Solstice® 1234ze

000000012546

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Solstice® 1234ze
MSDS Number	:	000000012546
Product Use Description	:	Aerosol propellant, Foam blowing agent
Manufacturer or supplier's details	:	Honeywell International Inc. 101 Columbia Road Morristown, NJ 07962-1057
For more information call	:	800-522-8001 +1-973-455-6300 (Monday-Friday, 9:00am-5:00pm)
In case of emergency call	:	**Medical: 1-800-498-5701 or +1-303-389-1414**
	:	**Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
	:	
	:	(24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form	:	Liquefied gas
Color	:	colourless
Odor	:	slight ether-like

Classification of the substance or mixture

Classification of the substance or mixture	:	Gases under pressure, Liquefied gas Simple Asphyxiant

GHS Label elements, including precautionary statements

Symbol(s) :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary statements : **Prevention:**
Use personal protective equipment as required.

Storage:
Protect from sunlight. Store in a well-ventilated place.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Substance

Chemical Name	CAS-No.	Concentration
trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9	100.00 %

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician.

Skin contact : Rapid evapouration of the liquid may cause frostbite. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Call a physician if irritation develops

or persists.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In case of frostbite water should be lukewarm, not hot. If symptoms persist, call a physician.

Ingestion : Unlikely route of exposure. As this product is a gas, refer to the inhalation section. Do not induce vomiting without medical advice. Call a physician immediately.

Notes to physician

Treatment : Treat frost-bitten areas as needed.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water mist
Dry powder
Foam
Carbon dioxide (CO2)

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Contents under pressure.
Heating will cause pressure rise with risk of bursting
Cool closed containers exposed to fire with water spray.
Product is not combustible under normal conditions.
However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.
Do not allow run-off from fire fighting to enter drains or water courses.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Some risk may be expected of corrosive and toxic decomposition products.
Fire may cause evolution of:
Hydrogen fluoride

Special protective equipment for firefighters : In the event of fire and/or explosion do not breathe fumes.
Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.

Exposure to decomposition products may be a hazard to health.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Wear personal protective equipment. Unprotected persons must be kept away.
Remove all sources of ignition.
Avoid skin contact with leaking liquid (danger of frostbite).
Ventilate the area.
After release, disperses into the air.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Avoid accumulation of vapours in low areas.
Unprotected personnel should not return until air has been tested and determined safe.

Environmental precautions : Prevent further leakage or spillage if safe to do so.
The product evapourates readily.
Prevent spreading over a wide area (e.g. by containment or oil barriers).

Methods for cleaning up : Do not direct water spray at the point of leakage.
Allow to evapourate.

SECTION 7. HANDLING AND STORAGE

Handling

Handling : Handle with care.
Avoid inhalation of vapour or mist.
Do not get in eyes, on skin, or on clothing.
Wear personal protective equipment.
Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.
Follow all standard safety precautions for handling and use of compressed gas cylinders.
Use authorized cylinders only.

Protect cylinders from physical damage.
Do not puncture or drop cylinders, expose them to open flame or excessive heat.
Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.
Do not remove screw cap until immediately ready for use.
Always replace cap after use.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Keep away from direct sunlight.
Fire or intense heat may cause violent rupture of packages.
Vapours may form explosive mixtures with air.
The product is not easily combustible.

Storage

Requirements for storage areas and containers : Keep containers tightly closed in a cool, well-ventilated place.
Keep away from direct sunlight.
Protect cylinders from physical damage.
Store away from incompatible substances.

Further information on storage conditions : Keep only in the original container at temperature not exceeding 50°C

Advice on common storage : Do not store together with:
Oxidizing agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Do not breathe vapour.
Avoid contact with skin, eyes and clothing.
Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures : Local exhaust

Eye protection : Goggles

Hand protection : Protective gloves

Skin and body protection : impervious clothing
Wear cold insulating gloves/ face shield/ eye protection.

Respiratory protection : In case of insufficient ventilation wear suitable respiratory equipment.
Wear a positive-pressure supplied-air respirator.

