SAFETY DATA SHEET

Revision date: 26 April 2018  Initial date of issue: 12 July 2007  SDS No. 277-12a

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

1.1. Product identifier
ARC 5ES

1.2. Relevant identified uses of the substance or mixture and uses advised against
ARC Polymer Composite. Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The product is used as a fast cure patching material that applies like putty.

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): ProductMSDs@chesterton.com
E-mail: customer.service@chesterton.com

Supplier:

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

Skin Irrit. 2, H315
Skin Sens. 1, H317
Eye Irrit. 2, H319
Aquatic Chronic 3, H412

2.1.2. Classification according to WHMIS 1988
D2A: Very toxic materials causing other effects; D2B: Toxic materials causing other effects

2.1.3. Australian statement of hazardous nature
Hazardous according to criteria of Safe Work Australia.

2.1.4. Additional information
For full text of H-statements: see SECTIONS 2.2 and 16. The final cured material is considered nonhazardous.

2.2. Label elements
Hazard pictograms:

Signal word: Warning
Hazard statements:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:
P264 Wash hands thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves and eye/face protection.
P302/352 IF ON SKIN: Wash with plenty of soap and water.
P362/364 Take off contaminated clothing and wash it before reuse.
P333/313 If skin irritation or rash occurs: Get medical advice/attention.
P305/351/338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337/313 If eye irritation persists: Get medical advice/attention.
P501 Dispose of contents/container to an approved waste disposal plant.

Supplemental information:
None

2.3. Other hazards
None known

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>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>10-&lt; 25</td>
<td>25068-38-6</td>
<td>500-033-5</td>
<td>Skin Irrit. 2, H315, Skin Sens. 1, H317, Eye Irrit. 2, H319, Aquatic Chronic 2, H411</td>
</tr>
<tr>
<td>Talc (non-asbestiform)</td>
<td>30-60</td>
<td>14807-96-6</td>
<td>238-877-9</td>
<td>Not classified*</td>
</tr>
<tr>
<td>Silica (Quartz)</td>
<td>0.1-1</td>
<td>14808-60-7</td>
<td>238-878-4</td>
<td>Not classified*</td>
</tr>
<tr>
<td>Carbon black</td>
<td>&lt; 1</td>
<td>1333-86-4</td>
<td>215-609-9</td>
<td>Not classified*</td>
</tr>
</tbody>
</table>

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

*Substance with a workplace exposure limit.
For full text of H-statements: see SECTION 16.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: Not applicable
Skin contact: Remove contaminated clothing. Wash clothing before reuse. Wash skin with soap and water. Consult physician.
Eye contact: Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.
Ingestion: Do not induce vomiting. If person is conscious, rinse mouth with water and give small quantities of water to drink. Contact physician immediately.

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

Irritating to eyes and skin. May cause skin sensitization as evidenced by rashes or hives.

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 fog

Unsuitable extinguishing media: None known

5.2. Special hazards arising from the substance or mixture

Thermal decomposition may produce Carbon Monoxide, Carbon Dioxide, oxides of Sulfur and other toxic fumes.

5.3. Advice for firefighters

Cool exposed containers with water. 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

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

6.2. Environmental Precautions

Keep out of sewers, streams and waterways.

6.3. Methods and material for containment and cleaning up

Scoop up and transfer to a suitable container for disposal.

6.4. Reference to other sections

Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid eye contact and excessive skin contact. Wash with soap and water immediately after use. Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated and should be discarded. Utilize exposure controls and personal protection as specified in Section 8. Avoid creating and breathing dust during removal, drilling, grinding, sawing 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 PEL¹ ppm</th>
<th>mg/m³</th>
<th>ACGIH TLV² ppm</th>
<th>mg/m³</th>
<th>UK WEL³ ppm</th>
<th>mg/m³</th>
<th>AUSTRALIA ES⁴ ppm</th>
<th>mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Talc</td>
<td>20 mpcf</td>
<td>–</td>
<td>(resp) 2</td>
<td>(resp)</td>
<td>1 (resp)</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silica (Quartz) non-respirable</td>
<td>(resp) 0.05</td>
<td>(resp)</td>
<td>0.025 (resp)</td>
<td>0.1 (resp)</td>
<td>0.1 (resp)</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon black</td>
<td>–</td>
<td>3.5</td>
<td>–</td>
<td>3</td>
<td>3.5</td>
<td>–</td>
<td>3</td>
<td></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:
Not available

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

8.2. Exposure controls
8.2.1. Engineering measures
No special requirements. If it is necessary to alter the final cured product such that dust may be generated, use adequate dust extraction or damp down.

