SAFETY DATA SHEET

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name: Carbon Dioxide, Dry Ice
Product Code(s): PF00096
Synonyms: Dry ice (nuggets, pellets, or blocks)
Trade Name: Not established
Chemical Family: Not determined

carbon dioxide (compressed)
CAS No 124-38-9

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

Recommended Use: Refrigerant Packaging

1.3. Details of the supplier of the safety data sheet

Pfizer Inc
235 East 42nd Street
New York, New York 10017
1-800-879-3477

Pfizer Ltd
Ramsgate Road
Sandwich, Kent
CT13 9NJ
United Kingdom
+00 44 (0)1304 616161

1.4. Emergency telephone number

Emergency Telephone: Chemtrec 1-800-424-9300
International Chemtrec (24 hours): +1-703-527-3887
E-mail address: pfizer-MSDS@pfizer.com

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS - Classification: Not classified as hazardous

OSHA Classification
Health Hazard: Simple Asphyxiant

2.2. Label elements

Signal word: Warning

Hazard statements: May displace oxygen and cause rapid suffocation

Precautionary Statements: P282 - Wear cold insulating gloves/face shield/eye protection
P336 + P315 - Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention
P403 - Store in a well-ventilated place
Supplemental Hazard

Contact with dry ice may cause cold burns or frostbite.

2.3. Other hazards

Other hazards

An Occupational Exposure Value has been established for this substance (see Section 8).

Note:

This document has been prepared in accordance with standards for workplace safety, which require the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Hazardous

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>REACH Registration Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>carbon dioxide (compressed)</td>
<td>204-696-9</td>
<td>124-38-9</td>
<td>100</td>
<td>Not Listed</td>
<td></td>
</tr>
</tbody>
</table>

Full text of H- and EUH-phrases: see section 16

Additional information

Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety.

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation

Remove to fresh air. Seek immediate medical attention/advice.

Eye contact

Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact

Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

Ingestion

Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

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

Most important symptoms and effects

For information on potential signs and symptoms of exposure, See Section 2 - Hazards Identification and/or Section 11 - Toxicological Information.

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

Note to physicians

None.

Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media
SAFETY DATA SHEET

Product Name  Carbon Dioxide, Dry Ice
Revision date  20-Nov-2020
Version  2.03

5.2. Special hazards arising from the substance or mixture

Suitable Extinguishing Media  Dry chemical, CO2, alcohol-resistant foam or water spray.

Specific hazards arising from the chemical  Dry ice sublimes to carbon dioxide vapor. Vapor may displace oxygen and cause rapid suffocation.
Hazardous combustion products  Formation of toxic gases is possible during heating or fire. Toxic gases including carbon monoxide can be expected in fires of this material. May include oxides of carbon.

5.3. Advice for firefighters

Special protective equipment for fire-fighters  Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions  Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure.
For emergency responders  Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions  Refer to protective measures listed in Sections 7 and 8.

6.3. Methods and material for containment and cleaning up

Methods for containment  Prevent further leakage or spillage if safe to do so.
Methods for cleaning up  Contain the source of the spill or leak. Collect spilled material by a method that controls dust generation. Avoid use of a filtered vacuum to clean spills of dry solids. Clean spill area thoroughly.
Prevention of secondary hazards  Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

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

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling  
Restrict access to work area. Avoid open handling. Minimize generating airborne mists and vapors. Use process containment, local exhaust ventilation or perform work under fume hood/fume cupboard. Avoid inhalation and contact with skin, eye, and clothing. When handling, use appropriate personal protective equipment (see Section 8). Wash hands and any exposed skin after removal of PPE. Releases to the environment should be avoided. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP.
General hygiene considerations  Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions  Store and use with adequate ventilation. Do not store in tight containers or confined spaces. Storage areas should be clean and dry. Store at -78.5 °C in properly labeled containers.

7.3. Specific end use(s)

Specific use(s)  Refrigerant Packaging.
# Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

## 8.1. Control parameters

### Exposure Limits

Refer to available public information for specific member state Occupational Exposure Limits.

