APPENDIX A
Selection of Chemicals of Potential Concern

TECHNICAL MEMORANDUM
SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ROMIC ENVIRONMENTAL TECHNOLOGIES CORPORATION (SOUTHWEST)
CHANDLER, ARIZONA

Prepared for

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ATTACHMENTS

ACRONYMS

AAQGS	Ambient Air Quality Guidelines
ACGIH	American Conference of Governmental Industrial Hygienists
ADEQ	Arizona Department of Environmental Quality
AEGL	Acute Exposure Guideline Levels
ATSDR	Agency for Toxic Substances and Disease Registry
Cal/EPA	California Environmental Protection Agency
COPC	Chemical of Potential Concern
ERPG	Emergency Response Planning Guidelines
HEAST	Health Effects Assessment Summary Tables
HRA	Health Risk Assessment
IRIS	Integrated Risk Information System
MRL	Minimal Risk Level
MSDS	Material Safety Data Sheet
NIST	National Institute of Standards and Technology
ODEQ	Oregon Department of Environmental Quality
OEHHA	Office of Environmental Health Hazard Assessment
PEL	Permissible Exposure Levels
PPRTV	Provisional Peer Reviewed Toxicity Values
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
TCEQ	Texas Commission on Environmental Quality Effects Screening Levels
TEEL	Temporary Emergency Exposure Limits
TLV	Total Limit Value
TPH	Total Petroleum Hydrocarbon
TPHCWG	Total Petroleum Hydrocarbon Criteria Working Group
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency

mmHg	millimeter mercury (pressure units)
%	percent

1.0 INTRODUCTION AND PURPOSE

The Romic Environmental Technologies Corporation (Southwest) ("Romic") facility ("Site") is a hazardous waste management facility located in central Arizona. As part of a Resource, Conservation and Recovery Act (RCRA) Part B permit application, ENVIRON International Corporation (on behalf of Romic) prepared a health risk assessment (HRA) which evaluated the potential impacts that could occur as a result of exposure to emissions to the air from its on-Site operations. The overall objective of the HRA was to evaluate the potential human health and ecological risks associated with current operations as well as the incremental risks associated with changes to the facility operations proposed in the Part B permit application.

Prior to conducting the HRA, Romic submitted a Health Risk Assessment Workplan ("Workplan") (ENVIRON 2005) to the United States Environmental Protection Agency (USEPA). The Workplan outlined the approach to be used to evaluate the potential health risks to the surrounding human and wildlife communities as a result of operations at the Site. The Workplan also proposed a series of technical memoranda in which individual complex HRA topics would be discussed in greater depth prior to submittal of the HRA. The following technical memoranda were proposed:

- Chemical Selection
- Emissions Estimation
- Identification of Off-Site Receptors
- Ecological Impacts Screening
- Accident Scenario Evaluation

The technical memorandum presented here describes the proposed selection of the chemicals of potential concern (COPC) from sources of emissions at the Romic Southwest facility. As there are no dust-generating operations at the Site, the HRA focuses on volatile emissions to the air. Hence, the COPCs are those chemicals that can partition, to some degree, to the air during handling, processing or storage.

The estimated emission rate of these chemicals from potential sources on-site was discussed in the Emissions Estimation Technical Memorandum. For some minor sources, conservative assumptions regarding the chemicals handled at these sources have been made in order to simplify a source screening evaluation. The source screening evaluation is designed to eliminate from further evaluation those sources with insignificant off-site impacts.

2.0 COMPOSITION OF MATERIAL THROUGHPUT STREAMS

In order to select chemicals for evaluation in the HRA, potential air emission sources at the Site were evaluated. These sources are discussed in detail the Emissions Estimation Technical Memorandum; however, they are briefly described in this memorandum as well in order to clarify the process by which the COPC were selected. Emissions from the Site primarily result from its fuel blending operations and distillation operations, with some additional emissions from ancillary operations (such as truck washing, aerosol can crushing and waste paint consolidation).

To select the COPCs, chemical constituents of process streams (i.e., distillation recycling wastes and blending operations) were identified from a database maintained by Romic. This database contains information regarding the wastestreams accepted at the Site and the chemical composition of those waste streams, based on waste manifests for the materials. The period of time selected as representative of current and future throughput was January 2004 through December 2004. A list of constituents (including compound groups and mixtures) was produced from this database. The disposition of each chemical/compound is also tracked by this database. Hence, it is possible to ascertain the fraction of each chemical that would go to either blended fuel or to recycling via distillation processing.

Blended fuel is a main product (or output) stream for the facility. Two classes of waste can be recycled using distillation processing. One class of waste is largely composed of solvents and organic compounds ("the organic wastestream"). The other class of waste is largely composed of water with trace organic compounds ("the aqueous wastestream"). Thus, three lists of chemicals were generated: those chemicals found in the blended fuel stream, the organic wastestream and the aqueous wastestream. The original or raw chemical lists are presented in Tables 1A through 1C. There are 527 compounds in the blended fuel stream, 120 compounds in the organic wastestream, and 487 compounds in the aqueous wastestream. The tables also list the percent contribution of each compound to the overall liquid wastestream (i.e., solids are not included in the total percent).

3.0 SELECTION OF CHEMICALS OF CONCERN

The selection of COPCs was conducted in two parts. In the first part, a master chemical list was compiled. In the second part, the master chemical list was screened to identify the COPC to be quantitatively evaluated in the HRA. The selection process is detailed below.

3.1 Master Chemical List

The following are the steps that were taken to develop the master list of chemicals:

- **Removal of Solids and Grouping Chemicals**

Due to the large size of the initial raw chemical lists, the lists were reviewed and refined. Materials that were duplicates or obviously solids (and hence would result in insignificant vapor emissions) were removed from the list (these are indicated in Tables 1A through 1C). Materials removed from the list include soil, metals, sludge, salts, wipes, fabric and filters. The remaining chemicals/compounds were then re-examined. Compounds that were non-specific chemicals were grouped together under one compound "class" where appropriate, including:

- Naptha
  - Aromatic petroleum distillates
  - Petroleum distillates
  - Petroleum hydrocarbons
- Paraffinic hydrocarbons
  - Paraffinic solvents
  - Paraffinic distillates
  - Isoparaffinic hydrocarbons
  - Paraffinic oil
- Alcohols
  - N-propanol[1]

- **Identification of Chemicals with Arizona AAQG Values**

The Arizona Department of Environmental Quality (ADEQ) has developed a list of chemicals and chemical compound groups for which it has developed ambient air quality guidelines (AAQGS)[2]. These chemicals include those on the federal hazardous air pollutants list (Clean Air Act Section 112 chemicals). Depending on the toxicity of the chemical, one-hour, 24-hour and/or annual concentrations have been specified. The master list was compared to the AAQGS list. All chemicals with an AAQGS, as identified in Tables 1A through 1C, were selected as COPC.

[1] The non-specific group of compounds called "alcohols" was a sufficiently large enough fraction of each wastestream to be a COPC. The physical and toxicological parameters of this compound group were represented by n-propanol; hence, where a wastestream had a separate total for propanol, it was added into the alcohols group.
[2] http://www.azdeq.gov/environ/air/permits/download/ambient.pdf

- **Screening Based on Quantity**

  In addition to chemicals with AAQGS, all chemicals that contributed greater than 0.1 percent (%) to a waste stream and were not identified as solids were selected for further evaluation. These chemicals are identified in Tables 1A through 1C.

The master chemical list is shown in Table 2.

3.2 Chemical of Potential Concern List

The following are the steps that were taken to screen the master chemical list and develop the COPC list for quantitative evaluation in the HRA:

- **Mixtures**

  There are six mixtures listed in raw chemical lists that do not have AAQGSs and that contribute more than 0.1% to a waste stream. These mixtures are adhesives, aerosol cans, oil based paint, paint thinner, lacquer thinner and photo resist. In order to identify the COPCs correctly, the typical constituents of these mixtures were identified using material safety data sheets (MSDSs) and facility compositional information. Table 3 lists the representative compositions of those compounds that were listed in the database with either a generic term (e.g., adhesives) or as a mixture (e.g., lacquer thinner). MSDSs for each of these compounds/mixtures were found (see Attachment A), and volatile components of these materials were identified. Any compounds that were not on the master list were added if the component was greater than 0.1% of the total throughput. Three chemicals were found in the MSDS data for mixtures that do not appear on the master chemical list. These chemicals (methyl ethyl ketoxime, 2,1,5-diazonaphthoquinone sulfonic acid, and cobalt 2-ethylhexanoate) would be present in the wastestream at less than 0.1% of the total mass of the wastestream. Hence these chemicals were not added to the master list. (This is the same selection criteria used to build the master chemical list from the components of the three waste streams characterized in Tables 1A through 1C). A fourth chemical, butyl cellosolve, is a component of lacquer thinner. It comprises 3% of lacquer thinner. This chemical was included because it has an AAQG and although it would comprise less than 0.1% of the total wastestream, the facility has several tanks that, during some fraction of the year, store only lacquer thinner. Hence, in the emissions from tanks during storage of lacquer thinner, this chemical could be a significant component of the potential emissions.

- **Vapor Pressure**

  The vapor pressure of each chemical was researched. Vapor pressures were found using the following sources:

  - Chemfinder website: www.chemfinder.com

- Syracuse Research Corporation website: http://www.syrres.com/esc/physdemo.htm

- National Institute of Standards and Technology (NIST): http://webbook.nist.gov/chemistry/

- MSDS for those compounds not found in the above references (any referenced MSDS is included in Attachment A)

It was assumed that compounds (not listed on the Arizona AAQGS) with less than 0.1% of atmosphere (or 0.76 millimeter mercury [mmHg]) are unlikely to vaporize during processing/handling/storage, and therefore are unlikely to comprise a significant fraction of the potential emissions from the Site's processes and operations. Table 4 summarizes the master list and the vapor pressures for each chemical at ambient temperatures.

- **Toxicity**

The final screening was to identify which compounds (not listed on the Arizona AAQGS) that have either a chronic and/or acute toxicity factors. The following sources, listed in order of preference, were used to obtain the cancer and chronic noncancer toxicity values:

- USEPA's Integrated Risk Information System (IRIS) (USEPA 2005a). IRIS is an on-line database that contains USEPA-approved oral and inhalation toxicity values.

- USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs). PPRTVs are interim toxicity values developed by the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center.

- The California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) Toxicity Criteria Database (Cal/EPA 2005). The Toxicity Criteria Database is an online database that contains Cal/EPA-approved oral and inhalation toxicity values.

- USEPA's *Health Effects Assessment Summary Tables* (HEAST) (USEPA 1997). HEAST provides an older listing of provisional toxicity values.

The above hierarchy is consistent with the hierarchy specified in USEPA guidelines (USEPA 2003). Cancer and chronic noncancer toxicity values are presented in Table 5. For certain chemicals, cancer slope factors and noncancer reference doses were not available. When possible, surrogate toxicity values were selected for these chemicals by using the toxicity criteria associated with a compound having a similar chemical structure. Based on the structural similarities, is assumed that the pharmacokinetics of the two chemicals will be similar and thus, the toxicity criteria of the surrogate compound can be used to provide a realistic estimate of the potential for adverse health effects for similar compounds lacking

toxicity criteria. Surrogate chemicals are identified in the "Represented by" column in Table 5.

Petroleum mixtures considered in this evaluation include: total petroleum hydrocarbons (TPH)-gasoline, naphtha, TPH-mineral spirits (Stoddard solvent), TPH-jet fuel (same as TPH-kerosene), paraffinic hydrocarbons, and TPH-diesel. No chronic toxicity criteria are available for these petroleum mixtures in the sources listed above. In the absence of published toxicity factors for these hydrocarbon mixtures, ENVIRON developed toxicity factors using an indicator/surrogate approach as recommended by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG 1997).

The TPHCWG approach is the product of a collaborative effort between industry, government, and academia and reflects the most current theories on evaluating complex mixtures. The basis for the TPHCWG methodology is the examination of a mixture as the product of several smaller subsets, which are defined by specific carbon ranges and are referred to as fractions. Within each fraction, toxicity surrogates are conservatively selected to be representative of the entire petroleum mixture in that range. One reference dose (RfD) is representative of the aliphatics (i.e., alkanes, alkenes, alkynes, and cycloalkanes) and one RfD is representative of the aromatics (i.e., polynuclear aromatics, diaromatics, and monoaromatics). This is based upon the TPHCWG assumption that within a given carbon range and structural class (i.e., aliphatic or aromatic), individual chemical components have similar toxic effects.

Toxicity values derived using the TPHCWG approach were obtained from the Oregon Department of Environmental Quality (ODEQ) Risk-Based Decision Making for Remediation of Petroleum-Contaminated Sites (ODEQ 2003). The RfDs derived for the petroleum mixtures in this evaluation are presented in Table 6.

For acute toxicity values, the following sources were reviewed:

- U.S. Occupational Safety and Health Administration Permissible Exposure Levels (PELs) (29 CFR § 1910.1000)
- American Conference of Governmental Industrial Hygienists Threshold Limit Values (TLVs) (ACGIH 2005)
- California Acute Reference Exposure Levels (Cal/EPA 2000)
- Texas Commission on Environmental Quality Effects Screening Levels (TCEQ 2005)
- National Advisory Council Acute Exposure Guideline Levels (AEGLs) (USEPA 2005b)
- U.S. Department of Energy Emergency Response Planning Guidelines (ERPGs) and Temporary Emergency Exposure Limits (TEELs) (United States Department of Energy [USDOE] 2005)

- Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs) (ATSDR 2004)

The acute toxicity values are summarized in Table 7.

Table 8 summarizes all chemicals selected as COPC. At the request of USEPA, all chemicals contributing greater than 1% to the overall waste stream were selected as COPC regardless of vapor pressure.

4.0 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. *Minimal Risk Levels (MRLs) for Hazardous Substances.* Atlanta, GA. Available at: http://www.atsdr.cdc.gov/mrls.html

American Conference of Governmental Industrial Hygienists (ACGIH). 2005. *TLVs® and BEIs® Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices.* Cincinnati, OH.

California Environmental Protection Agency (Cal/EPA). 2005. *California Toxicity Criteria Database.* Office of Environmental Health Hazard Assessment. April.

California Environmental Protection Agency (Cal/EPA). 2000. *All Acute Reference Exposure Levels Adopted by Office of Environmental Health Hazard Assessment (OEHHA).* May. Available at: http://www.oehha.ca.gov/air/acute_rels/allAcRELs.html

Code of Federal Regulations (CFR). 2005. Title 29, *Department of Labor*. Part 1910, *Occupational Safety and Health Standards*. Subpart Z, *Toxic and Hazardous Substances*. Section 1910.1000, *Air Contaminants*. Table Z-1, *Limits for Air Contaminants*. (29 CFR § 1910.1000) Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9992

ENVIRON. 2005. Health Risk Assessment Workplan for Romic Environmental Technologies (Chandler, Arizona). February 11.

Oregon Department of Environmental Quality (ODEQ). 2003. Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites. Land Quality Division. September 2002

Romic Environmental Technologies Inc. 2003. Engineering Analysis in Support of Air Emissions Standards Compliance Program. November 15.

Texas Commission on Environmental Quality (TCEQ). 2003. *Effects Screening Levels List.* Available at: http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html#esl_1

Total Petroleum Hydrocarbon Criteria Working Group Series (TPHCWGS). 1997. Volume 4, *Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).* Amherst Scientific Publishers. Amherst, Massachusetts.

United States Department of Energy (USDOE). 2005. Environment, Safety and Health. *ERPGs and TEELs.* Available at: http://www.eh.doe.gov/chem_safety/teel/TEELs_Rev20_Table3.pdf

United States Environmental Protection Agency (USEPA). 1997. *Health Effects Assessment Summary Tables (HEAST). FY 1997 Update*. Office of Research and Development. EPA 540-R-97-36. July.

United States Environmental Protection Agency (USEPA). 2003. *Memorandum: Human Health Toxicity Values in Superfund Risk Assessments.* Memorandum from Michael B. Cook (Director) to Superfund National Policy Managers, Regions 1 – 10. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-53. Washington, D.C. December 5.

United States Environmental Protection Agency (USEPA). 2005a. *Integrated Risk Information System (IRIS).* Online database maintained by the USEPA. http://www.epa.gov/iriswebp/iris/index.html. Cincinnati, OH. April.

United States Environmental Protection Agency (USEPA). 2005b. *Acute Exposure Guideline Levels (AEGLs).* Online database maintained by the USEPA. July. Available at: http://www.epa.gov/oppt/aegl/chemlist.htm

TABLES

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
1,1,1-TRICHLOROETHANE	12,640.0	0.1%	AAAQGS
1,1,1,2-TETRAFLUOROETHANE	2.8	0.0%	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHA	4.1	0.0%	AAAQGS
1,1,2-TRICHLOROETHANE	4.1	0.0%	AAAQGS
1,1-DICHLORO-1-FLUOROETHANE	4.5	0.0%	
1,2,4-TRIMETHYLBENZENE	4.7	0.0%	AAAQGS
1,2,5-DIAZONAPHTHAQUINENESULFONIC	333.5	0.0%	
1,2-DICHLOROBENZENE	14.1	0.0%	AAAQGS
1,2-DICHLOROETHENE	0.3	0.0%	
1,2-EPOXYBUTANE	2.6	0.0%	
1,3,5-TRIMETHYLBENZENE	1,173.7	0.0%	AAAQGS
1,3-BENZENEDIMETHANEAMINE	10.5	0.0%	
1,3-DIOXOLANE	18.6	0.0%	
1,4-DIOXANE	1,108.5	0.0%	AAAQGS
1,6-HEXANEDIOL DIACRYLATE	24.8	0.0%	
1-BROMOPROPANE	4,175.5	0.0%	
1-BUTOXY-2-PROPANOL	647.4	0.0%	
1-METHOXY-2-PROPANOL	163,443.7	1.8%	AAAQGS
1-METHOXY-2-PROPANOL ACETATE	93,884.9	1.1%	
1-METHOXY-2-PROPYLENEACETATE	26.5	0.0%	
2-(2-AMINOETHOXY)ETHANOL	8,197.2	0.09%	
2,2,2-TRIFLUOROETHANOL	1.0	0.0%	
2-BUTANOL	1,344.9	0.0%	
2-BUTOXYETHANOL	2,264.6	0.0%	
2-BUTOXYETHANOL ACETATE	45.9	0.0%	AAAQGS
2-DIMETHYLAMINOETHANOL	80.0	0.0%	
2-ETHOXYETHANOL	600.0	0.0%	
2-ETHOXYETHYL ACETATE	12,399.9	0.1%	AAAQGS
2-ETHYL-1-HEXYL METHACRYLATE	275.2	0.0%	
2-HEPTANONE	2,039.1	0.0%	AAAQGS
2-METHOXY-1-PROPANOL ACETATE	5.6	0.0%	
2-METHOXYETHANOL	7,652.0	0.1%	
2-METHYL BUTANE	13.8	0.0%	
2-METHYL-1-PROPANOL	3.9	0.0%	AAAQGS
2-METHYL-2-PROPANOL	5.3	0.0%	
2-PENTANONE	74,065.2	0.83%	AAAQGS
3-NONEN-2-ONE	250.2	0.0%	
4,4-DIPHENYLMETHANE DIISOCYANATE	686.5	0.0%	
4-HYDROXY-4-METHYL-2-PENTANONE	26.5	0.0%	AAAQGS
4-METHYL-2-PENTANONE	3.7	0.0%	
5-BROMO-3-SEC-BUTYL-6-METHYLURACIL	9.0	0.0%	
ABSORBENT			solid
ACETATES	2,353.1	0.0%	
ACETIC ACID	2,816.6	0.0%	AAAQGS
ACETONE	507,025.6	5.7%	AAAQGS
ACETONITRILE	121,230.5	1.4%	AAAQGS
ACETYL ACETONE	1,334.4	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
ACRYLATE OLIGOMER	135.0	0.0%	
ACRYLATE RESIN			solid
ACRYLATES	356.5	0.0%	
ACRYLIC COPOLYMER			solid
ACRYLIC PAINT	543.0	0.0%	
ACRYLIC RESIN			solid
ACTIVATED CARBON			solid
ADHESIVE	10,776.5	0.1%	
ADHESIVE RESIN			solid
AEROSOLS CONTAINING:	105,135.0	1.2%	
ALCOHOLS	588,779.0	6.6%	AAAQGS (as 2-propanol)
ALKYD POLYMER			solid
ALKYD RESIN			solid
ALKYL AMINES	45.0	0.0%	
ALKYL METHACRYLATE	501.6	0.0%	
ALKYL PHENOL	45.0	0.0%	
ALUMINA			solid
ALUMINUM			solid
ALUMINUM SILICATE			solid
AMINES	137.6	0.0%	
AMMONIUM ACETATE	68.0	0.0%	
AMMONIUM CHLORIDE	22.0	0.0%	
AMMONIUM HYDROXIDE	2,185.9	0.0%	
AMMONIUM PERCHLORATE	22.5	0.0%	
AMMONIUM PERFLUOROOCTANOTATE	18.9	0.0%	
AMMONIUM THIOSULFATE	10.5	0.0%	
AMYL ACETATE	21,811.9	0.2%	
AMYL ALCOHOL	5,233.5	0.1%	
ANISOLE	1,113.2	0.0%	
ANTIMONY			solid
AROMATIC ALCOHOL	82.5	0.0%	
AROMATIC HYDROCARBONS		0.0%	
AROMATIC PETROLEUM DISTILLATES		0.0%	
AROMATIC SOLVENT NAPHTHA		0.0%	
ARSENIC			solid
ARSENIC PENTOXIDE	17.5	0.0%	solid/AAAQGS
ARSENIC TRIOXIDE	17.5	0.0%	solid/AAAQGS
ASH			solid
ASPHALT			solid
ASPHALT EMULSION		0.0%	semi-solid
AXAREL	1,704.6	0.0%	
BAKING SODA			solid
BARIUM			solid
BARIUM SULFATE	108.0	0.0%	solid/AAAQGS
BENZENE	25,580.2	0.3%	AAAQGS
BERYLLIUM			solid
BERYLLIUM OXIDE	76.0	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
BIS(T-BUTYLPHENYL) PHENYL PHOSPHATE	3,056.4	0.0%	
BLUING AGENT	45.9	0.0%	
BOTTLES			solid
BRAKE CLEANER	263.8	0.0%	
BRAKE FLUID	2,919.0	0.0%	
BROMINATED BISPHENOL	41,868.4	0.5%	
BROMOEOSINE	8.3	0.0%	
BUTANE	36.0	0.0%	
BUTYL ACETATE	31,637.7	0.4%	AAAQGS
BUTYLATED TRIPHENYL PHOSPHATE	2,028.5	0.0%	
BUTYLENE OXIDE	44.7	0.0%	
BUTYROLACTONE	2,376.4	0.0%	
CADMIUM			solid
CALCIUM CARBONATE	30.7	0.0%	
CALCIUM STEARATE	12.0	0.0%	
CAMPHORSULFONIC ACID	72.0	0.0%	
CARBON			solid
CARBON TETRACHLORIDE	11.5	0.0%	AAAQGS
CARDBOARD			solid
CASTOR OIL	4,153.0	0.0%	
CETYL ALCOHOL	5.8	0.0%	
CHLORHEXIDENE DIACETATE	14.0	0.0%	
CHLORINATED HYDROCARBONS	20.6	0.0%	
CHLORINATED PARAFFINS	119.5	0.0%	
CHLOROALKANES	8,100.0	0.1%	
CHLOROBENZENE	83.1	0.0%	AAAQGS
CHLOROBENZOTRIFLUORIDE	825.7	0.0%	
CHLOROFLUOROMETHANE	9.4	0.0%	
CHLOROFORM	4,408.7	0.0%	AAAQGS
CHROMIUM			solid
CITRIC ACID	19.9	0.0%	
CITRUS TURPENES	32.4	0.0%	
CLAY			solid
CLEANING COMPOUNDS	45.9	0.0%	
COBALT			solid
COBALT COMPOUNDS	641.3	0.0%	
COCONUT OIL	1,200.0	0.0%	
COOLANT	213.3	0.0%	
COPPER		0.0%	solid/AAAQGS
CORN SYRUP	1,000.8	0.0%	
COTTONSEED OIL	2,485.7	0.0%	
CRESOL	128.3	0.0%	AAAQGS
CRESOL NOVOLAK RESIN			solid
CRESYLIC ACID	11.6	0.0%	
CUMENE	11.8	0.0%	
CUTTING OIL	1,238.1	0.0%	
CYCLOHEXANE	5,833.4	0.1%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
CYCLOHEXANONE	17,055.8	0.2%	
CYCLOPENTANONE	112.6	0.0%	
DEBRIS (METALLIC)			solid
DEBRIS: PAPER, WOOD, GLASS, PLASTIC			solid
DECAMETHYL CYCLOPENTASILOXANE	50.1	0.0%	
DETERGENT	218.3	0.0%	
DEVELOPER	450.0	0.0%	
DIACETONE ALCOHOL	356.6	0.0%	
DIACETOXYPROPANE	26.5	0.0%	
DIAZO PHOTOACTIVE COMPOUNDS	18.3	0.0%	solid/AAAQGS
DIBASIC ESTER	854.5	0.0%	
DIBUTYL ETHER	33.4	0.0%	
DIBUTYL PHTHALATE	50.0	0.0%	AAAQGS
DIBUTYLTIN DIACEATATE	275.2	0.0%	
DICHLOROMETHANE	116,554.7	1.3%	AAAQGS
DIESEL	203,207.5	2.3%	
DIETHANOLAMINE	9.7	0.0%	
DIETHYL ETHER	21.9	0.0%	
DIETHYL KETONE	501.6	0.0%	
DIETHYLENE GLYCOL	575.6	0.0%	
DIETHYLENE GLYCOL BUTYL ETHER	729.8	0.0%	AAAQGS
DIETHYLENE GLYCOL ETHYL ETHER	34.4	0.0%	
DIETHYLENE GLYCOL MONOBUTYL ETHER	4.2	0.0%	
DIISOPROPYLETHYLAMINE	3.1	0.0%	
DIMETHOXYMETHANE	81.0	0.0%	
DIMETHYL ACETAMIDE	112.6	0.0%	
DIMETHYL DIALKYL AMMONIUM CHLORIDE	578.0	0.0%	
DIMETHYL ISOSORBIDE	351.3	0.0%	
DIMETHYL PHOSPHITE	0.0	0.0%	
DIMETHYL SILOXANE	71.9	0.0%	
DIMETHYL SULFOXIDE	1,260.1	0.0%	
DIMETHYLAMINE	3.7	0.0%	
DIMETHYLAMINOPROPYL METHACRYLAMIDE	917.4	0.0%	
DIMETHYLDICHLOROSILANE	194.6	0.0%	
DIMETHYLFORMAMIDE	37,228.6	0.4%	
DIMETHYLSULFOXIDE	7,979.9	0.1%	
DIMETRICONE	12.6	0.0%	
DIOCTYL ADIPATE	112.5	0.0%	
DIOXANE	1,167.8	0.0%	
DIPROPYLENE GLYCOL MONOMETHYL ETHER	51.9	0.0%	
DIRT			solid
D-LIMONENE	1,246.8	0.0%	
DYE	85.6	0.0%	
EMPTY CONTAINERS	206.4	0.0%	
ENAMEL PAINT	671.4	0.0%	
EOSIN	45.9	0.0%	
EPOXY ADHESIVE	387.5	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
EPOXY PASTE			solid
EPOXY RESIN			solid
ESTERS	530.9	0.0%	
ETHANOL	172,102.4	1.9%	AAAQGS
ETHANOLAMINE	8.8	0.0%	
ETHER	77.1	0.0%	
ETHYL ACETATE	50,407.0	0.6%	AAAQGS
ETHYL BENZENE	8,584.3	0.1%	AAAQGS
ETHYL ETHER	2,559.1	0.0%	
ETHYL LACTATE	414,431.4	4.6%	
ETHYL-3-ETHOXYPROPIONATE	1,399.9	0.0%	AAAQGS
ETHYLACID-3-METHOXY-N-BUTYLENE ESTER	26.5	0.0%	
ETHYLENE GLYCOL	28,090.8	0.3%	
ETHYLENE GLYCOL BUTYL ETHER	450.3	0.0%	
ETHYLENE GLYCOL BUTYL ETHER ACETATE	870.2	0.0%	
ETHYLENE GLYCOL ETHYL ETHER ACETATE	671.4	0.0%	
ETHYLENE GLYCOL MONOBUTYL ETHER	2,107.6	0.0%	
ETHYLENE GLYCOL MONOETHYL ETHER	25.2	0.0%	
F001	100.1	0.0%	
F002	60.3	0.0%	
FERRIC CHLORIDE	99.0	0.0%	AAAQGS
FIBER WITH RESIDUE:			solid
FIBERGLASS			solid
FILTERS			solid
FIRE EXTINGUISHERS			solid
FLUOROALIPHATIC POLYMER ESTERS	1.8	0.0%	
FLUOROCARBONS	1,081.9	0.0%	
FLUX	4,082.6	0.0%	
FOAM INSULATION			solid
FOOD FLAVORING	41.7	0.0%	
FORMALDEHYDE	328.6	0.0%	AAAQGS
FORMIC ACID	2.2	0.0%	AAAQGS
GASOLINE	243,099.8	2.7%	
GEAR OIL	2,965.9	0.0%	
GLYCERINE	4,951.8	0.1%	AAAQGS
GLYCERYL MONOSTEARATE	417.0	0.0%	
GLYCERYL STEARATE	12.8	0.0%	
GLYCOL ETHERS	2,429.0	0.0%	
GLYCOLIC ACID	35.1	0.0%	
GLYCOLS	48.5	0.0%	
GREASE			solid
GRIT BLAST			solid
HALOGENS	222.7	0.0%	
HEAT TRANSFER OIL	2,956.5	0.0%	
HEMATOXYLIN	45.9	0.0%	
HEPTANE	8,670.0	0.1%	AAAQGS
HEXAMETHYLDISILAZANE	418.1	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
HEXAMETHYLENE DIISOCYANATE	32.3	0.0%	
HEXANE	16,123.8	0.2%	AAAQGS
HYDRAULIC OIL	10,222.9	0.1%	
HYDROBROMIC ACID	51.6	0.0%	
HYDROCHLORIC ACID (1.0-5.0%)	1,265.5	0.0%	AAAQGS
HYDROFLUORIC ACID (4.0%)	189.9	0.0%	AAAQGS
HYDROGEN SILSESQUIOXANE	1,611.4	0.0%	
HYDROQUINONE	33.1	0.0%	
HYDROTREATED PARAFINNIC DISTILLATE	106.3	0.0%	
HYDROXYLAMINE	233.5	0.0%	
IMIDAZOLE	1.0	0.0%	
INERTS			solid
INK			solid
INK PIGMENTS			solid
INSECTICIDE	1.1	0.0%	
IODINE	2.1	0.0%	
IRON GRINDINGS			solid
IRON OXIDE			solid
ISOBUTANE	642.9	0.0%	
ISOBUTANOL	472.5	0.0%	
ISOBUTYL ACETATE	1,178.6	0.0%	AAAQGS
ISOBUTYL ALCOHOL	1,670.7	0.0%	
ISOBUTYL ISOBUTYRATE	4.8	0.0%	AAAQGS
ISOBUTYL KETONE	39.2	0.0%	
ISOCYANATE	28.3	0.0%	
ISOOCTANE	1,600.5	0.0%	
ISOPARAFFINIC HYDROCARBONS	478,059.9	5.4%	
ISOPHTHALYL DICHLORIDE	4,346.4	0.0%	
ISOPROPYL ACETATE	117.8	0.0%	AAAQGS
ISOPROPYL ETHER	48.0	0.0%	
ISOPROPYL MYRISTATE	400.0	0.0%	
ISOPROPYLBENZENE	2.4	0.0%	
JET FUEL	149,177.9	1.7%	
KEROSENE	15,064.1	0.2%	
KETONES	251.7	0.0%	
KEVLAR			solid
LABPACKS - SEE INVENTORY SHEETS	7.5	0.0%	
LACOLENE	1,179.7	0.0%	
LACQUER THINNER	32,892.2	0.4%	
LACTIC ACID	1,728.0	0.0%	
LANOLIN	351.3	0.0%	
LEAD			solid
LECITHIN			solid
LIMONENE	3,244.5	0.0%	
LINSEED OIL	189.7	0.0%	
L-MENTHOL	229.4	0.0%	
L-MENTHONE	229.4	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
MAGNESIUM RESINATE			solid
MAGNESIUM SILICATE	120.0	0.0%	
MANGANESE			AAAQGS/solid
MERCURY	2,359.1	0.0%	AAAQGS
METAL CONTAINERS			solid
METAL SCREEN			solid
METAL SHAVINGS			solid
METHANOL	230,118.1	2.6%	AAAQGS
METHOXY PROPYL ACETATE	125.1	0.0%	
METHYL ACETATE	4,068.2	0.0%	
METHYL AMYL KETONE	2,481.8	0.0%	AAAQGS
METHYL CELLOSOLVE	159.5	0.0%	
METHYL CYCLOHEXANE	167.6	0.0%	
METHYL ETHYL KETONE	266,422.0	3.0%	AAAQGS
METHYL ISOBUTYL KETONE	72,200.3	0.8%	
METHYL RED	6.8	0.0%	
METHYLDIETHOXYSILANE	35.0	0.0%	
METHYL-TERT-BUTYL ETHER	361.6	0.0%	
MICA			solid
MINERAL OIL	50,312.7	0.6%	
MINERAL SPIRITS	88,588.3	1.0%	
MODIFIERS	5.3	0.0%	
MOLYBDENUM	4.2	0.0%	
MONOETHANOLAMINE	25.0	0.0%	
MONOETHYLAMINE	900.0	0.0%	
M-PHENYLENEDIAMINE	72.0	0.0%	
MUD			solid
N,N-DIMETHYLFORMAMIDE	128,311.2	1.4%	
N-AMINO-ETHYLETHANOLAMINE	8.8	0.0%	
NAPHTHA	434,568.6	4.9%	
NAPHTHALENE	403.6	0.0%	AAAQGS
N-BUTANOL	53,170.0	0.6%	AAAQGS
N-BUTYL ACETATE	95,636.3	1.1%	AAAQGS
N-DIMETHYL FORMAMIDE	143.1	0.0%	
N-HEXANE	185.8	0.0%	
NICKEL		0.0%	solid/AAAQGS
NITRIC ACID (0.5-2.5%)	1,013.9	0.0%	AAAQGS
NITROCELLULOSE	4.2	0.0%	solid/AAAQGS
NITROMETHANE	9,501.7	0.1%	
N-METHYL-2-PYRROLIDONE	311,502.9	3.5%	
NONIONIC SURFACTANT	1.8	0.0%	
N-PROPANOL	2,230.7	0.0%	
N-PROPYL ACETATE	2,563.2	0.0%	AAAQGS
N-PROPYL BROMIDE	448.4	0.0%	
NYLON			solid
OCTAMETHYLCYCLOTETRASILOXANE	249.6	0.0%	
OIL	867,564.7	9.7%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
OIL SLUDGE	835.3	0.0%	
OLEAMINE	187.0	0.0%	
ORGANIC BINDER	960.0	0.0%	
ORGANOSILOXANE	167.2	0.0%	
OXIRANE-METHOXIRANE POLYMER-BUTYL	2,168.0	0.0%	
PAINT	299,453.0	3.4%	
PAINT PIGMENT			solid
PAINT POWDER			solid
PAINT SLUDGE			solid
PAINT SOLIDS			solid
PAINT SOLIDS (PIGMENT, RESIN)			solid
PAINT THINNERS	13,938.7	0.2%	
PARA-CHLORO BENZO TRIFLOURIDE	1,179.7	0.0%	
PARAFFIN			solid
PARAFFIN OIL	6,620.7	0.1%	
PEG 24 GLYCERINE	450.0	0.0%	
PERCHLOROETHYLENE	102,277.5	1.1%	AAAQGS
PERFUME	1,501.2	0.0%	
PETROLATUM	10.3	0.0%	
PETROLEUM ASPHALT	3,561.3	0.0%	
PETROLEUM BASED OIL	990.8	0.0%	
PETROLEUM CRUDE	1,949.3	0.0%	
PETROLEUM OIL	41,189.2	0.5%	
PHENOL	439.6	0.0%	
PHENOLIC RESINS			solid
PHENOLPHTHALEIN	3.8	0.0%	
PHOSPHATE DETERGENT	1,320.0	0.0%	
PHOSPHINE	521.8	0.0%	
PHOSPHONIC ACID	0.0	0.0%	
PHOSPHORUS	753.9	0.0%	
PHOSPHORUS PENTOXIDE	2.5	0.0%	
PHOTO RESIST	36,298.0	0.4%	
PIGMENT			solid
PIPERIDINE	1,358.0	0.0%	
PLASTIC BAGS			solid
PLASTIC MATERIAL			solid
POLYALKYLENE GLYCOL	337.5	0.0%	
POLYALPHAOLEFIN	350.9	0.0%	
POLYAMIC ACID	668.8	0.0%	
POLYCHLOROPRENE	340.6	0.0%	
POLYCHLOROTRIFLUOROETHYLENE	66.3	0.0%	
POLYDIMETHYL SILOXANE	20,338.1	0.2%	
POLYESTER RESIN			solid
POLYETHERSULFONE	3.8	0.0%	
POLYETHYLENE GLYCOL	660.8	0.0%	
POLYGLYCOL MONOETHYL ETHER ACETATE	225.2	0.0%	
POLYMER (UNPROCESSED)			solid

