

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

1.1. Product Identifier

1.1. Product Identifier				
Product name	MC002968			
Synonyms	MC002968 - 232ml			
Other means of identification	Super Shield Nickel Conductive Paint / Nickel Conductive Paint			
1.2. Relevant identified uses of	f the substance or mixture and uses advised against			
Relevant identified uses	Electrically conductive coating and EMI/RFI shield			
Uses advised against	Not Applicable			
1.3. Details of the supplier of the safety data sheet				
Registered company name	Premier Farnell plc			
Address	150 Armley Road, Leeds, LS12 2QQ			

	·····, ·····, ·····, ·····, ·····				
Telephone	+44 (0) 870 129 8608				
Fax					
1.4. Emergency telephone num	ber				
Association / Organisation	Premier Farnell plc				
Emergency telephone numbers	+44 1865 407333				
Other emergency telephone numbers	NA				

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, H372 - Specific Target Organ Toxicity - Repeated Exposure Category 1, H351 - Carcinogenicity Category 2, H412 - Hazardous to the Aquatic Environment Long-Term Hazard Category 3
Legend:	1. Classified by Chernwatch; 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	ay cause drowsiness or dizziness.		
H225	Highly flammable liquid and vapour.		
H319	Causes serious eye irritation.		
H317	May cause an allergic skin reaction.		
H372	Causes damage to organs through prolonged or repeated exposure.		
H351	Suspected of causing cancer.		
H412	Harmful to aquatic life with long lasting effects.		

Supplementary statement(s)

Not Applicable





Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe mist/vapours/spray.
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.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P264	Wash all exposed external body areas thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.

Precautionary statement(s) Response

P308+P313	F exposed or concerned: Get medical advice/ attention.			
P370+P378	In case of fire: Use alcohol resistant foam or normal protein foam to extinguish.			
P302+P352	² ON SKIN: Wash with plenty of water and soap.			
P305+P351+P338	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

Inhalation, skin contact and/or ingestion may produce health damage*.

Cumulative effects may result following exposure*.

May produce discomfort of the respiratory system*.

Repeated exposure potentially causes skin dryness and cracking*.

SECTION 3 Composition / information on ingredients

3.1.Substances

See 'Composition on ingredients' in Section 3.2

3.2.Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567	SCL / M-Factor	Nanoform Particle Characteristics
1.7440-02-0 2.231-111-4 445-070-7 3.028-002-00-7 028-002-01-4 4.Not Available	48	nickel	Sensitisation (Skin) Category 1, Carcinogenicity Category 2, Specific Target Organ Toxicity - Repeated Exposure Category 1; H317, H351, H372 ^[2]	Not Available	Not Available





1.616-38-6 2.210-478-4 3.607-013-00-6 4.Not Available		16	dimethyl carbonate	Flammable Liquids Category 2; H225 ^[2]	Not Available	Not Available
1.67-64-1 2.200-662-2 3.606-001-00-8 4.Not Available		13	<u>acetone</u> * -	Flammable Liquids Category 2, Serious Eye Damage/Eye Irritation Category 2, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3; H225, H319, H336 [2]	Not Available	Not Available
1.CAS No 2.EC No 3.Index No 4.REACH No		%[weight]	Name	Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567	SCL / M-Factor	Nanoform Particle Characteristics
1.110-43-0 2.203-767-1 3.606-024-00-3 4.Not Available		10	amyl methyl ketone * -	Flammable Liquids Category 3, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4; H226, H302, H332 ^[2]	Not Available	Not Available
1.108-65-6 2.203-603-9 3.607-195-00-7 4.Not Available		2	propylene glycol monomethyl ether acetate, alpha-isomer -	Flammable Liquids Category 3; H226 ^[2]	Not Available	Not Available
	Legend:	 Classified by Chernwatch; 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: Wash out immediately with fresh running water. 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. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	 If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	 If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. 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. Transport to hospital, or doctor, without delay.
Ingestion	 Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor. 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:

BASIC TREATMENT

- 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.



multicomp

- 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.

ADVANCED TREATMENT

- 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.
- Hypotension with signs of hypotension
 Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

EMERGENCY DEPARTMENT

- 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

5.1. Extinguishing media

DO NOT use halogenated fire extinguishing agents.

- Metal dust fires need to be smothered with sand, inert dry powders.
- DO NOT USE WATER, CO2 or FOAM.
- Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire.
- Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.
- Chemical reaction with CO2 may produce flammable and explosive methane.
- If impossible to extinguish, withdraw, protect surroundings and allow fire to burn itself out.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	 Reacts with acids producing flammable / explosive hydrogen (H2) gas 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. May be violently or explosively reactive. Wear breathing apparatus plus protective gloves in the event of a fire. Prevent, by any means available, spillage from entering drains or water course. Consider evacuation (or protect in place). Fight fire from a safe distance, with adequate cover. If safe, switch off electrical equipment until vapour fire hazard removed. Use water delivered as a fine spray to control the fire and cool adjacent area. Avoid spraying water onto liquid pools. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	 DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal. DO NOT use water or foam as generation of explosive hydrogen may result. With the exception of the metals that burn in contact with air or water (for example, sodium), masses of combustible metals do not represent unusual fire risks because they have the ability to conduct heat away from hot spots so efficiently that the heat of combustion cannot be maintained - this means that it will require a lot of heat to ignite a mass of combustible metal. Generally, metal fire risks exist when sawdust, machine shavings and other metal 'fines' are present. Metal powders, while generally regarded as non-combustible: May burn when metal is finely divided and energy input is high. May burn when metal is finely divided and energy input is high. May peignited by friction, heat, sparks or flame. May REIGNITE after fire is extinguished. Will burn with intense heat. Note: Metal dust fires are slow moving but intense and difficult to extinguish. Containers may explode on heating. Dusts or fumes may form explosive mixtures with air. Gases generated in fire may be poisonous, corrosive or irritating. Hot or burning metals may react violently upon contact with other materials, such as oxidising agents and extinguishing agents used on fires involving ordinary combustibles of flammable liquids.





