

# Experimental Flowable Composite (LV)

SDI Limited

Version No: 3.1.1.1

Safety Data Sheet according to WHS and ADG requirements

Issue Date: 02/05/2017

Print Date: 09/05/2017

L.GHS.AUS.EN

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

### Product Identifier

|                               |                                      |
|-------------------------------|--------------------------------------|
| Product name                  | Experimental Flowable Composite (LV) |
| Synonyms                      | Not Available                        |
| Other means of identification | Not Available                        |

### Relevant identified uses of the substance or mixture and uses advised against

|                          |                                                         |
|--------------------------|---------------------------------------------------------|
| Relevant identified uses | For filling of cavitated teeth by dental professionals. |
|--------------------------|---------------------------------------------------------|

### Details of the supplier of the safety data sheet

|                         |                                                   |                                                     |                                                                        |
|-------------------------|---------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------|
| Registered company name | SDI Limited                                       | SDI (North America) Inc.                            | SDI Brazil Industria E Comercio Ltda                                   |
| Address                 | 3-15 Brunston Street Bayswater VIC 3153 Australia | 1279 Hamilton Parkway Itasca IL 60143 United States | Rua Dr. Virgilio de Carvalho Pinto, 612 São Paulo CEP 05415-020 Brazil |
| Telephone               | +61 3 8727 7111                                   | +1 630 361 9200                                     | +55 11 3092 7100                                                       |
| Fax                     | +61 3 8727 7222                                   | Not Available                                       | +55 11 3092 7101                                                       |
| Website                 | www.sdi.com.au                                    | Not Available                                       | www.sdi.com.au                                                         |
| Email                   | info@sdi.com.au                                   | Not Available                                       | brasil@sdi.com.au                                                      |

|                         |                                         |
|-------------------------|-----------------------------------------|
| Registered company name | SDI Germany GmbH                        |
| Address                 | Hansestrasse 85 Cologne D-51149 Germany |
| Telephone               | +49 0 2203 9255 0                       |
| Fax                     | +49 0 2203 9255 200                     |
| Website                 | www.sdi.com.au                          |
| Email                   | germany@sdi.com.au                      |

### Emergency telephone number

|                                   |                 |                 |               |
|-----------------------------------|-----------------|-----------------|---------------|
| Association / Organisation        | SDI Limited     | Not Available   | Not Available |
| Emergency telephone numbers       | +61 3 8727 7111 | +61 3 8727 7111 | Not Available |
| Other emergency telephone numbers | 131126          | Not Available   | Not Available |

|                                   |               |
|-----------------------------------|---------------|
| Association / Organisation        | Not Available |
| Emergency telephone numbers       | Not Available |
| Other emergency telephone numbers | Not Available |

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

|                               |                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Poisons Schedule              | Not Applicable                                                                                                                  |
| Classification <sup>[1]</sup> | Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Skin Sensitizer Category 1                                    |
| Legend:                       | 1. Classification by vendor; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI |

### Label elements

|                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|
| Hazard pictogram(s) |  |
|---------------------|-------------------------------------------------------------------------------------|

|             |         |
|-------------|---------|
| SIGNAL WORD | WARNING |
|-------------|---------|

### Hazard statement(s)

|      |                         |
|------|-------------------------|
| H315 | Causes skin irritation. |
|------|-------------------------|

Continued...

## Experimental Flowable Composite (LV)

|      |                                      |
|------|--------------------------------------|
| H319 | Causes serious eye irritation.       |
| H317 | May cause an allergic skin reaction. |

## Precautionary statement(s) Prevention

|      |                                                                            |
|------|----------------------------------------------------------------------------|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P261 | Avoid breathing mist/vapours/spray.                                        |
| P272 | Contaminated work clothing should not be allowed out of the workplace.     |

## Precautionary statement(s) Response

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| P362           | Take off contaminated clothing and wash before reuse.                                                                            |
| P302+P352      | IF ON SKIN: Wash with plenty of soap and water.                                                                                  |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313      | If skin irritation or rash occurs: Get medical advice/attention.                                                                 |
| P337+P313      | If eye irritation persists: Get medical advice/attention.                                                                        |

