

Material Safety Data Sheet

Product Name: **Red Indicating Liquid**

Product Part Number: **2992**

This product is a mixture of two or more chemicals as defined under O.S.H.A. standard 29 CFR 1910.1200. An individual MSDS for each chemical ingredient which comprises 1% or greater of the mixture (for Carcinogens concentrations of 0.1% or greater) is included with and is considered as part of the complete material safety data sheet.

Chemical Ingredient No. 1

Common Name:Tetrabromoethane (TBE)
 Chemical Name:..... 1,1,2,2-Tetrabromoethane
 Chemical Formula: C₂H₂Br₄
 Percent of Mixture (by volume).....95%
 Manufacturer ICL-IP Terneuzen (formerly Broomchemie B.V.)
 Distributor..... Morre-Tec Industries, Inc.
 MSDS..... Attached

Chemical Ingredient No. 2

Common Name: Heptyl Alcohol
 Chemical Name:..... 1-Heptanol, 98%
 Chemical Formula: n/a
 Percent of Mixture (by volume).....5%
 Manufacturer Acros Organics
 Distributor..... Pfaltz & Bauer
 MSDS..... Attached

Chemical Ingredient No. 3

Common Name Solvisol Red Dye
 Percent of Mixture (by volume)..... Less than 1%

The information herein is provided in good faith, but no warranty, either expressed or implied, is made by King Engineering.





MATERIAL SAFETY DATA SHEET

Product Name	Tetrabromoethane (TBE)	
Product id	2360	
Revision date	21/10/2010	Revision: 7
Supersedes	14/02/2008	

1. Identification of the substance & the company

Chemical name	1,1,2,2-Tetrabromoethane
Synonym(s)	Acetylene tetrabromide, Ethane, 1,1,2,2-tetrabromo-
Chemical formula	$C_2H_2Br_4$
Molecular weight	345.7
Type of product and use	For use in polymer/polyester fiber industry and for mineral separation
Supplier	ICL-IP America Inc. 95 MacCorkle Ave. SW, South Charleston, WV 25303-1411, USA Tel: (304) 720-3950 Fax: (304) 746-3101
Emergency Telephone	Chemtrec (800)424-9300

2. Hazards identification

Emergency overview	<i>Colourless to yellowish liquid with a sweet pungent odour. Very toxic by inhalation Irritant to eyes, skin and mucous membranes TBE is a central nervous system depressant and a hepatotoxin.</i>
Potential Health Effects:	
- Eye Contact	Irritant
- Skin contact	Irritant
- Inhalation	Irritant to upper respiratory tract. Symptoms of overexposure may include headache, abdominal cramps, vomiting, anorexia, drowsiness, yellowing of the skin, dark urine and unconsciousness in severe cases. May cause bilirubinuria, monocytosis, pulmonary edema, liver and kidney damage.
- Ingestion	Irritant to mucous membranes Symptoms as of inhalation.
Chronic effects/Carcinogenicity	Prolonged exposure may cause liver and kidney damage.



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NFPA Ratings (Scale 0-4) Health = 3, Fire = 0, Reactivity = 1.

3. Composition / information on ingredients

Components	CAS No.	Weight %
1,1,2,2-TETRABROMOETHANE	79-27-6	98.6

4. First-aid measures

Eye contact Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. Get medical attention immediately.

Skin contact Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention immediately.

Inhalation In case of mist inhalation or breathing fumes released from heated material, remove person to fresh air. Keep him quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

Ingestion If swallowed, wash mouth thoroughly with plenty of water and give water to drink. Get medical attention immediately.

NOTE: Never give an unconscious person anything to drink.

Notes to the physician No specific antidote. Treat symptomatically and supportively. In case of ingestion DO NOT induce vomiting. Signs and symptoms of toxicity are primarily referable to the CNS, respiratory tract .



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5. Fire - fighting measures

Suitable extinguishing media Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

Fire fighting procedure Cool containers with water spray. In closed stores, provide fire-fighters with self-contained breathing apparatus in positive pressure mode

Unusual fire and explosion hazards Will decompose from ca. 239°C releasing poisonous and corrosive fumes of Hydrogen bromide, bromine and carbonyl bromide.