 Temperatures produced by burning metals can be higher than temperatures generated by burning flammable liquids
 Some metals can continue to burn in carbon dioxide, nitrogen, water, or steam atmospheres in which ordinary combustibles or flammable liquids would be incapable of burning.
 Combustion products include: carbon dioxide (CO2) other pyrolysis products typical of burning organic material.
 Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

SECTION 6 Accidental release measures

6.1. Personal precautions,	protective equipment an	d 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. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container. 											
	Chemical Cla For release o	ss: estei nto land:	and ethers recommende	ed s	orbents li	sted in d	order	of priority.				
Major Spills	SORBENT TYPE RANK APPLICATION COLLECTION LIMITATIONS											
	LAND SPILL	- SMALI										
	cross-linked	polyme	- particulate	1	shovel	shovel	F	R, W, SS				
	cross-linked	polyme	- pillow	1	throw	pitchfo	rk F	R, DGC, RT				
	sorbent clay	- particu	llate	2	shovel	shovel	F	R,I, P				
	wood fiber -	particula	ite	3	shovel	shovel	F	R, W, P, DGC				
	treated wood	d fiber - I	oillow	3 3	throw	pitchio	rk F	DGC, RT				
	LAND SPILL	- MEDIL	M	-								
	cross-linked	polvme	- particulate	1	blower	skiploa	der	R.W. SS				
	cross-linked	polyme	- pillow	2	throw	skiploa	der	R, DGC, RT				
	sorbent clay	- particu	llate	3	blower	skiploa	der	R, I, P				
	polypropyler	ne - parti	culate	3	blower	skiploa	der	W, SS, DGC				
	expanded m	ineral - I	particulate	4	blower	skiploa	der	R, I, W, P, DGC				
	wood fiber -	particula	ite	4	blower	skiploa	der	R, W, P, DGC				
	Legend DGC: Not effective where ground cover is dense R; Not reusable I: Not incinerable P: Effectiveness reduced when rainy RT:Not effective where terrain is rugged SS: Not for use within environmentally sensitive sites W: Effectiveness reduced when windy Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control; R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988 • Clear area of personnel and move upwind. • Alert Fire Brigade and tell them location and nature of hazard. • May be violently or explosively reactive. • Wear breathing apparatus pilus protective gloves. • Prevent, by any means available, spillage from entering drains or water course. • Consider evacuation (or protect in place). • No smoking, naked lights or ignition sources. • Increase ventilation.											



multicomp

Stop leak if safe to do so.
Water spray or fog may be used to disperse /absorb vapour.
Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable product into labelled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labelled drums for disposal.
Wash area and prevent runoff into drains.
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 handl	ing
Safe handling	 Containers, even those that have been emptied, may contain explosive vapours. Do NOT cut, drill, grind, weld or perform similar operations on or near containers. Contains low boiling substance: Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately. Check for bulging containers. Vent periodically Always release caps or seals slowly to ensure slow dissipation of vapours Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. Avoid smoking, naked lights, heat or ignition sources. When handling, DO NOT eat, drink or smoke. Vapour may ignite on pumping or pouring due to static electricity. DO NOT use plastic buckets. Earth and secure metal containers when dispensing or pouring product. Use spark-free tools when handling. Avoid physical damage to containers. Always wash hands with scap and water after handling. Work clothes should be laundered separately. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
Fire and explosion protection	See section 5
Other information	 Store in original containers in approved flame-proof area. No smoking, naked lights, heat or ignition sources. DO NOT store in pits, depressions, basements or areas where vapours may be trapped. Keep containers securely sealed. Store away from incompatible materials in a cool, dry well ventilated area. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.

7.2. Conditions for safe storage, including any incompatibilities

	CARE: Packing of high density product in light weight metal or plastic packages may result in container collapse with product release
	Heavy gauge metal packages / Heavy gauge metal drums
	Packing as supplied by manufacturer.
	Plastic containers may only be used if approved for flammable liquid.
	Check that containers are clearly labelled and free from leaks.
	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.
Suitable container	For materials with a viscosity of at least 2680 cSt. (23 deg. C)
	 For manufactured product having a viscosity of at least 250 cSt. (23 deg. C)
	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.
	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
	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.



multicomp

Heptanones:

	react violently with strong oxidisers, aldehydes, nitric acid, perchloric acid
	 form a variety of unstable peroxides following reaction with hydrogen peroxide b great percent perce
	viale incompatible with aliphatic antines, aldenydes, strong bases
	k is a strong reducing agent
	It is a complexity reaction and a set of the set of
	reacts with acids, evolving flammable hydrogen gas
	reacts violently with ammonia, ammonium nitrate, fluorine, hydrazine, hydrazoic acid, strong oxidisers, nitric acid, peroxyformic acid,
	potassium, potassium perchlorate, selenium, sulfur (evolves heat, incandescence), titanium and other materials
	is incompatible with organic solvents, sulfur compounds
	In reducing atmosphere furnace can react with carbon monoxide forming highly toxic nickel carbonyl gas; under fire conditions may also
	react in similar manner
	 Raney alloys, containing aluminum, may react with moisture Containing aluminum, may react with moisture Containing aluminum, may react with moisture
	 Carbonates are incompatible with cerum compounds, germanium, lead diacetate, magnesium, mercurous chioride, sliver nitrate WARPINIC: And a contract leading with participation. All transition metal participation behaviors are participation.
	 WARNING: Avoid of control reaction with peroxides: An iransinon micra peroxides should be considered as potentially explosive. For example transition metal complexes of alkel burgeners/decomprose explosively.
	example transition metal complexes of any injurice context and exposite explosited.
	poly-fluorobenzene show extreme sensitivity to heat and are explosive.
	Avoid reaction with borohydrides or cyanoborohydrides
	Many metals may incandesce, react violently, ignite or react explosively upon addition of concentrated nitric acid.
	Esters react with acids to liberate heat along with alcohols and acids.
	Strong oxidising acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products.
	 Heat is also generated by the interaction of esters with caustic solutions.
	 Flammable hydrogen is generated by mixing esters with alkali metals and hydrides.
	 Esters may be incompatible with alignatic amines and nitrates.
	Netones in this group.
Storage incompatibility	are reactive warming acute and backs including near and named gacks (e.g., 112).
	 are incompatible with isocyanates, aldehydes, cyanides, peroxides, and anhydrides.
	▶ react violently with aldehydes, HNO3 (nitric acid), HNO3 + H2O2 (mixture of nitric acid and hydrogen peroxide), and HClO4 (perchloric acid).
	may react with hydrogen peroxide to form unstable peroxides; many are heat- and shock-sensitive explosives.
	A significant property of most ketones is that the hydrogen atoms on the carbons next to the carbonyl group are relatively acidic when compared
	to hydrogen atoms in typical hydrocarbons. Under strongly basic conditions these hydrogen atoms may be abstracted to form an enolate anion.
	In sproperty allows ketones, especially methyl ketones, to participate in condensation reactions with other ketones and aldenydes. This type of
	condensation reaction is lavoure oby high substate concentrations and high pr (greater than 1 w/w NaOH).
	• Avoid reaction with oxidiating agents, bases and strong reducing agents. Matals exhibit varying degrees of activity. Reaction is reduced in the massive form (sheet rod, or dron), compared with finely divided forms. The
	less active metals will not burn in air but:
	can react exothermically with oxidising acids to form noxious gases.
	catalyse polymerisation and other reactions, particularly when finely divided
	react with halogenated hydrocarbons (for example, copper dissolves when heated in carbon tetrachloride), sometimes forming explosive
	compounds.
	• Finely divided metal powders develop pyrophoricity when a critical specific surface area is exceeded; this is ascribed to high heat of oxide
	tormation on exposure to air.
	• Sale handling is possible in relatively low concentrations of oxygen in an inertigas. • Sale handling is possible in relatively low concentrations of oxygen in an inertigas.
	 Several pyrophotic initiality, solution in grass bolius have ignited when the container is broken on impact. Storage of these materials molist and in metal containers is recommended.
	 The reaction residues from various metal syntheses (involving vacuum evaporation and co-deposition with a ligand) are often pyrophoric.
	Factors influencing the pyrophoricity of metals are particle size, presence of moisture, nature of the surface of the particle, heat of formation of
	the oxide, or nitride, mass, hydrogen content, stress, purity and presence of oxide, among others.
	Many metals in elemental form react exothermically with compounds having active hydrogen atoms (such as acids and water) to form
	flammable hydrogen gas and caustic products.
	 Elemental metals may react with azo/diazo compounds to form explosive products.
	Some elemental metals form explosive products with halogenated hydrocarbons.