## Precautionary statement(s) Storage

Not Applicable

## Precautionary statement(s) Disposal

|      |                                                                     |
|------|---------------------------------------------------------------------|
| P501 | Dispose of contents/container in accordance with local regulations. |
|------|---------------------------------------------------------------------|

## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

## Substances

See section below for composition of Mixtures

## Mixtures

| CAS No     | %[weight] | Name                                                   |
|------------|-----------|--------------------------------------------------------|
| 72869-86-4 | 20-30     | <u>diurethane dimethacrylate</u>                       |
| 24448-20-2 | 30-40     | <u>2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane</u> |
| 109-16-0   | 5-10      | <u>triethylene glycol dimethacrylate</u>               |
| 13760-80-0 | 5-10      | <u>ytterbium(III) fluoride</u>                         |

## SECTION 4 FIRST AID MEASURES

## Description of first aid measures

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye Contact  | If this product comes in contact with the eyes: <ul style="list-style-type: none"><li>▶ Wash out immediately with fresh running water.</li><li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li><li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li><li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li></ul> |
| Skin Contact | If skin contact occurs: <ul style="list-style-type: none"><li>▶ Immediately remove all contaminated clothing, including footwear.</li><li>▶ Flush skin and hair with running water (and soap if available).</li><li>▶ Seek medical attention in event of irritation.</li></ul>                                                                                                                                                                                                                                                  |
| Inhalation   | <ul style="list-style-type: none"><li>▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area.</li><li>▶ Other measures are usually unnecessary.</li></ul> If irritation continues, seek medical attention.                                                                                                                                                                                                                                                                                       |
| Ingestion    | Seek medical attention.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5 FIREFIGHTING MEASURES

## Extinguishing media

- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.
- ▶ Water spray or fog - Large fires only.

## Special hazards arising from the substrate or mixture

|                      |                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Fire Incompatibility | ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|

## Advice for firefighters

|               |                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire Fighting | <ul style="list-style-type: none"><li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li><li>▶ May be violently or explosively reactive.</li><li>▶ Wear full body protective clothing with breathing apparatus.</li></ul> |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Continued...

## Experimental Flowable Composite (LV)

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <ul style="list-style-type: none"> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Fight fire from a safe distance, with adequate cover.</li> <li>▶ If safe, switch off electrical equipment until vapour fire hazard removed.</li> <li>▶ Use water delivered as a fine spray to control the fire and cool adjacent area.</li> <li>▶ Avoid spraying water onto liquid pools.</li> <li>▶ <b>Do not</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> <li>▶ If safe to do so, remove containers from path of fire.</li> </ul> |
| Fire/Explosion Hazard | <ul style="list-style-type: none"> <li>▶ Non combustible.</li> <li>▶ Not considered a significant fire risk, however containers may burn.</li> </ul> Decomposes on heating and produces: <ul style="list-style-type: none"> <li>carbon dioxide (CO<sub>2</sub>)</li> <li>carbon monoxide (CO)</li> </ul> May emit poisonous fumes.<br>May emit corrosive fumes.                                                                                                                                                                                                                                                                                                  |
| HAZCHEM               | Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## SECTION 6 ACCIDENTAL RELEASE MEASURES

## Personal precautions, protective equipment and emergency procedures

See section 8

## Environmental precautions

See section 12

## Methods and material for containment and cleaning up

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minor Spills | <ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid contact with skin and eyes.</li> <li>▶ Wear impervious gloves and safety goggles.</li> <li>▶ Trowel up/scrape up.</li> <li>▶ Place spilled material in clean, dry, sealed container.</li> <li>▶ Flush spill area with water.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Major Spills | Minor hazard. <ul style="list-style-type: none"> <li>▶ Clear area of personnel.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Control personal contact with the substance, by using protective equipment as required.</li> <li>▶ Prevent spillage from entering drains or water ways.</li> <li>▶ Contain spill with sand, earth or vermiculite.</li> <li>▶ Collect recoverable product into labelled containers for recycling.</li> <li>▶ Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.</li> <li>▶ Wash area and prevent runoff into drains or waterways.</li> <li>▶ If contamination of drains or waterways occurs, advise emergency services.</li> </ul> |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 HANDLING AND STORAGE

