



D250-ULA-cla-06-09
January 15, 2009

Mr. Michael Hom
U.S. Environmental Protection Agency
Clean Water Enforcement Branch
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

Subject: Information Request – Section 308 of the Clean Water Act
Discharge of Perfluorinated Compounds (PFCs)

Dear Mr. Hom:

Please see the attached information in regards to the recent request by your office concerning the discharge of Perfluorinated Compounds (PFCs) from the United Launch Alliance (ULA) facility located in Decatur, AL. This report reflects data regarding manufacturing processes and final discharge information as request from the document entitled "Enclosure A" contained in the original request package sent from your office.

In this report, you will specifically find Material Safety Data Sheets (MSDSs), site discharge Permitting information, analytical data, as well as detailed manufacturing processes which represent ULA – Decatur Operations final discharges into the Decatur Utilities sanitary sewer collection system.

If you have any further questions or comments, please contact Chris Slayton at (256) 432-1139.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Bergstue", is written over the word "Sincerely,".

Gordon W. Bergstue, Senior Site Leader
ULA – Decatur Operations

MATERIAL SAFETY DATA SHEET

ZYGLO® PENETRANT ZL-60D

1. IDENTIFICATION

Company: MAGNAFLUX
 Address: 3624 West Lake Avenue, Glenview, Illinois 60026
 Telephone No.: 847-657-5300 (Off-Hour Emergency Number - CHEMTREC - 1-800-424-9300).
 Product Use: Fluorescent inspection penetrant
 Packages: 1 and 5 gallon pails, 20 and 55 gallon drums, aerosols
 NFPA Rating: Health 1, Flammability 1 (aerosol 4), Reactivity 0
 PIN (Canada): None
 Revision Date: April 13, 2007

2. INGREDIENTS

Ingredient	Wt./Wt. %	CAS#	TLV	PEL	LD ₅₀	LC ₅₀
White Mineral Oil (petroleum)	15-40	8042-47-5 or 64742-47-8	5 mg/m3	5 mg/m3	Not avail.	Not avail.
Alcohols, C6-10, Ethoxyl	15-40	68987-81-5	Not avail.	Not avail.	Not avail.	Not avail.
Alcohols, C12-15, Ethoxyl	10-30	68551-13-3	Not avail.	Not avail.	Not avail.	Not avail.
Tri-butoxyethyl phosphate	10-30	78-51-3	Not avail.	Not avail.	1.2 g/kg (oral/rat)	Not avail.
Secondary Alcohol Ethoxylate	0-20	84133-50-6	Not avail.	Not avail.	3 g/kg (oral/rat)	75mg/l
Liquefied petroleum gasses (propellant, aerosol only)	30	68476-86-8	not avail.	Not avail.	8.57 ml/kg (oral/rat)	Not avail.
				1000 ppm	not avail.	not avail.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
 Bland oily liquid which may irritate the skin and eyes. Difficult to ignite, but will burn vigorously if engulfed in fire. Aerosol is extremely flammable.

POTENTIAL HEALTH EFFECTS

Skin Contact: Can irritate by removing natural skin oils on long or repeated exposures.
 Eyes: Irritating
 Inhalation: Not significant. Heated bulk vapors may cause dizziness and nausea.
 Ingestion: Not significant in small (mouthful) amounts.
 Medical conditions known to be aggravated by exposure to product: None

4. FIRST AID

Skin Contact: Wash off with soap and water. Use soothing lotion.
 Eyes: Rinse carefully under upper and lower eyelids using plenty of water.
 Inhalation: Remove to fresh air if dizzy or nauseated.
 Ingestion: Do not induce vomiting. Accidental ingestion of a small mouthful is not expected to cause significant harm.
NOTE: In all severe cases, contact physician immediately. Local telephone operators can furnish number of regional poison control center.

5. FIRE HAZARD

Conditions of flammability: Bulk: Can ignite if heated above 200°F. Aerosol: Spraying near flames or arcs will ignite the spray mist.
 Flash point (Bulk): Minimum 200°F (93°C) (Pensky-Martens closed cup).
 Flammable limits in air: 1% to 6%
 Extinguishing media: Carbon dioxide, foam.
 Special fire fighting procedures: Keep containers cool with water spray. Do not spray water on burning ZL-60D. It will float and spread the fire.
 Hazardous combustion products: Smoke, soot, oxides of carbon and nitrogen.
 Unusual fire hazards: Aerosol cans may burst if heated above 130°F (54°C) and spray contents into a fire.

6. ACCIDENTAL RELEASE MEASURES

Mop up or sweep up with absorbent. (For disposal, see Section 13.)

7. HANDLING AND STORAGE

Avoid breathing spray mist. Avoid repeated or prolonged skin contact. Avoid eye contact. Store away from heat sources.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Controls: None, unless applied as spray. Use where ventilation will carry spray mist away from occupied areas.
 Personal protection: Wear safety glasses to protect eyes. Wear nitrile rubber gloves if hand exposure is unavoidable.
 Respirator with filter if sprayed in enclosed, unventilated space.

MAGNAFLUX

A Division of Illinois Tool Works Inc.
 3624 WEST LAKE AVENUE ■ GLENVIEW, ILLINOIS 60026
 TEL 847.657.5300 ■ FAX 847.657.5388
 www.magnaflex.com

9. PHYSICAL PROPERTIES

Initial boiling point (bulk): 455° F (235° C) (ASTM D-86)

Vapor pressure: Bulk: <0.10mm @ 70°F(21°C)
Aerosol: 60 psi @ 75°F
(24° C)

VOC Content (EPA Method 24): 356 g/L
Density/sp. gravity: 0.92
Water solubility: 0 (emulsifies into water)
pH: Neutral

Vapor density: Heavier than air
Evaporation rate: Negligible
Appearance: Green, oily liquid
Odor: Mild odor

10. STABILITY AND REACTIVITY

Stability: Stable
Incompatibility: None
Hazardous decomposition products: When burning, soot, carbon and nitrogen oxides.
Reactivity: None

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: Contains no known or suspected carcinogens listed with OSHA, IARC, NTP, or ACGIH.
Threshold limit value: 5 mg/m³ for oily mist.
WHMIS information (Canada): According to available information, the ingredients have not been found to show reproductive toxicity, teratogenicity, mutagenicity, skin sensitization, or synergistic toxic effects with other materials.

12. ECOLOGICAL INFORMATION

No data is available on ZL-60D. It emulsifies into water and is biodegradable. Its low bulk vapor pressure may exempt it from VOC restrictions.
Aerosol propellant is not an ozone depleter.

13. DISPOSAL

As a non-hazardous oily waste, incinerate or send to waste handler who can blend it into secondary fuels.

RCRA: Not a hazardous waste
U.S. EPA Waste Number: None

14. TRANSPORTATION

U.S. DOT: 49 CFR 172.101 Hazardous Materials Table

	<u>Non-aerosol</u>	<u>Aerosol</u>
Proper shipping name:	None, not restricted	Consumer commodity
Hazard class or division:	None	ORM-D
Identification No.:	None	None
Packing Group:	None	None

IATA: List of Dangerous Goods

	<u>Non-aerosol</u>	<u>Aerosol</u>
Proper shipping name:	None, not restricted	Aerosols, flammable
Hazard class or division:	None	2.1
Identification No.:	None	UN1950
Packing Group:	None	-

IMDG: General Index

	<u>Non-aerosol</u>	<u>Aerosol</u>
Proper shipping name:	None, not restricted	aerosols
Hazard class or division:	None	2.1
Identification No.:	None	UN1950
Packing Group:	None	-

15. REGULATORY INFORMATION

TSCA: All ingredients are listed in TSCA inventory.
CERCLA: Not reportable
SARA TITLE III, Section 313: No reportable ingredients
California Proposition 65: Warning: This material may contain trace amounts of chemicals known to the state of California to cause cancer and/or birth defects and/or reproductive harm.
WHMIS Class (Canada): Non-Aerosol: D-2B. Aerosol: A, B-5, D-2B
Note: This MSDS has been prepared to meet WHMIS (Canada) requirements with the exception of using 16 headings.

16. OTHER INFORMATION

Revision Statement: Sections: 9
Supersedes: November 19, 2004
Prepared by: Tamie Simmons, Research Manager

MAGNAFLUX

A Division of Illinois Tool Works Inc.

3624 WEST LAKE AVENUE ■ GLENVIEW, ILLINOIS 60026

TEL 847.657.5300 ■ FAX 847.657.5388

www.magnaflex.com



Material Safety Data Sheet

CIMTECH® 310

METALWORKING FLUID CONCENTRATE

DATE EFFECTIVE: 04-10-2007

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: Milacron Marketing Company, Global Industrial Fluids
3000 Disney Street
Cincinnati, OH 45209 United States

Emergency: Telephone (USA): 1-800-424-9300 (CHEMTREC)
Telephone (Outside USA): 1-703-527-3887 (CHEMTREC)

General Information: Telephone: 1-513-458-8199

Generic Name: Water Soluble Metalworking Fluid Concentrate

2 EMERGENCY INFORMATION

Product is alkaline. Highway spills could result in slippery conditions. No other significant health effects are associated with this material.

3 POTENTIAL HEALTH EFFECTS OF DIRECT EXPOSURE

	Product	Product at Use Dilution
Inhalation:	Not Applicable	Extended exposure to mist may cause upper respiratory irritation.
Eye Contact:	Product is a primary eye irritant.	Will cause stinging sensation in the eye.
Skin Contact:	Product is not a primary skin irritant.	Not irritating to the skin when used as directed and good personal hygiene is practiced.
Ingestion:	Not orally toxic.	Swallowing small quantities may cause diarrhea, nausea or vomiting. Digestive tract damage may occur.

Medical Conditions generally aggravated by exposure

May aggravate existing skin irritation where further defatting or skin penetration could occur.

Mild skin irritation (redness and dryness of hands) may be experienced when the diluted product has been contaminated by certain oils, by dissolved metals, or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Milacron Marketing Company, Global Industrial Fluids Technical Services at 1-513-458-8199 for specific recommendations.

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted. Contact Milacron Marketing Company, Global Industrial Fluids at 1-513-458-8199 for specific recommendations.

Repeated excessive exposures to high amounts of triethanolamine may cause liver and kidney effects.

Carcinogen Listings: NTP: No IARC: No OSHA: No

Signs and symptoms of exposure

Acute

Eye injury may result from contact with product. Skin irritation can result from improper use and handling of product.

4 EMERGENCY AND FIRST AID PROCEDURES

Eyes

In case of eye contact, flush immediately with running water for at least 15 minutes, and get prompt medical attention. Continue to flush eyes with water while awaiting medical attention.

Skin Contact

For skin contact flush with large amounts of water while removing contaminated clothing. Remove contaminated shoes and clothing and launder before reuse.

Product is not irritating to the skin when used as recommended and good personal hygiene is practiced.

Ingestion

Do not induce vomiting. If the material is swallowed, get immediate medical attention or advice. DO NOT INDUCE VOMITING. Give two glasses of water or milk. Immediately contact a physician and obtain treatment. Swallowing small quantities of diluted product may cause nausea, diarrhea or abdominal distress.

Inhalation

Inhalation can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/m³ for any airborne particulate as a nuisance level of exposure. NIOSH has set a REL of 0.5 mg/m³ for metalworking fluid mist. If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention.

5 CONTROL MEASURES

Respiratory protection

Product is not volatile.

In applications where time-weighted exposures are 0.5 to 5 mg/m³, mist reduction through improved ventilation, mist collection or process modification is recommended by NIOSH. Where this is not possible, NIOSH recommends the use of any air purifying, half-mask respirator including a disposable respirator, equipped with any P- or R-series particulate filter. If the average exposure will exceed 5 mg/m³, NIOSH recommends use of a powered, air-purifying respirator equipped with a hood or helmet and a HEPA filter. If respiratory problems are present when mist levels are < 0.5 mg/m³, respiratory protection should be based on the individual recommendation of a qualified health care provider.

Caution

The appropriate use and type of respirator is dependent upon use of the product and local operating conditions.

Ventilation

For most applications, normal shop ventilation is adequate. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Eye protection

Proper metalworking plant eye protection required when handling product concentrate.

Other protective clothing or equipment

Use effective metalworking plant protective clothing as appropriate.

Work / Hygiene Practices

Good personal hygiene should always be followed.

Protective Gloves

Impervious gloves, such as nitrile gloves, are recommended when handling product concentrate.

6 HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

These ingredients may contribute to the acute product hazards listed under the Potential Health Effects section. Other substances, not hazardous under the OSHA Hazard Communication Standard, may be present. Further composition information may be available to health professionals as provided in the Standard.

Component	CAS #	Percent
TRIETHANOLAMINE	102-71-6	10 - 30
NEODECANOIC ACID	26896-20-8	5 - 10
MONOISOPROPANOLAMINE	78-96-6	1 - 5

7 FIRE AND EXPLOSION HAZARD DATA

Hazardous Combustion Products

Smoke, fumes, oxides of nitrogen, and oxides of carbon

Flash Point: Not Applicable

Lower Explosive Limit: Not Applicable

Upper Explosive Limit: Not Applicable

HMIS RATINGS

Health 1

Flammability Classification 0

Reactivity 0

NFPA RATINGS

Health 1

Flammability Classification 0

Reactivity 0

8 ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material, and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity: None

9 WASTE DISPOSAL

For Used Product

Disposal procedures must comply with local, county, state and Federal regulations. If pre-treatment is needed, ultrafiltration, emulsion breaking or evaporation may be used. Contact Milacron Marketing Company, Global Industrial Fluids at 1-513-458-8199 for assistance.

For Unused Product

Product is not a hazardous waste as defined under 40 CFR 261. Contact Milacron Marketing Company, Global Industrial Fluids at 1-513-458-8199 for assistance.

Empty Containers

Empty containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

10 HANDLING AND STORAGE

If frozen, product separates. Thaw completely at room temperature and stir thoroughly prior to use. Avoid all contact of product with eyes or skin. Wash thoroughly after handling. Do not swallow. Do not store product concentrate in direct sunlight or elevated temperatures. Use only as recommended by Milacron Marketing Company, Global Industrial Fluids .

Other Precautions

Contains amines. Do not add sodium nitrite or other nitrosating agents to this product because suspected cancer-causing nitrosamines may be formed.

11 PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point:	212 °F (100 °C)
Specific Gravity:	1.08
Evaporation Rate:	Like water when diluted
Solubility (H2O):	100 % Miscible
Volatile Organic Content (by ASTM D2369):	5 %
pH (Concentrate):	8.2
pH (Mix):	7.8 @ 5%
Recommended Starting Dilution:	5 %
Appearance/Odor:	Clear/Chemical

12 REACTIVITY

Stability

Stable under normal conditions.

Conditions to avoid

Use as directed.

Materials to avoid

Avoid contact with strong acids or oxidizers to product.

Hazardous Polymerization

Will not occur.

Combustion Products

Smoke, fumes, oxides of nitrogen, and oxides of carbon

13 TRANSPORTATION INFORMATION**BY LAND****Hazardous Materials Description and Proper Shipping Name (49 CFR 172.101)**

Not a Hazardous Material

U.S. Harmonized Tariff Code: 3403.99.0000

BY AIR OR VESSEL**Hazardous Materials Description and Proper Shipping Name (49 CFR 172.101)**

Not a Hazardous Material

14 REGULATORY INFORMATION**EXPOSURE GUIDELINES**

REGULATED MATERIAL	NIOSH REL	OSHA PEL	OSHA STEL	ACGIH TLV	ACGIH STEL
TRIETHANOLAMINE				5 mg/m ³	
METALWORKING FLUID MIST	0.5 mg/m ³				

CERCLA

No components of this product are present at levels which require reporting under 40 CFR 302.4.

EPCRA (SARA) TITLE III Extremely Hazardous Substances (302): None

Hazardous Substances (311/312)

Product is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

HAZARD CATEGORIES

Acute Health: Yes

Chronic Health: No

Fire: No

Sudden Release of Pressure: No

Reactive: No

RCRA

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the product may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

TSCA

The ingredients of this product are on the TSCA inventory.

State Right to Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

Toxic Substances (313)

Component	CAS #	Max % Comments
None		%

GLOSSARY OF ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Disclaimer

NOTE: The opinions expressed herein are those of qualified experts within Milacron Marketing Company, Global Industrial Fluids and of their suppliers. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the condition and use of the product are not within the control of Milacron Marketing Company, Global Industrial Fluids, it is the user's obligation to determine the conditions of safe use of the product.

ac products, inc.

172 East La Jolla Street, Placentia, California 92870 (714) 630-7311 FAX (714) 630-8399

Material Safety Data Sheet

Print date: 07/19/2005

Version: 1

Revision date: 07/19/2005

1. COMPANY AND PRODUCT IDENTIFICATION

Product code: AC-818OT

Product name: AC-818-O TAN

Supplier:

AC Products, Inc.
172 East La Jolla Street
Placentia, CA 92870
714-630-7311
E-mail: she@quakerchem.com

Emergency telephone number:

* 24 HOUR TRANSPORTATION:
**CHEMTREC: 1-800-424-9300
703-527-3887 (Call collect outside of US)
* 24 HOUR EMERGENCY HEALTH & SAFETY:
**QUAKER CHEMICAL CORPORATION: (800) 523-7010(
Within US only)
Outside of US call (703) 527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

Components	Weight %	CAS No.	OSHA Ceiling Limits	OSHA TWA (final):	ACGIH Ceiling Limits	ACGIH Exposure Limits:	Vendor Exposure Limits:
Benzene, 1-chloro-4-(trifluoromethyl)-	70-80	98-56-6		2.5mg/m ³		2.5 mg/m ³	25 ppm 8hr TWA

3. HAZARDS IDENTIFICATION

Emergency Overview

Irritating to eyes.
May cause skin irritation and/or dermatitis.
May cause irritation of respiratory tract.
Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache)
Flammable.

Principle routes of exposure: Eyes, skin and inhalation.

Signal word: WARNING

Eye contact: Avoid contact with eyes. Severe eye irritation.