7.3. Specific end use(s)

See section 1.2

SECTION 8 Exposure controls / personal protection

8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
nickel	Inhalation 0.05 mg/m ³ (Systemic, Chronic) Dermal 0.035 mg/cm ² (Local, Chronic) Inhalation 0.05 mg/m ³ (Local, Chronic) Inhalation 11.9 mg/m ³ (Local, Acute) Inhalation 60 ng/m ³ (Systemic, Chronic) * Oral 0.011 mg/kg bw/day (Systemic, Chronic) * Dermal 0.035 mg/cm ² (Local, Chronic) * Inhalation 60 ng/m ³ (Local, Chronic) * Oral 0.37 mg/kg bw/day (Systemic, Acute) * Inhalation 0.8 mg/m ³ (Local, Acute) *	 7.1 µg/L (Water (Fresh)) 8.6 µg/L (Water - Intermittent release) 0 µg/L (Water (Marine)) 109 mg/kg sediment dw (Sediment (Fresh Water)) 109 mg/kg sediment dw (Sediment (Marine)) 29.9 mg/kg soil dw (Soil) 0.33 mg/L (STP) 0.12 mg/kg food (Oral)





dimethyl carbonate	Dermal 5 mg/kg bw/day (Systemic, Chronic) Inhalation 34.9 mg/m ³ (Systemic, Chronic) Dermal 2.5 mg/kg bw/day (Systemic, Chronic) * Inhalation 8.7 mg/m ³ (Systemic, Chronic) * Oral 2.5 mg/kg bw/day (Systemic, Chronic) *	0.5 mg/L (Water (Fresh)) 0.05 mg/L (Water - Intermittent release) 1 mg/L (Water (Marine)) 188 mg/L (STP)
acetone Dermal 186 mg/kg bw/day (Systemic, Chronic) Inhalation 1 210 mg/m³ (Systemic, Chronic) Inhalation 2 420 mg/m³ (Local, Acute) Dermal 62 mg/kg bw/day (Systemic, Chronic) * Inhalation 200 mg/m³ (Systemic, Chronic) * Oral 62 mg/kg bw/day (Systemic, Chronic) *		 10.6 mg/L (Water (Fresh)) 1.06 mg/L (Water - Intermittent release) 21 mg/L (Water (Marine)) 30.4 mg/kg sediment dw (Sediment (Fresh Water)) 3.04 mg/kg sediment dw (Sediment (Marine)) 29.5 mg/kg soil dw (Soil) 100 mg/L (STP)
amyl methyl ketone	Dermal 54.27 mg/kg bw/day (Systemic, Chronic) Inhalation 394.25 mg/m³ (Systemic, Chronic) Inhalation 1 516 mg/m³ (Systemic, Acute) Dermal 23.32 mg/kg bw/day (Systemic, Chronic) * Inhalation 84.31 mg/m³ (Systemic, Chronic) * Oral 23.32 mg/kg bw/day (Systemic, Chronic) *	0.098 mg/L (Water (Fresh)) 0.01 mg/L (Water - Intermittent release) 0.982 mg/L (Water (Marine)) 1.89 mg/kg sediment dw (Sediment (Fresh Water)) 0.189 mg/kg sediment dw (Sediment (Marine)) 0.321 mg/kg soil dw (Soil) 12.5 mg/L (STP)
propylene glycol monomethyl ether acetate, alpha-isomer	Dermal 796 mg/kg bw/day (Systemic, Chronic) Inhalation 275 mg/m ³ (Systemic, Chronic) Inhalation 550 mg/m ³ (Local, Acute) Dermal 320 mg/kg bw/day (Systemic, Chronic) * Inhalation 33 mg/m ³ (Systemic, Chronic) * Oral 36 mg/kg bw/day (Systemic, Chronic) * Inhalation 33 mg/m ³ (Local, Chronic) *	0.635 mg/L (Water (Fresh)) 0.064 mg/L (Water - Intermittent release) 6.35 mg/L (Water (Marine)) 3.29 mg/kg sediment dw (Sediment (Fresh Water)) 0.329 mg/kg sediment dw (Sediment (Marine)) 0.29 mg/kg soil dw (Soil) 100 mg/L (STP)

* Values for General Population

Occupational Exposure Limits (OEL)

INGREDIENT DATA						
Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Europe ECHA Occupational exposure limits - Activity list	nickel	Not Available	Not Available	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	nickel	Nickel and its inorganic compounds (except nickel tetracarbonyl): nickel and water-insoluble nickel compounds (as Ni)	0.5 mg/m3	Not Available	Not Available	Sk, Carc (nickel oxides and sulphides) Sen (nickel sulphate)
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	acetone	Acetone	500 ppm / 1210 mg/m3	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	acetone	Acetone	500 ppm / 1210 mg/m3	3620 mg/m3 / 1500 ppm	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	amyl methyl ketone	Heptan-2-one	50 ppm / 238 mg/m3	475 mg/m3 / 100 ppm	Not Available	Skin
UK Workplace Exposure Limits (WELs)	amyl methyl ketone	Heptan-2-one	50 ppm / 237 mg/m3	475 mg/m3 / 100 ppm	Not Available	Sk
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

