Devcon Plastic Steel Liquid (B) Resin ITW POLYMERS & FLUIDS

Chemwatch: 11524 Version No: 10.1

Safety Data Sheet according to Work Health and Safety Regulations (Hazardous Chemicals) 2023 and ADG requirements

Issue Date: 10/03/2023 Print Date: 01/10/2024 S.GHS.AUS.EN

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

Product Identifier

Product name	Devcon Plastic Steel Liquid (B) Resin	
Chemical Name	Not Applicable	
Synonyms	Not Available	
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol A/ diglycidyl ether resin, liquid)	
Chemical formula	Not Applicable	
Other means of identification	Not Available	

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

Details of the manufacturer or supplier of the safety data sheet

Registered company name	ITW POLYMERS & FLUIDS	ITW Polymers & Fluids (NZ)
Address	100 Hassall Street, Wetherill Park NSW 2164 Australia	Unit 2/38 Trugood Drive, East Tamaki, Auckland 2013 New Zealand
Telephone	+61 2 9757 8800	0800 476 265
Fax	ax +61 2 9757 3855 +64 9 273 6489	
Website	www.itwpf.com.au	www.itwpf.co.nz
Email	Not Available	Not Available

Emergency telephone number

Association / Organisation	CHEMWATCH EMERGENCY RESPONSE (24/7)	ITW Polymers & Fluids (NZ)	CHEMWATCH EMERGENCY RESPONSE (24/7)
Emergency telephone numbers	+61 1800 951 288	0800 2436 2255	+61 1800 951 288
Other emergency telephone numbers	+61 3 9573 3188	Not Available	+61 3 9573 3188

Once connected and if the message is not in your preferred language then please dial ${\bf 01}$

SECTION 2 Hazards identification

Classification of the substance or mixture

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

Poisons Schedule	Not Applicable	
Classification ^[1]	Skin Corrosion/Irritation Category 2, Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation Category 2A, Hazardous to the Aquatic Environment Long-Term Hazard Category 2	
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI	

Label elements

Hazard pictogram(s)





Chemwatch: 11524

Devcon Plastic Steel Liquid (B) Resin

Page 2 of 14 Issue Date: 10/03/2023 Print Date: 01/10/2024

Signal word

Hazard statement(s)

Version No: 10.1

H315	Causes skin irritation.	
H317	May cause an allergic skin reaction.	
H319	Causes serious eye irritation.	
H411	Toxic to aquatic life with long lasting effects.	
AUH019	May form explosive peroxides.	

Precautionary statement(s) General

P101	If medical advice is needed, have product container or label at hand.	
P102	Keep out of reach of children.	
P103	Read carefully and follow all instructions.	

Precautionary statement(s) Prevention

P280	Wear protective gloves, protective clothing, eye protection and face protection.	
P261	Avoid breathing mist/vapours/spray.	
P273	Avoid release to the environment.	
P264	Wash all exposed external body areas thoroughly after handling.	

Precautionary statement(s) Response

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

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

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

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
8049-17-0	40-70	ferrosilicon
25068-38-6	15-40	bisphenol A/ diglycidyl ether resin, liquid
65997-17-3	0.1-1	g <u>lass, oxide</u>
Not Available	1-<3 Ingredients determined not to be hazardous	
Legend:		2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - awn from C&L * EU IOELVs available

SECTION 4 First aid measures

escription of first aid me	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.

Chemwatch: 11524

Page 3 of 14

Issue Date: 10/03/2023

Version No: 10.1

Print Date: 01/10/2024

Devcon Plastic Steel Liquid (B) Resin

	 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.
Ingestion	 If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically

Copper, magnesium, aluminium, antimony, iron, manganese, nickel, zinc (and their compounds) in welding, brazing, galvanising or smelting operations all give rise to thermally produced particulates of smaller dimension than may be produced if the metals are divided mechanically. Where insufficient ventilation or respiratory protection is available these particulates may produce "metal fume fever" in workers from an acute or long term exposure.

- Onset occurs in 4-6 hours generally on the evening following exposure. Tolerance develops in workers but may be lost over the weekend. (Monday Morning Fever)
- Pulmonary function tests may indicate reduced lung volumes, small airway obstruction and decreased carbon monoxide diffusing capacity but these abnormalities resolve after several months.
- · Although mildly elevated urinary levels of heavy metal may occur they do not correlate with clinical effects.
- The general approach to treatment is recognition of the disease, supportive care and prevention of exposure.
- Seriously symptomatic patients should receive chest x-rays, have arterial blood gases determined and be observed for the development of tracheobronchitis and pulmonary edema.