Hygiene measures : Avoid breathing vapours, mist or gas.
Keep working clothes separately.
Do not smoke.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9	TWA : time weighted average	(800 ppm)	2012	WEEL:US. AIHA Workplace Environmental Exposure Level (WEEL) Guides
trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9	TWA : time weighted average	(800 ppm)	31.03.11	Honeywell:Limit established by Honeywell International Inc.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Liquefied gas

Color : colourless

Odor : slight ether-like

pH : Note: neutral

Boiling point/boiling range : -19 °C

Flash point : Note: does not flash

Lower explosion limit	:	Note: Exhibits flame limits at temperatures in excess of 28˚ C.
Upper explosion limit	:	Note: Exhibits flame limits at temperatures in excess of 28˚ C.
Vapor pressure	:	4,192 hPa at 20 °C(68 °F) 10,998 hPa at 54.4 °C(129.9 °F)
Vapor density	:	4 Note: (Air = 1.0)
Density	:	1.17 g/cm3 at 21.1 °C
Water solubility	:	0.373 g/l
Partition coefficient: n-octanol/water	:	log Pow: 1.6
Ignition temperature	:	368 °C Method: Auto-ignition temperature

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
Conditions to avoid	:	Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Can form a combustible mixture with air at pressures above

atmospheric pressure.
Do not mix with oxygen or air above atmospheric pressure.

Incompatible materials to avoid	:	Reactions with alkali metals.
Hazardous decomposition products	:	Pyrolysis products containing fluoride Fluorocarbons Hydrogen fluoride

SECTION 11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity	:	Species: mouse Note: Acute (4-Hour) Inhalation Toxicity Screening Study (mouse): No lethality at >100,000 ppm.
	:	LC50: > 207000 ppm Exposure time: 4 h Species: rat
Skin irritation	:	Species: rabbit Result: No skin irritation Method: OECD Test Guideline 404
Sensitisation	:	Cardiac sensitization Species: dogs Result: Did not cause sensitisation on laboratory animals.
Repeated dose toxicity	:	Species: rat Application Route: Inhalation Exposure time: 13 Weeks Note: Causes mild effects on the heart. NOEL 5,000 ppm
Genotoxicity in vitro	:	Test Method: Chromosome aberration test in vitro Cell type: Human lymphocytes Result: negative
	:	Test Method: Ames test Result: negative

Genotoxicity in vivo	:	Test Method: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Species: mouse Cell type: Micronucleus Application Route: Inhalation Result: negative
Teratogenicity	:	Species: rabbit Method: Prenatal Developmental Inhalation Toxicity Study Note: Did not show teratogenic effects in animal experiments.
	:	Species: rat Method: Prenatal Developmental Inhalation Toxicity Study Note: Did not show teratogenic effects in animal experiments.
Further information	:	Note: Excessive exposure may cause central nervous system effects including drowsiness and dizziness. Excessive exposure may also cause cardiac arrhythmia. Rapid evapouration of the liquid may cause frostbite.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	:	NOEC: > 117 mg/l Exposure time: 96 h Species: Cyprinus carpio (Carp)
Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 160 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Toxicity to algae	:	Growth inhibition NOEC: > 170 mg/l Exposure time: 72 h Species: Algae

Elimination information (persistence and degradability)

Biodegradability	:	aerobic Result: Not readily biodegradable.

Further information on ecology

Additional ecological information	:	no data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT	UN/ID No.	:	UN 3163
	Proper shipping name	:	LIQUEFIED GAS, N.O.S. (trans-1,3,3,3-Tetrafluoroprop-1-ene)
	Class		2.2
	Packing group		
	Hazard Labels		2.2
IATA	UN/ID No.	:	UN 3163
	Description of the goods	:	LIQUEFIED GAS, N.O.S. (trans-1,3,3,3-Tetrafluoroprop-1-ene)
	Class	:	2.2
	Hazard Labels	:	2.2
	Packing instruction (cargo aircraft)	:	200
	Packing instruction (passenger aircraft)	:	200
IMDG	UN/ID No.	:	UN 3163
	Description of the goods	:	LIQUEFIED GAS, N.O.S. (TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)
	Class	:	2.2
	Hazard Labels	:	2.2

EmS Number	:	F-C, S-V
Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act	:	On TSCA Inventory	
Australia. Industrial Chemical (Notification and Assessment) Act	:	Not in compliance with the inventory	
	:	trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL.	
Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory	
Korea. Toxic Chemical Control Law (TCCL) List	:	Not in compliance with the inventory	
	:	trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	:	Not in compliance with the inventory	
	:	trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9
China. Inventory of Existing Chemical Substances	:	On the inventory, or in compliance with the inventory	
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	:	Not in compliance with the inventory	

	: trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9

National regulatory information

SARA 302 Components : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components : 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.

SARA 311/312 Hazards : Acute Health Hazard
Sudden Release of Pressure Hazard

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

WHMIS Classification : A: Compressed Gas
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

		HMIS III	NFPA
Health hazard	:	1	2
Flammability	:	0	0
Physical Hazard	:	0	
Instability	:		0

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.
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