

**Solstice® N15 (R-515B)**

000000021925

Version 1.3

Revision Date 20.04.2020

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1. Product identifier**

Product name : Solstice® N15 (R-515B)  
SDS-number : 000000021925  
Type of product : Mixture  
Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.

**1.2. Relevant identified uses of the substance or mixture and uses advised against**

Use of the Substance/Mixture : Refrigerant  
Uses advised against : none

**1.3. Details of the supplier of the safety data sheet**

Company : Honeywell Specialty Chemicals Seelze GmbH  
Wunstorfer Straße 40  
30926 Seelze  
Germany  
Honeywell International, Inc.  
115 Tabor Road  
Morris Plains, NJ 07950-2546  
USA  
Telephone : (49) 5137-999 0  
Telefax : (49) 5137-999 123  
For further information, please contact: : PMTEU Product Stewardship:  
SafetyDataSheet@Honeywell.com

**1.4. Emergency telephone number**

Emergency telephone number : +1-703-527-3887 (ChemTrec-Transport)  
+1-303-389-1414 (Medical)  
Country based Poison Control Center : see chapter 15.1

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**REGULATION (EC) No 1272/2008**

Gases under pressure Liquefied gas  
H280 Contains gas under pressure; may explode if heated.

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**2.2. Label elements**

**REGULATION (EC) No 1272/2008**

Hazard pictograms



Signal word : Warning

Hazard statements : H280 Contains gas under pressure; may explode if heated.

Precautionary statements : P410 + P403 Protect from sunlight. Store in a well-ventilated place.

**2.3. Other hazards**

None known. Results of PBT and vPvB assessment, see chapter 12.5.

**SECTION 3: Composition/information on ingredients**

**3.1. Substance**

Not applicable

**3.2. Mixture**

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
trans-1,3,3,3-Tetrafluoroprop-1-ene	29118-24-9 01-0000019758-54 471-480-0	Press. Gas ; H280	91,1 %	1*
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0 01-2119485489-18 207-079-2	Press. Gas ; H280	8,9 %	1*

1\* - For specific concentration limits see Annexes of 1272/2008

Remaining components of this product are non-hazardous and/or are present at concentrations below reportable limits.

Occupational Exposure Limit(s), if available, are listed in Section 8.

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For the full text of the H-Statements mentioned in this Section, see Section 16.

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**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

*General advice:*

Show this safety data sheet to the doctor in attendance. Keep warm and in a quiet place.

*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 evaporation 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. 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.

**4.2. Most important symptoms and effects, both acute and delayed**

no data available

**4.3. Indication of any immediate medical attention and special treatment needed**

no data available

See Section 11 for more detailed information on health effects and symptoms.

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**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

*Suitable extinguishing media:*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Water mist

Dry powder

Foam

Carbon dioxide (CO<sub>2</sub>)

**5.2. Special hazards arising from the substance or mixture**

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

Carbon oxides

Carbonyl halides

Halogenated compounds

**5.3. Advice for firefighters**

Wear full protective clothing and self-contained breathing apparatus.

Exposure to decomposition products may be a hazard to health.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire, cool tanks with water spray.

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**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

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.

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**6.2. Environmental precautions**

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

**6.3. Methods and materials for containment and cleaning up**

Do not direct water spray at the point of leakage.  
Allow to evaporate.

**6.4. Reference to other sections**

For personal protection see section 8.

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**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

*Advice on safe handling:*

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Exhaust ventilation at the object is necessary.

*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.

*Hygiene measures:*

Avoid breathing vapours, mist or gas. Keep working clothes separately.

**7.2. Conditions for safe storage, including any incompatibilities**

*Further information on storage conditions:*

Keep containers tightly closed in a cool, well-ventilated place. Keep only in the original container at temperature not exceeding 50°C Keep away from direct sunlight.

**7.3. Specific end use(s)**

no additional data available

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**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Occupational exposure limits:**

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
trans-1,3,3,3-Tetrafluoroprop-1-ene	HONEYWELL TWA	800 ppm		We are not aware of any national exposure limit.