[Ellenhorn and Barceloux: Medical Toxicology]

For severe acute or short term repeated exposures to phosphine:

- There is no antidote. Clinical manifestations include headache, fatigue, nausea, vomiting, cough, dyspnoea, paresthaesias, jaundice, ataxia, intention tremor, weakness and diplopia.
- i Care is supportive and all obviously symptomatic patients should be monitored in an intensive care setting. Watch for dysrhythmias. ii Replace fluids/electrolytes iii Follow blood chemistries (calcium, phosphorus, glucose, prothrombin time, CBC) at least daily iv Follow renal and hepatic function at least daily. Avoid any alcohol intake.
- The risk of pulmonary oedema after severe exposure requires observation for 24-48 hours but can appear several days later. Initial X-ray may be useful in assessing development of oedema. If oedema develops, nurse with trunk upright and administer oxygen at atmospheric pressure. Diuretics, morphine, theophylline derivatives are of little benefit since oedema is exudate rather than transudate. Bronchodilators by nebulizer or metered aerosol may reduce bronchospasm and dyspnoea. Where immediate respiratory symptoms suggest lower airway exposure, steroids may be beneficial, with intravenous injection of methylprednisolone up to 30 mg/kg body weight initially with subsequent smaller doses. Prophylactic antibiotics are indicated in all but mild cases. Intermittent positive pressure ventilation with bronchial toilet and suction may be important elements of treatment. [I.L.O. Health and Safety Guide No. 28]

SECTION 5 Firefighting measures

Extinguishing media

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.
- DO NOT use halogenated fire extinguishing agents.

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

Advice for firefighters

Fire Fighting

- ▶ Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus
- ▶ Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.

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.

Chemwatch: 11524 Page 4 of 14 Issue Date: 10/03/2023 Version No: 10.1 Print Date: 01/10/2024

Devcon Plastic Steel Liquid (B) Resin

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. Combustion products include: carbon dioxide (CO2) hydrogen chloride phosgene metal oxides other pyrolysis products typical of burning organic material. When aluminium oxide dust is dispersed in air, firefighters should wear protection against inhalation of dust particles, which can also contain hazardous substances from the fire absorbed on the alumina particles. **HAZCHEM** •3Z

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Methods and material for 6	containment and cleaning up
Minor Spills	 In the event of a spill of a reactive diluent, the focus is on containing the spill to prevent contamination of soil and surface or ground water. If irritating vapors are present, an approved air-purifying respirator with organic vapor canister is recommended for cleaning up spills and leaks. For small spills, reactive diluents should be absorbed with sand. Environmental hazard - contain spillage. 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 spill with sand, earth, inert material or vermiculite.
Major Spills	Environmental hazard - contain spillage. Industrial spills or releases of reactive diluents are infrequent and generally contained. If a large spill does occur, the material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. An approved air-purifying respirator with organic-vapor canister is recommended for emergency work. Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves.

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

SECTION 7 Handling and storage

Precautions for safe handling

Precautions for safe nandi	
Safe handling	 DO NOT allow clothing wet with material to stay in contact with skin 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.
Other information	 Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area.

Conditions for safe storage, including any incompatibilities

Storage incompatibility	For aluminas (aluminium oxide):
	Incompatible with hot chlorinated rubber. In the presence of chlorine trifluoride may react violently and ignite. -May initiate explosive polymerisation of olefin oxides including ethylene oxide. -Produces exothermic reaction above 200°C with halocarbons and an exothermic reaction at ambient temperatures with halocarbons in the presence of other metals. The material is described as an electropositive metal. The activity or electromotive series of metals is a listing of the metals in decreasing order of their reactivity with hydrogen-ion sources such as water and acids. In the reaction with a hydrogen-ion source, the metal is oxidised to a metal ion, and the

Chemwatch: 11524

Page 5 of 14

Issue Date: 10/03/2023

Version No: 10.1

Print Date: 01/10/2024

Devcon Plastic Steel Liquid (B) Resin

hydrogen ion is reduced to H2. The ordering of the activity series can be related to the standard reduction potential of a metal

In general, uncured epoxy resins have only poor mechanical, chemical and heat resistance properties. However, good properties are obtained by reacting the linear epoxy resin with suitable curatives to form three-dimensional cross-linked thermoset structures. This process is commonly referred to as curing or gelation process. Curing of epoxy resins is an exothermic reaction and in some cases produces sufficient heat to cause thermal degradation if not controlled.

- · Ferrosilicons may, in contact with water, evolve hydrogen, a flammable gas which may form an explosive mixture in air. Impurities may, under similar conditions produce phosphine and arsine, which are highly toxic gases.
- · If any material becomes wet, immediately increase ventilation then, if safe or using personal protective gear, move to under cover open air storage.
- WARNING: Avoid or control reaction with peroxides. All transition metal peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively.
- ▶ The pi-complexes formed between chromium(0), vanadium(0) and other transition metals (haloarene-metal complexes) and mono-or poly-fluorobenzene show extreme sensitivity to heat and are explosive.
- Reacts slowly with water.
- CAUTION contamination with moisture will liberate explosive hydrogen gas, causing pressure build up in sealed containers.
- Segregate from alcohol, water.
- ▶ Phosphine gas may react with certain metals and cause corrosion, especially at elevated temperatures and humidities.
- Metals such as copper, brass, and other copper alloys, aluminium and precious metals such as gold and silver are susceptible to corrosion by phosphine. Small electric motors smoke detectors, brass sprinkler heads, batteries and battery chargers, fork lifts, temperature monitoring systems, switching gears, communication devices, computers, calculators and other electrical equipment may be damaged by this gas.
- Phosphine will also react with certain metallic salts and therefore sensitive items such as photographic film, some inorganic pigments, etc., should not be exposed to the gas.

Reactive diluents are stable under recommended storage conditions, but can decompose at elevated temperatures. In some cases, decomposition can cause pressure build-up in closed systems.

Glycidyl ethers:

- may form unstable peroxides on storage in air ,light, sunlight, UV light or other ionising radiation, trace metals inhibitor should be maintained at adequate levels
- ▶ may polymerise in contact with heat, organic and inorganic free radical producing initiators
- may polymerise with evolution of heat in contact with oxidisers, strong acids, bases and amines
- react violently with strong oxidisers, permanganates, peroxides, acyl halides, alkalis, ammonium persulfate, bromine dioxide
- ▶ attack some forms of plastics, coatings, and rubber
- Avoid cross contamination between the two liquid parts of product (kit).
- If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur.
- ▶ This excess heat may generate toxic vapour
- ▶ Avoid reaction with amines, mercaptans, strong acids and oxidising agents
- Many metals may incandesce, react violently, ignite or react explosively upon addition of concentrated nitric acid.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Not Available

Ingredient	Original IDLH	Revised IDLH
ferrosilicon	Not Available	Not Available
bisphenol A/ diglycidyl ether resin, liquid	Not Available	Not Available
glass, oxide	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
bisphenol A/ diglycidyl ether resin, liquid	Е	≤ 0.1 ppm
Notes:	Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.	

Exposure controls

Appropriate engineering 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.

Chemwatch: 11524 Version No: 10.1

Devcon Plastic Steel Liquid (B) Resin

Issue Date: 10/03/2023 Print Date: 01/10/2024

Individual protection measures, such as personal protective equipment











Eye and face protection

- Safety glasses with side shields.
- ► Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]
- 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.

Skin protection

See Hand protection below

NOTE:

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

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Personal hygiene is a key element of effective hand care.

When handling liquid-grade epoxy resins wear chemically protective gloves, boots and aprons.

The performance, based on breakthrough times ,of:

- \cdot Ethyl Vinyl Alcohol (EVAL laminate) is generally excellent
- · Butyl Rubber ranges from excellent to good
- Nitrile Butyl Rubber (NBR) from excellent to fair.
- · Neoprene from excellent to fair
- · Polyvinyl (PVC) from excellent to poor

As defined in ASTM F-739-96

- · Excellent breakthrough time > 480 min
- · Good breakthrough time > 20 min
- · Fair breakthrough time < 20 min
- · Poor glove material degradation

Gloves should be tested against each resin system prior to making a selection of the most suitable type. Systems include both the resin and any hardener, individually and collectively)

· DO NOT use cotton or leather (which absorb and concentrate the resin), natural rubber (latex), medical or polyethylene gloves (which absorb the resin).

