SAFETY DATA SHEET

Revision date: 8 June 2018  Initial date of issue: 23 March 2011  SDS No. 1140-7

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

<table>
<thead>
<tr>
<th>1.1. Product identifier</th>
<th>Supplier:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1622 (Lot number 180601 and higher)</td>
<td>A.W. CHESTERTON COMPANY</td>
</tr>
</tbody>
</table>

1.2. Relevant identified uses of the substance or mixture and uses advised against
Graphite based braided packing with nickel alloy wire reinforcement for use in block valves in low emissions VOC service.

1.3. Details of the supplier of the safety data sheet
Company: A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel. +1 978-469-6446  Fax: +1 978-469-6785
(Mon. - Fri. 8:30 - 5:00 PM EST)
SDS requests: www.chesterton.com
E-mail (SDS questions): ProductMSDSs@chesterton.com
E-mail: customer.service@chesterton.com

Canada: A.W. Chesterton Company Ltd., 889 Fraser Drive,
Unit 105, Burlington, Ontario L7L 4X8 – Tel. 905-335-5055
EU: Chesterton International GmbH, Am Lenzenfleck 23,
D85737 Ismaning, Germany – Tel. +49-89-996-5460

1.4. Emergency telephone number
24 hours per day, 7 days per week
Call Infotrac: 1-800-535-5053
Outside N. America: +1 352-323-3500 (collect)
NSW Poisons Information Centre (Australia): 13 11 26

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
This product does not meet the criteria for classification in any hazard class according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. However, a safety data sheet is being supplied for it on request as it contains at least one substance posing human health or environmental hazards.

2.1.2. Australian statement of hazardous nature
Not classified as hazardous according to criteria of Safe Work Australia.

2.1.3. Additional information
None

2.2. Label elements
Hazard pictograms: None
Signal word: None
Hazard statements: None
Precautionary statements: None
Supplemental information: None
2.3. Other hazards

None expected in industrial use. PTFE is nonhazardous at ambient temperatures. At temperatures above 260°C (500°F), toxic decomposition products may be emitted. Due to toxic decomposition, avoid smoking (wash hands to avoid transfer to tobacco products) when handling PTFE products.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

<table>
<thead>
<tr>
<th>Hazardous Ingredients¹</th>
<th>% Wt.</th>
<th>CAS No./ EC No.</th>
<th>REACH Reg. No.</th>
<th>CLP/GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other ingredients:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>60-70</td>
<td>7782-42-5</td>
<td>NA</td>
<td>Not classified*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>231-955-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silica (Quartz)</td>
<td>&lt; 1</td>
<td>14808-60-7</td>
<td>NA</td>
<td>Not classified*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>238-878-4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Substance with a workplace exposure limit.

  • 1272/2008/EC, GHS, REACH
  • WHMIS 2015
  • Safe Work Australia

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: If overcome by decomposition fumes, remove to fresh air. If not breathing, administer artificial respiration. Contact physician.

Skin contact: Wash skin with soap and water. Contact physician if irritation persists.

Eye contact: Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.

Ingestion: Not applicable

Protection of first-aiders: No special precautions.

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

Graphite dust may cause mechanical irritation to the skin, eyes and nasal passages. Repeated inhalation of nuisance dust in excess of exposure limits over an extended period of time may result in injury to the lungs. Symptoms can include cough, shortness of breath and decrease in pulmonary function.

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

Treat symptoms.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide, dry chemical, foam or water spray

Unsuitable extinguishing media: None known

5.2. Special hazards arising from the substance or mixture

Toxic fumes may be emitted at temperatures above 260°C (500°F).

5.3. Advice for firefighters

Recommend Firefighters wear self-contained breathing apparatus.

Flammability Classification: –

HAZCHEM Emergency Action Code: 2 Z

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Utilize exposure controls and personal protection as specified in Section 8.

6.2. Environmental Precautions

No special requirements.
6.3. Methods and material for containment and cleaning up
No special steps required. Nontoxic.

6.4. Reference to other sections
Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling
Accumulations of graphite may cause shorting of electrical circuits. Do not smoke when handling PTFE products; wash hands after handling to avoid transfer to tobacco products. Avoid creating and breathing dust during removal, drilling, grinding, sawing or sanding.

7.2. Conditions for safe storage, including any incompatibilities
Store in cool, dry area. Exposure to heat, humidity, ozone or light may shorten its unlimited shelf life.