TWA - Time weighted average

**DNEL/ PNEC-Values**

Component	End-use/impact	Exposure duration	Value	Exposure routes	Remarks
trans-1,3,3,3-Tetrafluoroprop-1-ene	Workers / Long-term systemic effects		3902 mg/m <sup>3</sup>	Inhalation	
trans-1,3,3,3-Tetrafluoroprop-1-ene	Consumers / Long-term systemic effects		830 mg/m <sup>3</sup>	Inhalation	
1,1,1,2,3,3,3-Heptafluoropropane	Workers / Long-term systemic effects		61279 mg/m <sup>3</sup>	Inhalation	
1,1,1,2,3,3,3-Heptafluoropropane	Consumers / Long-term systemic effects		6533 mg/m <sup>3</sup>	Inhalation	

Component	Environmental compartment / Value	Remarks
trans-1,3,3,3-Tetrafluoroprop-1-ene	Fresh water: 0,1 mg/l	Assessment factor: 1000
1,1,1,2,3,3,3-Heptafluoropropane	Fresh water: 0,1 mg/l	Assessment factor: 1000
1,1,1,2,3,3,3-Heptafluoropropane	Sewage treatment plant: 1,73 mg/l	Assessment factor: 100
1,1,1,2,3,3,3-Heptafluoropropane	Fresh water sediment: 1,3 mg/kg dw	

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**8.2. Exposure controls**

**Occupational exposure controls**

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Avoid inhalation of vapour or mist.

**Engineering measures**

Local exhaust

**Personal protective equipment**

*Respiratory protection:*

In case of insufficient ventilation wear suitable respiratory equipment.

Self-contained breathing apparatus (EN 133)

*Hand protection:*

Protective gloves against cold  
(EN 511)

Gloves must be inspected prior to use.

Replace when worn.

*Eye protection:*

Goggles

*Skin and body protection:*

Wear suitable protective equipment.

Wear as appropriate:

Protective suit

**Environmental exposure controls**

Handle in accordance with local environmental regulations and good industrial practices.

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**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Form : Liquefied gas

Colour : colourless

Odour : slight  
ether-like

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	:	no data available
Flash point	:	Not applicable
Ignition temperature	:	not determined
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	440 kPa at 21 °C
Density	:	no data available
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
pH	:	neutral
Water solubility	:	no data available
Partition coefficient: n- octanol/water	:	no data available
Relative vapour density	:	no data available
Evaporation rate	:	Not applicable

**9.2 Other Information**

no additional data available

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**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable under normal conditions.

**10.2. Chemical stability**

Hazardous decomposition products formed under fire conditions.  
To avoid thermal decomposition, do not overheat.

**10.3. Possibility of hazardous reactions**



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Hazardous polymerisation does not occur.

**10.4. 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.

**10.5. Incompatible materials**

Reactions with alkali metals.

**10.6. Hazardous decomposition products**

Carbon oxides  
Carbonyl halides  
Hydrogen fluoride  
Halogenated compounds

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**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

*Acute oral toxicity:*

Not applicable  
study technically not feasible

*Acute dermal toxicity:*

no data available  
study technically not feasible

*Acute inhalation toxicity:*

LC0  
Species: Rat  
Value: > 207000 ppm  
Exposure time: 4 h  
Method: OECD Test Guideline 403  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

LC50

Species: Rat  
Value: > 241000 ppm  
Exposure time: 4 h  
Test substance: Propane, 1,1,1,2,3,3,3-heptafluoro- (HFC-227ea)

*Skin irritation:*

Species: Rabbit  
Result: No skin irritation  
Method: OECD Test Guideline 404

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Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

*Eye irritation:*

no data available

study technically not feasible

*Respiratory or skin sensitisation:*

Species: human

Result: Does not cause skin sensitisation.

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

*Repeated dose toxicity:*

Species: Rat

Application Route: Inhalation

Exposure time: 90 d

NOEL: 5000 ppm

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Method: OECD Test Guideline 413

Note: Subchronic toxicity

*Carcinogenicity:*

Note: no data available

*Germ cell mutagenicity:*

Test Method: Chromosome aberration test in vitro

Cell type: Human lymphocytes

Result: negative

Method: OECD Test Guideline 473

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Test Method: Ames test

Result: negative

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Test Method: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)

Species: Mouse

Cell type: Micronucleus

Application Route: Inhalation

Method: OECD Test Guideline 474

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Result: negative

Species: Rabbit

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

Method: OECD 416

Note: Did not show teratogenic effects in animal experiments.

Species: Rat

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Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene  
Method: OECD 416  
Note: Did not show teratogenic effects in animal experiments.