<table>
<thead>
<tr>
<th>carbon dioxide (compressed)</th>
<th>ACGIH TLV</th>
<th>STEL: 30000 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 10000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 18000 mg/m³</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling: 45000 mg/m³</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Estonia</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Finland</td>
<td>5000 ppm</td>
<td>9100 mg/m³</td>
</tr>
<tr>
<td>France</td>
<td>9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>5000 ppm</td>
<td>9100 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling / Peak: 10000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling / Peak: 18200 mg/m³</td>
</tr>
<tr>
<td>Germany</td>
<td>5000 ppm</td>
<td>9100 mg/m³</td>
</tr>
<tr>
<td>Hungary</td>
<td>9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 15000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 27000 mg/m³</td>
</tr>
<tr>
<td>Italy</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Latvia</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>STEL: 27000 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Russia</td>
<td>TWA: 9000 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL: 27000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Slovakia</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>Spain</td>
<td>5000 ppm</td>
<td>9150 mg/m³</td>
</tr>
<tr>
<td>Switzerland</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>5000 ppm</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(vacated) TWA: 10000 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vacated) TWA: 18000 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vacated) STEL: 30000 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vacated) STEL: 54000 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>
8.2. Exposure controls

Engineering controls should be used as the primary means to control exposures.

Environmental exposure controls
No information available.

Personal protective equipment
Contact your safety and health professional or safety equipment supplier for assistance in selecting the correct protective clothing/equipment based on an assessment of the workplace conditions, other chemicals used or present in the workplace and specific operational processes. Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

Eye/face protection
Wear safety glasses as minimum protection. (Safety glasses must meet the standards in accordance with EN166, ANSI Z87.1 or international equivalent.).

Hand protection
Wear insulated gloves to prevent skin contact. (Protective gloves must meet the standards in accordance with EN511 or international equivalent.).

Skin and body protection
Use protective clothing (uniforms, lab coats, disposable coveralls, etc.) in both production and laboratory areas. (Protective clothing must meet the standards in accordance with EN13982, ANSI 103 or international equivalent.).

Respiratory protection
Whenever excessive air contamination (dust, mist, vapor) is generated, respiratory protection, with appropriate protection factors, should be used to minimize exposure. (e.g. particulate respirator with a half mask, P3 filter). (Respirators must meet the standards in accordance with EN140, EN143, ASTM F2704-10 or international equivalent.).

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Molecular formula (MF):</td>
<td>CO2</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>44</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>-56.6</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-78.46</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper flammability limit:</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower flammability limit:</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>5.73</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Relative density
Water solubility
Solubility(ies)
Autoignition temperature
Decomposition temperature
Kinematic viscosity
Dynamic viscosity
Explosive properties
Oxidizing properties

9.2. Other information
Liquid Density
Bulk density

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity
Reactivity
No data available.

10.2. Chemical stability
Stability
Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact
No data available.
Sensitivity to Static Discharge
No data available.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions
No information available.

10.4. Conditions to avoid
Conditions to avoid
Dry ice sublimes to carbon dioxide vapor. Vapor may displace oxygen and cause rapid suffocation.

10.5. Incompatible materials
Incompatible materials
As a precautionary measure, keep away from strong oxidizers.

10.6. Hazardous decomposition products
Hazardous decomposition products
No data available.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects
General Information:
Toxicological properties have not been thoroughly investigated.

Short term
Dry ice sublimes to carbon dioxide vapor. Vapor may displace oxygen and cause rapid suffocation. Contact with dry ice may cause cold burns or frostbite.

Carcinogenicity
Not listed as a carcinogen by IARC, NTP or US OSHA.

Section 12: ECOLOGICAL INFORMATION
12.1. Toxicity
No information available

12.2. Persistence and degradability
Persistence and degradability
No information available.

12.3. Bioaccumulative potential
Bioaccumulation
No information available.

12.4. Mobility in soil
Mobility in soil
No information available.

12.5. Results of PBT and vPvB assessment
PBT and vPvB assessment
No information available.

12.6. Other adverse effects
Other adverse effects
No information available.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

Section 14: TRANSPORT INFORMATION

The following refers to all modes of transportation unless specified below.

UN proper shipping name: Not regulated

IMDG
UN-No UN1845
UN proper shipping name Carbon Dioxide, Solid
Hazard Class 9

IATA
UN-No UN1845
UN proper shipping name Carbon Dioxide, Solid
Hazard Class 9
Section 15: REGULATORY INFORMATION

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

carbon dioxide (compressed)
  CERCLA/SARA Section 313 de minimus % Not Listed
  California Proposition 65 Not Listed
  TSCA Present
  EINECS 204-696-9
  AICS Present

15.2. Chemical safety assessment

Chemical Safety Report No information available

Section 16: OTHER INFORMATION

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

Data Sources: Publicly available toxicity information. Commercial vendor MSDS.
Reason for revision Updated Section 8 - Exposure Controls / Personal Protection.
Revision date 20-Nov-2020
Prepared By Product Stewardship Hazard Communication
  Pfizer Global Environment, Health, and Safety Operations

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