# 419D-P-BK Overcoat Pen — Black

## MG Chemicals UK Limited

Version No: **A-2.00**
Safety data sheet according to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

Issue Date: **26/11/2021**
Revision Date: **26/11/2021**
L.REACH.GB.EN

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

### 1.1. Product Identifier

| | |
|---|---|
| **Product name** | 419D-P-BK |
| **Synonyms** | SDS Code: 419D-P-BK, Related Part: 419D-P-BK \| UFI:KPC0-Q0H4-W00D-CJQ6 |
| **Other means of identification** | Overcoat Pen — Black |

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

| | |
|---|---|
| **Relevant identified uses** | Protective coating for printed circuit boards |
| **Uses advised against** | Not Applicable |

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

| | | |
|---|---|---|
| **Registered company name** | **MG Chemicals UK Limited** | **MG Chemicals (Head office)** |
| **Address** | Heame House, 23 Bilston Street, Sedgely Dudley DY3 1JA United Kingdom | 9347 - 193 Street Surrey V4N 4E7 British Columbia Canada |
| **Telephone** | +(44) 1663 362888 | +(1) 800-201-8822 |
| **Fax** | Not Available | +(1) 800-708-9888 |
| **Website** | Not Available | www.mgchemicals.com |
| **Email** | sales@mgchemicals.com | Info@mgchemicals.com |

### 1.4. Emergency telephone number

| | |
|---|---|
| **Association / Organisation** | **Verisk 3E (Access code: 335388)** |
| **Emergency telephone numbers** | +(44) 20 35147487 |
| **Other emergency telephone numbers** | +(0) 800 680 0425 |

## SECTION 2 Hazards identification

### 2.1. Classification of the substance or mixture

| | |
|---|---|
| **Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 [1]** | H336 - Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, H225 - Flammable Liquids Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2, H317 - Sensitisation (Skin) Category 1 |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567* |

### 2.2. Label elements

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

### Hazard statement(s)

| | |
|---|---|
| **H336** | May cause drowsiness or dizziness. |
| **H225** | Highly flammable liquid and vapour. |
| **H319** | Causes serious eye irritation. |
| **H317** | May cause an allergic skin reaction. |

### Supplementary statement(s)

| | |
|---|---|
| **EUH066** | Repeated exposure may cause skin dryness or cracking. |

**Page 1 continued...**

**Precautionary statement(s) Prevention**

| | |
|---|---|
| **P210** | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| **P271** | Use only outdoors or in a well-ventilated area. |
| **P280** | Wear protective gloves, protective clothing, eye protection and face protection. |
| **P240** | Ground and bond container and receiving equipment. |
| **P241** | Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment. |
| **P242** | Use non-sparking tools. |
| **P243** | Take action to prevent static discharges. |
| **P261** | Avoid breathing mist/vapours/spray. |
| **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**

| | |
|---|---|
| **P370+P378** | In case of fire: Use alcohol resistant foam or normal protein foam to extinguish. |
| **P302+P352** | IF ON SKIN: Wash with plenty of 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. |
| **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. |
| **P303+P361+P353** | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |
| **P304+P340** | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |

**Precautionary statement(s) Storage**

| | |
|---|---|
| **P403+P235** | Store in a well-ventilated place. Keep cool. |
| **P405** | Store locked up. |

**Precautionary statement(s) Disposal**

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

### 2.3. Other hazards

Cumulative effects may result following exposure*.

HARMFUL: may cause lung damage if swallowed

## SECTION 3 Composition / information on ingredients

### 3.1.Substances

See 'Composition on ingredients' in Section 3.2

### 3.2.Mixtures

| **1.CAS No<br>2.EC No<br>3.Index No<br>4.REACH No** | **%[weight]** | **Name** | **Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567** | **Nanoform Particle Characteristics** |
|---|---|---|---|---|
| 1.123-86-4<br>2.204-658-1<br>3.607-025-00-1<br>4.Not Available | 54 | n-butyl acetate<br>* - | Flammable Liquids Category 3, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3; H226, H336, EUH066 [2] | Not Available |
| 1.78-93-3<br>2.201-159-0<br>3.606-002-00-3<br>4.Not Available | 12 | methyl ethyl ketone<br>* - | Flammable Liquids Category 2, Serious Eye Damage/Eye Irritation Category 2, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3; H225, H319, H336, EUH066 [2] | Not Available |
| 1.108-65-6<br>2.203-603-9<br>3.607-195-00-7<br>4.Not Available | 4 | propylene glycol monomethyl ether acetate, alpha-isomer<br>* - | Flammable Liquids Category 3; H226 [2] | Not Available |
| 1.1333-86-4<br>2.215-609-9\|435-640-3\|422-130-0<br>3.Not Available<br>4.Not Available | 3 | carbon black | Carcinogenicity Category 2; H351 [1] | Not Available |
| 1.8052-41-3.<br>2.265-149-8\|232-489-3<br>3.649-422-00-2\|649-345-00-4<br>4.Not Available | 2 | Stoddard Solvent | Flammable Liquids Category 3, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Aspiration Hazard Category 1; H226, H336, H304, EUH066 [1] | Not Available |
| 1.80-62-6<br>2.201-297-1<br>3.607-035-00-6 | 0.1 | methyl methacrylate<br>* - | Flammable Liquids Category 2, Skin Corrosion/Irritation Category 2, Sensitisation (Skin) Category 1, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3; H225, H315, H317, H335 | Not Available |

**Continued...**

| 1.CAS No<br>2.EC No<br>3.Index No<br>4.REACH No | %[weight] | Name | Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 | Nanoform Particle Characteristics |
|---|---|---|---|---|
| 4.Not Available | | | [2] | |
| 1.97-88-1<br>2.202-615-1<br>3.607-033-00-5<br>4.Not Available | 0.1 | n-butyl methacrylate | Flammable Liquids Category 3, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3; H226, H315, H319, H317, H335 [2] | Not Available |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties* | | | |

## SECTION 4 First aid measures

### 4.1. Description of first aid measures

| | |
|---|---|
| **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. |
| **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** | ▸ Immediately give a glass of water.<br>▸ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.<br>▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. |

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

See Section 11

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

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.
Treat symptomatically.
for simple esters:

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BASIC TREATMENT

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- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

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ADVANCED TREATMENT

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- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

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EMERGENCY DEPARTMENT

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- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- Consult a toxicologist as necessary.

*BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994*

## SECTION 5 Firefighting measures

**Continued...**

### 5.1. Extinguishing media

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

### 5.2. 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 |

### 5.3. 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 breathing apparatus plus protective gloves in the event of a fire.<br>‣ Prevent, by any means available, spillage from entering drains or water course.<br>‣ Consider evacuation (or protect in place).<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** | ‣ Liquid and vapour are highly flammable.<br>‣ Severe fire hazard when exposed to heat, flame and/or oxidisers.<br>‣ Vapour may travel a considerable distance to source of ignition.<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>Combustion products include:<br>carbon dioxide ($CO_2$)<br>other pyrolysis products typical of burning organic material. |

## SECTION 6 Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

See section 8

### 6.2. Environmental precautions

See section 12

### 6.3. Methods and material for containment and cleaning up

| | |
|---|---|
| **Minor Spills** | ‣ Remove all ignition sources.<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 small quantities with vermiculite or other absorbent material.<br>‣ Wipe up.<br>‣ Collect residues in a flammable waste container. |
| **Major Spills** | Chemical Class: ester and ethers<br>For release onto land: recommended sorbents listed in order of priority. |

| SORBENT TYPE | RANK | APPLICATION | COLLECTION | LIMITATIONS |
|---|---|---|---|---|

LAND SPILL - SMALL

| | | | | |
|---|---|---|---|---|
| cross-linked polymer - particulate | 1 | shovel | shovel | R, W, SS |
| cross-linked polymer - pillow | 1 | throw | pitchfork | R, DGC, RT |
| sorbent clay - particulate | 2 | shovel | shovel | R,I, P |
| wood fiber - particulate | 3 | shovel | shovel | R, W, P, DGC |
| wood fiber - pillow | 3 | throw | pitchfork | R, P, DGC, RT |
| treated wood fiber - pillow | 3 | throw | pitchfork | DGC, RT |

LAND SPILL - MEDIUM

| | | | | |
|---|---|---|---|---|
| cross-linked polymer - particulate | 1 | blower | skiploader | R,W, SS |
| cross-linked polymer - pillow | 2 | throw | skiploader | R, DGC, RT |
| sorbent clay - particulate | 3 | blower | skiploader | R, I, P |
| polypropylene - particulate | 3 | blower | skiploader | W, SS, DGC |
| expanded mineral - particulate | 4 | blower | skiploader | R, I, W, P, DGC |
| wood fiber - particulate | 4 | blower | skiploader | R, W, P, DGC |

