SAFETY DATA SHEET

Cool Renewal™

FILE NO.:
SDS DATE: 10/1/ 2014

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Cool Renewal™
SYNONYMS: Refrigerant
PRODUCT USE: Cryosurgical Refrigerant

MANUFACTURER: Cool Renewal, LLC
ADDRESS: 2515 Eugenia Ave, Ste 103, Nashville, TN 37211

EMERGENCY PHONE: 615.844.0132
CHEMTREC PHONE: 1.800.424.9300
FAX PHONE: 615.544.1411

SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview
Misuse or intentional inhalation abuse may lead to death without warning.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Rapid evaporation of the liquid may cause frostbite.

Potential Health Effects
Skin : Contact with liquid or refrigerated gas can cause cold burns and frostbite.
May cause skin irritation.
May cause: Discomfort, itching, redness, or swelling.

Eyes : Contact with liquid or refrigerated gas can cause cold burns and frostbite.
May cause eye irritation.
May cause: tearing, Redness, Discomfort.

Inhalation : Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.
Other symptoms potentially related to misuse or inhalation abuse are:
Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Carcinogenicity
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

Label Requirements:

Pictogram: Gas Cylinder

Signal Words: WARNING
Hazard Statement: Contains pressurized gas.
Precautionary Statement: Store in a clean and dry area. Keep canister in a cool place out of direct sunlight. Do not heat above 130°F. Do not puncture of damage canister. Rotate stock. Do not store in automobiles. Keep this and all chemicals out of reach of children.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:

Ingredients:	CAS No.:	Weight %:
1,1,1,2-tetrfluoroethane	811-97-2	4
Pentafluoroethane	354-33-6	44
1,1,1- trifluoroethane	420-46-2	52

Common Name: Liquefied Gas, N.O.S > Non Flammable (R-404A)

SECTION 4: FIRST AID MEASURES

Skin contact : Flush area with lukewarm water. Do not use hot water. If frostbite has occurred, call a physician.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Inhalation : Remove from exposure, lie down. Artificial respiration and/or oxygen may be necessary. Call a physician.

Ingestion : Is not considered a potential route of exposure.

General advice : Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.

Notes to physician : Because of possible disturbances of cardiac rhythm, catecholamine drugs,

such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

SECTION 5: FIRE-FIGHTING MEASURES

Flammable Properties

Flash point : does not flash

Lower explosion limit : Method : None per ASTM E681

Upper explosion limit : Method : None per ASTM E681

Fire and Explosion Hazard : Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and colour of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. This substance is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example this substance should NOT be mixed with air under pressure for leak testing or other purposes. Experimental data have also been reported which indicate combustibility of this substance in the presence of certain concentrations of chlorine.

Suitable extinguishing media : As appropriate for combustibles in area. Extinguishant for other burning material in area is sufficient to stop burning.

Firefighting Instructions : Use water spray or fog to protect the fire fighters and to cool container. Selfcontained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions. Water runoff should be contained and neutralized prior to release.

SECTION 6: ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with cleanup. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel) : Ventilate area, especially low or enclosed places where heavy vapours might collect.

Accidental Release Measures : Avoid open flames and high temperatures. Self-contained breathing apparatus (SCBA) is required if a large release occurs.

SECTION 7: HANDLING AND STORAGE

Handling (Personnel) : Avoid breathing vapours or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. Handle in accordance with good industrial hygiene and safety practice.

Storage : Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder

movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (>3000 psig) piping or systems. Never attempt to lift cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Keep at temperature not exceeding 52°C. Do not store near combustible materials. Avoid area where salt or other corrosive materials are present.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places. Refrigerant Concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.

Personal protective equipment
Respiratory protection : Under normal manufacturing conditions, no respiratory protection is required when using this product.

Hand protection : Material: Impervious gloves

Eye protection : Wear safety glasses with side shields. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Protective measures : Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values			
1,1,1-Trifluoroethane AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA
Pentafluoroethane AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA
1,1,1,2-Tetrafluoroethane AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form :	Liquefied gas
Color :	colourless
Odor :	slight, ether-like
Melting point :	Not available for this mixture.
Boiling point :	-46.2 °C (-51.2 °F)
% Volatile :	100 %
Vapour Pressure :	12,546 hPa at 25 °C (77 °F)
Specific gravity :	1.05 at 25 °C (77 °F)
Water solubility :	not determined
Vapour density :	3.4 at 25°C (77°F) and 1013 hPa (Air=1.0)
Evaporation rate :	> 1, (CCL4=1.0)

SECTION 10: STABILITY AND REACTIVITY

Stability : Stable at normal temperatures and storage conditions.