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
POLYMERIC RESIN			solid
POLYMERS			solid
POLYSULFONE POLYMER			solid
POLYURETHANE (OIL BASED)	29.2	0.0%	
POLYURETHANE RESIN			solid
POLYVINYL ALCOHOL	664.0	0.0%	
POLYVINYL CHLORIDE	247.2	0.0%	
POTASSIUM CARBONATE	81.3	0.0%	
POTASSIUM HYDROXIDE			solid
POTASSIUM PERCHLORATE	22.5	0.0%	
PROPIONIC ACID	583.9	0.0%	
PROPIONITRILE	80.0	0.0%	
PROPYLENE GLYCOL	4,631.2	0.1%	
PROPYLENE GLYCOL ESTER	75.1	0.0%	
PROPYLENE GLYCOL ETHER	75.1	0.0%	
PROPYLENE GLYCOL METHYL ETHER	3,592.9	0.0%	
PROPYLENE GLYCOL METHYL ETHER ACETATE	108,563.7	1.2%	
PROPYLENE GLYCOL MONOETHYL ETHER	50.7	0.0%	
PROPYLENE GLYCOL MONOETHYL ETHER ACETATE	197.6	0.0%	
PROPYLENE GLYCOL N-BUTYL ETHER	27.0	0.0%	
PROPYLENE OXIDE	573.4	0.0%	AAAQGS
PYRIDINE	1,237.0	0.0%	AAAQGS
PYROCATECHOL	83.5	0.0%	
RESIN			solid
RESIN (EPOXY)			solid
RESIN (SYNTHETIC)			solid
RESIN FLUX			solid
RESINS			solid
RESIST			solid
ROOFING TAR			solid
ROSIN			solid
ROSIN FLUX			solid
RUBBER			solid
RUST			solid
SAND			solid
SCALE			solid
SEC-BUTANOL	0.7	0.0%	
SELENIUM	1,359.0	0.0%	
SENSITIZER	83.6	0.0%	
SHELLAC	127.2	0.0%	
SILICA			solid
SILICON	5,235.4	0.1%	
SILICON OIL	3,300.5	0.0%	
SILICONE RESIN			solid
SILVER			solid

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
SLUDGE			solid
SOAP	210.0	0.0%	
SODIUM ACETATE	1,100.0	0.0%	
SODIUM BICARBONATE			solid
SODIUM BISULFATE	0.5	0.0%	
SODIUM CARBONATE			solid
SODIUM DODECYLBENZENE SULFONATE	16.1	0.0%	
SODIUM HYDROXIDE			solid
SODIUM LAURYL SULFATE	72.0	0.0%	
SODIUM NITRATE	131.4	0.0%	
SOIL			solid
SOLIDS			solid
SOLIDS (SUSPENDED)			solid
STAIN	3,034.5	0.0%	
STEARIC ACID	43.9	0.0%	
STODDARD SOLVENT	58,865.8	0.7%	
STRONTIUM NITRATE	6.8	0.0%	
STYRENE	9,052.9	0.1%	
STYRENE MONOMER	369.3	0.0%	
STYRENE RESIN			solid
SUGAR			solid
SULFOLANE	52,861.3	0.6%	
SULFONIC ACID ESTER	32.1	0.0%	
SULFURIC ACID	776.8	0.0%	
SURFACTANT	400.3	0.0%	
SURFACTANTS	104.3	0.0%	
SUSPENDED SOLIDS	36.7	0.0%	
SYNTHETIC ESTERS	41.3	0.0%	
TALC			solid
TAR			solid
T-BUTYL ALCOHOL	5.6	0.0%	
T-BUTYLPHENYL DIPHENYL PHOSPHATE	3,056.4	0.0%	
TERPENE	509.0	0.0%	
TERPENE HYDROCARBONS	2,374.7	0.0%	
TERPINEOL	12.7	0.0%	
TERTBUTYL ALCOHOL	6.9	0.0%	
TETRACHLOROETHANE	1,251.0	0.0%	
TETRAETHYL ORTHOSILICATE	15,411.8	0.2%	
TETRAETHYLENE GLYCOL	240.0	0.0%	
TETRAHYDROFURAN	15,794.4	0.2%	
TETRAHYDROFURFURYL ALCOHOL	16.1	0.0%	
TETRAHYDROTHIOPHENE	2,400.0	0.0%	
TETRAHYDROXYPROPYLETHYLENEDIAMINE	875.7	0.0%	
TETRAZOLE	58.5	0.0%	
THINNER (LACQUER)		0.0%	
TIN			solid
TITANIUM DIOXIDE			solid/AAAQGS

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
TOLUENE DIISOCYANATE	22.0	0.0%	
TONER	153.0	0.0%	
TOWELS			solid
TRANSMISSION FLUID	2,390.2	0.0%	
TRI(T-BUTYLPHENYL) PHOSPHATE	1,175.6	0.0%	
TRIBUTOXYETHYL PHOSPHATE	1.8	0.0%	
TRIBUTYL PHOSPHATE	8.8	0.0%	
TRICHLOROETHANE	45.5	0.0%	
TRICHLOROETHENE	155,912.0	1.7%	AAAQGS
TRICRESYL PHOSPHATE	21.0	0.0%	
TRIETHANOLAMINE	13.8	0.0%	
TRIETHYL PHOSPHATE	450.0	0.0%	
TRIETHYLAMINE	462.7	0.0%	
TRIETHYLENE GLYCOL ETHYL ETHER	91.7	0.0%	
TRIETHYLENETETRAMINE	50.0	0.0%	AAAQGS
TRIFLUOROACETIC ACID	2,386.5	0.0%	
TRIMESIC ACID	6,416.1	0.1%	
TRIMESOYL CHLORIDE	106.1	0.0%	
TRIMETHYL BENZENE	174.1	0.0%	
TRIMETHYL PHOSPHITE	47.8	0.0%	
TRIMETHYLATED SILICA	383.6	0.0%	
TRIPHENYL PHOSPHATE	2,580.2	0.0%	
TRIPROPYLENE GLYCOL METHYL ETHER	399.9	0.0%	
TRITOTYL PHOSPHATE	49.5	0.0%	
TRIXYLENYL PHOSPHATE	1,576.1	0.0%	
TURPENTINE	135.5	0.0%	
UREA	10.1	0.0%	
URETHANE	92.8	0.0%	
URETHANE FOAM			solid
URETHANE RESIN			solid
VEGETABLE OIL	6,451.2	0.1%	
VERMICULITE	191.0	0.0%	
VINYL COPOLYMER	41.5	0.0%	
VINYLPOLYDIMETHYLSILOXANE	1,790.0	0.0%	
VITAMIN D3 POWDER	0.5	0.0%	
VM & P NAPTHA		0.0%	
WATER	768,770.1	8.6%	
WELDING DUST			solid
XYLENE	210,982.1	2.4%	AAAQGS
XYLENOLS	0.9	0.0%	
ZEOLITE			solid
ZINC			solid
ZINC ACETATE	9.2	0.0%	
ZINC ALKYL DITHIOPHOSPHATE	363.3	0.0%	
ZINC PHOSPHATE	2,353.1	0.0%	
ZINC SULFATE	11.7	0.0%	

TABLE 1A
Raw Chemical List - Blended Fuel Stream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
Grand Total	8,935,078.8	100.00%	

Notes:
AAAQGS = Arizona Ambient Air Quality Guidelines

TABLE 1B
Raw Chemical List - Solvents (Organic) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
1,1,1-TRICHLOROETHANE	4,075.0	0.1%	AAAQGS
1,2,3,4-TETRAHYDRONAPHTHALENE	9.2	0.0%	
1,2,5-DIAZONAPHTHAQUINENESULFONIC	514.5	0.0%	
1-METHYL-2-PROPANOL ACETATE	19,457.6	0.3%	AAAQGS
2-(2-BUTOXYETHOXY)ETHANOL	10,663.7	0.2%	AAAQGS
2-ETHOXYETHYL ACETATE	16.1	0.0%	AAAQGS
2-ETHOXYPROPANOL	19,457.6	0.3%	
2-HEPTANONE	3,233.9	0.0%	AAAQGS
2-PENTANONE	9,261.7	0.1%	
ACETATES	392.2	0.0%	
ACETONE	121,997.5	1.9%	AAAQGS
ACETONITRILE	676.8	0.0%	AAAQGS
ALUMINUM			solid
AMMONIUM FLUORIDE	3,015.3	0.0%	
ANISOLE	1,543.6	0.0%	
BARIUM			solid
BUTANOL	140.3	0.0%	
BUTYL ACETATE	778.3	0.0%	AAAQGS
CADMIUM			solid
CARBON BLACK			solid
CHLOROFORM	235.8	0.0%	AAAQGS
CHROMIUM			solid
COPPER			solid/AAAQGS
CYCLOHEXANONE	10,863.0	0.2%	
DIBASIC ESTER	39.0	0.0%	
DIBUTYL PHTHALATE	22.5	0.0%	AAAQGS
DICHLOROETHANE	6.6	0.0%	
DICHLOROFLUOROMETHANE	5,217.8	0.1%	
DICHLOROMETHANE	25,813.6	0.0%	
DIETHYL ETHER	31.8	0.0%	
DIETHYLENE GLYCOL	501,122.1	7.6%	
DIMETHYL SULFOXIDE	202.8	0.0%	
DIMETHYLFORMAMIDE	1,584.9	0.0%	
DIRT			solid
EPOXY RESIN			solid
ETHANOL	2,597.2	0.0%	AAAQGS
ETHOXYETHYL ACETATE	19,457.6	0.3%	
ETHYL ACETATE	3,691.4	0.1%	AAAQGS
ETHYL BENZENE	431.2	0.0%	AAAQGS
ETHYL LACTATE	409,730.0	6.2%	
ETHYL-3-ETHOXYPROPIONATE	10,846.2	0.2%	AAAQGS
ETHYLENE GLYCOL	167,952.7	2.6%	
ETHYLENE GLYCOL BUTYL ETHER	156.0	0.0%	
ETHYLENE GLYCOL BUTYL ETHER ACETATE	52.3	0.0%	
ETHYLENE GLYCOL ETHYL ETHER ACETATE	23,291.1	0.4%	

TABLE 1B
Raw Chemical List - Solvents (Organic) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
FIBER WITH RESIDUE:			solid
FLUOROCARBONS	5,176.5	0.1%	
FORMALIN	33.0	0.0%	
GLUE			solid
GREASE			solid
HEPTANE	392.2	0.0%	AAAQGS
HEXAMETHYLDISILAZANE	11,266.2	0.2%	
HEXANE	664.4	0.0%	
HYDROFLUORIC ACID (0.25%)	603.1	0.0%	AAAQGS
INK			solid
IODINE			solid
ION EXCHANGE RESIN (CATION)			solid
IRON			solid
IRON OXIDE			solid
ISOCYANATE	9.2	0.0%	
ISOPARAFFINIC HYDROCARBONS	180.6	0.0%	
ISOPROPANOL	160,848.4	2.5%	AAAQGS
N-PROPANOL	1,807.7	0.0%	
ISOPROPANOLAMINE	10,150.0	0.2%	
ISOPROPYL ACETATE	23.4	0.0%	AAAQGS
LACTIC ACID	431.5	0.0%	
LEAD			solid
METHANOL	4,113.9	0.1%	AAAQGS
METHYL ETHYL KETONE	38,032.3	0.6%	AAAQGS
METHYL ISOBUTYL KETONE	1,278.0	0.0%	
METHYL NONAFLUOROISOBUTYL ETHER	791.3	0.0%	
METHYL-TERT-BUTYL ETHER	6.5	0.0%	
MINERAL SPIRITS	422,372.4	6.4%	
NAPHTHA	203,594.5	3.1%	
N-BUTANOL	3,380.3	0.0%	AAAQGS
N-BUTYL ACETATE	1,367.5	0.0%	
NICKEL			solid
N-METHYL-2-PYRROLIDONE	3,377,312.7	51.5%	
N-METHYLPYRROLIDINE		0.0%	
N-PROPYL ACETATE	3,445.5	0.1%	AAAQGS
OIL	45,665.0	0.7%	
PAINT	1,146.2	0.0%	
PAINT PIGMENT			solid
PAINT SLUDGE			solid
PAINT SOLIDS			solid
PAINT SOLIDS (PIGMENT, RESIN)			solid
PERCHLOROETHYLENE	81,411.2	0.7%	AAAQGS
PERFLUORINATED POLYETHERS	5,176.5	0.1%	
PERFLUORO COMPOUNDS	2,690.3	0.0%	
PETROLEUM DISTILLATES		0.0%	

TABLE 1B
Raw Chemical List - Solvents (Organic) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
PETROLEUM HYDROCARBONS		0.0%	
PETROLEUM NAPHTHA		0.0%	
PETROLEUM OIL	22.5	0.0%	
PHENOL	36.3	0.0%	
PHOSPHORIC ACID	9.2	0.0%	
PHOTORESIST	1,949.5	0.0%	
PIGMENTS			solid
PLASTIC MATERIAL			solid
POLYMERS			solid
PROPYLENE GLYCOL	4,019.5	0.1%	
PROPYLENE GLYCOL METHYL ETHER	2,755.2	0.0%	AAAQGS
PROPYLENE GLYCOL METHYL ETHER ACETATE	22,261.7	0.3%	AAAQGS
PROPYLENE GLYCOL MONOETHYL ETHER	18.3	0.0%	
RESIN			solid
SLUDGE			semi-solid
SODIUM CHLORIDE			solid
SODIUM SULFATE			solid/AAAQGS
SOLIDS (SUSPENDED)			solid
SULFOLANE	52,647.7	0.8%	
SULFONIC ACID ESTER	254.6	0.0%	
TETRAETHYL ORTHOSILICATE	30.0	0.0%	
TETRAHYDROFURAN	550.6	0.0%	
TOLUENE	17,279.3	0.3%	AAAQGS
TRICHLOROACETIC ACID	3.3	0.0%	
TRICHLOROETHYLENE	23,342.4	0.4%	AAAQGS
TRICHLOROTRIFLUOROETHANE	5,217.8	0.1%	
TRIETHYLENETETRAMINE	22.5	0.0%	AAAQGS
WATER	566,475.4	8.6%	
XYLENE	102,831.0	0.1%	AAAQGS
ZEOLITE			solid
ZINC			solid
ZINC PHOSPHATE	392.2	0.0%	
Grand	6,562,067.6	100.00%	

Notes:
AAAQGS = Arizona Ambient Air Quality Guidelines

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
1,1,1-TRICHLOROETHANE	147.4	0.0%	AAAQGS
1,2,3-TRIMETHYLBENZENE	1.7	0.0%	
1,2,4-TRIMETHYLBENZENE	440.4	0.0%	AAAQGS
1,2-DICHLOROBENZENE	4.0	0.0%	AAAQGS
1,2-ETHANEDIOL	6.4	0.0%	
1,2-HEXANEDIOL	1,167.6	0.0%	
1,5-PENTANEDIOL	3,888.9	0.1%	
1-HYDROXYETHYLIDENE-1,1 DIPHOSPHONIC ACID	60.7	0.0%	
1-METHOXY-2-PROPANOL	131.9	0.0%	AAAQGS
1-METHYL-2-PYRROLIDINONE		0.0%	
1-NAPHTHALENEACETIC ACID	114.7	0.0%	
1-NITROPROPANE	27.2	0.0%	
2-(2-BUTOXYETHOXY)ETHANOL	2.4	0.0%	AAAQGS
2,4-PENTANEDIONE	2.5	0.0%	
2-AMINO-2-METHYL-1-PROPANOL	440.4	0.0%	
2-BUTANOL	699.8	0.0%	
2-BUTENEDINIC ACID	131.4	0.0%	
2-BUTOXYETHANOL	348.9	0.0%	
2-DIMETHYLAMINOETHANOL	5.0	0.0%	
2-ETHOXYETHANOL	37.5	0.0%	
2-METHOXYETHANOL	17.4	0.0%	
2-METHYL-1,3-PROPANEDIOL	275.2	0.0%	
2-METHYLAMINOETHANOL	0.0	0.0%	
2-PYRROLIDONE	9,970.5	0.2%	
3,3-DIAMINOBENZIDINE	16.4	0.0%	
3,3-DIAMINOBENZIDINE TETRAHYDROCHLORO	5.8	0.0%	
4-METHYLAMINOPHENOL SULFATE	7.6	0.0%	
ABSORBENT	162.0	0.0%	
ACETATES	12.5	0.0%	
ACETIC ACID	1,523.3	0.0%	AAAQGS
ACETONE	12,602.9	0.3%	AAAQGS
ACETONITRILE	1,674.5	0.0%	AAAQGS
ACRYLIC COPOLYMER	60.7	0.0%	
ACRYLIC POLYMER			solid
ADIPIC ACID	1.4	0.0%	
ALCOHOL ETHOXYLATES	27.9	0.0%	
ALCOHOL ETHOXYSULFATE	10.6	0.0%	
ALCOHOLS	18,432.1	0.4%	
ALIPHATIC HYDROCARBONS		0.0%	
ALKYLAMMONIUM HYDROXIDE	15.8	0.0%	
ALKYLATED PHENOL INHIBITOR	0.4	0.0%	
ALUMINA			solid
ALUMINA POWDER			solid

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
ALUMINUM			solid
ALUMINUM FINES			solid
ALUMINUM HYDROXIDE	1,877.5	0.0%	
ALUMINUM HYDROXY CHLORIDE	2,817.0	0.1%	
ALUMINUM OXIDE			solid
ALUMINUM SULFATE	0.0	0.0%	
AMMONIUM ACETATE	63.7	0.0%	
AMMONIUM ALUM, DODECAHYDRATE	7.6	0.0%	
AMMONIUM BISULFITE	33.8	0.0%	
AMMONIUM FLUORIDE	630.2	0.0%	
AMMONIUM HYDROXIDE	1,992.2	0.0%	
AMMONIUM NITRATE	36.3	0.0%	
AMMONIUM OXALATE	0.5	0.0%	
AMMONIUM PERFLUOROOCTANOTATE	23.6	0.0%	
AMMONIUM SULFITE	1.2	0.0%	
AMMONIUM THIOSULFATE	2,273.9	0.0%	
ANIONIC COPOLYMER			solid
ARSENIC			solid
ASPHALT			solid
ASPHALT EMULSION			semi-solid
BARIUM			solid
BARIUM SULFATE			solid/AAAQGS
BENZENE	839.6	0.0%	AAAQGS
BENZOIC ACID	32.5	0.0%	
BENZYL ALCOHOL	24.0	0.0%	
BIFENTHRIN	350.3	0.0%	
BIOCIDE	5.1	0.0%	AAAQGS (as acrolein)
BORAX	20.0	0.0%	
BORIC ACID	403.4	0.0%	
BORON	72.7	0.0%	solid/AAAQGS
BRAKE FLUID	1,376.1	0.0%	
BUFFER	23.7	0.0%	
BUTANE	13.0	0.0%	
BUTANOL	43.6	0.0%	
BUTOXYETHANOL	7.5	0.0%	AAAQGS
BUTYL ACETATE	2,014.0	0.0%	AAAQGS
BUTYL CHLORIDE	2.5	0.0%	
CADMIUM			solid
CADMIUM OXIDE			solid
CALCIUM CHLORIDE			solid
CALCIUM HYDROXIDE	496.6	0.0%	
CALCIUM LIGNOSULFONATE	326.1	0.0%	
CALCIUM OXIDE			solid
CAMPHORSULFONIC ACID	1,373.0	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
CARBON BLACK			solid
CARBOXYALKANE	15.8	0.0%	
CARBOXYLIC ACID	35.2	0.0%	
CERAMIC DUST			solid
CETYL ALCOHOL	37.5	0.0%	
CHELATING AGENT	39.0	0.0%	
CHLORIDE SALTS	1.3	0.0%	
CHLORINATED PARAFFINS	500.0	0.0%	
CHLOROBENZENE	5.7	0.0%	
CHLOROFORM	123.4	0.0%	AAAQGS
CHROMIC ACID	186.5	0.0%	
CHROMIUM			solid
CHROMIUM TRIOXIDE			solid/AAAQGS
CITRIC ACID	1,083.5	0.0%	
CLEANING COMPOUNDS	1,269.6	0.0%	
COBALT	137.4	0.0%	
COLLOIDAL SILICA			solid
CONCRETE SEALER	131.9	0.0%	
CONDITIONER SOLUTION	275.2	0.0%	
CONTAINERS (METAL)			solid
COOLANT	1,688.2	0.0%	
COPOLYMER ACRYLAMIDE	0.7	0.0%	
COPPER			solid/AAAQGS
COPPER SULFATE			solid
CRESOL	12.0	0.0%	AAAQGS
CUTTING OIL	13,475.3	0.3%	
CYANIDES	3.6	0.0%	
CYCLOHEXANE	7,859.7	0.2%	
CYCLOHEXANOL	6.3	0.0%	
CYCLOHEXANONE	1,269.0	0.0%	
CYPERMETHRIN	350.3	0.0%	
DEBRIS: PAPER, WOOD, GLASS, PLASTIC			solid
DEBRIS: PLASTIC, PAPER, CLOTH			solid
DEBRIS: PLASTIC,PAPER,CLOTH,WOOD			solid
DEGREASER	187.7	0.0%	
DETERGENT	1,992.7	0.0%	
DEVELOPER	71.9	0.0%	
DIAMOND DUST			solid
DICHLOROACETIC ACID	121.8	0.0%	
DICHLOROMETHANE	8,866.8	0.2%	AAAQGS
DICHLOROPHENE	0.5	0.0%	
DIESEL	77,160.4	1.7%	
DIETHANOLAMINE	772.8	0.0%	
DIETHYL ETHER	123.8	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
DIETHYLENE GLYCOL	2,863.4	0.1%	
DIETHYLENE GLYCOL BUTYL ETHER	1,418.4	0.0%	AAAQGS
DIETHYLENETRIAMINE	15.1	0.0%	AAAQGS
DIMETHYL SULFOXIDE	17.4	0.0%	
DIMETHYLAMINE BORANE	0.1	0.0%	
DIMETHYLDICHLOROSILANE	10.5	0.0%	
DIMETHYLFORMAMIDE	113.0	0.0%	
DIOXANE	62.7	0.0%	
DIPROPYLENE GLYCOL METHYL ETHER	64.6	0.0%	
DIPROPYLENE GLYCOL MONOMETHYL ETHER		0.0%	
DIRT			solid
DISTILLED WATER	491.8	0.0%	
DIURON	350.3	0.0%	
D-LIMONENE	128.0	0.0%	
DYE	1,015.3	0.0%	
EDTA TETRASODIUM SALT	19.7	0.0%	
EMULSIFIER	57.3	0.0%	
ENAMEL	874.0	0.0%	
ENZYMES	0.1	0.0%	
EPOXY RESIN			solid
ESTERS	12.9	0.0%	
ETHANOL	5,941.7	0.1%	AAAQGS
ETHANOLAMINE	502.2	0.0%	
ETHIDIUM BROMIDE	2.3	0.0%	
ETHOXYLATED ACETYLENIC DIOLS	16.7	0.0%	
ETHOXYLATED ALCOHOLS	40.0	0.0%	
ETHYL ACETATE	1,292.7	0.0%	
ETHYL BENZENE	518.2	0.0%	AAAQGS
ETHYL CELLULOSE	75.1	0.0%	
ETHYL ETHER	1.8	0.0%	
ETHYL LACTATE	1,269.0	0.0%	
ETHYLENE DIAMINE TETRAACETIC ACID	4.8	0.0%	
ETHYLENE GLYCOL	54,399.6	1.2%	
ETHYLENE GLYCOL METHYL ETHER	211.0	0.0%	
FAT			solid
FATTY ACIDS	235.0	0.0%	
FERRIC AMMONIUM OXALATE	225.0	0.0%	
FERRIC CHLORIDE	41.7	0.0%	AAAQGS
FERRIC OXIDE	2,008.7	0.0%	solid/AAAQGS
FERROUS OXIDE	82.5	0.0%	
FIBERGLASS			solid
FILTER CAKE			solid
FIPRONIL	350.3	0.0%	
FIRE SUPPRESSANT FOAM	13.8	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
FIXER	57.3	0.0%	
FLOW MODIFIER	0.4	0.0%	
FLUORIDE	465.9	0.0%	
FLUX	1.9	0.0%	
FORMALDEHYDE	1,018.2	0.0%	AAAQGS
FRAGRANCE OILS	184.6	0.0%	
FRAGRANCES		0.0%	
FUEL OIL		0.0%	
FURFURYL ALCOHOL	15.0	0.0%	
GALLIUM ARSENIDE	78.3	0.0%	
GASOLINE	119,716.0	2.6%	
GEAR OIL	1,376.1	0.0%	
GLASS			solid
GLASS BEADS			solid
GLUE	42.2	0.0%	
GLUTARALDEHYDE	72.3	0.0%	
GLYCERIN	852.3	0.0%	AAAQGS
GLYCOL ETHERS	45.0	0.0%	
GLYCOLIC ACID	228.5	0.0%	
GLYCOLS	48.2	0.0%	
GLYPHOSPHATE	4.6	0.0%	
GOLD			solid
GRAPHITE			solid
GRAVEL			solid
GREASE			solids
GUM ARABIC	6.9	0.0%	
HAIR GEL	275.2	0.0%	
HALOGENS	17.5	0.0%	
HARDENER	21.5	0.0%	
HEPES	0.4	0.0%	
HEPTANE	247.5	0.0%	AAAQGS
HEXANE	134.9	0.0%	AAAQGS
HEXYLENE GLYCOL	188.7	0.0%	
HYDRAULIC FLUID	760.4	0.0%	
HYDRAULIC OIL	1,550.6	0.0%	
HYDRAZINE	29.2	0.0%	
HYDROCHLORIC ACID (0.5-4.0%)	2,122.4	0.0%	AAAQGS
HYDROFLUORIC ACID (0.25-2.5%)	364.6	0.0%	AAAQGS
HYDROGEN PEROXIDE	16.4	0.0%	
HYDROQUINONE	242.4	0.0%	
IMIDACLOPRID	350.3	0.0%	
INDIUM PHOSPHIDE	0.1	0.0%	
INERTS			solid
INK			solid

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
INK (WATER SOLUBLE)			aqeuous
INK CONTAINING:	6,328.8	0.1%	
INK PIGMENTS	114.7	0.0%	
INORGANIC ACIDS	2.5	0.0%	
INORGANIC SALTS	32.8	0.0%	
IODINE	22.9	0.0%	
IODINE COMPLEX	8.1	0.0%	
IRON	1,789.6	0.0%	
IRON HYDROXIDE			solid/AAAQGS
IRON OXIDE			solid
IRON PHOSPHATE			solid/AAAQGS
ISOBUTANOL	459.0	0.0%	
ISOPARAFFINIC HYDROCARBON	9,348.8	0.2%	
ISOPHTHALYL DICHLORIDE	94.5	0.0%	
ISOPROPYL ACETATE	218.6	0.0%	AAAQGS
JET FUEL	68,019.7	1.5%	
KEROSENE	9,161.9	0.2%	
LACQUER THINNER	500.4	0.0%	
LACTOSE	1.3	0.0%	
LAMBDA-CYHALOTHRIN	350.3	0.0%	
LATEX PAINT		0.0%	
LAURAMINE OXIDE	40.0	0.0%	
LAURIC ALCOHOL	33.0	0.0%	
L-CYSTINE	26.4	0.0%	
LEAD			solid
LEAD NITRATE	10.0	0.0%	
LEAD OXIDE	13.5	0.0%	
LECITHIN	32.6	0.0%	
LITHIUM HYDROXIDE	7.2	0.0%	
LOTION	275.2	0.0%	
LUBRICANT	602.3	0.0%	
MAGNESIUM HYDROXIDE	138.7	0.0%	
MAGNESIUM NITRATE	1.4	0.0%	
MAGNESIUM OXIDE	124.8	0.0%	
MANGANESE OXIDE			solid/AAAQGS
MERCURIC CHLORIDE	20.9	0.0%	
MERCURIC IODIDE	20.9	0.0%	
MERCURY	6.6	0.0%	AAAQGS
METAL			solid
METAL SHAVINGS			solid
METHANOL	2,815.4	0.1%	AAAQGS
METHOXY-METHYL ETHOXY PROPANOL	41.3	0.0%	
METHYL AMYL KETONE	100.0	0.0%	AAAQGS
METHYL ETHYL KETONE	1,832.4	0.0%	AAAQGS

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
METHYL ISOBUTYL KETONE	264.1	0.0%	
METHYL RED	39.5	0.0%	
METHYL-TERT-BUTYL ETHER	108.4	0.0%	
MILK	20.2	0.0%	
MINERAL OIL	2,475.6	0.1%	
MINERAL SPIRITS	5,270.2	0.1%	
MONOCHLOROTOLUENE	31.2	0.0%	
MONOETHANOLAMINE	540.5	0.0%	
M-PHENYLENEDIAMINE	1,373.0	0.0%	
MUD			solid
N,N-DIMETHYLFORMAMIDE	396.8	0.0%	
N-AMINOETHYLETHANOLAMINE	15.8	0.0%	
NAPHTHA	18,161.0	0.4%	
NAPHTHALENE	62.6	0.0%	AAAQGS
N-BUTANOL	156.9	0.0%	AAAQGS
NEUTRALIZED ACIDS	0.4	0.0%	
NICKEL			solid/AAAQGS
NICKEL BROMIDE			solid/AAAQGS
NICKEL CHLORIDE			solid/AAAQGS
NICKEL HYDROXIDE			solid/AAAQGS
NICKEL NITRATE			solid/AAAQGS
NICKEL SULFAMATE			solid/AAAQGS
NICKEL SULFATE			solid/AAAQGS
NITRATES	13.2	0.0%	
NITRIC ACID (0.5-5.0%)	423.3	0.0%	AAAQGS
N-METHYL-2-PYRROLIDONE	9,195.1	0.2%	
NON-HALOGENATED ORGANIC SOLVENTS	21.9	0.0%	
NONYLPHENOXYPOLYETHANOL	0.7	0.0%	
NONYLPHENOXYPOLYETHOXYETHANOL	4.8	0.0%	
N-PROPANOL	119.4	0.0%	
N-PROPYL ACETATE	301.2	0.0%	
OIL	230,680.0	5.0%	
OIL (HYDRAULIC)	59.6	0.0%	
OIL (NAPTHENIC)	11.3	0.0%	
OIL BASED PAINT		0.0%	
OIL PRODUCTS	252.3	0.0%	
OIL SLUDGE			semi-solid
ORGANIC ACID	34.0	0.0%	
ORGANIC ACID SALTS	2.5	0.0%	
OXALIC ACID	1,789.6	0.0%	
PAINT	19,880.6	0.4%	
PAINT PIGMENT			solid
PAINT POWDER			solid
PAINT SLUDGE			solids