Legend

**Continued...**

| | |
|---|---|
| | DGC: Not effective where ground cover is dense<br>R; Not reusable<br>I: Not incinerable<br>P: Effectiveness reduced when rainy<br>RT:Not effective where terrain is rugged<br>SS: Not for use within environmentally sensitive sites<br>W: Effectiveness reduced when windy<br>Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;<br>R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988<br>▸ Clear area of personnel and move upwind.<br>▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ May be violently or explosively reactive.<br>▸ Wear breathing apparatus plus protective gloves.<br>▸ Prevent, by any means available, spillage from entering drains or water course.<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 spill with sand, earth or vermiculite.<br>▸ Use only spark-free shovels and explosion proof equipment.<br>▸ Collect recoverable product into labelled containers for recycling.<br>▸ Absorb remaining product with sand, earth or vermiculite.<br>▸ Collect solid residues and seal in labelled drums for disposal.<br>▸ Wash area and prevent runoff into drains.<br>▸ If contamination of drains or waterways occurs, advise emergency services. |

### 6.4. Reference to other sections

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

## SECTION 7 Handling and storage

### 7.1. Precautions for safe handling

| | |
|---|---|
| **Safe handling** | ▸ Containers, even those that have been emptied, may contain explosive vapours.<br>▸ Do NOT cut, drill, grind, weld or perform similar operations on or near containers.<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, heat or ignition sources.<br>▸ When handling, **DO NOT** eat, drink or smoke.<br>▸ Vapour may ignite on pumping or pouring due to static electricity.<br>▸ **DO NOT** use plastic buckets.<br>▸ Earth and secure metal containers when dispensing or pouring product.<br>▸ Use spark-free tools when handling.<br>▸ Avoid contact with incompatible materials.<br>▸ Keep containers securely sealed.<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.<br>▸ **DO NOT** allow clothing wet with material to stay in contact with skin |
| **Fire and explosion protection** | See section 5 |
| **Other information** | ▸ Store in original containers in approved flame-proof area.<br>▸ No smoking, naked lights, heat or ignition sources.<br>▸ **DO NOT** store in pits, depressions, basements or areas where vapours may be trapped.<br>▸ Keep containers securely sealed.<br>▸ Store away from incompatible materials in a cool, dry well ventilated area.<br>▸ Protect containers against physical damage and check regularly for leaks.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS. |

### 7.2. Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| **Suitable container** | ▸ Packing as supplied by manufacturer.<br>▸ Plastic containers may only be used if approved for flammable liquid.<br>▸ Check that containers are clearly labelled and free from leaks.<br>▸ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure.<br>▸ For materials with a viscosity of at least 2680 cSt. (23 deg. C)<br>▸ For manufactured product having a viscosity of at least 250 cSt. (23 deg. C)<br>▸ Manufactured product that requires stirring before use and having a viscosity of at least 20 cSt (25 deg. C): (i) Removable head packaging; (ii) Cans with friction closures and (iii) low pressure tubes and cartridges may be used.<br>▸ Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages<br>▸ In addition, where inner packagings are glass and contain liquids of packing group I there must be sufficient inert absorbent to absorb any spillage, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic. |

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| | |
|---|---|
| **Storage incompatibility** | n-Butyl acetate:<br>▸ reacts with water on standing to form acetic acid and n-butyl alcohol<br>▸ reacts violently with strong oxidisers and potassium tert-butoxide<br>▸ is incompatible with caustics, strong acids and nitrates<br>▸ dissolves rubber, many plastics, resins and some coatings<br>Methyl ethyl ketone:<br>▸ reacts violently with strong oxidisers, aldehydes, nitric acid, perchloric acid, potassium tert-butoxide, oleum<br>▸ is incompatible with inorganic acids, aliphatic amines, ammonia, caustics, isocyanates, pyridines, chlorosulfonic aid<br>▸ forms unstable peroxides in storage, or on contact with propanol or hydrogen peroxide<br>▸ attacks some plastics<br>▸ may generate electrostatic charges, due to low conductivity, on flow or agitation<br>▸ Esters react with acids to liberate heat along with alcohols and acids.<br>▸ Strong oxidising acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products.<br>▸ Heat is also generated by the interaction of esters with caustic solutions.<br>▸ Flammable hydrogen is generated by mixing esters with alkali metals and hydrides.<br>▸ Esters may be incompatible with aliphatic amines and nitrates.<br>▸ Avoid strong acids, bases. |

### 7.3. Specific end use(s)

See section 1.2

## SECTION 8 Exposure controls / personal protection

### 8.1. Control parameters

| Ingredient | DNELs<br>Exposure Pattern Worker | PNECs<br>Compartment |
|---|---|---|
| n-butyl acetate | Dermal 7 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 48 mg/m³ (Systemic, Chronic)<br>Inhalation 300 mg/m³ (Local, Chronic)<br>Dermal 11 mg/kg bw/day (Systemic, Acute)<br>Inhalation 600 mg/m³ (Systemic, Acute)<br>Inhalation 600 mg/m³ (Local, Acute)<br>*Dermal 3.4 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 12 mg/m³ (Systemic, Chronic) **<br>*Oral 2 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 35.7 mg/m³ (Local, Chronic) **<br>*Dermal 6 mg/kg bw/day (Systemic, Acute) **<br>*Inhalation 300 mg/m³ (Systemic, Acute) **<br>*Oral 2 mg/kg bw/day (Systemic, Acute) **<br>*Inhalation 300 mg/m³ (Local, Acute) * | 0.18 mg/L (Water (Fresh))<br>0.018 mg/L (Water - Intermittent release)<br>0.36 mg/L (Water (Marine))<br>0.981 mg/kg sediment dw (Sediment (Fresh Water))<br>0.098 mg/kg sediment dw (Sediment (Marine))<br>0.09 mg/kg soil dw (Soil)<br>35.6 mg/L (STP) |
| methyl ethyl ketone | Dermal 1 161 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 600 mg/m³ (Systemic, Chronic)<br>*Dermal 412 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 106 mg/m³ (Systemic, Chronic) **<br>*Oral 31 mg/kg bw/day (Systemic, Chronic) * | 55.8 mg/L (Water (Fresh))<br>55.8 mg/L (Water - Intermittent release)<br>55.8 mg/L (Water (Marine))<br>284.74 mg/kg sediment dw (Sediment (Fresh Water))<br>284.7 mg/kg sediment dw (Sediment (Marine))<br>22.5 mg/kg soil dw (Soil)<br>709 mg/L (STP)<br>1000 mg/kg food (Oral) |
| propylene glycol monomethyl ether acetate, alpha-isomer | Dermal 796 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 275 mg/m³ (Systemic, Chronic)<br>Inhalation 550 mg/m³ (Local, Acute)<br>*Dermal 320 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 33 mg/m³ (Systemic, Chronic) **<br>*Oral 36 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 33 mg/m³ (Local, Chronic) * | 0.635 mg/L (Water (Fresh))<br>0.064 mg/L (Water - Intermittent release)<br>6.35 mg/L (Water (Marine))<br>3.29 mg/kg sediment dw (Sediment (Fresh Water))<br>0.329 mg/kg sediment dw (Sediment (Marine))<br>0.29 mg/kg soil dw (Soil)<br>100 mg/L (STP) |
| carbon black | Inhalation 1 mg/m³ (Systemic, Chronic)<br>Inhalation 0.5 mg/m³ (Local, Chronic)<br>*Inhalation 0.06 mg/m³ (Systemic, Chronic) * | 1 mg/L (Water (Fresh))<br>0.1 mg/L (Water - Intermittent release)<br>10 mg/L (Water (Marine)) |
| Stoddard Solvent | Dermal 80 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 44 mg/m³ (Systemic, Chronic)<br>Dermal 7.56 mg/cm² (Local, Chronic)<br>Inhalation 44 mg/m³ (Local, Chronic)<br>Dermal 30 mg/kg bw/day (Systemic, Acute)<br>Inhalation 55 mg/m³ (Systemic, Acute)<br>Inhalation 55 mg/m³ (Local, Acute)<br>*Dermal 40 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 22 mg/m³ (Systemic, Chronic) **<br>*Oral 10.56 mg/kg bw/day (Systemic, Chronic) **<br>*Dermal 3.78 mg/cm² (Local, Chronic) **<br>*Inhalation 22 mg/m³ (Local, Chronic) **<br>*Dermal 60 mg/kg bw/day (Systemic, Acute) **<br>*Inhalation 55 mg/m³ (Systemic, Acute) **<br>*Oral 50 mg/kg bw/day (Systemic, Acute) **<br>*Inhalation 55 mg/m³ (Local, Acute) * | 0.14 mg/L (Water (Fresh))<br>0.35 mg/L (Water - Intermittent release)<br>0.014 mg/L (Water (Marine))<br>1.14 mg/kg sediment dw (Sediment (Fresh Water))<br>0.14 mg/kg sediment dw (Sediment (Marine)) |
| methyl methacrylate | Dermal 13.67 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 208 mg/m³ (Systemic, Chronic)<br>Dermal 1.5 mg/cm² (Local, Chronic)<br>Inhalation 208 mg/m³ (Local, Chronic)<br>Dermal 1.5 mg/cm² (Local, Acute)<br>*Dermal 8.2 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 74.3 mg/m³ (Systemic, Chronic) * | 0.94 mg/L (Water (Fresh))<br>0.94 mg/L (Water - Intermittent release)<br>0.94 mg/L (Water (Marine))<br>5.74 mg/kg sediment dw (Sediment (Fresh Water))<br>1.47 mg/kg soil dw (Soil)<br>10 mg/L (STP) |

**Continued...**

| Ingredient | DNELs<br>Exposure Pattern Worker | PNECs<br>Compartment |
|---|---|---|
| | *Dermal 1.5 mg/cm² (Local, Chronic) **<br>*Inhalation 104 mg/m³ (Local, Chronic) **<br>*Dermal 1.5 mg/cm² (Local, Acute) ** | |
| n-butyl methacrylate | Dermal 5 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 415.9 mg/m³ (Systemic, Chronic)<br>Dermal 1 % in mixture (weight basis) (Local, Chronic)<br>Inhalation 409 mg/m³ (Local, Chronic)<br>Dermal 1 % in mixture (weight basis) (Local, Acute)<br>*Dermal 3 mg/kg bw/day (Systemic, Chronic) **<br>*Inhalation 66.5 mg/m³ (Systemic, Chronic) **<br>*Dermal 1 % in mixture (weight basis) (Local, Chronic) **<br>*Inhalation 366.4 mg/m³ (Local, Chronic) **<br>*Dermal 1 % in mixture (weight basis) (Local, Acute) ** | 0.017 mg/L (Water (Fresh))<br>0.002 mg/L (Water - Intermittent release)<br>0.056 mg/L (Water (Marine))<br>4.73 mg/kg sediment dw (Sediment (Fresh Water))<br>0.473 mg/kg sediment dw (Sediment (Marine))<br>0.935 mg/kg soil dw (Soil)<br>31.7 mg/L (STP) |

* Values for General Population

**Occupational Exposure Limits (OEL)**

**INGREDIENT DATA**

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---|---|---|---|---|---|---|
| EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs) | n-butyl acetate | n-Butyl acetate | 50 ppm / 241 mg/m3 | 723 mg/m3 / 150 ppm | Not Available | Not Available |
| UK Workplace Exposure Limits (WELs) | n-butyl acetate | Butyl acetate | 150 ppm / 724 mg/m3 | 966 mg/m3 / 200 ppm | Not Available | Not Available |
| EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs) | methyl ethyl ketone | Butanone | 200 ppm / 600 mg/m3 | 900 mg/m3 / 300 ppm | Not Available | Not Available |
| UK Workplace Exposure Limits (WELs) | methyl ethyl ketone | Butan-2-one (methyl ethyl ketone) | 200 ppm / 600 mg/m3 | 899 mg/m3 / 300 ppm | Not Available | Sk, BMGV |
| EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs) | propylene glycol monomethyl ether acetate, alpha-isomer | 1-Methoxypropyl-2-acetate | 50 ppm / 275 mg/m3 | 550 mg/m3 / 100 ppm | Not Available | Skin |
| UK Workplace Exposure Limits (WELs) | propylene glycol monomethyl ether acetate, alpha-isomer | 1-Methoxypropyl acetate | 50 ppm / 274 mg/m3 | 548 mg/m3 / 100 ppm | Not Available | Sk |
| UK Workplace Exposure Limits (WELs) | carbon black | Carbon black | 3.5 mg/m3 | 7 mg/m3 | Not Available | Not Available |
| EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs) | methyl methacrylate | Methyl methacrylate | 50 ppm | 100 ppm | Not Available | Not Available |
| UK Workplace Exposure Limits (WELs) | methyl methacrylate | Methyl methacrylate | 50 ppm / 208 mg/m3 | 416 mg/m3 / 100 ppm | Not Available | Not Available |

**Emergency Limits**

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|---|---|---|---|
| n-butyl acetate | Not Available | Not Available | Not Available |
| methyl ethyl ketone | Not Available | Not Available | Not Available |
| propylene glycol monomethyl ether acetate, alpha-isomer | Not Available | Not Available | Not Available |
| carbon black | 9 mg/m3 | 99 mg/m3 | 590 mg/m3 |
| Stoddard Solvent | 300 mg/m3 | 1,800 mg/m3 | 29500** mg/m3 |
| methyl methacrylate | Not Available | Not Available | Not Available |
| n-butyl methacrylate | 19 mg/m3 | 210 mg/m3 | 1,300 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| n-butyl acetate | 1,700 ppm | Not Available |
| methyl ethyl ketone | 3,000 ppm | Not Available |
| propylene glycol monomethyl ether acetate, alpha-isomer | Not Available | Not Available |
| carbon black | 1,750 mg/m3 | Not Available |
| Stoddard Solvent | 20,000 mg/m3 | Not Available |
| methyl methacrylate | 1,000 ppm | Not Available |
| n-butyl methacrylate | Not Available | Not Available |

**Occupational Exposure Banding**

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|---|---|---|
| n-butyl methacrylate | E | ≤ 0.1 ppm |
| ***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.* | |

**MATERIAL DATA**

**Continued...**

IFRA Prohibited Fragrance Substance
The International Fragrance Association (IFRA) Standards form the basis for the globally accepted and recognized risk management system for the safe use of fragrance ingredients and are part of the IFRA Code of Practice. This is the self-regulating system of the industry, based on risk assessments carried out by an independent Expert Panel
For n-butyl acetate
Odour Threshold Value: 0.0063 ppm (detection), 0.038-12 ppm (recognition)
Exposure at or below the recommended TLV-TWA is thought to prevent significant irritation of the eyes and respiratory passages as well as narcotic effects. In light of the lack of substantive evidence regarding teratogenicity and a review of acute oral data a STEL is considered inappropriate.
Odour Safety Factor(OSF)
OSF=3.8E2 (n-BUTYL ACETATE)

for propylene glycol monomethyl ether acetate (PGMEA)
Saturated vapour concentration: 4868 ppm at 20 C.
A two-week inhalation study found nasal effects to the nasal mucosa in animals at concentrations up to 3000 ppm. Differences in the teratogenic potential of the alpha (commercial grade) and beta isomers of PGMEA may be explained by the formation of different metabolites. The beta-isomer is thought to be oxidised to methoxypropionic acid, a homologue to methoxyacetic acid which is a known teratogen. The alpha- form is conjugated and excreted. PGMEA mixture (containing 2% to 5% beta isomer) is a mild skin and eye irritant, produces mild central nervous system effects in animals at 3000 ppm and produces mild CNS impairment and upper respiratory tract and eye irritation in humans at 1000 ppm. In rats exposed to 3000 ppm PGMEA produced slight foetotoxic effects (delayed sternabral ossification) - no effects on foetal development were seen in rabbits exposed at 3000 ppm.

For methyl ethyl ketone:
Odour Threshold Value: Variously reported as 2 ppm and 4.8 ppm
Odour threshold: 2 ppm (detection); 5 ppm (recognition) 25 ppm (easy recognition); 300 ppm IRRITATING
Exposures at or below the recommended TLV-TWA are thought to prevent injurious systemic effects and to minimise objections to odour and irritation. Where synergism or potentiation may occur stringent control of the primary toxin (e.g. n-hexane or methyl butyl ketone) is desirable and additional consideration should be given to lowering MEK exposures.
Odour Safety Factor(OSF)
OSF=28 (METHYL ETHYL KETONE)

Odour Threshold Value (methyl methacrylate): 0.049 ppm (detection), 0.34 ppm (recognition)
NOTE: Detector tubes measuring in excess of 50 ppm, are available.
Concentrations as low as 125 ppm methyl methacrylate have produced irritation of the mucous membranes of exposed workers. The recommended TLV-TWA is thought to be sufficiently low to protect against discomfort from irritation and acute systemic intoxication.

NOTE D: Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed on Annex I
When they are placed on the market in a non-stabilised form, the label must state the name of the substance followed by the words 'non-stabilised'
European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP
NOTE P: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.01% w/w benzene (EINECS No 200-753-7). Note E shall also apply when the substance is classified as a carcinogen. This note applies only to certain complex oil-derived substances in Annex VI.
European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP

### 8.2. Exposure controls

**8.2.1. 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.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
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.
Employers may need to use multiple types of controls to prevent employee overexposure.

For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.
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.

| 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.) |

Within each range the appropriate value depends on:

| 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.