6. Accidental release measures

Personal precautions Evacuate area.
Full protective clothing, including self-contained breathing apparatus, must be used.

Methods for cleaning up Absorb on sand or vermiculite and place in closed container for disposal.
Ventilate area and wash spill site after material pickup is complete.

7. Handling and storage

Handling Keep containers tightly closed. Avoid breathing vapours and any other bodily contact.

Storage Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid").

8. Exposure controls / personal protection

Exposure Limits :

Components	ACGIH-TLV Data	OSHA (PEL) Data
1,1,2,2-TETRABROMOETHANE 79-27-6	0.1 ppm	1 ppm, 14 mg/m ³

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Ventilation requirements Mechanical exhaust required.
Ventilation must be sufficient to maintain atmospheric concentration below recommended exposure limit.

Personal protective equipment:

- Respiratory protection	Approved respirator
- Hand protection	Protective gloves
- Eye protection	Chemical safety goggles
- Skin and body protection	Body covering clothes and boots

Hygiene measures

Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking.
Safety shower and eye bath should be provided.

9. Physical and chemical properties

Appearance	Colourless to yellowish liquid with a sweet pungent odour.
Boiling point/range	119°C (15mmHg) & 150°C (50 mmHg)
Melting point/range	1 °C ±1°C
Flash point	None
Flammable/Explosion limits	Not flammable
Auto-ignition temperature	335°C
Vapour pressure	0.04 mmHg (24°C)
Evaporation rate (ether=1)	Not available
Vapor density	11.92
Viscosity	Not determined
Solubility:	
- Solubility in water	0.063 g/100ml at 20°C 0.28 gr/100ml at 80°C
- Solubility in other solvents	Soluble in most organic solvents
Specific gravity	2.96
pH	Not available
Decomposition temperature	239°C
Explosive properties	Not available
Oxidising properties	Not available
Particle size:	Not applicable Substance is a liquid, thus test not relevant



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10. Stability and reactivity

Stability	Stable under normal conditions.
Materials to avoid	Reacts with chemically active metals or strong caustics. In the presence of steam, contact with hot iron, aluminium and zinc may cause formation of toxic vapours. Softens or destroys most plastics and rubbers.
Conditions to avoid	Heating above decomposition temperature
Hazardous decomposition products	Hydrogen bromide, bromine and carbonyl bromide
Hazardous polymerization	Will not occur

11. Toxicological information

Acute toxicity:	
- Rat oral LD50	1200 mg/kg
- Rat dermal LD50	5250 mg/kg
- Rat inhalation LC50	549 mg/m ³ /4 hour
Chronic toxicity	Prolonged exposure may cause liver and kidney damage.
Mutagenicity	Mutagenic by the Ames Test Was found mutagenic in DNA repair test with E. coli. Was found clastogenic in sister chromatid exchange test with Chinese hamster ovary cells.
Carcinogenicity	Not classified by IARC Not included in NTP 11th Report on Carcinogens
Reproductive toxicity	No information available

12. Ecological information

Aquatic toxicity :	Aquatic toxicity :
- LC50, fish	19 mg/l, 48 Hours (orange red-killifish)
- BOD % of TOD	29% (2 weeks)
Bioaccumulative potential	BCF 0.5~7.0 (10 ug/l, 6 weeks) BCF <2.9~8.2 (1 ug/l, 6 weeks)



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13. Disposal considerations

Waste disposal Observe all federal, state and local environmental regulations when disposing of this material.

