

Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 1 of 12

## SAFETY DATA SHEET

### SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Heatsavr™**

Product Code(s) : HS480, HS560, HS140

Recommended use of the chemical and restrictions on use

: Liquid swimming pool cover, that when added to your pool, creates a liquid barrier between the water and the air for reducing the rate of evaporation.  
No restrictions on use known.

Chemical family

: Mixture of: Alcohols; Water

Name, address, and telephone number of the supplier:

**Flexible Solutions International**

#206 - 920 Hillside Avenue  
Victoria, B.C., Canada  
V8T 1Z8

Supplier's Telephone # : (250) 477-9969; (800) 661-3560 (Toll Free)  
(Monday to Friday, 8 am to 4 pm, Pacific Time)

24 Hr. Emergency Tel # : (613) 996-6666 (CANUTEC)

Name, address, and telephone number of the manufacturer:

Refer to supplier

### SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Light blue liquid. Solvent/alcohol odor.

Most important hazards:

Highly flammable liquid and vapor. This material may be ignited by heat, sparks and direct flame. Vapors are heavier than air and may spread along floors.

Causes eye irritation. Inhalation may cause central nervous system depression. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Hazardous classification:

Flammable liquid - Category 2

Eye damage/irritation - Category 2B

Specific target organ toxicity, single exposure - Category 3 (Narcotic effects)

Label elements

Hazard pictogram(s)



Signal Word

**DANGER!**

Hazard statement(s)

Highly flammable liquid and vapor.

Causes eye irritation.

May cause drowsiness or dizziness.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 2 of 12

## SAFETY DATA SHEET

### Precautionary statement(s)

Keep away from heat, sparks and open flame. - No smoking.  
Keep container tightly closed.  
Ground/Bond container and receiving equipment.  
Use explosion-proof electrical and ventilating equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Avoid breathing vapors.  
Wash hands and face thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves and eye/face protection.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

In case of fire, use dry chemical, CO<sub>2</sub>, or alcohol foam to extinguish.

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Dispose of contents/container in accordance with local regulation.

### Other hazards

*Other hazards which do not result in classification:*

Toxic fumes may be released during a fire. May be mildly irritating to skin and respiratory system. May cause gastrointestinal irritation. Prolonged or repeated overexposure could cause adverse liver effects.

*Environmental precautions:*

Avoid release to the environment. See ECOLOGICAL INFORMATION, Section 12.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

<u>Chemical name</u>	<u>Common name and synonyms</u>	<u>CAS #</u>	<u>Concentration (% by weight)</u>
Ethanol	Ethyl alcohol Ethyl hydrate	64-17-5	82.19
Isopropanol	Isopropyl alcohol 2-Propanol	67-63-0	4.11

## SECTION 4. FIRST-AID MEASURES

### Description of first aid measures

- Ingestion* : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical advice/attention.
- Inhalation* : If inhaled: Remove person to fresh air and keep comfortable for breathing. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Call a POISON CENTER or doctor/physician if you feel unwell.
- Skin contact* : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If irritation or symptoms develop, seek medical attention.
- Eye contact* : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eyes with water for at least 15 minutes. If eye irritation persists: get medical advice/attention.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 3 of 12

## SAFETY DATA SHEET

### Most important symptoms and effects, both acute and delayed

- : Causes eye irritation. Symptoms may include stinging, tearing, redness and swelling. Inhaling high concentrations may cause central nervous system depression, with effects ranging from dizziness and headache to unconsciousness. May be mildly irritating to skin and respiratory system. May cause coughing and breathing difficulties. Direct skin contact may cause temporary redness. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Prolonged or repeated overexposure could cause adverse liver effects. Long-term ingestion may result in liver damage with symptoms such as jaundice, swelling of the legs, ankles and feet, weightloss and weakness. However, these effects and symptoms are primarily associated with the consumption of alcoholic beverages.

### Indication of any immediate medical attention and special treatment needed

- : Provide general supportive measures and treat symptomatically.

## SECTION 5. FIRE-FIGHTING MEASURES

### Extinguishing media

#### *Suitable extinguishing media*

- : Dry chemical, carbon dioxide and foam.