**Continued...**

| | |
|---|---|
| **8.2.2. Personal protection** |  |
| **Eye and face protection** | ‣ Safety glasses with side shields.<br>‣ Chemical goggles.<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 |
| **Hands/feet protection** | ‣ Wear chemical protective gloves, e.g. PVC.<br>‣ Wear safety footwear or safety gumboots, e.g. Rubber<br>For esters:<br>‣ Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials.<br>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.<br>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.<br>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.<br>Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:<br>· frequency and duration of contact,<br>· chemical resistance of glove material,<br>· glove thickness and<br>· dexterity<br>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).<br>· 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.<br>· 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.<br>· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.<br>· Contaminated gloves should be replaced.<br>As defined in ASTM F-739-96 in any application, gloves are rated as:<br>· Excellent when breakthrough time > 480 min<br>· Good when breakthrough time > 20 min<br>· Fair when breakthrough time < 20 min<br>· Poor when glove material degrades<br>For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.<br>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.<br>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.<br>Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:<br>· 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.<br>· 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<br>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. |
| **Body protection** | See Other protection below |
| **Other protection** | ‣ Overalls.<br>‣ PVC Apron.<br>‣ PVC protective suit may be required if exposure severe.<br>‣ Eyewash unit.<br>‣ Ensure there is ready access to a safety shower.<br>‣ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.<br>‣ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).<br>‣ Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return. |

### Recommended material(s)

**GLOVE SELECTION INDEX**

Glove selection is based on a modified presentation of the:
***'Forsberg Clothing Performance Index'.***
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
419D-P-BK Overcoat Pen — Black

| Material | CPI |
|---|---|

### 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 | Half-Face | Full-Face | Powered Air |
|---|---|---|---|

**Continued...**

| | |
|---|---|
| PE/EVAL/PE | A |
| TEFLON | A |
| PVA | B |
| BUTYL | C |
| BUTYL/NEOPRENE | C |
| HYPALON | C |
| NATURAL RUBBER | C |
| NATURAL+NEOPRENE | C |
| NEOPRENE | C |
| NEOPRENE/NATURAL | C |
| NITRILE | C |
| NITRILE+PVC | C |
| PE | C |
| PVC | C |
| SARANEX-23 | C |
| VITON/BUTYL | C |
| VITON/NEOPRENE | C |

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
**NOTE**: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as 'feel' or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

| Protection Factor | Respirator | Respirator | 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(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)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

### 8.2.3. Environmental exposure controls

See section 12

## SECTION 9 Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Black |

| | | | |
|---|---|---|---|
| **Physical state** | Liquid | **Relative density (Water = 1)** | 0.93 |
| **Odour** | Not Available | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | >315 |
| **pH (as supplied)** | Not Available | **Decomposition temperature** | Not Available |
| **Melting point / freezing point (°C)** | Not Available | **Viscosity (cSt)** | 110.00 |
| **Initial boiling point and boiling range (°C)** | >80 | **Molecular weight (g/mol)** | Not Available |
| **Flash point (°C)** | -3 | **Taste** | Not Available |
| **Evaporation rate** | Not Available BuAC = 1 | **Explosive properties** | Not Available |
| **Flammability** | HIGHLY FLAMMABLE. | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | 9.2 | **Surface Tension (dyn/cm or mN/m)** | Not Available |
| **Lower Explosive Limit (%)** | 2.5 | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | 4.00 | **Gas group** | Not Available |
| **Solubility in water** | Partly miscible | **pH as a solution (%)** | Not Available |
| **Vapour density (Air = 1)** | >2.5 | **VOC g/L** | Not Available |
| **Nanoform Solubility** | Not Available | **Nanoform Particle Characteristics** | Not Available |
| **Particle Size** | Not Available | | |

### 9.2. Other information

**Continued...**

Not Available

## SECTION 10 Stability and reactivity

| | |
|---|---|
| **10.1.Reactivity** | See section 7.2 |
| **10.2. Chemical stability** | ▸ Unstable in the presence of incompatible materials.<br>▸ Product is considered stable.<br>▸ Hazardous polymerisation will not occur. |
| **10.3. Possibility of hazardous reactions** | See section 7.2 |
| **10.4. Conditions to avoid** | See section 7.2 |
| **10.5. Incompatible materials** | See section 7.2 |
| **10.6. Hazardous decomposition products** | See section 5.3 |

## SECTION 11 Toxicological information

### 11.1. Information on toxicological effects

| | |
|---|---|
| **Inhaled** | Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.<br>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.<br>The main effects of simple aliphatic esters are narcosis and irritation and anaesthesia at higher concentrations. These effects become greater as the molecular weights and boiling points increase. Central nervous system depression , headache, drowsiness, dizziness, coma and neurobehavioral changes may also be symptomatic of overexposure. Respiratory tract involvement may produce mucous membrane irritation, dyspnea, and tachypnea, pharyngitis, bronchitis, pneumonitis and, in massive exposures, pulmonary oedema (which may be delayed). Gastrointestinal effects include nausea, vomiting, diarrhoea and abdominal cramps. Liver and kidney damage may result from massive exposures.<br>The material has **NOT** been classified by EC Directives or other classification systems as 'harmful by inhalation'. This is because of the lack of corroborating animal or human evidence. In the absence of such evidence, care should be taken nevertheless to ensure exposure is kept to a minimum and that suitable control measures be used, in an occupational setting to control vapours, fumes and aerosols.<br>Acute exposure of humans to high concentrations of methyl ethyl ketone produces irritation to the eyes, nose, and throat. Other effects reported from acute inhalation exposure in humans include central nervous system depression, headache, and nausea.<br>Easy odour recognition and irritant properties of methyl ethyl ketone means that high vapour levels are readily detected and should be avoided by application of control measures; however odour fatigue may occur with loss of warning of exposure.<br>Prolonged exposure may cause headache, nausea and ultimately loss of consciousness. |
| **Ingestion** | Swallowing of the liquid may cause aspiration of vomit into the lungs with the risk of haemorrhaging, pulmonary oedema, progressing to chemical pneumonitis; serious consequences may result.<br>Signs and symptoms of chemical (aspiration) pneumonitis may include coughing, gasping, choking, burning of the mouth, difficult breathing, and bluish coloured skin (cyanosis).<br>The material has **NOT** 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.<br>Accidental ingestion of the material may be damaging to the health of the individual. |
| **Skin Contact** | The material may accentuate any pre-existing dermatitis condition<br>Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.<br>Dermatitis has been reported in humans following dermal exposure to methyl ethyl ketone. Tests involving acute exposure of rabbits has shown methyl ethyl ketone to have high acute toxicity from dermal exposure.<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, puncture wounds or lesions, may produce systemic injury with harmful effects.<br>Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.<br>The material may produce moderate skin irritation; limited evidence or practical experience suggests, that the material either:<br>▸ produces moderate inflammation of the skin in a substantial number of individuals following direct contact and/or<br>▸ produces significant, but moderate, 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.<br>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** | Limited evidence or practical experience suggests, that the material may cause severe 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. Eye contact may cause significant inflammation with pain. Corneal injury may occur; permanent impairment of vision may result unless treatment is prompt and adequate.<br>Repeated or prolonged exposure may cause severe inflammation (similar to windburn) characterised by a temporary redness of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur. |
| **Chronic** | Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.<br>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. |

**Continued...**

Serious damage (clear functional disturbance or morphological change which may have toxicological significance) is likely to be caused by repeated or prolonged exposure. As a rule the material produces, or contains a substance which produces severe lesions. Such damage may become apparent following direct application in subchronic (90 day) toxicity studies or following sub-acute (28 day) or chronic (two-year) toxicity tests.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Limited information is available on the chronic (long-term) effects of methyl ethyl ketone in humans. Chronic inhalation studies in animals have reported slight neurological, liver, kidney, and respiratory effects. No information is available on the developmental, reproductive, or carcinogenic effects of methyl ethyl ketone in humans. Developmental effects, including decreased foetal weight and foetal malformations, have been reported in mice and rats exposed to methyl ethyl ketone via inhalation and ingestion.
Methyl ethyl ketone is considered to have a low order of toxicity; however methyl ethyl ketone is often used in combination with other solvents and the toxic effects of the mix may be greater than either solvent alone. Combinations of n-hexane with methyl ethyl ketone and also methyl n-butyl ketone with methyl ethyl ketone show increase in peripheral neuropathy, a progressive disorder of nerves of extremities.
Combinations with chloroform also show increase in toxicity
On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.
Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.

**419D-P-BK Overcoat Pen — Black**

| TOXICITY | IRRITATION |
|---|---|
| Not Available | Not Available |

**n-butyl acetate**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: 3200 mg/kg[2] | Eye ( human): 300 mg |
| Inhalation(Rat) LC50; 0.74 mg/l4h[2] | Eye (rabbit): 20 mg (open)-SEVERE |
| Oral(Rabbit) LD50; 3200 mg/kg[2] | Eye (rabbit): 20 mg/24h - moderate |
| | Eye: no adverse effect observed (not irritating)[1] |
| | Skin (rabbit): 500 mg/24h-moderate |
| | Skin: no adverse effect observed (not irritating)[1] |

**methyl ethyl ketone**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: 6480 mg/kg[2] | Eye (human): 350 ppm -irritant |
| Inhalation(Mouse) LC50; 32 mg/L4h[2] | Eye (rabbit): 80 mg - irritant |
| Oral(Rat) LD50; 2054 mg/kg[1] | Skin (rabbit): 402 mg/24 hr - mild |
| | Skin (rabbit):13.78mg/24 hr open |

**propylene glycol monomethyl ether acetate, alpha-isomer**

| TOXICITY | IRRITATION |
|---|---|
| dermal (rat) LD50: >2000 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| Oral(Rat) LD50; 3739 mg/kg[2] | Skin: no adverse effect observed (not irritating)[1] |

