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

1.1. Product identifier
   Product Name: R410A
   REACH registration number: No information available

1.2. Relevant identified uses of the substance or mixture and uses advised against
   Recommended Use: To replace R22, mainly used for low temperature refrigeration system.
   Uses advised against: No information available

1.3. Details of the supplier of the safety data sheet
   Supplier: Sinochem Environmental Protection Chemicals (Taicang) Co., Ltd
   Address: No.18, Binjiang Road, Shihua Park, The Port Development Zone, Taicang, Jiangsu, PR of China
   Phone: +86-512-53713100
   FAX: +86-512-53713199
   E-mail: david@impecca.com

   Importer: Impecca
   Address: 171 47th St., Brooklyn, NY
   Postal Code: 11232
   Phone: 866-954-4111
   FAX: 718-369-3333
   E-mail: service@impecca.com

1.4. Emergency telephone number
   +86-532-83889090

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
   Classification according to Regulation (EC) No. 1272/2008 [CLP]
   Gases under pressure: Liquefied gas - (H280)

   Classification according to Directive 67/548/EEC or 1999/45/EC
   Not classified

2.2. Label elements
Symbols/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
No information available

SECTION 3: Composition/information on ingredients

3.1. Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>Classification according to Directive 67/548/EEC or 1999/45/EC</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentfluoroethane</td>
<td>-</td>
<td>354-33-6</td>
<td>49.5-51.5</td>
<td>Not classified</td>
<td>Compressed gas H280</td>
</tr>
<tr>
<td>Methylene fluoride</td>
<td>-</td>
<td>75-10-5</td>
<td>48.5-50.5</td>
<td>F+; R12</td>
<td>Flam. Gas 1 H220 Liquefied gas H280</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures
General advice
Remove contaminated clothing and shoes. If symptoms persist, call a physician.

Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. (Get medical attention immediately if symptoms occur.).

Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. 40-42 °C fresh water rewarming. If skin irritation persists, call a physician.

Eye contact
Not an expected route of exposure. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion
Not an expected route of exposure.
4.2. Most important symptoms and effects, both acute and delayed
   None known

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

SECTION 5: Firefighting measures

5.1. Extinguishing media
   Suitable extinguishing media
   Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

   Unsuitable extinguishing media
   No information available

5.2. Special hazards arising from the substance or mixture
   In case of fire, can lead to release of irritating and toxic gases and vapors: hydrogen fluoride, carbonyl fluoride.
   In case of strong, may cause cracking or explosion

5.3. Advice for firefighters
   Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
   Evacuate personnel to safe areas
   Ensure adequate ventilation, especially in confined areas
   Remove all sources of ignition
   Use personal protection recommended in Section 8

6.2. Environmental precautions
   Avoid release to the environment

6.3. Methods and material for containment and cleaning up
   Ventilate affected area

6.4. Reference to other sections
   See Section 7 for more information
   See section 8 for more information
   See section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Handle in accordance with good industrial hygiene and safety practice
Ensure adequate ventilation, especially in confined areas
Keep away from heat, sparks, flame and other sources of ignition
Avoid contact with skin and eyes
Wash thoroughly after handling
When handling or unloading, be gentle. Do not damage the steel cylinder and accessories.
Use personal protection recommended in Section 8

7.2. Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place
Keep the temperature below 52°C.
Keep away from heat and sunlight.
Store in accordance with local regulations
Keep away from food, drink and animal feeding stuffs

7.3. Specific end use(s)
Apart from the uses mentioned in SECTION 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Pentafluoroethane
Sweden: TWA 2500mg/m3

Derived No Effect Level (DNEL)
No information available.

Predicted No Effect Concentration (PNEC)
No information available.

8.2. Exposure controls
Engineering Controls
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment
Eye/face protection  Wear chemical safety goggles if necessary.
Hand Protection  Wear protective gloves
Skin and body protection  Suitable protective clothing
Respiratory protection  The concentration in air exceed standard, wear self- absorption filter type respirator.

