# Primeprint Temp

## Dentsply Sirona Pty Ltd

Chemwatch Hazard Alert Code: **3**

Chemwatch: **5535-90**
Version No: **2.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **12/04/2022**
Print Date: **12/04/2022**
S.GHS.AUS.EN.E

## SECTION 1 Identification of the substance / mixture and of the company / undertaking

### Product Identifier

| | |
|---|---|
| **Product name** | Primeprint Temp |
| **Chemical Name** | Not Applicable |
| **Synonyms** | Product code: 919; Primary UFI: 0G2W-V0Y1-F00V-N50C; Secondary UFI: 38JX-N0UM-Q00N-73KR; Tertiary UFI : QFDX-A06D-J00W-6YY4 |
| **Proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| **Chemical formula** | Not Applicable |
| **Other means of identification** | UFI:0G2W-V0Y1-F00V-N50C |

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

| | |
|---|---|
| **Relevant identified uses** | Light-curing single-component material fro the generative production of dental restorations such as temporary crowns and bridges.<br>Use according to manufacturer's directions. |

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

| | |
|---|---|
| **Registered company name** | **Dentsply Sirona Pty Ltd** |
| **Address** | 11-21 Gilby Road Mount Waverley VIC 3149 Australia |
| **Telephone** | 1300 55 29 29 |
| **Fax** | 1300 55 31 31 |
| **Website** | www.dentsplysirona.com.au |
| **Email** | clientservices@dentsplysirona.com |

### Emergency telephone number

| | |
|---|---|
| **Association / Organisation** | **Dentsply Sirona Pty Ltd** |
| **Emergency telephone numbers** | 1300 55 29 29 |
| **Other emergency telephone numbers** | Not Available |

## SECTION 2 Hazards identification

### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.**

**ChemWatch Hazard Ratings**

| | | Min | Max |
|---|---|---|---|
| Flammability | 1 | ▨ | |
| Toxicity | 1 | ▨ | |
| Body Contact | 2 | ▨▨ | |
| Reactivity | 2 | ▨▨ | |
| Chronic | 3 | ▨▨▨ | |

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

| | |
|---|---|
| **Poisons Schedule** | Not Applicable |
| **Classification [1]** | Skin Corrosion/Irritation Category 2, Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation Category 2A, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Carcinogenicity Category 1B, Reproductive Toxicity Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 2 |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI* |

### Label elements

| | |
|---|---|
| **Hazard pictogram(s)** |  |
| **Signal word** | **Danger** |

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### Hazard statement(s)

| | |
|---|---|
| **H315** | Causes skin irritation. |
| **H317** | May cause an allergic skin reaction. |
| **H319** | Causes serious eye irritation. |
| **H335** | May cause respiratory irritation. |
| **H350** | May cause cancer. |
| **H361f** | Suspected of damaging fertility. |
| **H411** | Toxic to aquatic life with long lasting effects. |

### Precautionary statement(s) Prevention

| | |
|---|---|
| **P201** | Obtain special instructions before use. |
| **P271** | Use only a well-ventilated area. |
| **P280** | Wear protective gloves, protective clothing, eye protection and face protection. |
| **P261** | Avoid breathing mist/vapours/spray. |
| **P273** | Avoid release to the environment. |
| **P264** | Wash all exposed external body areas thoroughly after handling. |
| **P272** | Contaminated work clothing should not be allowed out of the workplace. |

### Precautionary statement(s) Response

| | |
|---|---|
| **P308+P313** | IF exposed or concerned: Get medical advice/ attention. |
| **P302+P352** | IF ON SKIN: Wash with plenty of water and soap. |
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P312** | Call a POISON CENTER/doctor/physician/first aider/if you feel unwell. |
| **P333+P313** | If skin irritation or rash occurs: Get medical advice/attention. |
| **P337+P313** | If eye irritation persists: Get medical advice/attention. |
| **P362+P364** | Take off contaminated clothing and wash it before reuse. |
| **P391** | Collect spillage. |
| **P304+P340** | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |

### Precautionary statement(s) Storage

| | |
|---|---|
| **P405** | Store locked up. |
| **P403+P233** | Store in a well-ventilated place. Keep container tightly closed. |

### Precautionary statement(s) Disposal

| | |
|---|---|
| **P501** | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |

## SECTION 3 Composition / information on ingredients

### Substances

See section below for composition of Mixtures

### Mixtures

| CAS No | %[weight] | Name |
|---|---|---|
| 41637-38-1 | 45-<60 | bisphenol A dimethacrylate, ethoxylated |
| 72869-86-4 | 30-<35 | diurethane dimethacrylate |
| 6606-59-3 | 1-<5 | hexanediol dimethacrylate |
| 868-77-9 | 1-<5 | 2-hydroxyethyl methacrylate |
| 75980-60-8 | 1-<5 | diphenyl(2,4,6-trimethylbenzoyl)phosphine |
| 27813-02-1 | 1-<5 | 2-hydroxypropyl methacrylate |
| 162881-26-7 | <1 | phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available* | |

## SECTION 4 First aid measures

### Description of first aid measures

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|---|---|
| **Eye Contact** | If this product comes in contact with the eyes:<br>‣ Wash out immediately with fresh running water.<br>‣ 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.<br>‣ Seek medical attention without delay; if pain persists or recurs seek medical attention.<br>‣ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |

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| | |
|---|---|
| **Skin Contact** | If skin contact occurs:<br>‣ Immediately remove all contaminated clothing, including footwear.<br>‣ Flush skin and hair with running water (and soap if available).<br>‣ Seek medical attention in event of irritation. |
| **Inhalation** | ‣ If fumes or combustion products are inhaled remove from contaminated area.<br>‣ Lay patient down. Keep warm and rested.<br>‣ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.<br>‣ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.<br>‣ Transport to hospital, or doctor, without delay. |
| **Ingestion** | ‣ If swallowed do **NOT** induce vomiting.<br>‣ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.<br>‣ Observe the patient carefully.<br>‣ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.<br>‣ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.<br>‣ Seek medical advice. |