#### *Unsuitable extinguishing media*

- : Water may be ineffective because it may not cool product below the flashpoint.

### Special hazards arising from the substance or mixture / Conditions of flammability

- : Highly flammable liquid and vapor. Will ignite when exposed to heat, flame and other sources of ignition. Vapors are heavier than air and collect in confined and low-lying areas. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

### Flammability classification (OSHA 29 CFR 1910.106)

- : Flammable liquid - Category 2

### Hazardous combustion products

- : Carbon oxides; formaldehyde; unburned alcohols.

### Special protective equipment and precautions for firefighters

#### *Protective equipment for fire-fighters*

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

#### *Special fire-fighting procedures*

- : Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

- : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to protective measures listed in sections 7 and 8.

### Environmental precautions

- : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

### Methods and material for containment and cleaning up

- : Ventilate the area. Prevent further leakage or spillage if safe to do so. Eliminate all ignition sources. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand). Pick up and transfer to properly labeled containers. Do not use combustible absorbents, such as sawdust. Refer to Section 13 for disposal of contaminated material. Contact the proper local authorities.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 4 of 12

## SAFETY DATA SHEET

### Special spill response procedures

- : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).  
US CERCLA Reportable quantity (RQ): None known.

In Canada: Contact appropriate local and provincial environmental authorities for assistance and/or reporting requirements.

### SECTION 7. HANDLING AND STORAGE

#### Precautions for safe handling

- : Use only outdoors or in a well-ventilated area. Wear protective equipment during handling. Wear protective gloves and eye/face protection. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and open flame. - No smoking. Ground/Bond container and receiving equipment. Use explosion-proof electrical and ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep away from incompatibles. Keep container tightly closed when not in use. Wash thoroughly after handling. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

#### Conditions for safe storage

- : Store in a cool, dry, well-ventilated area. Store away from incompatibles and out of direct sunlight. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks.

#### Incompatible materials

- : Strong oxidizing agents (e.g. hydrogen peroxide, nitric acid); Strong acids; Alkali metals (e.g. Sodium; Potassium)

### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Exposure Limits:

<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Ethanol	N/Av	1000 ppm	1000 ppm (1900 mg/m <sup>3</sup> )	N/Av
Isopropanol	200 ppm	400 ppm	400 ppm (980 mg/m <sup>3</sup> )	N/Av

#### Exposure controls

##### Ventilation and engineering measures

- : Use only outdoors or in a well-ventilated area. Use with adequate local or mechanical ventilation to meet TLV requirements. Use explosion-proof electrical and ventilating equipment.

##### Respiratory protection

- : If airborne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

##### Skin protection

- : Wear protective gloves. Wear as appropriate: Butyl rubber; Viton; Neoprene. The following glove material(s) are not recommended: Natural Rubber; polyvinyl alcohol; PVC. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Wear sufficient clothing to prevent skin contact.

##### Eye / face protection

- : Wear eye/face protection. Wear as appropriate: Safety glasses with side shields; Tightly fitting safety goggles.

##### Other protective equipment

- : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 5 of 12

## SAFETY DATA SHEET

### General hygiene considerations

- : Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse. Handle in accordance with good industrial hygiene and safety practice.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** : Light blue liquid.
- Odor** : Solvent/alcohol odor.
- Odor threshold** : 0.1 - 5100 ppm (Ethanol)  
40 - 200 ppm (Isopropanol)
- pH** : N/Av
- Melting/Freezing point** : - 100°C (- 148°F) (approximately)
- Initial boiling point and boiling range**  
: 78 - 83°C (172 - 181°F)
- Flash point** : 13°C (55.4°F)
- Flashpoint (Method)** : Tag closed cup
- Evaporation rate (BuAe = 1)** : 1.7 (butyl acetate = 1)
- Flammability (solid, gas)** : Not applicable.
- Lower flammable limit (% by vol.)**  
: 3.3%(Ethanol)  
2.5% (Isopropanol)
- Upper flammable limit (% by vol.)**  
: 19% (Ethanol)  
12% (Isopropanol)
- Oxidizing properties** : None known.
- Explosive properties** : Not explosive
- Vapor pressure** : 5.9 kPa (44.25 mm Hg) @ 20°C (68°F) (Ethanol)  
4.41 kPa (33.1 mm Hg) @ 20°C (68°F) (Isopropanol)
- Vapor density** : 1.61 (Air = 1)
- Relative density / Specific gravity**  
: 0.7882 @ 20°C (68°F)
- Solubility in water** : Complete
- Other solubility(ies)** : Soluble in all proportions with diethyl ether, acetone, benzene, chloroform, methanol and some other organic solvents.
- Partition coefficient: n-octanol/water or Coefficient of water/oil distribution**  
: N/Av
- Auto-ignition temperature** : 370°C (752°F)
- Decomposition temperature** : N/Av
- Viscosity** : 1.35 cP @ 20°C (68°F) (approximately)
- Volatiles (% by weight)** : 100%
- Volatile organic Compounds (VOC's)**  
: 715 g/L
- Absolute pressure of container**  
: N/Av
- Flame projection length** : N/Av
- Other physical/chemical comments**  
: No additional information.

