MATERIAL SAFETY DATA SHEET

Product Name: Surgical Simplex® P Radiopaque Bone Cement

MSDS Date Created: 29 October, 2014

<table>
<thead>
<tr>
<th>Name:</th>
<th>Australian Supplier</th>
<th>New Zealand Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>Howmedica Intl S. de R.L.</td>
<td>Stryker Australia</td>
</tr>
<tr>
<td>Address:</td>
<td>Raheen Business Park</td>
<td>515 Mt Wellington Highway,</td>
</tr>
<tr>
<td></td>
<td>Limerick</td>
<td>Auckland,</td>
</tr>
<tr>
<td></td>
<td>Ireland</td>
<td>New Zealand, 1060</td>
</tr>
<tr>
<td>Phone No:</td>
<td>+353 61498 200</td>
<td>+64 09 573 1890</td>
</tr>
<tr>
<td>Fax No:</td>
<td>+353 56229 941</td>
<td>+64 09 573 1891</td>
</tr>
</tbody>
</table>

Surgical Simplex® P Radiopaque Bone Cement is a two component product containing:
- Surgical Simplex® P Radiopaque Powder
- Surgical Simplex® P Liquid

This MSDS includes both components.
1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>Manufacturer</th>
<th>Australian Supplier</th>
<th>New Zealand Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURGICAL SIMPLEX® P LIQUID</td>
<td>Howmedica Intl S. de R.L.</td>
<td>Stryker Australia</td>
<td>Stryker New Zealand</td>
</tr>
<tr>
<td>Synonym(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STRYKER SIMPLEX® P LIQUID</td>
<td>Raheen Business Park</td>
<td>8 Herbert St,</td>
<td>515 Mt Wellington</td>
</tr>
<tr>
<td></td>
<td>Limerick</td>
<td>St Leonards, NSW,</td>
<td>Highway, Auckland,</td>
</tr>
<tr>
<td></td>
<td>Ireland</td>
<td>Australia, 2065</td>
<td>New Zealand, 1060</td>
</tr>
<tr>
<td>Phone No.:</td>
<td>+353 61 498200</td>
<td>+61 02 9467 1000</td>
<td>+64 09 573 1890</td>
</tr>
<tr>
<td>Fax No.:</td>
<td>+353 56 229941</td>
<td>+61 02 9467 1010</td>
<td>+64 09 573 1891</td>
</tr>
<tr>
<td>EMERGENCY</td>
<td>+353 61 498200</td>
<td>13 11 26</td>
<td>0800 764 766</td>
</tr>
</tbody>
</table>

Contact Person: Colette Herbert, colette.herbert@stryker.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA AND HAZARDOUS SUBSTANCES [CLASSIFICATION] REGULATIONS 2001

HSNO classification(s)

3.1B Flammable liquids: high hazard.
6.1D (inhalation) Substances that are acutely toxic - Harmful.
6.1E (oral) Substances that are acutely toxic - May be harmful.
6.3B Substances that are mildly irritating to the skin.
6.4A Substances that are irritating to the eye.
6.5B Substances that are contact sensitisers.
6.9B (inhalation repeated) Harmful to human target organs or systems.
9.1B Substances that are ecotoxic in the aquatic environment.
9.3C Substances that are harmful to terrestrial vertebrates.

2.2 Label elements

Signal word: DANGER

Pictogram(s)

Hazard:
H225 Highly flammable liquid and vapour.
H303 May be harmful if swallowed.
H316 Causes mild skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.
H433 Harmful to terrestrial vertebrates.
Prevention

P102 Keep out of reach of children.
P103 Read label before use.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/tume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

P101 If medical advice is needed, have product container or label at hand.
P314 Get medical advice/attention if you feel unwell.
P331 Do NOT induce vomiting.
P363 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P364 Wash thoroughly after handling.
P371 In case of fire: Use appropriate media for extinction.
P391 Collect spillage.
P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal

P501 In the case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Regulations 2001. This may also include any method of disposal that must be avoided.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL METHACRYLATE</td>
<td>80-62-6</td>
<td>201-297-1</td>
<td>95.98%</td>
</tr>
<tr>
<td>N,N-DIMETHYLTOLUDINE</td>
<td>99-97-8</td>
<td>202-805-4</td>
<td>2.3%</td>
</tr>
<tr>
<td>HYDROQUINONE</td>
<td>123-31-9</td>
<td>204-617-8</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact the emergency contact listed above or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.
4.2 Most important symptoms and effects, both acute and delayed
See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture
Highly flammable. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Vapour may form explosive mixtures with air. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones etc. when handling. Earth containers when dispensing fluids.

