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

1.1 Product identifier
   Trade name
   UniSec AirPlus / HySec AirPlus

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Relevant identified uses of the substance or mixture
   Insulating gas in gas-insulated electrical switchgear (GIS)
   Arc quenching medium in gas switches (circuit breaker and load break switches)
   Use in gas-insulated lines (GIL) or gas-insulated transformers (GIT)
   Uses advised against
   No data available.

1.3 Details of the supplier of the safety data sheet
   Address
   ABB SpA
   Via Friuli, 4
   24044 Dalmine (BG)
   Italy
   Telephone no. +39 035 695 2600
   e-mail reception.dalmine@it.abb.com
   Advice on Safety Data Sheet
   sdb_info@umco.de

1.4 Emergency telephone number
   For medical advice (in German and English):
   +49 (0)551 192 40 (Giftinformationszentrum Nord)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification information
   This product does not meet the classification and labelling criteria given in the Regulation (EC) No 1272/2008 (CLP).

2.2 Label elements
   Not relevant

2.3 Other hazards
   PBT assessment
   The product is not considered to be a PBT.
   vPvB assessment
   The product is not considered to be a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances
   Not applicable. The product is not a substance.

3.2 Mixtures
   Hazardous ingredients

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>nitrogen</td>
<td>Class. Gas; H280</td>
</tr>
<tr>
<td></td>
<td>7727-37-9</td>
<td>231-783-9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Press. Gas; H280</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Remove affected person from danger area, lay him down. In case of persisting adverse effects, consult a physician.

After inhalation
Remove affected persons from dangerous area by observing suitable respiratory protection measures. Ensure supply of fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of persisting adverse effects consult a physician.

After skin contact
Wash off with soap and water.

After eye contact
Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes).

After ingestion
Rinse mouth thoroughly with water.

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.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Extinguishing measures to suit surroundings.

Unsuitable extinguishing media
Not relevant

5.2 Special hazards arising from the substance or mixture
In the event of fire, the following can be released: Carbon monoxide and carbon dioxide; Hydrogen fluoride (HF)

5.3 Advice for firefighters
Use self-contained breathing apparatus. Wear full protective suit.

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation.

For emergency responders
Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions
No special measures necessary.

6.3 Methods and material for containment and cleaning up
Ensure adequate ventilation. Room ventilation via exhaust system.

6.4 Reference to other sections
Information regarding safe handling, see chapter 7. Information regarding personal protective measures, see chapter 8. Information regarding waste disposal, see chapter 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Only qualified and trained persons are authorised to handle. Provide good ventilation at the work area (local exhaust ventilation, if necessary).

General protective and hygiene measures
Wash hands before breaks and after work. Do not inhale gases. Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages.

Advice on protection against fire and explosion
Pay attention to general rules of internal fire prevention.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions
No special measures necessary.

Requirements for storage rooms and vessels
No special measures required.

Incompatible products
None known

7.3 Specific end use(s)
No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
No parameters available for monitoring.

Other information
Chemical name:
1,1,1,3,4,4,4-Heptafluoro-3-(trifluoromethyl)butan-2-on

CAS No.:
756-12-7

Maximum Allowable Concentration (MAC)
225ppm (8h)

Source:
ECHA

8.2 Exposure controls
Appropriate engineering controls
No data available.
**Personal protective equipment**

**Respiratory protection**
No special measures required.

**Eye / face protection**
No special measures required.

**Hand protection**
No special measures required.

**Environmental exposure controls**
No data available.

### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Reference</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form/Colour</strong></td>
<td>gas type</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>pH value</strong></td>
<td>Not relevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Boiling point / boiling range</strong></td>
<td>26.9 °C</td>
<td>CAS 756-12-7</td>
<td>supplier</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Melting point / melting range</strong></td>
<td>&lt; -80 °C</td>
<td>CAS 756-12-7</td>
<td>supplier</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decomposition point / decomposition range</strong></td>
<td>Not applicable</td>
<td></td>
<td>supplier</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td></td>
<td>supplier</td>
<td></td>
</tr>
<tr>
<td><strong>Oxidising properties</strong></td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>not flammable</td>
<td>supplier</td>
<td></td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lower flammability or explosive limits</strong></td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Upper flammability or explosive limits</strong></td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>94.3 kPa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 10: Stability and reactivity

10.1 Reactivity
Dangerous reactions are not expected if the product is handled according to its intended use.

10.2 Chemical stability
Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions
No dangerous reactions known.

10.4 Conditions to avoid
None known

10.5 Incompatible materials
None known.

10.6 Hazardous decomposition products
No data available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

LD50
Species: rat
Method: OECD 425
Source: ECHA

Acute dermal toxicity

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

LD50
Species: rat
Method: OECD 402
Source: ECHA

Acute inhalational toxicity

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

LC50
Species: rat
Duration of exposure: 4 h
State of aggregation: Vapour
Method: OECD 403
Source: ECHA

