SAFETY DATA SHEET

FRMFTR3

1. IDENTIFICATION

Product identifier
Product Name ManVer® Hardness Indicator

Other means of identification
Product Code(s) 42532

Safety data sheet number M00635

UN/ID no UN2924

Synonyms

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. Indicator for hardness.
Uses advised against None.
Restrictions on use None.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company
P.O.Box 389 Loveland, CO 80539 USA
(970) 669-3050

Emergency telephone number
(303) 623-5716 - 24 Hour Service (515)232-2533 - 8am - 4pm CST

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Corrosive to metals	Category 1
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 2
Aquatic Acute Toxicity	Category 2

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word - Danger

Hazard statements
H226 - Flammable liquid and vapor
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H401 - Toxic to aquatic life

Precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves
P273 - Avoid release to the environment
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P234 - Keep only in original container
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P363 - Wash contaminated clothing before reuse
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P310 - Immediately call a POISON CENTER or doctor/physician
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
P390 - Absorb spillage to prevent material damage
P405 - Store locked up
P403 + P235 - Store in a well-ventilated place. Keep cool
P406 - Store in corrosive resistant stainless steel container with a resistant inliner
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Information
May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Synonyms .

Percent ranges are used where confidential product information is applicable.

Chemical Name	CAS No	Percent Range	HMRIC #
1,2-Propanediol	57-55-6	90 - 100%	-
Hydroxylamine, hydrochloride	5470-11-1	1 - 5%	-
Isopropyl alcohol	67-63-0	1 - 5%	-
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-	3147-14-6	0.1 - 1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice See section 8 for PPE that may be required during handling. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). If no local exhaust use approved fume hood and/or respirator. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Remove from exposure, lie down. Immediate medical attention is required. IF IN EYES: Flush eyes for at least 15 minutes. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. May cause allergic skin reaction. Repeated contact may cause allergic reactions in very susceptible persons.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

Inhalation IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a physician immediately.

Ingestion IF SWALLOWED: Rinse Mouth. Do NOT induce vomiting. Call a physician immediately.

Self-protection of the first aider First aider: Pay attention to self-protection. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians Causes sensitization.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Alcohol foam.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Flammable properties
Flammable; may be ignited by heat, sparks or flames. Flammable liquid. Classified as flammable according to GHS criteria. Flammable liquids. Highly flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may cause flash fire or explosion. Vapors can travel to a source of ignition and flash back. Heating may cause a fire or explosion. Containers may explode when heated. May be ignited by friction, heat, sparks or flames. Flammable.

Specific hazards arising from the chemical
The product causes burns of eyes, skin and mucous membranes. Flammable. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products Chlorides. Carbon monoxide, Carbon dioxide.

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

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

EC Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

WHMIS Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Remove all sources of ignition. Do not touch or walk through spilled material. Ventilate affected area. Use personal protective equipment as required.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take necessary precautions in observance of pertinent physical hazards. Neutralize spill if necessary. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Dispose of in

accordance with local, state and federal regulations or laws. Use only non-sparking tools. Ground and bond containers when transferring material. Take precautionary measures against static discharges. Use personal protective equipment as required.

Emergency Response Guide Number 132

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Absorb spillage to prevent material damage.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep tightly closed in a dry and cool place. Keep in properly labeled containers. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep containers tightly closed in a cool, well-ventilated place. Keep containers tightly closed in a dry, cool and well-ventilated place. Use spark-proof tools and explosion-proof equipment. Keep/store only in original container.

Flammability class Class IC

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Isopropyl alcohol 1 - 5%	STEL: 400 ppm TWA: 200 ppm	TWA: 400 ppm TWA: 980 mg/m³ (vacated) TWA: 400 ppm (vacated) TWA: 980 mg/m³ (vacated) STEL: 500 ppm (vacated) STEL: 1225 mg/m³	IDLH: 2000 ppm TWA: 400 ppm TWA: 980 mg/m³ STEL: 500 ppm STEL: 1225 mg/m³

Chemical Name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL
Isopropyl alcohol 1 - 5%	TWA: 200 ppm TWA: 492 mg/m³ STEL: 400 ppm STEL: 984 mg/m³	TWA: 200 ppm STEL: 400 ppm	TWA: 200 ppm STEL: 400 ppm	TWA: 400 ppm TWA: 983 mg/m³ STEL: 500 ppm STEL: 1230 mg/m³	TWA: 200 ppm STEL: 400 ppm