5.3 Advice for firefighters
Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code
3YE
3 Foam
Y Self Contained Breathing apparatus and protective gloves.
E Evacuation of people in the vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment as detailed in Section 8 of the MSDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions
Prevent product from entering drains and waterways.

6.3 Methods of cleaning up
Contain spillage, then cover/absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, dark, well-ventilated area, removed from direct sunlight, incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled and protected from physical damage when not in use. Large storage areas should have appropriate ventilation and fire protection systems. Polymerises in light.

7.3 Specific end use(s)
No information provided.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Reference</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>WES (NZ)</td>
<td>--</td>
<td>2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>WES (NZ)</td>
<td>50</td>
<td>208</td>
<td>100</td>
<td>416</td>
</tr>
</tbody>
</table>

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. Maintain vapour levels below the recommended standard.

Personal Protection Equipment

Eye / Face: Wear safety glasses. When using large quantities or where heavy contamination is likely, wear a faceshield.

Hands: Wear PVA gloves.

Body: Wear coveralls. When using large quantities or where heavy contamination is likely, wear rubber boots and a rubber apron. If spraying, with prolonged use, or if in confined areas, wear impervious coveralls.

Respiratory: Wear a Type A-Class P1 (Organic gases/vapours and Particulate) respirator. At high vapour levels, wear a Type A (Organic vapour) respirator. If spraying, with prolonged use, or if in confined areas, wear an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance: COLOURLESS LIQUID
Odour: CHARACTERISTIC ODOUR
Odour threshold: NOT AVAILABLE
pH: NOT AVAILABLE
Melting point: NOT AVAILABLE
Boiling point: 100.5°C
Flash point: 11.5°C
Evaporation rate: NOT AVAILABLE
Flammability: HIGHLY FLAMMABLE
Upper explosion limit: 12.5 % (Methyl methacrylate)
Lower explosion limit: 2.1 % (Methyl methacrylate)
Vapour pressure: 40 mm Hg @ 25°C
Vapour density: NOT AVAILABLE
Solubility (water): INSOLUBLE
Partition coefficient: NOT AVAILABLE
Autoignition temperature: NOT AVAILABLE
Decomposition temperature: NOT AVAILABLE
Viscosity: NOT AVAILABLE
Explosive properties: NOT AVAILABLE
Oxidising properties: NOT AVAILABLE
Specific gravity: NOT AVAILABLE

9.2 Other information

Relative density: 0.949 @ 15.5°C
% Volatiles: NOT AVAILABLE
Density: NOT AVAILABLE
10. STABILITY AND REACTIVITY

10.1 Reactivity
In the supplied state, the product is stable and non-reactive. At the time of use, the powder and liquid are mixed, the mixture is designed to result in the exothermic polymeric formation of a soft pliable, dough like mass which as the reaction progresses becomes a hard cement like complex.

10.2 Chemical stability
Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions
Hydroquinone has been added to this product to avoid polymerization of the liquid component of product.

10.4 Conditions to avoid
Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
May polymerise in contact with oxidising agents (e.g. nitrates), acids (e.g. nitric acid), amines, UV light, alkalis (e.g. sodium hydroxide), or if heated. Polymerisation may generate heat with potential for fire-explosion.