### 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** | ‣ Alert Fire Brigade and tell them location and nature of hazard.<br>‣ May be violently or explosively reactive.<br>‣ Wear full body protective clothing with breathing apparatus.<br>‣ Prevent, by any means available, spillage from entering drains or water course.<br>‣ Fight fire from a safe distance, with adequate cover.<br>‣ If safe, switch off electrical equipment until vapour fire hazard removed.<br>‣ Use water delivered as a fine spray to control the fire and cool adjacent area.<br>‣ Avoid spraying water onto liquid pools.<br>‣ **Do not** approach containers suspected to be hot.<br>‣ Cool fire exposed containers with water spray from a protected location.<br>‣ If safe to do so, remove containers from path of fire. |
| **Fire/Explosion Hazard** | ‣ Combustible.<br>‣ Slight fire hazard when exposed to heat or flame.<br>‣ Heating may cause expansion or decomposition leading to violent rupture of containers.<br>‣ On combustion, may emit toxic fumes of carbon monoxide (CO).<br>‣ May emit acrid smoke.<br>‣ Mists containing combustible materials may be explosive.<br>Combustion products include:<br>carbon dioxide ($CO_2$)<br>nitrogen oxides (NOx)<br>other pyrolysis products typical of burning organic material.<br>May emit clouds of acrid smoke<br>When heated at high temperatures many isocyanates decompose rapidly generating a vapour which pressurises containers, possibly to the point of rupture. Release of toxic and/or flammable isocyanate vapours may then occur |
| **HAZCHEM** | •3Z |

## 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** | Environmental hazard - contain spillage.<br>‣ Clean up all spills immediately.<br>‣ Avoid breathing vapours and contact with skin and eyes.<br>‣ Control personal contact with the substance, by using protective equipment.<br>‣ Contain and absorb spill with sand, earth, inert material or vermiculite.<br>‣ Wipe up.<br>‣ Place in a suitable, labelled container for waste disposal. |
| **Major Spills** | ‣ Clear area of personnel and move upwind.<br>‣ Alert Fire Brigade and tell them location and nature of hazard.<br>‣ Wear full body protective clothing with breathing apparatus. |

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|---|---|
| | - Prevent, by all means available, spillage from entering drains or water courses.<br>- Consider evacuation (or protect in place).<br>- No smoking, naked lights or ignition sources.<br>- Increase ventilation.<br>- Stop leak if safe to do so.<br>- Water spray or fog may be used to disperse / absorb vapour.<br>- Contain or absorb spill with sand, earth or vermiculite.<br>- Collect recoverable product into labelled containers for recycling.<br>- Collect solid residues and seal in labelled drums for disposal.<br>- Wash area and prevent runoff into drains.<br>- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.<br>- If contamination of drains or waterways occurs, advise emergency services.<br>Environmental hazard - contain spillage.<br>- **DO NOT** touch the spill material |

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

## SECTION 7 Handling and storage

### Precautions for safe handling

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|---|---|
| **Safe handling** | - Most acrylic monomers have low viscosity therefore pouring, material transfer and processing of these materials do not necessitate heating.<br>- Viscous monomers may require heating to facilitate handling. To facilitate product transfer from original containers, product must be heated to no more than 60 deg. C. (140 F.), for not more than 24 hours.<br>- Do NOT use localised heat sources such as band heaters to heat/ melt product.<br>- Do NOT use steam.<br>- Hot boxes or hot rooms are recommended for heating/ melting material. The hot box or hot room should be set a maximum temperature of 60 deg. C. (140 F.).<br>- Do NOT overheat - this may compromise product quality and /or result in an uncontrolled hazardous polymerisation.<br>- If product freezes, heat as indicated above and mix gently to redistribute the inhibitor. Product should be consumed in its entirety after heating/ melting; avoid multiple "reheats" which may affect product quality or result in product degradation.<br>- Product should be packaged with inhibitor(s). Unless inhibited, product may polymerise, raising temperature and pressure, possibly rupturing container. Check inhibitor level periodically, adding to bulk material if needed. In addition, the product's inhibitor(s) require the presence of dissolved oxygen. Maintain, at a minimum, the original headspace in the product container and do NOT blanket or mix with oxygen-free gas as it renders the inhibitor ineffective. Ensure air space (oxygen) is present during product heating / melting.<br>- Store product indoors at temperatures greater than the product's freeing point (or greater than 0 deg. C. (32 F).) if no freezing point available and below 38 deg. C (100 F.).<br>- Avoid prolonged storage (longer than shelf-life) storage temperatures above 38 deg. C (100 F.).<br>- Store in tightly closed containers in a properly vented storage area away from heat, sparks, open flame, strong oxidisers, radiation and other initiators.<br>- Prevent contamination by foreign materials.<br>- Prevent moisture contact.<br>- Use only non-sparking tools and limit storage time. Unless specified elsewhere, shelf-life is 6 months from receipt.<br>- **DO NOT** allow clothing wet with material to stay in contact with skin<br>- Overheating of ethoxylates/ alkoxylates in air should be avoided. When some ethoxylates are heated vigorously in the presence of air or oxygen, at temperatures exceeding 160 C, they may undergo exothermic oxidative degeneration resulting in self-heating and autoignition.<br>- Nitrogen blanketing will minimise the potential for ethoxylate oxidation. Prolonged storage in the presence of air or oxygen may cause product degradation. Oxidation is not expected when stored under a nitrogen atmosphere. Inert gas blanket and breathing system needed to maintain color stability. Use dry inert gas having at least -40 C dew point.<br>- Trace quantities of ethylene oxide may be present in the material. Although these may accumulate in the headspace of storage and transport vessels, concentrations are not expected to exceed levels which might produce a flammability or worker exposure hazard.<br>- Avoid all personal contact, including inhalation.<br>- Wear protective clothing when risk of exposure occurs.<br>- Use in a well-ventilated area.<br>- Prevent concentration in hollows and sumps.<br>- **DO NOT** enter confined spaces until atmosphere has been checked.<br>- Avoid smoking, naked lights or ignition sources.<br>- Avoid contact with incompatible materials.<br>- When handling, **DO NOT** eat, drink or smoke.<br>- Keep containers securely sealed when not in use.<br>- Avoid physical damage to containers.<br>- Always wash hands with soap and water after handling.<br>- Work clothes should be laundered separately.<br>- Use good occupational work practice.<br>- Observe manufacturer's storage and handling recommendations contained within this SDS.<br>- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions. |
| **Other information** | Store in the dark.<br>Ethoxylates/ alkoxylates react slowly with air or oxygen and may generate potentially sensitising intermediates (haptens).. Storage under heated conditions in the presence of air or oxygen increases reaction rate. For example, after storing at 95 F/ 35 C for 30 days in the presence of air, there is measurable oxidation of the ethoxylate. Lower temperatures will allow for longer storage time and higher temperatures will shorten the storage time if stored under an air or oxygen atmosphere.<br>- Polymerisation may occur slowly at room temperature.<br>- Storage requires stabilising inhibitor content and dissolved oxygen content to be monitored. Refer to manufacturer's recommended levels.<br>- **DO NOT** overfill containers so as to maintain free head space above product.<br>- Blanketing or sparging with nitrogen or oxygen free gas will deactivate stabiliser.<br>- Store below 38 deg. C.<br>- Store in original containers.<br>- Keep containers securely sealed.<br>- Store in a cool, dry, well-ventilated area.<br>- Store away from incompatible materials and foodstuff containers.<br>- Protect containers against physical damage and check regularly for leaks.<br>- Observe manufacturer's storage and handling recommendations contained within this SDS. |

### Conditions for safe storage, including any incompatibilities

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|---|---|
| **Suitable container** | - Metal can or drum<br>- Packaging as recommended by manufacturer.<br>- Check all containers are clearly labelled and free from leaks. |
| **Storage incompatibility** | - Polymerisation may occur slowly at room temperature.<br>- Storage requires stabilising inhibitor content and dissolved oxygen content to be monitored. Refer to manufacturer's recommended levels.<br>- **DO NOT** overfill containers so as to maintain free head space above product.<br>- Blanketing or sparging with nitrogen or oxygen free gas will deactivate stabiliser.<br>- Store below 38 deg. C.<br>for multifunctional acrylates:<br>- Avoid exposure to free radical initiators (peroxides, persulfates) , iron, rust, oxidisers, and strong acids and strong bases.<br>- Avoid heat, flame, sunlight, X-rays or ultra-violet radiation.<br>- Storage beyond expiration date, may initiate polymerisation. Polymerisation of large quantities may be violent (even explosive)<br>- A range of exothermic decomposition energies for isocyanates is given as 20-30 kJ/mol.<br>- The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment.<br>- For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.<br>BRETHERICK: Handbook of Reactive Chemical Hazards, 4th Edition |

## SECTION 8 Exposure controls / personal protection

### Control parameters

**Occupational Exposure Limits (OEL)**

**INGREDIENT DATA**

Not Available

**Emergency Limits**

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|---|---|---|---|
| diurethane dimethacrylate | 120 mg/m3 | 1,300 mg/m3 | 7,900 mg/m3 |
| 2-hydroxyethyl methacrylate | 1.9 mg/m3 | 21 mg/m3 | 1,000 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| bisphenol A dimethacrylate, ethoxylated | Not Available | Not Available |
| diurethane dimethacrylate | Not Available | Not Available |
| hexanediol dimethacrylate | Not Available | Not Available |
| 2-hydroxyethyl methacrylate | Not Available | Not Available |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | Not Available | Not Available |
| 2-hydroxypropyl methacrylate | Not Available | Not Available |
| phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide | Not Available | Not Available |

**Occupational Exposure Banding**

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|---|---|---|
| bisphenol A dimethacrylate, ethoxylated | E | ≤ 0.1 ppm |
| diurethane dimethacrylate | E | ≤ 0.1 ppm |
| hexanediol dimethacrylate | E | ≤ 0.1 ppm |
| 2-hydroxyethyl methacrylate | E | ≤ 0.1 ppm |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | E | ≤ 0.01 mg/m³ |
| 2-hydroxypropyl methacrylate | E | ≤ 0.1 ppm |
| phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide | E | ≤ 0.01 mg/m³ |
| ***Notes:*** | *Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.* | |

### Exposure controls

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|---|---|
| **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.<br>- Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.<br>- Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upon completion of |

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the assigned task and before engaging in other activities not associated with the isolated system.
- Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping systems, with any sample ports or openings closed while the carcinogens are contained within.
- Open-vessel systems are prohibited.
- Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation.
- Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
- For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
- Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
- Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 0.76 m/sec with a minimum of 0.64 m/sec. Design and construction of the fume hood requires that insertion of any portion of the employees body, other than hands and arms, be disallowed.

**Personal protection**

**Eye and face protection**

- Safety glasses with side shields.
- Chemical goggles.
- 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

**Hands/feet protection**

**NOTE:**
- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
· Contaminated gloves should be replaced.
As defined in ASTM F-739-96 in any application, gloves are rated as:
· Excellent when breakthrough time > 480 min
· Good when breakthrough time > 20 min
· Fair when breakthrough time < 20 min
· Poor when glove material degrades
For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.
It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task.
Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:
· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
General warning: Do NOT use latex gloves! Use only recommended gloves - using the wrong gloves may increase the risk:

| | |
|---|---|
| **Exposure condition**<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 tactibility ("feel"), powder-free<br>Disposable<br>Inexpensive<br>Give adequate protection to low molecular weigh acrylic monomers |
| **Exposure condition**<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 tactibility ("feel"), powder-free<br>Disposable<br>Moderate price |

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| | |
| --- | --- |
| | 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 |
| **Exposure condition**<br>Long time<br>Cleaning operations | Nitrile rubber, NRL (latex) free; >0.56 mm<br>low tactibility ("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.
Guide to the Classification and Labelling of UV/EB Acrylates Third edition, 231 October 2007 - Cefic

| | |
| --- | --- |
| **Body protection** | See Other protection below |
| **Other protection** | ‣ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]<br>‣ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent]<br>‣ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.<br>‣ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.<br>‣ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.<br>‣ Overalls.<br>‣ P.V.C apron.<br>‣ Barrier cream.<br>‣ Skin cleansing cream.<br>‣ Eye wash unit. |

### Respiratory protection

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

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

| Required minimum protection factor | Maximum gas/vapour concentration present in air p.p.m. (by volume) | Half-face Respirator | Full-Face Respirator |
| --- | --- | --- | --- |
| up to 10 | 1000 | A-AUS / Class1 P3 | - |
| up to 50 | 1000 | - | A-AUS / Class 1 P3 |
| up to 50 | 5000 | Airline * | - |
| up to 100 | 5000 | - | A-2 P3 |
| up to 100 | 10000 | - | A-3 P3 |
| 100+ | | | Airline** |

* - Continuous Flow ** - Continuous-flow or positive pressure demand
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(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Avoid inhalation.

