Revision Date 24.01.2011

SOLKANE ® 410 A

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifiers

- Product name : **SOLKANE ® 410 A**
- Synonyms : HFC-32/HFC-125
- Type of product : Mixture

1.2. Identified uses / Uses advised against

- Identified uses : - Refrigerant

1.3. Manufacturer or supplier's details

- Company : SOLVAY CHEMICALS INTERNATIONAL SA
- Address : RUE DE RANSBEEK, 310
  B- 1120 BRUXELLES
- Telephone : +3222642111
- Fax : +3222641802
- E-mail address : sdstracking@solvay.com

1.4. Emergency telephone number

- Emergency telephone number **+44(0)1235 239 670 [CareChem 24] (Europe)**

2. HAZARDS IDENTIFICATION

2.1. GHS Classification

2.1.1. European regulation (EC) 1272/2008, as amended

Classified as hazardous according to the European regulation (EC) 1272/2008, as amended

Hazard class	Hazard category	Route of exposure	H Phrases
Gases under pressure	Liquefied gas		H280

2.1.2. European Directive 67/548/EEC or 1999/45/EC, as amended

Not classified as hazardous according to European Directive 67/548/EEC or 1999/45/EC, as amended

2.2. EC Label - According to Regulation (EC) 1272/2008, as amended

2.2.1. Name(s) on label

Hazardous components : Pentafluoroethane
Difluoromethane

2.2.2. Signal word

Warning

2.2.3. Hazard symbols

2.2.4. Hazard statements

H280 - Contains gas under pressure; may explode if heated.

2.2.5. Precautionary statements

Storage	P410 + P403	-	Protect from sunlight. Store in a well-ventilated place.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Concentration

Substance name:	Concentration
Pentafluoroethane CAS-No.: 354-33-6 / EC-No.: 206-557-8 / Index-No.: - REACH Registration Number: 01-2119485636-25	ca. 50 %
Difluoromethane CAS-No.: 75-10-5 / EC-No.: 200-839-4 / Index-No.: -	ca. 50 %

3.2. Hazardous components - According to Regulation (EC) 1272/2008, as amended

Substance name	Hazard class	Hazard category	Route of exposure	H Phrases
Pentafluoroethane	Gases under pressure	Liquefied gas		H280
Difluoromethane	Flammable gases	Category 1		H220
	Gases under pressure	Liquefied gas		H280

3.3. Hazardous components - European Directive 67/548/EEC or 1999/45/EC, as amended

Substance name	Classification	Hazard category	R-phrase(s)
Difluoromethane	F+	Extremely flammable	R12

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures

4.1.1. If inhaled

- Remove to fresh air.
- Oxygen or artificial respiration if needed.
- If symptoms persist, call a physician.

4.1.2. In case of eye contact

- Allow to evaporate.
- Rinse thoroughly with plenty of water, also under the eyelids.
- If eye irritation persists, consult a specialist.

4.1.3. In case of skin contact

- Allow to evaporate.
- Wash off with warm water.
- If symptoms persist, call a physician.

4.1.4. If swallowed

- not applicable

4.2. Most important symptoms/effects, acute and delayed

4.2.1. Inhalation

- In case of higher concentrations: narcosis, Asphyxia, May cause cardiac arrhythmia.

4.2.2. Skin contact

- Contact with liquid or refrigerated gas can cause cold burns and frostbite.
- Prolonged skin contact may defat the skin and produce dermatitis.

4.2.3. Eye contact

- Causes frostbite burns to eyes.
- Symptoms: Lachrymation, Redness, Swelling of tissue, Frostbite, Burn

4.2.4. Ingestion

- gas
- not applicable

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Suitable extinguishing media

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

5.1.2. Unsuitable extinguishing media

- None.

5.2. Specific hazards arising from the chemical

- The product is not flammable.
- Hazardous decomposition products formed under fire conditions.

5.3. Special protective actions for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- Wear chemical resistant oversuit
- Special protective actions for fire-fighters
- In case of fire, use water spray.
- Keep product and empty container away from heat and sources of ignition.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. Advice for non-emergency personnel

- Prevent further leakage or spillage if safe to do so.
- Keep away from Incompatible products.

6.1.2. Advice for emergency responders

- Immediately evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Wear self-contained breathing apparatus and protective suit.
- Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
- Suppress (knock down) gases/vapours/mists with a water spray jet.
- Avoid spraying the leak source.
- Ventilate the area.

6.2. Environmental precautions

- Discharge into the environment must be avoided.
- Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains.

6.3. Methods and materials for containment and cleaning up

- Allow to evaporate.
- Prevent product from entering drains.

6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

- Use only in well-ventilated areas.
- Use only clean and dry utensils.
- Keep away from water.
- Preferably transfer by pump or gravity.
- Keep away from Incompatible products.

7.2. Conditions for storage, including incompatibilities

7.2.1. Storage

- Keep only in the original container.
- Store in a receptacle equipped with a vent.