7.3. Specific end use(s)
No special precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>OSHA PEL¹ ppm</th>
<th>ACGIH TLV² ppm</th>
<th>UK WEL³ ppm</th>
<th>AUSTRALIA ES⁴ ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/m³</td>
<td>mg/m³</td>
<td>mg/m³</td>
<td>mg/m³</td>
</tr>
<tr>
<td>Graphite</td>
<td>15</td>
<td>(resp.)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>mppcf</td>
<td>(resp.)</td>
<td>(inhal.)</td>
<td>(resp.)</td>
</tr>
<tr>
<td>Silica (Quartz)</td>
<td>(resp.) 0.5</td>
<td>(total) 0.3</td>
<td>0.025</td>
<td>0.1</td>
</tr>
</tbody>
</table>

¹ United States Occupational Health & Safety Administration permissible exposure limits
² American Conference of Governmental Industrial Hygienists threshold limit values
³ EH40 Workplace exposure limits, Health & Safety Executive
⁴ Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003]

Derived No Effect Level (DNEL) according to Regulation (EC) No 1907/2006:
Workers
Not available

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No 1907/2006:
Not available

8.2. Exposure controls

8.2.1. Engineering measures
If using under extreme heat, use local exhaust.

8.2.2. Individual protection measures

<table>
<thead>
<tr>
<th>Respiratory protection:</th>
<th>Not normally needed. If exposure limits are exceeded, use an approved dust respirator (e.g., EN filter type P2).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective gloves:</td>
<td>Not normally needed.</td>
</tr>
<tr>
<td>Eye and face protection:</td>
<td>Recommend safety glasses.</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

8.2.3. Environmental exposure controls
Refer to sections 6 and 12.
## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

<table>
<thead>
<tr>
<th>Physical state</th>
<th>solid</th>
<th>Odour</th>
<th>odorless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>gray</td>
<td>Odour threshold</td>
<td>not determined</td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>not applicable</td>
<td>Vapour pressure @ 20°C</td>
<td>not applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>not determined</td>
<td>% Aromatics by weight</td>
<td>not applicable</td>
</tr>
<tr>
<td>% Volatile (by volume)</td>
<td>not applicable</td>
<td>pH</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>not applicable</td>
<td>Relative density</td>
<td>not applicable</td>
</tr>
<tr>
<td>Method</td>
<td>not applicable</td>
<td>Weight per volume</td>
<td>not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>not applicable</td>
<td>Coefficient (water/oil)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>not determined</td>
<td>Vapour density (air=1)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>not determined</td>
<td>Rate of evaporation (ether=1)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>not applicable</td>
<td>Solubility in water</td>
<td>insoluble</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>not applicable</td>
<td>Oxidising properties</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

### 9.2. Other information

None

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Refer to sections 10.3 and 10.5.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under conditions of normal use.

### 10.4. Conditions to avoid

Extreme heat above 260°C (500°F).

### 10.5. Incompatible materials

Fluorine, Chlorine Trifluoride and related compounds and molten alkali metals.

### 10.6. Hazardous decomposition products

Carbon Monoxide, Carbon Dioxide, trace amounts of Hydrogen Fluoride, Perfluorocarbon olefins and other toxic fumes may be evolved above 260°C (500°F).

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

#### Primary route of exposure under normal use:

Inhalation, skin and eye contact. Personnel with pre-existing chronic respiratory impairments are generally aggravated by exposure.

#### Acute toxicity -

**Oral:**

Based on available data on components, the classification criteria are not met.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>LD50, rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
</tbody>
</table>

**Dermal:**

Based on available data on components, the classification criteria are not met.

**Inhalation:**

Graphite dust may cause mechanical irritation of the nasal passages.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>LC50, rat, 4 hours</td>
<td>&gt; 2 mg/l (dust)</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation:**

Graphite dust may cause mechanical irritation to the skin.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>Skin irritation, rabbit</td>
<td>Not irritating</td>
</tr>
</tbody>
</table>
Serious eye damage/irritation:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>Eye irritation, rabbit</td>
<td>Not irritating</td>
</tr>
</tbody>
</table>

Respiratory or skin sensitisation:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>Skin sensitization, mouse</td>
<td>Not sensitizing</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity:

Graphite: based on available data, the classification criteria are not met.

Carcinogenicity:

The International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) have classified inhaled silica as a human carcinogen.

Reproductive toxicity:

Graphite: based on available data, the classification criteria are not met.

STOT – single exposure:

Not expected to cause toxicity. Graphite: based on available data, the classification criteria are not met.

STOT – repeated exposure:

Repeated inhalation of respirable free silica may cause scarring of the lungs with cough and shortness of breath. Silicosis, a delayed lung injury that is a disabling, progressive and sometimes fatal pulmonary fibrosis, may result. Prolonged, excessive inhalation of Graphite dust has caused emphysema and pneumoconiosis. Graphite: based on available data, the classification criteria are not met.

Aspiration hazard:

Based on available data, the classification criteria are not met.