Skin contact: Prolonged skin contact may defat the skin and produce dermatitis.

Inhalation: May cause irritation of respiratory tract. Inhalation of high vapor concentrations may cause symptoms such as headache, dizziness, tiredness, nausea and vomiting,

Ingestion: Risk of product entering the lungs on vomiting after ingestion. Ingestion or inhalation of high concentrations may cause injuries to gastrointestinal tract, liver, kidneys and central nervous system.

Physico-chemical properties: Flammable.

4. FIRST AID MEASURES

General advice: Call a physician immediately. Show this safety data sheet to the doctor in attendance.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin contact: Rinse immediately with plenty of water for at least 15 minutes

Ingestion: Consult a physician. Do not induce vomiting. Risk of product entering the lungs on vomiting after ingestion. Never give anything by mouth to an unconscious person.

Inhalation: Move to fresh air in case of accidental inhalation of vapors or decomposition products. If not breathing, give artificial respiration. In case of shortness of breath, give oxygen. Consult a physician.

Notes to physician: This product contains parachlorobenzotrifluoride (PCBTF) Aspiration may cause pulmonary oedema and pneumonitis.

Medical condition aggravated by exposure: Dermatitis and asthma.

5. FIRE-FIGHTING MEASURES

Flash point (°C): 42.8 **Flash point (°F):** 109 **Flash Point Method:** TCC

Flammable limits in air - upper (%): 10.5 **Flammable limits in air - lower (%):** 0.9

Suitable extinguishing media: Carbon dioxide (CO₂), Dry chemical, Foam, Water.

Specific hazards: Do not allow material to contaminate ground water system. Flammable.

Unusual hazards: Keep away from open flames, hot surfaces and sources of ignition. Vapors are heavier than air and may spread along floors. Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture.

Special protective equipment for fire-fighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Specific methods: Use spark-proof tools and explosion-proof equipment. Cool containers / tanks with spray water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate personnel to safe areas. Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental precautions: Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods for cleaning up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Ground and bond containers when transferring material

7. HANDLING AND STORAGE

Handling

Technical measures/precautions: Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation.

Safe handling advice: In case of insufficient ventilation, wear suitable respiratory equipment.

Storage

Technical measures/storage conditions: Keep containers tightly closed in a cool, well-ventilated place.

Incompatible products: strong oxidizing agents

Safe storage temperature: 40-100 ° F

Shelf life: 12 months

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components	ACGIH Ceiling Limits	ACGIH Exposure Limits:	OSHA Ceiling Limits	OSHA TWA (final):	NIOSH - Pocket Guide - TWAs:	Vendor Exposure Limits:
Benzene, 1-chloro-4-(trifluoromethyl)-		2.5 mg/m ³		2.5mg/m ³	None	25 ppm 8hr TWA

Engineering measures: Provide adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

Personal Protective Equipment

General: Eye Wash and Safety Shower

Respiratory protection: In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

Hand protection: Impervious gloves

Skin and body protection: Chemical resistant apron, Long sleeved clothing

Eye protection: Goggles. Wear face-shield and protective suit for abnormal processing problems.

Hygiene measures: Avoid contact with skin, eyes and clothing.



9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical state: liquid
Color: tan
Odour: Sweet

Boiling point/boiling range (°C):	139
Boiling point/range (°F):	282
Vapour pressure:	Not determined
Vapour density:	Not determined
VOC Content Product:	0
VOC Content Coating (g/L):	0
HAP Content Product (g/L):	0
Solubility:	Insoluble
Evaporation rate:	Not determined
pH:	NA
Flash point (°C):	42.8
Flash point (°F):	109
Decomposition temperature:	Not determined
Auto-ignition temperature:	Not determined
Density @ 15.5 ° C (g/cc) :	1.344
Bulk density @ 60 ° F (lb/gal):	11.2
Volatiles (% by volume) :	79.7
Solids (% by weight):	20.6
Partition coefficient (n-octanol/water, log Pow):	Not determined
Explosive properties:	
- upper limit:	No data available
- lower limit:	No data available

10. STABILITY AND REACTIVITY

Stability:

Stable under recommended storage conditions.

Conditions to avoid:

Heat, flames and sparks.

Materials to avoid:

Strong oxidising agents

Hazardous decomposition products:

Fluorine and chlorine containing gases

Polymerization:

Not applicable

11. TOXICOLOGICAL INFORMATION

No toxicological information is available on the product. Data obtained on components are summarized below. Overexposure to benzene, 1-chloro-4-(trifluoromethyl)- has been associated with liver, kidney and central nervous system effects in laboratory animals.

Components	NTP:	IARC:	OSHA - Select Carcinogens	NIOSH - Selected LD50s and LC50s
Benzene, 1-chloro-4-(trifluoromethyl)-	This product does not contain any material shown to be a carcinogen by the National Toxicology Program (NTP).	This product does not contain any material shown to be a carcinogen by the International Agency for Research on Cancer (IARC).	This product does not contain any material shown to be a carcinogen by OSHA.	13g/kgOral LD50Rat 33mg/LInhalation LC50Rat 2mg/kgDermal LD50Rabbit

12. ECOLOGICAL INFORMATION

Persistence and degradability:	No information available
Mobility:	No data available
Bioaccumulation:	No data available
Ecotoxicity effects:	No data available
Aquatic toxicity:	Not Determined

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products:	In accordance with local and national regulations. Should not be released into the environment.
Contaminated packaging:	Do not re-use empty containers
Methods for cleaning up:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).. Ground and bond containers when transferring material.

Components

Benzene, 1-chloro-4-(trifluoromethyl)-
98-56-6

RCRA - Hazardous Constituents (hazardous constituent - no waste number)
-Appendix

14. TRANSPORT INFORMATION

U. S. DEPARTMENT OF TRANSPORTATION:

UN/NA ID Number:	UN 2234
Proper shipping name:	Chlorobenzotrifluorides Solution
Hazard Class	3
Packing group:	III
Emergency Response Guide Number:	ERG 130

TDG (CANADA):

UN nr:	UN2234
Proper shipping name:	Chlorobenzotrifluorides Solution
TDG Hazard Classification:	3
Packing group:	III

IMDG/IMO:

UN nr:	UN2234
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Proper shipping name: Chlorobenzotrifluorides Solution
Class: 3
Packing group: III

IATA/ICAO:

UN nr: UN2234
Proper shipping name: Chlorobenzotrifluorides Solution
Hazard Class: 3
Packing group: III

15. REGULATORY INFORMATION

CLASSIFICATION AND LABELING

OSHA Hazard Communication Standard: This product is considered to be hazardous under the OSHA Hazard Communication Standard.

Canada - WHMIS Classification Information: This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Product Classification: Class B - Flammable and Combustible Material
Class D2B - Poisonous and Infectious Material: Other toxic effects - includes irritants, skin sensitizers and/ or chronic health effects

Product Classification Graphic(s):



Component Classification Data:

Canadian National Pollution Inventory Data:

U.S. REGULATIONS:

SARA (311, 312) hazard class: This product possesses the following SARA Hazard Categories:

Immediate Health (Acute): Yes
Delayed Health (Chronic): Yes
Flammability: Yes
Pressure: No
Reactivity: No

RCRA Status Flammable D001

STATE REGULATIONS (RTK):

California Proposition 65 Status: No components are listed

Benzene, 1-chloro-4-(trifluoromethyl)- - 98-56-6
PARTK:

Environmental hazard

INVENTORY STATUS:

United States TSCA - Sect. 8(b) Inventory:

This product complies with TSCA

Canada DSL Inventory List -

DSL Compliance has not been determined

EC No.

Compliance has not been determined

16. OTHER INFORMATION

**Sources of key data used to
complete the data sheet:**

Material safety data sheets of the ingredients.

Reason for revision:

This data sheet contains changes from the previous version in section(s) 9, 14

Prepared by:

Quaker Chemical Corporation -Safety, Health and Environmental Affairs Group - US

HMIS classification:

NFPA rating:

Health:

2*

Health:

2

Flammability:

2

Flammability:

2

Reactivity:

0

Reactivity:

0

Personal Protection:

H

Special:

NA

* Indicates possible chronic health effect

Personal protection recommendations should be reviewed by purchasers. Workplace conditions are important factors in specifying adequate protection.

Disclaimer

This product's safety information is provided to assist our customers in assessing compliance with safety/health/environmental regulations. The information contained herein is based on data available to us and is believed to be accurate. However, no warranty of merchantability, fitness for any use, or any other warranty is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, or the hazards connected with the use of the product. Since the use of this product is within the exclusive control of the user, it is the user's obligations to determine the conditions for safe use of the product. Such conditions should comply with all regulations concerning the product. AC Products assumes no liability for any injury or damage, direct or consequential, resulting from the use of this product unless such injury or damage is attributable to the gross negligence of AC Products.

End of Safety Data Sheet

MSDS 108184 REV 01/23/2004

Image Data From SunHealth

Chemetall Oakite**MATERIAL SAFETY DATA SHEET**

200117

PRODUCT CODE: 200117
 ARDROX 157-B
 200-313-103

HMIS 2 0 0 F

 =====
 SECTION I - PRODUCT IDENTIFICATION
 =====

TRADE NAME	ARDROX 157-B	EMERGENCY TELEPHONE NUMBER:
CHEMICAL NAME AND SYNONYMS	NA; Mixture	(800) 424-9300 (CHEMTREC)
MANUFACTURER'S NAME AND TELEPHONE NO.	OAKITE PRODUCTS INC. (908) 464-6900 (8am-5pm)	
ADDRESS	A Member of The CHEMETALL Group 50 Valley Road Berkeley Heights NJ 07922	
DATE OF PREPARATION	01-23-2004 ✓	

 =====
 SECTION II - HAZARDOUS INGREDIENTS
 =====

	CAS NO.	% BY WT	ACGIH TLV (TWA)	OSHA PEL (TWA)	UNITS
Phosphate ester	0052623957	1-5	NE	NE	
Trade secret registry (735517)	-5156P	1-5	NE	NE	
Trade secret registry (735517)	-5148P	1-10	NE	NE	
Non-hazardous ingredients		Bal.			

Unidentified ingredients are considered not hazardous under Federal Hazard Communication Standard (29CFR 1910.1200).

All components of this material are on the US TSCA Inventory.

CARCINOGENICITY: No substance in this product is listed by IARC, NTP, or regulated by OSHA as a carcinogen.

 =====
 SECTION III - PHYSICAL DATA
 =====

BOILING POINT (F)	NA	SPECIFIC GRAVITY (H2O=1)	1.169
VAPOR PRESSURE (mm Hg)	NE	Bulk Density	9.74 lbs/gal
VAPOR DENSITY (Air=1)	NE	PERCENT VOLATILE	

Oakite Products, Inc. warrants that the product or products described herein will conform with its published specifications. The products supplied by Oakite and information related to them are intended for use by buyers having necessary industrial skill and knowledge. Buyers should undertake sufficient verification and testing to determine the suitability of the Oakite materials for their own particular purpose. Since buyer's conditions of use of products are beyond Oakite's control, Oakite does not warrant any recommendations and information for the use of such products. OAKITE DISCLAIMS ALL OTHER WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE IN CONNECTION WITH THE USE OF ITS PRODUCTS.

NA - Not Applicable

NE - Not Established

-1-

007209-108184 TL

MSDS 108184 REV 01/23/2004

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Chemetall Oakite

200117

MATERIAL SAFETY DATA SHEET

SOLUBILITY IN WATER	Complete	BY WEIGHT(%) Excludes H2O	NE
EVAPORATION RATE (Water=1)	<1	PH	
APPEARANCE AND ODOR	Light pink to tan liquid; no odor.	PH (concentrate)	>12.5

=====

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

=====

FLASH POINT (Method Used): None

FLAMMABLE LIMITS: LEL: NA UEL: NA

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam, water spray.

SPECIAL FIRE FIGHTING PROCEDURES: Wear Self-Contained Breathing Apparatus (SCBA).

UNUSUAL FIRE AND EXPLOSION HAZARDS: See Section VII. (WHMIS)
See Section VI. (U.S.)

=====

SECTION V - HEALTH HAZARD INFORMATION

=====

ROUTE(S) OF ENTRY:	INHALATION:	SKIN:	INGESTION:
	x	x	x

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known

SYMPTOMS/EFFECTS OF OVEREXPOSURE:

Inhalation of mist may cause respiratory irritation. Direct contact causes skin irritation. Direct contact with eyes causes irritation.

FIRST AID

EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

SKIN: Wash affected area with large amounts of water. Get medical attention.

INGESTION: Contact local poison control center or physician IMMEDIATELY!

INHALATION: Move victim to fresh air.

=====

SECTION VI - REACTIVITY DATA

=====

Oakite Products, Inc. warrants that the product or products described herein will conform with its published specifications. The products supplied by Oakite and information related to them are intended for use by buyer's having necessary industrial skill and knowledge. Buyers should undertake sufficient verification and testing to determine the suitability of the Oakite materials for their own particular purpose. Since buyer's conditions of use of products are beyond Oakite's control, Oakite does not warrant any recommendations and information for the use of such products. OAKITE DISCLAIMS ALL OTHER WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE IN CONNECTION WITH THE USE OF ITS PRODUCTS.

NA - Not Applicable

NE - Not Established

MSDS 108184 REV 01/23/2004

Image Data From SunHealth

Chemetall Oakite

200117

MATERIAL SAFETY DATA SHEET

STABILITY: NORMALLY STABLE

INCOMPATIBLE MATERIALS: Acids, Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, Carbon dioxide, Phosphorous oxides, Silicon dioxide.

 =====
SECTION VII - SPILL OR LEAK PROCEDURES
 =====

PROCEDURES: Wear personal protective equipment (See Section VIII).
 Clean up with inert absorbant material. Neutralize with a mild acid. Flush area with water.

WASTE DISPOSAL METHOD: Dispose of in accordance with Local State and Federal regulations.

 =====
SECTION VIII - SPECIAL PROTECTION INFORMATION
 =====

RESPIRATORY: Respirator not normally required. For symptoms of overexposure, wear a NIOSH-approved dust/mist respirator.

EYEWEAR: Wear chemical safety goggles.

CLOTHING/GLOVES: Wear chemical-resistant gloves and clothing as needed to prevent skin contact.

VENTILATION: Local exhaust may be necessary for some handling/use conditions. Specific needs should be addressed by supervisory or health/safety personnel.

 =====
SECTION IX - SPECIAL PRECAUTIONS
 =====

Store in closed container in well-ventilated area.

APPROVAL *Michael Chang* Mgr. Health & Environmental Dept. 01/23/2004
 NAME TITLE DATE OF PRINTING

Oakite Products, Inc. warrants that the product or products described herein will conform with its published specifications. The products supplied by Oakite and information related to them are intended for use by buyer's having necessary industrial skill and knowledge. Buyer should undertake sufficient verification and testing to determine the suitability of the Oakite materials for their own particular purpose. Since buyer's conditions of use of products are beyond Oakite's control, Oakite does not warrant any recommendations and information for the use of such products. OAKITE DISCLAIMS ALL OTHER WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE IN CONNECTION WITH THE USE OF ITS PRODUCTS.

NA - Not Applicable

- 3 -

NE - Not Established

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

*** Section 1 - Chemical Product and Company Identification ***

Product Trade Name TURCO 6849

Manufacturer Information

Henkel Surface Technologies
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Contact Phone: (248) 583-9300

Chemtrec Emergency # (800) 424-9300

*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent
9016-45-9	Nonylphenoxy poly (ethyleneoxy) ethanol	10-30
1300-72-7	Sodium xylene sulfonate	1-10
141-43-5	Ethanolamine	1-10
7758-29-4	Sodium tripolyphosphate	1-10
Not Available	Modified polyethoxylated alcohol	1-10

*** Section 3 - Hazards Identification ***

Emergency Overview:

WARNING!

CAUSES SEVERE EYE AND SKIN IRRITATION.

CAUSES RESPIRATORY TRACT IRRITATION.

EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE LIVER AND KIDNEY DAMAGE BASED ON ANIMAL DATA

Potential Health Effects:

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on its composition, it is anticipated to be severely irritating to the eyes, skin and respiratory tract. Prolonged or repeated contact may remove oils from and dry the skin causing irritation, redness and rash. Overexposure to vapor or mist may cause chest pain, coughing, headache, nausea, dizziness, and upper extremity numbness. Animal studies on a component of this material have produced liver and kidney changes. Medical conditions which may be aggravated by exposure to this material include lung, liver or kidney disease or limited respiratory capacity.

*** Section 4 - First Aid Measures ***

Eye Contact:

Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

If On Skin

Immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Ingestion:

Do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

*** Section 5 - Fire Fighting Measures ***

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

Flash Point: None

Method Used:

Flammability
Classification:

Upper Flammable
Limit (UFL): NA

Lower Flammable
Limit (LFL): NA

Fire & Explosion Hazards:

Avoid breathing fumes from fire exposed material.

Extinguishing Media:

Water spray, water fog, carbon dioxide, dry chemical or foam

Fire-Fighting Instructions:

Use water spray to cool containers exposed to fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

*** Section 6 - Accidental Release Measures ***

Spill or Leak

Contain spill. Stop leak at source if this can be done safely. Ventilate area. Nonessential personnel should leave the area until cleanup is completed. Pump liquid into DOT-approved drums for disposal. Absorb remaining liquid onto inert absorbent and place in DOT approved drums for disposal. Wash area with water. Keep concentrate and wash water from entering sewers or waterways.

*** Section 7 - Handling and Storage ***

Handling Procedures:

Do not get in eyes, on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Empty container may contain hazardous residues.

Storage Procedures:

Store in a cool, dry place. Avoid excessive heat. Store out of direct sunlight in a cool, well-ventilated place.