Protective gloves eg. Leather gloves or gloves with Leather facing

Body protection

Hands/feet protection

See Other protection below

During repair or maintenance activities the potential exists for exposures to toxic metal particulate in excess of the occupational standards. Under these circumstances, protecting workers can require the use of specific work practices or procedures involving the combined use of ventilation, wet and vacuum cleaning methods, respiratory protection, decontamination, special protective clothing, and when necessary, restricted work zones.

Other protection

- · Protective over-garments or work clothing must be worn by persons who may become contaminated with particulate during activities such as machining, furnace rebuilding, air cleaning equipment filter changes, maintenance, furnace tending, etc. Contaminated work clothing and over-garments must be managed in a controlled manner to prevent secondary exposure to workers of third parties, to prevent the spread of particulate to other areas, and to prevent particulate from being taken home by workers.
- · Personnel who handle and work with <u>molten metal</u> should utilise primary protective clothing like polycarbonate face shields, fire resistant tapper's jackets, neck shades (snoods), leggings, spats and similar equipment to prevent burn injuries.

Respiratory protection

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

- 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

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties Appearance | Dark grey liquid with slight odour.

Appearance	Dark grey liquid with slight odour.		
Physical state	Liquid	Relative density (Water = 1)	1.17
Odour	Not Available	Partition coefficient n- octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature	Not Available

Chemwatch: 11524 Page 7 of 14

Devcon Plastic Steel Liquid (B) Resin

Issue Date: 10/03/2023 Print Date: 01/10/2024

	l	(°C)	
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	320	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	>204.4	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Not Available	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available
Heat of Combustion (kJ/g)	Not Available	Ignition Distance (cm)	Not Available
Flame Height (cm)	Not Available	Flame Duration (s)	Not Available
Enclosed Space Ignition Time Equivalent (s/m3)	Not Available	Enclosed Space Ignition Deflagration Density (g/m3)	Not Available

SECTION 10 Stability and reactivity

Version No. 10.1

Reactivity	See section 7
Chemical stability	 Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally,

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo,

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

Inhaled

In animal testing, exposure to aerosols of reactive diluents (especially o-cresol glycidyl ether, CAS RN:2210-79-9) has been reported to affect the adrenal gland, central nervous system, kidney, liver, ovaries, spleen, testes, thymus and respiratory tract. The inhalation of small particles of metal oxide results in sudden thirst, a sweet, metallic foul taste, throat irritation, cough, dry mucous membranes, tiredness and general unwellness. Headache, nausea and vomiting, fever or chills, restlessness, sweating, diarrhoea, excessive urination and prostration may also occur.

Phosphine is a very toxic gas and chiefly causes, exacerbation of asthma and other respiratory disorders, depression of the central nervous system and damaging effect on the lungs and blood (oxyhaemoglobin in mammals is converted by phosphine into a poisonous verdichromogen-like material). Inhalation of phosphine causes dose-dependent multi-systemic effect including incoordination, vomiting, low oxygen tension, rapid pulse, low blood pressure, gastric and chest pain, headache, dyspnoea, arrhythmias, myocardial injury and cardiovascular collapse. Coma and cardio-respiratory arrest may precede death. Mortality from severe poisoning is high.

Inhalation of arsine causes respiratory failure. High doses are lethal. Minor doses may cause massive destruction of red cells, muscle insufficiency and acute kidney failure. Initial sign of poisoning is usually strong port-red coloration of urine.

Ingestion

Accidental ingestion of the material may be damaging to the health of the individual. Reactive diluents exhibit a range of ingestion hazards. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. However, swallowing larger amounts may cause injury.

Animal testing showed that a single dose of bisphenol A diglycidyl ether (BADGE) given by mouth, caused an increase in

Skin Contact

This material can cause inflammation of the skin on contact in some persons.