**carbon black**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: >3000 mg/kg[2] | Eye: no adverse effect observed (not irritating)[1] |
| Oral(Rat) LD50; >8000 mg/kg[1] | Skin: no adverse effect observed (not irritating)[1] |

**Stoddard Solvent**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: >3000 mg/kg[1] | Eye (hmn) 470 ppm/15m irrit. |
| Inhalation(Rat) LC50; >5.5 mg/l4h[1] | Eye (rabbit) 500 mg/24h moderate |
| Oral(Rat) LD50; >5000 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| | Skin: adverse effect observed (irritating)[1] |
| | Skin: no adverse effect observed (not irritating)[1] |

**methyl methacrylate**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: >5000 mg/kg[2] | Eye (rabbit): 150 mg |
| Inhalation(Rat) LC50; 29.8 mg/l4h[1] | Skin (rabbit): 10000 mg/kg (open) |
| Oral(Rat) LD50; 7872 mg/kg[2] | |

**n-butyl methacrylate**

| TOXICITY | IRRITATION |
|---|---|
| Dermal (rabbit) LD50: >2000 mg/kg[2] | Eye: no adverse effect observed (not irritating)[1] |
| Inhalation(Rat) LC50; 4910 ppm4h[2] | Skin (rabbit): 10000 mg/kg (open) |
| Oral(Rat) LD50; 22600 mg/kg[2] | Skin: adverse effect observed (irritating)[1] |

**Continued...**

| | |
|---|---|
| ***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* |

| | |
|---|---|
| **N-BUTYL ACETATE** | The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. |
| **PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE, ALPHA-ISOMER** | A BASF report (in ECETOC ) showed that inhalation exposure to 545 ppm PGMEA (beta isomer) was associated with a teratogenic response in rabbits; but exposure to 145 ppm and 36 ppm had no adverse effects. The beta isomer of PGMEA comprises only 10% of the commercial material, the remaining 90% is alpha isomer. Hazard appears low but emphasizes the need for care in handling this chemical. [I.C.I] *Shin-Etsu SDS<br>for propylene glycol ethers (PGEs):<br>Typical propylene glycol ethers include propylene glycol n-butyl ether (PnB); dipropylene glycol n-butyl ether (DPnB); dipropylene glycol methyl ether acetate (DPMA); tripropylene glycol methyl ether (TPM).<br>Testing of a wide variety of propylene glycol ethers Testing of a wide variety of propylene glycol ethers has shown that propylene glycol-based ethers are less toxic than some ethers of the ethylene series. The common toxicities associated with the lower molecular weight homologues of the ethylene series, such as adverse effects on reproductive organs, the developing embryo and fetus, blood (haemolytic effects), or thymus, are not seen with the commercial-grade propylene glycol ethers. In the ethylene series, metabolism of the terminal hydroxyl group produces an alkoxyacetic acid. The reproductive and developmental toxicities of the lower molecular weight homologues in the ethylene series are due specifically to the formation of methoxyacetic and ethoxyacetic acids.<br>Longer chain length homologues in the ethylene series are not associated with the reproductive toxicity but can cause haemolysis in sensitive species, also through formation of an alkoxyacetic acid. The predominant alpha isomer of all the PGEs (thermodynamically favored during manufacture of PGEs) is a secondary alcohol incapable of forming an alkoxypropionic acid. In contrast beta-isomers are able to form the alkoxypropionic acids and these are linked to teratogenic effects (and possibly haemolytic effects).<br>This alpha isomer comprises greater than 95% of the isomeric mixture in the commercial product.<br>Because the alpha isomer cannot form an alkoxypropionic acid, this is the most likely reason for the lack of toxicity shown by the PGEs as distinct from the lower molecular weight ethylene glycol ethers. More importantly, however, very extensive empirical test data show that this class of commercial-grade glycol ether presents a low toxicity hazard. PGEs, whether mono, di- or tripropylene glycol-based (and no matter what the alcohol group), show a very similar pattern of low to non-detectable toxicity of any type at doses or exposure levels greatly exceeding those showing pronounced effects from the ethylene series. One of the primary metabolites of the propylene glycol ethers is propylene glycol, which is of low toxicity and completely metabolised in the body.<br>As a class, the propylene glycol ethers are rapidly absorbed and distributed throughout the body when introduced by inhalation or oral exposure. Dermal absorption is somewhat slower but subsequent distribution is rapid. Most excretion for PGEs is via the urine and expired air. A small portion is excreted in the faeces.<br>As a group PGEs exhibits low acute toxicity by the oral, dermal, and inhalation routes. Rat oral LD50s range from >3,000 mg/kg (PnB) to >5,000 mg/kg (DPMA). Dermal LD50s are all > 2,000 mg/kg (PnB, & DPnB; where no deaths occurred), and ranging up to >15,000 mg/kg (TPM). Inhalation LC50 values were higher than 5,000 mg/m3 for DPMA (4-hour exposure), and TPM (1-hour exposure). For DPnB the 4-hour LC50 is >2,040 mg/m3. For PnB, the 4-hour LC50 was >651 ppm (>3,412 mg/m3), representing the highest practically attainable vapor level. No deaths occurred at these concentrations. PnB and TPM are moderately irritating to eyes while the remaining category members are only slightly irritating to nonirritating. PnB is moderately irritating to skin while the remaining category members are slightly to non-irritating<br>None are skin sensitisers.<br>In repeated dose studies ranging in duration from 2 to 13 weeks, few adverse effects were found even at high exposure levels and effects that did occur were mild in nature. By the oral route of administration, NOAELs of 350 mg/kg-d (PnB – 13 wk) and 450 mg/kg-d (DPnB – 13 wk) were observed for liver and kidney weight increases (without accompanying histopathology). LOAELs for these two chemicals were 1000 mg/kg-d (highest dose tested).<br>Dermal repeated-dose toxicity tests have been performed for many PGEs. For PnB, no effects were seen in a 13-wk study at doses as high as 1,000 mg/kg-d. A dose of 273 mg/kg-d constituted a LOAEL (increased organ weights without histopathology) in a 13-week dermal study for DPnB. For TPM, increased kidney weights (no histopathology) and transiently decreased body weights were found at a dose of 2,895 mg/kg-d in a 90-day study in rabbits. By inhalation, no effects were observed in 2-week studies in rats at the highest tested concentrations of 3244 mg/m3 (600 ppm) for PnB and 2,010 mg/m3 (260 ppm) for DPnB. TPM caused increased liver weights without histopathology by inhalation in a 2-week study at a LOAEL of 360 mg/m3 (43 ppm). In this study, the highest tested TPM concentration, 1010 mg/m3 (120 ppm), also caused increased liver weights without accompanying histopathology. Although no repeated-dose studies are available for the oral route for TPM, or for any route for DPMA, it is anticipated that these chemicals would behave similarly to other category members.<br>One and two-generation reproductive toxicity testing has been conducted in mice, rats, and rabbits via the oral or inhalation routes of exposure on PM and PMA. In an inhalation rat study using PM, the NOAEL for parental toxicity is 300 ppm (1106 mg/m3) with decreases in body and organ weights occurring at the LOAEL of 1000 ppm (3686 mg/m3). For offspring toxicity the NOAEL is 1000 ppm (3686 mg/m3), with decreased body weights occurring at 3000 ppm (11058 mg/m3). For PMA, the NOAEL for parental and offspring toxicity is 1000 mg/kg/d. in a two generation gavage study in rats. No adverse effects were found on reproductive organs, fertility rates, or other indices commonly monitored in such studies. In addition, there is no evidence from histopathological data from repeated-dose studies for the category members that would indicate that these chemicals would pose a reproductive hazard to human health.<br>In developmental toxicity studies many PGEs have been tested by various routes of exposure and in various species at significant exposure levels and show no frank developmental effects. Due to the rapid hydrolysis of DPMA to DPM, DPMA would not be expected to show teratogenic effects. At high doses where maternal toxicity occurs (e.g., significant body weight loss), an increased incidence of some anomalies such as delayed skeletal ossification or increased 13th ribs, have been reported. Commercially available PGEs showed no teratogenicity.<br>The weight of the evidence indicates that propylene glycol ethers are not likely to be genotoxic. *In vitro*, negative results have been seen in a number of assays for PnB, DPnB, DPMA and TPM. Positive results were only seen in 3 out of 5 chromosome aberration assays in mammalian cells with DPnB. However, negative results were seen in a mouse micronucleus assay with DPnB and PM. Thus, there is no evidence to suggest these PGEs would be genotoxic *in vivo*. In a 2-year bioassay on PM, there were no statistically significant increases in tumors in rats and mice.<br>A BASF report (in ECETOC ) showed that inhalation exposure to 545 ppm PGMEA (beta isomer) was associated with a teratogenic response in rabbits; but exposure to 145 ppm and 36 ppm had no adverse effects.<br>The beta isomer of PGMEA comprises only 10% of the commercial material, the remaining 90% is alpha isomer. Hazard appears low but emphasizes the need for care in handling this chemical. [I.C.I] |
| **CARBON BLACK** | Inhalation (rat) TCLo: 50 mg/m3/6h/90D-I Nil reported No significant acute toxicological data identified in literature search.<br><br>**WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans. |
| **STODDARD SOLVENT** | for petroleum:<br>Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline<br>This product may contain benzene which is known to cause acute myeloid leukaemia and n-hexane which has been shown to metabolize to compounds which are neuropathic.<br>This product contains toluene. There are indications from animal studies that prolonged exposure to high concentrations of toluene may lead to hearing loss.<br>This product contains ethyl benzene and naphthalene from which there is evidence of tumours in rodents<br>**Carcinogenicity:** Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans. Inhalation exposure to rats causes kidney tumours which are not considered relevant to humans. |