*** Section 8 - Exposure Controls / Personal Protection ***

Component Exposure Limits

Ethanolamine (141-43-5)

ACGIH: 3 ppm TWA
6 ppm STEL

OSHA: 3 ppm TWA; 6 mg/m3 TWA
6 ppm STEL; 15 mg/m3 STEL

NIOSH: 3 ppm TWA; 8 mg/m3 TWA
6 ppm STEL; 15 mg/m3 STEL

Engineering Controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

PERSONAL PROTECTIVE EQUIPMENT

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a Hazard Assessment of all workplaces to determine the need for, and selection of, proper protective equipment for each task performed.

Eyes/Face Protective Equipment:

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

Skin Protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash skin thoroughly after handling.

Respiratory Protection:

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

*** Section 9 - Physical & Chemical Properties ***

Physical State:	Liquid	Appearance:	Clear Yellow Liquid
Odor:		Vapor Pressure:	As water
Vapor Density:	As water	Boiling Point:	> 200 F
Melting Point:	NA	Specific Gravity:	1.06
pH:	11.7 - 12.2	Viscosity:	
VOC:		Solubility Water:	Complete

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability:

This material is chemically stable under specified conditions or storage, shipment and/or use. See HANDLING AND STORAGE section of this MSDS for specified conditions.

Incompatibility:

Strong acids, and strong oxidizers

Decomposition Products:

Thermal - oxides of carbon, nitrogen and sulfur compounds

Hazardous Polymerization:

Hazardous polymerization is not known to occur.

*** Section 11 - Toxicological Information ***

Acute Toxicity:

A: General Product Information

No information available for the product.

B: Component Analysis - LD50/LC50

Nonylphenoxy poly (ethyleneoxy) ethanol (9016-45-9)

MD0900000: Glycols, polyethylene, mono(nonylphenyl) ether (10/1/97)

Oral LD50 Rat : 1310 mg/kg

Oral LD50 Mouse : >50 gm/kg

Dermal LD50 Rabbit : 2 mL/kg

Ethanolamine (141-43-5)

Oral LD50 Rat : 1720 mg/kg

Oral LD50 Mouse : 700 mg/kg

Dermal LD50 Rabbit : 1 mL/kg

Sodium tripolyphosphate (7758-29-4)

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

Oral LD50 Rat : 3120 mg/kg
Oral LD50 Mouse : 3100 mg/kg

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Chronic Toxicity

No information available for the product.

Epidemiology:

No information available for the product.

Neurotoxicity:

No information available for the product.

Mutagenicity:

No information available for the product.

Teratogenicity:

No information available for the product.

*** Section 12 - Ecological Information ***

Ecotoxicity:

A: General Product Information

No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Ethanolamine (141-43-5)

Test & Species	Conditions
LC50 (96 hr) goldfish	170.0 mg/L
EC50 (30 min) Photobacterium phosphoreum	13.7 mg/L Microtox test.

Environmental Fate:

No data is available concerning the environmental fate, biodegradation or bioconcentration for this product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Numbers & Descriptions:

A: General Product Information

Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Please refer to the container label for transportation information.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Sodium tripolyphosphate (7758-29-4)

CERCLA: final RQ = 5000 pounds (2270 kg) (Listed under "Sodium phosphate, tribasic")

SARA 311/312: Acute: Y Chronic: Y Fire: N Pressure: N Reactive: N

State Regulations

A: General Product Information

No additional information available.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Ethanolamine	141-43-5	Yes	Yes	Yes	Yes	Yes	Yes
Sodium tripolyphosphate	7758-29-4	Yes	No	Yes	No	Yes	Yes

Other Regulations

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Nonylphenoxy poly (ethyleneoxy) ethanol	9016-45-9	Yes	Yes	No
Sodium xylene sulfonate	1300-72-7	Yes	Yes	Yes
Ethanolamine	141-43-5	Yes	Yes	Yes
Sodium tripolyphosphate	7758-29-4	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Ethanolamine	141-43-5	1%; English Item 1096; French Item 1170

*** Section 16 - Other Information ***

NFPA Ratings: Health: 2 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

HMIS Ratings: Health: 2* Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Henkel Surface Technologies bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

Material Safety Data Sheet

Material Name: TURCO 6849

ID: 238832

Contact: Regulatory Affairs and Product Acceptance
Contact Phone: (248) 583-9300

This is the end of MSDS # 238832

Material Safety Data Sheet

Material Name: NOVA EC-202L

ID: 233115

***** Section 1 - Chemical Product and Company Identification *****

Product Trade Name NOVA EC-202L

Manufacturer Information

Henkel Surface Technologies
 Henkel Corporation
 32100 Stephenson Highway
 Madison Heights, MI 48071

Contact Phone: (248) 583-9300

Chemtrec Emergency # (800) 424-9300

***** Section 2 - Composition / Information on Ingredients *****

CAS #	Component	Percent
1310-58-3	Potassium hydroxide	10-30
7320-34-5	Potassium pyrophosphate	1-10

***** Section 3 - Hazards Identification *****

Emergency Overview:

DANGER -- CORROSIVE!

Contact with this material will cause burns to the skin, eyes and mucous membranes.

Eye Contact:

This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.

Skin Contact:

Corrosive to the skin. Contact with the skin or mucous membranes may cause severe irritation and burns.

Skin Absorption:

None expected.

Ingestion:

This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

Inhalation:

Inhalation of mists of this product may cause severe irritation and burns to the respiratory tract.

Medical Conditions Aggravated by Exposure:

Pre-existing eye, skin and respiratory disorders.

***** Section 4 - First Aid Measures *****

Eye Contact:

In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Skin Contact:

Immediately take off all contaminated clothing. For skin contact, flush with large amounts of water. Seek immediate medical attention.

Ingestion:

If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Inhalation:

If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

First Aid: Notes to Physician

No additional information available.

004541-75927 TC

***** Section 5 - Fire Fighting Measures *****

Material Safety Data Sheet

Material Name: NOVA EC-202L

ID: 233115

Flash Point: Not applicable
Upper Flammable Limit (UFL): Not applicable

Method Used: Not applicable
Lower Flammable Limit (LFL): Not applicable

Flammability Classification: Non-flammable

Fire & Explosion Hazards:

None expected.

Decomposition Products:

Irritating and toxic gases or fumes may be released during a fire.

Extinguishing Media:

Use any media suitable for the surrounding fires.

Fire-Fighting Instructions:

Firefighters should wear full protective clothing including self contained breathing apparatus.

*** Section 6 - Accidental Release Measures ***

Containment Procedures:

Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up.

Clean-Up Procedures:

Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of collected material according to regulation.

*** Section 7 - Handling and Storage ***

Handling Procedures:

Do not get this material in your eyes, on your skin, or on your clothing. Wash thoroughly after handling. Do not breathe fumes or dust from this material. NEVER ADD WATER TO PRODUCT. For dilutions, add product slowly to water while stirring. Use caution; heat may be generated. For industrial use only.

Storage Procedures:

Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Thaw and mix thoroughly if frozen.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines:

A: General Product Information

Follow all applicable exposure limits.

B: Component Exposure Limits

Potassium hydroxide (1310-58-3)

ACGIH: 2 mg/m3 Ceiling

NIOSH: 2 mg/m3 Ceiling

Engineering Controls:

Ventilation should effectively remove and prevent buildup of any vapor or mist generated from the handling of this product.

PERSONAL PROTECTIVE EQUIPMENT

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a Hazard Assessment of all workplaces to determine the need for, and selection of, proper protective equipment for each task performed.

Eyes/Face Protective Equipment:

Wear chemical goggles; face shield (if splashing is possible).

Skin Protection:

Use impervious gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

Material Safety Data Sheet

Material Name: NOVA EC-202L

ID: 233115

Respiratory Protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols or mists, appropriate NIOSH/MSHA respiratory protection must be provided.

Work Practices:

Eyewash fountains and emergency showers are required.

*** Section 9 - Physical & Chemical Properties ***

Physical State:	Liquid	Appearance:	Amber
Odor:	Bland	Vapor Pressure:	Not determined
Vapor Density:	Not determined	Boiling Point:	>212 ° F (>100 ° C)
Specific Gravity:	1.25 - 1.35	pH:	>13
Viscosity:	Not applicable	VOC:	Not applicable
Solubility Water:	Complete	Evaporation Rate:	Not determined
Percent Volatile:	Not applicable	Percent Solids:	Not determined

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability:

Stable under normal conditions.

Conditions to Avoid:

None.

Incompatibility:

This product reacts with acids. Adding water to this product may cause localized overheating and splattering.

Decomposition Products:

Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition.

Hazardous Polymerization:

Will not occur.

*** Section 11 - Toxicological Information ***

Acute Toxicity:**A: General Product Information**

No information available for the product.

B: Component Analysis - LD50/LC50

Potassium hydroxide (1310-58-3)

Oral LD50 Rat: 273 mg/kg

Potassium pyrophosphate (7320-34-5)

Dermal LD50 Rabbit: >4640 mg/kg

Carcinogenicity:**A: General Product Information**

No information available for the product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Chronic Toxicity

None expected.

Epidemiology:

No information available for the product.

Neurotoxicity:

No information available for the product.

Material Safety Data Sheet

Material Name: NOVA EC-202L

ID: 233115

Mutagenicity:

No information available for the product.

Teratogenicity:

No information available for the product.

Other Toxicological Information:

None available.

*** Section 12 - Ecological Information ***

Ecotoxicity:**A: General Product Information**

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity**Potassium hydroxide (1310-58-3)**

Test & Species		Conditions
24 Hr LC50 mosquito fish	80.0 mg/L	

Potassium pyrophosphate (7320-34-5)

Test & Species		Conditions
96 Hr LC50 rainbow trout	>100 mg/L	
48 Hr EC50 water flea	>100 mg/L	

Environmental Fate:

No data available for this product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Numbers & Descriptions:**A: General Product Information**

Wastes of this product may meet the characteristics of a RCRA corrosive waste (D002). This chemical contains phosphates.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions:

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Please refer to the container label for transportation information.

*** Section 15 - Regulatory Information ***

US Federal Regulations**A: General Product Information**

No additional information available.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Potassium hydroxide (1310-58-3)

CERCLA: 1000 lb final RQ; 454 kg final RQ

SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No Reactive: Yes

Material Safety Data Sheet

Material Name: NOVA EC-202L

ID: 233115

State Regulations

A: General Product Information

No additional information available.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Potassium hydroxide	1310-58-3	Yes	No	Yes	Yes	Yes	Yes

Other Regulations

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Potassium hydroxide	1310-58-3	Yes	Yes	Yes
Potassium pyrophosphate	7320-34-5	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Potassium hydroxide	1310-58-3	1% (English Item 1335, French Item 996)

***** Section 16 - Other Information *****

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

HMIS Ratings: Health: 3 Fire: 0 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Henkel Surface Technologies bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

Contact: Regulatory Affairs and Product Acceptance

Contact Phone: (248) 583-9300

This is the end of MSDS # 233115

Boeing MSDS# 74149 REV 05/06/2005

NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

MSDS Number: N3660 ***** Effective Date: 05/06/05 ✓ ***** Supercedes: 07/02/02

MSDS Material Safety Data Sheet

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



24 Hour Emergency Telephone: 800-855-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-995-6166

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 (1-800-662-2537) for assistance.

NITRIC ACID, 50-70%

1. Product Identification

Synonyms: Aqua Fortis; Azotic Acid; Nitric Acid 50%; Nitric Acid 65%; nitric acid 69-70%

CAS No.: 7697-37-2

Molecular Weight: 63.01

Chemical Formula: HNO₃

Product Codes:

J.T. Baker: 411D, 412D, 5371, 5796, 5801, 5826, 5856, 5876, 5896, 9597, 9598, 9600, 9601, 9602, 9603, 9604, 9606, 9607, 9608, 9610, 9616, 9617, 9670

Mallinckrodt: 1409, 2704, 2705, 2716, 6623, H862, H988, H993, H998, V077, V650

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Nitric Acid	7697-37-2	50 - 70%	Yes
Water	7732-18-5	30 - 50%	No

3. Hazards Identification

Emergency Overview

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

VENDOR 000166
MSDS# 74149
F

NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)

Potential Health Effects

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

Inhalation:

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract.

Ingestion:

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

Skin Contact:

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

Eye Contact:

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

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:

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

Explosion:

Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas

NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

which can form explosive mixtures with air.

Fire Extinguishing Media:

Water spray may be used to keep fire exposed containers cool. Do not get water inside container.

Special Information:

Increases the flammability of combustible, organic and readily oxidizable materials. 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. 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. Neutralize with alkaline material (soda ash, lime), then 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! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. 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:

-OSHA Permissible Exposure Limit (PEL):

2 ppm (TWA), 4 ppm (STEL)

-ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 ppm (STEL)

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, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Nitric acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

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.

NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

9. Physical and Chemical Properties

Appearance:
Colorless to yellowish liquid.
Odor:
Suffocating, acrid.
Solubility:
Infinitely soluble.
Specific Gravity:
1.41
pH:
1.0 (0.1M solution)
% Volatiles by volume @ 21C (70F):
100 (as water and acid)
Boiling Point:
122C (252F)
Melting Point:
-42C (-44F)
Vapor Density (Air=1):
2-3
Vapor Pressure (mm Hg):
48 @ 20C (68F)
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Containers may burst when heated.
Hazardous Decomposition Products:
When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.
Conditions to Avoid:
Light and heat.

11. Toxicological Information

Nitric acid: Inhalation rat LC50: 244 ppm (NO2)/30M; Investigated as a mutagen, reproductive effector. Oral (human) LDLo: 430 mg/kg.

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

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None

NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

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 facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. 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

Domestic (Land, D.O.T.)

Proper Shipping Name: NITRIC ACID
Hazard Class: 8
UN/NA: UN2031
Packing Group: II
Information reported for product/size: 6.5GL

International (Water, I.M.O.)

Proper Shipping Name: NITRIC ACID (WITH NOT MORE THAN 70% NITRIC ACID)
Hazard Class: 8
UN/NA: UN2031
Packing Group: II
Information reported for product/size: 6.5GL

15. Regulatory Information

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

Ingredient	TSCA	EC	Japan	Australia
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

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

Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

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

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Nitric Acid (7697-37-2)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No

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

NITRIC ACID, 50-70%

http://www.jtbaker.com/msds/englishhtml/N3660.htm

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)
Nitric Acid (7697-37-2)	1000	No	No
Water (7732-18-5)	No	No	No

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

Australian Hazchem Code: 2PE

Poison Schedule: S6

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: 3 Flammability: 0 Reactivity: 0 Other: Oxidizer

Label Hazard Warning:

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

Label Precautions:

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor or mist.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Keep from contact with clothing and other combustible materials.
- Do not store near combustible materials.
- Store in a tightly closed container.
- Remove and wash contaminated clothing promptly.

Label First Aid:

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

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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NITRIC ACID, 50-70%

<http://www.jtbaker.com/msds/englishhtml/N3660.htm>

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

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

*** Section 1 - Chemical Product and Company Identification ***

Product Trade Name DEOXALUME® 2310

Manufacturer Information

Henkel Surface Technologies
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Contact Phone: (248) 583-9300

Chemtrec Emergency # (800) 424-9300

*** Section 2 - Composition / Information on Ingredients ***

Table with 3 columns: CAS #, Component, Percent. Rows include Sulfuric acid (10-30), Ferric sulfate (10-30), and Ammonium bifluoride (1-10).

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Fluorides (16984-48-8).

*** Section 3 - Hazards Identification ***

Emergency Overview:

DANGER -- CORROSIVE! Contact with this material will cause burns to the skin, eyes and mucous membranes.

Eye Contact:

This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.

Skin Contact:

Corrosive to the skin. Contact with the skin or mucous membranes may cause severe irritation and burns. Following skin exposure to this product, the sensation of irritation or pain may be delayed.

Skin Absorption:

A component in this product may be harmful or fatal if absorbed through the skin, especially if skin is damaged.

Ingestion:

This product may produce corrosive damage to the gastrointestinal tract if it is swallowed. Ingestion of small amounts of this product may result in potentially fatal hypocalcemia and systemic toxicity. Ingestion of large amounts of this product may result in fluoride poisoning including symptoms of calcification of the ligaments and severe bone changes making normal movements painful, mottling of the teeth, pulmonary fibrosis, anemia, anorexia, dental effects, and possibly death.

Inhalation:

Inhalation of mists of this product may cause severe irritation and burns to the respiratory tract. Inhalation of mists or vapors may produce upper airway edema, wheezing, pulmonary edema, pneumonitis and respiratory failure. The repeated breathing of this material for years may cause fluorosis.

Medical Conditions Aggravated by Exposure:

Pre-existing eye, skin and respiratory disorders.

*** Section 4 - First Aid Measures ***

Eye Contact:

In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Skin Contact:

Immediately take off all contaminated clothing. Flush with large amounts of water. Soak the affected area for one hour in an iced solution (0.13%) of Zephiran chloride (30 cc of 17% concentrate per gallon of iced distilled water.) GET MEDICAL ATTENTION IMMEDIATELY.

Handwritten ID: 004541-84377

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

Ingestion:

If the material is swallowed, get immediate medical attention or advice – Do not induce vomiting. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Inhalation:

If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

First Aid: Notes to Physician

Ocular exposure to corrosive fluoride compounds has been treated with isotonic sodium chloride or magnesium chloride. Dermal exposure to corrosive fluoride compounds has been treated with calcium gluconate or calcium carbonate gel applied topically to the affected areas to relieve pain at the site of exposure. Treatment of hypocalcemia associated with corrosive fluoride compounds exposure may be corrected by intravenous calcium gluconate or calcium chloride. Treatment of hypomagnesemia may be corrected by intravenous magnesium sulfate.

*** Section 5 - Fire Fighting Measures ***

Flash Point:	Not applicable	Method Used:	Not applicable	Flammability Classification:	Non-flammable
Upper Flammable Limit (UFL):	Not applicable	Lower Flammable Limit (LFL):	Not applicable		

Fire & Explosion Hazards:

May react with metals to form flammable hydrogen gas. This product is an oxidizing agent and is a serious fire and explosion risk. Do not permit contact with combustible, organic, or other oxidizable materials.