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
PAINT SOLIDS			solid
PAINT THINNERS	32.5	0.0%	
PAPER			solid
PAPER TOWELS			solid
PARAFFIN	164.4	0.0%	
PARAFFIN OIL	990.0	0.0%	
PERCHLOROETHYLENE	5,817.9	0.1%	AAAQGS
PERFUME	53.5	0.0%	
PERMETHRIN	350.3	0.0%	
PETROLEUM ASPHALT	67.1	0.0%	
PETROLEUM CRUDE	1,146.8	0.0%	
PETROLEUM OIL	2,356.6	0.1%	
PETROLEUM SLACK WAX	2,088.5	0.0%	
PHENOL	1,119.7	0.0%	AAAQGS
PHENOLPHTHALEIN	36.3	0.0%	
PHENYLISOTHIOCYANATE	25.0	0.0%	
PHENYLMERCURIC ACETATE	0.1	0.0%	AAAQGS
PHENYLMERCURY ACETATE	0.1	0.0%	
PHOSPHATE	43.3	0.0%	
PHOSPHORIC ACID	977.9	0.0%	AAAQGS
PHOTO PROCESSING SOLUTIONS	114.7	0.0%	
PHOTORESIST	125.0	0.0%	
PICRIC ACID	17.4	0.0%	
PIGMENT			solid
PLASTIC CONTAINERS			solid
PLASTIC LINERS			solid
PLASTIC MATERIAL			solid
POLY(DIMETHYLSILOXANE)	38.9	0.0%	
POLY(ETHYLENE-PROPYLENE) GLYCOL	155.4	0.0%	
POLYACRYLAMIDE POLYMER	1,009.1	0.0%	
POLYALKYLENE GLYCOL	337.5	0.0%	
POLYESTER RESIN	633.0	0.0%	
POLYETHYLENE GLYCOL	0.5	0.0%	
POLYETHYLENE GLYCOL TRIMETHYLNONYL	13.8	0.0%	
POLYMERS	873.3	0.0%	
POLYOXYALKYLENE GLYCOL	32.2	0.0%	
POLYOXYETHYLENE(DIMETHYLIMINIO)ETHYL	4.2	0.0%	
POLYTETRAFLUOROETHYLENE			solid
POLYVINYL ALCOHOL			solid
POTASSIUM BIPHTHALATE	13.1	0.0%	
POTASSIUM BROMIDE			solid
POTASSIUM CARBONATE			solid/AAAQGS
POTASSIUM CHLORIDE			solid
POTASSIUM CITRATE MONOHYDRATE	5.2	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
POTASSIUM DICHROMATE	2.4	0.0%	
POTASSIUM FERRICYANIDE	715.8	0.0%	
POTASSIUM FERROCYANIDE (II)	17.4	0.0%	
POTASSIUM HYDROXIDE	3,408.6	0.1%	
POTASSIUM IODIDE	314.5	0.0%	
POTASSIUM NAPTHALENESULFONATE	782.7	0.0%	
POTASSIUM PERMANGANATE	22.2	0.0%	
POTASSIUM PHOSPHATE DIBASIC	1.3	0.0%	
POTASSIUM SULFATE	68.8	0.0%	
POTASSIUM SULFITE	114.9	0.0%	
POTASSIUM THIOCYANATE	159.7	0.0%	
PPE	337.5	0.0%	
PROPIONIC ACID	391.6	0.0%	
PROPYLENE GLYCOL	6,546.9	0.1%	
PROPYLENE GLYCOL METHYL ETHER ACETATE	1,311.1	0.0%	
PYRIDINE	36.0	0.0%	AAAQGS
QUARTZ			solid/AAAQGS
QUATERNARY AMMONIUM COMPOUNDS	12.0	0.0%	
RESIN			solid
RESIST			solid
ROSIN			solid
RUST			solid
SAFROLE	1.0	0.0%	
SALICYLIC ACID	228.5	0.0%	
SALINE	16.4	0.0%	
SAND			solid
SEDIMENT			solid
SELENIUM			solid/AAAQGS
SHAMPOO	275.2	0.0%	
SILICA			solid
SILICATE MINERALS			solid
SILICIC ACID	5.0	0.0%	
SILICON	77.7	0.0%	
SILICON DIOXIDE	562.5	0.0%	
SILICON OXIDE	4.8	0.0%	
SILVER			solid
SILVER NITRATE	77.2	0.0%	
SLUDGE			solid
SOAP			solid
SODIUM	0.7	0.0%	
SODIUM ACETATE	19.4	0.0%	
SODIUM ALKYLBENZENESULFONATE	4.0	0.0%	
SODIUM BICARBONATE			solid
SODIUM BICHROMATE	1.9	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
SODIUM BISULFATE	73.0	0.0%	
SODIUM BISULFITE	1,338.9	0.0%	
SODIUM BORATE	252.9	0.0%	
SODIUM CARBONATE			solid
SODIUM CHLORIDE			solid
SODIUM CHROMATE	79.8	0.0%	
SODIUM CITRATE	68.8	0.0%	
SODIUM CYANIDE	0.0	0.0%	
SODIUM CYANOBOROHYDRIDE	72.3	0.0%	
SODIUM DICHROMATE	92.9	0.0%	
SODIUM DODECYLBENZENE SULFONATE	0.7	0.0%	
SODIUM FLUORIDE			solid/AAAQGS
SODIUM HYDROXIDE			solid
SODIUM HYPOCHLORITE	29.6	0.0%	
SODIUM HYPOPHOSPHITE	68.1	0.0%	
SODIUM IODIDE	213.9	0.0%	
SODIUM LACTATE	320.0	0.0%	
SODIUM LAURYL SULFATE	1,482.7	0.0%	
SODIUM METABISULFITE	220.5	0.0%	
SODIUM METABORATE TETRAHYDRATE	38.8	0.0%	
SODIUM METASILICATE	90.1	0.0%	
SODIUM MOLYBDATE	65.5	0.0%	
SODIUM NAPTHALENESULFONATE	782.7	0.0%	
SODIUM NITRATE	209.6	0.0%	
SODIUM NITRITE	130.1	0.0%	
SODIUM PENTAHYDRATE	7.6	0.0%	
SODIUM PERMANGANATE	4.3	0.0%	
SODIUM PHOSPHATE	20.4	0.0%	
SODIUM PHOSPHATE, DIBASIC	2.6	0.0%	
SODIUM SALT			solid
SODIUM SELENITE	7.7	0.0%	
SODIUM SILICATE	441.3	0.0%	
SODIUM SULFATE			solid/AAAQGS
SODIUM SULFITE	313.3	0.0%	
SODIUM TETRABORATE	7.6	0.0%	
SODIUM THIOCYANATE	69.9	0.0%	
SODIUM THIOSULFATE	585.2	0.0%	
SODIUM TOLYTRIAZOLE	4.8	0.0%	
SODIUM XYLENE SULFONATE	24.0	0.0%	
SOIL			solid
SOLIDS (SUSPENDED)			solid
SORBITOL	3,428.8	0.1%	
SOY BEAN OIL	398.0	0.0%	
STAIN	172.0	0.0%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
STARCH			solid
STEARIC ACID	27.2	0.0%	
STEEL DUST			solid
STODDARD SOLVENT	150.1	0.0%	
STRONTIUM NITRATE	3.3	0.0%	
STYRENE	923.9	0.0%	AAAQGS
SUCCINIC ACID	1,625.3	0.0%	
SULFATES	1.3	0.0%	
SULFIDE	187.7	0.0%	
SULFOLANE	1,903.5	0.0%	
SULFURIC ACID	318.6	0.0%	AAAQGS
SURFACTANT	2,286.1	0.0%	
SUSPENDED SOLIDS			solid
TALC			solid
TALL OIL	238.2	0.0%	
TAR			solid
TERPENE HYDROCARBONS	335.0	0.0%	
TETRAETHYL ORTHOSILICATE	634.5	0.0%	
TETRAETHYLENE GLYCOL	745.9	0.0%	
TETRAHYDROFURAN	6.3	0.0%	
TETRAHYDROTHIOPHENE	150.0	0.0%	
TETRAMETHYL AMMONIUM HYDROXIDE	2,257.5	0.0%	
TETRASODIUM EDTA	198.5	0.0%	
THALLIUM			solid/AAAQGS
TIN			solid
TITANIUM DIOXIDE			solid/AAAQGS
TOLUENE	1,582.3	0.0%	AAAQGS
TRASH			solid
TRICHLOROETHENE	398.1	0.0%	AAAQGS
TRIETHANOLAMINE	1,390.3	0.0%	
TRIETHYL AMMONIUM ACETATE	22.9	0.0%	
TRIETHYL AMMONIUM BICARBONATE	11.5	0.0%	
TRIETHYLAMINE	1,379.2	0.0%	
TRIETHYLENE GLYCOL	108.6	0.0%	
TRIFLUOROACETIC ACID	46.9	0.0%	
TRIISOPROPANOLAMINE	3.0	0.0%	
TRIMESIC ACID	139.5	0.0%	
TRIMETHYL BENZENE	0.0	0.0%	
TRIPROPYLENE GLYCOL MONOMETHYLETHER	13.8	0.0%	
TRIS(HYDROXYMETHYL)NITROMETHANE	0.1	0.0%	
TRISODIUM PHOSPHATE	261.2	0.0%	
VEGETABLE OIL	4,837.2	0.1%	
VINYLPOLYDIMETHYLSILOXANE	412.5	0.0%	
WATER	3,730,835.1	81.3%	

TABLE 1C
Raw Chemical List - Wastewater (Aqueous) Wastestream
Romic Facility - Chandler, AZ

CHEMICAL	Total Pounds	% of Total	Notes
WATER BASED POLYMER	24.0	0.0%	
WATER BASED SOLVENT	1,396.2	0.0%	
WATER TREATMENT CHEMICAL	106.0	0.0%	
WAXES			solid
WOOD			solid
XYLENE	2,913.3	0.1%	AAAQGS
ZINC			solid
ZIRCONIUM OXIDE			solid/AAAQGS
Grand Total	4,590,202.2	100.00%	

Notes:
AAAQGS = Arizona Ambient Air Quality Guidelines

TABLE 2
Master Chemical List
Rromic Facility - Chandler, AZ

Chemical	AAQGS	Is total mass >0.1%?
1,1,1 TRICHLOROETHANE	Yes	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Yes	
1,1,2-TRICHLOROETHANE	Yes	
1,2,4-TRIMETHYLBENZENE	Yes	
1,2-DICHLOROBENZENE	Yes	
1,3,5-TRIMETHYLBENZENE	Yes	
1,4-DIOXANE	Yes	
1-METHOXY-2-PROPANOL	Yes	Yes
2-BUTOXYETHANOL ACETATE	Yes	
2-ETHOXYETHYL ACETATE	Yes	
2-ETHOXYPROPANOL		Yes
2-HEPTANONE	Yes	
2-METHYL-1-PROPANOL	Yes	Yes
2-PENTANONE	Yes	Yes
2-PROPANOL (ALCOHOLS)	Yes	Yes
2-PYRROLIDONE		Yes
4-HYDROXY-4-METHYL-2-PENTANONE	Yes	
ACETIC ACID	Yes	
ACETONE	Yes	Yes
ACETONITRILE	Yes	Yes
ADHESIVE		Yes
AEROSOLS CONTAINING		Yes
AMYL ACETATE		Yes
BENZENE	Yes	Yes
BIOCIDE (acrolein)	Yes	
BROMINATED BISPHENOL		Yes
BUTOXYETHANOL (BUTYL CELLOSOLVE)	Yes	
BUTYL ACETATE	Yes	Yes
CARBON TETRACHLORIDE	Yes	
CHLOROBENZENE	Yes	
CHLOROFORM	Yes	
CRESOL	Yes	
CUTTING OIL		Yes
CYCLOHEXANE		Yes
CYCLOHEXANONE		Yes
DIBUTYL PHTHALATE	Yes	
DIESEL		Yes
DIETHYLENE GLYCOL		Yes
DIETHYLENE GLYCOL BUTYL ETHER	Yes	Yes
DIETHYLENETRIAMINE	Yes	
DIMETHYLFORMAMIDE		Yes
ETHANOL	Yes	Yes

TABLE 2
Master Chemical List
Rromic Facility - Chandler, AZ

Chemical	AAQGS	Is total mass >0.1%?
ETHYL ACETATE	Yes	Yes
ETHYL BENZENE	Yes	
ETHYL LACTATE		Yes
ETHYL-3-ETHOXYPROPIONATE	Yes	Yes
ETHYLENE GLYCOL		Yes
ETHYLENE GLYCOL ETHYL ETHER ACETATE	Yes	Yes
FERRIC CHLORIDE	Yes	
FORMALDEHYDE	Yes	
FORMIC ACID	Yes	
GASOLINE		Yes
GLYCERIN	Yes	
HEPTANE	Yes	
HEXAMETHYLDISILAZANE		Yes
HEXANE	Yes	Yes
HYDROCHLORIC ACID	Yes	
HYDROFLUORIC ACID	Yes	
ISOBUTYL ACETATE	Yes	
ISOBUTYL ISOBUTYRATE	Yes	
ISOPROPANOLAMINE		Yes
ISOPROPYL ACETATE	Yes	
JET FUEL		Yes
KEROSENE		Yes
LACQUER THINNER		Yes
MERCURY	Yes	
METHANOL	Yes	Yes
METHYL ETHYL KETONE	Yes	Yes
METHYL ISOBUTYL KETONE		Yes
METHYLENE CHLORIDE	Yes	Yes
MINERAL OIL		Yes
MINERAL SPIRITS		Yes
NAPHTHA		Yes
NAPHTHALENE	Yes	
N-BUTANOL	Yes	Yes
NITRIC ACID	Yes	
N-METHYL-2-PYRROLIDONE		Yes
N-PROPYL ACETATE	Yes	
OIL		Yes
PAINT		Yes
PAINT THINNERS		Yes
PETROLEUM OIL		Yes
PHENOL	Yes	
PHENYLMERCURIC ACETATE	Yes	
PHOSPHORIC ACID	Yes	
PHOTO RESIST		Yes

TABLE 2
Master Chemical List
Rromic Facility - Chandler, AZ

Chemical	AAQGS	Is total mass >0.1%?
POLYDIMETHYL SILOXANE		Yes
PROPYLENE GLYCOL METHYL ETHER ACETATE	Yes	Yes
PROPYLENE OXIDE	Yes	
PYRIDINE	Yes	
STODDARD SOLVENT		Yes
STYRENE	Yes	
SULFOLANE		Yes
SULFURIC ACID	Yes	
TETRACHLOROETHYLENE	Yes	Yes
TETRAETHYL ORTHOSILICATE		Yes
TETRAHYDROFURAN		Yes
TOLUENE	Yes	Yes
TRICHLOROETHENE	Yes	Yes
TRIETHYLENETETRAMINE	Yes	
XYLENE	Yes	Yes

Notes:
AAQGS = Arizona Ambient Air Quality Guidelines

TABLE 3
Composition of Generic Compounds and Mixtures Found in Facility Wastestreams
Romic Facility - Chandler, AZ

Compound/Mixture	Represented By:	Volatile Constituents	CAS Number	Composition	Currently In Master List? [H]
Adhesives	construction adhesive	toluene	108-88-3	5.0-10.0 %	yes
		n-hexane	110-54-3	5.0-10.0 %	yes
		aliphatic petroleum distillate	64742-89-8	5.0-10.0 %	yes (as naptha)
Oil based paint	solvent-thinned paint	ethyl benzene	100-41-4	0.10%	yes
		stoddard solvent	8052-41-3	31%	yes
		methyl ethyl ketoxime	96-29-7	0.20%	less than 0.1% of wastestream
Photoresist	AZ 4620 photoresist (Hoescht)	n-butyl acetate	123-86-4	5%	yes
		xylenes	1330-20-7	5%	yes
		2,1,5-diazonaphthoquinone sulfonic acid	5610-94-6	trace	less than 0.l% of wastestream
Aerosol cans [g]	penetrating oil [a]	stoddard solvent	8052-41-3	55%	yes
	fluorescent spray paint [b]	hexane	110-54-3	15%	yes
		dimethylbenzene	1330-20-7	10%	yes (xylene)
		naptha	64742-95-6	10%	yes
		methylbenzene	108-88-3	5%	yes (toluene)
		ethylbenzene	100-41-4	5%	yes
		1,2,4-trimethylbenzene	95-63-6	1%	yes
	furniture polish [c]	isoparaffinic hydrocarbon solvent	68920-06-9	10%	yes
	spray degreaser [d]	ethanol	64-17-5	99%	yes
		methanol	67-56-1	5%	yes
	flat spray paint [e]	xylene (mixed)	1330-20-7	25%	yes
		ethylbenzene	100-41-4	10%	yes
		acetone	67-64-1	15%	yes
		ligroin (petroleum ether)	8032-32-4	5%	yes (naptha)
		toluene	108-88-3	1%	yes
		cobalt 2-ethylhexanoate	136-52-7	0.10%	less than 0.1% of wastestream
Lacquer thinner	Romic lacquer thinner	methyl ethyl ketone	78-93-3	10.0%	yes
		toluene	108-88-3	25.0%	yes
		isopropanol	99-63-8	10.0%	yes
		butyl acetate	123-86-4	0.5%	yes
		acetone	67-64-1	20.0%	yes
		xylene	554-95-0	10.0%	yes
		butanol	71-36-3	3.0%	yes (n-butanol)
		butyl cellosolve	111-76-2	3.0%	add
		methanol	67-56-1	3%	yes
		VM&P naptha	554-95-0	10%	yes (naptha)
Paint thinner		naptha	64742-95-6	93%	yes
		trimethylbenzene	25551-13-7	7%	yes (1,2,4 trimethylbenzene)

TABLE 3
Composition of Generic Compounds and Mixtures Found in Facility Wastestreams
Romic Facility - Chandler, AZ

Compound/Mixture	Represented By:	Volatile Constituents	CAS Number	Composition	Currently In Master List? [H]

Notes:

[a] The penetrating oil was represented by Chesterton Sprasolvo 723 Penetrating Oil

[b] The fluoresent spray paint was represented by Rust-Oleum Red-Orange Fluorescent Spray Paint

[c] The furniture polish was represented by S.C. Johnson and Son Professional Lemon Polish

[d] The spray degreaser was represented by Lectra-Clean Aersol Degreaser

[e] The interior/exterior flat spray paint was represented by America's Finest by Rus Oleum - Fast Dry All Purpose Interior/Exterior Flat, White

[f] The lacquer thinner was represented by the Romic MSDS for recycled lacquer thinner.

[g] Material collected from aerosol can crushing - it was assumed that all gases (propellants) have been captured and/or emitted at the aerosol can crushing operation, hence do not appear on this list

[h] If a component of a generic compound or mixture is not in the master chemical list, it will be added if it comprises greater than 0.1% of the throughput.

TABLE 4
Vapor Pressures
Romic Facility - Chandler, AZ

CHEMICAL	CAS #	Vapor Pressure (mmHg)					Is Vapor Pressure >0.76 mmHg or 0.1%?
		NIST	SRC	Chem Finder	MSDS	Maximum Vapor Pressure (mmHg)	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76131	583		285		583	yes
1,1,1-TRICHLOROETHANE	71556		124	100		124	yes
1,1,2-TRICHLOROETHANE	79005			19		18.8	yes
1,2-DICHLOROBENZENE	95501			1.2		1.2	yes
1,2,4-TRIMETHYLBENZENE	95636				1.7	1.7	yes
1,3,5-TRIMETHYLBENZENE	108678			1.86			yes
1,4-DIOXANE	123911			27		27	yes
1-METHOXY-2-PROPANOL (propylene glycol methyl ether)	107982		12.5			12.5	yes
2-BUTOXYETHANOL ACETATE	112072			0.3		0.3	no
2-ETHOXYPROPANOL	19089475				39.75	39.75	yes
2-HEPTANONE	110430	3.9				3.9	yes
2-METHYL-1-PROPANOL	78831			9		9	yes
4-HYDROXY-4-METHYL-2-PENTANONE	123422			0.80		0.8	yes
ACETIC ACID	64197			11		11	yes
ACETONE	67641		232	181		232	yes
ACETONITRILE	75058		88.8	73		88.8	yes
ALCOHOLS	67630		45	33		45	yes
AMYL ACETATE	628637		3.5	4		4	yes
BENZENE	71432		94.8	95.3		95.3	yes
BIOCIDE (acrolein)	107028	488				488.0901511	yes
BROMINATED BISPHENOL	79947		1.76E-11			1.76E-11	no
BUTYL ACETATE	123864		11.5	8		11.5	yes
BUTYL CELLOSOLVE	111762			0.98		0.98	yes
CARBON TETRACHLORIDE	56235			91		91	yes
CHLOROBENZENE	108907			9		8.8	yes
CHLOROFORM	67663			159		159	yes
CRESOL	1319773			0.1		0.1	no
CUTTING OIL					0.01	0.01	no
CYCLOHEXANE	110827		96.9	95		96.9	yes
CYCLOHEXANONE	108941		4.33	2		4.33	yes
DIBUTYL PHTHALATE	84742	0.000049				4.9054E-05	no
DIESEL FUEL					1.6	1.6	yes
DIETHYLENE GLYCOL	111466			0.0057		0.0057	no
DIETHYLENE GLYCOL BUTYL ETHER	112345			0.02		0.02	no
DIETHYLENETRIAMINE	111400				0.40	0.4	no
DIMETHYLFORMAMIDE	68122		3.87	2.6		3.87	yes
ETHANOL	64175		59.3	59.03		59.30	yes
ETHYL ACETATE	141786		93.2	76		93.2	yes
ETHYL BENZENE	100414		9.6			9.6	yes
ETHYL LACTATE	687478		3.75			3.75	yes
ETHYL-3-ETHOXYPROPIONATE	763699				<1	<1	no
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	111159		2.34			2.34	yes
ETHYLENE GLYCOL	107211		0.092	0.06		0.092	no
FERRIC CHLORIDE	7705080			40.00		40	yes
FORMALDEHYDE	50000				1.30	1.3	yes
FORMIC ACID	64186			23.00		23	yes
GLYCERIN	56815				0.0025	0.0025	no
GASOLINE					362	362	yes
HEPTANE	142825		46			46	yes
HEXAMETHYLDISILAZANE	999973		13.8	20		20	yes
HEXANE	110543		151	130		151	yes
HYDROCHLORIC ACID	7647010				160.00	160	yes
HYDROFLUORIC ACID	7664393				25.00	25	yes
ISOBUTYL ACETATE	110190	41.28				41.28	yes
ISOBUTYL ISOBUTYRATE	97858	10.04				10.04	yes
ISOPROPANOLAMINE	78966.00		0.47			0.47	no
ISOPROPYL ACETATE	108214			43.00		43.00	yes
JET FUEL					5	5	yes

TABLE 4
Vapor Pressures
Romic Facility - Chandler, AZ

CHEMICAL	CAS #	Vapor Pressure (mmHg)					Is Vapor Pressure >0.76 mmHg or 0.1%?
		NIST	SRC	Chem Finder	MSDS	Maximum Vapor Pressure (mmHg)	
KEROSENE	8008206			1		1	yes
MERCURY	7439976			0.0020		0.0020	no
METHANOL	67561		127	16.8		127	yes
METHYL ETHYL KETONE	78933		90.6	78		90.6	yes
METHYL PROPYL KETONE	107879		35.4			35.4	yes
METHYLENE CHLORIDE	75092		435	350		435	yes
NAPHTHALENE	91203			0.0500		0.0500	no
N-BUTANOL	71363		6.7	4		6.7	yes
NITRIC ACID	7697372				7.10	7.1000	yes
N-METHYL-2-PYRROLIDONE	872504		0.345			0.345	no
N-PROPYL ACETATE	109604		35.9			35.9	yes
OIL	---				0.01	0.01	no
PETROLEUM OIL					<0.1	0	no
PHENOL	108952			0.35		0.35	no
PHENYLMERCURIC ACETATE	62384				9.00E-06	9.00E-06	no
PHOSPHORIC ACID	7664382			2.20		2.20	yes
POLYDIMETHYL SILOXANE	63148-62-9				0.01	0.01	no
N-PROPANOL	71238			14.90		14.90	yes
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	108656		3.92			3.92	yes
PROPYLENE OXIDE	75569			442.0		442	yes
PYRIDINE	110861			16.0		16	yes
STODDARD SOLVENT	8052413				2	2	yes
STYRENE	100425		6.4	5		6.4	yes
SULFOLANE	126330		0.0062			0.0062	no
SULFURIC ACID	7664939				0.30	0.30	no
TETRACHLOROETHYLENE	127184		18.5	13		18.5	yes
TETRAETHYL ORTHOSILICATE	78104		1.88	2		2	yes
TETRAHYDROFURAN	109999		162	162.2		162.2	yes
TOLUENE	108883		28.4	22		28.4	yes
TRICHLOROETHYLENE	79016		69	58		69	yes
TRIETHYLENETETRAMINE	112243			0.010		0.01	no
XYLENES	1330207		7.99	1.5		7.99	yes

Notes:
mmHg = millimeter mercury

NIST = National Institute of Standards and Technology
SRC = Syracuse Research Corporation
MSDS = Material Safety Data Sheets

Table 5
Chronic Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	Molecular Weight	Represented by:	CAS #	Chronic Toxicity Criteria						
				Cancer Slope Factor (CSF) (mg/kg-day)$^{-1}$			Noncancer Reference Dose (RfD) (mg/kg-day)		NonCancer Reference Concentration (RfC) (ug/m^3)	
				Inhalation	Source	USEPA Weight of Evidence	Inhalation	Source	Inhalation	Source
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	**187.3762**		76131	----		----	8.57E+00	HEAST	3.00E+04	HEAST
1,1,1-TRICHLOROETHANE	**133.41**		71556	----		D	6.30E-01	pprtv	2.21E+03	Calculated
1,1,2-TRICHLOROETHANE	**133.4047**		79005	5.60E-02	IRIS	C	4.00E-03	IRIS (rr)	1.40E+01	Calculated
1,2-DICHLOROBENZENE	**147.0036**		95501	----		D	5.71E-02	HEAST	2.00E+02	HEAST
1,2,4-TRIMETHYLBENZENE	**120.19**	aerosols	95636	----		----	1.70E-03	pprtv	5.95E+00	Calculated
1,3,5-TRIMETHYLBENZENE	**120.19**		108678	----		----	1.70E-03	pprtv	5.95E+00	Calculated
1,4-DIOXANE	**88.106**		123911	1.10E-02	IRIS (rr)	B2	----		----	
1-METHOXY-2-PROPANOL (propylene glycol methyl ether)	**90.12**		107982	----		----	5.71E-01	IRIS	2.00E+03	IRIS
2-BUTOXYETHANOL ACETATE	**160.2126**	ethylene glycol monoethyl ether acetate (111-15-9) tox surrogate	112072	----		----	3.00E-01	HEAST (rr)	1.05E+03	Calculated
2-ETHOXYPROPANOL	**104.17**	2-ethoxy ethanol (110-80-5) (toxicological surrogate)	19089475	----		----	5.71E-02	IRIS	2.00E+02	IRIS
2-HEPTANONE	**114.187**	MIBK (108-10-1) tox surrogate	110430	----		ID	8.57E-01	IRIS	3.00E+03	IRIS
2-METHYL-1-PROPANOL	**74.1224**		78831	----		----	3.00E-01	IRIS (rr)	1,050	Calculated
2-PENTANONE	**86.1334**	(toxicological surrogate)	107879	----		ID	1.43E+00	IRIS	5000	IRIS
2-PYRROLIDONE	85.1054	N-nitrosopyrrolidine (930-55-2)	616455	2.10E+00	IRIS	B2	----		----	
2-PYRROLIDONE	**85.1054**		616455	----		----	----		----	
4-HYDROXY-4-METHYL-2-PENTANONE	**116.1596**	MIBK (108-10-1) tox surrogate	123422	----		ID	8.57E-01	IRIS	3.00E+03	IRIS
ACETIC ACID	**60.0524**	Acetaldehyde (75-07-0)	64197	----		----	2.57E-03	IRIS	9.00E+00	IRIS
ACETONE	**58.08**		67641	----		ID	9.00E-01	IRIS (rr)	3.15E+03	Calculated
ACETONITRILE	**41.05**		75058	----		D	1.71E-02	IRIS	6.00E+01	IRIS
ALCOHOLS	**60.10**	represented by 2-propanol	67630	----		----	3.00E-01	IRIS (rr)	1.05E+03	Calculated
AMYL ACETATE	**130.19**	ethyl acetate (141-78-6) (toxicological surrogate)	628637	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
BENZENE	**78.11**		71432	2.70E-02	IRIS	A	8.57E-03	IRIS	3.00E+01	IRIS
BIOCIDE (acrolein)	**56.064**		107028	----		ID	5.71E-06	IRIS	2.00E-02	IRIS
BROMINATED BISPHENOL	**543.87**	Bisphenol A (80-05-7)	79947	----		----	----		----	
BUTYL ACETATE	**116.16**	ethyl acetate (141-78-6) (toxicological surrogate)	123864	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
BUTYL CELLOSOLVE	**118.18**	Ethylene glycol monobutyl ether	111762	----		C	3.71E+00	IRIS	1.30E+04	IRIS
CARBON TETRACHLORIDE	**153.823**		56235	5.30E-02	IRIS	B2	7.00E-04	IRIS (rr)	2.45E+00	Calculated
CHLOROBENZENE	**112.5585**		108907	----		D	1.70E-02	NCEA	5.95E+01	Calculated
CHLOROFORM	**119.3779**		67663	8.10E-02	IRIS	B2	1.40E-02	NCEA	4.90E+01	Calculated
CRESOL	**324.4188**	p-cresol (106-44-5)	1319773	----		C	5.00E-03	HEAST (rr)	1.75E+01	Calculated
CYCLOHEXANE	**84.16**		110827	----		ID	1.71E+00	IRIS	6.00E+03	IRIS
CYCLOHEXANONE	**112.17**		108941	----		----	5.00E+00	IRIS (rr)	1.75E+04	Calculated
DIBUTYL PHTHALATE	**278.3474**		84742	----		D	1.00E-01	IRIS (rr)	3.50E+02	Calculated
DIESEL FUEL	**185.00**		68476346	----		----	8.22E-01	ENVIRON	2.88E+03	Calculated
DIETHYLENE GLYCOL	**106.12**	Ethylene glycol monobutyl ether (111-76-2)	111466	----		C	3.71E+00	IRIS	1.30E+04	IRIS
DIETHYLENE GLYCOL BUTYL ETHER	**162.2284**		112345	----		----	5.70E-03	PPRTV	2.00E+01	Calculated
DIETHYLENETRIAMINE	**103.1668**	ethylene diamine (107-15-3)	111400	----		----	9.00E-02	PPRTV (rr)	3.15E+02	Calculated
DIMETHYLFORMAMIDE	**73.09**		68122	----		----	8.57E-03	IRIS	3.00E+01	IRIS

Table 5
Chronic Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	Molecular Weight	Represented by:	CAS #	Chronic Toxicity Criteria						
				Cancer Slope Factor (CSF) $(mg/kg\text{-}day)^{-1}$			Noncancer Reference Dose (RfD) (mg/kg-day)		NonCancer Reference Concentration (RfC) (ug/m^3)	
				Inhalation	Source	USEPA Weight of Evidence	Inhalation	Source	Inhalation	Source
ETHANOL	**46.07**	methanol (67-56-1) (toxicological surrogate)	64175	----		----	5.00E-01	IRIS (rr)	1.75E+03	Calculated
ETHYL ACETATE	**88.11**		141786	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
ETHYL BENZENE	**106.17**		100414	----		D	2.86E-01	IRIS	1.00E+03	IRIS
ETHYL LACTATE	**118.13**	ethyl acetate (141-78-6)	687478	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
ETHYL-3-ETHOXYPROPIONATE	**146.19**	Ethylene glycol monoethyl ether acetate	763699	----		----	3.00E-01	HEAST (rr)	1.05E+03	Calculated
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	**132.16**		111159	----		----	3.00E-01	HEAST (rr)	1.05E+03	Calculated
ETHYLENE GLYCOL	**62.07**		107211	----		----	2.00E+00	IRIS (rr)	7.00E+03	Calculated
FERRIC CHLORIDE	**162.204**		7705080	----		----	----		----	
FORMIC ACID	**46.0256**		64186	----		----	8.60E-04	PPRTV	3.01E+00	Calculated
GLYCERIN	**92.0944**	propylene glycol (57-55-6)	56815	----		----	8.60E-04	PPRTV	3.01E+00	Calculated
GASOLINE	**108.00**	Reid pressure 7 psi gasoline	8006619	----		----	2.50E+00	ENVIRON	8.73E+03	Calculated
HEPTANE	**100.20**	hexane (toxicological surrogate)	142825	----		----	5.71E-02	IRIS	2.00E+02	IRIS
HEXAMETHYLDISILAZANE	**161.39**		999973	----		----	----		----	
HEXANE	**86.18**		110543	----		----	5.71E-02	IRIS	2.00E+02	IRIS
HYDROCHLORIC ACID	**36.4609**		7647010	----		----	5.71E-03	IRIS	2.00E+01	IRIS
HYDROFLUORIC ACID	**20.0063**	hydrogen chloride (7647-01-0)	7664393	----		----	5.71E-03	IRIS	2.00E+01	IRIS
ISOBUTYL ACETATE	**116.1596**	ethyl acetate (141-78-6) (toxicological surrogate)	110190	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
ISOBUTYL ISOBUTYRATE	**144.2132**		97858	----		----	3.00E-01	HEAST (rr)	1.05E+03	Calculated
ISOPROPANOLAMINE	**75.1102**	cyclohexylamine (108-91-8)	78966	----		----	----		----	
ISOPROPYL ACETATE	**102.1328**		108214	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
JET FUEL/KEROSENE	**165.00**		8008206	----		----	2.47E-01	ENVIRON	8.64E+02	Calculated
METHANOL	**32.04**		67561	----		----	5.00E-01	IRIS (rr)	1.75E+03	Calculated
METHYL ETHYL KETONE	**72.11**		78933	----		ID	1.43E+00	IRIS	5.00E+03	IRIS
METHYL ISOBUTYL KETONE	**100.16**		108101	----		ID	8.57E-01	IRIS	3.00E+03	IRIS
METHYLENE CHLORIDE	**84.93**		75092	1.65E-03	IRIS	B2	8.57E-01	HEAST	3.00E+03	HEAST
MINERAL OIL	--		8012951	----		----	1.45E+00	ENVIRON	5.09E+03	Calculated
NAPHTHA	**110.0**		8030306	----		----	1.54E+00	ENVIRON	5.38E+03	Calculated
NAPHTHALENE	**128.1732**		91203	1.20E-01	Reg IX	C	8.57E-04	IRIS	3.00E+00	IRIS
N-BUTANOL	**74.12**		71363	----		D	2.60E-03	NCEA	9.10E+00	Calculated
NITRIC ACID	**63.0128**		7697372	----		----	----		----	
N-METHYL-2-PYRROLIDONE	**99.13**	N-nitrosopyrrolidine (930-55-2)	872504	----		----	----		----	
N-PROPYL ACETATE	**102.13**	(toxicological surrogate)	109604	----		----	9.00E-01	IRIS (rr)	3.15E+03	Calculated
PARAFFINIC HYDROCARBONS	72.15		64771728	----		----	3.67E+00	ENVIRON[a]	12,858	Calculated
PETROLEUM OIL	**282.00**	represented by motor oil	8002059	----		----	3.00E-02		1.05E+02	Calculated
PHENOL	**94.1128**		108952	----		D	3.00E-01	IRIS (rr)	1.05E+03	Calculated
PHENYLMERCURIC ACETATE	**336.74**		62384	----		----	8.00E-05	IRIS (rr)	2.80E-01	Calculated
PHOSPHORIC ACID	**97.99506**		7664382	----		----	2.86E-03	IRIS	1.00E+01	IRIS
POLYDIMETHYL SILOXANE	**74.15**		63148629	----		----	----		----	
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	**132.16**	Propylene glycol monomethyl ether (107-98-2)	108656	----		----	3.00E-01	HEAST (rr)	1.05E+03	Calculated

Table 5
Chronic Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	Molecular Weight	Represented by:	CAS #	Chronic Toxicity Criteria						
				Cancer Slope Factor (CSF) (mg/kg-day)$^{-1}$			Noncancer Reference Dose (RfD) (mg/kg-day)		NonCancer Reference Concentration (RfC) (ug/m^3)	
				Inhalation	Source	USEPA Weight of Evidence	Inhalation	Source	Inhalation	Source
PROPYLENE OXIDE	**58.0798**		75569	1.30E-02		B2	8.57E-03	IRIS	3.00E+01	IRIS
PYRIDINE	**79.1012**		110861	----		----	1.00E-03	IRIS (rr)	3.50E+00	Calculated
STODDARD SOLVENT	**141.00**		8052413	----		----	2.68E-01	ENVIRON	9.39E+02	Calculated
STYRENE	**104.15**		100425	----		----	2.86E-01	IRIS	1.00E+03	IRIS
SULFOLANE	**120.17**	Diphenyl sulfone (127-63-9)	126330	----		----	----		----	
SULFURIC ACID	**98.0734**		7664939	----		----	----		----	
TETRACHLOROETHYLENE	**165.83**		127184	2.10E-02	Reg IX	----	1.00E-02	Reg IX	3.50E+01	Reg IX
TETRAETHYL ORTHOSILICATE	**208.33**		78104	----		----	----		----	
TETRAHYDROFURAN	**72.11**		109999	6.80E-03	NCEA	----	8.60E-02	NCEA	3.01E+02	Calculated
TOLUENE	**92.14**		108883	----		D	1.14E-01	IRIS	4.00E+02	IRIS
TRICHLOROETHYLENE	**131.39**		79016	4.00E-01	NCEA	----	1.00E-02	NCEA	3.50E+01	Calculated
TRIETHYLENETETRAMINE	**146.235**	ethylene diamine (107-15-3)	112243	----		----	9.00E-02	PPRTV (rr)	3.15E+02	Calculated
XYLENES	**106.16**		1330207	----		ID	2.86E-02	IRIS	1.00E+02	IRIS

Notes:
mg/kg-day = milligrams per kilogram per day
ug/m^3 = micrograms per cubic meter
HEAST = Health Effects Assessment Summary Tables
ID = Inadequate data for determination of carcinogenic potential.
IRIS = Integrated Risk Information System
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer Reviewed Toxcicity Values as cited in USEPA Region 9 Preliminary remediation Goals (USEPA 2004)
Reg IX = USEPA Region 9 Preliminary Remediation Goals (USEPA 2004)
rr = route-to-route extrapolation from oral toxicity value.
USEPA = United States Environmental Protection Agency

[a] Toxicity values were derived by ENVIRON to represent petroleum mixtures using methodology presented by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG 1997).