## Precautions for safe handling

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safe handling     | <ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Prevent concentration in hollows and sumps.</li> <li>▶ <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li> <li>▶ <b>DO NOT allow material to contact humans, exposed food or food utensils.</b></li> <li>▶ Avoid contact with incompatible materials.</li> <li>▶ <b>When handling, DO NOT eat, drink or smoke.</b></li> <li>▶ Keep containers securely sealed when not in use.</li> <li>▶ Avoid physical damage to containers.</li> <li>▶ Always wash hands with soap and water after handling.</li> <li>▶ Work clothes should be laundered separately. Launder contaminated clothing before re-use.</li> <li>▶ Use good occupational work practice.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul> |
| Other information | Store between 10 and 25 deg. C.<br><b>Do not</b> store in direct sunlight.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Conditions for safe storage, including any incompatibilities

|                         |                                                                                                                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable container      | <ul style="list-style-type: none"> <li>▶ <b>DO NOT repack.</b> Use containers supplied by manufacturer only.</li> <li>▶ Check that containers are clearly labelled and free from leaks</li> </ul> |
| Storage incompatibility | <ul style="list-style-type: none"> <li>▶ Avoid storage with reducing agents.</li> </ul>                                                                                                           |

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

## Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

Continued...

INGREDIENT DATA

| Source                       | Ingredient              | Material name    | TWA       | STEL          | Peak          | Notes         |
|------------------------------|-------------------------|------------------|-----------|---------------|---------------|---------------|
| Australia Exposure Standards | ytterbium(III) fluoride | Fluorides (as F) | 2.5 mg/m3 | Not Available | Not Available | Not Available |

EMERGENCY LIMITS

| Ingredient                        | Material name                                                       | TEEL-1    | TEEL-2      | TEEL-3      |
|-----------------------------------|---------------------------------------------------------------------|-----------|-------------|-------------|
| diurethane dimethacrylate         | Diurethane dimethacrylate                                           | 120 mg/m3 | 1,300 mg/m3 | 7,900 mg/m3 |
| triethylene glycol dimethacrylate | Methacrylic acid, diester with triethylene glycol; (Polyester TGM3) | 33 mg/m3  | 360 mg/m3   | 2,100 mg/m3 |
| ytterbium(III) fluoride           | Ytterbium fluoride                                                  | 30 mg/m3  | 330 mg/m3   | 2,000 mg/m3 |

| Ingredient                                      | Original IDLH | Revised IDLH  |
|-------------------------------------------------|---------------|---------------|
| diurethane dimethacrylate                       | Not Available | Not Available |
| 2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane | Not Available | Not Available |
| triethylene glycol dimethacrylate               | Not Available | Not Available |
| ytterbium(III) fluoride                         | 500 mg/m3     | 250 mg/m3     |