8.2.2. Individual protection measures
Respiratory protection: Not normally needed.
Protective gloves: Chemical resistant gloves (e.g., neoprene)
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>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>putty</td>
</tr>
<tr>
<td>Colour</td>
<td>gray and black</td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>not determined</td>
</tr>
<tr>
<td>% Volatile (by volume)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Flash point</td>
<td>None</td>
</tr>
<tr>
<td>Method</td>
<td>PM Closed Cup</td>
</tr>
<tr>
<td>Viscosity</td>
<td>&gt; 10 million cps @25°C</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>not determined</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 200°C (&gt; 392°F)</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>not determined</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>not applicable</td>
</tr>
<tr>
<td>Odour</td>
<td>sweet and amine odor</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>not determined</td>
</tr>
<tr>
<td>Vapour pressure @ 20°C</td>
<td>0</td>
</tr>
<tr>
<td>% Aromatics by weight</td>
<td>0</td>
</tr>
<tr>
<td>pH</td>
<td>not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>2.247 kg/l</td>
</tr>
<tr>
<td>Weight per volume</td>
<td>18.75 lbs/gal.</td>
</tr>
<tr>
<td>Coefficient (water/oil)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Vapour density (air=1)</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Rate of evaporation (ether=1)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>insoluble</td>
</tr>
<tr>
<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
No specific data.

10.5. Incompatible materials
No specific data.

10.6. Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced.
## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

**Primary route of exposure under normal use:** Skin and eye contact. Personnel with pre-existing skin and eye disorders and skin allergies may be aggravated by exposure.

**Acute toxicity -**

#### Oral:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>LD50, rat</td>
<td>&gt; 5000 mg/kg</td>
</tr>
</tbody>
</table>

#### Dermal:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>LD50, rabbit</td>
<td>&gt; 6000 mg/kg</td>
</tr>
</tbody>
</table>

#### Inhalation:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>LC50, rat, 5 h</td>
<td>No mortality at vapor saturation level</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation:** Irritating to skin.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>Skin irritation, rabbit</td>
<td>Moderate irritation / Severe irritation</td>
</tr>
</tbody>
</table>

**Serious eye damage/irritation:** Irritating to eyes.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>Eye irritation, rabbit</td>
<td>Mild irritation / Moderate irritation</td>
</tr>
</tbody>
</table>

**Respiratory or skin sensitisation:** May cause skin sensitization as evidenced by rashes or hives.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin (number average molecular weight &lt;= 700)</td>
<td>Skin sensitization, guinea pig</td>
<td>Sensitizing</td>
</tr>
</tbody>
</table>

**Germ cell mutagenicity:** Epoxy resin (number average molecular weight <= 700): 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. IARC has designated carbon black as possibly carcinogenic to humans (group 2B). The silica and carbon black in this product do not separate from the mixture or in of themselves become airborne, therefore, do not present a hazard in normal use. Epoxy resin (number average molecular weight <= 700): based on available data, the classification criteria are not met.

**Reproductive toxicity:** Epoxy resin (number average molecular weight <= 700): based on available data, the classification criteria are not met.

**STOT-single exposure:** Not expected to cause toxicity.

**STOT-repeated exposure:** Repeated or prolonged inhalation of Talc dust may cause chronic cough, shortness of breath, scarring of the lungs (pulmonary fibrosis) and mild symptomatic pneumoconiosis. 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. The silica and talc in this product do not separate from the mixture or in of themselves become airborne, therefore, do not present a hazard in normal use. Epoxy resin (number average molecular weight <= 700): not expected to cause toxicity.

**Aspiration hazard:** Based on available data, the classification criteria are not met.

**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

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

#### 12.2. Persistence and degradability

Epoxy resin: not readily biodegradable (OECD 301F, 28 days = 5%).

#### 12.3. Bioaccumulative potential

Epoxy resin: low potential for bioaccumulation. (log Kow = 2.64 – 3.78, BCF = 31).

#### 12.4. Mobility in soil

Putty. Insoluble in water. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). Epoxy resin: if product enters soil, it will be mobile and may contaminate groundwater.

#### 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

Unreacted components are a special waste (classified as hazardous according to 2008/98/EC). Combine resin and curative. The final cured material is considered nonhazardous. Landfill sealed containers with a properly licensed facility. May be incinerated at an appropriate facility. Check local, state and national/federal regulations and comply with the most stringent requirement.

### 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>
</tr>
</thead>
<tbody>
<tr>
<td>TDG</td>
<td>NON-HAZARDOUS, NON REGULATED</td>
</tr>
<tr>
<td>US DOT</td>
<td>NON-HAZARDOUS, NON REGULATED</td>
</tr>
</tbody>
</table>

#### 14.3. Transport hazard class(es)

<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>

#### 14.4. 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: Directive 94/33/EC on the protection of young people at work.

15.1.2. National regulations

US EPA SARA TITLE III

312 Hazards: 313 Chemicals:
Immediate None

Other national regulations: National implementation of the EC Directive referred to in section 15.1.1.

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)
- Chemical Classification and Information Database (CCID)
- 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>Eye Irrit. 2, H319</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin Irrit. 2, H315</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin Sens. 1, H317</td>
<td>Bridging principle &quot;Dilution&quot;</td>
</tr>
<tr>
<td>Aquatic Chronic 3, H412</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

**Relevant H-statements:**
- H315: Causes skin irritation.
- H317: May cause an allergic skin reaction.
- H319: Causes serious eye irritation.
- H411: Toxic to aquatic life with long lasting effects.

**Hazard pictogram names:** Exclamation mark

**Changes to the SDS in this revision:** Section 1.3.

**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.