### SECTION 10. STABILITY AND REACTIVITY

- Reactivity** : Not normally reactive.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 6 of 12

## SAFETY DATA SHEET

- Chemical stability** : Stable under normal conditions.
- Possibility of hazardous reactions** : Hazardous polymerization does not occur.
- Conditions to avoid** : Ensure adequate ventilation, especially in confined areas. Avoid contact with incompatible materials. Avoid heat and open flame.
- Incompatible materials** : Strong oxidizing agents (e.g. hydrogen peroxide, nitric acid); Strong acids; Alkali metals (e.g. Sodium; Potassium)
- Hazardous decomposition products** : None known, refer to hazardous combustion products in Section 5.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure:

- Routes of entry inhalation** : YES
- Routes of entry skin & eye** : YES
- Routes of entry Ingestion** : YES
- Routes of exposure skin absorption** : YES

#### Potential Health Effects:

##### Signs and symptoms of short-term (acute) exposure

###### *Sign and symptoms Inhalation*

- : Mild respiratory irritant. May cause coughing and breathing difficulties. Inhalation may cause headache, nausea and central nervous effects such as dizziness, coordination difficulties and unconsciousness.

###### *Sign and symptoms ingestion*

- : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

###### *Sign and symptoms skin*

- : Direct skin contact may cause slight or mild, transient irritation. Direct skin contact may cause temporary redness.

###### *Sign and symptoms eyes*

- : Causes eye irritation. Symptoms may include stinging, tearing, redness and swelling.

##### Potential Chronic Health Effects

- : Excessive over-exposure may cause slight liver effects. Long-term ingestion may result in liver damage with symptoms such as jaundice, swelling of the legs, ankles and feet, weightloss and weakness. However, these effects and symptoms are primarily associated with the consumption of alcoholic beverages.

##### Mutagenicity

- : No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.  
Contains: Ethanol. Ethanol has been shown to cause mutagenic effects but at extremely high oral doses, which are not applicable in an occupational setting.

##### Carcinogenicity

- : Not expected to have carcinogenic effects. No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.  
Note that this product contains ethanol, a confirmed animal carcinogen (A3) by the ACGIH and human carcinogen (Group 1) by the IARC; however, this is only applicable when the chemical is present in alcoholic beverages.

##### Reproductive effects & Teratogenicity

- : This product is not expected to cause reproductive or developmental effects.  
Contains: Ethanol. Ethanol has been shown to cause effects on reproductive organs (e.g. decreased testicular weight, decreased numbers of motile sperm, decreased ovarian functions, irregular fertility cycles) but at extremely high oral doses, which are not applicable in an occupational setting. Ethanol has been shown to cause developmental / teratogenic effects, but only in the presence of maternal toxicity.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 7 of 12

## SAFETY DATA SHEET

**Sensitization to material** : Not expected to be a skin or respiratory sensitizer.  
**Specific target organ effects** : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:  
Specific target organ toxicity, single exposure - Category 3. May cause drowsiness or dizziness.

**Medical conditions aggravated by overexposure**

: Pre-existing skin, eye and respiratory disorders.