10.6 Hazardous decomposition products
May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Health hazard summary</th>
<th>Eye</th>
<th>Inhalation</th>
<th>Skin</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmful - irritant. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. Chronic exposure may result in fatigue, headache, sleep disturbances, irritability, loss of memory and pains in the extremities. May cause sensitisation by skin contact.</td>
<td>Irritant. Contact may result in irritation, laceration, pain, redness, conjunctivitis and violent itching. May result in burns with prolonged contact.</td>
<td>Harmful - irritant. Over exposure may result in irritation of the nose and throat, coughing, headache and fatigue. High level exposure may result in breathing difficulties, chemical pneumonitis, pulmonary oedema and respiratory failure.</td>
<td>Irritant. Contact may result in drying and defatting of the skin, rash and dermatitis. May be absorbed through skin with harmful effects. May cause sensitisation by skin contact.</td>
<td>Toxic. Ingestion may result in nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in dizziness, drowsiness, liver and kidney damage, and unconsciousness. Aspiration or inhalation may cause chemical pneumonitis and pulmonary oedema.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity data</th>
<th>METHYL METHACRYLATE (80-62-6)</th>
<th>N,N-DIMETHYLTOLUDINE (99-97-8)</th>
<th>HYDROQUINONE (123-31-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCLo (inhalation)</td>
<td>17500 mg/kg/4.5 hours (rabbit)</td>
<td>212 mg/kg (mouse)</td>
<td>70 mg/kg (cat)</td>
</tr>
<tr>
<td>LD50 (ingestion)</td>
<td>3625 mg/kg (mouse)</td>
<td></td>
<td>100 mg/kg (mouse)</td>
</tr>
<tr>
<td>LD50 (skin)</td>
<td>&gt; 5000 mg/kg (rabbit)</td>
<td></td>
<td>115 mg/kg (rat)</td>
</tr>
<tr>
<td>TCLo (inhalation)</td>
<td>125 ppm (human - behavioural effect)</td>
<td></td>
<td>182 mg/kg (mouse)</td>
</tr>
<tr>
<td>LD50 (intraperitoneal)</td>
<td>100 mg/kg (mouse)</td>
<td></td>
<td>29 mg/kg (human)</td>
</tr>
<tr>
<td>LD50 (intravenous)</td>
<td>120 mg/kg (guinea pig)</td>
<td></td>
<td>50 mg/kg (cat)</td>
</tr>
<tr>
<td>LD50 (subcutaneous)</td>
<td>100 mg/kg (dog)</td>
<td></td>
<td>170 mg/kg (human)</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION
12.1 Toxicity
Toxic to aquatic organisms.

12.2 Persistence and degradability
No information provided.

12.3 Bioaccumulative potential
No information provided.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
If emitted into the atmosphere it will rapidly photodegrade. If released into soil or water methyl methacrylate will be principally lost by volatilisation, though in soil some leaching to groundwater will occur. Will biodegrade at a moderate rate. Not expected to bioconcentrate in fish.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste disposal: Mix components together (small amounts), absorb with sand, vermiculite or similar and dispose of to an approved landfill site. Ensure protective equipment is worn when mixing. Do not seal containers/tins until reaction is complete. Contact the manufacturer/supplier for additional information (if required). Prevent contamination of drains and waterways as environmental damage may result.

Legislation: Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD ACCORDING TO LAND TRANSPORT RULE: DANGEROUS GOODS 2005; NZS 5433:2012, UN, IMDG OR IATA

<table>
<thead>
<tr>
<th>LAND TRANSPORT (NZS 5433)</th>
<th>SEA TRANSPORT (IMDG / IMO)</th>
<th>AIR TRANSPORT (IATA / ICAO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN Number</td>
<td>1247</td>
<td>1247</td>
</tr>
<tr>
<td>14.2 Proper Shipping Name</td>
<td>METHYL METHACRYLATE MONOMER, INHIBITED</td>
<td>METHYL METHACRYLATE MONOMER, INHIBITED</td>
</tr>
<tr>
<td>14.3 Transport hazard class</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>14.5 Environmental hazards</td>
<td>Not a Marine Pollutant</td>
<td></td>
</tr>
<tr>
<td>14.6 Special precautions for user</td>
<td>3YE</td>
<td>3YE</td>
</tr>
<tr>
<td></td>
<td>F-E, S-D</td>
<td></td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Approval code: HSR002495
16. OTHER INFORMATION

Additional information

This product is used in conjunction with SURGICAL SIMPLEX® P RADIOPAQUE POWDER. Please consult the appropriate MSDS before use.

ACRYLIC - ACRYLAMIDE RESINS: These resins are generally of low toxicity. Toxicity increases with presence of significant concentrations of acrylic - acrylamide monomers. These monomers have been linked with the development of skin sensitisation.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

Abbreviations

ACGIH American Conference of Governmental Industrial Hygienists
CAS # Chemical Abstract Service number - used to uniquely identify chemical compounds
CCID Chemical Classification and Information Database (HSNO)
CNS Central Nervous System
EC No. EC No - European Community Number
EPA Environmental Protection Authority [New Zealand]
GHS Globally Harmonized System
HSNO Hazardous Substances and New Organisms
IARC International Agency for Research on Cancer
LC50 Lethal Concentration, 50% / Median Lethal Concentration
LD50 Lethal Dose, 50% / Median Lethal Dose
mg/m³ Milligrams per Cubic Metre
OEL Occupational Exposure Limit
PEL Permissible Exposure Limit
pH relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm Parts Per Million
REACH Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL Short-Term Exposure Limit
STOT-RE Specific target organ toxicity (repeated exposure)
STOT-SE Specific target organ toxicity (single exposure)
TLV Threshold Limit Value
TWA Time Weighted Average
1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier
Product name: SURGICAL SIMPLEX® P RADIOPAQUE POWDER
Synonym(s): STRYKER SURGICAL SIMPLEX® P RADIOPAQUE POWDER