Decomposition Products:

Irritating and toxic gases or fumes may be released during a fire.

Extinguishing Media:

Use any media suitable for the surrounding fires.

Fire-Fighting Instructions:

Firefighters should wear full protective clothing including self contained breathing apparatus.

*** Section 6 - Accidental Release Measures ***

Containment Procedures:

Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up.

Clean-Up Procedures:

Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of collected material according to regulation.

*** Section 7 - Handling and Storage ***

Handling Procedures:

Do not get this material in your eyes, on your skin, or on your clothing. Wash thoroughly after handling. Do not inhale vapors or mists of this product. For industrial use only. Do not take internally. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.

Storage Procedures:

Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines:

A: General Product Information

Follow all applicable exposure limits.

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

B: Component Exposure Limits**Sulfuric acid (7664-93-9)**

ACGIH: 1 mg/m3 TWA

3 mg/m3 STEL

OSHA: 1 mg/m3 TWA

NIOSH: 1 mg/m3 TWA

Ammonium bifluoride (1341-49-7)

ACGIH: 2.5 mg/m3 TWA (as F) (related to Fluorides)

OSHA: 2.5 mg/m3 TWA (as F) (related to Fluoride)

Engineering Controls:

Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces.

PERSONAL PROTECTIVE EQUIPMENT

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a Hazard Assessment of all workplaces to determine the need for, and selection of, proper protective equipment for each task performed.

Eyes/Face Protective Equipment:

Wear chemical goggles; face shield (if splashing is possible).

Skin Protection:

Use impervious gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

Respiratory Protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Work Practices:

Eye wash fountain and emergency showers are recommended.

***** Section 9 - Physical & Chemical Properties *****

Physical State: Liquid	Appearance: Dark brown
Odor: Acidic	Vapor Pressure: Not determined
Vapor Density: Not determined	Boiling Point: >212 °F (>100 °C)
Specific Gravity: 1.34-1.45	pH: <1
Viscosity: Not applicable	VOC: 0%
Solubility Water: Complete	Evaporation Rate: As water
Percent Volatile: Not applicable	Percent Solids: Not determined

***** Section 10 - Chemical Stability & Reactivity Information *******Chemical Stability:**

Stable under normal conditions.

Conditions to Avoid:

None expected.

Incompatibility:

This product may react with strong alkalis. This material will react with glass, concrete, certain metals, silica containing materials, rubber, leather, and many organics. Keep away from organic, alkaline, and oxidizing materials, metallic powders, chromates, chlorates, nitrates, and carbides. Adding water to this product may cause localized overheating and splattering.

Decomposition Products:

May liberate hydrogen fluoride. Thermal decomposition may produce ammonia. Decomposition of this product may yield oxides of sulfur.

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

Hazardous Polymerization:

Will not occur.

***** Section 11 - Toxicological Information *****

Acute Toxicity:

A: General Product Information

No information available for the product.

B: Component Analysis - LD50/LC50

Sulfuric acid (7664-93-9)

Inhalation LC50 Rat: 510 mg/m3/2H

Inhalation LC50 Mouse: 320 mg/m3/2H

Oral LD50 Rat: 2140 mg/kg

Carcinogenicity:

A: General Product Information

No information available for the product.

B: Component Carcinogenicity

Sulfuric acid (7664-93-9)

ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists)

IARC: Monograph 54, 1992; (see RR-04058-4) (Group 1 (carcinogenic to humans))

Ammonium bifluoride (1341-49-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (as F) (related to Fluorides)

Chronic Toxicity

No information available for the product.

Exposure to mists containing inorganic acids including sulfuric acid have been implicated in causing cancer in humans.

Chronic exposure to fluoride compounds may result in fluorosis characterized by calcification of ligaments and severe bone changes which result in painful movements, mottling of the teeth, pulmonary fibrosis, anemia, anorexia, and weight loss.

Epidemiology:

No information available for the product.

Neurotoxicity:

No information available for the product.

Mutagenicity:

No information available for the product.

Teratogenicity:

No information available for the product.

Other Toxicological Information:

None available.

***** Section 12 - Ecological Information *****

Ecotoxicity:

A: General Product Information

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

Environmental Fate:

No data available for this product.

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

***** Section 13 - Disposal Considerations *****

US EPA Waste Numbers & Descriptions:

A: General Product Information

This product, if discarded directly, would be a characteristic RCRA corrosive waste (D002). Neutralize the spilled material before disposal.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions:

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

***** Section 14 - Transportation Information *****

US DOT Information

Shipping Name: Please refer to the container label for transportation information.

***** Section 15 - Regulatory Information *****

US Federal Regulations

A: General Product Information

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Ferric sulfate (10028-22-5)

CERCLA: 1000 lb final RQ; 454 kg final RQ

Sulfuric acid (7664-93-9)

SARA 302: 1000 lb TPQ; 1000 lb EPCRA RQ

SARA 313: 1.0 percent de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

CERCLA: 1000 lb final RQ; 454 kg final RQ

Ammonium bifluoride (1341-49-7)

CERCLA: 100 lb final RQ; 45.4 kg final RQ

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No Reactive: Yes

State Regulations

A: General Product Information

No additional information available.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Ferric sulfate	10028-22-5	Yes	No	Yes	No	Yes	Yes
Sulfuric acid	7664-93-9	Yes	Yes	Yes	Yes	Yes	Yes
Ammonium bifluoride (*related to Fluorides)	1341-49-7	Yes	No	Yes	Yes'	Yes	Yes

Other Regulations

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

Material Safety Data Sheet

Material Name: DEOXALUME® 2310

ID: 235870

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Ferric sulfate	10028-22-5	Yes	Yes	Yes
Sulfuric acid	7664-93-9	Yes	Yes	Yes
Ammonium bifluoride	1341-49-7	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Sulfuric acid	7664-93-9	1%; English Item 1485; French Item 138

*** Section 16 - Other Information ***

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

HMIS Ratings: Health: 3* Fire: 0 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Henkel Surface Technologies bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

Contact: Regulatory Affairs and Product Acceptance

Contact Phone: (248) 583-9300

This is the end of MSDS # 235870

MSDS 095424 REV 06/13/2001

Image Data From SunHealth

(#95424 - 705T)

SR651

Material Safety Data Sheet

Material Name: ALODINE® 1600

ID: 236149

***** Section 1 - Chemical Product and Company Identification *****

Product Trade Name ALODINE® 1600

Manufacturer Information

Henkel Surface Technologies
 Henkel Corporation
 32100 Stephenson Highway
 Madison Heights, MI 48071

Contact Phone: (248) 583-9300

Chemtrec Emergency # (800) 424-9300

***** Section 2 - Composition / Information on Ingredients *****

CAS #	Component	Percent
10588-01-9	Sodium dichromate	>60

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Chromium (VI) compounds- water soluble, Chromium, inorganic compounds, Chromium (VI) compounds, Chromium (VI) (18540-29-9), Chromic acid (7738-94-5).

***** Section 3 - Hazards Identification *******Emergency Overview:**

DANGER -- CORROSIVE! Contact with this material will cause burns to the skin, eyes and mucous membranes. May cause blindness. Contact with broken skin may result in ulcers. Cancer hazard.

Eye Contact:

This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.

Skin Contact:

Contact with broken skin may lead to formation of firmly margined "chrome sores". Product contains chromium, which may cause an allergic skin sensitization reaction. Massive overexposures may lead to kidney failure and death.

Skin Absorption:

A component in this product may be absorbed through the skin, especially if skin is damaged.

Ingestion:

This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

Inhalation:

Inhalation of mists of this product may cause severe irritation and burns to the respiratory tract. Prolonged or repeated breathing may cause ulceration of nasal membranes.

Medical Conditions Aggravated by Exposure:

Pre-existing eye, skin and respiratory disorders.

***** Section 4 - First Aid Measures *******Eye Contact:**

In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Skin Contact:

Immediately take off all contaminated clothing. For skin contact, flush with large amounts of water. Seek immediate medical attention. If irritation persists, repeat flushing and get medical attention. Discard any shoes or clothing items that cannot be decontaminated.

Ingestion:

If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

004541-95424
TCV

Material Safety Data Sheet

Material Name: ALODINE® 1600

ID: 236149

Inhalation:

If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

First Aid: Notes to Physician

No additional information available.

*** Section 5 - Fire Fighting Measures ***

Flash Point: Not applicable

Method Used: Not applicable

Flammability Non-flammable
Classification:Upper Flammable Not applicable
Limit (UFL):Lower Flammable Not applicable
Limit (LFL):**Fire & Explosion Hazards:**

If evaporated to dryness, solid residue is an oxidizing agent and may cause spontaneous ignition of combustible materials.

Decomposition Products:

Irritating and toxic gases or fumes may be released during a fire.

Extinguishing Media:

Use any media suitable for the surrounding fires.

Fire-Fighting Instructions:

Firefighters should wear full protective clothing including self contained breathing apparatus.

*** Section 6 - Accidental Release Measures ***
--

Containment Procedures:

Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up.

Clean-Up Procedures:

Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of collected material according to regulation.

*** Section 7 - Handling and Storage ***

Handling Procedures:

Do not get this material in your eyes, on your skin, or on your clothing. Do not inhale vapors or mists of this product. Wash thoroughly after handling. For industrial use only. Clothing or other material wet with this product and allowed to dry may become flammable.

Storage Procedures:

Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials.

*** Section 8 - Exposure Controls / Personal Protection ***
--

Exposure Guidelines:**A: General Product Information**

Follow all applicable exposure limits.

B: Component Exposure Limits**Sodium dichromate (10588-01-9)**

ACGIH: 0.05 mg/m3 TWA (related to Chromium (VI) compounds - water soluble)
0.5 mg/m3 TWA (related to Chromium, inorganic compounds)

OSHA: Chromic acid and chromates: C 0.1 mg/m3 (related to Chromic acid)

NIOSH: as CrO3: 0.001 mg/m3 TWA; NIOSH Potential Occupational Carcinogen - see Appendix A; see Appendix C for supplementary exposure limits (related to Chromic acid)

Material Safety Data Sheet

Material Name: ALODINE® 1600

ID: 236149

Engineering Controls:

Ventilation should effectively remove and prevent buildup of any vapor or mist generated from the handling of this product.

PERSONAL PROTECTIVE EQUIPMENT**Eyes/Face Protective Equipment:**

Wear chemical goggles; face shield (if splashing is possible).

Skin Protection:

Use impervious gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

Respiratory Protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Personal Protective Equipment:

Eyewash fountains and emergency showers are required.

***** Section 9 - Physical & Chemical Properties *****

Physical State:	Liquid	Appearance:	Red/orange
Odor:	None	Vapor Pressure:	Not determined
Vapor Density:	Not determined	Boiling Point:	>212 °F (>100 °C)
Specific Gravity:	1.7-1.8	pH:	4.7
Viscosity:	Not determined	VOC:	Not applicable
Solubility Water:	Complete	Evaporation Rate:	Not determined
Percent Volatile:	Not determined	Percent Solids:	>60

***** Section 10 - Chemical Stability & Reactivity Information *******Chemical Stability:**

Stable under normal conditions.

Conditions to Avoid:

None expected.

Incompatibility:

Avoid contact with organic materials, oils, greases, and any oxidizable materials. This material will react with glass, concrete, certain metals, silica containing materials, rubber, leather, and many organics. This product may react with strong alkalis.

Decomposition Products:

Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition.

Hazardous Polymerization:

Will not occur.

***** Section 11 - Toxicological Information *******Acute Toxicity:****A: General Product Information**

No information available for the product.

B: Component Analysis - LD50/LC50

Sodium dichromate (10588-01-9)

Oral LD50 Rat : 50 mg/kg

Carcinogenicity:**A: General Product Information**

No information available for the product.

Material Safety Data Sheet

Material Name: ALODINE® 1600

ID: 236149

B: Component Carcinogenicity**Sodium dichromate (10588-01-9)**

ACGIH: A1 - confirmed human carcinogen (related to Chromium (VI) compounds - water soluble)
 A4 - not classifiable as a human carcinogen (related to Chromium, inorganic compounds)

NIOSH: occupational carcinogen (related to Chromic acid)

NTP: Known Carcinogen (related to Chromium (VI) compounds) (Select Carcinogen)

IARC: Monograph 49, 1990; (Evaluated as a group) (related to Chromium (VI) compounds)
 Monograph 49, 1990; (Evaluated as a group) (related to Chromium (VI)) (Group 1 (carcinogenic to humans))

Chronic Toxicity

Chromium III, the naturally occurring form, has low toxicity while chromium VI is highly toxic due to strong oxidation characteristics and permeability through biological membranes. Excessive exposure to chromium VI can produce allergic skin sensitization reactions and severe nasal irritation, scarring and damage to the lungs, liver and kidney damage.

The International Agency for Research on Cancer (IARC) has found that there is an excessive risk of lung cancer among workers in the chromate producing industry.

Epidemiology:

No information available for the product.

Neurotoxicity:

No information available for the product.

Mutagenicity:

No information available for the product.

Teratogenicity:

No information available for the product.

Other Toxicological Information:

None available.

***** Section 12 - Ecological Information *******Ecotoxicity:****A: General Product Information**

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity**Sodium dichromate (10588-01-9)****Test & Species**

LC50 (96 hr) fathead minnow	33.2 mg/L.
LC50 (96 hr) rainbow trout	69 mg/L.
LC50 (96 hr) bluegill	213 mg/L.
LC50 (96 hr) striped catfish	200 mg/L.
LC50 (96 hr) rainbow trout	7600 ug/L

Conditions

Flow-through, 235 mg/L CaCO₃.
 Flow-through, 45 mg/L CaCO₃.
 Static, 120 mg/L CaCO₃. -LC50 (96 hr) fathead minnow:36.2 mg/L.:

: water pH = 7.0 (related to Chromium (VI))

Environmental Fate:

No data available for this product.

***** Section 13 - Disposal Considerations *******US EPA Waste Numbers & Descriptions:****A: General Product Information**

Wastes of this product may meet the characteristics of a RCRA corrosive waste (D002). This product contains chromium which is a hazardous waste (D007).

Material Safety Data Sheet

Material Name: ALODINE® 1600

ID: 236149

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions:

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

***** Section 14 - Transportation Information *******US DOT Information**

Shipping Name: Please refer to the container label for transportation information.

***** Section 15 - Regulatory Information *******US Federal Regulations****A: General Product Information**

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Sodium dichromate (10588-01-9)

SARA 313: form R reporting required for 0.1% de minimis concentration; Chemical Category N090 (related to Chromium (VI) compounds)

CERCLA: final RQ = 10 pounds (4.54 kg)
final RQ = 10 pounds (4.54 kg) (related to Chromic acid)

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No Reactive: No

State Regulations**A: General Product Information**

No additional information available.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Sodium dichromate (1 related to Chromic acid) (2 related to Chromium (VI))	10588-01-9	Yes	Yes ¹	Yes ¹	Yes ²	Yes ¹	Yes ²

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Other Regulations**A: General Product Information**

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Sodium dichromate	10588-01-9	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Sodium dichromate	10588-01-9	1% item 1436 (688) - 1% item 398 (560) (related to Chromium (VI) compounds, n.o.s.) - 1% item 391 (79) (related to Chromic acid (H ₂ CrO ₄))

Material Safety Data Sheet

Material Name: ALODINE 600

ID: 236149

***** Section 16 - Other Information *****

NFPA Ratings: Health: 3 Fire: 3 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

HMIS Ratings: Health: 3* Fire: 3 Reactivity: 0 Pers. Prot.:

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendment and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Henkel Surface Technologies bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

Contact: Sulinda Leffingwell
Contact Phone: (248) 583-9300

This is the end of MSDS # 236149

MSDS 095424 REV 06/13/2001

Image Data From SunHealth

BCA MANUFACTURING RESEARCH & DEVELOPMENT

01/16/04

MSDS Number Request Form
MR&D Use Only

10/03

Print form, complete, attach MSDSs, and mail packet to: MSDS, M/C 7X-73, or
Fax this packet to: 425-965-8469, or
Do "Save As", complete form, and send e-copies of form and MSDSs to: msds@boeing.com
Contact: Mike Berg @ 425-373-8863

This form applies to MR&D test materials that are new to Boeing (i.e., brand new materials or reformulations). It is to be used for obtaining Boeing Material Safety Data Sheet (MSDS) numbers and for adding MSDSs to the SunHealth MR&D MSDS list (materials with active MR&D test status) prior to testing new materials. Since they will be undergoing evaluation, the materials listed below are currently for R&D use only. The attached MSDSs are to be made available to all affected employees during lab and shop testing.

Form Submit Date 1/14/04Test Site(s): Everett Renton Auburn DC Other (specify) _____Test Location(s) (lab and/or shop name, bldg, col.) 17-08 Chem Lab**MR&D Contact:**Name Linda Nuanez Phone 253-351-5389E-mail Linda.a.Nuanez@boeing.com @boeing.com Org# (e.g., 6-20C4) 6-20C2

Please assign MSDS numbers to the following materials, and return that information to me via e-mail.