**Synergistic materials**

: Ethanol has been associated with an increase in the toxicity of many chemicals including other alcohols, ketones (e.g. acetone and methyl ethyl ketone), benzene, toluene, halogenated hydrocarbons (e.g. carbon tetrachloride, trichloroethylene, chloroform, and methylene chloride), aromatic amines and nitrosamines. In particular, it enhances the activity of many chemicals which are harmful to the liver (hepatotoxic agents). There is also a synergistic effect between ethanol and certain metals (e.g. cobalt, manganese and mercury) or compounds containing these metals.

**Toxicological data**

: Not classified for acute toxicity based on available data. The calculated ATE values for this mixture are:

ATE oral = 114,842 mg/kg

See below for individual ingredient acute toxicity data.

<u>Chemical name</u>	<u>LC<sub>50</sub>(4hr)</u> <u>inh, rat</u>	<u>LD<sub>50</sub></u>	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Ethanol	> 32 380 ppm (61 mg/L) (vapor)	7060 mg/kg	> 15 800 mg/kg
Isopropanol	17 000 ppm (41.8 mg/L) (vapor)	4720 mg/kg	12 890 mg/kg

**Other important toxicological hazards**

: None known or reported by the manufacturer.

### SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity** : The product is not classified as environmentally hazardous.  
No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

See the following tables for individual ingredient ecotoxicity data.

**Ecotoxicity data:**

<u>Ingredients</u>	<u>CAS No</u>	<u>Toxicity to Fish</u>		
		<u>LC50 / 96h</u>	<u>NOEC / 21 day</u>	<u>M Factor</u>
Ethanol	64-17-5	> 100 mg/L (Fathead minnow)	N/Av	None.
Isopropanol	67-63-0	9640 mg/L (Fathead minnow)	N/Av	None.





Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 8 of 12

## SAFETY DATA SHEET

<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Ethanol	64-17-5	5012 mg/L (Daphnia magna)	N/Av	None.
Isopropanol	67-63-0	> 10 000 mg/L/24hr (Daphnia magna)	N/Av	None.

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Ethanol	64-17-5	1000 mg/L/96hr (Green algae)	N/Av	None.
Isopropanol	67-63-0	N/Av	N/Av	None.

### Persistence and degradability

- : No data is available on the product itself.  
The following ingredients are considered to be readily biodegradable: Ethanol; Isopropanol.

### Bioaccumulation potential

- : No data is available on the product itself. See the following data for ingredient information.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Ethanol (CAS 64-17-5)	- 0.31	N/Av
Isopropanol (CAS 67-63-0)	0.05	1.0

### Mobility in soil

- : No data is available on the product itself.

### Other Adverse Environmental effects

- : No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## SECTION 13. DISPOSAL CONSIDERATIONS

### Handling for Disposal

- : Handle waste according to recommendations in Section 7. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### Methods of Disposal

- : Dispose in accordance with all applicable federal, state, provincial and local regulations.

### RCRA

- : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.









Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 9 of 12

## SAFETY DATA SHEET

### SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
TDG	UN1987	ALCOHOLS, N.O.S. (Ethanol; Isopropanol)	3	II	
<b>TDG Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				
49CFR/DOT	UN1987	ALCOHOLS, N.O.S.	3	II	
<b>49CFR/DOT Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Refer to 49 CFR Section 173.150.				
ICAO/IATA	UN1987	Alcohols, n.o.s. (Ethanol; Isopropanol)	3	II	
<b>ICAO/IATA Additional information</b>	Refer to the appropriate Packing Instruction, prior to shipping this material. Review all State and Operator Variations, prior to shipping this material.				
IMDG	UN1987	ALCOHOLS, N.O.S. (Ethanol; Isopropanol)	3	II	
<b>IMDG Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass.				

**Special precautions for user** : Appropriate advice on safety must accompany the package. Keep away from heat, sparks and open flame. - No smoking.

**Environmental hazards** : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See Section 12 for more environmental information.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

: Not applicable.

