1 Identification

Product identifier
Product name: Cellulose, microcrystalline

Stock number: A17730
CAS Number: 9004-34-6
EC number: 232-674-9

Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency telephone number:
During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

GHS07

STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

Xi; Irritant

R37: Irritating to respiratory system.
Information concerning particular hazards for human and environment: Not applicable
Hazards not otherwise classified No information known.

Label elements
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labeled according to the CLP regulation.

Hazard pictograms

GHS07

Signal word Warning
Hazard statements
H335 May cause respiratory irritation.

Precautionary statements
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/doctor/.../if you feel unwell.
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

WHMIS classification Not controlled
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>0</th>
<th>Health (acute effects) = 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td>1</td>
<td>Flammability = 1</td>
</tr>
<tr>
<td>REACTIVITY</td>
<td>1</td>
<td>Physical Hazard = 1</td>
</tr>
</tbody>
</table>

(Contd. on page 2)
3 Composition/information on ingredients

Chemical characterization: Substances
CAS# Description:
9004-34-6 Cellulose, microcrystalline
Identification number(s):
EC number: 232-674-9

4 First-aid measures

Description of first aid measures
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.
After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing
Seek medical treatment.

Information for doctor
Most important symptoms and effects, both acute and delayed
No further relevant information available.
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents
Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
Methods and material for containment and cleaning up:
Ensure adequate ventilation.
Prevention of secondary hazards:
No special measures required.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Information about protection against explosions and fires:
No information known.
38.0.2 Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Store away from oxidizing agents.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>10</td>
</tr>
<tr>
<td>ACGIH TLV</td>
<td>10</td>
</tr>
<tr>
<td>Belgium TWA</td>
<td>10</td>
</tr>
<tr>
<td>France TWA</td>
<td>10</td>
</tr>
<tr>
<td>Ireland TWA</td>
<td>10; 20-STEL (total inhalable)</td>
</tr>
<tr>
<td>Ireland TWA</td>
<td>5 (respirable)</td>
</tr>
<tr>
<td>Netherlands TWA</td>
<td>2</td>
</tr>
<tr>
<td>Russia TWA</td>
<td>2; 4-STEL (skin)</td>
</tr>
<tr>
<td>Switzerland TWA</td>
<td>6</td>
</tr>
<tr>
<td>United Kingdom TWA</td>
<td>10; 20-STEL (total inhalable)</td>
</tr>
<tr>
<td>United Kingdom TWA</td>
<td>4 (respirable)</td>
</tr>
<tr>
<td>USA PEL</td>
<td>15 (total inhalable)</td>
</tr>
<tr>
<td>USA PEL</td>
<td>5 (respirable)</td>
</tr>
</tbody>
</table>

Control parameters

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper fibre, total dust</td>
<td>10* 5** mg/m³</td>
</tr>
<tr>
<td>Long-term value:</td>
<td></td>
</tr>
<tr>
<td>USA PEL</td>
<td>15* 5** mg/m³</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>10* 5** mg/m³</td>
</tr>
<tr>
<td>Long-term value:</td>
<td></td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>EL (Canada)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>EV (Canada)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Long-term value:</td>
<td>paper fibre, total dust</td>
</tr>
</tbody>
</table>

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:
Form: Crystalline powder
Color: White
Odor: Not determined
Odor threshold: Not determined.
Product name: Cellulose, microcrystalline

### 3.8.2 pH-value:
Not applicable.

### 3.8 Change in condition
- **Melting point/Melting range:** 260-270 °C (500-518 °F) (dec)
- **Boiling point/Boiling range:** Not determined
- **Sublimation temperature / start:** Not determined

### 3.9 Flash point:
Not applicable

### 3.10 Flammability (solid, gaseous):
Not determined

### 3.11 Ignition temperature:
Not determined

### 3.12 Decomposition temperature:
Not determined

### 3.13 Auto igniting:
Not determined

### 3.14 Danger of explosion:
Product does not present an explosion hazard.

### 3.15 Explosion limits:
- **Lower:** Not determined
- **Upper:** Not determined
- **Vapor pressure:** Not applicable
- **Density at 20 °C (68 °F):** 1.27-1.60 g/cm³ (10.598-13.352 lbs/gal)

### 3.16 Bulk density at 20 °C (68 °F):
288-304 kg/m³

### 3.17 Relative density
Not determined.

### 3.18 Vapor density
Not applicable.

### 3.19 Evaporation rate
Not applicable.

### 3.20 Solubility in / Miscibility with Water:
Dispersible

### 3.21 Partition coefficient (n-octanol/water):
Not determined.

### 3.22 Viscosity:
- **dynamic:** Not applicable.
- **kinematic:** Not applicable.

### 3.23 Other information
No further relevant information available.

#### 10 Stability and reactivity

**Reactivity:** No information known.

**Chemical stability:** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions:** No dangerous reactions known

**Incompatible materials:** Oxidizing agents

**Hazardous decomposition products:** Carbon monoxide and carbon dioxide

#### 11 Toxicological information

**Information on toxicological effects**

**Acute toxicity:** No effects known.

**LD/LC50 values that are relevant for classification:** No data

**Skin irritation or corrosion:** Irritant to skin and mucous membranes.

**Eye irritation or corrosion:** Irritating effect.

**Sensitization:** No sensitizing effects known.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:**
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:**
Cellulose is a chief constituent of plant fiber such as cotton. The microcrystalline form is a non-fibrous, rigid powder commonly used in thin layer or liquid chromatography. The dust can be irritating to the respiratory system and possibly to the eyes and skin as well but is otherwise non-hazardous.

**Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

#### 12 Ecological information

**Toxicity**

**Aquatic toxicity:** No further relevant information available.
38.0.2 Persistence and degradability
No further relevant information available.

Behavior in environmental systems:
Bioaccumulative potential
No further relevant information available.
Mobility in soil
No further relevant information available.

Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Avoid transfer into the environment.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects
No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14 Transport information

Not a hazardous material for transportation.

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
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</table>

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
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<tr>
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<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
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<tr>
<td></td>
<td>Class</td>
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<table>
<thead>
<tr>
<th>Packing group</th>
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<table>
<thead>
<tr>
<th>Environmental hazards:</th>
<th>DOT, ADR, IMDG, IATA</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not dangerous according to the above specifications.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOT Marine Pollutant (DOT):</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

15 Regulatory information

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

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).
SARA Section 313 (specific toxic chemical listings) Substance is not listed.
California Proposition 65
Prop 65 - Chemicals known to cause cancer Substance is not listed.
Prop 65 - Developmental toxicity Substance is not listed.
Prop 65 - Developmental toxicity, female Substance is not listed.
Prop 65 - Developmental toxicity, male Substance is not listed.
Information about limitation of use: For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substances of very high concern (SVHC) according to REACH, Article 57 Substance is not listed.
REACH - Pre-registered substances Substance is listed.
16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Health, Safety and Environmental Department.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent