1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product name: AR555 PFPE grease
Other means of identification: None
Item numbers: H113-50-013, 000-007-696

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

Identified uses: Lubricant.
Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

UK contact details
Edwards, Innovation Drive, Burgess Hill, West Sussex, RH15 9TW, United Kingdom
General enquiries
Tel: +44 (0)8459 212223
Email: info@edwardsvacuum.com

US contact details
Edwards, 6416 Inducon Drive West, Sanborn, New York, 14132, USA
General enquiries
Toll Free: 1-800-848-9800

1.4 Emergency telephone number

Chemtrec: 1-800-424-9300

2. Hazards Identification

2.1 Classification of the substance or mixture

GHS classification: Mixture.
Classification according to Regulation (EC) No. 1272/2008: Not hazardous.
Classification according to Directive 1999/45/EC: Not hazardous.

2.2 Label elements

Hazard pictograms: Not applicable.
Signal words: Not applicable.
Hazard statements: Not applicable.
Precautionary statements: Not applicable.
2.3 Other hazards

PBT criteria: The product is not considered a PBT.

vPvB criteria: The product is not considered a vPvB.

Other hazards which do not result in a classification: Not available.

3. Composition/Information on Ingredients

3.1 Substances

Not applicable.

3.2 Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>% Weight</th>
<th>CAS No</th>
<th>Hazard class*</th>
<th>Risk phrase / Hazard Statements*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexafluoropropene, oxidized, oligomers, reduced and hydrolyzed</td>
<td>≥3 - &lt; 10</td>
<td>161075-14-5</td>
<td>Eye Irritant. 2 H319</td>
<td>Xi; Xi; R36/38</td>
</tr>
</tbody>
</table>

*Hazard class, Risk phrase and Hazard Statements. These columns are only completed for ingredients which are classified as hazardous under EU Directive No 1272/2008 (as amended) and are present in sufficient concentration to make the overall substance hazardous. In all other situations, the column will be completed as “Not applicable”.

Full text for the declared risk phrases and hazards statements is given in Section 16.

4. First Aid Measures

4.1 Description of first aid measures

Eyes: Rinse immediately with plenty of water for at least 10 minutes occasionally lifting the upper and lower eyelids. Seek medical attention if symptoms persist.

Skin: Remove any contaminated clothing. Wash skin with soap and plenty of water. Seek medical attention if symptoms persist.

Ingestion/Oral: If swallowed, remove to fresh air, give plenty of water to drink and seek medical assistance. DO NOT give anything to drink to an unconscious person. Do not induce vomiting.

Inhalation: If high concentrations of mists or fumes are inhaled, remove to fresh air. If breathing problems occur, a qualified individual should administer oxygen or artificial respiration as indicated. Seek immediate medical attention.

General advice: None.
4.2 Most important symptoms and effect, both acute and delayed

Potential acute health effects:

Eyes: May cause serious irritation.
Skin: May cause irritation.
Ingestion / Oral: Not available.
Inhalation: Not available.

Over-exposure symptoms:

Eyes: Not available.
Skin: Not available.
Ingestion / Oral: Not available.
Inhalation: Not available.

4.3 Indication of any immediate medical attention and special treatment needed

Not available.

5. Fire Fighting Measures

5.1 Extinguishing media

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

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture

Fire and explosion hazard: Not available.
Hazardous combustion products Not available.

5.3 Advice for fire-fighters

Special precautions for fire-fighters: Not available.
Special protective equipment for fire-fighters: Firefighters should wear appropriate protective equipment and Self-Contained Breathing Apparatus (SCBA) with a full face-piece operated in positive pressure mode.

For Flammability Properties - see Section 9.
6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Put on appropriate personal protective equipment and evacuate personnel to safe areas. Avoid inhalation of vapours or mist and contact with skin and eyes. Provide adequate ventilation.

For emergency responders: Not available.

6.2 Environmental precautions

Stop the leak if it is safe/possible to do so. Use dykes or bunding to prevent spreading. Avoid contaminating sewers, streams, rivers and other water courses with spilled product. Notify the appropriate authorities if significant contamination occurs.

6.3 Methods and material for containment and cleaning up

Put on the necessary personal protective equipment: refer to Section 8. Exercise caution; the area of the spill area may be slippery. Extinguish all ignition sources and evacuate the area. Absorb material onto vermiculite, dry sand, earth or similar inert absorbent. Place spilled material into covered container for disposal. Use a suitable cleaning solution to clean up any remaining product. Dispose of according to applicable local, state and federal regulations. Do not flush into surface water or sanitary sewer system.

6.4 Reference to other sections

Refer to Section 8 for information on personal protective equipment.
Refer to Section 13 for information on disposal considerations.

7. Handling and Storage

7.1 Precautions for safe handling

Ensure Personal Protective Equipment is used whenever handling the product, see Section 8. Avoid eating, drinking and smoking in areas where the product is used. Practice good hygiene. Wash hands after use and prior to consuming food and drink.

If the contents are exposed, avoid inhalation of vapours or mist and contact with eyes and skin. Provide general ventilation when handling. If necessary provide mechanical exhaust.

7.2 Conditions for safe storage, including any incompatibilities

DO NOT store together with food. Store in original, sealed containers protected from direct sunlight in a dry, cool, well ventilated area away from oxidising agents and sources of ignition. Do not re-use empty containers.

7.3 Specific end use(s)

Not available.
8. Exposure Controls/Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>ACGIH - TLV</th>
<th>OSHA - PEL</th>
<th>Occupational Exposure Limits EH40 (UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None identified</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls: Provide adequate ventilation with explosion relief, explosion suppression or oxygen deficient environment. Avoid escape of dust into the work area.

Individual protection measures:

Eye/Face Protection: Safety glasses with side shields that conform to EN166.

Hand/Skin Protection: For prolonged or repeated contact, use protective gloves conforming to EU Directive 89/686/EEC and EN 374. Wear suitable protective clothing such as overalls/coveralls appropriate to the risk at the specific workplace.

Respiratory Protection: Use of a personal respirator and approved filter in cases of vapour formation.

Hygiene Measures: Practice good hygiene. Wash face, hands and any exposed skin thoroughly after handling. Immediately remove all soiled and contaminated clothing. Do not eat, drink or smoke while handling the product.

Other/General Protection: None.

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>White paste</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Odour</td>
<td>Not available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Flash point</td>
</tr>
<tr>
<td>pH</td>
<td>Upper/lower flammability or explosive limits</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Vapour pressure</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>The product is not flammable</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
9.2 Other information
Not applicable.

10. Stability and Reactivity
10.1 Reactivity
Not available.

10.2 Chemical stability
Stable under normal conditions of use.

10.3 Possibility of hazardous reactions
Not available.

10.4 Conditions to avoid
None known.

10.5 Incompatible materials
Oxidizing agents.

10.6 Hazardous decomposition products
Not available.

11. Toxicological Information
11.1 Information on toxicological effects
The following information is for Hexafluoropropene, oxidized, oligomers, reduced and hydrolyzed.

Acute toxicity: 
LD50 Oral: > 2,000 mg/kg (rat).
LD50 Dermal: > 2,000 mg/kg (rat).

Irritation: 
Irritating to skin and eyes (rabbit).

Corrosivity: 
Not available.

Sensitisation: 
Not available.

Repeat dose toxicity: 
Not available.

Carcinogenicity: 
Not available.

Mutagenicity: 
Not available.

Specific Target Organ Toxicity (STOT) - single exposure
Not available.
STOT - repeated exposure  Not available.
Aspiration hazard  Not available.
Toxicity for reproduction:  Not available.

**Information on likely routes of exposure**
Not available.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Eye Effects:** May cause serious irritation.
**Skin Effects:** May cause irritation.
**Ingestion/Oral Effects:** Not available.
**Inhalation Effects:** Not available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**
Not available.

**Other information**
Information given is based on the components and toxicology of similar products.

**12. Ecological Information**
The following information is for Hexafluoropropene, oxidized, oligomers, reduced and hydrolyzed.

**12.1 Toxicity**
EC50: > 100 mg/l, 48h, Daphnia magna (Water flea)

**12.2 Persistence and degradability**
The product is not considered to be persistent.

**12.3 Bioaccumulative potential**
The product is not considered to be bioaccumulative.

**12.4 Mobility in soil**
Not available.

**12.5 Results of PBT and vPvB assessment**
PBT: The product is not considered a PBT.
vPvB: The product is not considered a vPvB.

**12.6 Other adverse effects**
Not available.
13. Disposal Considerations

13.1 Waste treatment methods

Product: Dispose of the product in compliance with all applicable local and national regulations.