Chemical Name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
1,2-Propanediol 90 - 100%	NDF	NDF	NDF	TWA: 10 mg/m³ TWA: 50 ppm TWA: 155 mg/m³	NDF
Isopropyl alcohol 1 - 5%	TWA: 200 ppm STEL: 400 ppm	STEL: 400 ppm TWA: 200 ppm	TWA: 200 ppm STEL: 400 ppm	TWA: 200 ppm STEL: 400 ppm	STEL: 400 ppm TWA: 200 ppm

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Isopropyl alcohol 1 - 5%	TWA: 400 ppm TWA: 985 mg/m³	TWA: 200 ppm STEL: 400 ppm	STEL: 500 ppm STEL: 1225 mg/m³

	STEL: 500 ppm STEL: 1230 mg/m³		TWA: 400 ppm TWA: 980 mg/m³ SKN*

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Legend See section 16 for terms and abbreviations

Appropriate engineering controls

Engineering Controls If no local exhaust use approved fume hood or self-contained breathing apparatus
If no local exhaust use approved fume hood and/or respirator
Showers
Eyewash stations

Individual protection measures, such as personal protective equipment

Eye/face protection Wear tight sealing safety goggles and/or face protection shield. Avoid contact with eyes.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear protective gloves and protective clothing.

Respiratory protection Do not breathe gas/fumes/vapor/spray. If no local exhaust use approved fume hood and/or respirator. In case of inadequate ventilation wear respiratory protection.

General Hygiene Considerations Avoid breathing (dust, vapor, mist, gas). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear suitable gloves and eye/face protection. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feeding stuffs. Regular cleaning of equipment, work area and clothing is recommended. Handle in accordance with good industrial hygiene and safety practice. Avoid prolonged or repeated contact with skin. Take off all contaminated clothing and wash it before reuse.

Environmental exposure controls
Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Liquid

Gas Under Pressure Not classified according to GHS criteria

Appearance aqueous solution **Color** dark red

Odor Fruity **Odor threshold** No data available

Property	Values	Remarks • Method
Molecular weight	No data available	
pH	1.09	
Melting point/freezing point	No data available	
Boiling point / boiling range	118 °C / 244 °F	

Evaporation rate	0.05 (water = 1)	
Vapor pressure	1.35 mm Hg / 0.18 kPa at 20 °C / 68 °F	Estimation based on theoretical calculation
Vapor density (air = 1)	2.08 (air = 1)	
Specific gravity (water = 1 / air = 1)	1.01	
Partition Coefficient (n-octanol/water)	Not applicable	
Soil Organic Carbon-Water Partition Coefficient	Not applicable	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	No data available	
Kinematic viscosity	No data available	

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other Information

Metal Corrosivity	Classified as corrosive to metal according to GHS criteria
GHS Metal Corrosivity Classification	Category 1, H290
Steel Corrosion Rate	7.32 mm/yr / 0.29 in/yr
Aluminum Corrosion Rate	0.00254 mm/yr / 0.001 in/yr
Volatile Organic Compounds (VOC) Content	See ingredients information below.

Chemical Name	Volatile organic compounds (VOC) content
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	100%

Bulk density	Not applicable
Explosive properties	Not classified according to GHS criteria.
Explosion data	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Flammable properties	Flammable; may be ignited by heat, sparks or flames. Flammable

	liquid. Classified as flammable according to GHS criteria. Flammable liquids. Highly flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may cause flash fire or explosion. Vapors can travel to a source of ignition and flash back. Heating may cause a fire or explosion. Containers may explode when heated. May be ignited by friction, heat, sparks or flames. Flammable.
GHS Flammability Classification	Liquid - Category 3, H226 Liquid - Category 2, H225
Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available
Flash point	26 °C / 79 °F
Method	CC (closed cup)
Oxidizing properties	Not classified according to GHS criteria.
Reactivity propeties	Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

10. STABILITY AND REACTIVITY

Reactivity propeties
Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria

Chemical stability
Stable under recommended storage conditions.

Special dangers of the product
None reported

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Contact with heat, sparks, open flames or other ignition sources. Take precautionary measures against static discharges.