## SECTION 9 Physical and chemical properties

### Information on basic physical and chemical properties

| | |
| --- | --- |
| **Appearance** | Tooth Like coloured liquid with a Faintly ester-like odour; not miscible with water Coloured |

| | | | |
| --- | --- | --- | --- |
| **Physical state** | Liquid | **Relative density (Water = 1)** | 1.1 |
| **Odour** | Characteristic, Slight | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | Not Available |
| **pH (as supplied)** | Not Applicable | **Decomposition temperature** | >190 |
| **Melting point / freezing point (°C)** | Not Available | **Viscosity (cSt)** | Not Available |
| **Initial boiling point and boiling range (°C)** | Not Available | **Molecular weight (g/mol)** | Not Applicable |
| **Flash point (°C)** | >100 | **Taste** | Not Available |
| **Evaporation rate** | Not Available | **Explosive properties** | Not Available |
| **Flammability** | Not Applicable | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | Not Available | **Surface Tension (dyn/cm or mN/m)** | Not Available |

**Continued...**

| | | | |
|---|---|---|---|
| **Lower Explosive Limit (%)** | Not Available | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | Negligible | **Gas group** | Not Available |
| **Solubility in water** | Immiscible | **pH as a solution (Not Available%)** | Not Available |
| **Vapour density (Air = 1)** | Not Available | **VOC g/L** | Not Available |

## SECTION 10 Stability and reactivity

| | |
|---|---|
| **Reactivity** | See section 7 |
| **Chemical stability** | ‣ Polymerisation may occur at elevated temperatures.<br>‣ Polymerisation may be accompanied by generation of heat as exotherm.<br>‣ Process is self accelerating as heating causes more rapid polymerisation.<br>‣ Exotherm may cause boiling with generation of acrid, toxic and flammable vapour.<br>‣ Polymerisation and exotherm may be violent if contamination with strong acids, amines or catalysts occurs.<br>‣ Polymerisation and exotherm of material in bulk may be uncontrollable and result in rupture of storage tanks.<br>‣ Polymerisation may occur if stabilising inhibitor becomes depleted by aging.<br>‣ Stabilising inhibitor requires dissolved oxygen to be present in liquid for effective action.<br>‣ Specific storage requirements must be met for stability on ageing and transport. |
| **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 can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.<br>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.<br>No report of respiratory illness in humans as a result of exposure to multifunctional acrylates has been found.<br>Inhalation hazard is increased at higher temperatures.<br>Acute effects from inhalation of high vapour concentrations may be chest and nasal irritation with coughing, sneezing, headache and even nausea. |
| **Ingestion** | Accidental ingestion of the material may be damaging to the health of the individual. |
| **Skin Contact** | This material can cause inflammation of the skin on contact in some persons.<br>The material may accentuate any pre-existing dermatitis condition<br>All multifunctional acrylates (MFA) produce skin disorders and sensitise the skin and inflammation. Vapours generated by the heat of milling may occur in sufficient concentration to produce inflammation.<br>Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. |
| **Eye** | This material can cause eye irritation and damage in some persons. |
| **Chronic** | Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.<br>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.<br>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.<br>There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information.<br><br>Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.<br>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.<br>Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.<br>Sensitisation may give severe responses to very low levels of exposure, i.e. hypersensitivity. |

| | TOXICITY | IRRITATION |
|---|---|---|
| **Primeprint Temp** | Not Available | Not Available |
| **bisphenol A dimethacrylate, ethoxylated** | dermal (rat) LD50: >2000 mg/kg[1] | Not Available |
| | Oral (Rat) LD50; >2000 mg/kg[1] | |
| **diurethane dimethacrylate** | dermal (rat) LD50: >2000 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| | Oral (Rat) LD50; >2000 mg/kg[2] | Skin: no adverse effect observed (not irritating)[1] |
| **hexanediol dimethacrylate** | Oral (Rat) LD50; >2000 mg/kg[1] | Skin: no adverse effect observed (not irritating)[1] |

Continued...

| | TOXICITY | IRRITATION |
|---|---|---|
| **2-hydroxyethyl methacrylate** | Dermal (rabbit) LD50: >3000 mg/kg[2] | Eye (rabbit): SEVERE * |
| | Oral (Mouse) LD50; 3275 mg/kg[2] | Eye: adverse effect observed (irritating)[1] |
| | | Skin (rabbit): non-irritating* |
| | | Skin: no adverse effect observed (not irritating)[1] |

| | TOXICITY | IRRITATION |
|---|---|---|
| **diphenyl(2,4,6-trimethylbenzoyl)phosphine** | dermal (rat) LD50: >2000 mg/kg[1] | Eye (rabbit): non-irritating * |
| | Oral (Rat) LD50; >5000 mg/kg[1] | Skin (rabbit): non-irritating * |

| | TOXICITY | IRRITATION |
|---|---|---|
| **2-hydroxypropyl methacrylate** | Oral (Rat) LD50; 5050 mg/kg[2] | Eye: adverse effect observed (irritating)[1] |
| | | Skin: no adverse effect observed (not irritating)[1] |

| | TOXICITY | IRRITATION |
|---|---|---|
| **phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide** | dermal (rat) LD50: >2000 mg/kg[1] | Eye (rabbit): non-irritant * |
| | Oral (Rat) LD50; >2000 mg/kg[1] | Skin (rabbit): non-irritant * |