Packaging: Dispose of the packaging in compliance with all applicable local and national regulations.

14. Transport Information

14.1 UN number

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.2 UN proper shipping name

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.3 Transport hazard class

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.4 Packing group

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.5 Environmental hazards

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
14.6 Special precautions for user

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
<th>Canadian TDG</th>
<th>United States DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Not applicable.

15. Regulatory Information

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

European
This product has been classified in accordance with EU Regulation No 1907/2006 (REACH) on the Classification, Labelling and Packaging of Substances and Mixtures.
Classified as dangerous to supply: No.
German Federal Water Management Act: Water contaminating class - Not available.

United States
All materials contained in this product are on the U.S. Toxic Substances Control Act (TSCA).
SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:
This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and 40 CFR Part 372.
California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

Canadian
WHMIS Classification: Not available.
No ingredients in this product are included in the Canadian DSL.

15.2 Chemical safety assessment

Not available.

16. Other Information

This SDS is compiled in accordance with ANSI Z400.1, Regulation (EC) No 1907/2006 (as amended by Regulation No 453/2010) concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

16.1 Full text of abbreviated statements and phrases

R36/38 Irritating to eyes and skin.
H319 Causes serious eye irritation.
PRODUCT NAME: GREASE - AR555 PFPE

16.2 NFPA / HMIS hazard codes

<table>
<thead>
<tr>
<th>NFPA Hazard codes</th>
<th>HMIS Hazard codes</th>
<th>Rating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Not available</td>
<td>0 = No Hazard</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not available</td>
<td>1 = Slight Hazard</td>
</tr>
<tr>
<td>Instability</td>
<td>Not available</td>
<td>2 = Moderate Hazard</td>
</tr>
<tr>
<td></td>
<td>Reactivity</td>
<td>3 = Serious Hazard</td>
</tr>
<tr>
<td></td>
<td>Not available</td>
<td>4 = Severe Hazard</td>
</tr>
</tbody>
</table>

16.3 Sources of information for this data sheet

- Klübertemp GR AR555 North American Safety Data Sheet; Issue Date: 15th April 2015, Revision Date: 15th April 2015.
- Klübertemp GR AR555 Great Britain Safety Data Sheet; Issue Date: 15th April 2015, Revision Date: 15th April 2015.

16.4 Glossary

ACGIH - American Conference of Governmental Industrial Hygienists; ADN - European agreement concerning the international carriage of dangerous goods by inland waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; ATE - Acute Toxicity Estimate; CAS No. - Chemical Abstracts Service number; CEN - European Committee for Standardization; CVD - Chemical vapour deposition; EC No. - EINECS and ELINCS Number (see also EINECS and ELINCS); EC50 - Median effective concentration; ECHA - European Chemicals Agency; EINECS - European Inventory of Existing Commercial Substances; ELINCS - European List of Notified Chemical Substances; IATA - International carriage of dangerous goods by air; IMDG - International carriage of dangerous goods by sea; LC50 - Median lethal concentration; LD50 - Median lethal dose; NIOSH - National Institute for Occupational Safety and Health (US); OECD - Organisation for Economic Co-operation and Development; OEL - Occupational exposure limit; PBT - Persistent, bioaccumulative, toxic chemical; PEL - Permissible exposure limit; RID - International carriage of dangerous goods by rail; STEL - Short term exposure limit, 15 minute reference period; STOT - Specific target organ toxicity; TLV - Threshold limit value; TWA - Time weighted average, 8 hour reference period; vPvB - Very persistent, very bioaccumulative chemical

16.5 Revisions:

- April 2010 - Data Sheet updated to reflect the latest supplier safety information.
- June 2012 - Data Sheet updated to reflect the latest supplier safety information & current regulatory information.
- November 2012 - European and US Contact Details updated
- February 2014 - Data Sheet updated to conform to Regulation (EC) No 1907/2006 (as amended by Regulation No 453/2010) and GHS.
- July 2015 - Product description updated
- January 2016 - Contact details updated. Revision date not changed to preserve 2-yearly SDS review date.

Although the information and recommendations in this data sheet are to the best of our knowledge correct, it is recommended that you make your own determination of the material's suitability for your purpose before you use it. The information contained in this data sheet has been reproduced from the manufacturers data; the accuracy of this information is the responsibility of the manufacturer. Edwards accept no responsibility for damage of any nature resulting from the use of, or the reliance upon, this data sheet.