Materials (Specify: product; new (N) or reformulation (R); developmental (D) or non-production, lab-use only (L; e.g., for routine chemical analysis); manufacturer; manufacturer's phone number):

from Linda Nuanez 5F-11

MSDS 095424 REV 06/13/2001

Image Data From SunHealth

Product	N/R	D/L	Manufacturer	Phone
Hydrobromic Acid		X	J.T. Baker 79272	1-800-582-2537
Aluminum Sulfate		X	J.T. Baker 91012	same
Toluol; Methyl Benzene		X	EMD Chemicals Inc. 89776	856-423-6300
Ammonium Sulfate		X	J.T. Baker 76708	1-800-582-2537
Sodium Molybdate		X	J.T. Baker 76595	same
Ridoline 298		X	Henkel Surface Tech. 103777	248-583-9300
Alodine 1600		X	Henkel Surface Tech. 95424	same
Alodine 1660 Additive		X	Henkel Surface Tech. 95425	same
Thread Gain 90 Series (petroleum metalworking oil)		X	W.S. Dodge Oil Co. 126428	323-583-3478
Ruby Titanium Series (petroleum metalworking oil)		X	W.S. Dodge Oil Co. 126429	323-583-3478

MATERIAL SAFETY DATA SHEET REGULATORY DATA

INDUSTRIAL CHEMICALS INC. - PO BOX 660688 - BIRMINGHAM, ALABAMA - 35266-0688 - (205) 823-7330

FILE UPDATE: 5/5/2003

MSDS VERSION DATE: 5/25/2000

PRODUCT CODE: SFA100

ORIGINAL ENTRY: 6/10/1992

PRODUCT NAME: SULFURIC ACID 93% (AS IS)

115800

CAS Numbers and Names of the Primary Chemical and/or its Components

	MAXIMUM %
7664-93-9 SULFURIC ACID	93
7732-18-5 WATER	7

TITLE III, SECTION 313 REGULATED CAS REGISTRY NUMBERS AND NAMES

7664-93-9 SULFURIC ACID	93.00
Includes acid aerosols, including mists, vapors, gas, fog, and other airborne forms of any particle size.	

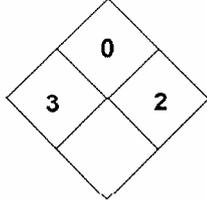
Extremely Hazardous Substance subject to section 302 emergency planning and notification requirements (EHS)	YES
Hazardous chemical and/or components subject to section 311 and 312 MSDS and inventory requirements (OSH)	YES
Toxic chemical and/or components subject to toxic chemical release reporting under Section 313 (TOXIC)	NO
Hazardous contents subject to section 304 spill reporting of Comprehensive Environmental Liability Act (CERCLA)	YES
Subject to the reporting requirements of the EPA Toxicity Characteristic Leaching Process (CFR40 261.24)	NO
This product, or its components, are listed on or are exempt from the Toxic Substance Control Act (TSCA)	YES
Contains a Toxic Air Pollutant listed under the 1990 Clean Air Act Amendments [42 USC sec 7412(b)(1)].	NO
Subject to the EPA Risk Management Program under Section 112(r) of the Clean Air Act and 40 CFR Part 68	NO

* INFORMATION NOT AVAILABLE

SARA Title III Hazard Categories

- Fire Hazard**
- Reactivity Hazard**
- Sudden Release of Pressure**
- Acute Health Hazard (Immediate)**
- Chronic Health Hazard (Delayed)**
- Extremely Hazardous Substance**

SULFURIC ACID

<input checked="" type="checkbox"/> NFPA	<input checked="" type="checkbox"/> HMS						
	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">HEALTH</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">FLAMMABILITY</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">REACTIVITY</td><td style="text-align: center;">2</td></tr> </table>	HEALTH	3	FLAMMABILITY	0	REACTIVITY	2
HEALTH	3						
FLAMMABILITY	0						
REACTIVITY	2						
V2.5/051398							

Department of Transportation Data

D.O.T. Shipping Name (CFR49 172.101(2))
SULFURIC ACID

Hazard Class (CFR49 172.101(3))
8

ID Number (CFR49 172.101(4))
UN1830

ERG Guide #: 137
Packing Group: II

RQ #: 1000

FLASHPOINT ° F / Method: NA

Handling & Storage

EMERGENCY RESPONSE GUIDE SHEET

Guide No.: 137

GUIDE 137 - ORANGE PAGE 222 - SUBSTANCES - WATER-REACTIVE - CORROSIVE

SFA100

POTENTIAL HAZARDS

HEALTH

TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns, or death. Fire will produce irritating, corrosive and/or toxic gases. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Contact with molten substance may cause severe burns to skin and eyes. Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn, but none ignite readily.
May ignite combustibles (wood, paper, oil, clothing, etc.).
Substance will react with water (some violently), releasing corrosive and/or toxic gases.
Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars etc.)
Contact with metals may evolve flammable hydrogen gas.
Containers may explode when heated or if contaminated with water.
Substance may be transported in a molten form.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
Isolate spill or leak area immediately for at least 50 to 100 meters (160 to 330 feet) in all directions.
Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas.

PROTECTIVE CLOTHING

Wear positive pressure self-contained breathing apparatus (SCBA).
Wear chemical protective clothing which is specifically recommended by the manufacturer.
Structural firefighters' protective clothing is recommended for fire situations ONLY; it is not effective in spill situations.

EVACUATION

Spill: See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under PUBLIC SAFETY."
Fire: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

When material is not involved in fire: do not use water on material itself.
Small Fires: Dry chemical or CO2.
Move containers from fire area if you can do it without risk.
Large Fires: Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only.
Fire involving Tanks or Car/Trailer Loads
Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from the ends of tanks.

SPILL OR LEAK

Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Stop leak if you can do it without risk.
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
Keep combustibles (wood, paper, oil, etc.) away from spilled material.
Small Spills: Cover with DRY earth, DRY sand, or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

Move victim to fresh air.
Call emergency medical care.
Apply artificial respiration if victim is not breathing.
Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Administer oxygen if breathing is difficult.
Remove and isolate contaminated clothing and shoes.
In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
For minor skin contact, avoid spreading material on unaffected skin.
Removal of solidified molten material from skin requires medical assistance.
Keep victim warm and quiet.
Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5/5/2003

DATE PRINTED: 11/05/2001

PAGE 1
MSDS NO. 16-084816

SULFURIC ACID, 93% Commerical Grade

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME
SULFURIC ACID, 93% Commerical Grade

CHEMICAL NAME
Sulfuric acid

SYNONYM
Hydrogen sulfate, Oil of vitrio

CHEMICAL FORMULA
H2 S O4

CAS #
7664-93-9

CHEMICAL FAMILY
Inorganic acid

MANUFACTURERS NAME
Akzo Nobel Functional Chemicals LLC

PRODUCT/TECHNICAL INFORMATION
1-770-246-4621

ADDRESS
5555 Spalding Drive
Suite 100 - Sulfur Products
Norcross, GA 30092

MEDICAL/HANDLING EMERGENCY
1-888-578-5387

COUNTRY
USA

TRANSPORTATION EMERGENCY
1-800-121-9300

PRODUCT USE
Fertilizers; explosives; artificial fibers;
water treatment

REVISION DATE
5/25/2000

ISSUE DATE
5/19/1998

REVISION NO.
003

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE DESCRIPTION	PERCENT	CAS#
Sulfuric acid	93.000	7664-93-9
Water	7.000	7732-18-5

SECTION 3. HAZARDS IDENTIFICATION

Appearance & Odor

Dense, oily, colorless, odorless liquid.

STATEMENT OF HAZARDS

DANGER!
CAUSES SEVERE SKIN AND EYE BURNS.
CAN REACT VIOLENTLY WITH WATER.
STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.
CONTENTS MAY BE UNDER PRESSURE OF EXPLOSIVE HYDROGEN GAS.
OVEREXPOSURE MAY AFFECT THE TEETH AND RESPIRATORY SYSTEM.

Fire & Explosion Hazards

Sulfuric acid is not flammable or combustible and is not sensitive to static discharge. However, it is highly reactive. Concentrated sulfuric acid is a strong oxidizer capable of igniting combustible materials on contact. Contact with water or strong bases can result in a violent, exothermic reaction.

Contact with many common metals can evolve flammable and potentially explosive hydrogen gas. The rate of hydrogen generation increases with decreasing acid concentration. Sulfuric acid contact with finely divided or powdered metals can cause an explosive reaction.

SULFURIC ACID, 93% Commercial Grade

SECTION 3. HAZARDS IDENTIFICATION
(CONTINUED)

Primary Route of Exposure

Skin and eye contact and inhalation of mist are the primary routes of exposure to this product.

Inhalation Acute Exposure

Inhalation of vapor or mist can cause severe irritation of the respiratory tract. High concentrations in air may cause sneezing, coughing, laryngitis, and difficult breathing. Overexposure may cause lung damage.

Skin Contact - ACUTE

Skin contact can cause severe irritation or burns with redness, swelling, and blistering.

Eye contact - ACUTE

Eye contact can cause severe irritation or burns. May cause permanent eye damage and blindness if not flushed out immediately.

Ingestion - ACUTE

Ingestion of this material can cause severe irritation or burns of the mouth, throat, esophagus, and stomach. May damage gastrointestinal system. May be fatal.

CARCINOGENICITY

IARCNO	OSHANO
NTPNO	ACGIHNO

SECTION 4. FIRST AID MEASURES

Inhalation First Aid

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Skin Contact - First Aid

Immediately remove contaminated clothing and shoes while under a safety shower with large water flow. Continue to flush remaining material from all affected areas under a safety shower. Then wash skin thoroughly with soap and plenty of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention immediately. Wash contaminated clothing promptly. Thoroughly clean resistant footwear. Destroy non-resistant footwear.

Eye Contact - First Aid

Immediate first aid is required to prevent eye damage. If victim is wearing contact lenses, remove them. Take care not to contaminate the victim's healthy skin and eyes. Immediately flush the eye(s) with large quantities of running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. DO NOT let the victim rub the eyes. Do not attempt to neutralize with chemical agents. Obtain medical attention immediately. Oils and ointments should not be used at this time. Continue flushing with water or normal saline solution, if available, for an additional 15 minutes if a physician is not immediately available.

Ingestion - First Aid

DO NOT induce vomiting. If victim is conscious and alert, give plenty of water to drink. Call a physician or a poison control center immediately. If vomiting occurs, keep head below hips to reduce risk of aspiration. Give victim water again. Never give anything by mouth to a person who is unconscious or convulsing.

SULFURIC ACID, 93% Commercial Grade

SECTION 4. FIRST AID MEASURES
(CONTINUED)

Get medical attention immediately.

Medical conditions aggravated

Individuals with pre-existing lung disease (such as asthma, bronchitis, and emphysema) are at increased risk from inhalation of sulfuric acid mists. Individuals exposed to other sulfates or previously sensitized to sulfates may be more sensitive to exposure to sulfuric acid.

Note to Physician

Attending physician should treat exposed patients symptomatically.

Chemical burns on the skin should be treated as thermal burns. Flush eyes with buffered or plain irrigating solutions. If any ulceration or conjunctival injury is present, have an ophthalmologist examine the patient. Iced water helps relieve pain and swelling of both the skin and eyes.

If swallowed, may cause severe ulceration, inflammation, and possible perforation of the gastrointestinal tract. Maintain adequate airway. Aspiration of sulfuric acid during induced emesis can result in severe lung injury. Evacuate stomach contents using the method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Ingestion of acid may affect the body's pH balance which may affect the nervous system. Immediate cause of death is often circulatory shock.

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT

N/D F N/D C
Not applicable

FLASH METHOD

Not applicable

AUTO IGNITION TEMPERATURE

N/D F N/D C

UPPER EXPLOSION LIMIT

N/D

LOWER EXPLOSION LIMIT

N/D

Extinguishing Media

Use dry chemical, carbon dioxide, or foam extinguishing agents. For larger fires, flood area with water from a safe distance. Direct application of high pressure water streams may splatter burning material.

Fire Fighting Procedures

As in any fire, prevent human exposure to fire, smoke, fumes, or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters should wear positive pressure/pressure demand, self-contained breathing apparatus and impervious protective clothing. If possible, remove containers from the fire area. Maintain a safe distance from the fire and storage area because excessive heat can cause storage containers to rupture. Keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. Do not apply water if it may enter containers; explosive reaction may occur. High pressure water may spread product from broken containers increasing contamination or fire hazard. Dike fire water for later neutralization and disposal. Do not allow contaminated water to enter waterways.

SULFURIC ACID, 93% Commercial Grade

SECTION 5. FIRE FIGHTING MEASURES
(CONTINUED)

Fire & Explosion Hazards

Sulfuric acid is not flammable or combustible and is not sensitive to static discharge. However, it is highly reactive. Concentrated sulfuric acid is a strong oxidizer capable of igniting combustible materials on contact. Contact with water or strong bases can result in a violent, exothermic reaction.

Contact with many common metals can evolve flammable and potentially explosive hydrogen gas. The rate of hydrogen generation increases with decreasing acid concentration. Sulfuric acid contact with finely divided or powdered metals can cause an explosive reaction.

Other Fire + Explosion Hazards

Contact with water may produce sulfuric acid vapors. Concentrated vapors are extremely irritating to the respiratory tract.

Do not allow water to enter containers of sulfuric acid; explosive reaction may occur.

Hazardous Products/Combustion

Decomposition of this product under fire conditions will produce irritating and toxic sulfur oxides.

NFPA HEALTH RATING

3

NFPA FLAMMABILITY RATING

0

NFPA REACTIVITY RATING

2

NFPA OTHER

W

SECTION 6. ACCIDENTAL RELEASE MEASURES

Cleanup

Isolate spill area and restrict non-essential personnel from area.

All personnel involved in spill cleanup should follow good industrial hygiene practices. Wear protective equipment to prevent eye and skin contact. Use adequate ventilation and/or wear a NIOSH-approved acid gas respirator with dust, mist, and fume filter to prevent inhalation exposure. Stop source of spill if this is possible without being injured.

Any leak occurring in pipelines or equipment should be considered an acid leak and treated with extreme caution until the leak is proven not to be an acid leak. All contaminated areas should be zoned off immediately to avoid personnel exposure to the acid spray or stream. Adjust all appropriate valves to isolate the system and stop further leakage.

Small spills should be absorbed with a suitable, dry, inert material (e.g., sand or earth) or a neutralizing material (e.g., limestone, lime, sodium bicarbonate, soda ash). Take care to avoid any foaming or splattering that may occur from the neutralization reaction of the acid with these materials. Remove the absorbed or reacted material (Note: Material may not be fully neutralized.), and place in an appropriate chemical waste container for disposal.

Large spills should be diked to prevent spreading. Keep water away from spill. Pump spilled material to salvage according to a predetermined plan. Remove residual material as described above.

Washing down of spills with water is not recommended because this tends to spread the contamination and increase the likelihood of percolating the acid down through the soil and/or of uncontrolled

DATE PRINTED: 11/05/2001

PAGE 5
MSDS NO. 16-084816

SULFURIC ACID, 93% Commercial Grade

SECTION 6. ACCIDENTAL RELEASE MEASURES
(CONTINUED)

flow of acid into sewers, streams, or other waters.

Sulfuric acid leaks, spills, or drainings must not contact any acid soluble sulfide wastes (such as sewers) because of the danger of evolving hydrogen sulfide gas.

SECTION 7. HANDLING AND STORAGE

Handling

Wear protective equipment when handling this product to prevent eye and skin contact. If adequate ventilation is not available or use conditions could generate acid vapors or mists, wear a NIOSH-approved, full-face, acid-gas cartridge respirator with dust, mist, and fume filters.

Do not add water to container; explosive reaction may occur. When diluting, slowly add acid to water with gentle stirring.

Emptied container may retain product residues. Follow all warnings and precautions even after container is emptied.

Storage

Store away from foodstuffs or animal feed. Containers should be stored in a cool, dry, well-ventilated area away from combustible and incompatible materials. Do not store near bases, halides, sulfides, picrates, nitrates, chlorates, carbides, fulminates, cyanides, and reducing agents. Containers should be tightly closed when not in use. Do not allow water to enter containers. If outdoor storage is unavoidable, containers should be placed in an area shielded from the sun and other elements. Sulfuric acid may be safely stored in properly designed bulk storage tanks. Exercise caution to prevent damage to or leakage from containers.

MAXIMUM STORAGE TEMPERATURE

N/D F N/D C

General Comments

Keep containers tightly closed until ready for use.
Wash thoroughly after handling.
Do not transfer to unmarked container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection

Use of respiratory protection generally is not required. However, if ventilation is inadequate or use conditions could generate acid vapors or mists, inhalation of airborne material must be prevented through the use of a NIOSH-approved, full-face, acid-gas cartridge respirator with dust, mist, and fume filters. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure, pressure-demand, air-supplied respirator.

When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the workshift) to assure breakthrough exposure does not occur.

Skin Protection

It is essential that skin contact with the liquid or aerosol be prevented through the use of impervious (e.g., neoprene, nitrile rubber, PVC) clothing, gloves, and footwear selected with regard for use condition exposure potential.

SULFURIC ACID, 93% Commercial Grade

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
(CONTINUED)**

Eye Protection

Eye contact with this product may cause severe irritation or chemical burns of the eyes, and possibly permanent eye damage. Eye contact with the liquid or aerosol should be prevented by wearing chemical goggles and/or a face shield while handling.

Ventilation protection

Special ventilation is usually not required under normal use conditions. General plant ventilation should be adequate in most cases.

Other Protection

Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

APPLICABLE EXPOSURE LIMITS

Other than any exposure limits which may be displayed in Section 8, there are no other known exposure limits applicable to this product or its components.

Exposure to sulfuric acid mists is immediately dangerous to life and health (IDLH) at 80 mg/m³.

**EXPOSURE LIMITS/REGULATORY INFORMATION
(IN MG/M³)**

SUBSTANCE DESCRIPTION	REG. AGENCY	PEL	TLV	TWA	STEL	CEIL
Sulfuric acid	OSHA	1.0000	N/D	N/D	N/D	N/D
	ACGIH	N/D	1.0000	N/D	3.0000	N/D
	NIOSH	N/D	N/D	1.0000	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
Water	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	N/D
	NIOSH	N/D	N/D	N/D	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D

LEGEND:

EXPOSURE LIMIT DESCRIPTIONS

- CEIL Ceiling Exposure Limit
- PEL Permissible Exposure Limit
- STEL Short Term Exposure Limit
- TLV Threshold Limit Value
- TWA Time Weighted Average
- N/D = Not Determined

DATE PRINTED: 11/05/2001

PAGE 7
MSDS NO. 16-084816

SULFURIC ACID, 93% Commercial Grade

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

VAPOR PRESSURE (mm Hg)
LT 1 @ 37.8 C (100 F)

VAPOR DENSITY (Air = 1.0)
3.4 @ Boiling Point of H2SO4

EVAPORATION RATE
ND N/D Not determined

VOLATILE %
N/D

BOILING POINT
529.00 F 276.11 C
Approximately (@ 29.92 mm Hg)

ODOR THRESHOLD (ppm)
ND N/D Not determined

SPECIFIC GRAVITY
EQ 1.8347 @ 15.5/15.5 C (60/60 F)

BULK DENSITY
N/D Not applicable

SOLUBILITY IN WATER
N/D Soluble

SOLUBILITY IN OTHER SOLVENTS
Not determined

COEFFICIENT OF OIL/WATER
ND N/D Not determined
Not applicable

POUR POINT
N/D F N/D C

MELTING POINT
-20.00 F -28.88 C
Approximately

pH FACTOR
LT 1 (1% aqueous solution)

CLOUD POINT
N/D F N/D C
Not determined

FLASH POINT
N/D F N/D C
Not applicable

FLASH METHOD
Not applicable

UPPER EXPLOSION LIMIT
N/D

LOWER EXPLOSION LIMIT
N/D

AUTO IGNITION TEMPERATURE
N/D F N/D C

Other
No other data available.