***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*

| | |
|---|---|
| **Primeprint Temp** | The various members of the bisphenol family produce hormone like effects, seemingly as a result of binding to estrogen receptor-related receptors (ERRs; not to be confused with estrogen receptors)<br>Polyethers (such as ethoxylated surfactants and polyethylene glycols) are highly susceptible to being oxidized in the air. They then form complex mixtures of oxidation products.<br>Animal testing reveals that whole the pure, non-oxidised surfactant is non-sensitizing, many of the oxidation products are sensitisers. The oxidization products also cause irritation.<br>A suspected estrogen-related receptors (ERR) binding agent:<br>Estrogen-related receptors (ERR, oestrogen-related receptors) are so named because of sequence homology with estrogen receptors but do not appear to bind estrogens or other tested steroid hormones. The ERR family have been demonstrated to control energy homeostasis, oxidative metabolism and mitochondrial biogenesis ,while effecting mammalian physiology in the heart, brown adipose tissue, white adipose tissue, placenta, macrophages, and demonstrated additional roles in diabetes and cancer.<br>ERRs bind enhancers throughout the genome where they exert effects on gene regulation<br>Although their overall functions remain uncertain, they also share DNA-binding sites, co-regulators, and target genes with the conventional estrogen receptors ERalpha and ERbeta and may function to modulate estrogen signaling pathways.<br>· ERR-alpha has wide tissue distribution but it is most highly expressed in tissues that preferentially use fatty acids as energy sources such as kidney, heart, brown adipose tissue, cerebellum, intestine, and skeletal muscle. ERRalpha has been detected in normal adrenal cortex tissues, in which its expression is possibly related to adrenal development, with a possible role in fetal adrenal function, in dehydroepiandrosterone (DHEAS) production in adrenarche, and also in steroid production of post-adrenarche/adult life. DHEA and other adrenal androgens such as androstenedione, although relatively weak androgens, are responsible for the androgenic effects of adrenarche, such as early pubic and axillary hair growth, adult-type body odor, increased oiliness of hair and skin, and mild acne.<br>· ERR-beta is a nuclear receptor . Its function is unknown; however, a similar protein in mouse plays an essential role in placental development<br>· ERR-gamma is a nuclear receptor that behaves as a constitutive activator of transcription. There is evidence that bisphenol A functions as an endocrine disruptor by binding strongly to ERRgamma BPA as well as its nitrated and chlorinated metabolites seems to binds strongly to ERR-gamma (dissociation constant = 5.5 nM), but not to the estrogen receptor (ER). BPA binding to ERR-gamma preserves its basal constitutive activity.Different expression of ERR-gamma in different parts of the body may account for variations in bisphenol A effects. For instance, ERR-gamma has been found in high concentration in the placenta, explaining reports of high bisphenol A accumulation there |
| **DIURETHANE DIMETHACRYLATE** | * Possible carcinogen; possible sensitizer; possible irreversible effects * Polysciences MSDS The skin sensitising potential of the test substance was investigated in a Local Lymph Node Assay (LLNA) in mice according to OECD Guideline 429 and in compliance with GLP (Vogel, 2009). The highest technically achievable test substance concentration was 50% (w/w) in dimethylformamide. To determine the highest non-irritant test concentration, a pre-test was performed in two animals. Two mice were treated with concentrations of 25 and 50% each on three consecutive days. No signs of irritation or systemic toxicity were observed at the tested concentrations. In the main study, four female CBA/CaOlaHsd mice per test group were treated with the test substance at concentrations of 10, 25 and 50% (w/w) in dimethylformamide or with vehicle alone for three consecutive days by open application on the ears (25 µL/ear). Three days after the last exposure, all animals were injected with 3H-methyl thymidine and approximately after five hours the draining (auricular) lymph nodes were excised and pooled for each test group. After precipitating the DNA of the lymph node cells, radioactivity measurements were performed. Treatment with test substance concentrations of 10, 25 and 50% (w/w) in dimethylformamide resulted in DPM values per lymph node of 1266.3, 1363.5 and 3562.1, respectively. The SI values calculated for the substance concentrations 10, 25 and 50% were 1.58, 1.70 and 4.44, respectively. The EC3 value was calculated to be 36.9%. Based on the results, the test substance was regarded as a skin sensitizer under the conditions of the test. Repeat Dose Toxicity: NOAEL = 100 mg/kg bw/day for males NOAEL = 300 mg/kg bw/day for females The lowest observed adverse effect level (LOAEL) in male animals is 300 mg/kg bw/day. According to Annex I of Regulation (EC) No 1272/2008 classification as STOT RE Category 2 is applicable, when significant toxic effects observed in a 90-day repeated-dose study conducted in experimental animals are seen to occur within the guidance value ranges of 10 < C = 100 mg/kg bw/day. These guidance values can be used as a basis to extrapolate equivalent guidance values for toxicity studies of greater or lesser duration, using dose/exposure time extrapolation similar to Habers rule for inhalation, which states essentially that the effective dose is directly proportional to the exposure concentration and the duration of exposure. The assessment shall be done on a case-by- case basis; for a 28-day study the guidance value is increased by a factor of three. The available repeated dose toxicity study was conducted in combination with the reproductive/developmental toxicity screening test. Male animals were exposed to the test substance for 56 days. Thus, the guidance value is increased by a factor of 1.6 leading to a guidance value range of 16 < C = 160 mg/kg bw/day for a classification as STOT RE Category 2. The LOAEL of 300 mg/kg/bw/day in the present study is above the guidance value for a classification with regard to repeated exposure. Thus, the available data on oral repeated dose toxicity do not meet the criteria for classification according to Regulation (EC) No 1272/2008, and is therefore conclusive but not sufficient for classification. Genetic toxicity: The available data on genetic toxicity are not sufficient for classification according to Regulation (EC) No 1272/2008. Gene mutation in bacteria A bacterial gene mutation assay with the test substance was performed in accordance with OECD Guideline 471 and in compliance with GLP (Paulus, 2009). In two independent experiments, the Salmonella typhimurium strains TA 97a, TA 98, TA 100, TA 102 and TA 1535 were exposed to the test substance dissolved in DMSO using either the preincubation or the plate incorporation method. Test substance concentrations of 50, 150, 500, 1501 and 5004 µg/plate were selected for the plate incorporation test with and without metabolic activation. In the second experiment, 312, 624, 1247, 2493 |