MATERIAL DATA

Exposure controls

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Appropriate engineering controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.<br>The basic types of engineering controls are:<br>Process controls which involve changing the way a job activity or process is done to reduce the risk.<br>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.<br>Employers may need to use multiple types of controls to prevent employee overexposure.                                                                                   |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <table><tr><td>Type of Contaminant:</td><td>Air Speed:</td></tr><tr><td>solvent, vapours, degreasing etc., evaporating from tank (in still air).</td><td>0.25-0.5 m/s (50-100 f/min)</td></tr><tr><td>aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)</td><td>0.5-1 m/s (100-200 f/min.)</td></tr><tr><td>direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td><td>1-2.5 m/s (200-500 f/min.)</td></tr><tr><td>grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion)</td><td>2.5-10 m/s (500-2000 f/min.)</td></tr></table>                                                                                                              | Type of Contaminant:        | Air Speed:                                            | solvent, vapours, degreasing etc., evaporating from tank (in still air). | 0.25-0.5 m/s (50-100 f/min)                                | aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5-1 m/s (100-200 f/min.)       | direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) | 1-2.5 m/s (200-500 f/min.)                | grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion) | 2.5-10 m/s (500-2000 f/min.) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Type of Contaminant:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Air Speed:                  |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | solvent, vapours, degreasing etc., evaporating from tank (in still air).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.25-0.5 m/s (50-100 f/min) |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)                                                                                                                                                                                                                                                                                                    | 0.5-1 m/s (100-200 f/min.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)                                                                                                                                                                                                                                                                                                                                                         | 1-2.5 m/s (200-500 f/min.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion)                                                                                                                                                                                                                                                                                                                                                                    | 2.5-10 m/s (500-2000 f/min.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| Within each range the appropriate value depends on:                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| <table><tr><td>Lower end of the range</td><td>Upper end of the range</td></tr><tr><td>1: Room air currents minimal or favourable to capture</td><td>1: Disturbing room air currents</td></tr><tr><td>2: Contaminants of low toxicity or of nuisance value only.</td><td>2: Contaminants of high toxicity</td></tr><tr><td>3: Intermittent, low production.</td><td>3: High production, heavy use</td></tr><tr><td>4: Large hood or large air mass in motion</td><td>4: Small hood-local control only</td></tr></table> | Lower end of the range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Upper end of the range      | 1: Room air currents minimal or favourable to capture | 1: Disturbing room air currents                                          | 2: Contaminants of low toxicity or of nuisance value only. | 2: Contaminants of high toxicity                                                                                                                                                                                    | 3: Intermittent, low production. | 3: High production, heavy use                                                                                                                                  | 4: Large hood or large air mass in motion | 4: Small hood-local control only                                                                                                                    |                              |
| Lower end of the range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Upper end of the range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| 1: Room air currents minimal or favourable to capture                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1: Disturbing room air currents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| 2: Contaminants of low toxicity or of nuisance value only.                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2: Contaminants of high toxicity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| 3: Intermittent, low production.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3: High production, heavy use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| 4: Large hood or large air mass in motion                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4: Small hood-local control only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.                                                                                                                                                                                                          |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| Personal protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| Eye and face protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No special equipment for minor exposure i.e. when handling small quantities.<br>OTHERWISE:<br>▶ Safety glasses with side shields.<br>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent] |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |
| Skin protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | See Hand protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                                                       |                                                                          |                                                            |                                                                                                                                                                                                                     |                                  |                                                                                                                                                                |                                           |                                                                                                                                                     |                              |

## Experimental Flowable Composite (LV)

|                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                         |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Hands/feet protection                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> <li>▶ Rubber Gloves</li> </ul> <p>General warning: Do NOT use latex gloves! Use only recommended gloves - using the wrong gloves may increase the risk:</p> |                                                                                                                                                                                                                                                                                                                                                                         |  |
|                                                                                                                                                                                                                                                                                             | <b>Exposure condition</b><br>Short time use; (few minutes less than 0.5 hour)<br>Little physical stress                                                                                                                                                                                                              | Use of thin nitrile rubber gloves:<br>Nitrile rubber (0.1 mm)<br>Excellent tactility ("feel"), powder-free<br>Disposable<br>Inexpensive<br>Give adequate protection to low molecular weight acrylic monomers                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                             | <b>Exposure condition</b><br>Medium time use;<br>less than 4 hours<br>Physical stress (opening drums, using tools, etc.)                                                                                                                                                                                             | Use of medium thick nitrile rubber gloves<br>Nitrile rubber, NRL (latex) free; <0.45 mm<br>Moderate tactility ("feel"), powder-free<br>Disposable<br>Moderate price<br>Gives adequate protection for most acrylates up to 4 hours<br>Do NOT give adequate protection to low molecular weight monomers at exposures longer than 1 hour                                   |  |
|                                                                                                                                                                                                                                                                                             | <b>Exposure condition</b><br>Long time<br>Cleaning operations                                                                                                                                                                                                                                                        | Nitrile rubber, NRL (latex) free; >0.56 mm<br>low tactility ("feel"), powder free<br>High price<br>Gives adequate protection for most acrylates in combination with commonly used solvents up to 8 hours<br>Do NOT give adequate protection to low molecular weight monomers at exposures longer than 1 hour<br>Avoid use of ketones and acetates in wash-up solutions. |  |
| Where none of this gloves ensure safe handling (for example in long term handling of acrylates containing high levels of acetates and/ or ketones, use laminated multilayer gloves.<br>Guide to the Classification and Labelling of UV/EB Acrylates Third edition, 231 October 2007 - Cefic |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                         |  |
| Body protection                                                                                                                                                                                                                                                                             | See Other protection below                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                         |  |
| Other protection                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ P.V.C. apron.</li> <li>▶ Barrier cream.</li> <li>▶ Skin cleansing cream.</li> <li>▶ Eye wash unit.</li> </ul>                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                         |  |
| Thermal hazards                                                                                                                                                                                                                                                                             | Not Available                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                         |  |

## Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|------------------------|
| up to 10 x ES                      | A-AUS                | -                    | A-PAPR-AUS / Class 1   |
| up to 50 x ES                      | -                    | A-AUS / Class 1      | -                      |
| up to 100 x ES                     | -                    | A-2                  | A-PAPR-2 ^             |

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

## Information on basic physical and chemical properties

|                                              |                                                                                        |                                         |                |
|----------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------|----------------|
| Appearance                                   | Tooth coloured viscous/ flowable paste with ester-like odour, does not mix with water. |                                         |                |
| Physical state                               | Free-flowing Paste                                                                     | Relative density (Water = 1)            | 1.5-2.0        |
| Odour                                        | Not Available                                                                          | Partition coefficient n-octanol / water | Not Available  |
| Odour threshold                              | Not Available                                                                          | Auto-ignition temperature (°C)          | Not Available  |
| pH (as supplied)                             | Not Applicable                                                                         | Decomposition temperature               | Not Available  |
| Melting point / freezing point (°C)          | Not Available                                                                          | Viscosity (cSt)                         | Not Available  |
| Initial boiling point and boiling range (°C) | Gel before boiling                                                                     | Molecular weight (g/mol)                | Not Applicable |
| Flash point (°C)                             | Not Available                                                                          | Taste                                   | Not Available  |
| Evaporation rate                             | Not Available                                                                          | Explosive properties                    | Not Available  |
| Flammability                                 | Not Available                                                                          | Oxidising properties                    | Not Available  |
| Upper Explosive Limit (%)                    | Not Available                                                                          | Surface Tension (dyn/cm or mN/m)        | Not Available  |
| Lower Explosive Limit (%)                    | Not Available                                                                          | Volatile Component (%vol)               | Not Available  |
| Vapour pressure (kPa)                        | Not Available                                                                          | Gas group                               | Not Available  |

Continued...

## Experimental Flowable Composite (LV)

|                           |               |                       |                |
|---------------------------|---------------|-----------------------|----------------|
| Solubility in water (g/L) | Immiscible    | pH as a solution (1%) | Not Applicable |
| Vapour density (Air = 1)  | Not Available | VOC g/L               | Not Available  |

## SECTION 10 STABILITY AND REACTIVITY

|                                    |                                                                           |
|------------------------------------|---------------------------------------------------------------------------|
| Reactivity                         | See section 7                                                             |
| Chemical stability                 | Product is considered stable and hazardous polymerisation will not occur. |
| Possibility of hazardous reactions | See section 7                                                             |
| Conditions to avoid                | See section 7                                                             |
| Incompatible materials             | See section 7                                                             |
| Hazardous decomposition products   | See section 5                                                             |

## SECTION 11 TOXICOLOGICAL INFORMATION

## Information on toxicological effects

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhaled      | The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Ingestion    | The material has <b>NOT</b> been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.                                                                                                                                                       |
| Skin Contact | Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. |
| Eye          | Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.                                                                                                                                                                                                                                                                                                                                       |
| Chronic      | Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Experimental Flowable Composite (LV)            | TOXICITY                                     | IRRITATION    |
|-------------------------------------------------|----------------------------------------------|---------------|
|                                                 | Not Available                                | Not Available |
| diurethane dimethacrylate                       | TOXICITY                                     | IRRITATION    |
|                                                 | Oral (rat) LD50: >5000 mg/kg <sup>[1]</sup>  | Not Available |
| 2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane | TOXICITY                                     | IRRITATION    |
|                                                 | Not Available                                | Not Available |
| triethylene glycol dimethacrylate               | TOXICITY                                     | IRRITATION    |
|                                                 | Oral (rat) LD50: 10837 mg/kgd <sup>[2]</sup> | Not Available |
| ytterbium(III) fluoride                         | TOXICITY                                     | IRRITATION    |
|                                                 | Not Available                                | Not Available |