Sources:

National Center for Environmental Assessment (NCEA). 2004. Cited in USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.
Total Petroleum Hydrocarbon Criteria Working Group Series (TPHCWGS). 1997.Volume 4, Development of Fraction Specific Reference Doses (RfDs) and *Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).* Amherst Scientific Publishers. Amherst, Massachusetts.
United States Environmental Protection Agency (USEPA). 1997. Health Effects Assessment Summary Tables (HEAST). FY 1997 Update. EPA 540-R-97-036. Office of Solid Waste and Emergency Response. Washington, D.C. July.
United States Environmental Protection Agency (USEPA). 2004. USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.
United States Environmental Protection Agency (USEPA). 2005. *Integrated risk information system (IRIS)*. Online database maintained by the USEPA. Cincinnati, OH. June.

TABLE 6
Derivation of Inhalation Reference Doses for Various TPH Fractions
Romic Facility - Chandler, AZ

Petroleum Hydrocarbon Fraction/ Constituent	Noncancer Reference Dose		Weight Fraction in Generic Product						Composition Weighted Inhalation RfD[f]					
	RfD $_{(inh)}$ (mg/kg-day)	Source	TPH-Gasoline[a]	Naptha[b]	TPH-Mineral Spirits[c]	TPH-Jet Fuel/ Kerosene[d]	Paraffinic Hydrocarbons[e]	TPH-Diesel[a]	TPH-Gasoline	Naptha	TPH-Mineral Spirits	TPH-Jet Fuel/ Kerosene	Paraffinic Hydrocarbons	TPH-Diesel
Aliphatic C5-C6	5.70E+00	ODEQ 2003	2.06E-01	1.06E-01	0.00E+00	0.00E+00	3.30E-01	0.00E+00	1.17E+00	6.04E-01	0.00E+00	0.00E+00	1.88E+00	0.00E+00
Aliphatic >C6-C8	5.70E+00	ODEQ 2003	2.20E-01	1.54E-01	1.30E-03	0.00E+00	3.05E-01	0.00E+00	1.25E+00	8.78E-01	7.41E-03	0.00E+00	1.74E+00	0.00E+00
Aliphatic >C8-C10	3.00E-01	ODEQ 2003	9.00E-02	1.51E-02	4.47E-01	0.00E+00	1.00E-01	2.00E-02	2.70E-02	4.53E-03	1.34E-01	0.00E+00	3.00E-02	6.00E-03
Aliphatic >C10-C12	3.00E-01	ODEQ 2003	3.00E-02	0.00E+00	3.82E-01	2.34E-01	9.00E-03	7.00E-02	9.00E-03	0.00E+00	1.15E-01	7.02E-02	2.70E-03	2.10E-02
Aliphatic >C12-C16	3.00E-01	ODEQ 2003	0.00E+00	0.00E+00	5.20E-03	5.42E-01	0.00E+00	3.50E-01	0.00E+00	0.00E+00	1.56E-03	1.63E-01	0.00E+00	1.05E-01
Aliphatic >C16-C21	2.00E+00	ODEQ 2003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.80E-01
Aliphatic >C21-C34	2.00E+00	ODEQ 2003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aromatic >C8-C10	6.00E-02	ODEQ 2003	9.02E-02	1.66E-01	6.00E-02	0.00E+00	8.26E-02	2.52E-03	5.41E-03	9.96E-03	3.60E-03	0.00E+00	4.96E-03	1.51E-04
Aromatic >C10-C12	6.00E-02	ODEQ 2003	2.25E-02	5.70E-02	9.20E-02	6.60E-02	2.40E-02	7.40E-03	1.35E-03	3.42E-03	5.52E-03	3.96E-03	1.44E-03	4.44E-04
Aromatic >C12-C16	6.00E-02	ODEQ 2003	0.00E+00	0.00E+00	2.70E-03	1.54E-01	0.00E+00	8.00E-02	0.00E+00	0.00E+00	1.62E-04	9.24E-03	0.00E+00	4.80E-03
Aromatic >C16-C21	3.00E-02	ODEQ 2003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-03
Aromatic >C21-C34	3.00E-02	ODEQ 2003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
n-Hexane	5.71E-02	IRIS	2.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	8.57E-03	IRIS	2.40E-02	3.00E-02	0.00E+00	0.00E+00	9.40E-03	2.90E-04	2.06E-04	2.57E-04	0.00E+00	0.00E+00	8.06E-05	2.49E-06
Toluene	1.14E-01	IRIS	1.20E-01	1.96E-01	0.00E+00	0.00E+00	4.97E-02	1.80E-03	1.37E-02	2.23E-02	0.00E+00	0.00E+00	5.67E-03	2.05E-04
Ethylbenzene	2.86E-01	IRIS	2.00E-02	4.45E-02	3.00E-04	0.00E+00	1.64E-02	6.80E-04	5.72E-03	1.27E-02	8.58E-05	0.00E+00	4.69E-03	1.94E-04
Total Xylenes	2.86E-02	IRIS	1.10E-01	2.28E-01	4.90E-03	0.00E+00	7.29E-02	5.00E-03	3.15E-03	6.53E-03	1.40E-04	0.00E+00	2.08E-03	1.43E-04
1,2,4-Trimethylbenzene	1.70E-03	PPRTV	3.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.10E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3,5-Trimethylbenzene	1.70E-03	PPRTV	9.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-03	1.67E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-06
Naphthalene	8.60E-04	IRIS	2.50E-03	2.00E-03	0.00E+00	0.00E+00	4.00E-04	2.60E-03	2.15E-06	1.72E-06	0.00E+00	0.00E+00	3.44E-07	2.24E-06
Overall Inhalation RfD (mg/kg-day)[g]			**2.50E+00**	**1.54E+00**	**2.68E-01**	**2.47E-01**	**3.67E+00**	**8.22E-01**						

Notes:
IRIS = Integrated Risk Information System (USEPA 2005)
ODEQ = Oregon Department of Environmental Quality
PPRTV = Provisional Peer Reviewed Toxcicity Values (USEPA 2004)
TPH = Total Petroleum Hydrocarbons

a Compositions for TPH-gas and TPH-diesel taken from page F-1 (ODEQ 2003)
b Composition for naptha taken from TPHCWG 1997 (volume 4, page 132).
c Composition for TPH-mineral spirits taken from TPHCWG 1997 (volume 4, page 126).
d Composition for TPH-jet fuel/kersene taken from TPHCWG 1997 (volume 4, page 136).
e Composition for paraffinic hydrocarbons taken from TPHCWG 1997 (volume 4, page 129).
f Values calculated by multiplying the petroleum hydrocarbon fraction-specific RfD by the weight fraction percentage represented by that structural carbon range or component.
g Overall inhalation RfD calculated by summing all composition weighted RfDs associated with a specific mixture (e.g., TPH-gasoline).

Sources:
Oregon Department of Environmental Quality (ODEQ). 2003. *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites.* Land Quality Division. September 22.
Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). 1997. Volume 4: *Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH)*. Amherst Scientific Publishers. Amherst, Massachusetts.
United States Environmental Protection Agency (USEPA). 2004. USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.
United States Environmental Protection Agency (USEPA). 2005. *Integrated risk information system (IRIS)*. Online database maintained by the USEPA. Cincinnati, OH. April.

Table 7
Acute Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	CAS #	Acute Toxicity Criteria							
		OSHA PELs (ug/m^3)	ACGIH TLVs (ug/m^3)	Cal/EPA Acute Reference Exposure Level (REL) (ug/m^3)	Texas Commission on Environmental Quality ESLs (ug/m^3)	National Advisory Council AEGL-1 (ug/m^3)	US Department of Energy		ATSDR Acute Minimum Risk Levels MRLs (ug/m^3)
							ERPG-3 (ug/m^3)	TEEL-3 (ug/m^3)	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76131	7.60E+06	7.66E+06	---	3.80E+04	----	----	1.53E+07	----
1,1,1-TRICHLOROETHANE	71556	1.90E+06	1.91E+06	6.80E+04	1.08E+04	1.25E+06	1.91E+07	1.91E+07	1.09E+04
1,1,2-TRICHLOROETHANE	79005	4.50E+04	5.46E+04	---	5.50E+02	----	----	5.46E+05	----
1,2-DICHLOROBENZENE	95501	3.00E+05	1.50E+05	---	6.00E+02	----	----	1.20E+06	----
1,2,4-TRIMETHYLBENZENE	95636	----	1.23E+05	----	1.25E+03	----	----	7.37E+06	----
1,3,5-TRIMETHYLBENZENE	108678	----	----	----	1.25E+03	----	----	2.46E+06	----
1,4-DIOXANE	123911	3.60E+05	7.21E+04	3.00E+03	9.00E+02	6.13E+04	----	1.80E+06	7.21E+03
1-METHOXY-2-PROPANOL (propylene glycol methyl ether)	107982	----	3.69E+05	----	3.70E+03	----	----	2.76E+06	----
2-BUTOXYETHANOL ACETATE	112072	---	1.31E+05	---	3.10E+02	----	----	9.83E+05	----
2-ETHOXYPROPANOL	19089475	----	----	----	----	----	----	----	----
2-HEPTANONE	110430	4.65E+05	2.34E+05	---	3.00E+02	----	----	3.74E+06	----
2-METHYL-1-PROPANOL	78831	3.00E+05	1.52E+05	---	1.52E+03	----	----	4.85E+06	----
2-PENTANONE	107879	7.00E+05	7.05E+05	----	5.30E+03	----	----	5.28E+06	----
2-PYRROLIDONE	616455	----	----	----	1.40E+02	----	----	1.39E+05	----
4-HYDROXY-4-METHYL-2-PENTANONE	123422	2.40E+05	2.38E+05	---	1.33E+03	----	----	8.55E+06	----
ACETIC ACID	64197	2.50E+04	2.46E+04	---	2.50E+02	----	6.14E+05	6.14E+05	----
ACETONE	67641	2.40E+06	1.19E+06	----	5.90E+03	4.75E+05	----	2.02E+07	6.18E+04
ACETONITRILE	75058	7.00E+04	3.36E+04	----	3.40E+02	2.18E+04	----	8.40E+05	----
ALCOHOLS	67630	9.80E+05	4.92E+05	3.20E+03	7.85E+03	----	----	4.92E+06	----
AMYL ACETATE	628637	5.25E+05	2.66E+05	----	2.70E+01	----	----	5.32E+06	----
BENZENE	71432	3.25E+04	1.60E+03	1.30E+03	7.50E+01	1.66E+05	3.19E+06	3.19E+06	1.60E+02
BIOCIDE (acrolein)	107028	2.50E+02	---	1.90E-01	2.30E+00	6.88E+01	6.88E+03	6.88E+03	1.15E-01
BROMINATED BISPHENOL	79947	----	----	----	----	----	----	----	----
BUTYL ACETATE	123864	7.10E+05	7.13E+05	----	1.85E+03	----	1.43E+07	1.43E+07	----
BUTYL CELLOSOLVE	111762	2.40E+05	9.67E+04	1.40E+04	2.40E+02	----	----	3.38E+06	----
CARBON TETRACHLORIDE	56235	6.29E+04	3.15E+04	1.90E+03	1.30E+02	2.77E+05	4.72E+06	4.72E+06	----
CHLOROBENZENE	108907	3.50E+05	4.60E+04	---	4.60E+02	----	----	4.60E+06	----
CHLOROFORM	67663	2.40E+05	4.88E+04	1.50E+02	1.00E+02	3.12E+05	2.44E+07	2.44E+07	4.88E+02
CRESOL	1319773	2.20E+04	6.63E+04	---	5.00E+00	----	----	3.32E+06	----
CYCLOHEXANE	110827	1.05E+06	3.44E+05	----	1.40E+03	----	----	4.47E+06	----
CYCLOHEXANONE	108941	2.00E+05	8.03E+04	----	4.80E+02	----	----	2.81E+06	----
DIBUTYL PHTHALATE	84742	5.00E+03	5.00E+03	---	5.00E+01	----	----	5.00E+05	----
DIESEL FUEL		4.00E+05	1.80E+06	----	----	----	----	----	----
DIETHYLENE GLYCOL BUTYL ETHER	112345	----	----	----	1.06E+03	----	----	5.00E+05	----
DIETHYLENETRIAMINE	111400	---	4.22E+03	---	4.00E+01	----	----	4.22E+05	----
DIMETHYLFORMAMIDE	68122	3.00E+04	2.99E+04	----	3.00E+02	2.69E+05	5.98E+05	5.98E+05	----
ETHANOL	64175	1.90E+06	1.88E+06	2.80E+04	1.88E+04	9.99E+05	----	6.22E+06	----
ETHYL ACETATE	141786	1.40E+06	1.44E+06	----	1.44E+04	----	----	7.21E+06	----
ETHYL BENZENE	100414	4.35E+05	4.34E+05	----	2.00E+03	----	----	3.47E+06	----
ETHYL LACTATE	687478	----	----	----	----	----	----	----	----
ETHYL-3-ETHOXYPROPIONATE	763699	----	----	----	4.00E+02	----	----	5.00E+05	----

Table 7
Acute Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	CAS #	Acute Toxicity Criteria							
		OSHA PELs (ug/m^3)	ACGIH TLVs (ug/m^3)	Cal/EPA Acute Reference Exposure Level (REL) (ug/m^3)	Texas Commission on Environmental Quality ESLs (ug/m^3)	National Advisory Council AEGL-1 (ug/m^3)	US Department of Energy		ATSDR Acute Minimum Risk Levels MRLs (ug/m^3)
							ERPG-3 (ug/m^3)	TEEL-3 (ug/m^3)	
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	111159	5.40E+05	2.70E+04	1.40E+02	2.70E+02	----	----	2.70E+06	----
ETHYLENE GLYCOL	107211	----	----	----	2.60E+02	----	----	1.52E+05	1.27E+03
FERRIC CHLORIDE	7705080	---	---	---	---	----	----	2.00E+05	----
FORMIC ACID	64186	9.00E+03	9.41E+03	---	9.00E+01	----	----	5.65E+04	----
GLYCERIN	56815	5.00E+03	1.00E+04	---	5.00E+01	----	----	5.00E+05	----
GASOLINE		4.00E+05	1.80E+06	----	----	----	----	----	----
HEPTANE	142825	2.00E+06	1.64E+06	----	3.50E+03	1.16E+07	----	3.07E+06	----
HEXAMETHYLDISILAZANE	999973	----	----	----	2.00E+02	----	----	3.50E+05	----
HEXANE	110543	1.80E+06	1.76E+05	----	1.76E+03	1.16E+07	----	3.88E+06	----
HYDROCHLORIC ACID	7647010	7.00E+03	---	2.10E+03	7.50E+01	2.68E+03	2.24E+05	2.24E+05	----
HYDROFLUORIC ACID	7664393	2.45E+03	4.09E+02	2.40E+02	5.00E+00	8.18E+02	4.09E+04	4.09E+04	1.64E+01
ISOBUTYL ACETATE	110190	7.00E+05	7.13E+05	---	6.30E+02	----	----	6.18E+06	----
ISOBUTYL ISOBUTYRATE	97858	---	---	---	3.00E+03	----	----	5.00E+05	----
ISOPROPANOLAMINE	78966.00	----	----	----	2.00E+02	----	----	----	----
ISOPROPYL ACETATE	108214	9.50E+05	4.18E+05	---	3.76E+03	----	----	7.52E+06	----
JET FUEL/KEROSENE	8008206	----	----	----	1.00E+03	----	----	4.00E+05	----
METHANOL	67561	2.60E+05	2.62E+05	2.80E+04	2.62E+03	6.95E+05	6.55E+06	6.55E+06	----
METHYL ETHYL KETONE	78933	5.90E+05	5.90E+05	1.30E+04	3.90E+03	5.90E+05	----	8.85E+06	----
METHYL ISOBUTYL KETONE	108101	4.10E+05	2.05E+05	----	2.05E+03	----	----	2.05E+06	----
METHYLENE CHLORIDE	75092	4.41E+04	1.74E+05	1.40E+04	2.60E+02	6.95E+05	1.39E+07	1.39E+07	2.08E+03
MINERAL OIL	8012951	5.00E+03	5.00E+03	----	5.00E+01	----	----	5.00E+05	----
NAPHTHA	8030306	4.00E+05	1.80E+06	----	3.50E+03	----	----	4.50E+06	----
NAPHTHALENE	91203	5.00E+04	5.24E+04	---	4.40E+02	----	----	1.31E+06	----
N-BUTANOL	71363	3.00E+05	6.06E+04	----	6.10E+02	----	----	4.24E+06	----
NITRIC ACID	7697372	5.00E+03	5.15E+03	8.60E+01	5.00E+01	1.37E+03	2.01E+05	2.01E+05	----
N-METHYL-2-PYRROLIDONE	872504	----	----	----	8.00E+02	----	----	1.62E+06	----
N-PROPYL ACETATE	109604	8.40E+05	8.35E+05	----	6.30E+02	----	----	8.35E+06	----
PARAFFINIC HYDROCARBONS	64771728	----	----	----	5.00E+01	----	----	8.85E+05	----
PETROLEUM OIL	8002059	5.00E+03	5.00E+03	----	3.50E+03	----	----	5.00E+05	----
PHENOL	108952	1.90E+04	1.92E+04	5.80E+03	1.50E+02	5.77E+04	7.70E+05	7.70E+05	----
PHENYLMERCURIC ACETATE	62384	---	---	---	---	----	----	1.00E+04	----
PHOSPHORIC ACID	7664382	1.00E+03	1.00E+03	---	1.00E+01	----	----	5.00E+05	----
POLYDIMETHYL SILOXANE	63148629	----	----	----	----	----	----	2.50E+05	----
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	108656	----	----	----	6.60E+02	----	----	3.24E+06	----
PROPYLENE OXIDE	75569	2.40E+05	4.75E+03	3.10E+03	7.00E+01	1.73E+05	1.78E+06	1.78E+06	----
PYRIDINE	110861	1.50E+04	3.24E+03	---	7.00E+01	----	----	3.24E+06	----
STODDARD SOLVENT	8052413	2.90E+06	5.77E+05	0.00E+00	3.50E+03	----	----	5.00E+05	----
STYRENE	100425	4.33E+05	8.52E+04	2.10E+04	1.10E+02	8.52E+04	4.26E+06	4.26E+06	----
SULFOLANE	126330	----	----	----	2.00E+01	----	----	----	----
SULFURIC ACID	7664939	1.00E+03	2.00E+02	---	---	8.02E+02	3.00E+04	3.00E+04	----
TETRACHLOROETHYLENE	127184	6.89E+05	1.70E+05	2.00E+04	3.40E+02	2.37E+05	6.78E+06	6.78E+06	1.36E+03
TETRAETHYL ORTHOSILICATE	78104	8.50E+05	8.52E+04	0.00E+00	8.50E+02	----	2.56E+06	2.56E+06	----

Table 7
Acute Toxicity Values
Romic Facility - Chandler, Arizona

CHEMICAL	CAS #	Acute Toxicity Criteria							
		OSHA PELs (ug/m^3)	ACGIH TLVs (ug/m^3)	Cal/EPA Acute Reference Exposure Level (REL) (ug/m^3)	Texas Commission on Environmental Quality ESLs (ug/m^3)	National Advisory Council AEGL-1 (ug/m^3)	US Department of Energy		ATSDR Acute Minimum Risk Levels MRLs (ug/m^3)
							ERPG-3 (ug/m^3)	TEEL-3 (ug/m^3)	
TETRAHYDROFURAN	109999	5.90E+05	1.47E+05	----	5.90E+03	----	----	5.90E+06	----
TOLUENE	108883	7.66E+05	1.88E+05	3.70E+04	1.88E+03	7.54E+05	3.77E+06	3.77E+06	3.77E+03
TRICHLOROETHYLENE	79016	5.46E+05	2.69E+05	----	1.35E+03	6.99E+05	2.69E+07	2.69E+07	1.07E+04
TRIETHYLENETETRAMINE	112243	---	---	---	2.40E+02	----	----	5.00E+05	----
XYLENES	1330207	4.35E+05	4.34E+05	2.20E+04	3.70E+03	5.64E+05	----	3.91E+06	4.34E+03

Notes:
ug/m^3 = micrograms per cubic meter

ACGIH = American Conference of Governmental Industrial Hygienists
AEGL = Acute Exposure Guideline Level (USEPA 2005)
Cal/EPA = California Environmental Protection Agency
ERPG = Emergency Response Planning Guideline
ESL = Effects Screening Levels (TCEQ 2003)
MRL - Minimal Risk Level
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Level (29 CFR § 1910.1000)
REL = Reference Exposure Level
Temporary Emergency Exposure Limits
TLV = Threshold Limit Value
US = United States

Sources:

American Conference of Governmental Industrial Hygienists (ACGIH). 2005. *TLVs® and BEIs® Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices*. Cincinnati, OH.

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Minimal Risk Levels (MRLs) for Hazardous Substances Atlanta, GA. July. Available at: http://www.atsdr.cdc.gov/mrls.html

California Environmental Protection Agency (CalEPA). 2000. *All Acute Reference Exposure Levels Adopted by Office of Environmental Health (OEHHA). May.*

Code of Federal Regulations (CFR). 2005. Title 29, *Department of Labor*. Part 1910, *Occupational Safety and Health Standards*. Subpart Z, *Toxic and Hazardous Substances*. Section 1910.1000, Air Contaminants. Table Z-1, Limits for Air Contaminants. (29 CFR § 1910.1000) Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9992

National Center for Environmental Assessment (NCEA). 2004. Cited in USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.

Texas Commission on Environmental Quality (TCEQ). 2003. *Effects Screening Levels List.* Available at: http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html#esl_1

United States Department of Energy (USDOE). 2005. Environment, Safety and Health. ERPGs and TEELs. Available at: http://www.eh.doe.gov/chem_safety/teel/TEELs_Rev20_Table3.pdf

United States Environmental Protection Agency (USEPA). 1997. Health Effects Assessment Summary Tables (HEAST). FY 1997 Update. EPA 540-R-97-036. Office of Solid Waste and Emergency Response. Washington, D.C. July.

United States Environmental Protection Agency (USEPA). 2004. USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.

United States Environmental Protection Agency (USEPA). 2005. Acute Exposure Guideline Levels *(AEGLs)*. Online database maintained by the USEPA. July. Available at: http://www.epa.gov/oppt/aegl/chemlist.htm

TABLE 8
Summary of Chemicals of Potential Concern
Rromic Facility - Chandler, AZ

Chemical	AAQGS	Is total mass >0.1%?	Is VP > 0.1%?	Chronic Toxicity Value	Acute Toxicty Value	Select as COPC
1,1,1 TRICHLOROETHANE	Yes		Yes	Yes	Yes	Yes
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Yes		Yes	Yes	Yes	Yes
1,1,2-TRICHLOROETHANE	Yes		Yes	Yes	Yes	Yes
1,2,4-TRIMETHYLBENZENE	Yes		Yes	Yes	Yes	Yes
1,2-DICHLOROBENZENE	Yes		Yes	Yes	Yes	Yes
1,3,5-TRIMETHYLBENZENE	Yes		Yes	Yes	Yes	Yes
1,4-DIOXANE	Yes		Yes	Yes	Yes	Yes
1-METHOXY-2-PROPANOL	Yes	Yes	Yes	Yes	Yes	Yes
2-BUTOXYETHANOL ACETATE	Yes		No	Yes	Yes	Yes
2-ETHOXYETHYL ACETATE	Yes		Yes	Yes	Yes	Yes
2-ETHOXYPROPANOL		Yes	Yes	Yes	No	Yes
2-HEPTANONE	Yes		Yes	Yes	Yes	Yes
2-METHYL-1-PROPANOL	Yes		Yes	Yes	Yes	Yes
2-PENTANONE	Yes	Yes	Yes	Yes	Yes	Yes
2-PROPANOL (ALCOHOLS)	Yes	Yes	Yes	Yes	Yes	Yes
2-PYRROLIDONE		Yes	No	NA	NA	Yes
4-HYDROXY-4-METHYL-2-	Yes		Yes	Yes	Yes	Yes
ACETIC ACID	Yes		Yes	Yes	Yes	Yes
ACETONE	Yes	Yes	Yes	Yes	Yes	Yes
ACETONITRILE	Yes	Yes	Yes	Yes	Yes	Yes
AMYL ACETATE		Yes	Yes	Yes	Yes	Yes
BENZENE	Yes	Yes	Yes	Yes	Yes	Yes
BIOCIDE (acrolein)	Yes		Yes	Yes	Yes	Yes
BROMINATED BISPHENOL		Yes	No	NA	NA	Yes
BUTOXYETHANOL (BUTYL CELLOSOLVE)	Yes		Yes	Yes	Yes	Yes
BUTYL ACETATE	Yes	Yes	Yes	Yes	Yes	Yes
CARBON TETRACHLORIDE	Yes		Yes	Yes	Yes	Yes
CHLOROBENZENE	Yes		Yes	Yes	Yes	Yes
CHLOROFORM	Yes		Yes	Yes	Yes	Yes
CRESOL	Yes		No	Yes	Yes	Yes
CUTTING OIL		Yes	No	NA	NA	Yes
CYCLOHEXANE		Yes	Yes	Yes	Yes	Yes
CYCLOHEXANONE		Yes	Yes	Yes	Yes	Yes
DIBUTYL PHTHALATE	Yes		No	Yes	Yes	Yes
DIESEL		Yes	Yes	Yes	Yes	Yes
DIETHYLENE GLYCOL		Yes	No	NA	NA	Yes
DIETHYLENE GLYCOL BUTYL ETHER	Yes	Yes	No	Yes	Yes	Yes
DIETHYLENETRIAMINE	Yes		No	Yes	Yes	Yes
DIMETHYLFORMAMIDE		Yes	Yes	Yes	Yes	Yes
ETHANOL	Yes		Yes	Yes	Yes	Yes
ETHYL ACETATE	Yes		Yes	Yes	Yes	Yes
ETHYL BENZENE	Yes		Yes	Yes	Yes	Yes
ETHYL LACTATE		Yes	Yes	Yes	No	Yes
ETHYL-3-ETHOXYPROPIONATE	Yes	Yes	No	Yes	Yes	Yes
ETHYLENE GLYCOL		Yes	No	NA	NA	Yes
ETHYLENE GLYCOL ETHYL ETHER ACETATE	Yes	Yes	Yes	Yes	Yes	Yes
FERRIC CHLORIDE	Yes		Yes	No	Yes	Yes
FORMALDEHYDE	Yes		Yes	Yes	Yes	Yes
FORMIC ACID	Yes		Yes	Yes	Yes	Yes
GASOLINE		Yes	Yes	Yes	Yes	Yes
GLYCERIN	Yes		No	Yes	Yes	Yes
HEPTANE	Yes		Yes	Yes	Yes	Yes
HEXAMETHYLDISILAZANE		Yes	Yes	No	Yes	Yes
HEXANE	Yes	Yes	Yes	Yes	Yes	Yes
HYDROCHLORIC ACID	Yes		Yes	Yes	Yes	Yes

TABLE 8
Summary of Chemicals of Potential Concern
Rromic Facility - Chandler, AZ

Chemical	AAQGS	Is total mass >0.1%?	Is VP > 0.1%?	Chronic Toxicity Value	Acute Toxicty Value	Select as COPC
HYDROFLUORIC ACID	Yes		Yes	Yes	Yes	Yes
ISOBUTYL ACETATE	Yes		Yes	Yes	Yes	Yes
ISOBUTYL ISOBUTYRATE	Yes		Yes	Yes	Yes	Yes
ISOPROPANOLAMINE		Yes	No	NA	NA	Yes
ISOPROPYL ACETATE	Yes		Yes	Yes	Yes	Yes
JET FUEL		Yes	Yes	Yes	Yes	Yes
KEROSENE		Yes	Yes	Yes	Yes	Yes
MERCURY	Yes		No	Yes	Yes	Yes
METHANOL	Yes	Yes	Yes	Yes	Yes	Yes
METHYL ETHYL KETONE	Yes	Yes	Yes	Yes	Yes	Yes
METHYL ISOBUTYL KETONE		Yes	Yes	Yes	Yes	Yes
METHYLENE CHLORIDE	Yes	Yes	Yes	Yes	Yes	Yes
MINERAL OIL		Yes	No	NA	NA	Yes
NAPHTHA		Yes	Yes	Yes	Yes	Yes
NAPHTHALENE	Yes		No	Yes	Yes	Yes
N-BUTANOL	Yes	Yes	Yes	Yes	Yes	Yes
NITRIC ACID	Yes		Yes	No	Yes	Yes
N-METHYL-2-PYRROLIDONE		Yes	No	NA	NA	Yes
N-PROPYL ACETATE	Yes		Yes	Yes	Yes	Yes
OIL		Yes	No	NA	NA	Yes
PETROLEUM OIL		Yes	No	NA	NA	Yes
PHENOL	Yes		No	Yes	Yes	Yes
PHENYLMERCURIC ACETATE	Yes		No	Yes	Yes	Yes
PHOSPHORIC ACID	Yes		Yes	Yes	Yes	Yes
POLYDIMETHYL SILOXANE		Yes	No	NA	NA	Yes
PROPYLENE GLYCOL METHYL ETHER ACETATE	Yes	Yes	Yes	Yes	Yes	Yes
PROPYLENE OXIDE	Yes		Yes	Yes	Yes	Yes
PYRIDINE	Yes		Yes	Yes	Yes	Yes
STODDARD SOLVENT		Yes	Yes	Yes	Yes	Yes
STYRENE	Yes		Yes	Yes	Yes	Yes
SULFOLANE		Yes	No	NA	NA	Yes
SULFURIC ACID	Yes		No	No	Yes	Yes
TETRACHLOROETHYLENE	Yes	Yes	Yes	Yes	Yes	Yes
TETRAETHYL ORTHOSILICATE		Yes	Yes	No	Yes	Yes
TETRAHYDROFURAN		Yes	Yes	Yes	Yes	Yes
TETRAHYDROTHIOPHENE-1,1-DIOXIDE		Yes	No	NA	NA	Yes
TOLUENE	Yes	Yes	Yes	Yes	Yes	Yes
TRICHLOROETHENE	Yes	Yes	Yes	Yes	Yes	Yes
TRIETHYLENETETRAMINE	Yes		No	Yes	Yes	Yes
XYLENE	Yes	Yes	Yes	Yes	Yes	Yes

Notes:
AAQGS = Arizona Ambient Air Quality Guidelines
COPC = Chemicals of Potential Concern
VP = Vapor Pressure

ATTACHMENTS

ATTACHMENT A

Material Safety Data Sheets (MSDSs) Used to Speciate Generic Compounds and Mixtures Found in Facility Wastestreams

HUNTSMAN

DGA® Agent e-Grade™

[CAS 929-06-6]

STRUCTURE

$H_2N\text{-}CH_2CH_2OCH_2CH_2OH$

Mol. Wt. 105.14

DESCRIPTION

An essentially colorless, slightly viscous liquid with a mild amine odor. Miscible with water, alcohols, and aromatic hydrocarbons, but relatively immiscible with aliphatic hydrocarbons and ethyl ether. DGA® Agent e-Grade™ is isomeric with diethanolamine; however, the primary amine group makes it more reactive, and gives it a higher pKa.