**Continued...**

| | |
|---|---|
| | and 4986 µg/plate were selected for the preincubation method with and without metabolic activation. No signs of cytotoxicity were observed up to and including the limit concentration. Up to 5000 µg/plate, the test substance did not induce an increase in the mutation frequency of the tester strains in the presence and absence of a metabolic activation system. The determined vehicle values for the spontaneous revertants of the controls and all positive control values were within the range of historical data. Under the conditions of this experiment, the test substance did not show mutagenicity in the selected S. typhimurium strains in the presence and absence of metabolic activation. In vitro cytogenicity An in vitro micronucleus assay was performed with the test substance (Schweikl, 2001). In two independent experiments, Chinese hamster lung fibroblasts were exposed to the test substance dissolved in DMSO at concentrations of 11.75, 23.5, 35.25 µg/mL for 24 h in the absence of metabolic activation. Cytotoxicity of the test substance was observed and the TC50 value was assessed to be 24 µg/mL. At cytotoxic concentration levels of the test substance (= 24 µg/mL) the numbers of micronuclei were slightly increased in the absence of metabolic activation. Ethyl methanesulphonate was used as positive control and produced a distinct increase in micronuclei frequency indicating that the test conditions were adequate. Under the conditions of this experiment, the potential of the test substance to induce micronuclei is equivocal. In vitro mutagenicity in mammalian cells An in vitro HPRT assay was performed with the test substance (Schweikl, 1998). In three replicate cultures Chinese hamster lung fibroblasts were exposed to the test substance dissolved in DMSO at concentrations of 11.75, 23.5, 35.25 µg/mL for 24 h in the absence of metabolic activation. Cytotoxicity of the test substance was observed at concentrations = 23.5 µg/mL. No mutagenic activity of UDMA was detected. Ethyl methanesulphonate was used as positive control and produced a distinct increase in mutant frequency indicating that the test conditions were adequate. Thus, under the conditions of this experiment, the test substance did not show mutagenicity in V79 cells without metabolic activation. Due to the positive result in the in vitro micronucleus test without metabolic activation at cytotoxic concentrations a micronucleus test in vivo should be conducted to conclude on genotoxic potential of the test substance. Reproductive toxicity: The available data on toxicity to reproduction do not meet the criteria for classification according to Regulation (EC) 1272/2008, and are therefore conclusive but not sufficient for classification. reproductive toxicity: NOAEL >= 1000 mg/kg bw/day for males and females of the parental generation systemic toxicity: NOAEL = 100 mg/kg bw/day for males and 300 mg/kg bw/day for females of the parental generation A reliable sub-acute study regarding reproductive/developmental toxicity is available for the test substance. The potential reproductive or developmental toxicity of the test substance was assessed in a sub-acute combined repeated dose toxicity study with the reproductive/developmental toxicity screening test in Hsd.Han: Wistar rats performed according to OECD Guideline 422 and in compliance with GLP. Three groups of 12 male and 12 female rats received the test substance in polyethylene glycol as vehicle at doses of 100, 300 or 600 mg/kg bw/day orally via gavage at concentrations of 0, 25, 75 and 150 mg/mL corresponding to a 4 mL/kg bw dosing volume. A control group of 12 animals/sex received the vehicle only. In addition, 5 animals/sex were added to the control and high dose group to assess the reversibility of any effects observed at the high dose level (recovery group). All animals of the parental generation were dosed prior to mating (14 days) and throughout mating. In addition, males received the test item or vehicle after mating up to the day before necropsy (altogether for 56 days). Females were additionally exposed through the gestation period and up to lactation days 13 - 21, i.e. up to the day before necropsy (altogether for 56, 57 or 64 days). Observations included mortality, clinical signs, body weight, food consumption, mating, pregnancy and delivery process, lactation as well as development of offspring. The dams were allowed to litter, and rear their offspring up to day 13 post-partum. Litters were weighed and offspring were observed for possible abnormalities and were euthanized on post-natal day 13 or shortly thereafter. Blood samples were collected for determination of serum levels of thyroid hormones (T4) from all pups per litter at termination on post-natal day 13. No adverse effect on mortality, clinical signs, body weight or necropsy findings were detected in the offspring terminated as scheduled. Thyroid homone levels (T4) in pups on post-natal day 13 were not affected. The anogenital distance (male and female) or nipple retention (male) was not affected due to treatment with the test substance. For the parental animals pale livers and histopathological changes in the liver (hepatic lipidosis) were observed at 300 mg/kg bw/day for males and 1000 mg/kg bw/day for females. Thus, under the conditions of this study, the NOAEL of the test substance for systemic toxicity of the parental generation following oral administration via gavage for 56 days is 100 mg/kg bw/day in male Wistar rats. The corresponding NOAEL in female Wistar rats following oral administration via gavage for 56, 57 or 64 days is 300 mg/kg bw/day. The corresponding NOAEL for the offspring is 1000 mg/kg bw/day. * REACh Dossier |
| **2-HYDROXYETHYL METHACRYLATE** | Dermal (rabbit): >5000 mg/kg* Effects persist beyond 21 days |
| **2-HYDROXYPROPYL METHACRYLATE** | for CAS 963-26-2 2-hydroxypropyl methacrylate NOTE: Allergic contact dermatitis is reported following exposure of guinea pigs (mild) and humans (severe). for CAS 27813-02-1 1-hydroxypropyl methacrylate |
| **PHENYLBIS(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE** | Sensitisation (guinea pigs): skin sensitiser; 3/10 animals showed positive response (slight erythema). Mutagenicity: non-mutagenic (human lymphocytes); non-clastogenic Subchronic toxicity (rats): oral administration of 15, 150 or 1000 mg/kg to rats for 28 days was not found to cause any signs of toxicity.The no observable effect level (NOEL) was 1000 mg/kg. |
| **Primeprint Temp & BISPHENOL A DIMETHACRYLATE, ETHOXYLATED & DIURETHANE DIMETHACRYLATE & HEXANEDIOL DIMETHACRYLATE** | UV (ultraviolet) / EB (electron beam) acrylates are generally of low toxicity. UV/EB acrylates are divided into two groups the “stenomeric” and “eurymeric” acrylates. Stenomeric acrylates are usually more hazardous than the eurymeric substances. |
| **Primeprint Temp & BISPHENOL A DIMETHACRYLATE, ETHOXYLATED** | 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.<br>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.<br>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.<br>In vitro cell models were used to evaluate the ability of 22 bisphenols (BPs) to induce or inhibit estrogenic and androgenic activity. BPA, Bisphenol AF (BPAF), bisphenol Z (BPZ), bisphenol C (BPC), tetramethyl bisphenol A (TMBPA), bisphenol S (BPS), bisphenol E (BPE), 4,4-bisphenol F (4,4-BPF), bisphenol AP (BPAP), bisphenol B (BPB), tetrachlorobisphenol A (TCBPA), and benzylparaben (PHBB) induced estrogen receptor (ER)alpha and/or ERbeta-mediated activity. With the exception of BPS, TCBPA, and PHBB, these same BPs were also androgen receptor (AR) antagonists. Only 3 BPs were found to be ER antagonists. Bisphenol P (BPP) selectively inhibited ERbeta-mediated activity and 4-(4-phenylmethoxyphenyl)sulfonylphenol (BPS-MPE) and 2,4-bisphenol S (2,4-BPS) selectively inhibited ERalpha-mediated activity. None of the BPs induced AR-mediated activity. |
| **Primeprint Temp & BISPHENOL A DIMETHACRYLATE, ETHOXYLATED & DIURETHANE DIMETHACRYLATE & HEXANEDIOL DIMETHACRYLATE & 2-HYDROXYPROPYL METHACRYLATE** | 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 (CH2=CHCOO or CH2=C(CH3)COO) should be considered to be a carcinogenic hazard unless shown otherwise by adequate testing.<br>This position has now been revised and acrylates and methacrylates are no longer *de facto* carcinogens.<br>Where no "official" classification for acrylates and methacrylates exists, there have been cautious attempts to create classifications in the absence of contrary evidence. For example<br>Monalkyl or monoarylesters of acrylic acids should be classified as R36/37/38 and R51/53<br>Monoalkyl or monoaryl esters of methacrylic acid should be classified as R36/37/38 |
| **BISPHENOL A DIMETHACRYLATE, ETHOXYLATED & DIURETHANE DIMETHACRYLATE & 2-HYDROXYETHYL** | The following information refers to contact allergens as a group and may not be specific to this product.<br>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 |