Incompatible materials
Strong oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Explosive properties
Not classified according to GHS criteria.

Upper explosion limit No data available

Lower explosion limit No data available

Autoignition temperature
No data available

Sensitivity to Static Discharge
None reported

Sensitivity to Mechanical Impact
None reported

11. TOXICOLOGICAL INFORMATION

NIOSH (RTECS) Number None reported

Information on Likely Routes of Exposure

Product Information	Corrosive to skin. Corrosive to eyes. May be harmful if swallowed. Skin sensitizer.
Inhalation	Causes burns. Corrosive by inhalation.
Eye contact	Corrosive to the eyes and may cause severe damage including blindness. Causes burns.
Skin contact	Cause severe skin burns and eye damage. May cause sensitization by skin contact.
Ingestion	Ingestion causes burns of the upper digestive and respiratory tracts. May be harmful if swallowed.
Aggravated Medical Conditions	Eye disorders. Skin disorders. Respiratory disorders.
Toxicologically synergistic products	None known.
Toxicokinetics, metabolism and distribution	See ingredients information below.

Chemical Name	Toxicokinetics, metabolism and distribution
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Based on human data (oral child), large doses over prolonged period of time cause behavioral changes.
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Isopropanol is rapidly absorbed across the gastric mucosa and reaches a peak concentration approximately 30-120 minutes after ingestion. Isopropanol is primarily metabolized via alcohol dehydrogenase to acetone.

Product Acute Toxicity Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	3,168.00 mg/kg
ATEmix (dermal)	25,229.00 mg/kg

Ingredient Acute Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
1,2-Propanediol	Rat	20000 mg/kg	None	None reported	RTECS (Registry of Toxic

(90 - 100%) CAS#: 57-55-6	LD_{50}		reported		Effects of Chemical Substances)
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	Rat LD_{50}	141 mg/kg	None reported	None reported	Vendor SDS
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat LD_{50}	4710 mg/kg	None reported	**Behavioral** General anesthetic	OECD (Organization for Economic Co-operation and Development)
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]- (0.1 - 1%) CAS#: 3147-14-6	Rat	> 5000 mg/kg	None reported	None reported	No information available
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Human TD_{Lo}	223 mg/kg	None reported	**Behavioral** Hallucinations, Distorted perceptions **Cardiac** Pulse rate decrease with fall in BP **Vascular** BP lowering not characterized in autonomic section	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route If available, see data below

Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Rabbit LD_{50}	20800 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rabbit LD_{50}	12800 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Dust/Mist) Exposure Route If available, see data below

Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat LC_{50}	72.6 mg/L	4 hours	**Behavioral** General anesthetic **Lungs, Thorax, or Respiration** Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route If available, see data below

Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Human TC_{Lo}	35 mg/L	4 hours	**Cardiac** Pulse rate decrease with fall in BP **Lungs, Thorax, or Respiration** Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Human TC_{Lo}	150 mg/L	2 hours	**Biochemical** Enzyme inhibition, induction, or change in blood or tissue levels Other enzymes	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
If available, see data below

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Standard Draize Test	Human	500 mg	7 days	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Standard Draize Test	Rabbit	500 mg	None reported	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Test method**	**Species**	**Reported dose**	**Exposure time**	**Results**	**Key literature references and sources for data**
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Standard Draize Test	Human	104 mg	72 hours	Skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
If available, see data below

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Standard Draize Test	Rabbit	500 mg	24 hours	Mild eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Standard Draize Test	Rabbit	100 mg	None reported	Corrosive to eyes	RTECS (Registry of Toxic Effects of Chemical Substances)

Sensitization Information

Product Sensitization Data

Skin Sensitization Exposure Route No data available.

Respiratory Sensitization Exposure Route No data available.

Ingredient Sensitization Data

Skin Sensitization Exposure Route If available, see data below.

Chemical Name	Test method	Species	Results	Key literature references and sources for data
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	None reported	Guinea pig	Not confirmed to be a skin sensitizer	OECD (Organization for Economic Co-operation and Development)

Respiratory Sensitization Exposure Route No data available.

Chronic Toxicity Information

Product Repeat Dose Toxicity Data

Oral Exposure Route No data available.

Dermal Exposure Route No data available.