**Legend:** 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.\* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

| DIURETHANE DIMETHACRYLATE                       | * Possible carcinogen; possible sensitizer; possible irreversible effects * Polysciences MSDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE | <p>The chemical structure of hydroxylated diphenylalkanes or bisphenols consists of two phenolic rings joined together through a bridging carbon. This class of endocrine disruptors that mimic oestrogens is widely used in industry, particularly in plastics. Bisphenol A (BPA) and some related compounds exhibit oestrogenic activity in human breast cancer cell line MCF-7, but there were remarkable differences in activity. Several derivatives of BPA exhibited significant thyroid hormonal activity towards rat pituitary cell line GH3, which releases growth hormone in a thyroid hormone-dependent manner. However, BPA and several other derivatives did not show such activity. Results suggest that the 4-hydroxyl group of the A-phenyl ring and the B-phenyl ring of BPA derivatives are required for these hormonal activities, and substituents at the 3,5-positions of the phenyl rings and the bridging alkyl moiety markedly influence the activities.</p> <p>Bisphenols promoted cell proliferation and increased the synthesis and secretion of cell type-specific proteins. When ranked by proliferative potency, the longer the alkyl substituent at the bridging carbon, the lower the concentration needed for maximal cell yield; the most active compound contained two propyl chains at the bridging carbon. Bisphenols with two hydroxyl groups in the para position and an angular configuration are suitable for appropriate hydrogen bonding to the acceptor site of the oestrogen receptor.</p> <p>Based on the available oncogenicity data and without a better understanding of the carcinogenic mechanism the Health and Environmental Review Division (HERD), Office of Toxic Substances (OTS), of the US EPA previously concluded that all chemicals that contain the acrylate or methacrylate moiety (CH<sub>2</sub>=CHCOO or CH<sub>2</sub>=C(CH<sub>3</sub>)COO) should be considered to be a carcinogenic hazard</p> |

Continued...

## Experimental Flowable Composite (LV)

|                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                           | <p>unless shown otherwise by adequate testing.</p> <p>This position has now been revised and acrylates and methacrylates are no longer <i>de facto</i> carcinogens.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| YTTERBIUM(III) FLUORIDE                                                                                                                   | <p>Symptoms of acute lanthanide toxicity in rats are immediate defecation, writhing, ataxia (the inability to coordinate voluntary muscular movement), sedation, laboured respiration and reduced activity. Death is due mainly to respiratory and cardiac failure. The rare earths exhibit low toxicity following ingestion but may be toxic by the intraperitoneal route and mildly toxic when administered by the subcutaneous route. The production of skin and lung granulomas, following exposure, may also occur.</p> <p>for typical lanthanides:</p> <p>The symptoms of toxicity of the rare earth elements include writhing, ataxia, laboured respiration, walking on the toes with arched back and sedation. The rare earth elements exhibit low toxicity by ingestion exposure. However, the intraperitoneal route may be highly toxic while the subcutaneous route is poison to moderately toxic. The production of skin and lung granulomas after exposure to them requires extensive protection to prevent such exposure.</p> <p><b>Chronic Inhalation Toxicity:</b> An accumulation of insoluble lanthanide particles has been observed in the respiratory tract of humans following chronic occupational exposure and in rodents following chronic exposure to a similar lanthanide cerium oxide. Lymphoid hyperplasia in the bronchial lymph nodes was the critical inhalation health effect identified by the USEPA in a 2008 toxicological review of cerium oxide.</p> <p><b>Developmental/Reproductive Toxicity:</b> Lanthanum carbonate, did not affect fertility or produce any harm to the fetus in a rat study.</p> <p><b>Mutagenicity:</b> Cerium oxide, was negative in the Ames bacterial mutagenic test using bacterial strains TA135, TA1537, TA98, TA100, TA102, and WP2uvrA., and in the mouse <i>in vivo</i> micronucleus assay.</p> <p><b>Carcinogenicity:</b> Lanthanum carbonate, was not carcinogenic in a two-year oral rat study. Not assessed by IARC, NTP, or USEPA.</p> |
| DIURETHANE DIMETHACRYLATE & TRIETHYLENE GLYCOL DIMETHACRYLATE                                                                             | <p>The following information refers to contact allergens as a group and may not be specific to this product.</p> <p>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DIURETHANE DIMETHACRYLATE & 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE & TRIETHYLENE GLYCOL DIMETHACRYLATE & YTTERBIUM(III) FLUORIDE | <p>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DIURETHANE DIMETHACRYLATE & 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE                                                               | <p>UV (ultraviolet)/ EB (electron beam) acrylates are generally of low toxicity</p> <p>UV/EB acrylates are divided into two groups; "stenomeric" and "eurymeric" acrylates.</p> <p>The first group consists of well-defined acrylates which can be described by a simple idealised chemical; they are low molecular weight species with a very narrow weight distribution profile.</p> <p>The eurymeric acrylates cannot be described by an idealised structure and may differ fundamentally between various suppliers; they are of relatively high molecular weight and possess a wide weight distribution.</p> <p>Stenomeric acrylates are usually more hazardous than the eurymeric substances. Stenomeric acrylates are also well defined which allows comparison and exchange of toxicity data - this allows more accurate classification.</p> <p>The stenomerics cannot be classified as a group; they exhibit substantial variation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DIURETHANE DIMETHACRYLATE & 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE                                                               | <p>Where no "official" classification for acrylates and methacrylates exists, there has been cautious attempts to create classifications in the absence of contrary evidence. For example</p> <p>Monalkyl or monoarylesters of acrylic acids should be classified as R36/37/38 and R51/53</p> <p>Monoalkyl or monoaryl esters of methacrylic acid should be classified as R36/37/38</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE & YTTERBIUM(III) FLUORIDE                                                                 | <p>No significant acute toxicological data identified in literature search.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| Acute Toxicity                    | ☒ | Carcinogenicity          | ☒ |
| Skin Irritation/Corrosion         | ✓ | Reproductivity           | ☒ |
| Serious Eye Damage/Irritation     | ✓ | STOT - Single Exposure   | ☒ |
| Respiratory or Skin sensitisation | ✓ | STOT - Repeated Exposure | ☒ |
| Mutagenicity                      | ☒ | Aspiration Hazard        | ☒ |