The material may accentuate any pre-existing dermatitis condition

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

Chemwatch: 11524 Page 8 of 14 Issue Date: 10/03/2023 Version No. 10.1 Print Date: 01/10/2024

Devcon Plastic Steel Liquid (B) Resin

Though considered non-harmful, slight irritation may result from contact because of the abrasive nature of the aluminium oxide particles. Thus it may cause itching and skin reaction and inflammation. Bisphenol A diglycidyl ether (BADGE) may produce contact dermatitis characterized by redness and swelling, with weeping followed by crusting and scaling. A liquid resin with a molecular weight of 350 produced severe skin irritation when applied daily for 4 hours over 20 days. Skin contact with reactive diluents may cause slight to moderate irritation with local redness. Repeated or prolonged skin contact may cause burns. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. This material can cause eye irritation and damage in some persons. Eye contact with reactive diluents may cause slight to severe irritation with the possibility of chemical burns or moderate to Eve severe damage to the cornea. Eye contact with arsine gas may result in aversion to light or clouding of the cornea. Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. Based on experience with similar materials, there is a possibility that exposure to the material may reduce fertility in humans at levels which do not cause other toxic effects. Bisphenol A may have effects similar to female sex hormones and when administered to pregnant women, may damage the foetus. It may also damage male reproductive organs and sperm. Glycidyl ethers can cause genetic damage and cancer. Animal testing shows long term exposure to aluminium oxides may cause lung disease and cancer, depending on the size of the particle. The smaller the size, the greater the tendencies of causing harm. Bisphenol A diglycidyl ethers (BADGEs) produce a sensitization dermatitis (skin inflammation) characterized by eczema with Chronic blisters and papules, with considerable itching of the back of the hand. This may persist for 10-14 days after withdrawal from exposure and recur immediately on re-exposure. The dermatitis may last longer following each exposure, but is unlikely to become more intense. Lower molecular weight species produce sensitization more readily. For some reactive diluents, prolonged or repeated skin contact may result in absorption of potentially harmful amounts or allergic skin reactions. Exposure to some reactive diluents (notably, neopentylglycol diglycidyl ether, CAS RN: 17557-23-2) has caused cancer in some animal testing. Phosphine is a very toxic gas. It causes worsening stomach and chest pain, headache, depression of the brain, lung irritation, tremor, fatigue, nausea and vomiting, fluid accumulation in the lungs, headache, thirst, dizziness, chest pain, anaemia, bluing of the extremities, inco-ordination, vomiting, rapid or irregular pulse, low blood pressure and injury to the heart muscle with rhythm disturbances. Coma, convulsions and stoppage of heartbeat and breathing may precede death. Mortality from severe poisoning

is high.

Long term exposure to low concentrations of arsine usually results in anaemia which in turn causes breathlessness on exertion and weakness. Repeated exposure may cause nausea, vomiting, weight loss, persistent low blood pressure, and loss of sense of smell. Other effects include loss of memory, tremors, tingling and other altered sensations, disturbance of balance or more serious brain damage. Asthma and lung disease will be aggravated.

Chronic excessive intake of iron have been associated with damage to the liver and pancreas. People with a genetic disposition to poor control over iron are at an increased risk.

Devcon Plastic Steel	TOXICITY	IRRITATION
Liquid (B) Resin	Not Available	Not Available
	TOXICITY	IRRITATION
ferrosilicon	Dermal (rabbit) LD50: >20000 mg/kg ^[2]	Not Available
	TOXICITY	IRRITATION
bisphenol A/ diglycidyl ether resin, liquid	dermal (rat) LD50: >1200 mg/kg ^[2]	Eye (rabbit): 100mg - Mild
	Oral (Mouse) LD50; >500 mg/kg ^[2]	
	TOXICITY	IRRITATION
glass, oxide	Not Available	Eye: no adverse effect observed (not irritating) ^[1]
		Skin: no adverse effect observed (not irritating) ^[1]
Legend:	1 Value obtained from Europe ECHA Registered Sub	stances - Acute toxicity 2. Value obtained from manufacturer's SDS.

FERROSILICON

Inhalation (rat) TCLo: 194 mg/m3/6H/26W-I data for decomposition products only

Chemwatch: 11524

Version No. 10.1 Devcon Plastic Steel Liquid (B) Resin

Page 9 of 14 Issue Date: 10/03/2023 Print Date: 01/10/2024

Foetoxicity has been observed in animal studies Oral (rabbit, female) NOEL 180 mg/kg (teratogenicity; NOEL (maternal 60

The following information refers to contact allergens as a group and may not be specific to this product.

Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.

The chemical structure of hydroxylated diphenylalkanes or bisphenols consists of two phenolic rings joined together through a bridging carbon. This class of endocrine disruptors that mimic oestrogens is widely used in industry, particularly in plastics. Bisphenol A (BPA) and some related compounds exhibit oestrogenic activity in human breast cancer cell line MCF-7, but there were remarkable differences in activity. Several derivatives of BPA exhibited significant thyroid hormonal activity towards rat pituitary cell line GH3, which releases growth hormone in a thyroid hormone-dependent manner. However, BPA and several other derivatives did not show such activity.