Environmental exposure controls
Do not allow into any sewer, on the ground or into any body of water

SECTION 9: Physical and chemical properties
9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquefied gas</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-51.53 °C (101.3 kPa)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>1664kPa (25°C)</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not available</td>
</tr>
<tr>
<td>Density</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.062 (101.3 kPa)</td>
</tr>
<tr>
<td>Bulk density</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>Not available</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Insoluble in water</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not an explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not available</td>
</tr>
<tr>
<td>Critical temperature</td>
<td>72.13°C</td>
</tr>
<tr>
<td>Critical pressure</td>
<td>4.920 MPa</td>
</tr>
</tbody>
</table>

9.2. Other information

No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No information available.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid
Strong heating.

10.5. Incompatible materials
    Strong oxidizing agents.

10.6. Hazardous decomposition products
    Hydrogen fluoride, carbonyl fluoride

SECTION 11: Toxicological information

11.1. Information on toxicological effects

    Acute toxicity
    No data available.

    Skin corrosion/irritation
    Long time or repeated contact with the product, can cause subcutaneous fat loss, resulting in non allergic dermatitis or skin absorption.

    Serious eye damage/eye irritation
    Short time splash or steam contact may cause slight eye irritating.

    Sensitization
    No sensitization responses were observed.

    Germ cell mutagenicity
    No information available.

    Carcinogenicity
    Not classified

    Reproductive toxicity
    No information available.

    STOT - single exposure
    No information available.

    STOT - repeated exposure
    No information available.

    Aspiration hazard
    No information available.

SECTION 12: Ecological information

12.1. Toxicity
**Pentafluoroethane**

Fish: LC50 = 450 mg/L/ 48 h (Salmo gairdneri) 
Aquatic invertebrates: EC50 > 200 mg/L/ 48 h (Daphnia magna) 
Algae: EC50 = 142 mg/L/ 96 h (green algae) 

**Methylene fluoride**

Fish: LC50 = 1507 mg/L/ 96 h (freshwater fish) 
Aquatic invertebrates: EC50 = 652 mg/L/ 48 h (daphnid) 
Algae: EC50 = 142 mg/L/ 96 h (green algae) 

### 12.2. Persistence and degradability

No information available.

### 12.3. Bioaccumulative potential

No information available.

### 12.4. Mobility in soil

No information available.

### 12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment information is not available as chemical safety assessment not conducted.

### 12.6. Other adverse effects

No information available

**SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

Waste from residues/unused products: 
Disposal should be in accordance with applicable regional, national and local laws and regulations. 
Contaminated packaging: 
Empty containers should be taken for local recycling, recovery or waste disposal.

**SECTION 14: Transport information**

#### 14.1 UN Number

3163

#### 14.2 Proper shipping name

LIQUEFIED GAS, N.O.S. (contains methylene fluoride, pentafluoroethane)

#### 14.3 Hazard Class

2.2

#### 14.4 Packing Group

None

#### 14.5 Environmental hazards

Not marine pollutant
14.6 Special precautions
No information available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL/NDSL</th>
<th>EINECS/ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentafluorothane 354-33-6</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Methylene fluoride 75-10-5</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

"X" Listed

15.2. Chemical safety assessment
No information available

SECTION 16: Other information

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Issue Date 12-Jun-2014
Revision date 12-Jun-2014
Revision Note Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances  
IECSC - China Inventory of Existing Chemical Substances  
KECL - Korean Existing and Evaluated Chemical Substances  
PICCS - Philippines Inventory of Chemicals and Chemical Substances  
AICS - Australian Inventory of Chemical Substances

Full text of H-Statements referred to under section 3  
H280 Contains gas under pressure; may explode if heated.  
H220 Extremely flammable gas.

Full text of R-phrases referred to under sections 2 and 3  
R12 Extremely flammable.

Disclaimer  
The information provided in this Material 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.

-------- End of Safety Data Sheet --------