Legend: ✗ – Data available but does not fill the criteria for classification  
✓ – Data available to make classification  
☒ – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## Toxicity

| Experimental Flowable Composite (LV) | ENDPOINT       | TEST DURATION (HR) | SPECIES                       | VALUE          | SOURCE         |
|--------------------------------------|----------------|--------------------|-------------------------------|----------------|----------------|
|                                      | Not Applicable | Not Applicable     | Not Applicable                | Not Applicable | Not Applicable |
| diurethane dimethacrylate            | ENDPOINT       | TEST DURATION (HR) | SPECIES                       | VALUE          | SOURCE         |
|                                      | EC50           | 48                 | Crustacea                     | >1.2mg/L       | 2              |
|                                      | EC50           | 72                 | Algae or other aquatic plants | >0.68mg/L      | 2              |
|                                      | EC50           | 72                 | Algae or other aquatic plants | >0.68mg/L      | 2              |

Continued...

|                                                 |                |                    |                               |                |                |
|-------------------------------------------------|----------------|--------------------|-------------------------------|----------------|----------------|
|                                                 | NOEC           | 72                 | Algae or other aquatic plants | >0.21mg/L      | 2              |
| 2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane | ENDPOINT       | TEST DURATION (HR) | SPECIES                       | VALUE          | SOURCE         |
|                                                 | Not Applicable | Not Applicable     | Not Applicable                | Not Applicable | Not Applicable |
| triethylene glycol dimethacrylate               | ENDPOINT       | TEST DURATION (HR) | SPECIES                       | VALUE          | SOURCE         |
|                                                 | LC50           | 96                 | Fish                          | 66.369mg/L     | 3              |
| ytterbium(III) fluoride                         | ENDPOINT       | TEST DURATION (HR) | SPECIES                       | VALUE          | SOURCE         |
|                                                 | Not Applicable | Not Applicable     | Not Applicable                | Not Applicable | Not Applicable |

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Persistence and degradability

|                                   |                         |                  |
|-----------------------------------|-------------------------|------------------|
| Ingredient                        | Persistence: Water/Soil | Persistence: Air |
| triethylene glycol dimethacrylate | LOW                     | LOW              |