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
nickel	4.5 mg/m3	50 mg/m3	99 mg/m3
dimethyl carbonate	11 ppm	120 ppm	700 ppm
acetone	Not Available	Not Available	Not Available
amyl methyl ketone	150 ppm	670 ppm	4000* ppm





Ingredient	TEEL-1	TEEL-2		TEEL-3
propylene glycol monomethyl ether acetate, alpha-isomer	Not Available	Not Available		Not Available
Ingredient	Original IDLH		Revised IDLH	
nickel	10 mg/m3		Not Available	
dimethyl carbonate	Not Available		Not Available	
acetone	2,500 ppm		Not Available	
amyl methyl ketone	800 ppm		Not Available	
propylene glycol monomethyl ether acetate, alpha-isomer	Not Available		Not Available	

MATERIAL DATA

These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive

American Industrial Hygiene Association Journal 57: 641-649 (1996)

Odour Threshold Value: 3.6 ppm (detection), 699 ppm (recognition) Saturation vapour concentration: 237000 ppm @ 20 C

NOTE: Detector tubes measuring in excess of 40 ppm, are available.

Exposure at or below the recommended TLV-TWA is thought to protect the worker against mild irritation associated with brief exposures and the bioaccumulation, chronic irritation of the respiratory tract and headaches associated with long-term acetone exposures. The NIOSH REL-TWA is substantially lower and has taken into account slight irritation experienced by volunteer subjects at 300 ppm. Mild irritation to acclimatised workers begins at about 750 ppm - unacclimatised subjects will experience irritation at about 350-500 ppm but acclimatisation can occur rapidly. Disagreement between the peak bodies is based largely on the view by ACGIH that widespread use of acetone, without evidence of significant adverse health effects at higher concentrations, allows acceptance of a higher limit.

Half-life of acetone in blood is 3 hours which means that no adjustment for shift-length has to be made with reference to the standard 8 hour/day, 40 hours per week because body clearance occurs within any shift with low potential for accumulation.

A STEL has been established to prevent excursions of acetone vapours that could cause depression of the central nervous system.

Odour Safety Factor(OSF)

OSF=38 (ACETONE)

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 amyl methyl ketone:

Odour Threshold Value: 0.18 ppm (detection)

The TLV-TWA is well below the highest level of vapour (1025 ppm) reported to be associated with adverse effects in animals including dermal irritation. Odour Safety Factor (OSF)

OSF=1.4E2 (2-HEPTANONE)

8.2. Exposure controls

	 Metal dusts must be collected at the source of generation as they are potentially explosive. Avoid ignition sources. Good housekeeping practices must be maintained. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions. Do not use compressed air to remove settled materials from floors, beams or equipment Vacuum cleaners, of flame-proof design, should be used to minimise dust accumulation. Use non-sparking handling equipment, tools and natural bristle brushes. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations. Do not allow chips, fines or dusts to contact water, particularly in enclosed areas. Metal spraying and blasting should, where possible, be conducted in separate rooms. This minimises the risk of supplying oxygen, in the form of metal oxides, to potentially reactive finely divided metals such as aluminium, zinc, magnesium or titanium.
8.2.1. Appropriate engineering controls	 form of metal oxides, to potentially reactive finely divided metals such as aluminium, zinc, magnesium or titanium. Work-shops designed for metal spraying should possess smooth walls and a minimum of obstructions, such as ledges, on which dust accumulation is possible. Wet scrubbers are preferable to dry dust collectors. Bag or filter-type collectors should be sited outside the workrooms and be fitted with explosion relief doors. Cyclones should be protected against entry of moisture as reactive metal dusts are capable of spontaneous combustion in humid or partially wetted states.





Local exhaust systems must be designed to provide a minimum capture velocity at the fume source, away from the worker, of 0.5 metre/sec.
 Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuum and electrostatic precipitators must not be used, unless specifically approved for use with flammable/ explosive dusts.

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:	
welding, brazing fumes (released at relatively low velocity into moderately still air)	0.5-1.0 m/s (100-200 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 1-2.5 m/s (200-500 f/min.) for extraction of gases discharged 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.



Eye and face protection	 Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent] 		
Skin protection	See Hand protection below		
	 Wear chemical protective gloves, e.g. PVC. Wear safety footwear or safety gumboots, e.g. Rubber NOTE: The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. For esters: Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: frequency and duration of contact, chemical resistance of glove material, glove thickness and dexterity Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent). 		
Hands/feet protection	When protonged of nequency repeated contact may occur, a give with a protection class of 5 of higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use. Contaminated gloves should be replaced.		

Newark.com/exclusive-brands Farnell.com/exclusive-brands Element14.com/exclusive-brands

8.2.2. Personal protection





	As defined in ASTM F-739-96 in any application, gloves are rated as: • Excellent when breakthrough time > 480 min • Good when breakthrough time > 20 min • Fair when breakthrough time > 20 min • Poor when glove material degrades For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended. It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times. Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task. Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example: • Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of. • Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Body protection	See Other protection below
Other protection	 Overalls. PVC Apron. PVC protective suit may be required if exposure severe. Eyewash unit. Ensure there is ready access to a safety shower. Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). 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:

841AR Super Shield Nickel Conductive Paint / Nickel Conductive Paint

Material	CPI
BUTYL	А
BUTYL/NEOPRENE	А
PE/EVAL/PE	А
PVDC/PE/PVDC	А
SARANEX-23 2-PLY	В
TEFLON	В
CPE	С
HYPALON	С
NATURAL RUBBER	С
NATURAL+NEOPRENE	С
NEOPRENE	С
NITRILE	С
NITRILE+PVC	С
PVA	С
PVC	С
SARANEX-23	С
VITON/NEOPRENE	С

Respiratory protection

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the 'Exposure Standard' (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

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





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

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

** - Continuous-flow or positive pressure demand.

A(All classes) = Organic vapours, B AUS or B1 = Acid gases, 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 deg C)

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	Dark grey		
Physical state	Liquid	Relative density (Water = 1)	1.7
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)	1460
Initial boiling point and boiling range (°C)	56	Molecular weight (g/mol)	Not Available
Flash point (°C)	-17	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	HIGHLY FLAMMABLE.	Oxidising properties	Not Available
Upper Explosive Limit (%)	13	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	2	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	11	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (Not Available%)	Not Available
Vapour density (Air = 1)	>1	VOC g/L	Not Available
Nanoform Solubility	Not Available	Nanoform Particle Characteristics	Not Available
Particle Size	Not Available		