### SECTION 15 - REGULATORY INFORMATION

**US Federal Information:**

Components listed below are present on the following U.S. Federal chemical lists:

<u>Ingredients</u>	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Ethanol	64-17-5	Yes	None.	None.	No	N/Ap
Isopropanol	67-63-0	Yes	None.	None.	Yes	1%

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Fire Hazard; Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 10 of 12

## SAFETY DATA SHEET

### US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Ethanol	64-17-5	Yes	Carcinogen (in alcoholic beverages)	Yes	Yes	Yes	Yes	Yes	Yes
Isopropanol	67-63-0	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes

### Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Canadian National Pollutant Release Inventory (NPRI): This product contains the following substances listed on the NPRI:

Ethanol (Part 5: Individual Substances)

Isopropanol (Part 1, Group A Substance; Part 5: Individual Substances)

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

### International Information:

Components listed below are present on the following International Inventory list:

<u>Ingredients</u>	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Ethanol	64-17-5	200-578-6	Present	Present	(2)-202	KE-13217	Present	HSR001144
Isopropanol	67-63-0	200-661-7	Present	Present	(2)-207	KE-29363	Present	HSR001180

## SECTION 16. OTHER INFORMATION

### Legend

- : ACGIH: American Conference of Governmental Industrial Hygienists
- AICS: Australian Inventory of Chemical Substances
- CA: California
- CAS: Chemical Abstract Services
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- CFR: Code of Federal Regulations
- DOT: Department of Transportation
- ENCS: Existing and New Chemical Substances
- EPA: Environmental Protection Agency
- HMIS: Hazardous Materials Identification System
- HSDB: Hazardous Substances Data Bank
- IARC: International Agency for Research on Cancer
- IATA: International Air Transport Association
- ICAO: International Civil Aviation Organisation
- IMDG: International Maritime Dangerous Goods
- Inh: Inhalation
- IOC: Inventory of Chemicals
- IUCLID: International Uniform Chemical Information Database
- KECI: Korean Existing Chemicals Inventory



Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 11 of 12

## SAFETY DATA SHEET

KECL: Korean Existing Chemicals List  
LC: Lethal Concentration  
LD: Lethal Dose  
MA: Massachusetts  
MN: Minnesota  
mppcf: million particles per cubic foot  
MSHA: Mine Safety and Health Administration  
N/Ap: Not Applicable  
N/Av: Not Available  
NFPA: National Fire Protection Association  
NIOSH: National Institute of Occupational Safety and Health  
NJ: New Jersey  
NOEC: No observable effect concentration  
OECD: Organisation for Economic Co-operation and Development  
NTP: National Toxicology Program  
OSHA: Occupational Safety and Health Administration  
PA: Pennsylvania  
PEL: Permissible exposure limit  
PICCS: Philippine Inventory of Chemicals and Chemical Substances  
PNOC: Particulates Not Otherwise Classified  
PNOR: Particulates Not Otherwise Regulated  
PNOS: Particles Not Otherwise Specified  
RCRA: Resource Conservation and Recovery Act  
RI: Rhode Island  
RTECS: Registry of Toxic Effects of Chemical Substances  
SARA: Superfund Amendments and Reauthorization Act  
SDS: Safety Data Sheet / Material Safety Data Sheet  
STEL: Short Term Exposure Limit  
TDG: Canadian Transportation of Dangerous Goods Act & Regulations  
TLV: Threshold Limit Values  
TWA: Time Weighted Average  
TSCA: Toxic Substance Control Act  
WHMIS: Workplace Hazardous Materials Identification System

### References

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2015.
- 2. International Agency for Research on Cancer Monographs, searched 2016.
- 3. Canadian Centre for Occupational Health and Safety, CCIInfoWeb databases, 2016 (Chempendium, HSDB and RTECs).
- 4. Material Safety Data Sheets from manufacturer.
- 5. US EPA Title III List of Lists - March 2015 version.
- 6. California Proposition 65 List - December 4, 2015 version.
- 7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2016.

### Preparation Date (mm/dd/yyyy)

: 03/01/2016

### Other special considerations for handling

: Provide adequate information, instruction and training for operators.





Flexible Solutions International  
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Heatsavr™

SDS Preparation Date (mm/dd/yyyy): 03/01/2016

Page 12 of 12

## SAFETY DATA SHEET

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<p><b><u>Prepared by:</u></b> ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.); (888) 977-4834 (Canada) <a href="http://www.thecompliancecenter.com">http://www.thecompliancecenter.com</a></p>	

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