BISPHENOL A/ DIGLYCIDYL ETHER RESIN, LIQUID

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Animal testing over 13 weeks showed bisphenol A diglycidyl ether (BADGE) caused mild to moderate, chronic, inflammation of the skin.

Reproductive and Developmental Toxicity: Animal testing showed BADGE given over several months caused reduction in body weight but had no reproductive effects.

Cancer-causing potential: It has been concluded that bisphenol A diglycidyl ether cannot be classified with respect to its cancercausing potential in humans.

Genetic toxicity: Laboratory tests on genetic toxicity of BADGE have so far been negative.

Immunotoxicity: Animal testing suggests regular injections of diluted BADGE may result in sensitization.

Consumer exposure: Comsumer exposure to BADGE is almost exclusively from migration of BADGE from can coatings into food. Testing has not found any evidence of hormonal disruption.

GLASS, OXIDE

A similar spherical glass powder was nontoxic to rats at 5,000 mg/kg. All animals survived, gained weight and appeared active and healthy. There were no signs of gross toxicity, adverse pharmacologic effects or abnormal behavior. There are no known reports of subchronic toxicity of nonfibrous glass. There are no known reports of carcinogenicity of nonfibrous glass When tested for primary irritation potential, a similar material caused minimal irritation to eyes and was non-irritating to skin. Dust in excess of recommended exposure limits may result in irritation to the respiratory tract

FERROSILICON & GLASS, OXIDE

No significant acute toxicological data identified in literature search.

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

Leaend:

★ - Data either not available or does not fill the criteria for classification.

Data available to make classification

SECTION 12 Ecological information

Toxicity

Daniero Blancii a Cinal	Endpoint	Test Duration (hr)	Species	Value	Source
Devcon Plastic Steel Liquid (B) Resin	Not Available	Not Available	Not Available	Not Available	Not Available
	Endpoint	Test Duration (hr)	Species	Value	Source
ferrosilicon	Not Available	Not Available	Not Available	Not Available	Not Available
	Endpoint	Test Duration (hr)	Species	Value	Source
bisphenol A/ diglycidyl ether resin, liquid	EC50	48h	Crustacea	~2mg/l	2
	EC50(ECx)	48h	Crustacea	~2mg/l	2
	Endpoint	Test Duration (hr)	Species	Value	Source
glass, oxide	EC50	72h	Algae or other aquatic plants	>1000mg/l	2
	NOEC(ECx)	72h	Crustacea	>=1000mg/l	2
	LC50	96h	Fish	>1000mg/l	2

Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Version No: 10.1

Devcon Plastic Steel Liquid (B) Resin

Issue Date: 10/03/2023 Print Date: 01/10/2024

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.

Liquid epoxy resins and some reactive diluents are not readily biodegradable, although its epoxy functional groups are hydrolysed in contact with water, they have the potential to bio-accumulate and are moderately toxic to aquatic organisms. They are generally classified as dangerous for the environment according to the European Union classification criteria.

Uncured solid resins on the other hand are not readily bio-available, not toxic to aquatic and terrestrial organisms, not readily biodegradable, but hydrolysable. They present no significant hazard for the environment.

Atmospheric Fate - Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air.

Environmental Fate: Environmental processes, such as oxidation, the presence of acids or bases and microbiological processes, may transform insoluble metals to more soluble ionic forms. Environmental processes may enhance bioavailability and may also be important in changing solubilities.

Aquatic/Terrestrial Fate: 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. A metal ion is considered infinitely persistent because it cannot degrade further.

Reactive diluents generally have a low to moderate potential for bioconcentration (tendency to accumulate in the food chain) and a high to very high potential for mobility in soil. Small amounts that escape to the atmosphere will photodegrade.

They would not be expected to persist in the environment.