Skin corrosion/irritation

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

Method: OECD 404
Source: ECHA
Evaluation: non-irritant

Serious eye damage/irritation

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

Method: OECD 405
Source: ECHA
Evaluation: non-irritant

Respiratory or skin sensitisation

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

Route of exposure: Skin
Species: mouse
Method: OECD 429
Source: ECHA
Evaluation: non-sensitizing

Germ cell mutagenicity
Reproduction toxicity
No data available

Carcinogenicity
No data available

STOT - single exposure
No data available

<table>
<thead>
<tr>
<th>Route of exposure</th>
<th>NOAEC</th>
<th>Duration of exposure</th>
<th>Species</th>
<th>Method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>inhalational</td>
<td>appr. 3000 ppm</td>
<td>6 h</td>
<td>rats (male/female)</td>
<td>OECD 412</td>
<td>ECHA</td>
</tr>
</tbody>
</table>

STOT - repeated exposure

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

Aspiration hazard
No data available

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)
No data available

Toxicity to fish (chronic)
No data available

Toxicity to Daphnia (acute)

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EC50</th>
<th>Duration of exposure</th>
<th>Species</th>
<th>Method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 mg/l</td>
<td>48 h</td>
<td>Daphnia magna</td>
<td>OECD 202</td>
<td>ECHA</td>
</tr>
</tbody>
</table>

Toxicity to Daphnia (chronic)
No data available

Toxicity to algae (acute)
No data available

Toxicity to algae (chronic)

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EC50</th>
<th>Duration of exposure</th>
<th>Species</th>
<th>Method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>98 mg/l</td>
<td>72 h</td>
<td>Pseudokirchneriella subcapitata</td>
<td>OECD 201</td>
<td>ECHA</td>
</tr>
</tbody>
</table>

Bacteria toxicity
No data available

12.2 Persistence and degradability

Biodegradability
No data available
EC safety data sheet

Trade name: UniSec AirPlus / HySec AirPlus

Current version: 2.0.1, issued: 04.09.2019
Replaced version: 2.0.0, issued: 22.08.2019
Region: GB

<table>
<thead>
<tr>
<th>1</th>
<th>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</th>
<th>756-12-7</th>
<th>690-995-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>aerobic biodegradation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>appr.</td>
<td>0</td>
<td>%</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
<td>28</td>
<td>day(s)</td>
</tr>
<tr>
<td>Method</td>
<td>OECD 301 D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>ECHA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>not readily biodegradable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.3 Bioaccumulative potential

<p>| Partition coefficient: n-octanol/water |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)butan-2-one</td>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
<tr>
<td>log Pow</td>
<td>1.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

with reference to CAS 756-12-7

Method: QSAR
Source: ECHA

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment

| Results of PBT and vPvB assessment |
| PBT assessment | The product is not considered to be a PBT. |
| vPvB assessment | The product is not considered to be a vPvB. |

12.6 Other adverse effects
No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Dispose of according to all applicable regulations upon consultation of the local competent authorities and the disposer in a suitable and authorised disposal facility.
Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging
Residuals must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

SECTION 14: Transport information

14.1 Transport ADR/RID/ADN
The product is not subject to ADR/RID/ADN regulations.

14.2 Transport IMDG
The product is not subject to IMDG regulations.

14.3 Transport ICAO-TI / IATA
The product is not subject to ICAO-TI / IATA regulations.

14.4 Other information
No data available.

14.5 Environmental hazards
Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user
No data available.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)
According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances considered as substances requiring authorisation as listed on Annex XIV of the REACH regulation (EC) 1907/2006.

REACH candidate list of substances of very high concern (SVHC) for authorisation
According to available data and the information provided by preliminary suppliers, the product does not contain substances that are considered substances meeting the criteria for inclusion in annex XIV (List of Substances Subject to Authorisation) as laid down in Article 57 and article 59 of REACH (EC) 1907/2006.

According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances requiring authorisation as listed on Annex XVII of the REACH regulation (EC) 1907/2006.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances
This product is not subject to Part 1 or 2 of Annex I.

15.2 Chemical safety assessment
A chemical safety assessment has been carried out for the following substance/s in this mixture:

<table>
<thead>
<tr>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>756-12-7</td>
<td>690-995-3</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Sources of key data used to compile the data sheet:
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Full text of the H- and EUH- phrases drawn up in sections 2 and 3 (provided not already drawn up in these sections)

H270 May cause or intensify fire; oxidiser.
H280 Contains gas under pressure; may explode if heated.

Notes relating to the identification, classification and labelling of substances and mixtures ((EC) No 1272/2008, Annex VI)

U When put on the market gases have to be classified as ‘Gases under pressure’, in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

Department issuing safety data sheet
UMCO GmbH
Georg-Wilhelm-Str. 187, D-21107 Hamburg
Tel.: +49 40 / 555 546 300  Fax: +49 40 / 555 546 357  e-mail: umco@umco.de

This information is based on our present knowledge and experience. The safety data sheet describes products with a view to safety requirements. It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

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Prod-ID 748620