- Keep containers tightly closed in a cool, well-ventilated place.
- Keep in properly labelled containers.
- Keep in a bunded area.
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Keep away from Incompatible products.

7.2.2. Packaging material

7.2.2.1. Suitable material

- Steel cylinder

7.3. Specific use(s)

- For further information, please contact: Supplier

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Exposure Limit Values

Pentafluoroethane

- SAEL (Solvay Acceptable Exposure Limit) 2006
  TWA = 1.000 ppm

Difluoromethane

- SAEL (Solvay Acceptable Exposure Limit) 2007
  TWA = 1.000 ppm
- US. ACGIH Threshold Limit Values
  Remarks: none established

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

8.2.2. Individual protection measures

8.2.2.1. Respiratory protection

- Self-contained breathing apparatus (EN 133)
- Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions.
- Use only respiratory protection that conforms to international/ national standards.

8.2.2.2. Hand protection

- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Protective gloves
- Suitable material: Fluoroelastomer

8.2.2.3. Eye protection

- Tightly fitting safety goggles

8.2.2.4. Skin and body protection

- Wear suitable protective clothing.
- If splashes are likely to occur, wear: Apron, Boots, Neoprene

8.2.2.5. Hygiene measures

- Eye wash bottles or eye wash stations in compliance with applicable standards.
- When using do not eat, drink or smoke.
- Gloves, overalls and boots have to be double layered (protection against cold temperature).
- Handle in accordance with good industrial hygiene and safety practice.

8.2.3. Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Physical and chemical properties

9.1.1. General Information

Appearance	compressed liquefied gas
Colour	colourless
Odour	ether-like

9.1.2. Important health safety and environmental information

pH	neutral
pKa	not applicable
Melting point/freezing point	-103 °C (Pentafluoroethane)
Boiling point/boiling range	-52,7 °C
Flash point	not applicable
Evaporation rate	No data
Flammability (solid, gas)	The product is not flammable.
Flammability	not applicable
Explosive properties	Not explosive
Vapour pressure	12,46 bar, at 15 °C
Vapour density	2,3
Density	not applicable
Relative density	1,11, at 15 °C
Bulk density	not applicable
Solubility(ies)	430 mg/l, at 25 °C, Water (Pentafluoroethane)
Solubility/qualitative	no data available
Partition coefficient: n-octanol/water	log Pow: 1,48, 20 °C (Pentafluoroethane)
Autoignition temperature	not applicable
Decomposition temperature	No data
Viscosity	0,15 mPa.s, liquid, at 25 °C
Oxidizing properties	Non oxidizer

10. STABILITY AND REACTIVITY

10.1. Reactivity

- Risk of violent reaction.

10.2. Chemical stability

- Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

- Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.

10.4. Conditions to avoid

- Heat.

10.5. Materials to avoid

- Light and/or alkaline metals, Powdered metals, Alkaline earth metals, Oxidizing agents

10.6. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF)., Fluorophosgene
- The release of other hazardous decomposition products is possible.

11. TOXICOLOGICAL INFORMATION

11.1. Acute toxicity

11.1.1. Acute oral toxicity

- not applicable

11.1.2. Acute inhalation toxicity

- LC50, 4 h, rat , > 1.107.000 mg/m3 (Difluoromethane)
- LC0, 4 h, > 800000 ppm (Pentafluoroethane)

11.1.3. Acute dermal toxicity

- not applicable

11.2. Skin corrosion/irritation

- not applicable

11.3. Serious eye damage/eye irritation

- not applicable

11.4. Respiratory or skin sensitization

- not applicable

11.5. Mutagenicity

- In vitro tests did not show mutagenic effects, (Pentafluoroethane)
- In vivo tests did not show mutagenic effects, (Pentafluoroethane)

11.6. Carcinogenicity

- no data available

11.7. Toxicity for reproduction

- No toxicity to reproduction, (Pentafluoroethane)
- Inhalation, mouse, 208.000 mg/m3, Effect on fertility, NOAEC, (Difluoromethane)
- foetotoxic effect, (Difluoromethane)

11.8. Repeated dose toxicity

- Inhalation, after a single exposure , dog, >= 10 %, cardiac sensitization following adrenergic stimulation, (1,1,1,3,3-pentafluorobutane)
- Inhalation, Repeated exposure , rat, 5 %, no observed effect, (1,1,1,3,3-pentafluorobutane)
- Inhalation, 90-day , rat, 105 g/m3, NOAEC, (Difluoromethane)