Most reactive diluents should be considered slightly to moderately toxic to aquatic organisms on an acute basis while some might also be considered harmful to

For bisphenol A and related bisphenols:

Environmental fate:

Biodegradability (28 d) 89% - Easily biodegradable

Bioconcentration factor (BCF) 7.8 mg/l

Bisphenol A, its derivatives and analogues, can be released from polymers, resins and certain substances by metabolic products

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII

As an environmental contaminant, bisphenol A interferes with nitrogen fixation at the roots of leguminous plants associated with the bacterial symbiont Sinorhizobium meliloti. Despite a half-life in the soil of only 1-10 days, its ubiquity makes it an important pollutant. According to Environment Canada, "initial assessment shows that at low levels, bisphenol A can harm fish and organisms over time. Studies also indicate that it can currently be found in municipal wastewater." However, a study conducted in the United States found that 91-98% of bisphenol A may be removed from water during treatment at municipal water treatment plants.

Significant environmental findings are limited. Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) exhibit common characteristics with respect to environmental fate and ecotoxicology. One such oxirane is ethyloxirane and data presented here may be taken as representative.

For 1,2-Butylene oxide (Ethyloxirane):

log Kow values of 0.68 and 0.86. BAF and BCF: 1 to 17 L./kg.

Aquatic Fate - Ethyloxirane is highly soluble in water and has a very low soil-adsorption coefficient, which suggests that, if released to water, adsorption of ethyloxirane to sediment and suspended solids is not expected. Volatilization of ethyloxirane from water surfaces would be expected.

Environmental toxicity is a function of the n-octanol/water partition coefficient (log Pow, log Kow). Compounds with log Pow >5 act as neutral organics, but at a lower log Pow, the toxicity of epoxide-containing polymers is greater than that predicted for simple narcotics.

For Phosphine: Henry's law constant (H) of 0.09 atm m3/mol (estimated).

Atmospheric Fate: The most important process for the loss of phosphine in the atmosphere is most likely its reaction with hydroxyl radicals. The estimated lifetime of phosphine in the troposphere is <1 day. Phosphine will oxidize rapidly under influence of radiation and UV light; however, it can persist in the atmosphere For Phosphate: The principal problems of phosphate contamination of the environment relates to eutrophication processes in lakes and ponds. Phosphorus is an essential plant nutrient and is usually the limiting nutrient for blue-green algae.

Aquatic Fate: Lakes overloaded with phosphates is the primary catalyst for the rapid growth of algae in surface waters. Planktonic algae cause turbidity and flotation films

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
bisphenol A/ diglycidyl ether resin, liquid	HIGH	HIGH

Bioaccumulative potential

· · · · · · · · · · · · · · · · · · ·		
Ingredient	Bioaccumulation	
bisphenol A/ diglycidyl ether resin, liquid	LOW (LogKOW = 2.6835)	

Mobility in soil

Ingredient	Mobility
bisphenol A/ diglycidyl ether resin, liquid	LOW (Log KOC = 51.43)

SECTION 13 Disposal considerations

Waste treatment methods

 Chemwatch: 11524
 Page 11 of 14
 Issue Date: 10/03/2023

 Version No: 10.1
 Devcon Plastic Steel Liquid (B) Resin
 Print Date: 01/10/2024

• 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.

Waste Management

Production waste from epoxy resins and resin systems should be treated as hazardous waste in accordance with National regulations. Fire retarded resins containing halogenated compounds should also be treated as special waste. Accidental spillage of resins, curing agents and their formulations should be contained and absorbed by special mineral absorbents to prevent them from entering the environment.

Contaminated or surplus product should not be washed down the sink, but preferably be fully reacted to form cross-linked solids which is non-hazardous and can be more easily disposed.

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:

Product / Packaging

disposal

- Reduction
- ReuseRecycling
- 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.

- ▶ 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 sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.

Removal of bisphenol A (BPA) from aqueous solutions was accomplished by adsorption of enzymatically generated quinone derivatives on chitosan beads. The use of chitosan in the form of beads was found to be more effective because heterogeneous removal of BPA with chitosan beads was much faster than homogeneous removal of BPA with chitosan solutions, and the removal efficiency was enhanced by increasing the amount of chitosan beads dispersed in the BPA solutions and BPA was completely removed by quinone adsorption in the presence of chitosan beads more than 0.10 cm3/cm3. In addition, a variety of bisphenol derivatives were completely or effectively removed by the procedure constructed in this study, although the enzyme dose or the amount of chitosan beads was further increased as necessary for some of the bisphenol derivatives used.