9.2. Other information

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. Product is considered stable. 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 of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo. 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 boling points increase. Central nervous system depression , headcache, drowsiness, dizziness, com and neurobehavioral changes may laso 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. The material has NOT been classified by EC Directives or other classification systems as 'harmful by inhalation'. This is because of the lack of corrobrating 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, furnes and aerosols. Not normally a hazard due to non-volatile nature of product
Ingestion	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. Nickel is poorly absorbed from the gastrointestinal tract. It is transported in the plasma bound to serum albumin and various small organic ligands. Excretion in the urine is substantially complete in 4-5 days. Serum nickel is influenced by environmental nickel or nickel concentrations in the air with faecal nickel about 100 times urinary nickel. Parenterally administered nickel is rapidly distributed to kidney, pituitary, lung, skin, adrenal and ovary and testis. In vivo binding with metallothionein has been demonstrated. A nickel binding protein has also been identified in plasma; it has been tentatively identified as an alpha-1-glycoprotein with a serum alpha-1-macroglobulin complex. Accidental ingestion of the material may be damaging to the health of the individual. 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. Signs and symptoms of chemical (aspiration) pneumonitis may include coughing, gasping, choking, burning of the mouth, difficult breathing, and bluish coloured skin (cyanosis).





Skin Contact	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. Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
Eye	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
Chronic	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. Long-term exposure to respirately minitan smar yeasuli in disease of the airways involving difficult breathing and related systemic problems. Produced evolution of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population. Putmonary sensitisation, resulting in hyperactive airway dysfunction and putmonary allergy may be accompanied by latigue, malaise and aching. Significant symptoms of exposure may presist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental situation activation experimental animats. Substances that can cause occupational astima alco known as astimagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness with an immunological, inflant or other mechanism. Once the airways have become hyper-responsive. further exponsure to the substance, sometimes even to timy quantities, may cause respiratory sensitisers or an exposure to a sthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance who are likely to become hyper-responsive. Substances than can cuase occupational astima should be distinguished from substances which may trigger the symptoms of astima in people with pre-existing all way hyper-responsive. The later substances are not dassiblance which may trigger the symptoms of astima in people with pre-existing all ways hyper-responsive. The later substances are not dassiblance which may cause occupational astima at the exposed to a substance which may trigger the sponsibles. Note there are associated with there with a substance which may cau





841AR Super Shield Nickel Conductive Paint / Nickel			IRRITATION	
Conductive Paint	Not Available	Not Available		
	ΤΟΧΙCITY	DXICITY IRRITATION		
nickel	Oral (Rat) LD50; 5000 mg/kg ^[2]	Eye: no adve	erse effect observed (not irritating) ^[1]	
		Skin: no adv	verse effect observed (not irritating) ^[1]	
	ΤΟΧΙCΙΤΥ	IRRIT	ATION	
dimethyl corbonate	Dermal (rabbit) LD50: >2000 mg/kg ^[1] Eye: no adverse effect		no adverse effect observed (not irritating) ^[1]	
unnetnyi carbonate	Inhalation(Rat) LC50; >5.36 mg/l4h ^[1]	Skin: r	no adverse effect observed (not irritating) ^[1]	
	Oral (Rat) LD50; >5000 mg/kg ^[1]			
	ΤΟΧΙΟΙΤΥ	IRRIT	TATION	
	Dermal (rabbit) LD50: 20000 mg/kg ^[2]	Eye (I	human): 500 ppm - irritant	
	Inhalation(Mouse) LC50; 44 mg/L4h ^[2]	Eye (i	rabbit): 20mg/24hr -moderate	
	Oral (Rat) LD50; 5800 mg/kg ^[2]	Eye (i	rabbit): 3.95 mg - SEVERE	
acetone		Eye: a	adverse effect observed (irritating) ^[1]	
		Skin ((rabbit): 500 mg/24hr - mild	
		Skin ((rabbit):395mg (open) - mild	
		Skin:	no adverse effect observed (not irritating) ^[1]	
	ΤΟΧΙCΙΤΥ	IRRIT	ATION	
	dermal (rat) LD50: >2000 mg/kg ^[1]		Eye: adverse effect observed (irritating) ^[1]	
a mud mathud katana	Inhalation(Rat) LC50; >16.7 mg/l4h ^[1]		rabbit): 14 mg/24h Mild	
amyi metnyi ketone	Oral (Rat) LD50; 1670 mg/kg ^[2]		rabbit): Primary Irritant	
	Skin: adverse effect		adverse effect observed (irritating) ^[1]	
		Skin: r	no adverse effect observed (not irritating) ^[1]	
	ΤΟΧΙCΙΤΥ	IRRITATI	ON	
propylene glycol monomethyl ether acetate. alpha-isomer	dermal (rat) LD50: >2000 mg/kg ^[1]	Eye: no a	adverse effect observed (not irritating) ^[1]	
,.,.,.	Oral (Rat) LD50; 3739 mg/kg ^[2] Skin: no adverse effect observed (not irritating) ^[1]		adverse effect observed (not irritating) ^[1]	
	1 Value abtained from Europe EOUA Desistand Cubat	anaaa Aautat	avisity 0 * Value abtained from many facture de CDC. Uplace attenuise	
Legena.	specified data extracted from RTECS - Registered Subst	Effect of chem	nical Substances	
	Asthma-like symptoms may continue for months or even condition known as reactive airways dysfunction syndror	years after exp me (RADS) whi	posure to the material ceases. This may be due to a non-allergenic ich 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.			
841AR Super Shield Nickel Conductive Paint / Nickel	particulate in nature) and is completely reversible after e	xposure cease	s. The disorder is characterised by dyspnea, cough and mucus	
Conductive Paint	Allergic reactions which develop in the respiratory passages as bronchial asthma or rhinoconjunctivitis, are mostly the result of reactions of the			
	allergen with specific antibodies of the IgE class and beli allergen-specific potential for causing respiratory sensitis	ong in their rea sation, the amo	inction rates to the manifestation of the immediate type. In addition to the munt of the allergen, the exposure period and the genetically determined	
	disposition of the exposed person are likely to be decisiv	e. Factors which	ch increase the sensitivity of the mucosa may play a role in predisposing a	
	Immunologically the low molecular weight substances be	ecome complet	e allergens in the organism either by binding to peptides or proteins	
	(haptens) or after metabolism (prohaptens). Particular attention is drawn to so-called atopic diathesis which is characterised by an increased susceptibility to allergic rhinitis, allergic bronchial			
	asthma and atopic eczema (neurodermatitis) which is as	sociated with in	ncreased IgE synthesis.	





	Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure. 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 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 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. 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 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 Internation! Program on Chemical Safety: the Joint FAO/WHO Expert Committee on Food Additives (JECFA) Esters of Aliphatic acyclic primary alcohols with aliphatic linear saturated carboxylic acids.; 1998
NICKEL	Oral (rat) TDLo: 500 mg/kg/5D-I Inhalation (rat) TCLo: 0.1 mg/m3/24H/17W-C WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen INational Toxicology Program: U.S. Den of Health & Human Services 2002
ACETONE	for acetone: The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitiser but is a defatting agent to the skin. Acetone is an eye irritant. The subchronic toxicity of acetone has been examined in mice and rats that were administered acetone in the drinking water and again in rats treated by oral gavage. Acetone-induced increases in relative kidney weight changes were observed in male and female rats used in the oral 13-week study. Acetone treatment caused increases in the relative liver weight in male and female rats that were not associated with histopathologic effects and the effects may have been associated with microsomal enzyme induction. Haematologic effects consistent with macrocytic anaemia were also noted in male rats along with hyperpigmentation in the spleen. The most notable findings in the mice were increased liver and decreased spleen weights. Overall, the no-observed-effect-levels in the drinking water study were 1% for male rats (900 mg/kg/d) and male mice (2258 mg/kg/d), 2% for female mice (5945 mg/kg/d), and 5% for female rats (3100 mg/kg/d). For developmental effects, a statistically significant reduction in foetal weight, and a slight, but statistically significant increase in the percent incidence of later resorptions were seen in mice at 15,665 mg/m3 and in rats at 26,100 mg/m3. The no-observable-effect level for developmental toxicity was determined to be 5220 mg/m3 for both rats and mice. Teratogenic effects were not observed in rats and mice tested at 26,110 and 15,665 mg/m3, respectively. Lifetime dermal carcinogenicity studies in mice treated with up to 0.2 mL of acetone did not reveal any increase in organ tumor incidence relative to untreated control animals. The scientific literature contains many different studies that have measured either the neurobehavioural performance or neurophysiological response of humans exposed to acetone. Effect levels ranging from about 600 to greater than 2375 mg/m3 wave been reported. Neurobehavioral studies with
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 for propylene glycol ethers (PGEs); Typical propylene glycol ethers (PGEs); Typical propylene glycol ethers include propylene glycol n-butyl ether (PnB); dipropylene glycol ethers (PGEs); Typical propylene glycol for propylene glycol methyl ether (TPM). Testing of a wide variety of propylene glycol heters Testing of a wide variety of propylene glycol betres Testing of a wide variety of propylene glycol betres Testing of a wide variety of propylene glycol betres to some others 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 caid. The reproductive and developmental toxicities of the lower molecular weight homologues in the ethylene series, also through formation of methoxyacetic acid. The predominant alpha isomer of all the PGEs (thermodynamically favored during manufacture of PGEs) is a secondary alcohol incapable of forming an alkoxyacetic and to tax acuse haemolytic effects). This alpha isomer cannot form 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 alkoxyacetic and to the acces of the lack of toxicity shown by the PGEs as alsinct from the lower molecular weight thylene glycol theres. More importanet, yever yextensive empirical test data s



r A ra T e	hese PGEs would be genotoxic <i>in vivo</i> . In a 2-year bit ABASF report (in ECETOC) showed that inhalation et abbits; but exposure to 145 ppm and 36 ppm had no 'he beta isomer of PGMEA comprises only 10% of th imphasizes the need for care in handling this chemic	ioassay on PM, there were no statistic exposure to 545 ppm PGMEA (beta is a dverse effects. ne commercial material, the remaining cal. [I.C.I]	DPhs and PM. I hus, there is no evidence to suggest ally significant increases in tumors in rats and mice. omer) was associated with a teratogenic response in 90% is alpha isomer. Hazard appears low but
T Conductive Paint / Nickel Conductive Paint & NICKEL d d	The following information refers to contact allergens a contact allergies quickly manifest themselves as cont czema involves a cell-mediated (T lymphocytes) imm rvolve antibody-mediated immune reactions. The sig listribution of the substance and the opportunities of listributed can be a more important allergen than one linical point of view, substances are noteworthy if the linical point of view.	as a group and may not be specific to I tact eczema, more rarely as urticaria o mune reaction of the delayed type. Oth nificance of the contact allergen is not contact with it are equally important. / with stronger sensitising potential wit ey produce an allergic test reaction in r	his product. r Quincke's oedema. The pathogenesis of contact ler allergic skin reactions, e.g. contact urticaria, simply determined by its sensitisation potential: the A weakly sensitising substance which is widely h which few individuals come into contact. From a more than 1% of the persons tested.
ACETONE & AMYL METHYL KETONE	The material may cause skin irritation after prolonged lermatitis is often characterised by skin redness (eryt pongy layer (spongiosis) and intracellular oedema of	l or repeated exposure and may produ thema) and swelling epidermis. Histolo f the epidermis.	ce a contact dermatitis (nonallergic). This form of ogically there may be intercellular oedema of the
Acute Toxicity	<	Carcinogenicity	✓
Skin Irritation/Corrosion	<	Reproductivity	×
Serious Eye Damage/Irritation	/	STOT - Single Exposure	×
Respiratory or Skin sensitisation	/	STOT - Repeated Exposure	✓
Mutagenicity 🔀	<	Aspiration Hazard	×

11.2.1. Endocrine Disruption Properties

Not Available

SECTION 12 Ecological information

12.1. Toxicity 841AR Super Shield Nickel Conductive Paint / Nickel Conductive Paint / Nickel Not Available Test Duration (hr) Species Value Source Not Available Not Available Not Available Not Available Not Available Not Available

