SAFETY DATA SHEET
in accordance with REACH (1907/2006/EC, as amended by 453/2010/EC) and WHMIS 2015

<table>
<thead>
<tr>
<th>Revision date: 26 April 2018</th>
<th>Initial date of issue: 30 March 2009</th>
<th>SDS No. 1098-3a</th>
</tr>
</thead>
</table>

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

1.1. Product identifier

1601, 1601C

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

A high-temperature, high-pressure steam service packing for use in valves to 5000 psi (345 Bar) and 650ºC (1200ºF) maximum temperature in a non-oxidizing environment.

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)
E-mail (SDS questions): ProductMSDSs@chesterton.com
E-mail: customer.service@chesterton.com
SDS requests: www.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)

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.

2.1.2. Classification according to Directive 1999/45/EC

This product does not meet the criteria for classification in any danger category according to Directive 1999/45/EC on classification, packaging and labelling of dangerous preparations.

2.1.3. Classification according to WHMIS 1988

D2B: Toxic materials causing other effects

2.1.4. Australian classification

Not classified as hazardous according to criteria of Safe Work Australia.

2.1.5. Additional information

None

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP] / WHMIS 2015 / GHS

<table>
<thead>
<tr>
<th>Hazard pictograms:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal word:</td>
<td>None</td>
</tr>
<tr>
<td>Hazard statements:</td>
<td>None</td>
</tr>
<tr>
<td>Precautionary statements:</td>
<td>None</td>
</tr>
</tbody>
</table>
**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>Hazardous Ingredients¹</th>
<th>% Wt.</th>
<th>CAS No./ EC No.</th>
<th>REACH Reg. No.</th>
<th>Classification (acc. to 1272/2008/EC)</th>
<th>Classification (67/548/EEC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite*</td>
<td>98-99</td>
<td>7782-42-5</td>
<td>NA</td>
<td>Not classified</td>
<td>Not classified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>231-955-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium Molybdate*</td>
<td>1-2</td>
<td>10102-40-6</td>
<td>NA</td>
<td>Not classified</td>
<td>Not classified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>231-551-7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indications of danger acc. to 67/548/EEC: Not applicable

*Substance with a workplace exposure limit.

* WHMIS 2015
* Safe Work Australia [NOHSC: 1008 (2004)]

**SECTION 4: FIRST AID MEASURES**

4.1. Description of first aid measures

**Inhalation:** 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

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

Graphite dust may cause mechanical irritation to the skin, eyes and nasal passages. Sodium Molybdate may result in eye, skin or respiratory tract irritation. Repeated inhalation of nuisance dust in excess of exposure limits over an extended period of time may result in injury to the lungs. Prolonged, excessive inhalation of Graphite dust has caused emphysema and pneumoconiosis.

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

Treat symptoms.

**SECTION 5: FIRE-FIGHTING MEASURES**

5.1. Extinguishing media

Carbon Dioxide, dry chemical, foam or water

5.2. Special hazards arising from the substance or mixture

None

5.3. Advice for firefighters

Recommend Firefighters wear self-contained breathing apparatus.

Flammability Classification: –

HAZCHEM Emergency Action Code: 1 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. Avoid excessive creation and inhalation of dust during removal, drilling, grinding, cutting or sanding.

7.2. Conditions for safe storage, including any incompatibilities
Store in a cool, dry area.

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters
Occupational exposure limit values

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>OSHA PEL ppm (total)</th>
<th>ACGIH TLV ppm (total)</th>
<th>UK WEL ppm (total)</th>
<th>AUSTRALIA ES ppm (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>15</td>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Sodium Molybdate</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

2 EH40 Workplace exposure limits, as amended.
3 Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003].

8.2. Exposure controls

8.2.1. Engineering measures
No special requirements. If exposure limits are exceeded, provide adequate ventilation.

8.2.2. Individual protection measures
Respiratory protection: Not normally needed. If exposure limits are exceeded, use an approved dust respirator (e.g., EN filter type P2).
Protective gloves: Recommended
Eye and face protection: Safety glasses
Other: None

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>Odour</th>
<th>Odour threshold</th>
<th>Vapour pressure @ 20°C</th>
<th>% Aromatics by weight</th>
<th>pH</th>
<th>Relative density</th>
<th>Weight per volume</th>
<th>Coefficient (water/oil)</th>
<th>Vapour density (air=1)</th>
<th>Rate of evaporation (ether=1)</th>
<th>Solubility in water</th>
<th>Oxidising properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>solid</td>
<td>None</td>
<td>not determined</td>
<td>not applicable</td>
<td>not applicable</td>
<td></td>
<td></td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>Insoluble</td>
<td>not applicable</td>
</tr>
</tbody>
</table>
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
None

10.5. Incompatible materials
Oleum, fuming Nitric Acid, aqua regia, Fluorine, HCL, and HF when used as a positive electrode.