Bioaccumulative potential

|                                   |                     |
|-----------------------------------|---------------------|
| Ingredient                        | Bioaccumulation     |
| triethylene glycol dimethacrylate | LOW (LogKOW = 1.88) |

Mobility in soil

|                                   |                |
|-----------------------------------|----------------|
| Ingredient                        | Mobility       |
| triethylene glycol dimethacrylate | LOW (KOC = 10) |

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

|                              |                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------|
| Product / Packaging disposal | Consult State Land Waste Management Authority for disposal.<br>Bury residue in an authorised landfill. |
|------------------------------|--------------------------------------------------------------------------------------------------------|

SECTION 14 TRANSPORT INFORMATION

Labels Required

|                  |                |
|------------------|----------------|
| Marine Pollutant | NO             |
| HAZCHEM          | Not Applicable |

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

|                                                                                                        |                                                                                               |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| DIURETHANE DIMETHACRYLATE(72869-86-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS                       |                                                                                               |
| Australia Inventory of Chemical Substances (AICS)                                                      |                                                                                               |
| 2,2-BIS[4-(2-METHACRYLOXY)ETHOXY]PHENYL]PROPANE(24448-20-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS |                                                                                               |
| Australia Inventory of Chemical Substances (AICS)                                                      |                                                                                               |
| TRIETHYLENE GLYCOL DIMETHACRYLATE(109-16-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS                 |                                                                                               |
| Australia Inventory of Chemical Substances (AICS)                                                      |                                                                                               |
| YTTERBIUM(III) FLUORIDE(13760-80-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS                         |                                                                                               |
| Australia Exposure Standards                                                                           | International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs |

## Experimental Flowable Composite (LV)

| National Inventory            | Status                                                                                                                                                                                   |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Australia - AICS              | N (ytterbium(III) fluoride)                                                                                                                                                              |
| Canada - DSL                  | N (diurethane dimethacrylate; ytterbium(III) fluoride)                                                                                                                                   |
| Canada - NDSL                 | N (2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane; triethylene glycol dimethacrylate)                                                                                                   |
| China - IECSC                 | Y                                                                                                                                                                                        |
| Europe - EINEC / ELINCS / NLP | Y                                                                                                                                                                                        |
| Japan - ENCS                  | N (diurethane dimethacrylate; 2,2-bis[4-(2-methacryloxy)ethoxy]phenyl]propane; triethylene glycol dimethacrylate)                                                                        |
| Korea - KECI                  | Y                                                                                                                                                                                        |
| New Zealand - NZIoC           | Y                                                                                                                                                                                        |
| Philippines - PICCS           | N (ytterbium(III) fluoride)                                                                                                                                                              |
| USA - TSCA                    | Y                                                                                                                                                                                        |
| <b>Legend:</b>                | Y = All ingredients are on the inventory<br>N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

## SECTION 16 OTHER INFORMATION

## Other information

## Ingredients with multiple cas numbers

| Name                      | CAS No                 |
|---------------------------|------------------------|
| diurethane dimethacrylate | 72869-86-4, 41137-60-4 |

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by SDI Limited using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

## Definitions and abbreviations

PC – TWA: Permissible Concentration-Time Weighted Average  
PC – STEL: Permissible Concentration-Short Term Exposure Limit  
IARC: International Agency for Research on Cancer  
ACGIH: American Conference of Governmental Industrial Hygienists  
STEL: Short Term Exposure Limit  
TEEL: Temporary Emergency Exposure Limit  
IDLH: Immediately Dangerous to Life or Health Concentrations  
OSF: Odour Safety Factor  
NOAEL :No Observed Adverse Effect Level  
LOAEL: Lowest Observed Adverse Effect Level  
TLV: Threshold Limit Value  
LOD: Limit Of Detection  
OTV: Odour Threshold Value  
BCF: BioConcentration Factors  
BEI: Biological Exposure Index

The information contained in the Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.

## Other information:

Prepared by: SDI Limited  
3-15 Brunson Street, Bayswater Victoria, 3153, Australia  
Phone Number: +61 3 8727 7111  
Department issuing SDS: Research and Development  
Contact: Technical Director