14. Transportation information

UN No.	2504
DOT	Proper shipping name: TETRABROMOETHANE Packing Group: III Class: 6.1 - Poisons Marking: Marine Pollutant Label: TOXIC (6.1) Emergency Guide No.159
IMO	Proper shipping name: TETRABROMOETHANE Class: 6.1 Toxic substances Label: TOXIC (6.1) Marking: Marine Pollutant Packing Group: III
ICAO/IATA	Proper shipping name: TETRABROMOETHANE Class: 6.1 Hazard Label (s): Toxic Packing group: III

15. Regulatory information

USA	Reported in the EPA TSCA Inventory.
- Massachusetts right-to-know list	Listed
- New Jersey right-to-know list	Listed
- Pennsylvania right to know list	Listed
- Illinois toxic substances list	Listed
- Rhode Island right-to-know list	Listed



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Canada	Listed in DSL
-WHMIS hazard class	D1B toxic materials D2A very toxic materials
EU	Reported in EINECS
EC No.	201-191-5
Japan	ENCS No. 2-77 ISHL No. 2-77
Australia	Listed in AICS
New Zealand Inventory	Listed in NZIoC
China inventory	Listed
Korea	Listed in ECL (KE-33261)
Philippines	Listed in PICCS
Switzerland	Listed in Giftliste 1 (G-2914)



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16. Other information

This data sheet contains changes from the previous version in section(s)
9, 13

Health, Safety & Environment Policy

We will strive to ensure that our operations and products meet the needs of the present global community without compromising the ability of future generations to meet their needs

We accept that the success of our business is dependent on the supply of products and services that will benefit society whilst ensuring human safety and protection of the environment and natural resources

Within the framework of our commitment to the Responsible Care program, we will provide a healthy and safe work environment for employees and will responsibly manage our products at all stages of their life cycle in order to protect human health and the environment whilst maintaining high production standards of operation

TO MEET THIS COMMITMENT WE WILL:

Comply with or exceed applicable national and international regulatory requirements and other requirements to which we subscribe

Communicate openly and actively encourage dialogue with employees, customers and community concerning our products and operations

Implement documented management systems consistent with and for promotion of the Responsible Care ethics

Develop and supply products that can be manufactured, transported, used and disposed of safely whilst best meeting the needs of our customers

Regularly assess, continually improve and responsibly manage health, safety and environmental risks associated with products and processes throughout their life-cycles

Share knowledge and expertise with others and seek to learn from and incorporate improved practices into our own operations

Educate and train employees, contractors and customers to improve their HSE performance

Communicate up-to-date information to enable our workers, customers and other interested parties to handle our products in a safe and environmentally responsible manner

Endeavor to work with customers, suppliers, distributors and contractors to foster the safe use, transport and disposal of our chemicals

Support Product Stewardship programs in cooperation with customers, distributors and transporters

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Bromine Compounds Ltd. makes no representations as to the completeness or accuracy thereof.

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In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

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End of safety data sheet

SAFETY DATA SHEET

Revision Date 16-Nov-2010

Revision Number 1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Description: 1-Heptanol
Cat No. 120360000; 120360010; 120360050; 120362500
Synonyms Heptyl alcohol

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals
Uses advised against No Information available

Details of the supplier of the safety data sheet

Company

Acros Organics BVBA
Janssen Pharmaceuticaaan 3a
2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

Emergency Telephone Number

For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11

Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 201-796-7100

CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Serious Eye Damage/Eye Irritation	Category 2A

Classification according to EU Directives 67/548/EEC or 1999/45/EC

For the full text of the R phrases mentioned in this Section, see Section 16

Symbol(s) Xn - Harmful
R -phrase(s) R36 - Irritating to eyes
Risk Combination Phrases R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed

Label Elements

(Too many files)

(Too many files)

Signal Word Warning

Hazard Statements

H312 - Harmful in contact with skin
 H319 - Causes serious eye irritation
 H332 - Harmful if inhaled

Precautionary Statements - EU (§28, 1272/2008)

P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Other Hazards

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	EC No.	Weight %	CAS-No	Classification	GHSCLAS	REACH Reg. No.
n-Heptyl alcohol 111-70-6	203-897-9	98	111-70-6	Xn; R20/21/22 Xi; R36	Eye Irrit. 2 (H319) Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332)	-

For the full text of the R phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of first aid measures**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes Obtain medical attention

Skin Contact

Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes Obtain medical attention

Ingestion

Do not induce vomiting Clean mouth with water Get medical attention

Inhalation

Remove from exposure, lie down Move to fresh air If breathing is difficult, give oxygen If not breathing, give artificial respiration Obtain medical attention

