MATERIAL SAFETY DATA SHEET

Dynatemp R-134a

Date: 02/01/2006

01 – IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

PRODUCT NAME Dynatemp R-134a

SUPPLIER
Dynatemp International, Inc.
42 W. North Street
Carlisle, Pennsylvania 17013

Telephone: (717) 249-0157
Fax: (717) 249-9043

EMERGENCY CONTACT INFORMATION: Contact Chemtrec at 1-800-424-9300 (24 Hours)

02 – COMPOSITION/INFORMATION ON INGREDIENTS

EEC No.: 212-377-0
CAS No.: 811-97-2

HAZARDOUS INGREDIENT(S)
1,1,1,2-tetrafluoroethane (HFC 134a)
Not classified as dangerous according to EC Directive 67/548/EEC

03 – HAZARDS IDENTIFICATION

Low acute toxicity. Very high atmospheric concentrations may cause an abnormal heart rhythm anesthetics effects and asphyxiation. Liquid splashes or spray may cause freeze burns to skin and eyes.

04 – FIRST AID MEASURES

The first aid advice given for skin contact, eye contact and ingestion is applicable following exposures to the liquid or spray. See also Section 11.

Inhalation:	Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.
Skin Contact:	Thaw affected areas with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in the case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If irritation or blistering occur obtain medical attention.
Eye Contact:	Immediately irrigate with eye wash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.
Ingestion:	Unlikely route of exposure. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half pint) of water to drink. Obtain immediate medical attention.

Further Medical Treatment
Symptomatic treatment and supportive therapy as indicated. Adrenalin and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest.

05 – FIRE FIGHTING MEASURES

This refrigerant is not flammable in air under ambient conditions of temperature and pressure. Certain mixtures of this refrigerant when under pressure may be flammable. Mixtures of this refrigerant and air under pressure should be avoided. Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Thermal decomposition will evolve very toxic and corrosive vapors (hydrogen fluoride).

Extinguishing Media:	As appropriate for surrounding fire. Water spray should be used to cool containers.
Fire Fighting Protective Equipment:	A self contained breathing apparatus and full protective clothing must be worn in fire conditions. See also Section 8.

06 – ACCIDENTAL RELEASE MEASURES

Ensure personal protection (including respiratory protection) during removal of spillages. See also Section 8.
Provided it is safe to do so, isolate the source of the leak. Allow small spillages to evaporate provided there is adequate ventilation.
Large spillages: Ventilate area. Contain spillages with sand, earth or any suitable absorbent material. Prevent liquid from entering drains, sewers, basements and work pits since the vapor may create a suffocating atmosphere.

07 – HANDLING AND STORAGE

Handling
Avoid inhalation of high concentrations of vapors. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice.
The vapor is heavier than air, high concentrations may be produced at low levels where general ventilation is poor, in such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply.
Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed.
Avoid contact between the liquid and skin and eyes.

Process Hazards
Liquid transfers between refrigerant containers and to and from systems can result in static generation. Ensure adequate earthing.
Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions.

Storage
Keep in a well ventilated place. Keep in a cool place away from fire risk, direct sunlight and all sources of heat such as electric and steam radiators.
Avoid storing near the intake of air conditioning units, boiler units and open drains.
Cylinders and drums:
Keep container dry.
Storage temperature <45°C.

08 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Wear suitable protective clothing, gloves and eye/face protection. Wear thermal insulating gloves when handling liquefied gases. In cases of insufficient ventilation, where exposure to high concentrations of vapor is possible, suitable respiratory protective equipment with positive air supply should be used.

Occupational Exposure Limits

HAZARDOUS INGREDIENT(S)	LTEL 8 hr TWA ppm	LTEL 8 hr TWA mg/m^3	STEL ppm	STEL mg/m^3	Notes
1,1,1,2-Tetrafluoroethane (HFC 134a)	1000	4240	-	-	OES

09 – PHYSICAL AND CHEMICAL PROPERTIES

Form:	liquefied gas
Color:	colorless
Odor:	ether-like (slightly)
Boiling point:	-26.2°C
Melting point:	-101.0°C
Vapor Pressure:	4270 mm Hg at 20°C
Solubility (Water):	slightly soluble
Solubility (Other):	Soluble in chlorinated solvents, esters, polyethylene glycol and alcohols
Specific gravity:	1.22 at 20°C
Vapor Density (Air = 1):	3.66 at normal boiling point

10 – STABILITY AND REACTIVITY

Hazardous Reactions:	Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Incompatible materials: finely divided metals, magnesium and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals, alkaline earth metals – sodium, potassium, barium.
Hazardous Decomposition Products:	hydrogen chloride, hydrogen fluoride by decomposition and hydrolysis.

11 – TOXICOLOGICAL INFORMATION

Inhalation
High exposures may cause an abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations may cause anesthetic effects and asphyxiation.

Skin Contact
Liquid splashes or spray may cause freeze burns. Unlikely to be hazardous by skin absorption.

Eye Contact
Liquid splashes or spray may cause freeze burns.

Ingestion
Highly unlikely – but should this occur freeze burns will result.

Long Term Exposure
A lifetime inhalation study in rats has shown that exposure to 50,000ppm resulted in benign tumors of the testes. The increased tumor incidence was observed only after prolonged exposure to high levels and is considered not to be of relevance to humans occupationally exposed to HFC 134a at or below the occupational exposure limit.

12 – ECOLOGICAL INFORMATION

Environmental Fate and Distribution
High tonnage material produced in wholly systems. High tonnage material used in open systems. Vapor.

Persistence and Degradation
Decomposed comparatively rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is 13.6 year(s). Products of decomposition will be highly dispersed and hence will have a very low concentration. Does not influence photochemical smog (i.e. is not a VOC under the terms of the UNECE agreement). Does not deplete ozone. Has a Global Warming Potential (GWP) of 1300 (relative to a value of 1 for carbon dioxide at 100 years).

Effect on Effluent Treatment
Discharges of the product will enter the atmosphere and will not result in long term aqueous contamination.

13 – DISPOSAL CONSIDERATIONS

Best to recover and recycle. If this is not possible, destruction is to be in an approved facility, which is equipped to absorb and neutralize acid gases and other toxic processing products.

14 – TRANSPORT INFORMATION

UN No:	3159
AIR	
ICAO/IATA	
-primary:	2.2
SEA	
IMDG	
-primary	2.2
Proper Shipping Name:	1,1,1,2-Tetrafluoroethane
ROAD/RAIL	
ADR/RID Class:	2
ADR Sin:	3159

15 – REGULATORY INFORMATION

Not classified as harmful to users.

16 – OTHER INFORMATION

Chemical formula	C2 H2 F4.
Molecular mass	102.04 g

17 - DISCLAIMER

The foregoing data exclusively describe the safety requirements of the product and are based on our present knowledge of scientific and technical product information. This data is not an assurance of characteristics of the described product in the meaning of legally binding rules of guarantee assurance. We do not accept the liability and guarantee for damages and injuries created through the improper use of this product or the product use against our instructions.