SALES SPECIFICATIONS

The following sales specifications for this product are subject to change. The appropriate analytical procedures for these specifications are available on request.

Test Determination		Method of Specification
Appearance	Clear liquid, substantially free of suspended matter	ST-30.1
Color, Pt-Co	35 max.	ST-30.12
DGA, wt.%	98 min.	ST-5.5 (titration)
Water, wt. %	0.5 max.	ST-31.53,6
Aluminum, ppb	50 max.	ICP/MS
Antimony, ppb	50 max.	ICP/MS
Arsenic, ppb	50 max.	ICP/MS
Barium, ppb	50 max.	ICP/MS
Cadmium, ppb	50 max.	ICP/MS
Chromium, ppb	50 max.	ICP/MS
Cobalt, ppb	50 max.	ICP/MS
Copper, ppb	40 max.	ICP/MS
Gallium, ppb	50 max.	ICP/MS
Germanium, ppb	50 max.	ICP/MS
Gold, ppb	50 max.	ICP/MS
Iron, ppb	40 max.	ICP/MS
Lead, ppb	30 max.	ICP/MS
Lithium, ppb	50 max.	ICP/MS
Magnesium, ppb	50 max.	ICP/MS
Manganese, ppb	50 max.	ICP/MS
Nickel, ppb	50 max.	ICP/MS
Potassium, ppb	30 max.	ICP/MS
Silver, ppb	50 max.	ICP/MS
Sodium, ppb	25 max.	ICP/MS
Strontium, ppb	50 max.	ICP/MS
Tin, ppb	50 max.	ICP/MS
Titanium, ppb	50 max.	ICP/MS
Zinc, ppb	30 max.	ICP/MS

TYPICAL PROPERTIES

Assay by GC, wt.%	97% min.
Boiling point, 760 mm Hg, °C	221
Flash point, PMCC, °F	255
Freezing point, °C	-12.5
pKa	9.56
Specific gravity, 20/20°C (68°F)	1.0560
Viscosity, cSt, 30°C	20
Vapor pressure, mm Hg, 68°F (20°C)	0.003

APPLICATIONS

Huntsman DGA® Agent e-Grade™ is used to formulate both wafer and PWB cleaning solvents. It is a water-soluble strong primary aminoglycol. Both the amine and glycol functions contribute to

Main Offices: Huntsman Corporation / P.O. Box 27707 / Houston, Texas 77227-7707 / 713/235-6000
Technical Services Section: P.O. Box 15730 / Austin, Texas 78761 / 512/459-6543

its solvency. It has good corrosion properties toward copper and aluminum. Its volatility is appreciably less than the other common amines used in this application.

COPPER AND ALUMINUM CORROSION DATA

DGA® Agent e-Grade™ Corrosion Rates for Aluminum and Copper[1]

The corrosion rates of aluminum and copper were measured in electronics grade DGA to determine potential loss rates of the metals when DGA is used as a solvent in electronics applications, such as a component in photoresist strippers. The results, shown below, provide the corrosion rates, in mils per year, for three concentrations of DGA at two different temperatures. The corrosion rates are comparable for the two metals at each set of conditions. Corrosion rates generally decrease with increasing concentrations.

I. Copper in DGA® Agent e-Grade™, Corrosion Rates (mpy)

Concentration in water	23°C	70°C
30%	6.1	13.0
40%	3.5	8.5
50%	1.5	5.6

II. Aluminum in DGA® Agent e-Grade™, Corrosion Rates (mpy)

Concentration in water	23°C	70°C
30%	7.0	11.0
40%	3.2	7.1
50%	1.5	3.8

[1] These corrosion rates were measured electrochemically, using the polarization resistance technique. Eight individual corrosion measurements were made over a four-hour period. The results shown are the average values from all tests performed with constant air sparge to maintain an equilibrum concentration of dissolved oxygen that would be present for a fluid exposed to air. Electronics grade DGA was used (DGA® Agent e-Grade™). The metal alloys were, respectively, copper UNS-C11000 and aluminum UNS-93003.

AVAILABILITY

DGA® Agent e-Grade™ is available in 55-gallon plastic drums, and tank wagons.

SHIPPING

Available in coiled tank cars, tank wagons, and UN1A1 or UN1H1 steel drums, 480 pounds net. DOT label required: corrosive. Freight classification: Chemicals NOIBN. Available worldwide with manufacturing facilities in U.S. and Europe.

TOXICITY AND SAFETY

The principal health hazard from accidental exposure to DGA® Agent e-Grade™ is a moderate-to-severe irritation/corrosion of the eyes, skin, and mucous membranes. Chemical-type goggles with face shield must be worn during handling or use of the undiluted product or concentrated solutions. Contact lenses should not be worn. Protective clothing, and gloves resistant to chemicals and petroleum distillates, must be worn.

Should accidental eye contact occur, flush eyes with large amounts of water for at least 15 minutes. Eyelids should be held apart to permit rinsing of entire surface of eyes and lids. Get medical attention immediately. For skin contact, immediately flush skin with large amounts of water for at least 15 minutes. Get medical attention immediately. Contaminated clothing should be laundered before reuse.

For further information, please refer to the Material Safety Data Sheet (MSDS) for this product.

Material Safety Data Sheet

1-Ethoxy-2-propanol,90-95%,remainder 2-eth oxy-1-propanol

ACC# 87116

Section 1 - Chemical Product and Company Identification

MSDS Name: 1-Ethoxy-2-propanol,90-95%,remainder 2-eth oxy-1-propanol
Catalog Numbers: AC259050000, AC259050010, AC259050025
Synonyms:
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1569-02-4	1-Ethoxy-2-propanol, 90-95%, remainder 2-ethoxy-1-propanol	90-95%	216-374-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 42 deg C.
Caution! Flammable liquid. Irritant. Causes eye and skin irritation. Causes digestive and respiratory tract irritation.
Target Organs: None.

Potential Health Effects
Eye: Causes eye irritation. Contact produces irritation, tearing, and burning pain. Lachrymator (substance which increases the flow of tears).
Skin: Causes skin irritation.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: Causes respiratory tract irritation.
Chronic: Not available.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.
Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Combustible liquid. Can form explosive mixtures at temperatures above the flashpoint.
Extinguishing Media: Use dry chemical, carbon dioxide, or alcohol-resistant foam.
Flash Point: 42 deg C (107.60 deg F)
Autoignition Temperature: 255 deg C (491.00 deg F)
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: Not published.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Remove all sources of ignition. Use a spark-proof tool.

Section 7 - Handling and Storage

Handling: Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with eyes, skin, and clothing. Keep away from heat, sparks and flame.
Storage: Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1-Ethoxy-2-propanol, 90-95%, remainder 2-ethoxy-1-propanol	none listed	none listed	none listed

OSHA Vacated PELs: 1-Ethoxy-2-propanol, 90-95%, remainder 2-ethoxy-1-propanol: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: Not available.
pH: Not available.
Vapor Pressure: 5.3 mbar @ 20 deg C
Vapor Density: 3.59 (air=1)
Evaporation Rate: Not available.
Viscosity: 2.08 cP 20 deg C
Boiling Point: 132 deg C @ 760.00mm Hg
Freezing/Melting Point:-100 deg C
Decomposition Temperature: Not available.
Solubility: soluble in water
Specific Gravity/Density:.8960g/cm3
Molecular Formula:C5H12O2
Molecular Weight:104.14

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Light, exposure to air, temperatures above 40°C.
Incompatibilities with Other Materials: oxidizing agents, strong acids
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 1569-02-4: UB5250000
LD50/LC50:
CAS# 1569-02-4:
Draize test, rabbit, eye: 100 mg/24H Moderate;
Inhalation, rat: LC50 = >10000 ppm/4H;
Oral, rat: LD50 = 4400 mg/kg;
Oral, rat: LD50 = 7000 mg/kg;
Skin, rabbit: LD50 = 8100 mg/kg;
Carcinogenicity:
CAS# 1569-02-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	FLAMMABLE LIQUIDS, N.O.S.	No information available.
Hazard Class:	3	
UN Number:	UN1993	
Packing Group:	III	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 1569-02-4 is not listed on the TSCA inventory. It is for research and development use only.

Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 1569-02-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XI

Risk Phrases:

R 10 Flammable.
R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 1569-02-4: 1

Canada - DSL/NDSL

CAS# 1569-02-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2B.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997
Revision #2 Date: 3/18/2003

TurboCLEAR™ 3B

EMERGENCY NUMBERS

IN CASE OF EMERGENCIES SUCH AS PRODUCT SPILLS, CALL:

CHEMTREC (800) 424-9300 USA (TOLL FREE)
CANUTEC (613) 996-6666 CANADA (CALL COLLECT)

1. PRODUCT AND COMPANY IDENTIFICATION

	USA	CANADA
Supplier:	Eaglebrook, Inc. 4801 Southwick Drive Suite 200 Matteson, IL 60443	Eaglebrook, Inc. of Canada 626 Oak Park Road Brantford, Ontario N3T 5L8
Telephone:	(708) 747-5038 (800) 654-8373	(519) 759-7570 (800) 265-0712

Product Name:	TurboCLEAR™ PC-3B
Chemical Family:	Polynuclear inorganic salt
Formula:	$Al_2(OH)_5Cl{\cdot}2H_2O$
Synonym:	Polyaluminum chloride, aluminum chlorohydrate.
Product Use:	Coagulant for the treatment of swimming pools and spa waters.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS #	WT/WT%	ACGIH TLV
Aluminum Chlorohydrate	12042-91-0	30 – 60	2 mg/m^3 (Al)

WHMIS Classification: Not required
OSHA Classification: Physical: Not required Health: Not required
Target Organs: None known.

3. HAZARDS IDENTIFICATION

Principal Risk: Irritating of skin, eyes and mucous membranes.

Potential Effects on Health:

SKIN CONTACT: May cause irritation, swelling, or dermatitis. Prolonged exposure may cause skin irritation. A single, prolonged exposure is not likely to result in the materials being absorbed through the skin in harmful amounts.

EYE CONTACT: Will cause painful burning or stinging of eyes and lids, watering of eyes, and inflammation of the conjunctiva.

INGESTION: May be harmful if swallowed. May cause nausea and vomiting. May cause liver and kidney effects.

INHALATION: Not a likely route of entry, however, may irritate respiratory tract.

EFFECTS OF ACUTE EXPOSURE: *Small Quantities*: nausea, vomiting, stomach cramps, diarrhea. *Large Quantities*: Ulcerations and necrosis of the mucous membranes in the throat, mouth, and esophagi plus small quantity effects, liver or kidney damage, intense thirst.

EFFECTS OF CHRONIC EXPOSURE: Mist will irritate respiratory tract. Possible dermatitis.

4. FIRST AID MEASURES

First Aid: In every case of overexposure seek medical attention. Move victim to fresh air.

Skin Contact: Remove all contaminated clothing. Wash affected area with soap and water. If irritation persists, seek medical attention.

Eye Contact: Flush immediately with water for 15 minutes. Seek immediate medical attention.

Inhalation: Remove to fresh air. Administer oxygen or artificial respiration if required.

Ingestion: *If conscious*, give two (2) glasses of water. **DO NOT INDUCE VOMITING**. Do not give anything by mouth to an unconscious person. Seek medical attention.

5. FIRE FIGHTING MEASURES

Flash Point: None **Method:** PMCC

Flammable Limits: LOWER: Not flammable. UPPER: Not flammable.

Autoignition: Not flammable.

Hazardous Combustion Product: HCl gas may be released in a fire.

Fire Fighting Instructions: Extinguish main fire with appropriate firefighting media. Containers can build up pressure if exposed to heat (fire). Use dry chemical, CO_2 or water spray. As in any fire, wear self-contained breathing apparatus (SCBA), pressure-demand MSHA/NIOSH approved or equivalent) and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Spill, Leak, Accidental

Restrict access until clean-up operations are complete. Ensure clean up is conducted by trained personnel only. Wear adequate personal protective equipment. Ventilate spill area if possible. Dam to prevent spreading. Neutralize with soda ash and soak up with absorbent material. Transfer to metal drum for disposal. Wash affected area with water. Notify appropriate government occupational heath and safety/environmental authorities when applicable. Contact an approved waste hauler for disposal of contaminated recovered material.

7. HANDLING AND STORAGE

Ensure that all containers are labelled. Treat as any dilute acid. Avoid contact with metal. Avoid skin and eye contact. Wear appropriate protective clothing. Store in dry rubber-lined, plastic or FRP vessels. Keep storage temperature between 10 and 30 °C. Keep containers tightly closed when not in use and when empty. Product should be used within one (1) year.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Due to its low volatility and toxicity, the hazard potential associated with this material is relatively low.

Ventilation: Local ventilation.

Gloves: Impervious gloves (neoprene recommended).

Eyes: Monogoggles or face shield.

Respirator: Not likely an inhalation hazard unless HCl mist forms. If so, use canister-type respirator at low concentration (<1%) and a MSHA or NIOSH-approved respirator.

Clothing: Rubber boots, pants, and coat depending on degree of exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Blue
Odor:	Slight
Form:	Liquid
pH as is:	3.8 ± 0.3
Vapor Pressure (mm Hg):	17 mm Hg 20 °C
Boiling Point:	105 ± 5 °C (221 ± 41 °F)
Freezing Point:	<-7 ± 2 °C (19.4 ± 35.6 °F)
Specific Gravity (20°C):	1.340 ± 0.010 (H_2O = 1)
Evaporation Rate:	Slow **Vapor Density (Air=1):** 1.3

10. STABILITY AND REACTIVITY

Stability:
Does not undergo self-polymerization or decomposition.

Hazardous Decomposition:
Under fire conditions, HCl gas may be released.

Conditions to Avoid:
High temperature decomposition. Avoid contact with alkalis and metal.

Incompatible Materials:
Reacts with zinc and aluminum to form hydrogen gas. Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, chlorites) may generate heat, splattering or boiling and toxic vapors.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY: Not available

ACUTE INTRAPERITONEAL TOXICITY: Not available

CARCINOGENICITY: Not considered carcinogenic by NTP, IARC, or OSHA.

IRRITANCY OF PRODUCT: Moderate skin and eye.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known.

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12. ECOLOGICAL INFORMATION

BIOCHEMICAL OXYGEN DEMAND (5-day BOD): Not available

CHEMICAL OXYGEN DEMAN (COD): Not available

TOTAL ORGANIC CARBON (TOC): Not available

DAPHNIA MAGNA: Not available

RAINBOW TROUT: Not available

FATHEAD MINNOW: Not available
NOEC: Not available LOEC: Not available

CERIODAPHNIA DUBIA: Not available
NOEC: Not available LOEC: Not available

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13. DISPOSAL CONSIDERATIONS

Disposal of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all Federal, Provincial/State and Local regulations. Do not dispose of wastes in local sewer or with normal garbage.

14. TRANSPORT INFORMATION

Shipping Name: Not regulated

Hazardous Class: N/A

UN Number: N/A

Packing Group: N/A **IMO Class:** N/A **IATA/ICAO Class:** N/A

15. REGULATORY INFORMATION

WHMIS: Not required

HMIS/NFPA: HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

CEPA: This substance or all ingredients of this product are listed on the DSL. The presence on this list does not require any legal reporting.

NPRI: Not reportable.

SARA TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE (IMMEDIATE) HEALTH: Yes
EXTREMELY HAZARDOUS SUBSTANCE: No
(40 CFR 355, SARA Title III Section 302)
CHRONIC (DELAYED) HEALTH: No FIRE: No
CERCLA HAZARDOUS SUBSTANCE: No (40 CFR 302.4)
REACTIVITY: No SUDDEN RELEASE OF PRESSURE: No
TOXIC CHEMICAL: No (40 CFR 372.65, SARA Title III Section 313)

TSCA: This substance or all ingredients of this product are listed on the Chemical Substances Inventory of the TSCA. Does not require reporting.

Risk Phrases: R22 – Harmful if swallowed

Safety Phrases: S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 – Wear suitable protective clothing, gloves and eye protection.

16. OTHER INFORMATION

ACGIH: American Conference of Government Industrial Hygienists
AWWA: American Water Works Association **CAS:** Chemical Abstracts Service
CEPA: Canadian Environmental Protection Act
CERCLA: Comprehensive Environmental Response, Compensation and Liability Act
CFR: Code of Federal Regulations **CIRC:** Cancer International Research Center
DOT: Department of Transport **DSL:** Domestic Substance List
FRP: Fiberglass Reinforced Plastic **HEPA:** High Efficiency Particulate Arresting
HMIS: Hazardous Material Information System **LEL:** Lower Explosive Limit
LC_{50}: The concentration of material in air expected to kill 50% of a group of test animals.
LD_{50}: Lethal dose expected to kill 50% of a group of test animals.
LOEC: Lowest observed effect concentration
N/A: Not Applicable **NIOSH:** National Institute for Occupational Safety and Health
NFPA: National Fire Protection Agency
NIOSH: National Institute for Occupational Safety and Health
NPRI: National Pollutant Release Inventory **NSF:** National Sanitation Foundation

16. (Cont'd)

NTP: National Toxicology Program **OSHA:** Occupation Health and Safety Administration
RCRA: Resource Conservation and Recovery Act
RTECS: Registry of Toxic Effects of Substances
SARA: Superfund Amendments and Reauthorization Act of the US EPA
TDG: Transport of Dangerous Goods **TLV:** Threshold Limit Value
TSCA: Toxic Substances Control Act **TWA:** Time Weight Average
UEL: Upper Explosive Limit
WHMIS: Workplace Hazardous Material Information System

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MSDS Prepared on September 22, 2003 by:

Eaglebrook - 4801 Southwick Drive Suite 200
Matteson, IL 60443 (800) 654 – 8373

1,2-DICHLOROPROPANE

(PROPYLENE DICHLORIDE)

Please Note: The main source of information for this fact sheet is the Agency for Toxic Substances and Disease Registry's (ATSDR's) *Toxicological Profile for 1,2-Dichloropropane*. Other sources include EPA's Integrated Risk Information System (IRIS), which contains information on inhalation chronic toxicity of 1,2-dichloropropane and the RfC, and the Registry of Toxic Effects of Chemical Substances (RTECS), a database of toxic effects that are not peer reviewed.

Environmental/Occupational Exposure

- * 1,2-Dichloropropane has been detected at low levels in ambient air, with an average level in air of about 0.022 ppb. (1)

  * 1,2-Dichloropropane has been detected in a few drinking water supplies. A nationwide survey of groundwater supplies showed that 1.4 percent of these supplies contained 1,2-dichloropropane at levels around 1 ppb. (1,2)

  * Occupational exposure to 1,2-dichloropropane may occur during its production, during its use in chemical reactions or as an industrial solvent, or from evaporation from wastewater that contains the chemical. (1)

Assessing Personal Exposure

- * Medical tests can detect 1,2-dichloropropane in urine and blood. 1,2-Dichloropropane leaves the body quickly, and thus the tests should be done soon after the exposure. (1)

Health Hazard Information

Acute Effects:

- * Acute (short-term) exposure to 1,2-dichloropropane in humans from inhalation and oral exposure results in effects on the gastrointestinal system, blood, liver, kidneys, and central nervous system. Additional effects noted in humans, from inhalation exposure only, are effects on the lung (chest discomfort, dyspnea [shortness of breath], and cough) and the eyes (conjunctival hemorrhages). (1)

  * Animal studies have reported effects on the respiratory system, liver, kidneys, eyes, and central nervous system from acute inhalation exposure to 1,2-dichloropropane. (1)

  * Tests involving acute exposure of animals, such as the LC_{50} and LD_{50} tests in rats, have shown 1,2-dichloropropane to have moderate acute toxicity from inhalation and oral exposure. (1,3)

Chronic Effects (Noncancer):

- * No information is available on the effects from chronic (long-term) exposure to 1,2-dichloropropane in humans from inhalation or oral exposure. (1)

  * Chronic animal studies, via inhalation exposure, have reported effects on the respiratory system and blood, while oral animal studies have noted effects on the blood, liver, and central nervous system. (1,4)

  * The RfC for 1,2-dichloropropane is 0.004 mg/m^3 based on hyperplasia of the nasal mucosa in rats. (5)

  * EPA has high confidence in the study on which the RfC was based because it used an adequate number of animals, exposure concentrations, and controls, examined three species, focused on known target organs, and the incidence and severity of the nasal lesions were exposure-related; medium confidence in the database because there are no chronic inhalation studies; and, consequently, medium confidence in the RfC. (5)

  * EPA has not established an RfD for 1,2-dichloropropane. (5)

Reproductive/Developmental Effects:

- * A case was reported of a woman who was hospitalized with metrorrhagia (bleeding from the uterus between menstrual periods) after acute inhalation exposure to 1,2-dichloropropane. No other information is available on the reproductive or developmental effects of 1,2-dichloropropane in humans. (1)

  * No reproductive effects were noted in several animal inhalation studies. (1)

  * Developmental effects, such as an increased incidence of delayed ossification of the bones of

the skull, and reproductive effects such as testicular degeneration and increased incidences of infection of the ovary, uterus, or other organs, have been observed in animals exposed to 1,2-dichloropropane by gavage (experimentally placing the chemical in the stomach). It is not known if the infections observed were related to 1,2-dichloropropane treatment since controls were also infected. (1)

Cancer Risk:

- * No studies are available regarding carcinogenic effects in humans from inhalation or oral exposure to 1,2-dichloropropane. (1)

  * An increased incidence of mammary gland tumors in female rats and liver tumors in male and female mice were reported in studies in which 1,2-dichloropropane was given by gavage. (1,6)

  * EPA has classified 1,2-dichloropropane as a Group B2, probable human carcinogen. (7)

  * EPA's Office of Air Quality Planning and Standards, for a hazard ranking under Section 112(g) of the Clean Air Act Amendments, has ranked 1,2-dichloropropane in the nonthreshold category. The $1/ED_{10}$ value is 0.36 per (mg/kg)/d and this would place it in the low category under Superfund's ranking for carcinogenic hazard. (7)

Physical Properties

- * The chemical formula for 1,2-dichloropropane is $C_3H_6Cl_2$, and the molecular weight is 112.99 g/mol. (1)

  * 1,2-Dichloropropane is a colorless liquid which evaporates quickly at room temperature. (1)

  * 1,2-Dichloropropane has a chloroform-like odor and an odor threshold of 0.25 ppm. (1)

  * The vapor pressure for 1,2-dichloropropane is 49.67 mm Hg at 25 EC, and it has a log octanol/water partition coefficient (log K_{ow}) of 1.99. (1)

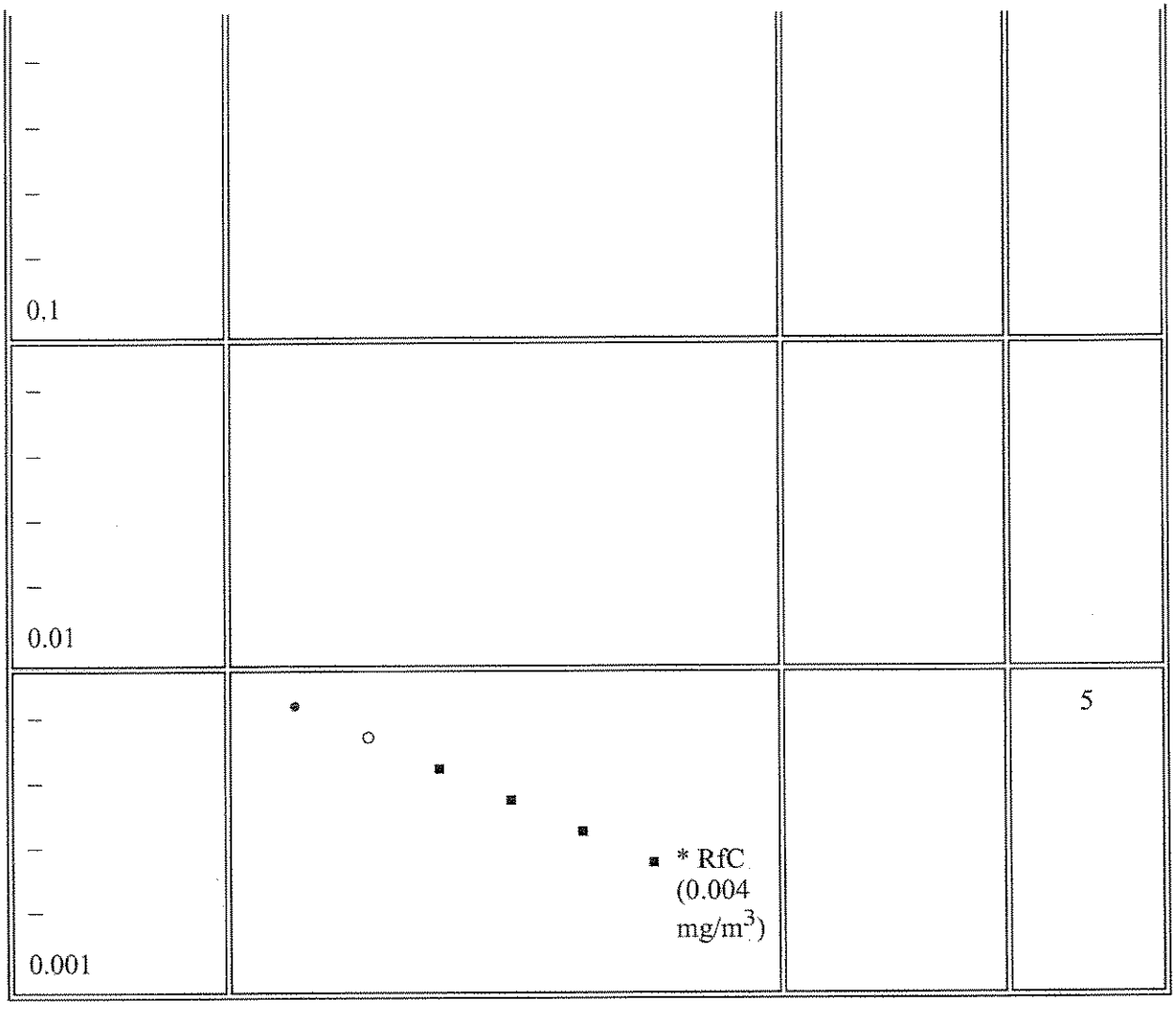
Uses

- * 1,2-Dichloropropane is used as a chemical intermediate in the production of chlorinated organic chemicals, as an industrial solvent, in ion exchange manufacture, in toluene diisocyanate production, in photographic film manufacture, for paper coating, and for petroleum catalyst regeneration. (1)

  * 1,2-Dichloropropane was used in the past as a soil fumigant for a variety of crops. This use has been discontinued, and pesticide formulations containing 1,2-dichloropropane are no longer available in the United States. (1)

Health Data from Inhalation Exposure

Concentration (mg/m^3)	Health numbers[a]	Regulatory, advisory numbers[b]	Reference
10,000.0			
– – – – 1,000.0	• * LC_{50} (rats) ($9,242\ mg/m^3$)		1
– – – – 100.0		• * OSHA PEL and ACGIH STEL (508 mg/m^3) * OSHA PEL and ACGIH TLV (347 mg/m^3)	6 6
– – – – 10.0			
– – – – 1.0	• * LOAEL (rats) ($1.3\ mg/m^3$)[c]		5



- ACGIH STELCAmerican Conference of Governmental and Industrial Hygienists' short-term exposure limit; 15-min time-weighted-average exposure that should not be exceeded at any time during a workday even if the 8-h time-weighted-average is within the threshold limit value.

  ACGIH TLVCAmerican Conference of Governmental and Industrial Hygienists' threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.

  LC_{50} (Lethal Concentration$_{50}$)CA calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.

  LOAELCLowest-observed-adverse-effect level.

  OSHA PELCOccupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

  RfCCReference concentration.

[a] Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

[b] Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice.

[c] This LOAEL is from the critical study used as the basis for the EPA RfC.

References

- 1. Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for 1,2-Dichloropropane* (Draft). U.S. Public Health Service, U.S. Department of Health and Human Services. 1989.

2. U.S. Environmental Protection Agency. *Health Advisory for 1,2-Dichloropropane.* Office of Drinking Water, Washington, DC. 1987.

3. U.S. Department of Health and Human Services. Registry of Toxic Effects of Chemical Substances (RTECS, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.

4. U.S. Department of Health and Human Services. Hazardous Substances Data Bank (HSDB, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.

5. U.S. Environmental Protection Agency. *Integrated Risk Information System (IRIS) on 1,2-Dichloropropane.* Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Office of Research and Development, Cincinnati, OH. 1993.

6. E.J. Calabrese and E.M. Kenyon. *Air Toxics and Risk Assessment.* Lewis Publishers, Chelsea, MI. 1991.

7. U.S. Environmental Protection Agency. *Technical Background Document to Support Rulemaking Pursuant to the Clean Air ActCSection 112(g). Ranking of Pollutants with Respect to Hazard to Human Health.* EPAB450/3-92-010. Emissions Standards Division, Office of Air Quality Planning and Standards, Research Triangle Park, NC. 1994.

FISKE BROTHERS REFINING CO -- FISKE'S THREAD-EZY CLEAR CUTTING OIL -- 9150-01-013-5281

MSDS Safety Information

FSC: 9150
NIIN: 01-013-5281
MSDS Date: 01/01/1999
MSDS Num: CKVRD
Tech Review: 11/02/2000
Product ID: FISKE'S THREAD-EZY CLEAR CUTTING OIL
Responsible Party
Cage: 9N579
Name: FISKE BROTHERS REFINING CO
Address: 1500 OAKDALE AVE
Box: 8038
City: TOLEDO OH 43605-3843 US
Info Phone Number: 419-691-2491
Emergency Phone Number: 800-255-3924

Contractor Summary

Cage: 9N579
Name: FISKE BROTHERS REFINING CO
Address: 1500 OAKDALE AVE
City: TOLEDO OH 43605 US
Phone: 419-691-2491

Item Description Information

Item Manager: S9G
Item Name: CUTTING FLUID
Specification Number: NONE
Type/Grade/Class: NONE
Unit of Issue: GL
UI Container Qty: 0
Type of Container: CAN

Ingredients

Name: OIL MIST IN AIR (NOT ENCOURAGED IN NORMAL AIR)
OSHA PEL: 5 MG/M3
ACGIH TLV: 5 MG/M3

Health Hazards Data

Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Signs And Symptions Of Overexposure: PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE SKIN IRRITATION. PRODUCT CONTACTING THE EYES MAY CAUSE EYE IRRITATION. HUMAN HEALTH RISKS VARY FROM PERSON TO PERSON. AS A PRECAUTION, EXPOSURE TO LIQUIDS, VAPORS, MISTS AND FUMES SHOULD BE MINIMIZED. THIS PRODUCT HAS A LOW ORDER OF ACUTE ORAL TOXICITY, BUT MINUTE AMOUNTS ASPIRATED INTO THE LUNGS DURING INGESTION MAY CAUSE MILD RO SEVERE PULMONARY INJU RY.
First Aid: EYE-FLUSH WITH CLEAR WATER FOR 15 MINS OR UNTIL SUBSIDES. IF IRRITATION PERSISTS, CONSULT A PHYSICIAN. SKIN-REMOVE ANY CONTAMINATED CLOTHING & WASH WITH SOAP & WARM WATER. IF INJECTED BY HIGH PRESSURE UNDER SKIN, REGARDLESS OF THE APPERANCE/SIZE, CONTACT PHYSICIAN IMMEDIATELY. DELAY MAY CAUSE LOSS OF AFFECTED PART OF THE BODY. INHALATION-VAPOR PRESSURE IS VERY LOW & INHALATION AT ROOM TEMPERATURE IS NOT A PROBLEM. IF OVERCOME BY VAPOR FROM HOT PRODUCT, IMMEDIATELY

REMOVE FROM EXPOSURE & CALL A PHYSICIAN. IF OVER-EXPOSED TO OIL MIST, REMOVE FROM EXPOSURE. INGESTION-CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.

Handling and Disposal

Spill Release Procedures: RECOVER LIQUID, WASH REMAINDER WITH SUITABLE PETROLEUM SOLVENT OR ADD ABSORBENT. KEEP PETROLEUM PRODUCTS OUT OF SEWER AND WATER COURSES. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS A ND WATER COURSES.
Waste Disposal Methods: ASSURE CONFORMITY WITH APPLICABLE DISPOSAL REGULATIONS. DISPOSE OF ABSORBED MATERIAL AT AN APPROVED WASTE DISPOSAL FACILITY OR SITE.
Handling And Storage Precautions: KEEP CONTAINER CLOSED WHEN NOT IN USE. DO NOT HANDLE OR STORE NEAR HEAT, SPARKS, FLAME, OR STRONG OXIDANTS.
Other Precautions: AVOID BREATHING OIL MIST. REMOVE OIL-SOAKED CLOTHING AND LAUNDER BEFORE RESUE. CLEANSE SKIN THOROUGHLY AFTER CONTACT.

Fire and Explosion Hazard Information

Flash Point Method: COC
Flash Point: =176.7C, 350.F
Lower Limits: 0.9
Upper Limits: 7.0
Extinguishing Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE OR WATER SPRAY (FOG).
Fire Fighting Procedures: COOL EXPOSED CONTAINERS WITH WATER. USE AIR-SUPPLIED BREATHING EQUIPMENT FOR ENCLOSED OR CONFINED SPACES.
Unusual Fire/Explosion Hazard: DO NOT STORE OR MIX WITH STRONG OXIDANTS. EMPTY CONTAINERS RETAIN RESIDUE. DO NOT CUT, DRILL, GRIND, OR WELD, AS THEY MAY EXPLODE.

Control Measures

Respiratory Protection: NORMALLY NOT NEEDED.
Ventilation: LOCAL EXHAUST: USED TO CAPTURE FUMES AND VAPORS.
Protective Gloves: USE OIL-RESISTANT GLOVES, IF NEEDED.
Eye Protection: IF CHANCE OF EYE CONTACT, WEAR GOGGLES.
Other Protective Equipment: USE OIL-SOAKED APRON IF NEEDED.
Supplemental Safety and Health: GENERIC/CHEMICAL NAME: PETROLEUM LUBRICATING OIL. FORMULA: MINERAL OIL, FATTY OIL AND SULFUR.