Notes to Physician

Treat symptomatically

5. FIRE-FIGHTING MEASURES

Extinguishing media**Suitable Extinguishing Media**

Carbon dioxide (CO₂) Dry chemical Use water spray to cool unopened containers chemical foam Do not use a solid water stream as it may scatter and spread fire

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Combustible material Flammable

Advice for fire-fighters

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

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation

Environmental precautions

Prevent further leakage or spillage if safe to do so

Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust) Keep in suitable and closed containers for disposal

7. HANDLING AND STORAGE**Precautions for Safe Handling**

Avoid contact with skin and eyes Do not breathe dust Do not breathe vapors or spray mist

Conditions for safe storage, including any incompatibilities

Keep in a dry, cool and well-ventilated place Keep container tightly closed Keep away from heat and sources of ignition

Specific End Uses**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Control parameters****Exposure limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL)

No information available.

Predicted No Effect Concentration (PNEC)

No information available.

Exposure controls**Engineering Measures**

Ensure adequate ventilation, especially in confined areas Ensure that eyewash stations and safety showers are close to the workstation location

Personal protective equipment**Ey e Protection**

Goggles

Ha nd Protection

Protective gloves

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure

Resp iratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls

No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear
odor	slight
pH	No information available.
Vapor Pressure	0.5 mbar @ 20 °C
Vapor Density	3.9
Boiling Point/Range	176°C / 348.8°F@ 760 mmHg
Melting Point/Range	-35°C / -31°F
Flash Point	73°C / 163.4°F
Water Solubility	2.85 g/L (100°C)
Specific Gravity	0.822
Molecular Formula	C7 H16 O
Molecular Weight	116.2

10. STABILITY AND REACTIVITY

Reactivity

Chemical Stability

Stable under normal conditions.

Possibility of Hazardous Reactions

Hazardous Polymerization

Hazardous polymerization does not occur.

Hazardous Reactions .

No information available.

Conditions to Avoid

Incompatible products.

Incompatible Materials

Strong oxidizing agents, Strong acids, Acid anhydrides, Acid chlorides.

Hazardous Decomposition Products

Carbon monoxide (CO). Carbon dioxide (CO₂).

11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Acute Toxicity

Product Information

No acute toxicity information is available for this product

Component Information

Component

n-Heptyl alcohol

	LD50 Oral	LD50 Dermal	LC50 Inhalation
	500 mg/kg (Rat)	2 g/kg (Rabbit)	

Chronic Toxicity

Carcinogenicity

There are no known carcinogenic chemicals in this product

Sensitization	No information available.
Mutagenic Effects	No information available
Reproductive Effects	No information available.
Developmental Effects	No information available.
Target Organs	No information available.
Other Adverse Effects	The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information
Endocrine Disruptor Information	None known

12. ECOLOGICAL INFORMATION

Toxicity

Ecotoxicity effects Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
n-Heptyl alcohol		33.1-36 mg/L LC50 96 h		

Persistence and degradability

No information available

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Results of PBT and vPvB assessment

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues / Unused Products

Dispose of in accordance with local regulations

Contaminated Packaging

Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

IMDG/IMO

UN-No	UN2810
Hazard Class	6.1
Packing Group	III
Proper Shipping Name	TOXIC LIQUIDS, ORGANIC, N.O.S.

ADR

Not regulated

IATA

UN-No	UN2810
Hazard Class	6.1
Packing Group	III

14. TRANSPORT INFORMATION

Proper Shipping Name TOXIC LIQUIDS, ORGANIC, N.O.S.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

Component	EINECS	ELINCS	NLP TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
n-Heptyl alcohol	203-897-9	-		X	X	-	X	X	X	KE-18302 X

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory Lists

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

CHINA - China Inventory of Existing Chemical Substances

AICS - Inventory of Chemical Substances

KECL - Existing and Evaluated Chemical Substances

Chemical Safety Assessment

16. OTHER INFORMATION

Text of R phrases mentioned in Section 2-3

R36 - Irritating to eyes

R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed

Revision Date 16-Nov-2010

Revision Summary Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

End of Safety Data Sheet