11.9. Other information

- no data available

12. ECOLOGICAL INFORMATION

12.1. Toxicity

- Fishes, Brachydanio rerio, LC50, 96 h, > 200 mg/l (1,1,1,3,3-pentafluorobutane)
- Fishes, Brachydanio rerio, LC0, 96 h, ca. 200 mg/l (1,1,1,3,3-pentafluorobutane)
- Crustaceans, Daphnia magna, EC50, 48 h, > 200 mg/l (1,1,1,3,3-pentafluorobutane)
- Crustaceans, Daphnia magna, NOEC, 48 h, 200 mg/l (1,1,1,3,3-pentafluorobutane)
- Algae, Selenastrum capricornutum, NOEC, 72 h, = 13,2 mg/l (1,1,1,3,3-pentafluorobutane)
- Algae, Selenastrum capricornutum, EC50, 72 h, > 114 mg/l (1,1,1,3,3-pentafluorobutane)
- Terrestrial plants, NOEC, growth, >= 6 g/m3 (1,1,1,3,3-pentafluorobutane)

12.2. Persistence and degradability

12.2.1. Abiotic degradation

- Air, indirect photo-oxidation, t 1/2 from 4,16 - 28,2 y
  Conditions: sensitizer: OH radicals
  Degradation products: Carbon dioxide (CO2) / hydrofluoric acid / TFA

12.2.2. Biodegradation

- aerobic, Tested according to: Closed Bottle test, Chemical degradation, = 4 - 5 % after 28 d
  Result: Not readily biodegradable.
  (Pentafluoroethane)

12.3. Bioaccumulative potential

- Bioaccumulative potential: log Pow 1,48,
  Result: Does not bioaccumulate. (Pentafluoroethane)

12.4. Mobility

- Soil/sediments, adsorption, log KOC:from 1,05 - 1,7
  Conditions: calculated value

- Air, Henry's law constant (H), from 19,7 - 150 hPa.m³/mol , 20 °C
  Conditions: calculated value
  considerable volatility

12.5. Other adverse effects

- Ozone Depletion Potential :
  = 0
  Result: no effect on stratospheric ozone
  Ozone depletion potential; ODP; (R-11 = 1)
- Global Warming Potential :
  < 0,5
  Halocarbon global warming potential; HGWP; (R-11 = 1)

13. DISPOSAL CONSIDERATIONS

13.1. Waste disposal methods

- In accordance with local and national regulations.
- Refer to manufacturer/supplier for information on recovery/recycling.

13.2. Contaminated packaging

- To avoid treatments, as far as possible, use dedicated containers.
- Where possible recycling is preferred to disposal or incineration.

14. TRANSPORT INFORMATION

14.1. International transport regulations

- **IATA-DGR**

UN number	UN 1078
Class	2.2
ICAO-Labels	2.2 - Non-flammable, non toxic gas,
Proper shipping name	REFRIGERANT GAS N.O.S.(MIXTURE R32/R125 50/50)

- **IMDG**

UN number	UN 1078
Class	2.2
IMDG-Labels	2.2 - Non-flammable, non-toxic gasses
HI/UN No.	1078
EmS	F-C S-V
Proper shipping name	REFRIGERANT GAS N.O.S.(MIXTURE R32/R125 50/50)

- **ADR**

UN number	UN 1078
Class	2
ADR/RID-Labels	2.2 - Non-flammable, non toxic gas,
HI/UN No.	20 / 1078
Proper shipping name	REFRIGERANT GAS N.O.S.(MIXTURE R32/R125 50/50)

- **RID**

UN number	UN 1078
Class	2
ADR/RID-Labels	2.2 - Non-flammable, non toxic gas,
HI/UN No.	20 / 1078
Proper shipping name	REFRIGERANT GAS N.O.S.(MIXTURE R32/R125 50/50)

- **ADN**

UN number	UN 1078
Class	2
ADR/RID-Labels	2.2 - Non-flammable, non toxic gas,
Proper shipping name	REFRIGERANT GAS N.O.S.(MIXTURE R32/R125 50/50)

15. REGULATORY INFORMATION

15.1. Applicable Laws or Regulations

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended
- Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, as amended
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- REGULATION (EC) No 166/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste

15.2. Notification status

Inventory Information	Status
Australian Inventory of Chemical Substances (AICS)	- In compliance with inventory
Canadian Domestic Substances List (DSL)	- In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	- In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	- In compliance with inventory
New Zealand Inventory of Chemicals (NZIOC)	- In compliance with inventory
Toxic Substance Control Act list (TSCA)	- In compliance with inventory
EU list of existing chemical substances (EINECS)	- In compliance with inventory
Korean Existing Chemicals Inventory (KECI (KR))	- In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	- In compliance with inventory

16. OTHER INFORMATION

16.1. Full text of H-Statements referred to under section 3

H220	-	Extremely flammable gas.
H280	-	Contains gas under pressure; may explode if heated.
	-	

16.2. Full text of R-phrases referred to under sections 2 and 3

16.2.1. Full text of R-phrases referred to under section 3

R12	-	Extremely flammable.

16.3. Other information

- New (MSDS)
- Distribute new edition to clients

This SDS is only intended for the indicated country to which it is applicable. The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request. The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

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