SECTION 10. STABILITY AND REACTIVITY

Stability

This product is stable at ambient temperatures and atmospheric pressures. It is not self-reactive and has an almost indefinite shelf life under sealed conditions. It is not sensitive to physical impact or static discharge.

Incompatibilities

This product is incompatible with the following: bases, halides, sulfides, picrates, nitrates, chlorates, carbides, fulminates, cyanides, and reducing agents. Sulfuric acid reacts with most common metals. Can react violently with water. Contact with concentrated sulfuric acid may ignite combustible materials.

Polymerization

Hazardous polymerization is not expected to occur.

Decomposition

Decomposition products include toxic oxides of sulfur.

Conditions to Avoid

Avoid contact with incompatible materials. Sulfuric acid is incompatible with bases, halides, sulfides, picrates, nitrates, chlorates, carbides, fulminates, cyanides, and reducing agents.

Contact with water may cause violent, exothermic reaction. Do not

SULFURIC ACID, 93% Commercial Grade

SECTION 10. STABILITY AND REACTIVITY
(CONTINUED)

allow water to enter containers. Do not add water to the acid because large amounts of heat can be produced, and localized boiling and spattering can occur. When diluting, always add the acid slowly to water with gentle stirring.

Avoid contact with metals. Sulfuric acid reacts with most common metals producing flammable and potentially explosive hydrogen gas. Weaker concentrations of sulfuric acid (<70%) are highly corrosive to metals. Contact with finely divided or powdered metals can cause violent reaction.

Avoid contact with combustible materials. Concentrated sulfuric acid is a strong oxidizing agent. Contact with concentrated sulfuric acid can ignite combustible liquids and solids.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological - Inhalation

The acute inhalation LC50 (animals) is 20-60 mg/m³ (8 hour exposure). Inhalation of sulfuric acid mist or vapor causes severe irritation of the respiratory tract.

Inhalation of 80 mg/m³ is immediately dangerous to life or health.

Inhalation Chronic Exposure

Repeated exposure to sulfuric acid mist or spray may cause inflammation of the upper respiratory tract, chronic bronchitis, and etching of dental enamel.

Toxicological - Dermal

The acute dermal LD50 for this material is not available. Sulfuric acid is severely irritating and corrosive to skin.

Skin Contact - CHRONIC

Chronic dermal exposure effects for this product are not known. Contact can cause severe skin irritation or burns with redness, swelling, and blistering. Repeated contact with dilute solutions may cause dermatitis.

Toxicological - Eye

Sulfuric acid is severely irritating and corrosive to eyes.

Toxicological - Ingestion

The acute oral LD50 (rat) is 2140 mg/kg (slightly toxic).

Ingestion - CHRONIC

Chronic ingestion effects of this product are not known.

CARCINOGENICITY/MUTAGENICITY

The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a Group 1 carcinogen - carcinogenic to humans. This is applicable to mists of inorganic acids only and not sulfuric acid or sulfuric acid solutions. Based on the human and animal data available, no definite relationship has been shown between exposure to sulfuric acid mist and respiratory tract cancer.

The mutagenic properties of this product are not known.

DATE PRINTED: 11/05/2001

PAGE 9
MSDS NO. 16-084816

SULFURIC ACID, 93% Commercial Grade

SECTION 11. TOXICOLOGICAL INFORMATION
(CONTINUED)

REPRODUCTIVE EFFECTS

Sulfuric acid was not teratogenic when administered to rabbits at a concentration of 20 mg/m³ (7 hours/day).

NEUROTOXICITY

The neurotoxic effects of this product are not known.

Other Toxicological Effects

No other toxic effects for this product are known.

Target Organs

Overexposure to this product may affect the skin, eyes, teeth and respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

The ecological toxicity of this product is not known.

DISTRIBUTION

Other ecological information on this product is not known.

CHEMICAL FATE

Chemical fate information on this product is not known.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal

Material that cannot be used or chemically reprocessed and empty containers, except those designed for multiple use (returnable), should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal.

This product is not a RCRA listed waste, but it meets the RCRA criteria for hazardous waste by characteristics. The unused product would exhibit the characteristics of corrosivity (D002) and reactivity (D003) if it becomes a waste (per 40 CFR 261, Subpart C). Waste generators are required to evaluate all waste material for compliance with RCRA and any local disposal procedures and regulations. Dispose of waste in accord with local, state, and federal regulations. Incineration may be used where permitted by regulations. NOTE: State and local regulations may be more stringent than federal regulations.

CONTAINER DISPOSAL

Containers should be cleaned of residual product before disposal. Empty containers should be disposed of in accordance with all applicable laws and regulations.

SECTION 14. TRANSPORT INFORMATION

SHIPPING DESCRIPTION

SULFURIC ACID
8, UN1830, PGII.
North American Emergency Response Guide NO. 137

DATE PRINTED: 11/05/2001

PAGE 10
MSDS NO. 16-084816

SULFURIC ACID, 93% Commercial Grade

SECTION 14. TRANSPORT INFORMATION
(CONTINUED)

REQUIRED LABELS

Corrosive

ENVIRON. HAZARDOUS SUBSTANCE

This product contains sulfuric acid (RQ=1000 lbs.) which is an environmentally hazardous material per 49 CFR 172.101, Appendix A.

SECTION 15. REGULATORY INFORMATION

Component Sulfuric acid is subject to the following

Environmental List

CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
SARA 302	SARA Title III, Section 302
SARA 313	SARA Title III, Section 313
TSCA	Toxic Subst. Cont. Act -listed

Component Water is subject to the following

Environmental List

DSL	Domestic Substance List-Canada
TSCA	Toxic Subst. Cont. Act -listed

OTHER REGULATORY INFORMATION

Sulfuric acid is subject to SARA Title III, Section 313 reporting requirements (40 CFR 372).

WHMIS HAZARD CLASS
D-1A, D-2B, E

HAZARD RATING SOURCE
HMIS

HEALTH
3

REACTIVITY
2

FLAMMABILITY
0

OTHER

SECTION 16. OTHER INFORMATION

OTHER INFORMATION

No other information is available.

Revisions made in Section(s) 14

SFA100 - SULFURIC ACID 93% (AS IS) Akzo Nobel Functional Chemicals LLC
MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/05/2001

PAGE 11

MSDS NO. 16-084816

SULFURIC ACID, 93% Commercial Grade

SECTION 16. OTHER INFORMATION
(CONTINUED)

CREATED BY

Product Safety 914/674-5000

KEY TO ABBREVIATIONS:

EQ=Equal

LT=Less Than

GT=Greater Than

AP=Approximately

TR=Trace

ND=No Data available

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions as to the merchantability or fitness of the product for any particular purpose, or that any suggested use will not infringe any patent. Nothing in here shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date of this document is more than three years old, call to make certain that this sheet is current.



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

ANSR CONSULTING & ENGINEERING 4929

2309 WEST MALL DRIVE
FLORENCE, AL 35530

Lab Number: 99-AS1660
Sample ID: DSN-001 COMPOSITE
Sample Type: Water
Site ID:

Project: 4523-D40-880
Project Name: BOEING
Sampler: CL

Date Collected: 3/ 5/99
Time Collected: 14:30
Date Received: 3/ 6/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
BOD Set Up										
Biochemical Oxygen Demand	80	mg/l	3.0	1.0	1	3/ 6/99	20:14	J. Tyree	405.1	7109
METALS										
Cadmium	ND	mg/l	0.0010	0.0010	1	3/12/99	7:54	C. Holmes	200.7	7859
Chromium	0.0160	mg/l	0.0050	0.0050	1	3/12/99	7:54	C. Holmes	200.7	7859
Copper	0.0790	mg/l	0.0100	0.0100	1	3/12/99	7:54	C. Holmes	200.7	7859
Lead	0.0200	mg/l	0.0050	0.0050	1	3/12/99	7:54	C. Holmes	200.7	7859
Molybdenum	1.47	mg/l	0.050	0.050	1	3/12/99	7:54	C. Holmes	200.7	7859
Nickel	0.0260	mg/l	0.0100	0.0100	1	3/12/99	7:54	C. Holmes	200.7	7859
Silver	ND	mg/l	0.0050	0.0050	1	3/12/99	7:54	C. Holmes	200.7	7859
Zinc	1.770	mg/l	0.0200	0.0200	1	3/12/99	7:54	C. Holmes	200.7	7859
MISCELLANEOUS CHEMISTRY										
Total Suspended Solids	73.0	mg/l	1.0	1.0	1	3/ 6/99	17:30	L. Fisher	160.2	6762

ND = Not detected at our report limit.

Report Approved By:

Report Date: 3/18/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johann R. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
 P.O. Box 40566
 Nashville, TN 37204-0566
 Phone 1-615-726-0177

ANALYTICAL REPORT

INSOR CONSULTING & ENGINEERING 4939

3809 WEST MALL DRIVE
 FLORENCE, AL 35220

Project: 4522-340-630
 Project Name: BOEING
 Sampler: CL

Lab Number: 99-AG1661
 Sample ID: DSN-001 GRAB
 Sample Type: Water
 Site ID:

Date Collected: 3/ 5/99
 Time Collected: 14:30
 Date Received: 3/ 6/99
 Time Received: 9:00

Analyte	Result	Units	Report Limit	Warn Limit	Rel Factor	Date	Time	Analyst	Method	Batch
EXTRACTABLE ORGANICS										
Benzophenone	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Acenaphthylene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Anthracene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Benzo(a)anthracene	ND	ug/l	50	50	1	3/10/99	16:24	Carmichael	625	1037
Benzo(a)pyrene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Benzo(b)fluoranthene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Benzo(g,h,i)perylene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Benzo(k)fluoranthene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
4-Bromophenylphenylether	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Butylbenzylphthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
4-Chloro-3-methylphenol	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
di-(2-Chloroethoxy)methane	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
di-(2-Chloroethyl)ether	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
di-(2-Chloroisopropyl)ether	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2-Chloronaphthalene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2-Chlorophenol	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
4-Chlorophenylphenylether	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Carbazole	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Dibenz(a,h)anthracene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
1,2-Dichlorobenzene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
1,3-Dichlorobenzene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
1,4-Dichlorobenzene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2,3'-Dichlorobenzidine	ND	ug/l	20	20	1	3/10/99	16:24	Carmichael	625	1037
2,4-Dichlorophenol	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Dimethylphthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2,4-Dimethylphenol	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Diethylphthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Di-n-butylphthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2,4-Dinitrophenol	ND	ug/l	25	25	1	3/10/99	16:24	Carmichael	625	1037
2,4-Dinitrotoluene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
2,6-Dinitrotoluene	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Di-ortho-phthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037
Di-ortho-phthalic anhydride	ND	ug/l	30	30	1	3/10/99	16:24	Carmichael	625	1037
Di-nonylphthalate	ND	ug/l	10	10	1	3/10/99	16:24	Carmichael	625	1037



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ANALYTICAL REPORT

Laboratory Number: 99-A31661
 Sample ID: DSN-Q01 GRAB

Page 2

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Fluorene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Hexachlorobenzene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Hexachlorobutadiene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Hexachlorocyclopentadiene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Hexachloroethane	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Isodeno(1,2,3-cd)pyrene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Isophorone	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
2-Methyl-4,6-dinitrophenol	ND	ug/l	50.	50.	1	3/10/99	16:24	Carmichael	625	1037
Naphthalene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Nitrobenzene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
2-Nitrophenol	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
4-Nitrophenol	ND	ug/l	25.	25.	1	3/10/99	16:24	Carmichael	625	1037
N-nitrosodi-n-propylamine	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
N-nitrosodiphenylamine	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
N-nitrosodimethylamine	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Pentachlorophenol	ND	ug/l	25.	25.	1	3/10/99	16:24	Carmichael	625	1037
Phenanthrene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Phenol	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Pyrene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
Bis(2-ethylhexyl)phthalate	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
1,2,4-Trichlorobenzene	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
2,4,6-Trichlorophenol	ND	ug/l	10.	10.	1	3/10/99	16:24	Carmichael	625	1037
VOLATILE ORGANICS										
Norolein	ND	ug/l	10.	10.	1	3/11/99	0:39	K. Hurt	624	537
Acrylonitrile	ND	ug/l	10.	10.	1	3/11/99	0:39	K. Hurt	624	537
Benzene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Bromoform	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Bromomethane	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Carbon tetrachloride	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Chlorobenzene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Chloroethane	ND	ug/l	10.	10.	1	3/11/99	0:39	K. Hurt	624	537
1-Chloroethylvinylether	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Chloroform	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Chloromethane	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Dibromochloromethane	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
1,1-Dichloroethane	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
1,2-Dichloroethane	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
1,1-Dichloroethene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
1,2-Dichloroethene (total)	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
1,1-Dichloropropene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
cis-1,3-Dichloropropene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
trans-1,3-Dichloropropene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Chybenzene	ND	ug/l	5.	5.	1	3/11/99	0:39	K. Hurt	624	537
Tetraplene chloride	ND	ug/l	10.	10.	1	3/11/99	0:39	K. Hurt	624	537



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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 Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A31661
 Sample ID: DSN-001 GRAD

Page 3

Analyste	Result	Units	Report Limit	Quan Limit	Oil Factor	Date	Time	Analyst	Method	Batch
1,1,2,2-Tetrachloroethane	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
Tetrachloroethene	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
Toluene	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
1,1,1-Trichloroethane	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
1,1,2-Trichloroethane	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
Trichloroethene	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
Vinyl chloride	ND	ug/l	10	10	1	3/11/99	0:39	M. Hurt	624	537
Bromodichloromethane	ND	ug/l	5	5	1	3/11/99	0:39	M. Hurt	624	537
PESTICIDES/PCOB's/HERBICIDES										
Aldrin	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1016	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1221	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1232	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1242	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1248	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1254	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
Aroclor 1260	ND	ug/l	0.50	0.50	1	3/12/99	7:12	M. Jones	608	9821
p-DHC	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
m-DHC	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
t-DHC	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
p-BHC, Lindane	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
Chlordane	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
1,4'-DD	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
1,4'-DDE	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
1,4'-DDT	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Dieldrin	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Endosulfan I	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
Endosulfan II	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Endosulfan Sulfate	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Endrin	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Endrin Aldehyde	ND	ug/l	0.10	0.10	1	3/12/99	7:12	M. Jones	608	9821
Heptachlor	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
Heptachlor Epoxide	ND	ug/l	0.05	0.05	1	3/12/99	7:12	M. Jones	608	9821
Toxaphene	ND	ug/l	5.00	5.00	1	3/12/99	7:12	M. Jones	608	9821
MISCELLANEOUS CHEMISTRY										
Opacite	ND	ug/l	0.010	0.010	1	3/ 9/99	10:30	J Temple	335 3	7993
Oil & Grease	ND	ug/l	1.0	1.0	1	3/11/99	13:42	L Philippott	413 1	7743

ND = Not detected at the report limit



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

ENGR CONSULTING & ENGINEERING 4939
JORIS VINCENT
3909 WEST MALL DRIVE
FLORENCE, AL 35630

Lab Number: 99-A44548
Sample ID: DSN-001
Sample Type: Water
Site ID:

Project: SID PERMIT #085200486
Project Name
Sample:

Date Collected: 3/29/99
Time Collected: 16:06
Date Received: 3/30/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Own Limit	DL Factor	Date	Time	Analyst	Method	Batch
NON METALS										
SDS Tot. Hg						3/30/99	13:11			
Stoichiometrical Oxygen Demand	8.1	mg/l	6.0	6.0	1	4/ 4/99	11:00	R. Shockley	405.1	2973
METALS										
Cadmium	ND	ng/l	0.0010	0.0010	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Chromium	ND	ng/l	0.0050	0.0050	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Copper	0.0750	ng/l	0.0100	0.0100	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Lead	0.0030	ng/l	0.0030	0.0030	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Nickel	0.247	ng/l	0.020	0.020	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Silver	0.0150	ng/l	0.0100	0.0100	1	4/ 2/99	13:28	R. Kelley	200.7	9726
Zinc	0.4020	ng/l	0.0200	0.0200	1	4/ 2/99	13:28	R. Kelley	200.7	9726
MICROELEMENTS CHEMISTRY										
Total Dissolved Solids	21.6	mg/l	1.0	1.0	1	3/30/99	17:00	L. Fisher	160.2	9518
Oil & Grease	ND	mg/l	0.0	0.0	1	4/ 1/99	15:30	L. Philpott	413.1	641

ND = Not detected at the report limit.