1.2 Uses and uses advised against
Use(s): MEDICAL APPLICATIONS • ORTHOPAEDIC APPLICATIONS • TWO COMPONENT PACK

1.3 Details of the supplier of the product

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Australian Supplier</th>
<th>New Zealand Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Howmedica Intl S. de R.L.</td>
<td>Stryker Australia</td>
<td>Stryker New Zealand</td>
</tr>
<tr>
<td>Address:</td>
<td>Raheen Business Park</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limerick, Ireland</td>
<td></td>
</tr>
<tr>
<td>Phone No.:</td>
<td>+353 61 498200</td>
<td></td>
</tr>
<tr>
<td>Fax No.:</td>
<td>+353 56 229941</td>
<td></td>
</tr>
<tr>
<td>EMERGENCY</td>
<td>+353 61 498200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+61 02 9467 1000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+61 02 9467 1010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+64 09 573 1890</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+64 09 573 1891</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0800 764 766</td>
<td></td>
</tr>
</tbody>
</table>

Contact Person: Colette Herbert, colette.herbert@stryker.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA AND HAZARDOUS SUBSTANCES [CLASSIFICATION] REGULATIONS 2001

HSNO classification(s)
None allocated.

2.2 Label elements
No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards
No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLY(STYRENE-CO-METHYL METHACRYLATE)</td>
<td>25034-86-0</td>
<td>-</td>
<td>90%</td>
</tr>
<tr>
<td>BARIUM SULPHATE</td>
<td>7727-43-7</td>
<td>231-784-4</td>
<td>10%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures
Eye: If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation: If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion: For advice, contact the emergency contact listed above or a doctor (at once). If swallowed, do not induce vomiting. Ingestion is considered unlikely due to product form.

First aid facilities: No information provided.
4.2 Most important symptoms and effects, both acute and delayed
Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture
Non flammable. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Finely divided dust may form explosive mixtures with air.

5.3 Advice for firefighters
Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment (PPE) as detailed in Section 8 of the MSDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions
Prevent product from entering drains and waterways.

6.3 Methods of cleaning up
Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems.

7.3 Specific end use(s)
No information provided.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Reference</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium sulphate</td>
<td>WES (NZ)</td>
<td>--</td>
<td>10</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Biological limits
No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls
Avoid inhalation. Use in well ventilated areas. Maintain dust levels below the recommended exposure standard.

PPE
- **Eye / Face**: Wear dust-proof goggles.
- **Hands**: Wear PVC or rubber gloves.
- **Body**: When using large quantities or where heavy contamination is likely, wear coveralls.
- **Respiratory**: Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- **Appearance**: FINE WHITE POWDER
- **Odour**: ODOURLESS
- **Odour threshold**: NOT AVAILABLE
- **pH**: NOT AVAILABLE
- **Melting point**: NOT AVAILABLE
- **Boiling point**: NOT AVAILABLE
- **Flash point**: NOT RELEVANT
- **Evaporation rate**: NOT AVAILABLE
- **Flammability**: NON FLAMMABLE
- **Upper explosion limit**: NOT RELEVANT
- **Lower explosion limit**: NOT RELEVANT
- **Vapour pressure**: NOT AVAILABLE
- **Vapour density**: NOT AVAILABLE
- **Solubility (water)**: INSOLUBLE
- **Partition coefficient**: NOT AVAILABLE
- **Autoignition temperature**: NOT AVAILABLE
- **Decomposition temperature**: NOT AVAILABLE
- **Viscosity**: NOT AVAILABLE
- **Explosive properties**: NOT AVAILABLE
- **Oxidising properties**: NOT AVAILABLE
- **Specific gravity**: NOT AVAILABLE

9.2 Other information
- **Relative density**: 0.3 @ 20°C
- **% Volatiles**: NOT AVAILABLE

10. STABILITY AND REACTIVITY
10.1 Reactivity
In the supplied state, the product is stable and non-reactive. At the time of use, the powder and liquid are mixed, the mixture is designed to result in the exothermic polymeric formation of a soft pliable, dough like mass which as the reaction progresses becomes a hard cement like complex. Avoid contact with acids and or oxidizing materials.