10.6. Hazardous decomposition products
Carbon Monoxide, Carbon Dioxide and other toxic fumes.

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 may be aggravated by exposure.

Acute effects: Graphite dust may cause mechanical irritation to the skin, eyes and nasal passages. Sodium Molybdate may result in eye, skin or respiratory tract irritation.

Chronic effects: Repeated inhalation of nuisance dust in excess of exposure limits over an extended period of time may result in injury to the lungs. Prolonged, excessive inhalation of Graphite dust has caused emphysema and pneumoconiosis.

Carcinogenicity: As per 29 CFR 1910.1200 (Hazard Communication), this product contains no carcinogens as listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA) or Regulation (EC) No 1272/2008.

Aspiration hazard: Not applicable
Other information: None known

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
Not determined

12.2. Persistence and degradability
Graphite, Sodium Molybdate: inorganic substances, exist in nature.

12.3. Bioaccumulative potential
Not determined

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
Unused product is not a regulated waste. 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.
**European List of Wastes code:** Not determined

**SECTION 14: TRANSPORT INFORMATION**

14.1. UN number

<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>

14.2. UN proper shipping name

<table>
<thead>
<tr>
<th>ADR/RID/ADN/IMDG/ICAO</th>
<th>NON-HAZARDOUS, NON REGULATED</th>
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</thead>
<tbody>
<tr>
<td>TDG</td>
<td>NON-HAZARDOUS, NON REGULATED</td>
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<tr>
<td>US DOT</td>
<td>NON-HAZARDOUS, NON REGULATED</td>
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</table>

14.3. Transport hazard class(es)

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

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

<table>
<thead>
<tr>
<th>Authorisations under Title VII</th>
<th>Not applicable</th>
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</thead>
<tbody>
<tr>
<td>Restrictions under Title VIII</td>
<td>None</td>
</tr>
<tr>
<td>Other EU regulations</td>
<td>None</td>
</tr>
</tbody>
</table>

15.1.2. National regulations

**US EPA SARA TITLE III**

<table>
<thead>
<tr>
<th>312 Hazards</th>
<th>313 Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>None</td>
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<tr>
<td>Delayed</td>
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</tbody>
</table>

**Hazardous Materials Identification System (HMIS)**

<table>
<thead>
<tr>
<th>Health</th>
<th>FLammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>*</td>
</tr>
</tbody>
</table>

**Other national regulations:** None

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.
### Abbreviations and acronyms:
- 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
- BCF: Bioconcentration Factor
- 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
- NOAEL: No Observed Adverse Effect Level
- NOEL: No Observed Effect Level
- OSHA: Occupational Health & Safety Administration
- PBT: Persistent, Bioaccumulative and Toxic substance
- PEL: Permissible Exposure Limit
- (Q)SAR: Quantitative Structure-Activity Relationship
- REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (1907/2006/EC)
- RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
- SDS: Safety Data Sheet
- STEL: Short Term Exposure Limit
- STOT: Specific Target Organ Toxicity
- TDG: Transportation of Dangerous Goods (Canada)
- TLV: Threshold Limit Value
- 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 de la santé et de la sécurité du travail (CSST)
- European chemical Substances Information System (ESIS)
- European Chemicals Agency (ECHA) - Information on Chemicals
- Hazardous Substances Data Bank (HSDB)
- Hazardous Substances Information System (HSIS)
- Swedish Chemicals Agency (KEMI)

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

<table>
<thead>
<tr>
<th>Classification</th>
<th>Classification procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Relevant H-statements: None
### Relevant R-phrases: None
### Hazard pictogram names: Not applicable

### Changes to the SDS in this revision: Sections 1.3, 2.1, 2.2, 3, 16.
### Date of last revision: 26 April 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.