**Continued...**

| | |
|---|---|
| **METHACRYLATE & 2-HYDROXYPROPYL METHACRYLATE & PHENYLBIS(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE** | 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. |
| **BISPHENOL A DIMETHACRYLATE, ETHOXYLATED & DIURETHANE DIMETHACRYLATE & HEXANEDIOL DIMETHACRYLATE & 2-HYDROXYETHYL METHACRYLATE & 2-HYDROXYPROPYL METHACRYLATE** | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. 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. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production. |
| **BISPHENOL A DIMETHACRYLATE, ETHOXYLATED & HEXANEDIOL DIMETHACRYLATE** | No significant acute toxicological data identified in literature search. |
| **DIURETHANE DIMETHACRYLATE** | Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test, oral (OECD 422), rat: |

| | | | |
|---|---|---|---|
| **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 either not available or does not fill the criteria for classification*
✓ *– Data available to make classification*

## SECTION 12 Ecological information

### Toxicity

| | Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **Primeprint Temp** | Not Available | Not Available | Not Available | Not Available | Not Available |
| **bisphenol A dimethacrylate, ethoxylated** | Not Available | Not Available | Not Available | Not Available | Not Available |
| **diurethane dimethacrylate** | NOEC(ECx) | 72h | Algae or other aquatic plants | 0.21mg/l | 2 |
| | LC50 | 96h | Fish | 10.1mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >0.68mg/l | 2 |
| | EC50 | 48h | Crustacea | >1.2mg/l | 2 |
| **hexanediol dimethacrylate** | NOEC(ECx) | 72h | Algae or other aquatic plants | 1.11mg/l | 2 |
| | LC50 | 96h | Fish | 4.5mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | 5.33mg/l | 2 |
| **2-hydroxyethyl methacrylate** | NOEC(ECx) | 504h | Crustacea | 24.1mg/l | 2 |
| | LC50 | 96h | Fish | >100mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | 345mg/l | 2 |
| | EC50 | 48h | Crustacea | 210mg/l | 2 |
| **diphenyl(2,4,6-trimethylbenzoyl)phosphine** | NOEC(ECx) | 96h | Fish | 1mg/l | 2 |
| | LC50 | 96h | Fish | 1-10mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >2.01mg/l | 2 |
| | EC50 | 48h | Crustacea | 3.53mg/l | 2 |
| **2-hydroxypropyl methacrylate** | LC50 | 96h | Fish | 833mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >97.2mg/l | 2 |
| | EC50 | 48h | Crustacea | >143mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | 45.2mg/l | 2 |

**Continued...**

| | Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide** | NOEC(ECx) | 48h | Crustacea | 0.003mg/l | 2 |
| | LC50 | 96h | Fish | >0.09mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >0.26mg/l | 2 |
| | EC50 | 48h | Crustacea | >1.175mg/l | 2 |
| ***Legend:*** | *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 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* | | | | |

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
**DO NOT** discharge into sewer or waterways.

### Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| hexanediol dimethacrylate | LOW | LOW |
| 2-hydroxyethyl methacrylate | LOW | LOW |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | HIGH | HIGH |
| 2-hydroxypropyl methacrylate | LOW | LOW |

### Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| hexanediol dimethacrylate | MEDIUM (LogKOW = 4.1732) |
| 2-hydroxyethyl methacrylate | LOW (BCF = 1.54) |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | MEDIUM (LogKOW = 3.8723) |
| 2-hydroxypropyl methacrylate | LOW (BCF = 3.2) |

### Mobility in soil

| Ingredient | Mobility |
|---|---|
| hexanediol dimethacrylate | LOW (KOC = 314.2) |
| 2-hydroxyethyl methacrylate | HIGH (KOC = 1.043) |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | LOW (KOC = 188300) |
| 2-hydroxypropyl methacrylate | LOW (KOC = 10) |