Physical/Chemical Properties

HCC: V6
Boiling Point: >287.8C, 550.F
M.P/F.P Text: LIQUID
Vapor Pres: <0.01
Vapor Density: >5
Spec Gravity: 0.92
Appearance and Odor: TRANSPARENT DARK OIL WITH FATTY ODOR.

Reactivity Data

Stability Indicator: YES
Materials To Avoid: AVOID CONTACT WITH STRONG OXIDANTS LIKE LIQUID CHLORINE, CONCENTRATED OXYGEN.
Hazardous Decomposition Products: MAY FORM S02. IF INCOMPLETE COMBUSTION, CARBON MONOXIDE.
Hazardous Polymerization Indicator: NO

Toxicological Information

Toxicological Information: THRESHOLD LIMIT VALUE: 5 MG/M3 FOR OIL MIST IN AIR. OSHA REGULATION 29 CFR 1910.1000.

Ecological Information

MSDS Transport Information

Other Information

Other Information: HAZARDOUS MATERIAL IDENTIFICATION SYSTEM (): HEALTH-1, FLAMMIBILITY-1, REACTIVITY-0. NOT A CONTROLLED PRODUCT UNDER (W) - CANADA.

Transportation Information

Responsible Party Cage: 9N579
Trans ID NO: 155227
Product ID: FISKE'S THREAD-EZY CLEAR CUTTING OIL
MSDS Prepared Date: 01/01/1999
Review Date: 11/02/2000
Article W/O MSDS: N
Net Unit Weight: 7.7 LBS
Limited Quantity IND: N
Multiple KIT Number: 0
Unit Of Issue: GL
Container QTY: 0
Type Of Container: CAN

Detail DOT Information

DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Detail IMO Information

IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION

Detail IATA Information

IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Detail AFI Information

AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

HAZCOM Label

Product ID: FISKE'S THREAD-EZY CLEAR CUTTING OIL
Cage: 9N579
Company Name: FISKE BROTHERS REFINING CO
Street: 1500 OAKDALE AVE
City: TOLEDO OH
Zipcode: 43605 US
Health Emergency Phone: 800-255-3924
Date Of Label Review: 11/02/2000
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: CAUTION
Respiratory Protection IND: NO
Health Hazard: Slight

Contact Hazard: Slight
Fire Hazard: Slight
Reactivity Hazard: None
==========

Disclaimer (provided with this information by the compiling agencies):
This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United States of America and disclaims all liability for such use. Any person utilizing this instruction who is not a military or civilian employee of the United States of America should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation regardless of similarity to a corresponding Department of Defense or other government situation.

COASTAL CORP -- DIESEL FUEL NO. 2 (HIGH SULFUR) -- 0000-

MSDS Safety Information

MSDS Date: 04/04/2000
MSDS Num: CLCXH
Tech Review: 05/18/2001
Product ID: DIESEL FUEL NO. 2 (HIGH SULFUR)
Responsible Party
Cage: 46684
Name: COASTAL CORP
Address: 9 GREENWAY PLAZA
City: HOUSTON TX 77046 US
Info Phone Number: 713-877-6732
Emergency Phone Number: 713-877-1400
Resp. Party Other MSDS No.: MSDS NUMBER: A0108.MSD
Chemtrec IND/Phone: (800)424-9300

Contractor Summary

Cage: 46684
Name: COASTAL CORP
Address: 9 GREENWAY PLAZA
City: HOUSTON TX 77046 US
Phone: 713-877-6732

Ingredients

Cas: 68476-34-6
Name: DIESEL FUEL NO. 2
Percent by Wt: 100.
Ozone Depleting Chemical: N

Health Hazards Data

LD50 LC50 Mixture: NO DATA PROVIDED BY MANUFACTURER
IARC: NO
OSHA: NO
Effects of Exposure: ACUTE: EYE: SLIGHT TO MODERATE EYE IRRITATION. SKIN: MODERATELY TO EXTREMELY IRRITATING. INHALATION: IRRITATING TO MUCOUS MEMBRANES AND RESPIRATORY TRACT. INGESTION: STOMACH IRRITATION. ASPIRATION HAZ ARD IF VOMITING OCCURS. INHALATION: IRRITATING TO MUCOUS MEMBRANES AND RESPIRATORY TRACT. CHRONIC: PROLONGED AND REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.
Explanation Of Carcinogenicity: NO DATA PROVIDED BY MANUFACTURER
Signs And Symptions Of Overexposure: SKIN: MAY CAUSE REDNESS, DRYING, BURNS OR BLISTERING OF SKIN. INHALATION: WILL PRODUCE SYMPTOMS OF INTOXICATION SUCH AS HEADACHE, DIZZINESS, NAUSEA, VOMITING, AND LOSS OF COORDINATION. INGESTION: GAST RITIS, MILD EXCITATION, LOSS AND CAPILLARY HEMORRHAGING OF THE LUNG AND INTERNAL ORGANS. ASPIRATION HAZARD IF VOMITING OCCURS.
Medical Cond Aggravated By Exposure: MAY AGGRAVATE PRE-EXISTING DERMATITIS. MIDDLE DISTILLATES HAVE CAUSED SKIN CANCER AND KIDNEY DAMAGE IN LABORATORY ANIMALS. THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH) BASED
First Aid: EYE: FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION. SKIN: COOL THE EXPOSED AREA IMMEDIATELY. REMOVE CONTAMINATED CLOTHING. IMMEDIATELY WASH AFFECTED AREAS WITH SOAP AND WA TER. INHALATION: REMOVE TO FREAH AIR. APPLY ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION. INGESTION: DO NOT INDUCE VOMITING. IF SPONTANEOUS VOMITING OCCURS, HOLD THE VICTIMS HEAD LOW ER THAN THEIR HIPS TO PREVENT ASPIRATION.

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Handling and Disposal
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Spill Release Procedures: REMOVE SOURCES OF HEAT OR IGNITION INCLUDING INTERNAL COMBUSTION ENGINES AND POWER TOOLS. CLEAN UP THE SPILL, BUT DO NOT FLUSH TO SEWER OR SURFACE WATER. VENTILATE AREA AND AVOID BREATHING VAPORS OR M ISTS.
Neutralizing Agent: NO DATA PROVIDED BY MANUFACTURER.
Waste Disposal Methods: DISPOSE THROUGH A LICENSED WASTE DISPOSAL COMPANY. FOLLOW APPLICABLE FEDERAL, STATE AND LOCAL WASTE DISPOSAL REGULATIONS.
Handling And Storage Precautions: STORE IN TIGHTLY CLOSED CONTAINERS IN A DRY, COOL PLACE, AWAY FROM SOURCES OF HEAT OR IGNITION. GROUND AND BOND ALL TRANSFER AND STORAGE EQUIPMENT TO PREVENT STATIC SPARKS AND EQUIP WITH SELF-CLOSING VALVES, PRESSURE VACUUM BUNGS AND FLAME ARRESTORS.
Other Precautions: EMPTY CONTAINERS MAY CONTAIN RESIDUE (LIQUID OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
==========
Fire and Explosion Hazard Information
==========
Flash Point Method: PMCC
Flash Point: =51.7C, 125.F
Autoignition Temp: =257.2C, 495.F
Lower Limits: 0.6
Upper Limits: 7.5
Extinguishing Media: DRY CHEMICAL, CARBON DIOXIDE, FOAM, AND WATER SPRAY
Fire Fighting Procedures: USE A WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS. USE A SMOTHERING TECHNIQUE FOR EXTINGUISHING FIRE OF THIS COMBUSTIBLE LIQUID. DO NOT USE A FORCED WATER STREAM DIRECTLY ON OIL FIRES AS THIS WILL SCA TTER THE FIRE. FIREFIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
Unusual Fire/Explosion Hazard: FLOWING OIL CAN BE IGNITED BY SELF-GENERATED STATIC ELECTRICITY.
==========
Control Measures
==========
Respiratory Protection: USE APPROVED RESPIRATORY PROTECTION EQUIPMENT FOR CLEANING LARGE SPILLS OR ENTRY INTO LARGE TANKS, VESSELS OR OTHER CONFINED SPACES.
Ventilation: PROVIDE ADEQUATE GENERAL AND/OR LOCAL VENTILATION TO MAINTAIN AIRBORNE CHEMICAL CONCENTRATIONS BELOW APPLICABLE EXPOSURE LIMITS.
Protective Gloves: IMPERVIOUS GLOVES
Eye Protection: CHEMICAL SAFETY GLASSES OR GOGGLES. REMOVE CONTACT LENSES
Other Protective Equipment: NO DATA PROVIDED BY MANUFACTURER
Work Hygienic Practices: NO DATA PROVIDED BY MANUFACTURER.
Supplemental Safety and Health: SYNONYMS: PETROLEUM DISTILLATE, DIESEL. NOTE: THIS PRODUCT MAY RELEASE GASES OR VAPORS THAT CAN DISPLACE OXYGEN IN ENCLOSED AREAS.
==========
Physical/Chemical Properties
==========
HCC: F4
B.P. Text: 300 TO 675EF
Vapor Pres: 1.6 MMHG @ 20EC
Vapor Density: 8(AIR=1)
Spec Gravity: 60/60F: 0.87
Viscosity: 1.9-4.1 CST @ 40 DEG C
Evaporation Rate & Reference: 0.1
Solubility in Water: INSOLUBLE
Appearance and Odor: CLEAR OR AMBER TO DARK BROWN LIQUID, MILD PETROLEUM ODOR

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Reactivity Data
==========
Stability Indicator: YES
Stability Condition To Avoid: STABLE UNDER NORMAL CONDITIONS OF USE. AVOID HEAT, SPARKS, FLAME AND BUILD-UP OF STATIC ELECTRICITY.
Materials To Avoid: STRONG OXIDIZING AGENTS.
Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE, SULFUR DIOXIDE AND HYDROCARBONS
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: WILL NOT OCCUR
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Toxicological Information
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Toxicological Information: NO DATA AVAILABLE.
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Ecological Information
==========
Ecological: NO DATA AVAILABLE.
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MSDS Transport Information
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Transport Information: DIESEL FUEL, 3, NA1993, PACKING GROUP III.
==========
Regulatory Information
==========
Sara Title III Information: SECTION 302 EPCRA EXTREMELY HAZARDOUS SUBSTANCE (EHS): NONE. SECTION 304 CERCLA HAZARDOUS SUBSTANCE: NONE. SECTION 311/312 HAZARD CATEGORIZATION: ACUTE: X, CHRONIC: X, FIRE: X. SECTION 313 EPCRA TOXIC SUBSTANCES: NONE.
Federal Regulatory Information: NO DATA PROVIDED BY MANUFACTURER.
State Regulatory Information: CHEMICALS KNOW TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM MAY BE FOUND IN CRUDE OIL AND PETROLEUM PRODUCTS. ALTHOUGH IT IS POSSIBLE TO SUFFICIENTLY REFINE A C RUDE OIL OR ITS END PRODUCTS TO REMOVE THE POTENTIAL FOR CANCER, WE ARE ADVISING THAT ONE OR MORE OF THE LISTED CHEMICALS MAY BE PRESENT IN SOME DETECTABLE QUANTITIES. READ AND FOLLOW DIRECTIONS AND U SE CARE WHEN HANDLING CRUDE OIL AND PETROLEUM PRODUCTS.
==========
Other Information
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Other Information: NO DATA PROVIDED BY MANUFACTURER
==========
Transportation Information
==========
Responsible Party Cage: 46684
Trans ID NO: 157014
Product ID: DIESEL FUEL NO. 2 (HIGH SULFUR)
MSDS Prepared Date: 04/04/2000
Review Date: 05/18/2001
Article W/O MSDS: N
Limited Quantity IND: N
Multiple KIT Number: 0
Review IND: N
Unit Of Issue: CY
Type Of Container: CYLINDER
Additional Data: SHIPPING NAME IS PER MSDS.
==========
Detail DOT Information
==========
DOT PSN Code: EXF
Symbols: D

DOT Proper Shipping Name: DIESEL FUEL
Hazard Class: 3
UN ID Num: NA1993
DOT Packaging Group: III
Label: NONE
Special Provision: B1
Non Bulk Pack: 203
Bulk Pack: 242
Max Qty Pass: 60 L
Max Qty Cargo: 220 L
Vessel Stow Req: A

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Detail IMO Information

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IMO PSN Code: FOY
IMO Proper Shipping Name: DIESEL FUEL
IMDG Page Number: 3375
UN Number: 1202
UN Hazard Class: 3.3
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 3-07
MED First Aid Guide NUM: 311

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Detail IATA Information

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IATA PSN Code: JEV
IATA UN ID Num: 1202
IATA Proper Shipping Name: DIESEL FUEL
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
UN Packing Group: III
Packing Note Passenger: 309
Max Quant Pass: 60L
Max Quant Cargo: 220L
Packaging Note Cargo: 310
Exceptions: A3

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Detail AFI Information

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AFI PSN Code: JEV
AFI Proper Shipping Name: DIESEL FUEL
AFI PSN Modifier: ,ALSO SEE GAS OIL
AFI Hazard Class: 3
AFI UN ID NUM: UN1202
AFI Packing Group: III
Special Provisions: P5
Back Pack Reference: A7.3

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HAZCOM Label

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Product ID: DIESEL FUEL NO. 2 (HIGH SULFUR)
Cage: 46684
Company Name: COASTAL CORP
Street: 9 GREENWAY PLAZA
City: HOUSTON TX
Zipcode: 77046 US
Health Emergency Phone: 713-877-1400
Date Of Label Review: 05/18/2001
Chronic Hazard IND: Y
Eye Protection IND: YES
Skin Protection IND: YES

Signal Word: DANGER
Respiratory Protection IND: NO
Health Hazard: Moderate
Contact Hazard: Slight
Fire Hazard: Severe
Reactivity Hazard: None. CONTACT MAY IRRITATE SKIN AND EYES. INHALATION OF VAPORS MAY IRRITATE RESPIRATORY TRACT, CAUSE INTOXICATION. HARMFUL IF INGESTED.

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Material Safety Data Sheet

SECTION I - Material Identity

Item Name	
Part Number/Trade Name	ETHYL 3-ETHOXYPROPIONATE
National Stock Number	6810PEZ049
CAGE Code	63415
Part Number Indicator	A
MSDS Number	185669
HAZ Code	B

SECTION II - Manufacturer's Information

Manufacturer Name	SPECTRUM CHEMICAL MFG. CORP
Street	14422 S. SAN PEDRA STREET
City	GARDENA
State	CA
Country	US
Zip Code	90248
Emergency Phone	800-424-9300
Information Phone	310-516-8000

MSDS Preparer's Information

Date MSDS Prepared/Revised	25AUG99
Active Indicator	N

Alternate Vendors

SECTION III - Physical/Chemical Characteristics

Specification Number	N/R
Specification Type/Grade/Class	N/R
Hazard Storage Compatibility Code	NR
NRC License Number	NR
Net Propellant Weight (Ammo)	NR
Appearance/Odor	COLORLESS LIQUID
Boiling Point	338 F
Melting Point	NR
Vapor Pressure	<1
Vapor Density	5.03
Specific Gravity	1
Decomposition Temperature	N/R
Evaporation Rate	N.R
Solubility in Water	VERY SLIGHTLY
Percent Volatiles by Volume	NR
Chemical pH	N/R
Corrosion Rate	N/R
Container Type	M
Container Pressure Code	1
Temperature Code	4
Product State Code	L

SECTION IV - Fire and Explosion Hazard Data

Flash Point Method	UNK
Lower Explosion Limit	N/R
Upper Explosion Limit	N/R
Extinguishing Media	SMALL FIRE: USE DRY CHEMICAL POWDER. LARGE FIRE: USE ALCOHOL FOAM, WATER, SPRAY OR FOG. COOL VESSELS WITH WATER JET
Special Fire Fighting Procedures	N/R
Unusual Fire/Explosion Hazards	N/R

SECTION V - Reactivity Data

Stability	YES
Stability Conditions to Avoid	N/R
Materials to Avoid	REACTIVE WITH OXIDIZING AGENTS, METALS
Hazardous Decomposition Products	NR
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	WILL NOT OCCUR

LD50 - LD50 Mixture	NR

SECTION VI - Health Hazard Data

Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute and Chronic	IRRITANT TO SKIN AND EYES. SLIGHTLY HAZ IN CASE OF INHALATION. (LUNG IRRITANT) CHRONIC: N/R
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
Explanation of Carcinogenity	NR
Symptoms of Overexposure	BREATHING DIFFICULTY,
Medical Cond. Aggrevated by Exposure	NR
Emergency/First Aid Procedures	[EYES] FLUSH W/ WATER FOR 15 MINUTES [SKIN] WASH W/ SOAP AND WATER, REMOVE CONTAMINATED CLOTHING, LAUNDER BEFORE REUSE [INHAL] REMOVE TO FRESH AIR [INGEST] DO NOT INDUCE VOMITING, NEVER GIVE ANYTHING TO AN UNCONSCIOUS PERSON

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	ABSORB WITH AN INERT MATERIAL AND PUT THE SPILLED MATERIAL IN A APPROPRIATE WASTE DISPOSAL
Neutralizing Agent	N/R
Waste Disposal Method	DISPOSE IAW FEDERAL, STATE, LOCAL REGS
Handling and Storage Precautions	KEEP LOCKED UP, KEEP AWAY FROM HEATAND SOURCES OF IGNITION. GROUD EQUIP CONTAINING MATERIAL. WEAR SUITABLE PPE
Other Precautions	AVOID CONTACT WITH SKIN AND EYES. KEEP AWAY FROM INCOMPATIBLES SUCH AS OXIDIZING AGENTS, METALS. SEEK MEDICA ADVICE IMMEDIATELY AND SHOW CONTAINER ON LABEL

SECTION VIII - Control Measures

Respiratory Protection	NIOSH APPROVED RESPIRATOR
Ventilation	PROVIDE PROPER EXHAUST
Protective Gloves	"GLOVES"
Eye Protection	CHEM GOGGLES
Other Protective Equipment	LAB COAT

Work Hygenic Practices	WASH HANDS AFTER USE
Supplemental Health/Safety Data	NR
Disposal Code	O

SECTION IX - Label Data

Protect Eye	YES
Protect Skin	YES
Protect Respiratory	YES
Chronic Indicator	NO
Contact Code	SLIGHT
Fire Code	UNKNOWN
Health Code	UNKNOWN
React Code	UNKNOWN
Specific Hazard and Precaution	NO TARGET ORGANS LISTED

SECTION X - Transportation Data

Container Quantity	1
Unit of Measure	LB

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G)	7.92
Volatile Organic Compounds (G/L)	949.1236

SECTION XII - Ingredients/Identity Information

Ingredient #	01
Ingredient Name	ETHYL 3-ETHOXYPROPIONATE
CAS Number	763699
Proprietary	NO
Percent	100

Welcome to California

Air Resources Board

Enforcement Advisory: #149: Reid Vapor Pressure of Gasoline

This page updated May 28, 2003.

Advisory	Fuel Specific
Number 149	Februa

REID VAPOR PRESSURE OF GASOLINE

The purpose of this advisory is to remind all producers, importers, blenders, distributors, haulers an retailers of gasoline in California of their responsibilities concerning the Reid vapor pressure (RVP) fuel. The RVP regulation is seasonal and geographical, and therefore requires periodic review.

Section 2262.1 (formerly Section 2251.5) of Title 13 of the California Code of Regulations states tha the basic regulatory control period, no person shall sell, offer for sale, dispense, supply, offer for sup transport California gasoline which has an RVP exceeding 7.00 pounds per square inch. Section 22 further states that during the additional regulatory control period, gasoline production facilities and i facilities are required to meet the 7.00 psi RVP limit one month before terminals and retailers. The additional regulatory control period also applies to parties when they transport gasoline directly from production or import facility.

Sometimes gasoline will be produced or imported in an air basin that is subject to a regulatory contr period, but will be shipped for sale in another air basin where the control periods have not yet begu Therefore, the regulation exempts gasoline being sold from a production or import facility during an additional regulatory control period where demonstrated precautions have been taken to assure the gasoline will be delivered to service stations in air basins where neither regulatory control period ha begun. It also exempts sales in an air basin where the basic regulatory control period applies if ther been demonstrated precautions assuring the gasoline will only be delivered to service stations whe are not subject to the basic regulatory control period.

The following table lists the air basins, the basic regulatory control periods, and the additional regul control periods for gasoline producers and importers.

Air Basins	Basic Regulatory Control Period	Additional Regulatory Control Period (Producers & Importers)
South Coast and Ventura County	April 1 - October 31	March 1 - March 31
San Diego	April 1 - October 31	March 1 - March 31
South East Desert	April 1 - October 31	March 1 - March 31

Great Basin Valley	May 1 - September 30	April 1 - April 30
San Francisco Bay Area	May 1 - October 31	April 1 - April 30
San Joaquin Valley	May 1 - October 31	April 1 - April 30
Sacramento Valley	May 1 - October 31	April 1 - April 30
Mountain Counties	May 1 - October 31	April 1 - April 30
Lake Tahoe	May 1 - October 31	April 1 - April 30
North Coast	June 1 - September 30	May 1 - May 31
Lake County	June 1 - September 30	May 1 - May 31
Northeast Plateau	June 1 - September 30	May 1 - May 31
North Central Coast	June 1 - October 31	May 1 - May 31
South Central Coast (Except Ventura County)	June 1 - October 31	May 1 - May 31

Be advised that the Air Resources Board Compliance Division routinely samples gasoline and tests vapor pressure and other required specifications. Additionally, it is imperative that all producers, imp blenders, distributors, and haulers ascertain the intended location for use of the fuel they market an transport, and take steps to ensure that all gasoline is sold or supplied according to the requirement regulations.

If you have questions regarding this advisory, please contact Mr. Mark Stover, Manager, Fuels Fiel Enforcement Section at (916) 322-2056.

James R. Ryden, Chief
Enforcement Division
California Air Resources Board
Post Office Box 2815, Sacramento, CA 95812

Advisories

Top of Page

MATERIAL SAFETY DATA SHEET
Revision Date: 09/29/2004

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: Shell™ Hydraulic Oil 46
MSDS NUMBER: 60170E - 3
PRODUCT CODE(S): 65237, 6523700055

MANUFACTURER ADDRESS:SOPUS Products, P.O. Box 4427, Houston, TX. 77210-4427

TELEPHONE NUMBERS
Spill Information: (877) 242-7400
Health Information: (877) 504-9351
MSDS Assistance Number: (877) 276-7285

SECTION 2 PRODUCT/INGREDIENTS

CAS#	CONCENTRATION	INGREDIENTS
		Hydraulic Oil
Blend	90 - 98.99 %weight	Highly refined petroleum oils
Mixture	1 - 2.99 %weight	Additives

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Appearance & Odor: Amber, clear liquid. Mild odor.
Health Hazards: No known immediate health hazards. High-pressure injection under the skin may cause serious damage.
Physical Hazards: No known physical hazards.
NFPA Rating (Health, Fire, Reactivity): 0, 1, 0
Hazard Rating:Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:
Inhalation of vapors (generated at high temperatures only) or oil mist may cause mild irritation of the nose, throat, and respiratory tract.

Eye Irritation:
Lubricating oils are generally considered no more than minimally irritating to the eyes.

Skin Contact:
May cause slight irritation of the skin. If irritation occurs, a temporary burning sensation and minor redness and/or swelling may result. Release of the material during high-pressure applications may result in injection under the skin causing possible extensive tissue damage which is difficult to heal. Other adverse effects not expected from brief skin contact.

Ingestion:

Lubricating oils are generally no more than slightly toxic if swallowed.

Signs and Symptoms:
Irritation as noted above. Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection.

Aggravated Medical Conditions:
Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

For additional health information, refer to section 11.

SECTION 4 FIRST AID MEASURES

Inhalation:
If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:
Remove contaminated clothing and shoes and wipe excess from skin. Flush skin with water, then wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. If material is injected under the skin, transport to the nearest medical facility for additional treatment. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:
Flush with water. If irritation occurs, get medical attention.

Ingestion:
Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical attention. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Note to Physician:
In general, emesis induction is unnecessary in high viscosity, low volatility products such as oils and greases.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point [Method]: 400 °F -440 °F/204.44 °C -226.67 °C [Cleveland Open Cup]

Extinguishing Media:
Material will float and can be re-ignited on surface of water.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures:
May burn although not readily ignitable.

Wear appropriate personal protective equipment when cleaning up spills. Refer to Section 8.

Spill Management:
FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:
CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures:
Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking.

Storage:
Do not store in open or unlabeled containers. Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Container Warnings:
Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Oil mist, mineral	ACGIH TLV	TWA: 5 mg/m3 STEL: 10 mg/m3
Oil mist, mineral	OSHA PEL	TWA: 5 mg/m3

EXPOSURE CONTROLS
Provide adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

PERSONAL PROTECTION
Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation.

Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:
Chemical Goggles, or Safety Glasses

Skin Protection:
Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by:
Neoprene, or Nitrile Rubber

Respiratory Protection:
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:
For Mist: Air Purifying, R or P style NIOSH approved respirator.
For Vapors: Air Purifying, R or P style prefilter & organic cartridge, NIOSH approved respirator. Self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Amber, clear liquid. Mild odor.
Substance Chemical Family: Lubricants
API Gravity: 30 - 32.3

Appearance: Amber, clear liquid.

Flash Point: 400 °F - 440 °F [Cleveland Open Cup]

Pour Point: -10 °F - 0 °F

Specific Gravity: 0.8856

Viscosity: 30 cSt - 100 cSt @ 40 °C

SECTION 10 REACTIVITY AND STABILITY

Stability:
Material is stable under normal conditions.

Conditions to Avoid:
Avoid heat and open flames.

Materials to Avoid:
Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:
Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Ketones, Methacrylate monomers
and other unidentified organic compounds may be formed upon combustion.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity
Dermal LD50 >5.0 g/kg(Rabbit) OSHA: Non-Toxic Based on components(s)
Oral LD50 >5.0 g/kg(Rat) OSHA: Non-Toxic Based on components(s)
Carcinogenicity Classification
Hydraulic Oil
NTP: No IARC: Not Reviewed ACGIH: No OSHA: No

SECTION 12 ECOLOGICAL INFORMATION

Environmental Impact Summary:
There is no ecological data available for this product. However, this product is an oil. It is persistent and does not readily biodegrade. However, it does not bioaccumulate.

SECTION 13 DISPOSAL CONSIDERATIONS

RCRA Information:

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14 TRANSPORT INFORMATION

US Department of Transportation Classification
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule.

International Air Transport Association
Not regulated under IATA rules.

International Maritime Organization Classification

Not regulated under International Maritime Organization rules.

SECTION 15 REGULATORY INFORMATION

FEDERAL REGULATORY STATUS

OSHA Classification:
Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200, because it carries the occupational exposure limit for mineral oil mist.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):
This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):
Immediate Health:NO Delayed Health:NO Fire:NO Pressure:NO Reactivity:NO

SARA Toxic Release Inventory (TRI) (313):
There are no components in this product on the SARA 313 list.

Toxic Substances Control Act (TSCA) Status:
All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:
Component(s) of this material is (are) listed on the Australian AICS, Canadian DSL, Chinese Inventory, European EINECS, Korean Inventory, Philippines PICCS,

State Regulation
The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

SECTION 16 OTHER INFORMATION

Revision#: 3
Revision Date: 09/29/2004
Revisions since last change (discussion): This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-1998). We encourage you to take the opportunity to read the MSDS and review the information contained therein.

SECTION 17 LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODE(S): 65237, 6523700055

Shell™ Hydraulic Oil 46

ATTENTION!

PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.
HIGH-PRESSURE INJECTION UNDER SKIN MAY CAUSE SERIOUS DAMAGE.

Precautionary Measures:
Avoid prolonged or repeated contact with eyes, skin and clothing. Avoid breathing of vapors, fumes, or mist. Use only with adequate ventilation. Wash thoroughly after handling.

FIRST AID

Inhalation: If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
Skin Contact: Remove contaminated clothing and shoes and wipe excess from skin. Flush skin with water, then wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. If material is injected under the skin, transport to the nearest medical facility for additional treatment. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
Eye Contact: Flush with water. If irritation occurs, get medical attention.
Ingestion: Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth.

FIRE

In case of fire, Material will float and can be re-ignited on surface of water.

SPILL OR LEAK
Dike and contain spill.
FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Highly refined petroleum oils, Blend; Additives, Mixture

NFPA Rating (Health, Fire, Reactivity): 0, 1, 0

TRANSPORTATION
US Department of Transportation Classification
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule.

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address

SOPUS Products
P.O. Box 4427
Houston, TX 77210-4427

ADMINISTRATIVE INFORMATION
MANUFACTURER ADDRESS: SOPUS Products, P.O. Box 4427, Houston, TX. 77210-4427
Company Product Stewardship & Regulatory Compliance Contact: Timothy W Childs
Phone Number: (713) 241-1524

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT : IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF SOPUS PRODUCTS AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF SOPUS PRODUCTS.

43309-11719-100R-09/29/2004

MATERIAL SAFETY DATA SHEET
EQUILON MSDS: 67422E-05 01/04/99

SHELL INK OIL 211
TELEPHONE NUMBER:
24 HOUR EMERGENCY ASSISTANCE
EQUIVA SERVICES: 877-276-7283
CHEMTREC: 800-424-9300
GENERAL MSDS ASSISTANCE
877-276-7285

NAME AND ADDRESS
EQUILON ENTERPRISES LLC
PRODUCT STEWARDSHIP
P.O. BOX 674414
HOUSTON, TX 77267-4414

SECTION I NAME

PRODUCT: SHELL INK OIL 211
CHEM NAME: MIXTURE (SEE SECTION II-A)
CHEM FAMILY: PETROLEUM HYDROCARBON; BASE STOCK
SHELL CODE: 86509
HEALTH HAZARD: 1 FIRE HAZARD: 1 REACTIVITY: 0

SECTION II-A PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NO.	PERCENT
P	SHELL INK OIL 211		
1	HIGHLY REFINED PETROLEUM OIL	MIXTURE*	100

* CONTAINS: 64742-52-5, 64742-53-6
NFPA HAZARD RATING: HEALTH 0 FIRE 1 REACTIVITY 0

SECTION II-B ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE
1	>5.0 G/KG (RAT)*	>2.0 G/KG (RABBIT)*	NOT AVAILABLE

* BASED ON API STUDIES.

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT: LUBRICATING OILS ARE GENERALLY CONSIDERED NO MORE THAN MINIMALLY IRRITATING TO THE EYES.

SKIN CONTACT: LUBRICATING OILS ARE GENERALLY CONSIDERED NO MORE THAN MILDLY IRRITATING TO THE SKIN. PROLONGED OR REPEATED CONTACT MAY CAUSE VARIOUS SKIN DISORDERS SUCH AS DERMATITIS, FOLLICULITIS OR OIL ACNE.

INHALATION: NOT EXPECTED TO BE A RELEVANT ROUTE OF EXPOSURE, HOWEVER, UNDER HIGH TEMPERATURE CONDITIONS, VAPORS IRRITATING TO THE NOSE, THROAT AND UPPER RESPIRATORY TRACT MAY BE PRODUCED.

INGESTION: LUBRICATING OILS ARE GENERALLY CONSIDERED NO MORE THAN SLIGHTLY TOXIC IF SWALLOWED.

SIGNS AND SYMPTOMS: IRRITATION AS NOTED ABOVE.

AGGRAVATED MEDICAL CONDITIONS:
PREEXISTING SKIN AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS:
THIS PRODUCT AND ITS COMPONENTS ARE NOT CLASSIFIED AS CARCINOGENS BY INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC), NATIONAL TOXICOLOGY PROGRAM (NTP) OR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

COMP NO.	OSHA PEL/TWA	PEL/CEILING	ACGIH TLV/TWA	TLV/STEL	OTHER
P	5 MG/M3*	NONE	5 MG/M3*	10 MG/M3*	

*OIL MIST, MINERAL

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: FLUSH EYES WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING AND WIPE EXCESS OFF. WASH WITH SOAP AND WATER OR A WATERLESS HAND CLEANER FOLLOWED BY SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION: REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. IN GENERAL NO TREATMENT IS NECESSARY UNLESS LARGE QUANTITIES OF PRODUCT ARE INGESTED. HOWEVER, GET MEDICAL ADVICE.

NOTE TO PHYSICIAN: IN GENERAL, EMESIS INDUCTION IS UNNECESSARY IN HIGH VISCOSITY, LOW VOLATILITY PRODUCTS, I.E., MOST OILS AND GREASES.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

NONE IDENTIFIED.

SECTION VII PHYSICAL DATA

BOILING POINT (DEG F):	SPECFIC GRAVITY (H2O = 1):	VAPOR PRESSURE (MM HG):
>550	0.8984	<0.1
MELTING POINT (DEG F):	SOLUBILITY IN WATER:	VAPOR DENSITY (AIR = 1):
+10 (POUR POINT)	NEGLIGIBLE	<0.1
		VISCOSITY: 20-22 (CST @ 104 DEG F)

EVAPORATION RATE (NORMAL BUTYL ACETATE = 1):NOT AVAILABLE
APPEARANCE AND ODOR:WHITE LIQUID. SLIGHT HYDROCARBON ODOR.
PHYS/CHEM PROPERTIES: SEE ABOVE FOR DETAILS

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD: 320 DEG F (PMCC)
FLAMMABLE LIMITS/PERCENT VOLUME IN AIR: LOWER: N/AV HIGHER: N/AV
EXTINGUISHING MEDIA:
USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.
SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS:
MATERIAL WILL NOT BURN UNLESS PREHEATED. DO NOT ENTER CONFINED FIRE-SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE-PRESSURE NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE IDENTIFIED

SECTION IX REACTIVITY

STABLITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, OPEN FLAMES AND OXIDIZING MATERIALS.
HAZARDOUS DECOMPOSITION PRODUCTS:
THERMAL DECOMPOSITION PRODUCTS ARE HIGHLY DEPENDENT ON THE COMBUSTION

CONDITIONS. A COMPLEX MIXTURE OF AIRBORNE SOLID, LIQUID, PARTICULATES AND GASES WILL EVOLVE WHEN THIS MATERIAL UNDERGOES PYROLYSIS OR COMBUSTION. CARBON MONOXIDE AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED UPON COMBUSTION.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION:
IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SECTION IV) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS AND PARTICULATES.

PROTECTIVE CLOTHING
WEAR CHEMICAL RESISTANT GLOVES AND OTHER PROTECTIVE CLOTHING AS REQUIRED TO MINIMIZE PROLONGED SKIN CONTACT. NO SPECIAL EYE PROTECTION IS ROUTINELY NECESSARY. TEST DATA FROM PUBLISHED LITERATURE AND/OR CLOTHING MANUFACTURERS INDICATE THE BEST PROTECTION IS PROVIDED BY NITRILE GLOVES.