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- ▶ Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- ${\color{red} \bullet} \ \ {\sf Recycle\ containers\ if\ possible,\ or\ dispose\ of\ in\ an\ authorised\ landfill.}$

SECTION 14 Transport information

Labels Required



Marine Pollutant



HAZCHEM

•3Z

Land transport (ADG)

14.1.	UN number or ID number	3082		
14.2.	UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol A/ diglycidyl ether resin, liquid)		
	Transport hazard class(es)	Class Subsidiary Hazard	9 Not Applicable	
14.4.	Packing group	III		
14.5.	Environmental hazard	Environmentally hazardous		
14.6.	Special precautions for user	Special provisions Limited quantity	274 331 335 375 AU01 5 L	

Chemwatch: 11524 Version No: 10.1

Devcon Plastic Steel Liquid (B) Resin

Issue Date: 10/03/2023 Print Date: 01/10/2024

- (a) packagings;
- (b) IBCs; or
- (c) any other receptacle not exceeding 500 kg(L).
- Australian Special Provisions (SP AU01) ADG Code 7th Ed.

Air transport (ICAO-IATA / DGR)

14.1. UN number	3082			
14.2. UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (contains bisphenol A/ diglycidyl ether resin, liquid)			
14.3. Transport hazard class(es)	ICAO/IATA Class 9			
	ICAO / IATA Subsidiary Hazard	Not Applicable		
	ERG Code	9L		
14.4. Packing group	III			
14.5. Environmental hazard	Environmentally hazardous			
	Special provisions		A97 A158 A197 A215	
	Cargo Only Packing Instructions		964	
14.6. Special precautions for user	Cargo Only Maximum Qty / Pack		450 L	
	Passenger and Cargo Packing Instructions		964	
	Passenger and Cargo Maximum Qty / Pack		450 L	
	Passenger and Cargo Limited Quantity Packing Instructions		Y964	
	Passenger and Cargo Limited Maximum Qty / Pack		30 kg G	

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	3082		
14.2. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol A/ diglycidyl ether resin, liquid)		
14.3. Transport hazard class(es)	IMDG Class IMDG Subsidiary Ha	g zard Not Applicable	
14.4. Packing group	III		
14.5 Environmental hazard	Marine Pollutant		
14.6. Special precautions for user	EMS Number Special provisions Limited Quantities	F-A , S-F 274 335 969 5 L	

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

Not Applicable

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

Product name	Group
ferrosilicon	Not Available
bisphenol A/ diglycidyl ether resin, liquid	Not Available
glass, oxide	Not Available

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
ferrosilicon	Not Available
bisphenol A/ diglycidyl ether resin, liquid	Not Available
glass, oxide	Not Available

SECTION 15 Regulatory information

Chemwatch: 11524 Version No: 10.1

Devcon Plastic Steel Liquid (B) Resin

Issue Date: 10/03/2023
Print Date: 01/10/2024

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

ferrosilicon is found on the following regulatory lists

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 2

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4

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

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

bisphenol A/ diglycidyl ether resin, liquid is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

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

Australian Inventory of Industrial Chemicals (AIIC)

Chemical Footprint Project - Chemicals of High Concern List

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

glass, oxide is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

Chemical Footprint Project - Chemicals of High Concern List

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

Additional Regulatory Information

Not Applicable

National Inventory Status

National Inventory	Status		
Australia - AIIC / Australia Non-Industrial Use	No (ferrosilicon)		
Canada - DSL	Yes		
Canada - NDSL	No (ferrosilicon; bisphenol A/ diglycidyl ether resin, liquid; glass, oxide)		
China - IECSC	No (ferrosilicon)		
Europe - EINEC / ELINCS / NLP	No (ferrosilicon)		
Japan - ENCS	No (ferrosilicon; glass, oxide)		
Korea - KECI	No (ferrosilicon)		
New Zealand - NZIoC	Yes		
Philippines - PICCS	Yes		
USA - TSCA	No (ferrosilicon)		
Taiwan - TCSI	Yes		
Mexico - INSQ	No (ferrosilicon)		
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	10/03/2023
Initial Date	28/03/2004

SDS Version Summary

Version	Date of Update	Sections Updated
9.1	03/04/2021	Physical and chemical properties - Appearance
10.1	10/03/2023	Classification change due to full database hazard calculation/update.

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.

Chemwatch: 11524 Page 14 of 14 Issue Date: 10/03/2023 Version No: 10.1 Print Date: 01/10/2024

Devcon Plastic Steel Liquid (B) Resin

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.

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