## SECTION 13 Disposal considerations

### Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.<br>A Hierarchy of Controls seems to be common - the user should investigate:<br>‣ Reduction<br>‣ Reuse<br>‣ Recycling<br>‣ Disposal (if all else fails)<br>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.<br>‣ **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>‣ It may be necessary to collect all wash water for treatment before disposal.<br>‣ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.<br>‣ Where in doubt contact the responsible authority.<br>Removal of bisphenol A (BPA) from aqueous solutions was accomplished by adsorption of enzymatically generated quinone derivatives on chitosan beads. The use of chitosan in the form of beads was found to be more effective because heterogeneous removal of BPA with chitosan beads was much faster than homogeneous removal of BPA with chitosan solutions, and the removal efficiency was enhanced by increasing the amount of chitosan beads dispersed in the BPA solutions and BPA was completely removed by quinone adsorption in the presence of chitosan beads more than 0.10 cm3/cm3. In addition, a variety of bisphenol derivatives were completely or effectively removed by the procedure constructed in this study, although the enzyme dose or the amount of chitosan beads was further increased as necessary for some of the bisphenol derivatives used.<br>M. Suzuki, and E Musashi J Appl Polym Sci, 118(2):721 - 732; October 2010<br>‣ **DO NOT** recycle spilled material.<br>‣ Consult State Land Waste Management Authority for disposal.<br>‣ Neutralise spill material carefully and decontaminate empty containers and spill residues with 10% ammonia solution plus detergent or a proprietary decontaminant prior to disposal.<br>‣ **DO NOT** seal or stopper drums being decontaminated as $CO_2$ gas is generated and may pressurise containers.<br>‣ Puncture containers to prevent re-use.<br>‣ Bury or incinerate residues at an approved site. |

**Continued...**

## SECTION 14 Transport information

### Labels Required

| | |
|---|---|
| |  |
| **Marine Pollutant** |  |
| **HAZCHEM** | •3Z |

### Land transport (ADG)

| | |
|---|---|
| **UN number** | 3082 |
| **UN proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| **Transport hazard class(es)** | Class: 9<br>Subrisk: Not Applicable |
| **Packing group** | III |
| **Environmental hazard** | Environmentally hazardous |
| **Special precautions for user** | Special provisions: 274 331 335 375 AU01<br>Limited quantity: 5 L |

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082
are not subject to this Code when transported by road or rail in;
(a) packagings;
(b) IBCs; or
(c) any other receptacle not exceeding 500 kg(L).
- Australian Special Provisions (SP AU01) - ADG Code 7th Ed.

### Air transport (ICAO-IATA / DGR)

| | |
|---|---|
| **UN number** | 3082 |
| **UN proper shipping name** | Environmentally hazardous substance, liquid, n.o.s. * |
| **Transport hazard class(es)** | ICAO/IATA Class: 9<br>ICAO / IATA Subrisk: Not Applicable<br>ERG Code: 9L |
| **Packing group** | III |
| **Environmental hazard** | Environmentally hazardous |
| **Special precautions for user** | Special provisions: A97 A158 A197 A215<br>Cargo Only Packing Instructions: 964<br>Cargo Only Maximum Qty / Pack: 450 L<br>Passenger and Cargo Packing Instructions: 964<br>Passenger and Cargo Maximum Qty / Pack: 450 L<br>Passenger and Cargo Limited Quantity Packing Instructions: Y964<br>Passenger and Cargo Limited Maximum Qty / Pack: 30 kg G |

### Sea transport (IMDG-Code / GGVSee)

| | |
|---|---|
| **UN number** | 3082 |
| **UN proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| **Transport hazard class(es)** | IMDG Class: 9<br>IMDG Subrisk: Not Applicable |
| **Packing group** | III |
| **Environmental hazard** | Marine Pollutant |
| **Special precautions for user** | EMS Number: F-A, S-F<br>Special provisions: 274 335 969<br>Limited Quantities: 5 L |

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

Not Applicable

**Continued...**

### Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name | Group |
|---|---|
| bisphenol A dimethacrylate, ethoxylated | Not Available |
| diurethane dimethacrylate | Not Available |
| hexanediol dimethacrylate | Not Available |
| 2-hydroxyethyl methacrylate | Not Available |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | Not Available |
| 2-hydroxypropyl methacrylate | Not Available |
| phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide | Not Available |

### Transport in bulk in accordance with the ICG Code

| Product name | Ship Type |
|---|---|
| bisphenol A dimethacrylate, ethoxylated | Not Available |
| diurethane dimethacrylate | Not Available |
| hexanediol dimethacrylate | Not Available |
| 2-hydroxyethyl methacrylate | Not Available |
| diphenyl(2,4,6-trimethylbenzoyl)phosphine | Not Available |
| 2-hydroxypropyl methacrylate | Not Available |
| phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide | Not Available |

## SECTION 15 Regulatory information

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

**bisphenol A dimethacrylate, ethoxylated is found on the following regulatory lists**

Australian Inventory of Industrial Chemicals (AIIC)

**diurethane dimethacrylate is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australian Inventory of Industrial Chemicals (AIIC)

**hexanediol dimethacrylate is found on the following regulatory lists**

Australian Inventory of Industrial Chemicals (AIIC)

**2-hydroxyethyl methacrylate is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australian Inventory of Industrial Chemicals (AIIC)

**diphenyl(2,4,6-trimethylbenzoyl)phosphine is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australian Inventory of Industrial Chemicals (AIIC)

**2-hydroxypropyl methacrylate is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australian Inventory of Industrial Chemicals (AIIC)

**phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australian Inventory of Industrial Chemicals (AIIC)

### National Inventory Status

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | No (diurethane dimethacrylate; hexanediol dimethacrylate) |
| Canada - NDSL | No (bisphenol A dimethacrylate, ethoxylated; 2-hydroxyethyl methacrylate; diphenyl(2,4,6-trimethylbenzoyl)phosphine; 2-hydroxypropyl methacrylate; phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | No (bisphenol A dimethacrylate, ethoxylated) |
| Japan - ENCS | No (diurethane dimethacrylate) |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | No (bisphenol A dimethacrylate, ethoxylated) |

**Continued...**

| National Inventory | Status |
|---|---|
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | No (bisphenol A dimethacrylate, ethoxylated; diurethane dimethacrylate; hexanediol dimethacrylate) |
| Vietnam - NCI | Yes |
| Russia - FBEPH | No (bisphenol A dimethacrylate, ethoxylated; diurethane dimethacrylate; hexanediol dimethacrylate) |
| ***Legend:*** | *Yes = All CAS declared ingredients are on the inventory*<br>*No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.* |

## SECTION 16 Other information

| | |
|---|---|
| **Revision Date** | 12/04/2022 |
| **Initial Date** | 12/04/2022 |

### Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee 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
ES: Exposure Standard
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
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

**end of SDS**