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| | |
|---|---|
| | **Mutagenicity:** There is a large database of mutagenicity studies on gasoline and gasoline blending streams, which use a wide variety of endpoints and give predominantly negative results. All in vivo studies in animals and recent studies in exposed humans (e.g. petrol service station attendants) have shown negative results in mutagenicity assays.<br>**Reproductive Toxicity:** Repeated exposure of pregnant rats to high concentrations of toluene (around or exceeding 1000 ppm) can cause developmental effects, such as lower birth weight and developmental neurotoxicity, on the foetus. However, in a two-generation reproductive study in rats exposed to gasoline vapour condensate, no adverse effects on the foetus were observed.<br>**Human Effects:** Prolonged/ repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials.<br>Lifetime exposure of rodents to gasoline produces carcinogenicity although the relevance to humans has been questioned. Gasoline induces kidney cancer in male rats as a consequence of accumulation of the alpha2-microglobulin protein in hyaline droplets in the male (but not female) rat kidney. Such abnormal accumulation represents lysosomal overload and leads to chronic renal tubular cell degeneration, accumulation of cell debris, mineralisation of renal medullary tubules and necrosis. A sustained regenerative proliferation occurs in epithelial cells with subsequent neoplastic transformation with continued exposure. The alpha2-microglobulin is produced under the influence of hormonal controls in male rats but not in females and, more importantly, not in humans. |
| **METHYL METHACRYLATE** | Inhalation (human) TCLo: 60 mg/m3(15 ppm) [* Manuf. Rohm & Haas]<br>**For methyl methacrylate:**<br>Acute toxicity: MMA is rapidly absorbed after oral or inhalatory administration. *In vitro* skin absorption studies in human skin indicate that MMA can be absorbed through human skin. After inhalation to rats 10 to 20% of the substance is deposited in the upper respiratory tract where it is metabolised by local tissue esterases.<br>Acute toxicity of MMA by the oral, dermal, and inhalative routes is low as judged by tests with different species: The oral LD50 for rats, mice, and rabbits is found to exceed 5000 mg/kg bw.<br>Acute inhalation toxicity for rats and mice is described by LC50 values of > 25 mg/l/4 hours.<br>Acute dermal toxicity is reported for rabbits to exceed 5000 mg/kg bw. Skin and respiratory irritation are reported for subjects exposed to monomeric MMA. The substance has been shown to produce severe skin irritation when tested undiluted on rabbit skin. There are indications from studies in animals that MMA can be irritating to the respiratory system. In contact with eyes MMA has shown only weak irritation of the conjunctivae. MMA has a moderate to strong sensitising potential in experimental animals**.** Cases of contact dermatitis have been reported for workers exposed to the monomeric chemical. There is no convincing evidence that MMA is a respiratory sensitiser in humans.<br>The lead effect caused by MMA is a degeneration of the olfactory region of the nose being the most sensitive target tissue. For this effect a NOAEC of 25 ppm (104 mg/m3) in a two-year inhalation study in rats was identified but only slight effects on the olfactory tissues have been observed at 100 ppm. Concerning systemic effects, two different valid studies have been considered for identifying a N(L)OAEL. Due to different dose selections, different values for N(L)OEALs are available. The LOEALs and the NOEALs for female rats ranges between 400 and 500 ppm and from 100 to 250 ppm respectively. In subchronic inhalation studies systemic toxic effects were seen in rats >1000 ppm, respectively in mice >500 ppm, including degenerative and necrotic lesions in liver, kidney, brain, and atrophic changes in spleen and bone marrow. These effects were not seen in chronic studies up to 1000 ppm. Oral administration to rats resulted in a NOAEL of 200 mg/kg bw/d.<br>MMA has *in vitro* the potential for induction of mutagenic effects, especially clastogenicity. However, this potential is limited to high doses with strong toxic effects. Furthermore, the negative *in vivo* micronucleus test and the negative dominant lethal assay indicate that this potential is not expressed *in vivo*. There is no relevant concern on carcinogenicity of MMA in humans and animals. Epidemiology data on increased tumour rates in exposed cohorts are of limited reliability and cannot be related to MMA as the solely causal agent.<br>MMA did not reveal an effect on male fertility when animals had been exposed to up to 9000 ppm. From the available developmental toxicity investigations, including an inhalation study according to OECD Guideline 414, no teratogenicity, embryotoxicity or foetotoxicity has been observed at exposure levels up to and including 2028 ppm (8425 mg/m3). The available human data on sexual disorders in male and female workers cannot be considered to conclude on reproductive toxicity effects of MMA due to the uncertain validity of the studies<br>The substance is classified by IARC as Group 3:<br>**NOT** classifiable as to its carcinogenicity to humans.<br>Evidence of carcinogenicity may be inadequate or limited in animal testing. |
| **N-BUTYL METHACRYLATE** | For iso-butyl methacrylate (i-BMA) and n-butyl methacrylate (n-BMA):<br>**Acute toxicity:** It is anticipated that BMA is absorbed after oral or inhalation exposure. In vitro studies using isolated rat liver microsomes or porcine liver esterase showed rapid hydrolysis of n-BMA yielding methacrylic acid and n-butanol. No in vivo metabolism data is available on n-BMA/ i-BMA, but from the in vitro data rapid hydrolysis to methacrylic acid and the corresponding alcohol can be anticipated. n-BMA did not bind to glutathione (GSH) in vitro. It is expected that after hydrolysis the respective cleavage products, methacrylic acid and n-butanol or or isobutanol are further metabolised to CO2.<br>In mammals n-BMA/ i-BMA is of low oral toxicity by the oral, dermal or inhalation route. The have local irritating properties to rabbit skin and eyes. Respiratory tract irritation was observed after inhalation exposure to rats of n-BMA. Whilst n-BMA is a weak skin sensitiser in guinea pigs there is no such evidence for i-BMA. From available human clinical data it can be concluded that the sensitisation potential to humans of n-BMA is low.<br>**Repeat dose toxicity:** A repeat dose oral study of limited reliability, indicates that n-BMA is of low oral toxicity. A reliable 28-day exposure inhalation study in rats, for n-BMA demonstrated the formation of nasal lesions indicative of a local irritant effect of the nose without indication of systemic toxicity.<br>**Genotoxicity:** Neither n-BMA nor i-BMA was mutagenic in a number of gene mutation assays with Salmonella typhimurium. i-BMA was not clastogenic in a mouse micronucleus assay. There appears to be little concern for genotoxicity despite limited data.<br>**Carcinogenicity:** Given the lack of carcinogenicity observed with methyl methacrylic (the metabolite) and the lack of genotoxic potential there appears to be little concern for possible carcinogenicity of BMA. Neither isobutanol or n-butanol exhibit carcinogenic potential.<br>**Developmental toxicity:** Available data for methyl methacrylate and n-butanol an isobutanol suggests that there is little concern for possible developmental effects arising out of inhalation exposure to non-maternally toxic concentrations of n-BMA/ i-BMA.<br>**Repeat dose toxicity:** Limited data from repeated dose studies with n-BMA, methyl methacrylate, methacrylic acid and a fertility study with n-butanol did not reveal an y indications for possible toxicity on the reproductive organ |
| **419D-P-BK Overcoat Pen — Black & METHYL ETHYL KETONE & METHYL METHACRYLATE & N-BUTYL METHACRYLATE** | 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.<br>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. |
| **419D-P-BK Overcoat Pen — Black & N-BUTYL ACETATE** | Generally,linear and branched-chain alkyl esters are hydrolysed to their component alcohols and carboxylic acids in the intestinal tract, blood and most tissues throughout the body. Following hydrolysis the component alcohols and carboxylic acids are metabolized<br>Oral acute toxicity studies have been reported for 51 of the 67 esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids. The very low oral acute toxicity of this group of esters is demonstrated by oral LD50 values greater than 1850 mg/kg bw<br>Genotoxicity studies have been performed in vitro using the following esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids: methyl acetate, butyl acetate, butyl stearate and the structurally related isoamyl formate and demonstrates that these substances are not genotoxic.<br>The JEFCA Committee concluded that the substances in this group would not present safety concerns at the current levels of intake the esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids are generally used as flavouring substances up to average maximum levels of 200 mg/kg. Higher levels of use (up to 3000 mg/kg) are permitted in food categories such as chewing gum and hard candy. In |