Newark.com/exclusive-brands Farnell.com/exclusive-brands Element14.com/exclusive-brands



multicomp



	Endpoint	Test Duration (hr)	Species		Value	Source
	EC50(ECx)	72h	Algae or other aquatic plants		0.18mg/l	1
	LC50	96h	Fish		0.168mg/L	4
nickel	EC50	72h	Algae or other aquatic plants		0.18mg/l	1
	EC50	48h	Crustacea	Crustacea		1
	EC50	96h	Algae or other aquatic plants		0.36mg/l	2
			· · · · · · · · · · · · · · · · · · ·			
	Endpoint	Test Duration (hr)	Species		Value	Source
	NOEC(ECx)	504h	Crustacea		25mg/l	2
	LC50	96h	Fish		>=100mg/l	2
dimethyl carbonate	EC50	72h	Algae or other aquatic plants		>57.29mg/l	2
	EC50	48h	Crustacea		>74.16mg/l	2
	EC50	96h	Algae or other aquatic plants		166.6-211mg/l	2
				!		
	Endpoint	Test Duration (hr)	Species	Value)	Sourc
	NOEC(ECx)	12h	Fish	0.001	mg/L	4
acetone	LC50	96h	Fish	3744.	6-5000.7mg/L	4
	EC50	48h	Crustacea	6098.	4mg/L	5
	EC50	96h	Algae or other aquatic plants	9.873	-27.684mg/l	4
				1	-	
					Value	Source
	Endpoint	Test Duration (hr)	Species		value	000100
	Endpoint NOEC(ECx)	Test Duration (hr) 72h	Species Algae or other aquatic plants		42.68mg/l	2
amyl methyl ketone	Endpoint NOEC(ECx) LC50	Test Duration (hr) 72h 96h	Species Algae or other aquatic plants Fish		42.68mg/l 131mg/l	2 2
amyl methyl ketone	Endpoint NOEC(ECx) LC50 EC50	Test Duration (hr) 72h 96h 72h	Species Algae or other aquatic plants Fish Algae or other aquatic plants		42.68mg/l 131mg/l 75.5mg/l	2 2 2 2
amyl methyl ketone	Endpoint NOEC(ECx) LC50 EC50 EC50	Test Duration (hr) 72h 96h 72h 48h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea		42.68mg/l 131mg/l 75.5mg/l >90.1mg/l	2 2 2 2 2 2
amyi methyi ketone	Endpoint NOEC(ECx) LC50 EC50 EC50	Test Duration (hr) 72h 96h 72h 48h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea		42.68mg/l 131mg/l 75.5mg/l >90.1mg/l	2 2 2 2 2
amyl methyl ketone	Endpoint NOEC(ECx) LC50 EC50 EC50 Endpoint	Test Duration (hr) 72h 96h 72h 48h Test Duration (hr)	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea Species		42.68mg/l 131mg/l 75.5mg/l >90.1mg/l	2 2 2 2 2 2
amyl methyl ketone	Endpoint NOEC(ECx) LC50 EC50 EC50 EC50 Endpoint NOEC(ECx)	Test Duration (hr) 72h 96h 72h 48h Test Duration (hr) 336h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea Species Fish		42.68mg/l 131mg/l 75.5mg/l >90.1mg/l Value 47.5mg/l	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
amyl methyl ketone	Endpoint NOEC(ECx) LC50 EC50 EC50 EC50 Endpoint NOEC(ECx) LC50	Test Duration (hr) 72h 96h 72h 48h Test Duration (hr) 336h 96h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea Species Fish Fish Fish		Value 42.68mg/l 131mg/l 75.5mg/l >90.1mg/l 47.5mg/l >100mg/l	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
amyl methyl ketone propylene glycol monomethyl ether acetate, alpha-isomer	Endpoint NOEC(ECx) LC50 EC50 EC50 EC50 Endpoint NOEC(ECx) LC50 EC50	Test Duration (hr) 72h 96h 72h 48h Test Duration (hr) 336h 96h 72h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea Fish Fish Algae or other aquatic plants		Value 42.68mg/l 131mg/l 75.5mg/l >90.1mg/l 47.5mg/l >100mg/l	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
amyi methyi ketone propylene glycol monomethyi ether acetate, alpha-isomer	Endpoint NOEC(ECx) LC50 EC50 EC50 Endpoint NOEC(ECx) LC50 EC50	Test Duration (hr) 72h 96h 72h 48h Test Duration (hr) 336h 96h 72h 48h	Species Algae or other aquatic plants Fish Algae or other aquatic plants Crustacea Fish Fish Algae or other aquatic plants Crustacea Crustacea Crustacea Crustacea Crustacea Crustacea Crustacea		Value 42.68mg/l 131mg/l 75.5mg/l >90.1mg/l 47.5mg/l >100mg/l >1000mg/l 373mg/l	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

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

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air. Once released to surface waters and moist soils their fate depends on solubility and dissociation in water. Environmental processes (such as oxidation and the presence of acids or bases) may transform insoluble metals to more soluble ionic forms. Microbiological processes may also transform insoluble metals to more soluble forms. Such ionic species may bind to dissolved ligands or sorb to solid particles in aquatic or aqueous media. A significant proportion of dissolved/ sorbed metals will end up in sediments through the settling of suspended particles. The remaining metal ions can then be taken up by aquatic organisms.

When released to dry soil most metals will exhibit limited mobility and remain in the upper layer; some will leach locally into ground water and/ or surface water ecosystems when soaked by rain or melt ice. Environmental processes may also be important in changing solubilities.

Even though many metals show few toxic effects at physiological pHs, transformation may introduce new or magnified effects.

A metal ion is considered infinitely persistent because it cannot degrade further.

The current state of science does not allow for an unambiguous interpretation of various measures of bioaccumulation.

The counter-ion may also create health and environmental concerns once isolated from the metal. Under normal physiological conditions the counter-ion may be essentially insoluble and may not be bioavailable.

Environmental processes may enhance bioavailability.

For ketones:

Ketones, unless they are alpha, beta--unsaturated ketones, can be considered as narcosis or baseline toxicity compounds



multicomp

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 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.

for acetone: log Kow: -0.24 Half-life (hr) air: 312-1896 Half-life (hr) H2O surface water: 20 Henry's atm m3 /mol: 3.67E-05 BOD 5: 0.31-1.76,46-55% COD: 1.12-2.07

ThOD: 2.2 BCF: 0.69

Environmental fate:

Acetone preferentially locates in the air compartment when released to the environment. A substantial amount of acetone can also be found in water, which is consistent with the high water to air partition coefficient and its small, but detectable, presence in rain water, sea water, and lake water samples. Very little acetone is expected to reside in soil, biota, or suspended solids. This is entirely consistent with the physical and chemical properties of acetone and with measurements showing a low propensity for soil absorption and a high preference for moving through the soil and into the ground water

In air, acetone is lost by photolysis and reaction with photochemically produced hydroxyl radicals; the estimated half-life of these combined processes is about 22 days. The relatively long half-life allows acetone to be transported long distances from its emission source.