Inhalation (Dust/Mist) Exposure Route No data available.

Inhalation (Vapor) Exposure Route No data available.

Inhalation (Gas) Exposure Route No data available.

Ingredient Repeat Dose Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	Rat LD_{Lo}	2478 mg/kg	6 days	**Behavioral** Food intake **Blood** Changes in blood leukocyte count **Nutritional and Gross Metabolic** Weight loss or decreased weight gain	NIOSH (National Institute for Occupational Safety and Health)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	Rat LD_{Lo}	49500 mg/kg	25 weeks	**Endocrine** Changes in spleen weight Changes in thyroid weight	NIOSH (National Institute for Occupational Safety and Health)

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Rat TC_{Lo}	2.180 mg/L	90 days	**Behavioral** Food intake **Biochemical** Enzyme inhibition, induction, or change in blood or tissue levels (dehydrogenases) **Endocrine** Changes in spleen weight	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

Chemical Name	CAS No	ACGIH	IARC	NTP	OSHA
1,2-Propanediol	57-55-6	-	-	-	-
Hydroxylamine, hydrochloride	5470-11-1	-	-	-	-
Isopropyl alcohol	67-63-0	-	Group 3	-	X
1-Naphthalenesulfonic	3147-14-6	-	-	-	-

acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-					

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Not classifiable as a human carcinogen
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	X - Present

Product Carcinogenicity Data No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Carcinogenicity Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Product Germ Cell Mutagenicity*invitro*Data
No data available.

Ingredient Germ Cell Mutagenicity*invitro*Data If available, see data below

Chemical Name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	Cytogenetic analysis	Hamster fibroblast	32000 mg/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Germ Cell Mutagenicity*invivo*Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route If available, see data below

Chemical Name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Cytogenetic analysis	Rat	0.00103 mg/L	16 weeks	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Reproductive Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TD_{Lo}	32.4 mg/kg	None reported	**Effects on Embryo or Fetus** Fetal death	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TD_{Lo}	3500 mg/kg	None reported	**Effects on Fertility** Mating performance (e.g. # sperm positive females per # females mated; # copulations per # estrus cycles)	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TD_{Lo}	8000 mg/kg	9 days	**Effects on Embryo or Fetus** Fetotoxicity (except death e.g. stunted fetus)	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TC_{Lo}	7000 mg/L	19 days	**Specific Developmental Abnormalities** Musculoskeletal system	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**

Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TC_{Lo}	10000 mg/L	19 days	**Effects on Embryo or Fetus** Fetal death **Effects on Fertility** Post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants) Pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	Rat TC_{Lo}	3500 mg/L	19 days	**Effects on Embryo or Fetus**Fetotoxicity (except death e.g. stunted fetus)	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity Toxic to aquatic life.

Product Ecological Data

Aquatic toxicity

Fish No data available

Crustacea No data available

Algae No data available

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Ingredient Ecological Data

Aquatic toxicity

Fish If available, see ingredient data below

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	96 hours	*Pimephales promelas*	LC_{50}	51400 mg/L	IUCLID (The International Uniform Chemical Information Database)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	96 hours	*Pimephales promelas*	LC_{50}	4200 mg/L	IUCLID (The International Uniform Chemical Information Database)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	48 hours	*Leuciscus idus*	LC_{50}	1 mg/L	Vendor SDS

Crustacea If available, see ingredient data below

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	48 Hours	*Daphnia magna*	LC_{50}	34400 mg/L	IUCLID (The International Uniform Chemical Information Database)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	48 Hours	None reported	LC_{50}	1400 mg/L	IUCLID (The International Uniform Chemical Information Database)

Algae If available, see ingredient data below

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	96 hours	*Selenastrum capricornutum*	EC_{50}	19000 mg/L	IUCLID (The International Uniform Chemical Information Database)
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	72 Hours	*Scenedesmus subspicatus*	EC_{50}	> 1000 mg/L	IUCLID (The International Uniform Chemical Information Database)

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Other Information

Persistence and degradability
None known.

Product Biodegradability Data
If available, see ingredient data below.

Ingredient Biodegradability Data
Test data reported below

Chemical Name	Test method	Biodegradation	Exposure time	Results
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	None reported	95%	21 days	Readily biodegradable

Bioaccumulation
If available, see ingredient data below.