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| | Europe the upper use levels for these flavouring substances are generally 1 to 30 mg/kg foods and in special food categories like candy and alcoholic beverages up to 300 mg/kg foods<br>**Internationl Program on Chemical Safety: the Joint FAO/WHO Expert Committee on Food Additives (JECFA)**<br>**Esters of Aliphatic acyclic primary alcohols with aliphatic linear saturated carboxylic acids.; 1998** |
| **419D-P-BK Overcoat Pen — Black & METHYL ETHYL KETONE** | Methyl ethyl ketone is considered to have a low order of toxicity; however methyl ethyl ketone is often used in combination with other solvents and the toxic effects of the mix may be greater than either solvent alone. Combinations of n-hexane with methyl ethyl ketone and also methyl n-butyl ketone with methyl ethyl ketone show increase in peripheral neuropathy, a progressive disorder of nerves of extremities.<br>Combinations with chloroform also show increase in toxicity |
| **N-BUTYL ACETATE & METHYL ETHYL KETONE** | The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. |
| **METHYL METHACRYLATE & N-BUTYL METHACRYLATE** | 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 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.<br>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<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<br>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. |

| | | | |
|---|---|---|---|
| **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*

### 11.2.1. Endocrine Disruption Properties

Not Available

## SECTION 12 Ecological information

### 12.1. Toxicity

**419D-P-BK Overcoat Pen — Black**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| Not Available | Not Available | Not Available | Not Available | Not Available |

**n-butyl acetate**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| EC50(ECx) | 96h | Fish | 18mg/l | 2 |
| EC50 | 72h | Algae or other aquatic plants | 246mg/l | 2 |
| LC50 | 96h | Fish | 18mg/l | 2 |
| EC50 | 48h | Crustacea | 32mg/l | 1 |

**methyl ethyl ketone**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| NOEC(ECx) | 48h | Crustacea | 68mg/l | 2 |
| EC50 | 72h | Algae or other aquatic plants | 1972mg/l | 2 |
| LC50 | 96h | Fish | >324mg/L | 4 |
| EC50 | 48h | Crustacea | 308mg/l | 2 |
| EC50 | 96h | Algae or other aquatic plants | >500mg/l | 4 |

**propylene glycol monomethyl ether acetate, alpha-isomer**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| EC50 | 72h | Algae or other aquatic plants | >1000mg/l | 2 |
| LC50 | 96h | Fish | >100mg/l | 2 |
| EC50 | 48h | Crustacea | 373mg/l | 2 |
| NOEC(ECx) | 336h | Fish | 47.5mg/l | 2 |
| EC50 | 96h | Algae or other aquatic plants | >1000mg/l | 2 |

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**carbon black**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| EC50 | 72h | Algae or other aquatic plants | >0.2mg/l | 2 |
| LC50 | 96h | Fish | >100mg/l | 2 |
| EC50 | 48h | Crustacea | 33.076-41.968mg/l | 4 |
| NOEC(ECx) | 24h | Crustacea | 3200mg/l | 1 |

**Stoddard Solvent**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| NOEC(ECx) | 3072h | Fish | 1mg/l | 1 |
| NOEC(ECx) | 720h | Crustacea | 0.024mg/l | 2 |
| LC50 | 96h | Fish | 0.14mg/l | 2 |
| EC50 | 96h | Algae or other aquatic plants | 0.277mg/l | 2 |

**methyl methacrylate**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| EC0(ECx) | 48h | Crustacea | 48mg/l | 1 |
| EC50 | 72h | Algae or other aquatic plants | >110mg/l | 2 |
| LC50 | 96h | Fish | >79mg/l | 2 |
| EC50 | 48h | Crustacea | 69mg/l | 1 |
| EC50 | 96h | Algae or other aquatic plants | 170mg/l | 1 |

**n-butyl methacrylate**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| NOEC(ECx) | 48h | Crustacea | 23mg/l | 1 |
| EC50 | 72h | Algae or other aquatic plants | 31.2mg/l | 2 |
| LC50 | 96h | Fish | 5.57mg/l | 2 |
| EC50 | 96h | Algae or other aquatic plants | 57mg/l | 1 |
| EC50 | 48h | Crustacea | 32mg/l | 1 |

***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*

Harmful 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.
For methyl ethyl ketone:
log Kow : 0.26-0.69
log Koc : 0.69
Koc : 34
Half-life (hr) air : 2.3
Half-life (hr) H2O surface water : 72-288
Henry's atm m3 /mol: 1.05E-05
BOD 5 : 1.5-2.24, 46%
COD : 2.2-2.31, 100%
ThOD : 2.44
BCF : 1
**Environmental fate:**
TERRESTRIAL FATE: Measured Koc values of 29 and 34 were obtained for methyl ethyl ketone in silt loams. Methyl ethyl ketone is expected to have very high mobility in soil. Volatilisation of methyl ethyl ketone from dry soil surfaces is expected based upon an experimental vapor pressure of 91 mm Hg at 25 deg C. Volatilization from moist soil surfaces is also expected given the measured Henry's Law constant of 4.7x10-5 atm-cu m/mole. The volatilisation half-life of methyl ethyl ketone from silt and sandy loams was measured as 4.9 days. Methyl ethyl ketone is expected to biodegrade under both aerobic and anaerobic conditions as indicated by numerous screening tests.
AQUATIC FATE: Based on Koc values, methyl ethyl ketone is not expected to adsorb to suspended solids and sediment in water. Methyl ethyl ketone is expected to volatilise from water surfaces based on the measured Henry's Law constant. Estimated half-lives for a model river and model lake are 19 and 197, hours respectively. Biodegradation of this compound is expected based upon numerous screening tests. An estimated BCF value of 1 based on an experimental log Kow of 0.29, suggests that bioconcentration in aquatic organisms is low.
ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere, methyl ethyl ketone, which has an experimental vapor pressure of 91 mm Hg at 25 deg C, will exist solely as a vapor in the ambient atmosphere. Vapour-phase methyl ethyl ketone is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be about 14 days. Methyl ethyl ketone is also expected to undergo photodecomposition in the atmosphere by natural sunlight. Photochemical degradation of methyl ethyl ketone by natural sunlight is expected to occur at approximately 1/5 the rate of degradation by photochemically produced hydroxyl radicals.
**Ecotoxicity:**
Fish LC50 (24 h): bluegill sunfish (Lepomis macrochirus) 1690-5640 mg/l; guppy (Lebistes reticulatus) 5700 mg/l; goldfish (Carassius auratus) >5000 mg/l
Fish LC50 (96 h): fathead minnow (Pimephales promelas) 3200 mg/l; bluegill sunfish (Lepomis macrochirus) 4467 mg/l; mosquito fish (Gambusia affinis) 5600 mg/l
Daphnia magna LC50 (48 h):<520-1382 mg/l
Daphnia magna LC50 (24 h): 8890 mg/l
Brine shrimp (Artemia salina) LC50 (24 h): 1950 mg/l
For ketones:
Ketones, unless they are alpha, beta--unsaturated ketones, can be considered as narcosis or baseline toxicity compounds
Hydrolysis may also involve the addition of water to ketones to yield ketals under mild acid conditions. However, this addition of water is thermodynamically favorable only for low molecular weight ketones. This addition is an equilibrium reaction that is reversible upon a change of water concentration and the reaction ultimately leads to no permanent change in the structure of the ketone substrateThe higher molecular weight ketones do no form stable ketals. Therefore, the ketones are stable to water under ambient environmental conditions
Another possible reaction of ketones in water involves the enolic hydrogen on the carbons bonded to the carbonyl function. Under conditions of high pH (pH greater than 10), the enolic proton is abstracted by base (OH-) forming a carbanion intermediate that may react with other organic substrates (*e.g.,* ketones, esters, aldehydes) containing a center for nucleophilic attack. The reactions, commonly recognized as condensation reactions, produce higher molecular weight products. Under ambient conditions of temperature, pH, and low