Report Approved By:

Theodore J. Duello

Report Date: 4/ 5/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Salton, Assistant Technical Director



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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val	MS Val	Spike Conc	Recovery	Target Range	R.C. Batch
Cadmium	ng/l	< 0.0010	0.0550	0.0500	110	80 - 120	9726
Chromium	ng/l	< 0.0050	0.2140	0.2000	107	80 - 120	9726
Copper	ng/l	< 0.0100	0.2500	0.2500	100	80 - 120	9726
Lead	ng/l	< 0.0030	0.0560	0.0500	111	80 - 120	9726
Polychlorinated	ng/l	< 0.050	0.485	0.500	94	80 - 120	9726
Nickel	ng/l	< 0.0100	0.5110	0.5000	102	80 - 120	9726
Silver	ng/l	< 0.0050	0.0600	0.0500	120	80 - 120	9726
Zinc	ng/l	0.0490	0.3580	0.5000	102	80 - 120	9726

Matrix Spike Duplicates

Analyte	units	Orig. Val	Duplicate	RPD	Limit	R.C. Batch
Cadmium	ng/l	0.0550	0.0450	20.00	30	9726
Chromium	ng/l	0.2140	0.1760	19.49	30	9726
Copper	ng/l	0.2500	0.2040	20.264	30	9726
Lead	ng/l	0.0560	0.0470	17.48	30	9726
Nickel	ng/l	0.5110	0.4160	20.504	30	9726
Silver	ng/l	0.0600	0.0600	0.00	30	9726
Zinc	ng/l	0.3580	0.4600	19.35	30	9726

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	R.C. Batch
Oil & Grease	ng/l	20.0	19.2	96	70 - 130	640
Cadmium	ng/l	0.0510	0.0500	98	80 - 120	9726
Chromium	ng/l	0.1710	0.2500	96	80 - 120	9726
Copper	ng/l	0.2500	0.2160	90	80 - 120	9726
Lead	ng/l	0.2060	0.2080	94	80 - 120	9726
Polychlorinated	ng/l	0.304	0.302	93	80 - 120	9726
Nickel	ng/l	0.2180	0.2190	90	80 - 120	9726
Silver	ng/l	0.0700	0.1000	101	80 - 120	9726
Zinc	ng/l	0.3290	0.3110	95	80 - 120	9726
Biochemical Oxygen Demand	ng/l	198	212	107	80 - 120	2373
Biochemical Oxygen Demand	ng/l	199	211	107	80 - 120	2373

Duplicates

Analyte	units	Orig. Val	Duplicate	RPD	Limit	R.C. Batch
Biochemical Oxygen Demand	ng/l	198	196	4.9	20	2373
Biochemical Oxygen Demand	ng/l	199	197	1.1	20	2373
Total Dissolved Solids	ng/l	20.4	20.4	0.00	15	9510
Total Suspended Solids	ng/l	25.1	25.1	0.00	17	9510



SPECIALIZED ASSAYS, INC.

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PROJECT QUALITY CONTROL DATA

Blank Data

Analyte	Blank Value	Units	d.c. Batch
Cadmium	< 0.0010	ng/l	9726
Chromium	< 0.0050	ng/l	9726
Copper	< 0.0100	ng/l	9726
Lead	< 0.0050	ng/l	9726
Polybromine	< 0.001	ng/l	9726
Nickel	< 0.0100	ng/l	9726
Silver	< 0.0050	ng/l	9726
Zinc	< 0.0200	ng/l	9726
Total Dissolved Solids	< 1.0	mg/l	9819
Total Suspended Solids	< 1.0	mg/l	9819

TestAmerica

INCORPORATED

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ENSR CONSULTING & ENGINEERING 4937

2807 WEST MALL DRIVE
FLORENCE, AL 36630

Lab Number: 00-A81925
Sample ID: DSN-001
Sample Type: Water
Site ID:

Project: 4937-409-010
Project Name: BOEING
Sampler: R. BRANSCOMSE

Date Collected: 6/13/00
Time Collected: 13:33
Date Received: 6/14/00
Time Received: 9:00

Analyte	Result	Units	Report Limit	Run Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
SED Set Up						6/14/00	22:35			
SED 5 Day	ND	ug/l	2.0	2.0	1	6/13/00	20:35	N. Shockley	405.1	4920
EXTRACTABLE ORGANICS										
Acenaphthene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Acenaphthylene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Anthracene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Benzo(a)anthracene	ND	ug/l	50.	50.	1	6/16/00	14:37	T. McCollum	625	5888
Benzo(a)pyrene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Benzo(b)fluoranthene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Benzo(g,h,i)perylene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Benzo(k)fluoranthene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
4-fluorophenyl phenylether	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Butylbenzylphthalate	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
4-Chloro-2-nitrophenol	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Bis(2-Chloroethoxy)ethane	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Bis(2-Chloroethyl)ether	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Bis(2-Chloroisopropyl)ether	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
2-Chloronaphthalene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
2-Chlorophenol	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
3-Chlorophenylphenylether	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Chrysene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Dibenz(a,h)anthracene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
1,2-Dichlorobenzene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
1,3-Dichlorobenzene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
1,4-Dichlorobenzene	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
2,3'-Dichlorobenzidine	ND	ug/l	20.	20.	1	6/16/00	14:37	T. McCollum	625	5888
2,4-Dichlorophenol	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
Dibutylphthalate	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888
1,4-Dimethylphenol	ND	ug/l	10.	10.	1	6/16/00	14:37	T. McCollum	625	5888

Sample report continued...

2960 Foster Creighton Dr
 Nashville, TN 37204
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ANALYTICAL REPORT

Laboratory Number: 00-AS1925
 Sample ID: DSN-001

Page 2

Analyte	Result	Units	Report Limit	Run Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Dimethylphthalate	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Di-n-butylphthalate	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
2,4-Dinitrophenol	ND	ug/l	25	25	1	6/16/00	14:37	T McCollum	625	5888
2,4-dinitrotoluene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
2,6-Dinitrotoluene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Di-n-octylphthalate	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
1,2-Diphenylhydrazine	ND	ug/l	50	50	1	6/16/00	14:37	T McCollum	625	5888
Fluoranthene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Fluorene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Hexachlorobenzene	NS	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Hexachlorobutadiene	NS	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Hexachlorocyclopentadiene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Hexachloroethane	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Indeno(1,2,3-cd)pyrene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Isophorone	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
2-Methyl-4,6-dinitrophenol	NS	ug/l	25	25	1	6/16/00	14:37	T McCollum	625	5888
Naphthalene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Nitrobenzene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
2-Nitrophenol	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
3-Nitrophenol	ND	ug/l	25	25	1	6/16/00	14:37	T McCollum	625	5888
N-nitrosodi-n-propylamine	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
N-nitrosodiphenylamine	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
N-nitrosodimethylamine	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Pentachlorophenol	ND	ug/l	25	25	1	6/16/00	14:37	T McCollum	625	5888
Phenanthrene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Phenol	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Pyrene	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
Bis(2-ethylhexyl)phthalate	NS	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
1,2,4-Trichlorobenzene	NS	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
2,4,6-Trichlorophenol	ND	ug/l	10	10	1	6/16/00	14:37	T McCollum	625	5888
VOLATILE ORGANICS										
Acrolein	NS	ug/l	10	10	1	6/20/00	4:16	B. Herford	624	8719
Acrylonitrile	NS	ug/l	10	10	1	6/20/00	4:16	B. Herford	624	8719
Benzene	NS	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
Bromoform	ND	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
Bromomethane	ND	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
Carbon tetrachloride	ND	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
Chlorobenzene	NS	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
Dichloromethane	ND	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719
1-Chloroethylvinyl ether	ND	ug/l	5	5	1	6/20/00	4:16	B. Herford	624	8719

Sample report continued.

2960 Foster Creighton Dr
 Nashville, TN 37204
 615-726-0177
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ANALYTICAL REPORT

Laboratory Number: 00-AB1925
 Sample ID: DSN-001

Page 3

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Chloroform	24.	ug/l	5.	5	1	6/20/00	4:16	B. Herford	624	8719
Chloroethane	ND	ug/l	5.	5	1	6/20/00	4:16	B. Herford	624	8719
Dibromochloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
1,1-Dichloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
1,2-Dichloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
1,1-Dichloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
1,2-Dichloroethane (total)	ND	ug/l	5.	5	1	6/20/00	4:16	B. Herford	624	8719
1,2-Dichloropropane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
cis-1,3-Dichloropropene	ND	ug/l	5.	5	1	6/20/00	4:16	B. Herford	624	8719
trans-1,3-Dichloropropene	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Ethylbenzene	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Methylene chloride	ND	ug/l	10.	10.	1	6/20/00	4:16	B. Herford	624	8719
1,1,2,2-Tetrachloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Tetrachloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Toluene	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
1,1,1-Trichloroethane	ND	ug/l	5.	5	1	6/20/00	4:16	B. Herford	624	8719
1,1,2-Trichloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Trichloroethane	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Vinyl chloride	ND	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
Bromodichloroethane	6.	ug/l	5.	5.	1	6/20/00	4:16	B. Herford	624	8719
PESTICIDES/PCPs/HERBICIDES										
Aldrin	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
Aroclor 1016	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1221	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1232	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1242	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1248	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1254	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
Aroclor 1260	ND	ug/l	0.50	0.50	1	6/15/00	4:09	R. Hunt	608	5283
p-DHC	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
p-DHC	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
p-DHC	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
p-DHC, Lindane	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
Chlordane	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
4,4'-DDE	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
4,4'-DDE	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
4,4'-DDT	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
4,4'-DDT	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
Dieldrin	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
Endosulfan I	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
Endosulfan II	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141

Multiple results continued

2960 Foster Creighton Dr
 Nashville, TN 37204
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ANALYTICAL REPORT

Laboratory Number: 00-AB1925
 Sample ID: DSN-001

Page 4

Analyte	Result	Units	Report	Run	Dil	Analysis	Analysis	Analyst	Method	Batch
			Limit	Limit	Factor	Date	Time			
Endosulfan Sulfate	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
Endrin	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
Endrin Aldehyde	ND	ug/l	0.10	0.10	1	6/17/00	0:05	M. Cauthen	608	5141
Heptachlor	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
Heptachlor Epoxide	ND	ug/l	0.05	0.05	1	6/17/00	0:05	M. Cauthen	608	5141
Toxaphene	ND	ug/l	5.00	5.00	1	6/17/00	0:05	M. Cauthen	608	5141
METALS										
Cadmium	ND	ug/l	0.0010	0.0010	1	6/19/00	8:09	R. Kelley	200.7	5111
Chromium	ND	ug/l	0.0050	0.0050	1	6/19/00	8:09	R. Kelley	200.7	5111
Copper	0.0340	ug/l	0.0100	0.0100	1	6/19/00	8:09	R. Kelley	200.7	5111
Lead	0.0250	ug/l	0.0050	0.0050	1	6/19/00	8:09	R. Kelley	200.7	5111
Molybdenum	0.065	ug/l	0.050	0.050	1	6/19/00	8:09	R. Kelley	200.7	5111
Nickel	ND	ug/l	0.0100	0.0100	1	6/19/00	8:09	R. Kelley	200.7	5111
Silver	ND	ug/l	0.0050	0.0050	1	6/19/00	8:09	R. Kelley	200.7	5111
Zinc	0.1710	ug/l	0.0200	0.0200	1	6/19/00	8:09	R. Kelley	200.7	5111
MISCELLANEOUS CHEMISTRY										
Cyanide	ND	ug/l	0.005	0.005	1	6/16/00	11:30	Hardcastle	335.4	3377
Total Suspended Solids	7.2	ug/l	1.0	1.0	1	6/14/00	21:00	K. McLain	160.2	4835
Oil & Grease	ND	ug/l	0.8	0.8	1	6/15/00	15:53	D. Yeager	413.1	4803

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Nt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
PAH's	990 ml	1 ml	6/14/00	D. Yeager	3510
Pesticides	500 ml	5.00 ml	6/14/00	C. Ferry	3510
PCB's	500 ml	5.00 ml	6/14/00	C. Ferry	3510

Surrogate	% Recovery	Target Range
MSR Surrogate, 1,1-Dichlorobenzene, 14	31	60 - 130
MSR Surrogate, Toluene 43	34	60 - 120

Full report available

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Nashville, TN 37204
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ANALYTICAL REPORT

Laboratory Number: 00-A61925
Sample ID: DSN-001

Page 5

<u>Surrogate</u>	<u>% Recovery</u>	<u>Target Range</u>
VDA Surrogate, 4-Bromofluorobenzene	97.	73. - 122.
VDA Surrogate, Dibromofluoromethane	85.	74. - 148.
pest surr-ICMX	103.	20. - 122.
surr-Dibutylchlorosulfate	82.	18. - 170.
pest surr-DCE	81.	18. - 128.

These results relate only to the items tested.
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Report Approved By: W. J. Duello

Report Date: 6/21/00

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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	A.C. Batch	Spike Sample
Cyanide	ng/l	0.024	0.226	0.200	101	80. - 120.	5377	00-079489
Acenaphthene	ng/l	< 0.0100	0.0240	0.1000	24%	46. - 129.	5888	blank
4-Chloro-3-methylphenol	ng/l	< 0.0100	0.0310	0.1000	31%	43. - 139.	5888	blank
2-Chlorophenol	ng/l	< 0.0100	0.0270	0.1000	27%	47. - 119.	5888	blank
1,4-Dichlorobenzene	ng/l	< 0.0100	0.0220	0.1000	22%	46. - 108.	5888	blank
2,4-Dinitrotoluene	ng/l	< 0.0100	0.0310	0.1000	31%	41. - 126.	5888	blank
4-Nitrophenol	ng/l	< 0.0250	0.0250	0.1000	N/A	14. - 150.	5888	blank
N-nitrosodi-n-propylamine	ng/l	< 0.0100	0.0320	0.1000	32%	47. - 142.	5888	blank
Pentachlorophenol	ng/l	< 0.0250	0.0270	0.1000	27%	33. - 133.	5888	blank
Phenol	ng/l	< 0.0100	0.0130	0.1000	13	13. - 145.	5888	blank
Pyrene	ng/l	< 0.0100	0.0270	0.1000	27%	40. - 149.	5888	blank
1,2,4-Trichlorobenzene	ng/l	< 0.0100	0.0240	0.1000	24%	42. - 127.	5888	blank
Benzene	ng/l	< 0.0050	0.0637	0.0500	127	37. - 151.	3717	BLANK
Chlorobenzene	ng/l	< 0.0050	0.0637	0.0500	132	37. - 160.	3717	BLANK
1,1-Dichloroethene	ng/l	< 0.0050	0.0653	0.0500	131	10. - 234.	3717	BLANK
Toluene	ng/l	< 0.0050	0.0656	0.0500	131	47. - 150.	3717	BLANK
Trichloroethene	ng/l	< 0.0050	0.0631	0.0500	126	71. - 157.	3717	BLANK
Aldrin	ng/l	< 0.00005	0.00023	0.00100	23	39. - 111.	5141	blank
Aroclor 1260	ng/l	< 0.00000	0.01107	0.01000	111	56. - 147.	5203	blank
p-DHC, Lindane	ng/l	< 0.00000	0.00070	0.00100	70	60. - 124.	5141	blank
4,4'DDT	ng/l	< 0.00010	0.00110	0.00100	110	27. - 162.	5141	blank
Dieldrin	ng/l	< 0.00010	0.00077	0.00100	77	67. - 124.	5141	blank
Endrin	ng/l	< 0.00010	0.00120	0.00100	120	66. - 140.	5141	blank
Heptachlor	ng/l	< 0.00005	0.00061	0.00100	61	47. - 115.	5141	blank
Chlordane	ng/l	< 0.0010	0.0470	0.0500	94	30 - 120	5111	Duplicate
Chromium	ng/l	0.0070	0.1760	0.2000	89	60 - 120	5111	Duplicate
Copper	ng/l	< 0.0100	0.2370	0.2000	120	80 - 120	5111	Duplicate
Lead	ng/l	< 0.0050	0.0400	0.0500	76	80 - 120	5111	Duplicate
Molybdenum	ng/l	< 0.050	0.477	0.500	95	80 - 120	5111	Duplicate
Nickel	ng/l	< 0.0100	0.3010	0.3000	604	80 - 120	5111	Duplicate
Silver	ng/l	< 0.0050	0.0460	0.0500	72	80 - 120	5111	Duplicate
Zinc	ng/l	< 0.0200	0.4630	0.5000	73	80 - 120	5111	Duplicate

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RFC	Limit	A.C. Batch
Cyanide	ng/l	0.226	0.267	8.78	20.	5377
Aroclor 1260	ng/l	0.01107	0.00713	17.39	34	5203
Chlordane	ng/l	0.0470	0.0450	4.35	20	5111
Chromium	ng/l	0.1760	0.1700	5.11	20	5111
Copper	ng/l	0.2350	0.2300	2.54	20	5111

2960 Foster Creighton Dr
 Nashville, TN 37204
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PROJECT QUALITY CONTROL DATA

Matrix Spike Duplicate

Analyte	units	Orig. Val	Duplicate	RFD	Limit	R.C. Match
Lead	ng/l	0.0480	0.0480	0.00	70	5111
Molybdenum	ng/l	0.475	0.466	1.91	70	5111
Nickel	ng/l	0.3010	0.2939	2.68	20	5111
Silver	ng/l	0.0460	0.0440	4.44	20	5111
Zinc	ng/l	0.4630	0.4500	2.85	20	5111