Conditions to avoid : Avoid open flames and high temperatures

Incompatibility : Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts

Hazardous decomposition products: Decomposition products are hazardous., This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride., These materials are toxic and irritating., Avoid contact with decomposition products

Hazardous reactions : Polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

1,1,1-Trifluoroethane (HFC-143a)
Dermal : not applicable
Oral : not applicable
Inhalation 4 h LC50 : > 540000 ppm , rat
Anaesthetic effects Cardiac sensitization

Inhalation 4 h LC50 : 591000 ppm , rat
Inhalation Low Observed: 300000 ppm , dog
Adverse Effect Concentration (LOAEC)

Skin irritation : No skin irritation, Not tested on animals
Not expected to cause skin irritation based on expert review of theproperties of the substance.
Eye irritation : No eye irritation, Not tested on animals
Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization : Not tested on animals
Not expected to cause sensitization based on expert review of the properties of the substance.
There are no reports of human respiratory sensitization.
Repeated dose toxicity : Inhalation,rat.
No toxicologically significant effects were found.
Carcinogenicity : Animal testing did not show any carcinogenic effects.
Mutagenicity : Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.
Teratogenicity : Animal testing showed no developmental toxicity.
Further information : Cardiac sensitisation threshold limit : 1040000 mg/m3

Pentafluoroethane (HFC-125)
Dermal : not applicable
Oral : not applicable
Inhalation 4 h LC50 : > 800000 ppm , rat
Inhalation Low Observed: 100000 ppm , dog
Adverse Effect Cardiac sensitization, Concentration (LOAEC)
Skin irritation : No skin irritation, Not tested on animals
Not expected to cause skin irritation based on expert review of the properties of the substance.

Eye irritation : No eye irritation, Not tested on animals
Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization : Does not cause skin sensitization., Not tested on animals
Not expected to cause sensitization based on expert review of the properties of the substance.
There are no reports of human respiratory sensitization.
Repeated dose toxicity : Inhalation,rat
No toxicologically significant effects were found.
Carcinogenicity : Overall weight of evidence indicates that the substance is not carcinogenic.
Mutagenicity : Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.
Reproductive toxicity : Evidence suggests the substance is not a reproductive toxin in animals.
Information given is based on data obtained from similar substances.
Teratogenicity : Animal testing showed no developmental toxicity.
Further information : Cardiac sensitisation threshold limit : 490000 mg/m3

1,1,1,2-Tetrafluoroethane (HFC-134a)
Dermal : not applicable
Oral : not applicable
Inhalation 4 h LC50 : 567000 ppm , rat
Inhalation Low Observed: 75000 ppm , dog
Adverse Effect Concentration (LOAEC), Cardiac sensitization
Skin irritation : slight irritation, rabbit
Not expected to cause skin irritation based on expert review of the properties of the substance.
No skin irritation, human
Eye irritation : slight irritation, rabbit
Not expected to cause eye irritation based on expert review of the properties of the substance.
No eye irritation, human
Skin sensitization : Did not cause sensitization on laboratory animals., guinea pig
Not expected to cause sensitization based on expert review of the properties of the substance.
Did not cause sensitization on laboratory animals. There are no reports of human respiratory sensitization.
Repeated dose toxicity : Inhalation rat
No toxicologically significant effects were found.
Carcinogenicity : Overall weight of evidence indicates that the substance is not carcinogenic.
An increased incidence of benign tumours was observed in laboratory animals.
Mutagenicity : Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.
Reproductive toxicity : Animal testing showed no reproductive toxicity.
Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.
Further information : Cardiac sensitisation threshold limit : 312975 mg/m3

SECTION 12: ECOLOGICAL INFORMATION

Aquatic Toxicity

1,1,1-Trifluoroethane (HFC-143a)	: Oncorhynchus mykiss (rainbow trout) > 100 mg/l
96 h LC50	: not applicable
48 h EC50	: Daphnia 300 mg/l
Pentafluoroethane (HFC-125)	: Danio rerio (zebra fish) > 200 mg/l
96 h LC50	Information given is based on data obtained from similar substances.
96 h LC50	: Oncorhynchus mykiss (rainbow trout) 450 mg/l
	Information given is based on data obtained from similar substances.

96 h EC50	: Algae 142 mg/l Information given is based on data obtained from similar substances.
48 h EC50	: Daphnia magna (Water flea) > 200 mg/l Information given is based on data obtained from similar substances.

1,1,1,2-Tetrafluoroethane (HFC-134a)

96 h LC50	: Oncorhynchus mykiss (rainbow trout) 450 mg/l
72 h EC50	: Algae > 118 mg/l Information given is based on data obtained from similar substances.
48 h EC50	: Daphnia magna (Water flea) 980 mg/l.

Environmental Fate
1,1,1-Trifluoroethane (HFC-143a)
Biodegradability : Not readily biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal : Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.

Environmental Hazards : Empty pressure vessels should be returned to the supplier.

SECTION 14: TRANSPORT INFORMATION

DOT
UN number : 3163
Proper shipping name : Liquefied Gas, NOS> Non-Flammable (R-404A)
Class : 2.2
Labelling No. : 2.2
Special Permit: 12187, 12783

IATA_C
UN number : 3163
Proper shipping name : Liquefied Gas, NOS> Non-Flammable (R-404A)
Class : 2.2
Labelling No. : 2.2

IMDG
UN number : 3163
Proper shipping name : Liquefied Gas, NOS> Non-Flammable (R-404A)
Class : 2.2
Labelling No. : 2.2

SECTION 15: REGULATORY INFORMATION

SARA 313 Regulated Chemical(s): SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop. 65 : Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

SECTION 16: OTHER INFORMATION

HMIS
Health : 1
Flammability : 0
Reactivity/Physical hazard : 1
PPE : Personal Protection rating to besupplied by user depending on use conditions.

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