Other information:

None

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

12.1. Toxicity

This product is expected to exhibit low toxicity to aquatic and soil organisms. Graphite: 96 h LC50 (fish) > 100 mg/l.

12.2. Persistence and degradability

Graphite, Silica: inorganic substances, exist in nature. PTFE: material is chemically unreactive and nonbiodegradable.

12.3. Bioaccumulative potential

Graphite: bioconcentration in aquatic organisms is not expected to be significant.

12.4. Mobility in soil

Solid. Insoluble in water. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9).

12.5. Results of PBT and vPvB assessment

Not available

12.6. Other adverse effects

None known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Check local, state and national/federal regulations and comply with the most stringent requirement. This product is not classified as a hazardous waste according to 2008/98/EC.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

ADR/RID/ADN/IMDG/ICAO: NOT APPLICABLE
TDG: NOT APPLICABLE
US DOT: NOT APPLICABLE

14.2. UN proper shipping name

ADR/RID/ADN/IMDG/ICAO: NON-HAZARDOUS, NON REGULATED
TDG: NON-HAZARDOUS, NON REGULATED
US DOT: NON-HAZARDOUS, NON REGULATED

14.3. Transport hazard class(es)

ADR/RID/ADN/IMDG/ICAO: NOT APPLICABLE
TDG: NOT APPLICABLE
**SECTION 14: TRANSPORT INFORMATION**

14.4. Packing group

<table>
<thead>
<tr>
<th>ADR/RID/ADN/IMDG/ICAO:</th>
<th>NOT APPLICABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDG:</td>
<td>NOT APPLICABLE</td>
</tr>
<tr>
<td>US DOT:</td>
<td>NOT APPLICABLE</td>
</tr>
</tbody>
</table>

14.5. Environmental hazards

- NOT APPLICABLE

14.6. Special precautions for user

- NOT APPLICABLE

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

- NOT APPLICABLE

14.8. Other information

- NOT APPLICABLE

**SECTION 15: REGULATORY INFORMATION**

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

15.1.1. EU regulations

- Authorisations under Title VII: Not applicable
- Restrictions under Title VIII: None
- Other EU regulations: None

15.1.2. National regulations

**US EPA SARA TITLE III**

312 Hazards: 313 Chemicals:

- See section 2.1.2
- None

- Other national regulations: None

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.
### SECTION 16: OTHER INFORMATION

#### Abbreviations and acronyms:
- 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
- BCF: Bioconcentration Factor
- cATpE: Converted Acute Toxicity point Estimate
- CLP: Classification Labelling Packaging Regulation (1272/2008/EC)
- ES: Exposure Standard
- GHS: Globally Harmonized System
- ICAO: International Civil Aviation Organization
- IMDG: International Maritime Dangerous Goods
- LC50: Lethal Concentration to 50 % of a test population
- LD50: Lethal Dose to 50% of a test population
- LOEL: Lowest Observed Effect Level
- N/A: Not Applicable
- NA: Not Available
- NOEC: No Observed Effect Concentration
- NOEL: No Observed Effect Level
- OECD: Organization for Economic Co-operation and Development
- PBT: Persistent, Bioaccumulative and Toxic substance
- (Q)SAR: Quantitative Structure-Activity Relationship
- REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (1907/2006/EC)
- REL: Recommended Exposure Limit
- RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
- SDS: Safety Data Sheet
- STEL: Short Term Exposure Limit
- STOT RE: Specific Target Organ Toxicity, Repeated Exposure
- STOT SE: Specific Target Organ Toxicity, Single Exposure
- TDG: Transportation of Dangerous Goods (Canada)
- TWA: Time Weighted Average
- US DOT: United States Department of Transportation
- vPvB: very Persistent and very Bioaccumulative substance
- WEL: Workplace Exposure Limit
- WHMIS: Workplace Hazardous Materials Information System
- Other abbreviations and acronyms can be looked up at www.wikipedia.org.

#### Key literature references and sources for data:
- Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
- European Chemicals Agency (ECHA) - Information on Chemicals
- Hazardous Chemical Information System (HCIS)
- National Institute of Technology and Evaluation (NITE)
- Swedish Chemicals Agency (KEMI)
- U.S. National Library of Medicine Toxicology Data Network (TOXNET)

#### Procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008 [CLP] / GHS:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Classification procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### Relevant H-statements:
- Not applicable

#### Hazard pictogram names:
- Not applicable

#### Changes to the SDS in this revision:
- Sections 1.1, 2.1, 2.2, 3, 8.1, 11, 12.2, 15.1.2, 16.

#### Date of last revision:
- 8 June 2018

#### Further information:
- None

This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user’s particular purpose. The user must make their own determination as to suitability.