ADDITIONAL PROTECTIVE MEASURES:
NONE IDENTIFIED

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES:
MAY BURN ALTHOUGH NOT READILY IGNITABLE. USE CAUTIOUS JUDGMENT WHEN CLEANING UP LARGE SPILLS. *** LARGE SPILLS *** WEAR RESPIRATOR AND PROTECTIVE CLOTHING AS APPROPRIATE. SHUT OFF SOURCE OF LEAK IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACCUM TRUCKS OR PUMP TO STORAGE SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIALS; DISPOSE OF PROPERLY. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND DISPOSE OF PROPERLY.

SECTION XII SPECIAL PRECAUTIONS

MINIMIZE PROLONGED SKIN CONTACT. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. PROPERLY DISPOSE OF CONTAMINATED LEATHER ARTICLES, INCLUDING SHOES, THAT CANNOT BE DECONTAMINATED.
STORE IN A COOL, DRY PLACE WITH ADEQUATE VENTILLATION. KEEP AWAY FROM OPEN FLAMES AND HIGH TEMPERATURES.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
NOT HAZARDOUS BY D.O.T. REGULATIONS
DOT PROPER SHIPPING NAME: NOT APPLICABLE
OTHER REQUIREMENTS:FOR BARGE SHIPMENTS: USE CARGO INFORMATION CARD SCM 68220, MVI OIL.

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA TSCA INVENTORY OF CHEMICAL SUBSTANCES.
PROTECTION OF STRATOSPHERIC OZONE (PURSUANT TO SECTION 611 OF THE CLEAN AIR ACT AMENDMENTS OF 1990): PER 40 CFR PART 82, THIS PRODUCT DOES NOT CONTAIN NOR WAS IT DIRECTLY MANUFACTURED WITH ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCES.
IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE ATTACHED ENVIRONMENTAL DATA SHEET (EDS) SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV STATE REGULATORY INFORMATION

THE FOLLOWING CHEMICALS ARE SPECIFICALLY LISTED BY INDIVIDUAL STATES; OTHER PROD

UCT SPECIFIC HEALTH AND SAFETY DATA IN OTHER SECTIONS OF THE MSDS MAY ALSO BE AP
PLICABLE FOR STATE REQUIREMENTS. FOR DETAILS ON YOUR REGULATORY REQUIREMENTS YO
U SHOULD CONTACT THE APPROPRIATE AGENCY IN YOUR STATE.

STATE LISTED COMPONENT	CAS NO	PERCENT	STATE CODE
HYDROTREATED LIGHT NAPHTHENIC DISTILLATE	64742-53-6	45-50	MA

CA = CALIFORNIA HAZ. SUBST. LIST; CA65C, CA65R, CA65C/R = CALIFORNIA SAFE DRINKING WATER AND TOXICS ENFORCEMENT ACT OF 1986 OR PROPOSITION 65 LIST; CT = CONNECTICUT TOXIC. SUBST. LIST; FL = FLORIDA SUBST. LIST; IL = ILLINOIS TOX. SUBST. LIST; LA = LOUISIANA HAZ. SUBST. LIST; MA = MASSACHUSETTS SUBST. LIST; ME = MAINE HAZ. SUBST. LIST; MN = MINNESOTA HAZ. SUBST. LIST; NJ = NEW JERSEY HAZ. SUBST. LIST; PA = PENNSYLVANIA HAZ. SUBST. LIST; RI = RHODE ISLAND HAZ. SUBST. LIST.

SECTION XVI SPECIAL NOTES

MSDS REVISED IN SECTION II-A TO SHOW REVISED COMPOSITION, SECTION III TO REVISE HEALTH INFORMATION, SECTION XIV TO REVISE OTHER REGULATORY CONTROLS, SECTION XV TO ADD STATES AND EDS SECTION SECTION I. THE OSHA HAZARD EVALUATION AND REGULATORY STATUS OF THE PRODUCT HAVE NOT CHANGED.

ENVIRONMENTAL DATA SHEET
EQUILON EDS: 67422E

SHELL INK OIL 211
TELEPHONE NUMBER:
24 HOUR EMERGENCY ASSISTANCE
EQUIVA SERVICES: 877-276-7283
CHEMTREC: 800-424-9300

GENERAL MSDS ASSISTANCE
877-276-7285

NAME AND ADDRESS
EQUILON ENTERPRISES
PRODUCT STEWARDSHIP
P.O. BOX 674414
HOUSTON, TX 77267-4414

PRODUCT CODE: 86509

SECTION I PRODUCT COMPOSITION

NO.	COMPOSITION	CAS	PERCENT
P	SHELL INK OIL 211		
1	HIGHLY REFINED PETROLUEM OIL	MIXTURE*	100

* CONTAINS: 64742-52-5, 64742-53-6

SECTION II SARA TITLE III INFORMATION

NO.	EHS RQ (*1)	EHS TPQ (*2)	SEC-313 (*3)	313 CATEGORY (*4)	311/312 CATEGORY (*5)

BASED ON THE DATA AVAILABLE THIS PRODUCT IS NOT REGULATED BY SARA, TITLE III

*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*3 = TOXIC CHEMICAL, SEC 313
*4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
*5 = CATEGORY (FOR AGGREGATE REPORTING REQUIREMENTS UNDER SARA 311, 312)
HEALTH: H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD
H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL: P-3 = FIRE HAZARD
P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
P-5 = REACTIVE HAZARD

SECTION III ENVIRONMENTAL RELEASE INFORMATION

THIS PRODUCT IS COVERED BY EPA'S COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA) PETROLEUM EXCLUSION. THEREFORE, RELEASES TO AIR, LAND, OR WATER ARE NOT REPORTABLE UNDER CERCLA ("SUPERFUND"). HOWEVER, UNDER SECTION 311 OF EPA'S CLEAN WATER ACT (CWA), THIS PRODUCT IS CONSIDERED AN OIL. AS SUCH, SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.
THIS PRODUCT IS AN OIL UNDER 49 CFR (DOT) PART 130. IF SHIPPED BY RAIL OR HIGHWAY IN A TANK WITH A CAPACITY OF 3,500 GALLONS OR MORE, IT IS SUBJECT TO THE REQUIREMENTS OF PART 130. MIXTURES OR SOLUTIONS IN WHICH THIS PRODUCT IS PRESENT AT 10% OR MORE MAY ALSO BE SUBJECT TO THIS RULE.

SECTION IV RCRA INFORMATION

IF THIS PRODUCT BECOMES A WASTE, IT WOULD NOT BE A HAZARDOUS WASTE BY RCRA CRITERIA (40 CFR 261). PLACE IN AN APPROPRIATE DISPOSAL FACILITY IN COMPLIANCE WITH LOCAL REGULATIONS.

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF EQUIVA SERVICES, LLC AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF EQUIVA SERVICES, LLC.

KAREN G. HAYNES

EQUIVA SERVICES LLC
P.O. BOX 674414
HOUSTON, TX 77267-4414

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(877) 276-7285
FOR EMERGENCY ASSISTANCE PLEASE CALL
EQUIVA SERVICES LLC: (877) 276-7283
CHEMTREC: (800) 424-9300
}

MSDS Number: **M7700** * * * * * *Effective Date:* ***08/10/04*** * * * * * *Supercedes:* ***11/02/01***

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS J.T.Baker

24 Hour Emergency Telephone 908-859-2151
CHEMTREC 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance

MINERAL OIL

1. Product Identification

Synonyms: Paraffin oil; liquid petrolatum; White Mineral Oil; Nujol
CAS No.: 8012-95-1
Molecular Weight: Not applicable.
Chemical Formula: Not applicable.
Product Codes:
J.T. Baker: 2705
Mallinckrodt: 6357, 6358

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Oil, Mineral	8012-95-1	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 1 - Slight
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:
Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Inhalation of mist or vapor may produce aspiration pneumonia.
Ingestion:
Material is a cathartic and can cause serious diarrhea. Nausea and vomiting may also occur and possibly abdominal cramping. Aspiration of mineral oil into the lungs can cause chemical pneumonia.
Skin Contact:
Prolonged contact may cause irritation; occasionally dermatitis due to hypersensitivity occurs.
Eye Contact:
Mists or fumes can irritate the eyes. Can cause discomfort similar to motor oil.
Chronic Exposure:
Prolonged or repeated skin exposure may cause dermatitis. Highly refined mineral oils are not classified as human carcinogens. However, related forms (untreated and mildly-treated oils) are listed as human carcinogens by both NTP and IARC.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. Aspiration hazard.
Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Flash point: 135C (275F) CC
Autoignition temperature: 260 - 370C (500 - 698F)
Combustible Liquid and Vapor!
Explosion:
Not considered to be an explosion hazard.
Fire Extinguishing Media:
Water spray, dry chemical, alcohol foam, or carbon dioxide. Water or foam may cause frothing. Do not allow water runoff to enter sewers or waterways.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Mineral Oil; Misted1:
-OSHA Permissible Exposure Limit (PEL): 5 mg/m3
-ACGIH Threshold Limit Value (TLV):
5 mg/m3 (TWA) 10 mg/m3 (STEL)
(1as sampled by method that does not collect vapor)

(1Refers to airborne mist of mineral oil)

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type P95 or R95 filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type P100 or R100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. Please note that N filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear oily liquid.
Odor:
Odorless.
Solubility:
Insoluble in water.
Specific Gravity:
Heavy: 0.845 to 0.905 Light: 0.818 to 0.880
pH:
No information found.
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
260 - 330C (500 - 626F)
Melting Point:
No information found.
Vapor Density (Air=1):
ca. 9
Vapor Pressure (mm Hg):
< 0.5
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. May solidify at room temperature.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizers.
Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Irritation Data, rabbit (Std Draize): skin= 100 mg/24H, mild; eye= 500 mg, moderate. Investigated as a tumorigen.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Oil, Mineral (8012-95-1)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Oil, Mineral (8012-95-1)	Yes	Yes	No	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Oil, Mineral (8012-95-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Oil, Mineral (8012-95-1)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Oil, Mineral (8012-95-1)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: None allocated.
Poison Schedule: S5
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **0** Flammability: **1** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR.
Label Precautions:
Avoid breathing mist.
Keep container closed.
Use only with adequate ventilation.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

Keep away from heat, sparks and flame.

Label First Aid:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

BUEHLER LTD -- MINERAL SPIRITS, 40-8140-128 -- 8010-00N026906

MSDS Safety Information

FSC: 8010
MSDS Date: 03/09/1990
MSDS Num: BMDFT
LIIN: 00N026906
Tech Review: 07/10/1995
Product ID: MINERAL SPIRITS, 40-8140-128
Responsible Party
Cage: 09410
Name: BUEHLER LTD
Address: 41 WAUKEGAN RD
City: LAKE BLUFF IL 60044 US
Info Phone Number: 708-295-6500
Emergency Phone Number: 708-295-6500
Preparer's Name: TOM DERAM
Review Ind: N

Contractor Summary

Cage: 09410
Name: BUEHLER LTD.
Address: 41 WAUKEGAN RD.
City: LAKE BLUFF IL 60044-1687 US
Phone: 847-295-8500

Ingredients

Cas: 8002-05-9
RTECS #: SE7449000
Name: PETROLEUM ;(PETROLEUM DISTILLATES)
% by Wt: 100
OSHA PEL: 400 PPM (MFR)
Ozone Depleting Chemical: N

Health Hazards Data

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry Inds - Inhalation: YES
Skin: NO
Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: ACUTE/CHRONIC: NONE EXPECTED WHEN GOOD HYGENIC PRACTICES ARE EMPLOYED.
Explanation Of Carcinogenicity: NOT RELEVANT
Signs And Symptions Of Overexposure: EFFECTS OF OVER EXPOSURE: BREATHING HIGH VAPOR CONCENTRATIONS MAY RESULT IN MILD DEPRESSION,DIZZINESS, HEADACHE, RESPIRATORY IRRITATION, CONVULSIONS OR LOSS OF CONSCIOUSNESS. CONTACT MAY IRRITATE EYES OR SKIN.
Medical Cond Aggravated By Exposure: NONE SPECIFIED BY MANUFACTURER.
First Aid: INHAL: IF OVERCOME, MOVE PATIENT TO FRESH AIR AND CALL MD. APPLY ARTF RESP IF NECESSARY. SKIN/EYE: FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, GET MED ATTN. INGEST: DO NOT INDUCE VOMI TING. CALL MD.

Handling and Disposal

Spill Release Procedures: REMOVE IGNITION SOURCES, AVOID BREATHING VAPORS

OR CONTACT WITH LIQUID. USE ABSORBANT MATERIAL FOR SMALL SPILLS. KEEP SPILLED MATERIAL OUT OF SEWERS, DITCHES AND BODIES OF WATER.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Methods: INCINERATE UNDER SAFE CONDITIONS DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Handling And Storage Precautions: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. KEEP CONTAINERS CLOSED WHEN NOT IN USE.
Other Precautions: AVOID EYE CONTACT AND PROLONGED OR REPEATED CONTACT WITH SKIN.

Fire and Explosion Hazard Information

Flash Point Method: TCC
Flash Point Text: 110F,43C
Extinguishing Media: CO*2 FOAM, DRY CHEMICAL, WATER SPRAY. DO NOT USE DIRECT WATER STREAM.
Fire Fighting Procedures: USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). COOL EXPOSED CONTAINERS WITH WATER.
Unusual Fire/Explosion Hazard: COMBUSTIBLE LIQUID - CLASS II. DO NOT STORE OR MIX WITH STRONG OXIDANTS.

Control Measures

Respiratory Protection: APPROPRIATE NIOSH/MSHA APPROVED VAPOR CANISTER, SCBA OR SUPPLIED AIR HOSE MASK IF NEEDED.
Ventilation: LOCAL EXHAUST: TO KEEP WORK ROOM CONCENTRATION BELOW SAFETY AND HEALTH REQUIREMENTS. USE EXPLOSION PROOF EQUIPMENT.
Protective Gloves: RUBBER OR NEOPRENE GLOVES.
Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).
Other Protective Equipment: IMPERVIOUS CLOTHING OR BOOTS IF NEEDED.
Work Hygienic Practices: GOOD PERSONAL HYGIENE TO BE FOLLOWED AT ALL TIMES.
Supplemental Safety and Health: NONE SPECIFIED BY MANUFACTURER.

Physical/Chemical Properties

HCC: F4
B.P. Text: 328F,164C
Vapor Pres: 0.4 @ 68F
Vapor Density: HVR/AIR
Spec Gravity: 0.81
Evaporation Rate & Reference: SLOWER THAN ETHER
Solubility in Water: NEGLIGIBLE
Appearance and Odor: CLEAR, WATER WHITE LIQUID, MILD CHARACTERISTIC ODOR.
Percent Volatiles by Volume: 100

Reactivity Data

Stability Indicator: YES
Stability Condition To Avoid: HEAT, SPARKS AND OPEN FLAME.
Materials To Avoid: STRONG OXIDIZING AGENTS LIKE LIQUID CHLORINE OR CONCENTRATED OXYGEN.
Hazardous Decomposition Products: THERMAL DECOMPOSITION MAY YIELD CO.
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: HEAT, SPARKS AND OPEN FLAME.

Toxicological Information

Ecological Information

MSDS Transport Information

Regulatory Information

Other Information

Transportation Information

Responsible Party Cage: 09410
Trans ID NO: 31472
Product ID: MINERAL SPIRITS, 40-8140-128
MSDS Prepared Date: 03/09/1990
Review Date: 03/20/1992
Article W/O MSDS: N
Multiple KIT Number: 0
Unit Of Issue: NK
Container QTY: NK

Detail DOT Information

DOT PSN Code: GJL
Symbols: G
DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
Hazard Class: 3
UN ID Num: UN1993
DOT Packaging Group: III
Label: FLAMMABLE LIQUID
Special Provision: B1,B52,T7,T30
Packaging Exception: 150
Non Bulk Pack: 203
Bulk Pack: 242
Max Qty Pass: 60 L
Max Qty Cargo: 220 L
Vessel Stow Req: A

Detail IMO Information

IMO PSN Code: HIA
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. o
IMDG Page Number: 3345
UN Number: 1993
UN Hazard Class: 3.3
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 3-07
MED First Aid Guide NUM: T

Detail IATA Information

IATA UN ID Num: 1993
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
UN Packing Group: III
Packing Note Passenger: 309
Max Quant Pass: 60L
Max Quant Cargo: 220L
Packaging Note Cargo: 310

Detail AFI Information
==========
AFI Symbols: *
AFI Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
AFI Hazard Class: 3
AFI UN ID NUM: UN1993
AFI Packing Group: III
Special Provisions: P5
Back Pack Reference: A7.3
==========
HAZCOM Label
==========
Product ID: MINERAL SPIRITS, 40-8140-128
Cage: 09410
Company Name: BUEHLER LTD.
Street: 41 WAUKEGAN RD.
City: LAKE BLUFF IL
Zipcode: 60044-1687 US
Health Emergency Phone: 708-295-6500
Date Of Label Review: 02/21/1992
Label Date: 02/21/1992
Chronic Hazard IND: N
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: WARNING
Respiratory Protection IND: YES
Health Hazard: Slight
Contact Hazard: Slight
Fire Hazard: Moderate
Reactivity Hazard: None
Hazard And Precautions: COMBUSTIBLE LIQUID, CLASS II. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME. DO NOT MIX OR STORE WITH STRONG OXIDIZERS. ACUTE: CONTACT MAY IRRITATE EYES OR SKIN. BREATHING HIGH VAPOR CONCENTRATIONS MAY RESU LT IN MILD DEPRESSION, DIZZINESS, HEADACHE, RESPIRATORY IRRITATION, CONVULSIONS, OR LOSS OF CONSCIOUSNESS. CHRONIC: NONE SPECIFIED BY MANUFACTURER.
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LANCASTER PAINT -- VM-14 VMP NAPTHA UN 1256, 483-1714 -- 9150-00N053511

MSDS Safety Information

FSC: 9150
MSDS Date: 10/18/1993
MSDS Num: BVVPK
LIIN: 00N053511
Tech Review: 10/05/1994
Product ID: VM-14 VMP NAPTHA UN 1256, 483-1714
Responsible Party
Cage: LANCA
Name: LANCASTER PAINT
Box: 325
City: PAULINE SC 29374 US
Info Phone Number: 803-775-6351
Emergency Phone Number: 803-775-6351
Review Ind: N

Contractor Summary

Cage: LANCA
Name: LANCASTER PAINT
Box: 325
City: PAULINE SC 29374 US
Phone: 803-775-6351

Ingredients

Cas: 64742-89-8
Name: VM & P NAPHTHA; (ALIPHATIC HYDROCARBON). VP:12 @ 20C.
OSHA PEL: 400 PPM (MFR)
ACGIH TLV: 400 PPM (MFR)
Ozone Depleting Chemical: N

Name: VOLATILE ORGANIC COMPONENT (CALCULATED): 6.15 LB/GAL (LESS WATER & NPRS); 738 G/L (LESS WATER).
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Name: SUPDAT:CNTNRS FOR DISP. PVNT CONTAM OF SEWERS, STREAMS & GROUNDWATER W/SPILLED MATL/USED ABSORB.

Name: RESP PROT:RESTRICTED VENT AREAS NIOSH/MSHA APPRVD CHEM CARTRIDGE RESP MAY BE REQD. UNDER CERTAIN CNDTNS, SUCH AS (ING 5)

Name: ING 4:SPRAYING, MECH PREFILTER MAY ALSO BE REQD. IN CONFINED AREAS, USE NIOSH/MSHA APPRVD AIR SUPPLIED RESP. IF (ING 6)

Name: ING 5:TLV'S LISTED ARE EXCEEDED USE PROPERLY FITTED NIOSH/MSHA APPRVD RESP W/APPROP PROT FACTOR. REFER TO OSHA (ING 7)

Name: ING 6:29 CFR 1910.134 "RESP PROT" & "RESP PROT MANUAL & GUIDELINE, AMERCIAN INDUSTRIAL HYGIENE ASSOC."

Name: VENT:MAY BE LISTED. REFER TO INDUS VENT - MANUAL FOR REC PRACTICE - ACGIH.

Health Hazards Data

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry Inds - Inhalation: YES

Skin: NO
Ingestion: NO
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: ACUTE:INGEST:CAN CAUSE GI IRRIT, NAUS & VOMIT. ASPIR OF MATL INTO LUNGS MAY CAUSE CHEM PNEUM WHICH CAN BE FATAL. INHAL:MAY CAUSE NOSE/THROAT IRRIT. HIGH CONCS MAY CAUSE ACUTE CNS DEPRESS CHARACT BY HD CHS, DIZZ, NAUS & CONFUSN. EYE:MAY CAUSE IRRIT. SKIN:MAY CAUSE DEFAT & IRRIT. CHRONIC:RPTS HAVE ASSOC (EFTS OF OVEREXP)
Explanation Of Carcinogenicity: NOT RELEVANT
Signs And Symptions Of Overexposure: HLTH HAZ:PRLNG & RPTD OCCUP OVEREXP TO SOLVS W/PERM BRAIN & NERV SYS DMG. INTENTIONAL MISUSE BY DELIB CONCENTRATING & INHALING CONTENTS MAY BE HARMFUL/FATAL.
Medical Cond Aggravated By Exposure: NONE CURRENTLY KNOWN.
First Aid: SKIN:FLUSH W/COPIOUS AMTS OF WATER. CALL MD (FP N). INGEST:DO NOT INDUCE VOMIT. CALL POIS CTL CTR, HOSPITAL EMER ROOM/MD IMMED. INHAL:REMOVE TO FRESH AIR IMMED. IF BRTHG HAS STOPPED, GIVE ARTF RESP. K EEP WARM & QUIET. GET MED ATTN IMMED. EYE:FLUSH LG AMTS OF WATER, LIFTING UPPER & LOWER LIDS OCCAS. CONTINUE FOR AT LST 15 MINS. GET MED ATTN. NOTES TO MD:ANY TREATMENT THAT MIGHT BE REQD FOR (SUPDAT)

Handling and Disposal

Spill Release Procedures: KEEP SPECTATORS AWAY. ELIM ALL IGNIT SOURCES (FLAMES, HOT SURFS & SOURCES OF ELEC, STATIC/FRICTIONAL SPKS). DIKE & CONTAIN SPILL W/INERT MATL (E.G. SAND, EARTH). TRANSFER LIQS TO COVERED METAL CNTNRS FOR RECOVERY/DISP, OR REMOVE W/INERT (SUPP DATA)
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Methods: DISPOSE I/A/W FEDERAL, STATE & LOCAL REGULATIONS. THIS PROD, IF DISCARDED DIRECTLY WOULD BE CLASSIFIED AS HAZ WASTE BASED ON ITS IGNITABILITY CHARACT, I.E. HAS FLASH POINT OF 140F(60C) OR LESS. PROPER RCRA CLASSIFICATION WOULD BE D001.
Handling And Storage Precautions: DO NOT STORE >115F(46C). STORE LG QTYS IN COMPLIANCE W/OSHA 29CFR1910.106. DO NOT TAKE INTERNALLY. CLOSE CNTNR AFTER EACH USE.
Other Precautions: EMTPY CNTNRS MUST NOT BE WASHED & RE-USED FOR ANY PURPOSE. CNTNRS SHOULD BE GROUNDED & BONDED TO RECEIVING CNTNR. DO NOT WELD, BRAZE/CUT ON EMPTY CNTNR. NEVER USE PRESSURE TO EMPTY. DRUM IS NOT A PRES SURE VESSEL.

Fire and Explosion Hazard Information

Flash Point Text: 45.0F,7.2C
Extinguishing Media: USE NFPA CLASS B FIRE EXTINGS (CARBON DIOXIDE, ALL PURPOSE DRY CHEM/ALCOHOL FOAM) DESIGNED TO EXTING FLAMM LIQ (SUPDAT)
Fire Fighting Procedures: USE NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP (FP N). WATER MAY BE INEFT, BUT MAY BE USED TO COOL EXPOS CNTNRS TO PVNT PRESS BUILD-UP & POSS AUTO-IGNIT/ (SUPDAT)
Unusual Fire/Explosion Hazard: DURING EMERGENCY CNDTNS, OVEREXP TO DECOMP PRODS MAY CAUSE HLTH HAZ. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT, OBTAIN MEDICAL ATTENTION. WARNING:FLAMMABLE.

Control Measures

Respiratory Protection: PROPER SELECTION OF RESP PROT DEPENDS UPON MANY FACTORS INCL DURATION LEVEL OF EXPOS & CNDTNS OF USE. IN GEN, EXPOS TO ORGANIC CHEMS SUCH AS THOSE CNTND IN THIS PROD MAY NOT REQ USE OF RESP PROT IF US ED IN WELL VENTILATED AREAS. IN (ING 4)
Ventilation: PROVIDE LOC EXHST VENT IN SUFFICIENT VOL & PATTERN SO AS TO MAINTAIN EXPOS BELOW NUISANCE DUST LMIS & PELS WHICH (ING 8)
Protective Gloves: SOLVENT IMPERMEABLE GLOVES.

Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: NOT LIKELY TO BE NEEDED.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health: EXTING MEDIA:FIRES. POLYMER FOAM IS PREF FOR LG FIRES. FIRE FIGHT PROC:EXPLO WHEN EXPOS TO EXTREME HEAT. IF WATER IS USED, FOG NOZZ ARE PREF. FIRST AID PROC:OVEREXP SHOULD BE DIRECTED AT CONTROL OF SY MPS & CLINICAL CNDTNS. SPILL PROC:ABSORB. USE ONLY NON-SPARKING TOOLS. PLACE ABSORB DIKING MATLS IN COVERED METAL(ING 3)

Physical/Chemical Properties

B.P. Text: >240F,>116C
Vapor Pres: SEE ING
Vapor Density: HVR/AIR
Spec Gravity: 0.8
Evaporation Rate & Reference: SLOWER THAN DIETHYL ETHER
Appearance and Odor: NONE SPECIFIED BY MANUFACTURER.
Percent Volatiles by Volume: 100

Reactivity Data

Stability Indicator: YES
Stability Condition To Avoid: AVOID EXCESSIVE HEAT (>115F(46C)) & SOURCES OF IGNITION.
Materials To Avoid: STRONG ACIDS OR ALKALINE MATERIALS.
Hazardous Decomposition Products: BURNING, INCLUDING WHEN HEATED BY WELDING/CUTTING, WILL PRODUCE SMOKE, CARBON MONOXIDE & CARBON DIOXIDE.
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: NOT RELEVANT

Toxicological Information

Ecological Information

MSDS Transport Information

Regulatory Information

Other Information

Transportation Information

Responsible Party Cage: LANCA
Trans ID NO: 42605
Product ID: VM-14 VMP NAPTHA UN 1256, 483-1714
MSDS Prepared Date: 10/18/1993
Review Date: 10/04/1994
Article W/O MSDS: N
Multiple KIT Number: 0
Unit Of Issue: NK
Container QTY: NK

Detail DOT Information

DOT Proper Shipping Name: SEE ADDITIONAL DATA FIELD IN FOR FURTHER INFORMATION

Detail IMO Information

IMO Proper Shipping Name: SEE ADDITIONAL DATA FIELD IN FOR FURTHER INFORMATION

Detail IATA Information

IATA Proper Shipping Name: SEE ADDITIONAL DATA FIELD IN FOR FURTHER INFORMATION

Detail AFI Information

AFI Proper Shipping Name: SEE ADDITIONAL DATA FIELD IN FOR FURTHER INFORMATION

HAZCOM Label

Product ID: VM-14 VMP NAPTHA UN 1256, 483-1714
Cage: LANCA
Company Name: LANCASTER PAINT
PO Box: 325
City: PAULINE SC
Zipcode: 29374 US
Health Emergency Phone: 803-775-6351
Date Of Label Review: 10/05/1994
Label Date: 10/05/1994
Chronic Hazard IND: Y
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: DANGER
Respiratory Protection IND: YES
Health Hazard: Moderate
Contact Hazard: Slight
Fire Hazard: Severe
Reactivity Hazard: None
Hazard And Precautions: EXTREMELY FLAMMABLE. ACUTE:INGEST:CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA & VOMITING. ASPIRATION OF MATERIAL INTO LUNGS MAY CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL. INHAL:MAY CAUSE NOSE OR THROAT IRRITATION. HIGH CONCENTRATIONSMAY CAUSE ACUTE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHES, DIZZINESS, NAUSEA & CONFUSION. EYE:MAY CAUSE IRRITATION. SKIN:MAY CAUSE DEFATTING & IRRITATION. CHRONIC:REPORTS HAVE ASSOCIATED PROLONGED & REPEATED OVEREXPOSURETO SOLVENTS W/PERMANENT BRAIN & NERVOUS SYSTEM DAMAGE.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United States of America and disclaims all liability for such use. Any person utilizing this instruction who is not a military or civilian employee of the United States of America should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation regardless of similarity to a corresponding Department of Defense or other government situation.

BROOKTRONICS ENGINEERING CORP -- BEC 369 NICKEL SULFAMATE -- 6850-01-292-9738

MSDS Safety Information

FSC: 6850
NIIN: 01-292-9738
MSDS Date: 11/20/1998
MSDS Num: CJLNQ
Tech Review: 09/05/1999
Product ID: BEC 369 NICKEL SULFAMATE
MFN: 03
Responsible Party
Cage: 21468
Name: BROOKTRONICS ENGINEERING CORP
Address: 28231 AVE CROCKER
City: VALENCIA CA 91355 US
Info Phone Number: 805-294-1195
Emergency Phone Number: 800-451-8346
Resp. Party Other MSDS No.: 369-02
Proprietary Ind: Y

Contractor Summary

Cage: 21468
Name: BROOKTRONICS ENGINEERING CORP
Address: 28231 AVE CROCKER
City: VALENCIA CA 91355 US
Phone: 805-294-1195
Cage: 0PHG7
Name: UNITED PROCUREMENT
Address: 3655 RUFFIN RD SUITE 230
City: SAN DIEGO CA 92123 US
Phone: 619-467-9880
Contract Number: SP0450-99-M-ND66

Item Description Information

Item Manager: S9G
Item Name: PLATING SOLUTION,AERONIKL 250
Specification Number: NONE
Type/Grade/Class: NONE
Unit of Issue: GL
UI Container Qty: 0
Type of Container: PLASTIC BOTTL

Ingredients

Name: *** PROPRIETARY ***

Health Hazards Data

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry Inds - Inhalation: NO
Skin: YES
Ingestion: NO
Effects of Exposure: EYES-SEVERE IRRITATION OF MUCOUS MEMBRANES AND SENSITIVE TISSUE. SKIN-MINOR IRRITATION OF SKIN. BREATHING-COUGHING, IRRITATION OF MUCOUS MEMBRANES. INGESTED-IRRIGATION OF DIGESTIVE TRACT, NAUSEA, VOMI TING.
Explanation Of Carcinogenicity: NONE SPECIFIED BY MANUFACTURER.
Signs And Symptions Of Overexposure: EYES-SEVERE IRRITATION. SKIN-MINOR

IRRITATION. BREATHING-COUGHING, IRRITATION OF MUCOUS MEMBRANES.
INGESTED-IRRITATION OF DIGESTIVE TRACT, NAUSEA, VOMITING.
Medical Cond Aggravated By Exposure: NONE SPECIFIED BY MANUFACTURER.
First Aid: SKIN-THOROUGHLY WASH EXPOSED AREA WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHES, LAUNDER BEFORE REUSE. EYES-FLUSH WITH LARGE AMOUNTS OF WATER, LIFING UPPER AND LOWER LIDS OCAISSIONALLY. INGESTED-IMME DIATELY DRINK LARGE AMOUNTS OF WATER OR FLUIDS TO DILUTE. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHALED-REMOVE TO FRESH AIR.

Handling and Disposal

Spill Release Procedures: USE ABSORBENT AND SWEEP UP FOR DISPOSAL OR RECOVERY. LARGE SPILL: VACUUM SOLUTION OR USE ABSORBENT AND SWEEP UP MATERIAL. PLACE THIS MATERIAL IN A CONTAINER FOR DISPOSAL.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Methods: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
Handling And Storage Precautions: NO SPECIAL HANDLING REQUIRED. STORE UNDER A CONTROLLED TEMPERATURE RANGE OF; 40-120 DEGEES F.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Fire and Explosion Hazard Information

Flash Point Text: NON-FLAMMABLE
Extinguishing Media: ALL TYPES.
Fire Fighting Procedures: NONE SPECIFIED BY MANUFACTURER.
Unusual Fire/Explosion Hazard: THIS SOLUTION IS NOT A FIRE OR EXPLOSIVE HAZARD. HOWEVER, HAZARDOUS EMISSIONS ARE POSSIBLE IN A FIRE SITUATION.

Control Measures

Respiratory Protection: IF NEEDED USE A NIOSH/MSHA APPROVED RESPIRATOR FOR RESPIRATOR FOR INORGANIC MISTS.
Ventilation: MECHANICAL GENERAL AND /OR LOCAL IS SUFFICIENT.
Protective Gloves: ACID/CHEMICAL RESISTANT RUBBER.
Eye Protection: CHEMICAL SPLASH GOGGLES ARE BEST.
Other Protective Equipment: CHEMICAL RESISTANT APRON.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health: NONE SPECIFIED BY MANUFACTURER.

Physical/Chemical Properties

HCC: N1
Spec Gravity: >1.0
Solubility in Water: 100%
Appearance and Odor: DARK GREEN IN COLOR WITH NO DISTINGUISHING ODOR.
Percent Volatiles by Volume: 0

Reactivity Data

Stability Indicator: YES
Materials To Avoid: NONE KNOWN
Hazardous Decomposition Products: NONE
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: NONE SPECIFIED BY MANUFACTURER.

Toxicological Information

Toxicological Information: NONE SPECIFIED BY MANUFACTURER.

Ecological Information

Ecological: NONE SPECIFIED BY MANUFACTURER.

MSDS Transport Information

Transport Information: NOT REGULATED.

Regulatory Information

Sara Title III Information: THIS PRODUCT CONTAINS A TOXIC CHEMICAL (OR CHEMICALS) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPER FUND.
Federal Regulatory Information: NONE SPECIFIED BY MANUFACTURER.
State Regulatory Information: NONE SPECIFIED BY MANUFACTURER.

Other Information

Other Information: NONE SPECIFIED BY MANUFACTURER.