### *Reproductive toxicity:*

Test Type: Two-generation study  
Method: OECD Test Guideline 416  
Species: Rat  
Route of Application: Inhalation  
General Toxicity - Parent: NOEL: > 20.000 ppm  
General Toxicity F1: NOEL: > 20.000 ppm  
Remarks: trans-1,3,3,3-Tetrafluoroprop-1-ene

Method: OECD Test Guideline 414  
Species: Rat  
Route of Application: Inhalation  
General Toxicity Maternal: NOEC: 15.000 ppm  
Developmental Toxicity: NOAEC: 15.000 ppm  
Remarks: trans-1,3,3,3-Tetrafluoroprop-1-ene

*Aspiration hazard:*  
no data available

*Other information:*  
Cardiac Sensitization (dog): No effects

## SECTION 12: Ecological information

### 12.1. Toxicity

*Toxicity to fish:*  
LC0  
static test  
Species: Cyprinus carpio (Carp)  
Value: > 117 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

*Toxicity to aquatic plants:*  
NOEC  
Growth rate  
Species: Algae  
Value: > 170 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

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NOEC  
Biomass  
Species: Algae  
Value: > 170 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

*Toxicity to aquatic invertebrates:*

EC50  
static test  
Species: Daphnia magna (Water flea)  
Value: > 160 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

**12.2. Persistence and degradability**

*Biodegradability:*  
aerobic  
Result: Not readily biodegradable.  
Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene

**12.3. Bioaccumulative potential**

Test substance: trans-1,3,3,3-Tetrafluoroprop-1-ene  
No bioaccumulation is to be expected (log Pow <= 4).

**12.4. Mobility in soil**

no data available

**12.5. Results of PBT and vPvB assessment**

no data available

**12.6. Other adverse effects**

no data available

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**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

*Product:*

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Dispose according to legal requirements.

*Packaging:*

Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

*Further information:*

Provisions relating to waste:

EC Directive 2006/12/EC; 2008/98/EEC

Regulation No. 1013/2006

For personal protection see section 8.

**SECTION 14: Transport information**

**ADR/RID**

UN Number : 3163  
Description of the goods : LIQUEFIED GAS, N.O.S.  
(TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE, 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE)  
Class : 2  
Classification Code : 2A  
Hazard Identification Number : 20  
ADR/RID-Labels : 2.2  
Environmentally hazardous : no

**IATA**

UN Number : 3163  
Description of the goods : Liquefied gas, n.o.s.  
(trans-1,3,3,3-Tetrafluoroprop-1-ene, 1,1,1,2,3,3,3-Heptafluoropropane)  
Class : 2.2  
Hazard Labels : 2.2

**IMDG**

UN Number : 3163  
Description of the goods : LIQUEFIED GAS, N.O.S.  
(TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE, 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE)  
Class : 2.2  
Hazard Labels : 2.2  
EmS Number : F-C, S-V  
Marine pollutant : no

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**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Poison Control Center**

Country	Phone Number
Austria	+4314064343
Belgium	070 245245
Bulgaria	(+35929154233
Croatia	(+3851)23-48-342
Cyprus	+357 2240 5611
Czech Republic	+420224919293; +420224915402
Denmark	82121212
Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	+30 210 779 3777
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
Italy	0382 24444
Germany	Berlin : 030/19240
	Bonn : 0228/19240
	Erfurt : 0361/730730
	Freiburg : 0761/19240
	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
Munich : 089/19240	
Latvia	+37167042473

Country	Phone Number
Liechtenstein	+41 442515151
Lithuania	+370532362052
Luxembourg	070245245; (+352)80002-5500
Malta	+356 2395 2000
Netherlands	030-2748888
Norway	22591300
Poland	+48 42 25 38 400
Portugal	808250143
Romania	+40 21 318 3606
Slovakia (NTIC)	+421 2 54 774 166
Slovenia	+386 1 400 6051
Spain	+34915620420
Sweden	112 (begär Giftinformation);+46104566786
Switzerland	145
United Kingdom	(+44) 844 892 0111

**Other inventory information**

US. Toxic Substances Control Act

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On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act  
On the inventory, or in compliance with the inventory

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  
Not in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)  
On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act  
Not in compliance with the inventory

China. Inventory of Existing Chemical Substances (IECSC)  
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand  
On the inventory, or in compliance with the inventory

**15.2 Chemical safety assessment**

A Chemical Safety Assessment has not been carried out.

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**SECTION 16: Other information**

**Text of H-statements referred to under heading 3**

trans-1,3,3,3-Tetrafluoroprop-1-ene : H280 Contains gas under pressure; may explode if heated.

1,1,1,2,3,3,3-Heptafluoropropane : H280 Contains gas under pressure; may explode if heated.

**Further information**

All directives and regulations refer to amended versions.  
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:

EC European Community  
CAS Chemical Abstracts Service  
DNEL Derived no effect level

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PNEC Predicted no effect level

vPvB Very persistent and very bioaccumulative substance

PBT Persistent, bioaccumulative und toxic substance

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.

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