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	R.C. Match
Oil & Grease	ng/l	20.0	17.0	85	70 - 130	4803
Cadmium	ng/l	0.0500	0.0460	92	85 - 115	5111
Chromium	ng/l	0.2000	0.1670	84	85 - 115	5111
Copper	ng/l	0.2500	0.2360	94	85 - 115	5111
Lead	ng/l	0.0500	0.0480	96	85 - 115	5111
Molybdenum	ng/l	0.500	0.460	94	85 - 115	5111
Nickel	ng/l	0.5000	0.4810	96	85 - 115	5111
Silver	ng/l	0.0500	0.0470	94	85 - 115	5111
Zinc	ng/l	0.5000	0.4520	90	85 - 115	5111
Acenaphthene	ng/l	0.0500	0.0230	46	47 - 145	5880
Acenaphthylene	ng/l	0.0500	0.0220	44	33 - 145	5880
Anthracene	ng/l	0.0500	0.0270	54	27 - 133	5880
Benzo(a)pyrene	ng/l	0.0500	0.0500	100	60 - 140	5880
Benzo(a)fluoranthene	ng/l	0.0500	0.0280	56	32 - 143	5880
Benzo(b)fluoranthene	ng/l	0.0500	0.0260	52	24 - 159	5880
Benzo(g,h,i)perylene	ng/l	0.0500	0.0310	62	10 - 219	5880
Benzo(k)fluoranthene	ng/l	0.0500	0.0390	60	11 - 162	5880
4-Bromophenylphenylether	ng/l	0.0500	0.0270	54	59 - 127	5880
Butylbenzylphthalate	ng/l	0.0500	0.0280	56	10 - 152	5880
4-Chloro-3-methylphenol	ng/l	0.0500	0.0300	60	22 - 147	5880
Bis(2-Chloroethoxy)methane	ng/l	0.0500	0.0260	56	33 - 134	5880
Bis(2-Chloroethyl)ether	ng/l	0.0500	0.0280	56	12 - 158	5880
Bis(2-Chloroisopropoxy)ether	ng/l	0.0500	0.0270	54	36 - 166	5880
3-Chloronaphthalene	ng/l	0.0500	0.0230	46	60 - 140	5880
2-Chlorophenol	ng/l	0.0500	0.0250	50	23 - 134	5880
4-Chlorophenylphenylether	ng/l	0.0500	0.0260	52	25 - 158	5880
Chrysene	ng/l	0.0500	0.0280	56	17 - 163	5880
3-benz(a,h)anthracene	ng/l	0.0500	0.0310	62	10 - 227	5880
1,2-Dichlorobenzene	ng/l	0.0500	0.0210	42	32 - 127	5880
1,3-Dichlorobenzene	ng/l	0.0500	0.0210	42	10 - 172	5880
1,4-Dichlorobenzene	ng/l	0.0500	0.0200	40	20 - 124	5880

2960 Foster Creighton Dr
 Nashville, TN 37204
 615-726-0177
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PROJECT QUALITY CONTROL DATA

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
2,3-Dichlorobenzidine	ng/l	0.0500	0.0300	60	10 - 262	5888
2,4-Dichlorophenol	ng/l	0.0500	0.0260	52	39 - 135	5888
Diethylphthalate	ng/l	0.0500	0.0280	56	10 - 114	5888
2,4-Dimethylphenol	ng/l	0.0500	0.0280	56	32 - 119	5888
Dimethylphthalate	ng/l	0.0500	0.0260	52	10 - 112	5888
Di-n-butylphthalate	ng/l	0.0500	0.0280	56	10 - 116	5888
2,4-dinitrotoluene	ng/l	0.0500	0.0290	58	39 - 139	5888
2,6-Dinitrotoluene	ng/l	0.0500	0.0280	56	30 - 138	5888
Di-n-octylphthalate	ng/l	0.0500	0.0300	60	10 - 146	5888
1,2-Diphenylhydrazine	ng/l	0.0500	< 0.0500	N/A	60 - 140	5888
Fluoranthene	ng/l	0.0500	0.0270	54	26 - 137	5888
Fluorene	ng/l	0.0500	0.0260	52	59 - 121	5888
Hexachlorobenzene	ng/l	0.0500	0.0260	52	10 - 152	5888
Hexachlorobutadiene	ng/l	0.0500	0.0240	48	24 - 116	5888
Hexachlorocyclopentadiene	ng/l	0.0500	0.0210	42	33 - 145	5888
Hexachloroethane	ng/l	0.0500	0.0220	44	40 - 113	5888
Indeno(1,2,3-cd)pyrene	ng/l	0.0500	0.0310	62	10 - 171	5888
Isophorone	ng/l	0.0500	0.0300	60	21 - 196	5888
2-Methyl-4,6-dinitrophenol	ng/l	0.0500	0.0270	54	10 - 181	5888
Naphthalene	ng/l	0.0500	0.0220	44	21 - 176	5888
Nitrobenzene	ng/l	0.0500	0.0280	56	30 - 180	5888
2-Nitrophenol	ng/l	0.0500	0.0260	52	10 - 181	5888
4-Nitrophenol	ng/l	0.0500	< 0.0250	N/A	10 - 132	5888
N-nitrosodi-n-propylamine	ng/l	0.0500	0.0300	60	10 - 230	5888
N-nitrosodiphenylamine	ng/l	0.0500	0.0260	52	60 - 140	5888
N-nitrosodimethylamine	ng/l	0.0500	0.0130	26	60 - 140	5888
Pentachlorophenol	ng/l	0.0500	0.0250	50	14 - 176	5888
Phenanthrene	ng/l	0.0500	0.0260	52	54 - 120	5888
Phenol	ng/l	0.0500	0.0130	26	10 - 112	5888
Pyrene	ng/l	0.0500	0.0280	56	52 - 115	5888
Bis(2-ethylhexyl)phthalate	ng/l	0.0500	0.0280	56	60 - 140	5888
1,2,4-Trichlorobenzene	ng/l	0.0500	0.0220	44	44 - 142	5888
2,4,6-Trichlorophenol	ng/l	0.0500	0.0270	54	60 - 140	5888
Scorleia	ng/l	0.2500	0.2220	89	61 - 133	8717
Acrylonitrile	ng/l	0.2500	0.2320	93	70 - 144	8717
Benzene	ng/l	0.0500	0.0477	95	64 - 136	8717
Bromoforn	ng/l	0.0500	0.0530	106	71 - 129	8717
Bromonethane	ng/l	0.0500	0.0434	87	14 - 136	8717
Carbon tetrachloride	ng/l	0.0500	0.0480	96	73 - 127	8717
Chlorobenzene	ng/l	0.0500	0.0516	103	66 - 164	8717
Chloroethane	ng/l	0.0500	0.0461	92	30 - 162	8717
2-Chloroethylvinylether	ng/l	0.2500	0.2290	92	10 - 234	8717

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PROJECT QUALITY CONTROL DATA

Laboratory Control Data

Analyte	Units	Known Val.	Analyzed Val	% Recovery	Target Range	R.C. Retch
Chloroform	ng/l	0.0500	0.0457	91	68 - 133	8719
Chloroethane	ng/l	0.0500	0.0371	78	10 - 204	8719
Dibromochloroethane	ng/l	0.0500	0.0549	110	68 - 133	8719
1,1-Dichloroethane	ng/l	0.0500	0.0463	93	73 - 128	8719
1,2-Dichloroethane	ng/l	0.0500	0.0418	84	88 - 132	8719
1,1-Dichloroethane	ng/l	0.0500	0.0470	98	51 - 158	8719
1,2-Dichloroethane (total)	ng/l	0.1000	0.0928	93	70 - 130	8719
1,2-Dichloropropane	ng/l	0.0500	0.0486	97	34 - 166	8719
cis-1,3-Dichloropropene	ng/l	0.0500	0.0440	88	24 - 176	8719
trans-1,3-Dichloropropene	ng/l	0.0500	0.0440	88	50 - 130	8719
Ethylbenzene	ng/l	0.0500	0.0537	106	70 - 130	8719
Methylene Chloride	ng/l	0.0500	0.0460	92	61 - 140	8719
1,1,2,2-Tetrachloroethane	ng/l	0.0500	0.0514	103	61 - 140	8719
Tetrachloroethane	ng/l	0.0500	0.0517	103	74 - 127	8719
Toluene	ng/l	0.0500	0.0486	97	75 - 126	8719
1,1,1-Trichloroethane	ng/l	0.0500	0.0455	91	75 - 125	8719
1,1,2-Trichloroethane	ng/l	0.0500	0.0452	90	71 - 129	8719
Trichloroethane	ng/l	0.0500	0.0427	85	67 - 134	8719
Vinyl chloride	ng/l	0.0500	0.0502	100	10 - 196	8719
Bromodichloromethane	ng/l	0.0500	0.0461	92	66 - 135	8719
Aldrin	ng/l	0.00100	0.00078	78	42 - 122	5141
Aroclor 1016	ng/l	0.00100	0.00034	33	50 - 114	5283
Aroclor 1260	ng/l	0.01000	0.01005	100	10 - 127	5283
p-BHC	ng/l	0.00100	0.00091	91	37 - 134	5141
o-BHC	ng/l	0.00100	0.00078	78	17 - 147	5141
d-BHC	ng/l	0.00100	0.00085	85	19 - 148	5141
o-BHC, Lindane	ng/l	0.00100	0.00034	34	32 - 127	5141
1,4'-DDE	ng/l	0.00100	0.00105	105	31 - 141	5141
1,4'-DDE	ng/l	0.00100	0.00098	98	30 - 145	5141
1,4'-DDT	ng/l	0.00100	0.00095	95	25 - 160	5141
Dieldrin	ng/l	0.00100	0.00087	87	36 - 146	5141
Endosulfan I	ng/l	0.00100	0.00088	88	45 - 153	5141
Endosulfan II	ng/l	0.00100	0.00089	89	10 - 202	5141
Endosulfan Sulfate	ng/l	0.00100	0.00088	88	26 - 144	5141
Endrin	ng/l	0.00100	0.00102	102	60 - 147	5141
Endrin Aldehyde	ng/l	0.00100	0.00072	72	60 - 140	5141
Heptachlor	ng/l	0.00100	0.00076	76	34 - 111	5141
Heptachlor Epoxide	ng/l	0.00100	0.00084	84	37 - 142	5141
DDP 5 Day	ng/l	100	200	100	80 - 120	4928
Cyanide	ng/l	0.100	0.104	104	80 - 120	5977



2960 Foster Creighton Dr
 Nashville, TN 37204
 615-726-0177
 Fax: 615-726-0954

PROJECT QUALITY CONTROL DATA

Duplicates

Analyte	Units	Orig. Val.	Duplicate	RFD	Limit	Q.C. Batch	Sample Dup'd
BOD 5 Day	mg/l	< 2.0	< 2.0	N/A	15.	4920	00-081925
Cyanide	mg/l	< 0.005	< 0.005	N/A	15.	5377	00-081925
Total Suspended Solids	mg/l	15.3	15.3	0.00	15.	4835	00-081775
Total Suspended Solids	mg/l	15.3	15.3	0.00	15.	4835	00-081990

Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Cadmium	< 0.0010	mg/l	5111
Chromium	< 0.0050	mg/l	5111
Copper	< 0.0100	mg/l	5111
Lead	< 0.0020	mg/l	5111
Molybdenum	< 0.050	mg/l	5111
Nickel	< 0.0100	mg/l	5111
Silver	< 0.0050	mg/l	5111
Zinc	< 0.0200	mg/l	5111
Cyanide	< 0.005	mg/l	5377
Total Suspended Solids	< 1.0	mg/l	4835
Total Suspended Solids	< 1.0	mg/l	4835
Acenaphthene	< 0.0100	mg/l	5888
Acenaphthylene	< 0.0100	mg/l	5888
Anthracene	< 0.0100	mg/l	5888
Benzo(a)pyrene	< 0.0500	mg/l	5888
Benzo(a)anthracene	< 0.0100	mg/l	5888
Benzo(a)pyrene	< 0.0100	mg/l	5888
Benzo(b)fluoranthene	< 0.0100	mg/l	5888
Benzo(g,h,i)perylene	< 0.0100	mg/l	5888
Benzo(k)fluoranthene	< 0.0100	mg/l	5888
4-Bromophenylphenylether	< 0.0100	mg/l	5888
Butylbenzylphthalate	< 0.0100	mg/l	5888
4-Chloro-2-nethylphenol	< 0.0100	mg/l	5888
bis(2-Chloroethoxy)ethane	< 0.0100	mg/l	5888
bis(2-Chloroethyl)ether	< 0.0100	mg/l	5888
bis(2-Chloroisopropyl)ether	< 0.0100	mg/l	5888
2-Chloronaphthalene	< 0.0100	mg/l	5888
2-Chlorophenol	< 0.0100	mg/l	5888
4-Chlorophenylphenylether	< 0.0100	mg/l	5888
Chrysenes	< 0.0100	mg/l	5888
Fluoranthene	< 0.0100	mg/l	5888
1,2-Dichlorobenzene	< 0.0100	mg/l	5888
1,3-Dichlorobenzene	< 0.0100	mg/l	5888
1,4-Dichlorobenzene	< 0.0100	mg/l	5888

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PROJECT QUALITY CONTROL DATA

Blank Data

Analyte	Blank Value	Units	R.C. Batch
1,3-Dichlorobenzidine	< 0.0200	ng/L	5888
2,4-Dichlorophenol	< 0.0100	ng/L	5888
Bis(2-chlorophthalate	< 0.0100	ng/L	5888
2,4-Dimethylphenol	< 0.0100	ng/L	5888
Dimethylphthalate	< 0.0100	ng/L	5888
Di-n-butylphthalate	< 0.0100	ng/L	5888
2,4-Dinitrophenol	< 0.0250	ng/L	5888
2,4-Dinitrotoluene	< 0.0100	ng/L	5888
2,6-Dinitrotoluene	< 0.0100	ng/L	5888
Di-n-octylphthalate	< 0.0100	ng/L	5888
1,2-Diphenylhydrazine	< 0.0500	ng/L	5888
Fluoranthene	< 0.0100	ng/L	5888
Fluorene	< 0.0100	ng/L	5888
Hexachlorobenzene	< 0.0100	ng/L	5888
Hexachlorobutadiene	< 0.0100	ng/L	5888
Hexachlorocyclopentadiene	< 0.0100	ng/L	5888
Hexachloroethane	< 0.0100	ng/L	5888
Indene(1,2,3-cd)pyrene	< 0.0100	ng/L	5888
Isophorone	< 0.0100	ng/L	5888
2-Methyl-4,6-dinitrophenol	< 0.0250	ng/L	5888
Naphthalene	< 0.0100	ng/L	5888
Nitrobenzene	< 0.0100	ng/L	5888
2-Nitrophenol	< 0.0100	ng/L	5888
4-Nitrophenol	< 0.0250	ng/L	5888
N-nitrosodi-n-propylamine	< 0.0100	ng/L	5888
N-nitrosodiphenylamine	< 0.0100	ng/L	5888
N-nitrosodimethylamine	< 0.0100	ng/L	5888
2,3,7,8-Tetrachlorodibenzodioxin	< 0.0250	ng/L	5888
Phenanthrene	< 0.0100	ng/L	5888
Phenol	< 0.0100	ng/L	5888
Pyrene	< 0.0100	ng/L	5888
Bis(2-ethylhexyl)phthalate	< 0.0100	ng/L	5888
1,2,4-Trichlorobenzene	< 0.0100	ng/L	5888
2,4,6-Trichlorophenol	< 0.0100	ng/L	5888
Acrolein	< 0.0100	ng/L	8717
Acrylonitrile	< 0.0100	ng/L	8717
Benzene	< 0.0050	ng/L	8717
Bromoform	< 0.0050	ng/L	8717
Diurethanes	< 0.0050	ng/L	8717
Carbon tetrachloride	< 0.0050	ng/L	8717
Chlorobenzene	< 0.0050	ng/L	8717
Chloroethane	< 0.0050	ng/L	8717



2960 Foster Creighton Dr
 Nashville, TN 37204
 615-726-0177
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PROJECT QUALITY CONTROL DATA

Blank Data

Sample	Blank Value	Units	R. C. Match
2-Chloroethylvinylether	< 0.0050	ug/l	8719
Chloroform	< 0.0050	ug/l	8719
Chloroethane	< 0.0050	ug/l	8719
Dibromochloromethane	< 0.0050	ug/l	8719
1,1-Dichloroethane	< 0.0050	ug/l	8719
1,2-Dichloroethane	< 0.0050	ug/l	8719
1,1-Dichloroethene	< 0.0050	ug/l	8719
1,2-Dichloroethene (total)	< 0.0050	ug/l	8719
1,2-Dichloropropane	< 0.0050	ug/l	8719
cis-1,3-Dichloropropene	< 0.0050	ug/l	8719
trans-1,3-Dichloropropene	< 0.0050	ug/l	8719
Ethylbenzene	< 0.0050	ug/l	8719
Methylene chloride	< 0.0100	ug/l	8719
1,1,1,2-Tetrachloroethane	< 0.0050	ug/l	8719
Tetrachloroethene	< 0.0050	ug/l	8719
Toluene	< 0.0050	ug/l	8719
1,1,1-Trichloroethane	< 0.0050	ug/l	8719
1,1,2-Trichloroethane	< 0.0050	ug/l	8719
Trichloroethene	< 0.0050	ug/l	8719
Vinyl chloride	< 0.0050	ug/l	8719
Bromodichloroethane	< 0.0050	ug/l	8719
Aldrin	< 0.00005	ug/l	5141
Aroclor 1016	< 0.00050	ug/l	5283
Aroclor 1221	< 0.00050	ug/l	5283
Aroclor 1232	< 0.00050	ug/l	5283
Aroclor 1242	< 0.00050	ug/l	5283
Aroclor 1248	< 0.00050	ug/l	5283
Aroclor 1254	< 0.00050	ug/l	5283
Aroclor 1260	< 0.00050	ug/l	5283
p-DHC	< 0.00005	ug/l	5141
o-DHC	< 0.00005	ug/l	5141
m-DHC	< 0.00005	ug/l	5141
p-DHC, Lindane	< 0.00005	ug/l	5141
Chlordane	< 0.00005	ug/l	5141
4,4'-DDD	< 0.00010	ug/l	5141
4,4'-DDE	< 0.00010	ug/l	5141
4,4'-DDT	< 0.00010	ug/l	5141
Dieldrin	< 0.00010	ug/l	5141
Endosulfan I	< 0.00005	ug/l	5141
Endosulfan II	< 0.00010	ug/l	5141
Endosulfan Sulfate	< 0.00010	ug/l	5141
Heptach	< 0.00010	ug/l	5141



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PROJECT QUALITY CONTROL DATA

Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Endrin Aldehyde	< 0.00010	ng/l	5141
Heptachlor	< 0.00005	ng/l	5141
Heptachlor Epoxide	< 0.00005	ng/l	5141
Toxaphene	< 0.00500	ng/l	5141