Transportation Information

Responsible Party Cage: 21468
Trans ID NO: 147957
Product ID: BEC 369 NICKEL SULFAMATE
MSDS Prepared Date: 11/20/1998
Review Date: 09/05/1999
MFN: 3
Article W/O MSDS: N
Net Unit Weight: 8.33 LB/GL
Limited Quantity IND: N
Multiple KIT Number: 0
Review IND: N
Unit Of Issue: GL
Container QTY: 0
Type Of Container: PLASTIC BOTTL

Detail DOT Information

DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Detail IMO Information

IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION

Detail IATA Information

IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Detail AFI Information

AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

HAZCOM Label

Product ID: BEC 369 NICKEL SULFAMATE
Cage: 21468
Company Name: BROOKTRONICS ENGINEERING CORP
Street: 28231 AVE CROCKER
City: VALENCIA CA
Zipcode: 91355 US
Health Emergency Phone: 800-451-8346
Date Of Label Review: 09/05/1999

Year Procured: 1999
Signal Word: CAUTION
Health Hazard: Slight
Contact Hazard: Slight
Fire Hazard: None
Reactivity Hazard: None
Hazard And Precautions: EYES-SEVERE IRRITATION OF MUCOUS MEMBRANES AND SENSITIVE TISSUE. SKIN-MINOR IRRITATION OF SKIN. BREATHING-COUGHING, IRRITATION OF MUCOUS MEMBRANES. INGESTED-IRRIGATION OF DIGESTIVE TRACT, NAUSEA, VOMI TING. FIRST AID:-SKIN-THOROUGHLY WASH EXPOSED AREA WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHES, LAUNDER BEFORE REUSE. EYES-FLUSH WITH LARGE AMOUNTS OF WATER, LIFING UPPER AND LOWER LIDS OCAISSIONAL LY. INGESTED-IMMEDIATELY DRINK LARGE AMOUNTS OF WATER OR FLUIDS TO DILUTE. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHALED-REMOVE TO FRESH AIR.

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Fuels/Motor Oil

Techron Quality Gas
Gasoline Technical & Safety Information
Gasoline Q&A
Diesel Fuels
Proformix
Motor Oils

Chevron quality products are designed to keep your vehicle running efficiently. Techron® Quality Gas, diesel fuels, automotive transmission fluids and our range of motor oils have been developed to meet your motoring needs.

Techron® Quality Gas — Only Chevron gasolines contain Techron®. Read about the *Techron® Advantage*.

Gasoline Technical & Safety Information

- Technical bulletins — fuel economy, storage & other technical information
- Safety bulletins — safe fueling and gasoline handling
- Q&A on octane & additives
- *Motor Gasolines Technical Review*
- *Aviation Fuels Technical Review*

Diesel Fuels

- *Diesel Fuels Technical Review*
- Diesel Division site for suppliers

Proformix™ — A low-emission diesel alternative.

Motor Oils/Transmission Fluid — Engine protection for your car or truck.

- Choosing the Right Motor Oil
- Chevron Supreme
- Delo® 400 Heavy Duty
- Automotive Transmission Fluid

Related Sites

Product Information
Go to ChevronTexaco's corporate site to read at

- Other Fuels and Lubricants
- Q&A on Brands & Products
- Why Gasoline Pric Rise and Fall

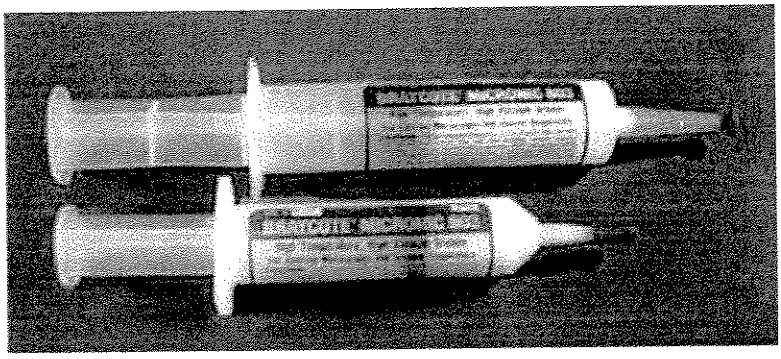
Chevron Canada
Chevron Canada Limite sells retail and commerc fuels in British Columbia

Aviation Products
The Global Aviation Wel site has information on aviation fuels and lubric

Material Safety Data Sheets
Look up technical and s information for many Chevron products in the MSDS database.

Braycote® Micronic® 803 Vacuum Grease

Select this product for applications on "o" rings in electron microscopes



Braycote Micronic® 803 Grease

The Braycote Micronic 803 high performance vacuum grease has been reformulated and is available once again from SPI, this is the high quality lubricant of choice for users desiring the ultimate cleanliness in their vacuum systems, such as those using LaB_6 filaments.

SPI is now adding the entire range of Braycote greases to the SPI product line, so if you have vacuum questions, let SPI help you with the right vacuum grease solution. Be sure you are familiar with the broader range of these unique fluorocarbon based grease products for vacuum applications.

Braycote Micronic 803 features excellent room temperature outgassing characteristics and high temperature stability (-63°C to +260°C) and is also acceptable for use in clean rooms. Coefficient of friction is 0.06 as measured by ASTM Method D2266. With a perfluorinated polyether grease, such as Braycote Micronic 803, "O"-rings need not be lubricated as frequently. The product is packaged in easy-to-use syringes.

Lower cost alternative:
Braycote 1632 is also available as a more economical alternative to 803 but it has not been final filtered to remove all particulates larger than 1 µm, therefore we would not recommend its use in clean rooms. Also, we would recommend Braycote Micronic 803 for electron microscope applications as well. The recommended temperature range of use for Braycote 1632 is -40°C to +232°C.

Applications in space:
We are often times asked about the suitability of Braycote Micronic 803 for use in space. Actually, from a historical perspective, the product was originally developed under contract from NASA for that specific application. In 1978, NASA (GSFC 9491) did make some measurements on Braycote Micronic 803 with the following results: TML 0.24%, CVCM 0.13%, and WVR 0.00%.

For the uninitiated, these terms have the following meanings:

Total Mass Loss (TML):
The mass loss of the sample, determined from the weights before and after the 398° K exposure, expressed as a percentage. Generally speaking, NASA considers "low outgassing" materials to have TML's of <= 1.0 %.

Collected Volatile Condensable Material (CVCM)
The difference between the weight of a clean collector and of the collector having condensed materials will provide the mass of condensables. NASA considers low offgassing materials to have CVCM values of <= 0.10 %.

Some other characteristics:
Evaporation Weight Loss, %: 2.4 (22 hours at 204°C/399°F)
Base Oil Vapor Pressure (torr)

20°C	$<1x10^{-10}$
100°C	$1x10^{-7}$

NGLI Grade: 2

Removal of unwanted grease from grease applied surfaces:
The composition of this product is a mixture of small PTFE particles (which won't dissolve in anything) and a perfluorinated polyether liquid. We have found that Castrol Fluoroclean™ X100 or Castrol Fluoroclean HE is an effective solvent for the liquid component of the formulated composition and aids in the removal of the grease from places where it is no longer needed or wanted.


MSDS Safety Sheet

Braycote Micronic 803 Vacuum Grease

Size	SPI #	Each	
10 g	**05042-AB**	$ 47.03	ADD TO CART
25 g	**05043-CF**	86.63	ADD TO CART
56 g (2 oz.)	**05045-FA**	117.40	ADD TO CART
(1 pound) 453 g	**05046-XQ**	484.02	ADD TO CART

Storage conditions: Room temperature
Non-hazardous from stand point of shipping

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- SPI Supplies Catalog Table of Contents
- SPI Supplies Home Page

Monday July 11, 2005

Worldwide Distributors, Representatives, and Agents 

PATH SILICONE, INC -- TBF 9-10 POLYDIMETHYLPOLYSILOXANE -- 9150-01-313-9025

MSDS Safety Information

FSC: 9150
NIIN: 01-313-9025
MSDS Date: 01/01/2000
MSDS Num: CKXPK
Tech Review: 05/24/2001
Product ID: TBF 9-10 POLYDIMETHYLPOLYSILOXANE
Responsible Party
Cage: UO150
Name: PATH SILICONE, INC
Address: WALLACE ST, EXT.
Box: 430
City: ELMWOOD PARK, NJ 07407 US
Info Phone Number: 201-796-0833
Emergency Phone Number: 201-796-0833/800-998-4252
Review Ind: N

Contractor Summary

Cage: UO150
Name: PATH SILICONE, INC
Address: WALLACE ST, EXT.
Box: 430
City: ELMWOOD PARK, NJ 07407 US
Phone: 201-796-0833
Cage: 0T5T6
Name: SALATHE OIL CO. INC. (504-366-4542)
Box: UNKNOW
City: UNKNOWN NK 00000
Country: NK
Contract Number: SP0450-01-M-LG75
Cage: 0PGK2
Name: SDB CONSULTANTS LTD
Address: 401 WHITNEY AVE SUITE 120
City: GRETNA LA 70056 US
Phone: 504-366-9105
Contract Number: SP0450-01-M-C815

Item Description Information

Item Manager: S9G
Item Name: DAMPING FLUID
Specification Number: VV-D-1078B
Type/Grade/Class: NONE
Unit of Issue: GL
UI Container Qty: 0
Type of Container: CAN

Ingredients

Cas: 63148-62-9
RTECS #: JT6484500
Name: POLYDIMETHYLPOLYSILOXANE
Percent by Wt: 100.
Ozone Depleting Chemical: N

Health Hazards Data

LD50 LC50 Mixture: NO DATA PROVIDED BY MANUFACTURER

Route Of Entry Inds - Inhalation: NO
Skin: NO
Ingestion: NO
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: INGESTION-LOW ACUTE ORAL TOXICITY. SKIN CONTACT-NONIRRITATING TO RABBIT SKIN. INHALATION-THIS IS A VISCOUS FLUID THAT DOES NOT EASILY FORM A MIST OR VAPOR, AND, THEREFORE, INHALATION HAZARDS ARE MINIM AL. EYE CONTACT-MAY CAUSE MILD EYE IRRITATION. SUBCHRONIC (TARGET ORGAN) EFFECTS: NONE KNOWN. CHRONIC EFFECTS: THIS PRODUCT OR ONE IF ITS INGREDIENTS PRESENT 0.1% OR MORE IN NOT LISTED AS A CARCINOGEN OR SUSPECT CARCINOGEN BY NTP, IARC, OR OSHA.
Explanation Of Carcinogenicity: THIS PRODUCT OR ONE IF ITS INGREDIENTS PRESENT 0.1% OR MORE IN NOT LISTED AS A CARCINOGEN OR SUSPECT CARCINOGEN BY NTP, IARC, OR OSHA.
Signs And Symptions Of Overexposure: NGESTION-LOW ACUTE ORAL TOXICITY. SKIN CONTACT-NON-IRRITATING TO RABBIT SKIN. INHALATION-THIS IS A VISCOUS FLUID THAT DOES NOT EASILY FORM A MIST OR VAPOR, AND, THEREFORE, INHALATION HAZARDS ARE MINIM AL. EYE CONTACT-MAY CAUSE MILD EYE IRRITATION.
Medical Cond Aggravated By Exposure: NONE KNOWN.
First Aid: INGESTION-IF SWALLOWED & VICTIM IS FULLY CONSCIOUS, INDUCE VOMITING IMMEDIATELY BY GIVING TWO GLASSES OF WATER & STICKING FINGER DOWN THROAT. GET IMMEDIATE MEDICAL ATTENTION. EYES-WIPE OFFF EXCESS WIT H A CLEAN GAUZE PAD OR COTTON & THEN FLUSH EYES WITH PLENTY OF WATER FOR 15 MIN. USING AN EYEWASH FOUNTAIN. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS. INHALATION-ALTHOUGH IT WOULD BE DI FFICULT TO INHALE THIS PRODUCT, SEEK MEDICAL ATTENTION IF IT SHOULD OCCUR. SKIN-WIPE OFF EXCESS WITH A CLEAN CLOTH AND THEN WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PE RSISTS.

Handling and Disposal

Spill Release Procedures: WEAR APPROPIATE PROTECTIVE GEAR. ABSORB ONTO VERMICULITE. SWEEP UP INTO APPROPIATE CONTAINER. WASH SPILL AREA AFTER MATERIAL PICK-UP IS COMPLETE WITH AN APPROPIATE SOLVENT LIKE PAINT THINNER.
Neutralizing Agent: NO DATA PROVIDED BY MANUFACTURER.
Waste Disposal Methods: DISPOSAL SHOULD BE MADE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
Handling And Storage Precautions: STORE AT ROOM TEMPERATURE IN TIGHTLY CLOSED CONTAINERS. AVOID DIRECT OR PROLONGED CONTACT WITH SKIN AND EYES. WASH HANDS THOROUGHLU AFTER HANDLING. DO NOT RUB EYES WITH SOILED HANDS. DO NOT EAT, DRINK OR SMOKE IN WORK AREA.
Other Precautions: NOTE TO PHYSICIAN: ALL TREATMENT SHOULD BE BASED ON OBSERVED SIGNS AND SYMPTOMS OF DISTRESS IN THE PATIENT. CONSIDERATIONS SHOULD BE GIVEN TO THE POSSIBILITY THAT OVEREXPOSURE TO MATERIALS OTHER THAN THIS PRODUCT MAY HAVE OCCURRED. TREAT SYMPTOMATICALLY. NO SPECIFIC INFORMATION FOUND.

Fire and Explosion Hazard Information

Flash Point Method: TCC
Flash Point: =155.C, 311.F
Autoignition Temp Text: UNK
Extinguishing Media: DRY CHEMICAL, FOAM AND CO2.
Fire Fighting Procedures: WEAR A NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. COOL CONTAINERS EXPOSED TO FIRE WITH WATER.
Unusual Fire/Explosion Hazard: NO DATA PROVIDED BY MANUFACTURER.

Control Measures
==========
Respiratory Protection: NO SPECIAL RESPIRATORY PROTECTION REQUIRED FOR PRODUCT AS SOLD.
Ventilation: PROVIDE ADEQUATE VENTILATION. USE LOCAL EXHAUST AS NEEDED.
Protective Gloves: GLOVES.
Eye Protection: SAFETY GLASSES WITH SIDE SHIELDS.
Other Protective Equipment: WORK CLOTHING. NO OTHER KNOWN. ENGINEERING CONTROLS: MAINTAIN A SINK AND EYEWASH FOUNTAIN IN THE WORK AREA.
Work Hygienic Practices: AVOID DIRECT OR PROLONGED CONTACT WITH SKIN AND EYES. WASH HANDS THOROUGHLY AFTER HANDLING. DO NOT RUB EYES WITH SOILED HANDS. DO NOT EAT, DRINK, OR SMOKE IN THE WORK AREA.
Supplemental Safety and Health: STORE AT ROOM TEMPERATURE IN TIGHTLY CLOSED CONTAINERS.
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Physical/Chemical Properties
==========
HCC: V5
B.P. Text: NA
Melt/Freeze Pt: =-65.C, -85.F
Vapor Pres: 0.01@392F (20C)(MMHG)
Vapor Density: NA
Spec Gravity: (WATER=1)0.930@25C
Viscosity: 10 CENTISTOKES
Evaporation Rate & Reference: NA
Solubility in Water: (20C) INSOLUBLE
Appearance and Odor: CLEAR. ODORLESS LIQUID
Percent Volatiles by Volume: NA
==========
Reactivity Data
==========
Stability Indicator: YES
Stability Condition To Avoid: AVOID HEAT AND OPEN FLAME.
Materials To Avoid: STRONG ACIDS, BASES AND OXIDIZING MATERIALS.
Hazardous Decomposition Products: ON COMBUSTION, SILICA AND OXIDES OF CARBON ARE EMITTED.
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: WILL NOT OCCUR.
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Toxicological Information
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Toxicological Information: NO DATA PROVIDED BY MANUFACTURER.
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Ecological Information
==========
Ecological: NO DATA PROVIDED BY MANUFACTURER.
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MSDS Transport Information
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Transport Information: DOT SHIPPING NAME: NA. DOT HAZARD CLASS: NA. DOT LABEL(S): NA. UN/NA NUMBER: NA. PLACARDS: NONE. IATA: NA. IMO IMDG-CODE: NA. EUROPEAN CLASS: RID (OCTI): NA, ADR (ECE): NA, RARA (IATA): NA.
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Regulatory Information
==========
Sara Title III Information: NOT LISTED.
Federal Regulatory Information: TSCA INVENTORY STATUS: PRODUCT IS TSCA CERTIFIED. US EPA
CERCLA: NOT LISTED.
State Regulatory Information: NO DATA PROVIDED BY MANUFACTURER.
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Other Information

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Other Information: HAZARD RATING SYSTEMS: NPCA-: FLAMMABILITY-0, REACTIVITY-0, HEALTH-0. NFPA: FLAMMABILITY-0, REACTIVITY-0, HEALTH-0. ABBREVIATIONS (USED ON MANUFACTURER'S MSDS): NA= NOT APPLICABLE. NE=NONE ESTABLI SHED. ND = NOT DETERMINED. NEGL = NEGLIGIBLE. NF = NONE FOUND. UNK = UNKNOWN. SKN = SKIN. TS = TRADE SECRET. R = RECOMMENDED. MST = MIST. NT = NOT TESTED. STEL = SHORT TERM EXPOSURE LIMIT.

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Transportation Information

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Responsible Party Cage: U0150
Trans ID NO: 155787
Product ID: TBF 9-10 POLYDIMETHYLPOLYSILOXANE
MSDS Prepared Date: 01/01/2000
Review Date: 01/11/2001
Article W/O MSDS: N
Net Unit Weight: 7.7 LBS
Limited Quantity IND: N
Multiple KIT Number: 0
Review IND: N
Unit Of Issue: GL
Container QTY: 0
Type Of Container: CAN
Additional Data: NOT REGULATED FOR SHIPPING PER MSDS.

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Detail DOT Information

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DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

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Detail IMO Information

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IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION

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Detail IATA Information

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IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

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Detail AFI Information

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AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

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HAZCOM Label

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Product ID: TBF 9-10 POLYDIMETHYLPOLYSILOXANE
Cage: U0150
Company Name: PATH SILICONE, INC
Street: WALLACE ST, EXT.
PO Box: 430
City: ELMWOOD PARK, NJ
Zipcode: 07407 US
Health Emergency Phone: 201-796-0833/800-998-4252
Date Of Label Review: 05/24/2001
Year Procured: 2001
Chronic Hazard IND: N
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: CAUTION
Respiratory Protection IND: NO
Health Hazard: None
Contact Hazard: Slight
Fire Hazard: Slight
Reactivity Hazard: None

Hazard And Precautions: COMBUSTIBLE! TARGET ORGANS: NONE KNOWN. HEALTH HAZARDS: INGESTION-LOW ACUTE ORAL TOXICITY. SKIN CONTACT-NON-IRRITATING. INHALATION-INHALATION HAZARDS ARE MINIMAL.

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Material Safety Data Sheet
Stoddard solvent

ACC# 13692

Section 1 - Chemical Product and Company Identification

MSDS Name: Stoddard solvent
Catalog Numbers: S457-200, S457-200LC, S457-4
Synonyms: Mineral Spirits; Varsol; Sovasol.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
64742-88-7	Stoddard solvent	100	265-191-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid.
Danger! Harmful or fatal if swallowed. **Flammable liquid and vapor.** Causes eye and skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Causes digestive and respiratory tract irritation. May cause central nervous system depression. May cause liver damage.
Target Organs: Central nervous system, liver.

Potential Health Effects
Eye: Causes eye irritation. May cause chemical conjunctivitis and corneal damage.
Skin: Exposure may cause irritation characterized by redness, dryness, and inflammation. May cause irritation and dermatitis. May cause cyanosis of the extremities.
Ingestion: Aspiration hazard. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Harmful or fatal if swallowed Ingestion of large amounts may cause CNS depression.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. High vapor concentrations may cause drowsiness. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause burning sensation in the chest.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Effects may be delayed.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Vapor may cause flash fire. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. This material is lighter than water and insoluble in water. The fire could easily be spread by the use of water in an area where the water cannot be contained. Do NOT use straight streams of water.
Flash Point: 100-140F
Autoignition Temperature: 445-500F
Explosion Limits, Lower:0.9
Upper: 6
NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Prevent build up of vapors to explosive concentration.

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Stoddard solvent	none listed	none listed	none listed

OSHA Vacated PELs: Stoddard solvent: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: kerosine-like
pH: Not available.
Vapor Pressure: 2 mm Hg @20 C
Vapor Density: 4.0
Evaporation Rate:0.1 (butyl acetate=1)
Viscosity: 0.91-0.95cp@25C
Boiling Point: 300-400F
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Insoluble in water.
Specific Gravity/Density:0.770-0.806
Molecular Formula: Not available.
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Ignition sources, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon

dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 64742-88-7: WJ8930000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 64742-88-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Epidemiological studies involving petroleum refinery workers indicate persons with routine exposure to petroleum or one of its constituents may be at an increased risk to the development of benign neoplasms, digestive tract cancer, and skin cancer.
Teratogenicity: No information found.
Reproductive Effects: No information found.
Mutagenicity: No information found.
Neurotoxicity: No information found.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	FLAMMABLE LIQUIDS, N.O.S.	No information available.
Hazard Class:	3	
UN Number:	UN1993	
Packing Group:	III	

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 64742-88-7 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 64742-88-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XI

Risk Phrases:

R 10 Flammable.
R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 33 Take precautionary measures against static discharges.
S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)

CAS# 64742-88-7: No information available.

Canada - DSL/NDSL

CAS# 64742-88-7 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2B.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 3/19/1999
Revision #6 Date: 10/05/2004

Material Safety Data Sheet
Corn Oil

ACC# 05465

Section 1 - Chemical Product and Company Identification

MSDS Name: Corn Oil
Catalog Numbers: S79980, S79981, S79981-1, S93205, S799811
Synonyms: Stripped corn oil
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
8001-30-7	Corn oil	100	232-281-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: gold liquid.
Caution! May cause irritation. This is expected to be a low hazard for usual industrial handling.
Target Organs: None.

Potential Health Effects
Eye: Contact may cause transient irritation.
Skin: May cause skin irritation. Low hazard for usual industrial handling.
Ingestion: May cause irritation of the digestive tract. Expected to be a low ingestion hazard.
Inhalation: May cause respiratory tract irritation. Low hazard for usual industrial handling.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation develops, get medi cal aid.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid if cough or

other symptoms appear.
Notes to Physician: Treat symptomatically and supportively.
Antidote: None reported.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
Extinguishing Media: Do NOT use water directly on fire. For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Water or foam may cause frothing. Use water spray to cool fire-exposed containers.
Flash Point: 238 deg C (460.40 deg F)
Autoignition Temperature: 740 deg C (1,364.00 deg F)
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 0; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Avoid contact with skin and eyes. Keep away from heat, sparks and flame. Avoid ingestion and inhalation.
Storage: Keep away from heat and flame. Store in a cool, dry place. Keep from contact with oxidizing materials.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Good general ventilation should be sufficient to control airborne levels.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Corn oil	none listed	none listed	none listed

OSHA Vacated PELs: Corn oil: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: gold
Odor: characteristic odor
pH: Not available.
Vapor Pressure: Negligible.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point:14 deg F
Decomposition Temperature: Not available.
Solubility: Insoluble in water.
Specific Gravity/Density:0.914-0.921
Molecular Formula: Mixture
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: Ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials: Avoid direct exposure to heat, sparks, open flame, lighted tobacco product and strong oxidants.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 8001-30-7: GM4800000
LD50/LC50:
CAS# 8001-30-7:
Oral, rat: LD50 = >100 mL/kg;
Carcinogenicity:
CAS# 8001-30-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 8001-30-7 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 8001-30-7 can be found on the following state right to know lists: Pennsylvania.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 8001-30-7: No information available.

Canada - DSL/NDSL

CAS# 8001-30-7 is listed on Canada's DSL List.

Canada - WHMIS

This product does not have a WHMIS classification.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #3 Date: 3/18/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

Product Name: Lacquer Wash
Chemical Name: N/A
Chemical Family: DOT Shipping Name - Paint Related Material UN 1263
Product Description: N/A

EMERGENCY PHONE NUMBER
(520) 796 - 1040

SECTION 2 HAZARDOUS INGREDIENT INFORMATION

SOLVENT	**%**	**TLV (units)**
	100	100 - 1000 PPM

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, GASSES	**%**	**TLV (units)**
Methyl Ethyl Ketone	10	200 PPM
Toluene	25	100 PPM
Isopropanol	10	400 PPM
Butyl Acetate	05	200 PPM
Acetone	20	750 PPM
Xylene	10	100 PPM
Butanol	03	100 PPM
Butyl Cellosolve	03	50 PPM
Methanol	03	200 PPM
VM&P Naptha	10	1000 PPM

SECTION 3 PHYSICAL DATA

BOILING POINT (°F)
100 - 200 °F

SPECIFIC GRAVITY (H_20=1)
.80

VAPOR PRESSURE (mm hg)
150

PERCENT VOLATILE BY VOLUME (%)
100%

SOLUBILITY IN WATER
22%

VAPOR DENSITY (air=1)
Heavier

EVAPORATION RATE (ether = 1)
Slower

APPEARANCE AND ODOR

Product is clear with characteristic odor

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 22°F **METHOD:** T.O.C. **FLAMMABLE LIMITS:** LEL 2.0 UEL 14.0

EXTINGUISHING MEDIA:
Dry Chemical, Alcohol Foam; Carbon Dioxide

SPECIAL FIRE FIGHTING PROCEDURES:
Water may be unsuitable as extinguishing agent but helpful in keeping adjacent containers cool. Avoid spreading burning liquid with water used for cooling purposes. Flash back may occur along vapor trail.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Danger extremely flammable. Keep work areas clear of hot metal surfaces and other sources of ignition.

SECTION 5 HEALTH INFORMATION & PROTECTION

NATURE OF HAZARD

EYE CONTACT:
Product may be an eye irritant

SKIN CONTACT:
Prolonged or repeated skin contact may result in dermatitis.

INHALATION:
Product is a respiratory tract irritant. Potential kidney and liver damage. Brain cell damage may result from long term inhalation of toluene.

Central nervous system depression may occur at high concentration.

FIRST AID

EYE CONTACT:
If product comes in contact with eyes - gently flush with copious quantities of water. Seek immediate medical attention.

SKIN CONTACT:
If product comes into contact with skin, remove contaminated clothing and wash with soap and large quantities of water. Seek medical attention if irritation from contact persists.

INHALATION:
If breathing difficulties, dizziness or light headedness occur when working in areas of high vapor concentration, victim should seek fresh air. If breathing stops, apply artificial respiration and seek immediate medical attention.

INGESTION:
If product is swallowed, contact physician immediately. Physician should contact local poison control center for specific guidance.

PROTECTIVE EQUIPMENT

EYE:

Safety glasses, goggles and/or face shield are recommended.

SKIN:

Protective gloves of material impermeable to the specific materials in the mixture. Impermeable clothing is advised when working with this material. Eye wash and safety showers should be available in the work area.

INHALATION:

For exposures above the recommended TLV, an organic vapor respirator or gas mask should be used. For high concentrations, air supplied equipment should be used.

VENTILATION:

General mechanical ventilation may be sufficient to keep concentrations of vapor below recommended TLV. If required, forced local exhaust ventilation should be provided. Respiratory protection should be used if ventilation does not reduce vapor concentration below recommended TLV.

SECTION 6 REACTIVITY DATA

STABILITY:

Stable.

INCOMPATIBILITY:

Strong oxidizing agents; strong acids or bases; selected amines; organometallic contaminants.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition may produce carbon monoxide/carbon dioxide.

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION 7 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Stay upwind and away from spill unless wearing proper protective equipment. Stop and/or contain discharge. Keep all sources of ignition away. Use non sparking tools for cleanup. Keep out of sewers, drains or waterways. Contact fire, health and pollution control agencies. Cover with inert material to reduce fumes.

WASTE DISPOSAL

Dispose of in accordance with local, county, state and federal regulations.

SECTION 8 STORAGE AND HANDLING

Keep containers cool, dry and away from sources of ignition. Use and store material with adequate ventilation. Keep containers closed when not in use.

SECTION 9 NOTES

All information, recommendations and suggestions appearing herein are based upon data obtained from the most currently recognized technical sources; however, Romic Chemical Corporation (Romic) makes no warranty, representation or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the users responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of the product. Since actual use by others is beyond our control, no warranty, expressed or implied, is made by Romic as to the effects of such use, the results to be obtained or the safety and toxicity of the product referred to herein. The data in this MSDS relates only to the specific material designated and does not relate to use in combination with any other material or in any process.

DATE PREPARED: 12/9/2003

M A T E R I A L S A F E T Y D A T A S H E E T Rev. 03B

For Coating, Resins, and Related Materials NPCA 1-84

Manufacturer's Name
BENJAMIN MOORE & CO.
51 CHESTNUT RIDGE RD
MONTVALE, NJ 07645

Emergency Telephone No.
800-424-9300 (CHEMTREC)

Date Prepared	Last Rev Date	Information Telephone No.
01-19-01	09-05-00	201-573-9600

For the most up-to-date MSDS information
please visit our website www.benjaminmoore.com/msds/go.html

SECTION I - PRODUCT ID

PRODUCT*: 024, n024
CLASS: SOLVENT THINNED PAINT
NAME: BM FRESH START ALL PURPOSE ALKYD PRIMER
COLOR: ALL

** HMIS CODE **
HEALTH: 2*
FLAMMABILITY: 2
REACTIVITY: 0
PERSONAL PROT:

** SARA TITLE 312 **
ACUTE: Y CHRONIC: Y FIRE: Y PRESSURE: N REACTIVITY: N

For a complete description of HMIS and an explanation of the PERSONAL PROT: code, see Section XX.

*NOTE: In the PRODUCT code a little n can be any capital letter of the alphabet except P or Q.

SECTION II HAZARDOUS INGREDIENTS

INGREDIENT	HAZ	SARA	MAX %	CAS #	TLV	PEL	STEL	CEIL	MM Hg
Ethyl Benzene	Y	N	.1	000100-41-4	100 ppm	100 ppm	125 ppm	N/E	10 @ 20C
Magnesium Aluminum Silicate	Y	N	1.1	012174-11-7	10 mg/M3	N/E	N/E	N/E	N/A
Silica, Crystalline	Y	N	.4	014808-60-7	.1 mg/M3	.1 mg/M3	N/E	N/E	N/A
Titanium Dioxide	Y	N	10.5	013463-67-7	10 mg/M3	10 mg/M3	N/E	N/E	N/A
Calcium Carbonate	Y	N	44.8	000471-34-1	10 mg/M3	5 mg/M3	N/E	N/E	N/A
Stoddard Solvent	Y	N	24.0	008052-41-3	100 ppm	100 ppm	N/E	N/E	2.0 @ 20

****

This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column.

****

Note: This product contains pigments which may become a dust nuisance when removed by abrasive blasting, sanding, or grinding.

This product may contain small amounts of materials known to the State of California to cause cancer and reproductive harm.

SECTION III PHYSICAL DATA

BOIL RANGE: 315.0 to 395.0 WT/GL: 11.5 to 11.8 %VOL/VOL: 44.1 to 44.5
EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

D.O.T. FLAMMABILITY CLASS.: COMBUSTIBLE FLASH POINT: 104 F PMCC
LEL %: 1.0
EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Toxic gases may form when product burns.
Closed containers may burst if exposed to extreme heat or fire.
SPECIAL FIRE FIGHTING PROCEDURES:
Cool exposed containers with water. Use self-contained breathing apparatus. Do not use water stream on burning liquid. Use self-contained breathing apparatus.

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - ACUTE:
Inhalation - Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea.
Contact - Causes eye irritation.
Contact - Causes skin irritation.
Skin Absorption - Hazardous ingredients contained in this product have the capacity to be absorbed through the skin in sufficient quantities to cause systemic toxicity. See Safe Handling and Use Information (Section VIII).
Ingestion - Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue). Aspiration Hazard - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.
EFFECTS OF OVEREXPOSURE - CHRONIC:
Contains: Crystalline Silica which has been determined to be carcinogenic to humans (1) by IARC when in respirable form. Risk of cancer depends on duration and level of inhalation exposure to dust from sanding the dried paint or spray mist.
NOTICE: Reports have associated permanent brain and nervous system damage with repeated, prolonged overexposure to solvents among persons engaged in the painting trade. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
IARC has classified Ethyl Benzene as possibly carcinogenic for humans (2B).
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:
None expected when used in accordance with Safe Handling and Use Information (Section VIII).
Inhalation statement: Sanding dust inhalation may cause lung damage.
PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION
EMERGENCY AND FIRST AID PROCEDURES :
Inhalation - Remove from hazard area, maintain breathing, call physician.
Skin Contact - Remove with soap and water.
Eye Contact - Flush immediately with large amounts of water. Call physician
Ingestion - Drink 1 or 2 glasses of water to dilute.
DO NOT induce vomiting. Call physician.

SECTION VI REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS:
Burning may produce carbon dioxide and carbon monoxide.
CONDITIONS TO AVOID: Elevated temperatures and build up of vapors
INCOMPATABILITY (MATERIALS TO AVOID): None reasonably foreseeable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Remove all sources of ignition. Avoid breathing vapors. Use non-sparking tools to return materials to container. Absorb residue with Fullers earth.
WASTE DISPOSAL METHOD:
Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

SECTION VIII SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION:
Wear a properly fitted vapor/particulate respirator approved by NIOSH for use with paints during application or sanding and until all vapors and spray mist are exhausted. In confined spaces or in situations where continuous spray operations are typical, or if proper respirator fit is not possible, wear a positive-pressure, supplied air respirator approved by NIOSH.
VENTILATION:
Adequate to maintain working atmosphere below T.L.V. and L.E.L. (See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.
Discharge exhaust only in area away from ignition sources.
PROTECTIVE GLOVES: Solvent impermeable gloves are required.
EYE PROTECTION : Splash goggles or safety glasses with side shields.
OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.
HYGIENIC PRACTICES:
Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Combustible - Keep away from heat and flame
OTHER PRECAUTIONS :
Use only with adequate ventilation. Avoid prolonged contact with skin and breathing of vapor spray mist or sanding dust.
Close container after each use. Keep out of reach of children. Do not take internally.

SECTION XX

HMIS (Hazardous Materials Identification System)(R) NPCA
HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division
5724 N. Pulaski Rd., Chicago, IL 60646
1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where

this system is used.
PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster.
Note: There are no SARA reportable materials in this product.

DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.
NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.