**Continued...**

concentration, these condensation reactions are unfavorable.
Based on its reactions in air, it seems likely that ketones undergo photolysis in water. It is probable that ketones will be biodegraded to an appreciable degree by micro-organisms in soil and water. They are unlikely to bioconcentrate or biomagnify.
Drinking Water Standards: hydrocarbon total: 10 ug/l (UK max.).
For n-butyl acetate:
Half-life (hr) air : 144
Half-life (hr) H2O surface water : 178-27156
Henry's atm m3 /mol: 3.20E-04
BOD 5 if unstated: 0.15-1.02,7%
COD : 78%
ThOD : 2.207
BCF : 4-14
**Environmental Fate:**
TERRESTRIAL FATE: An estimated Koc value of 200 determined from a measured log Kow of 1.78 indicates that n-butyl acetate is expected to have moderate mobility in soil. Volatilisation of n-butyl acetate is expected from moist soil surfaces given its Henry's Law constant of 2.8x10-4 atm-cu m/mole. Volatilisation from dry soil surfaces is expected based on a measured vapor pressure of 11.5 mm Hg. Using a standard BOD dilution technique and a sewage inoculum, theoretical BODs of 56 % to 86 % were observed during 5-20 day incubation periods, which suggests that n-butyl acetate may biodegrade in soil.
AQUATIC FATE: An estimated Koc value indicates that n-butyl acetate is not expected to adsorb to suspended solids and sediment in water. Butyl acetate is expected to volatilise from water surfaces based on a Henry's Law constant of 2.8x10-4 atm-cu m/mole. Estimated half-lives for a model river and model lake are 7 and 127, hours respectively. An estimated BCF value of 10 based on the log Kow, suggests that bioconcentration in aquatic organisms is low. Using a filtered sewage seed, 5-day and 20-day theoretical BODs of 58 % and 83 % were measured in freshwater dilution tests; 5-day and 20-day theoretical BODs of 40 % and 61 % were measured in salt water. A 5-day theoretical BOD of 56.8 % and 51.8 % were measured for n-butyl acetate in distilled water and seawater, respectively. Hydrolysis may be an important environmental fate for this compound based upon experimentally determined hydrolysis half-lives of 114 and 11 days at pH 8 and 9 respectively.
ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere, n-butyl acetate, which has a vapour pressure of 11.5 mm Hg at 25 deg C, is expected to exist solely as a vapor in the ambient atmosphere. Vapour-phase n-butyl acetate is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be about 4 days
**Environmental fate:**
Fish LC50 (96 h, 23 C): island silverside (Menidia beryllina) 185 ppm (static bioassay in synthetic seawater, mild aeration applied after 24 h); bluegill sunfish (Lepomis macrochirus) 100 ppm (static bioassay in fresh water, mild aeration applied after 24 h)
Fish EC50 (96 h): fathead minnow (Pimephales promelas) 18 mg/l (affected fish lost equilibrium prior to death)
Daphnia LC50 (48 h): 44 ppm
Algal LC50 (96 h): Scenedesmus 320 ppm
**DO NOT** discharge into sewer or waterways.

### 12.2. Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| n-butyl acetate | LOW | LOW |
| methyl ethyl ketone | LOW (Half-life = 14 days) | LOW (Half-life = 26.75 days) |
| propylene glycol monomethyl ether acetate, alpha-isomer | LOW | LOW |
| methyl methacrylate | LOW | LOW |
| n-butyl methacrylate | LOW | LOW |

### 12.3. Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| n-butyl acetate | LOW (BCF = 14) |
| methyl ethyl ketone | LOW (LogKOW = 0.29) |
| propylene glycol monomethyl ether acetate, alpha-isomer | LOW (LogKOW = 0.56) |
| Stoddard Solvent | LOW (BCF = 159) |
| methyl methacrylate | LOW (BCF = 6.6) |
| n-butyl methacrylate | LOW (BCF = 114) |

### 12.4. Mobility in soil

| Ingredient | Mobility |
|---|---|
| n-butyl acetate | LOW (KOC = 20.86) |
| methyl ethyl ketone | MEDIUM (KOC = 3.827) |
| propylene glycol monomethyl ether acetate, alpha-isomer | HIGH (KOC = 1.838) |
| methyl methacrylate | LOW (KOC = 10.14) |
| n-butyl methacrylate | LOW (KOC = 63.6) |

### 12.5. Results of PBT and vPvB assessment

| | P | B | T |
|---|---|---|---|
| Relevant available data | Not Available | Not Available | Not Available |
| PBT | ✗ | ✗ | ✗ |
| vPvB | ✗ | ✗ | ✗ |

| | |
|---|---|
| PBT Criteria fulfilled? | No |
| vPvB | No |

### 12.6. Endocrine Disruption Properties

**Continued...**

Not Available

### 12.7. Other adverse effects

Not Available

## SECTION 13 Disposal considerations

### 13.1. 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>▸ Recycle wherever possible.<br>▸ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.<br>▸ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material).<br>▸ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed. |
| **Waste treatment options** | Not Available |
| **Sewage disposal options** | Not Available |

## SECTION 14 Transport information

### Labels Required

| | |
|---|---|
| |  **Excepted Quantity**<br>Code E2 for all modes of transport.<br>On air waybill, write "Dangerous Goods in Excepted Quantity" |

### Land transport (ADR-RID)

| | |
|---|---|
| 14.1. **UN number** | 1263 |
| 14.2. **UN proper shipping name** | PAINT or PAINT RELATED MATERIAL |
| 14.3. **Transport hazard class(es)** | Class: 3<br>Subrisk: Not Applicable |
| 14.4. **Packing group** | II |
| 14.5. **Environmental hazard** | Not Applicable |
| 14.6. **Special precautions for user** | Hazard identification (Kemler): 33<br>Classification code: F1<br>Hazard Label: 3<br>Special provisions: 163 367 640C 650 640D<br>Limited quantity: 5 L<br>Tunnel Restriction Code: 2 (D/E) |

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

| | |
|---|---|
| 14.1. **UN number** | 1263 |
| 14.2. **UN proper shipping name** | Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base); Paint related material (including paint thinning or reducing compounds) |
| 14.3. **Transport hazard class(es)** | ICAO/IATA Class: 3<br>ICAO / IATA Subrisk: Not Applicable<br>ERG Code: 3L |
| 14.4. **Packing group** | II |
| 14.5. **Environmental hazard** | Not Applicable |

**Continued...**

| | | |
|---|---|---|
| 14.6. **Special precautions for user** | Special provisions | A3 A72 A192 |
| | Cargo Only Packing Instructions | 364 |
| | Cargo Only Maximum Qty / Pack | 60 L |
| | Passenger and Cargo Packing Instructions | 353 |
| | Passenger and Cargo Maximum Qty / Pack | 5 L |
| | Passenger and Cargo Limited Quantity Packing Instructions | Y341 |
| | Passenger and Cargo Limited Maximum Qty / Pack | 1 L |

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

| | | |
|---|---|---|
| 14.1. **UN number** | 1263 | |
| 14.2. **UN proper shipping name** | PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound) | |
| 14.3. **Transport hazard class(es)** | IMDG Class | 3 |
| | IMDG Subrisk | Not Applicable |
| 14.4. **Packing group** | II | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | EMS Number | F-E , S-E |
| | Special provisions | 163 367 |
| | Limited Quantities | 5 L |

**Inland waterways transport (ADN)**

| | | |
|---|---|---|
| 14.1. **UN number** | 1263 | |
| 14.2. **UN proper shipping name** | PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound) | |
| 14.3. **Transport hazard class(es)** | 3 | Not Applicable |
| 14.4. **Packing group** | II | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Classification code | F1 |
| | Special provisions | 163; 367; 640C; 640D; 650 |
| | Limited quantity | 5 L |
| | Equipment required | PP, EX, A |
| | Fire cones number | 1 |

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

Not Applicable

**14.8. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

| Product name | Group |
|---|---|
| n-butyl acetate | Not Available |
| methyl ethyl ketone | Not Available |
| propylene glycol monomethyl ether acetate, alpha-isomer | Not Available |
| carbon black | Not Available |
| Stoddard Solvent | Not Available |
| methyl methacrylate | Not Available |
| n-butyl methacrylate | Not Available |

**14.9. Transport in bulk in accordance with the ICG Code**

| Product name | Ship Type |
|---|---|
| n-butyl acetate | Not Available |
| methyl ethyl ketone | Not Available |
| propylene glycol monomethyl ether acetate, alpha-isomer | Not Available |
| carbon black | Not Available |
| Stoddard Solvent | Not Available |
| methyl methacrylate | Not Available |
| n-butyl methacrylate | Not Available |

## SECTION 15 Regulatory information

**Continued...**

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

**n-butyl acetate is found on the following regulatory lists**

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

**methyl ethyl ketone is found on the following regulatory lists**

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

**propylene glycol monomethyl ether acetate, alpha-isomer is found on the following regulatory lists**

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

**carbon black is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

**Stoddard Solvent is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 2) Carcinogens: Category 1 B
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 4) Germ cell mutagens: Category 1 B
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans

**methyl methacrylate is found on the following regulatory lists**

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

**n-butyl methacrylate is found on the following regulatory lists**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

### National Inventory Status

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (n-butyl acetate; methyl ethyl ketone; propylene glycol monomethyl ether acetate, alpha-isomer; carbon black; Stoddard Solvent; methyl methacrylate; n-butyl methacrylate) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | Yes |
| Japan - ENCS | Yes |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | Yes |

**Continued...**

| National Inventory | Status |
|---|---|
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | Yes |
| Vietnam - NCI | Yes |
| Russia - FBEPH | Yes |
| ***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** | 26/11/2021 |
| **Initial Date** | 29/04/2017 |

### Full text Risk and Hazard codes

| | |
|---|---|
| **H226** | Flammable liquid and vapour. |
| **H304** | May be fatal if swallowed and enters airways. |
| **H315** | Causes skin irritation. |
| **H335** | May cause respiratory irritation. |
| **H351** | Suspected of causing cancer. |

### 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.
For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:
EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

### 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

### Reason For Change

A-2.00 - Update to the safety data sheet and added the UFI number