10.2 Chemical stability
Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions
Polymerization is not expected to occur.

10.4 Conditions to avoid
Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products
May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.</td>
</tr>
<tr>
<td>Skin</td>
<td>Not classified as a skin irritant. Contact may result in mild irritation.</td>
</tr>
<tr>
<td>Eye</td>
<td>Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.</td>
</tr>
<tr>
<td>Sensitization</td>
<td>This product is not known to be a skin or respiratory sensitiser.</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>No evidence of mutagenic effects.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>No evidence of carcinogenic effects.</td>
</tr>
<tr>
<td>Reproductive</td>
<td>No evidence of reproductive effects.</td>
</tr>
<tr>
<td>STOT – single exposure</td>
<td>No known effects from this product.</td>
</tr>
<tr>
<td>STOT – repeated exposure</td>
<td>No known effects from this product.</td>
</tr>
<tr>
<td>Aspiration</td>
<td>This product does not present an aspiration hazard.</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No information provided.

12.2 Persistence and degradability
No information provided.

12.3 Bioaccumulative potential
No information provided.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste disposal</td>
<td>Collect and place in sealable containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).</td>
</tr>
<tr>
<td>Legislation</td>
<td>Dispose of in accordance with relevant local legislation.</td>
</tr>
</tbody>
</table>
14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD ACCORDING TO LAND TRANSPORT RULE:
DANGEROUS GOODS 2005; NZS 5433:2012, UN, IMDG OR IATA

<table>
<thead>
<tr>
<th></th>
<th>LAND TRANSPORT (NZS 5433)</th>
<th>SEA TRANSPORT (IMDG / IMO)</th>
<th>AIR TRANSPORT (IATA / ICAO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN Number</td>
<td>None Allocated</td>
<td>None Allocated</td>
<td>None Allocated</td>
</tr>
<tr>
<td>14.2 Proper Shipping Name</td>
<td>None Allocated</td>
<td>None Allocated</td>
<td>None Allocated</td>
</tr>
<tr>
<td>14.3 Transport hazard class</td>
<td>None Allocated</td>
<td>None Allocated</td>
<td>None Allocated</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>None Allocated</td>
<td>None Allocated</td>
<td>None Allocated</td>
</tr>
</tbody>
</table>

14.5 Environmental hazards  No information provided

14.6 Special precautions for user

| Hazchem code | None Allocated |

15. REGULATORY INFORMATION

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

| Approval code       | None allocated. |
| Group standard      | None allocated. |

Inventory listing(s)

AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, or are exempt.

NEW ZEALAND: NZIoC (New Zealand Inventory of Chemicals)
All components are listed on the NZIoC inventory, or are exempt.

16. OTHER INFORMATION

Additional information

This product is used in conjunction with Surgical Simplex® P Liquid. Please consult the appropriate SDS before use.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.
SURGICAL SIMPLEX® P RADIOPAQUE BONE CEMENT - POWDER

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>CAS #</td>
<td>Chemical Abstract Service number - used to uniquely identify chemical compounds</td>
</tr>
<tr>
<td>CCID</td>
<td>Chemical Classification and Information Database (HSNO)</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>EC No.</td>
<td>EC No - European Community Number</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Authority [New Zealand]</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>HSNO</td>
<td>Hazardous Substances and New Organisms</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration, 50% / Median Lethal Concentration</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose, 50% / Median Lethal Dose</td>
</tr>
<tr>
<td>mg/m³</td>
<td>Milligrams per Cubic Metre</td>
</tr>
<tr>
<td>OEL</td>
<td>Occupational Exposure Limit</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>pH</td>
<td>relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts Per Million</td>
</tr>
<tr>
<td>REACH</td>
<td>Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-Term Exposure Limit</td>
</tr>
<tr>
<td>STOT-RE</td>
<td>Specific target organ toxicity (repeated exposure)</td>
</tr>
<tr>
<td>STOT-SE</td>
<td>Specific target organ toxicity (single exposure)</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
</tbody>
</table>

Revision history

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Initial MSDS Creation</td>
</tr>
</tbody>
</table>

END OF MSDS