Acetone is highly soluble and slightly persistent in water, with a half-life of about 20 hours; it is minimally toxic to aquatic life

Acetone released to soil volatilises although some may leach into the ground where it rapidly biodegrades.

Acetone does not concentrate in the food chain.

Acetone meets the OECD definition of readily biodegradable which requires that the biological oxygen demand (BOD) is at least 70% of the theoretical oxygen demand (THOD) within the 28-day test period Drinking Water Standard: none available.

Soil Guidelines: none available. Air Quality Standards: none available.

Ecotoxicity:

Testing shows that acetone exhibits a low order of toxicity

Fish LC50: brook trout 6070 mg/l; fathead minnow 15000 mg/l

Bird LC0 (5 day): Japanese quail, ring-neck pheasant 40,000 mg/l

Daphnia magna LC50 (48 h): 15800 mg/l; NOEC 8500 mg/l

Aquatic invertebrate 2100 - 16700 mg/l Aquatic plant NOEC: 5400-7500 mg/l

Daphnia magna chronic NOEC 1660 mg/l

Acetone vapors were shown to be relatively toxic to two types insects and their eggs. The time to 50% lethality (LT50) was found to be 51.2 hr and 67.9 hr when the flour beetle (Tribolium confusum) and the flour moth (Ephestia kuehniella) were exposed to an airborne acetone concentration of 61.5 mg/m3. The LT50 values for the eggs were 30-50% lower than for the adult. The direct application of acetone liquid to the body of the insects or surface of the eggs did not, however, cause any mortality.

The ability of acetone to inhibit cell multiplication has been examined in a wide variety of microorganisms. The results have generally indicated mild to minimal toxicity with NOECs greater than 1700 mg/L for exposures lasting from 6 hr to 4 days. Longer exposure periods of 7 to 8 days with bacteria produced mixed results; but overall the data indicate a low degree of toxicity for acetone. The only exception to these findings were the results obtained with the flagellated protozoa (Entosiphon sulcatum) which yielded a 3-day NOEC of 28 mg/L.

DO NOT discharge into sewer or waterways

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
dimethyl carbonate	HIGH	HIGH
acetone	LOW (Half-life = 14 days)	MEDIUM (Half-life = 116.25 days)
amyl methyl ketone	LOW	LOW
propylene glycol monomethyl ether acetate, alpha-isomer	LOW	LOW

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
dimethyl carbonate	LOW (LogKOW = 0.2336)
acetone	LOW (BCF = 0.69)
amyl methyl ketone	LOW (LogKOW = 1.98)
propylene glycol monomethyl ether acetate, alpha-isomer	LOW (LogKOW = 0.56)





12.4. Mobility in soil

Ingredient	Mobility
dimethyl carbonate	LOW (KOC = 8.254)
acetone	HIGH (KOC = 1.981)
amyl methyl ketone	LOW (KOC = 24.01)
propylene glycol monomethyl ether acetate, alpha-isomer	HIGH (KOC = 1.838)

12.5. Results of PBT and vPvB assessment

	P	В	т	
Relevant available data	Not Available	Not Available	Not Ava	ailable
PBT	×	×	×	
vPvB	×	×	×	
PBT Criteria fulfilled? No				No
vPvB			No	

12.6. Endocrine Disruption Properties

Not Available

12.7. Other adverse effects

Not Available

SECTION 13 Disposal considerations

13.1. Waste treatment methods	·
Product / Packaging disposal	 Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. Otherwise: If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and SDS and observe all notices pertaining to the product. 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. A Hierarchy of Controls seems to be common - the user should investigate: Reduction Reuse Recycling Disposal (if all else fails) 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. Do NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. In all cases disposal to sever may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible. 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. Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apaparatus (after admixture with sui
Waste treatment options	Not Available
Sewage disposal options	Not Available





SECTION 14 Transport information

Labels Required



Limited quantity: MC002968 - 232ml

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 Subrisk Not Applicable		
14.4. Packing group	I		
14.5. Environmental hazard	Not Applicable		
14.6. Special precautions for user	Hazard identification (Kemler) Classification code Hazard Label Special provisions Limited quantity Tunnel Restriction Code	33 F1 3 163 367 640C 650 640D 5 L 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 ICAO / IATA Subrisk ERG Code	AO/IATA Class3AO / IATA SubriskNot ApplicableRG Code3L			
14.4. Packing group	П				
14.5. Environmental hazard	Not Applicable				
	Special provisions Cargo Only Packing Ir Cargo Only Maximum	istructions Qty / Pack	A3 A72 A192 364 60 L		
14.6. Special precautions for user	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)

1263	1263		
PAINT (including p (including paint thi	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)		
IMDG Class	3		
IMDG Subrisk	Not Applicable		
П			
Not Applicable			
	1263 PAINT (including p (including paint the IMDG Class IMDG Subrisk II Not Applicable		





	EMS Number	F-E , S-E
14.6. Special precautions for user	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	П	
14.5. Environmental hazard	Not Applicable	
	Classification code	F1
	Special provisions	163; 367; 640C; 640D; 650
14.6. Special precautions for user	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
nickel	Not Available
dimethyl carbonate	Not Available
acetone	Not Available
amyl methyl ketone	Not Available
propylene glycol monomethyl ether acetate, alpha-isomer	Not Available

14.9. Transport in bulk in accordance with the ICG Code

Product name	Ship Type
nickel	Not Available
dimethyl carbonate	Not Available
acetone	Not Available
amyl methyl ketone	Not Available
propylene glycol monomethyl ether acetate, alpha-isomer	Not Available

SECTION 15 Regulatory information

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

	nickel 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
	Europe EC Inventory
	European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
i.	

dimethyl carbonate 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 (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 2B: Possibly carcinogenic to humans

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

Newark.com/exclusive-brands Farnell.com/exclusive-brands Element14.com/exclusive-brands



26/02/24 V1.0



acetone 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

amyl methyl ketone 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

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs) EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the and articles

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

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

manufacture, placing on the market and use of certain dangerous substances, mixtures 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 (nickel; dimethyl carbonate; acetone; amyl methyl ketone; propylene glycol monomethyl ether acetate, alpha-isomer)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (nickel)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
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 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	27/01/2022
Initial Date	01/04/2019
Full text Risk and Hazard code	_
	S
H226	s Flammable liquid and vapour.

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.

Newark.com/exclusive-brands Farnell.com/exclusive-brands Element14.com/exclusive-brands

H332 Harmful if inhaled.





- 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

> Part Number MC002968

Important Notice : This data sheet and its contents (the "Information") belong to the members of the AVNET group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of Premier Farnell Limited 2019.