Product Bioaccumulation Data No data available.

Ingredient Bioaccumulation Data No data available

Additional information

Product Information

Partition Coefficient (n-octanol/water) Not applicable

Ingredient Information

Chemical Name	Partition Coefficient (n-octanol/water)	Method
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	log K_{ow} = -0.92	No information available
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	log K_{ow} = -2.66	Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	log K_{ow} = 0.05	No information available
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]- (0.1 - 1%) CAS#: 3147-14-6	log K_{ow} = .?	No information available

Mobility
Mobility in soil: High mobility. If available, see ingredient data below.

Product Information

Soil Organic Carbon-Water Partition Coefficient Not applicable

Ingredient Information

Chemical Name	Soil Organic Carbon-Water Partition Coefficient	Method
1,2-Propanediol (90 - 100%) CAS#: 57-55-6	log K_{oc} = -0.41	No information available
Hydroxylamine, hydrochloride (1 - 5%) CAS#: 5470-11-1	log K_{oc} = 1.34	Estimation through KOCWIN v2.00 part of the Estimation Programs Interface (EPI) Suite™
Isopropyl alcohol (1 - 5%) CAS#: 67-63-0	log K_{oc} = 0.54	No information available

Additional information

Water solubility

Product Information

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
1,2-Propanediol CAS#: 57-55-6	Completely soluble	100000 mg/L	20 °C	68 °F
Hydroxylamine, hydrochloride CAS#: 5470-11-1	Soluble	> 1000 mg/L	25 °C	77 °F
Isopropyl alcohol CAS#: 67-63-0	Soluble	> 1000 mg/L	25 °C	77 °F
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-	Soluble	> 1000 mg/L	25 °C	77 °F

CAS#: 3147-14-6				

Other adverse effects
No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Contaminated packaging Do not reuse container.

US EPA Waste Number D001, D002

Special instructions for disposal Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.

14. TRANSPORT INFORMATION

DOT

UN/ID no	UN2924
Proper shipping name	Flammable liquid, corrosive, n.o.s.
DOT Technical Name	(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)
Hazard Class	3
Subsidiary class	8
Packing Group	III
Emergency Response Guide Number	132

TDG

UN/ID no	UN2924
Proper shipping name	Flammable liquid, corrosive, n.o.s.
TDG Technical Name	(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)
Hazard Class	3
Subsidiary class	8
Packing Group	III

IATA

UN/ID no	UN2924
Proper shipping name	Flammable liquid, corrosive, n.o.s.
IATA Technical Name	(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)
Hazard Class	3
Subsidiary hazard class	8
Packing Group	III
ERG Code	132

IMDG

UN/ID no	UN2924
IMDG Technical Name	(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)
Hazard Class	3
Subsidiary hazard class	8
Packing Group	III

Note: No special precautions necessary.

Additional information
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

National Inventories

TSCA	Complies
DSL/NDSL	Complies

TSCA- United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL- Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Does not comply
PICCS	Complies
TCSI	Complies
AICS	Complies
NZIoC	Complies

EINECS/ELINCS- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS- Japan Existing and New Chemical Substances
IECSC- China Inventory of Existing Chemical Substances
KECL- Korean Existing and Evaluated Chemical Substances
PICCS- Philippines Inventory of Chemicals and Chemical Substances
TCSI- Taiwan Chemical Substances Inventory
AICS- Australian Inventory of Chemical Substances
NZIoC- New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Isopropyl alcohol (CAS #: 67-63-0)	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level

pertaining to releases of this material

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
1,2-Propanediol 57-55-6	X	-	X
Isopropyl alcohol 67-63-0	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Additional information

Global Automotive Declarable Substance List (GADSL)
Not applicable

Special Comments
None

NFPA and HMIS Classifications

NFPA	Health hazards - 3	Flammability - 3	Instability - 0	Physical and Chemical Properties -
HMIS	Health hazards - 3	Flammability - 3	Physical hazards - 0	Personal protection - X - See section 8 for more information

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH	*Immediately Dangerous to Life or Health*
ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
NDF	*no data*

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these

"liberated" exposure limits in their state regulations.

SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By	Hach Product Compliance Department
Issue Date	11-May-2016
Revision Date	15-Dec-2016
Revision Note	None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

End of Safety Data Sheet