SAFETY DATA SHEET

According to
HSNO Hazardous Substances (Safety Data Sheets) Notice 2017

Section 1. Identification of the material and the supplier

Product:	**Bitumen Emulsion (Cationic)**		
Trade Names:	Cat-60	Emulsiphalt 373	Primer Emulsion
	Cat-65	Emulsiphalt 374	Primerseal Emulsion
	CRS-2	Emulsiphalt 375	
	CRS-2K	Microsurfacing Emulsion	Reprise
	CSS-1	Trackless Tackcoat	PME Crack Filler

Other Names:	PME	CMS-2
	Precoat Emulsion	CAM
	Enrichment Emulsion	Fog Seal
	Cold Mix Emulsion	
	Slurry Emulsion	

Product Use: Cationic Bitumen Emulsions are used for the construction of bituminous road and pavement surfaces

Restriction of Use: Refer to Section 15

New Zealand Supplier: **Higgins Bitumen Manufacturing**
Address: 26 Waitangi Road
Awatoto
Napier, New Zealand

Telephone: +64 6 834 1589
E-mail: HBM@higgins.co.nz

Emergency Telephone: 0800 764 766 (National Poison Centre)

Date of SDS Preparation: 17 May 2021

Section 2. Hazards Identification

This substance is hazardous according to the EPA Hazardous Substances (Classification) Notice 2020.

EPA Approval No: Surface Coatings and Colourants (subsidiary) – HSR002670

GHS Classification and Category	Hazard Code	Hazard Statement
Hazardous to the aquatic environment chronic Cat. 4	H413	May cause long lasting harmful effects to aquatic life.

Prevention Code	Prevention Statement
P103	Read label before use.
P273	Avoid release to the environment.

Response Code	Response Statement
None allocated	

Storage Code	Storage Statement
None allocated	

Disposal Code	Disposal Statement
P501	Dispose of according to Local Regulations or Authorities

Other Hazards	Statement
	Risk of scolds when handled, stored and transported at elevated temperatures.

Section 3. Composition / Information on Ingredients

Ingredients	Wt%	CAS NUMBER.
Bitumen	50 – 75	8052-42-4
Synthetic Rubber	0 – 10	9003-55-8
Alkyl Amine Derivatives	0 – 2	Proprietary
Hydrochloric Acid	0 – 2	7647-01-0
Other ingredients that do not contribute to hazard classifications	20 - 40	Proprietary

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes — If hot material contacts the eyes, immediately cool the affected area under cold water for at least 10 minutes. **DO NOT** attempt to remove the product from burnt areas. Refer to the CCNZ Bitumen Burns Card (see Section 16) and seek immediate medical assistance. Excessive exposure to fumes may cause eye irritations including redness, swelling, stinging and tearing in susceptible individuals. Remove affected person to a ventilated area.

If on Skin — If hot material contacts the skin, immediately cool the affected area under cold water for at least 10 minutes. **DO NOT** attempt to remove the product from burnt areas. Refer to the CCNZ Bitumen Burns Card (see Section 16) and seek immediate medical assistance. Material that contacts the skin at ambient temperatures **and does not** result in burns can be removed using vegetable based oils, or industrial hand cleaners. Do not use thinners or solvents. Repeated skin contact may cause skin irritations or dermatitis in susceptible individuals.

If Swallowed — Do not induce vomiting, wash out month thoroughly. If symptoms develop seek medical assistance.

If Inhaled — Remove affected person to a ventilated area. If symptoms persist, seek medical advice. If not breathing, apply artificial respiration and seek urgent medical advice.

Most important symptoms and effects, both acute and delayed

Symptoms: Various studies have concluded that there is no evidence of long-term health affects arising from the use of bitumen. Ingestion may cause pain, nausea or gastrointestinal irritations. Do not induce vomiting, give water to drink and seek immediate medical assistance. Inhalation of fumes may cause nausea, headaches, or dizziness. Remove affected persons to a well-ventilated area. If symptoms persist, seek medical advice. If not breathing, apply artificial respiration and seek urgent medical advice.

Section 5. Fire Fighting Measures

Hazard Type	Because cationic bitumen emulsion is a dispersion of bitumen in water it is considered non-combustible.
Hazards from products	At temperatures above 100 °C the emulsion will decompose to bitumen and steam. In enclosed containers, steam pressure can cause an

	explosive rupture of the container. Complete or incomplete combustion can produce oxides of carbon, sulfur and nitrogen, hydrogen sulphide and polyaromatic hydrocarbons.
Suitable Extinguishing media	For large fires use foam, or water fog For small fires use CO_2, dry powder, foam, sand or soil Do not use: Do not use high-pressure water hoses as these may spread the burning material.
Precautions for firefighters and special protective clothing	Fire fighters should wear full protective clothing and self-contained breathing apparatus.
HAZCHEM CODE	2Y (if transport in temperatures >100^0C)

Section 6. Accidental Release Measures

Wear suitable personal protective clothing as described in Section 8 to prevent skin or eye contact with the material. Whenever possible isolate the cause of the spill (i.e. close valves, empty ruptured vessels etc).

Small Spills:
Use absorbent material such as sand or soil to contain the spill. Allow the material to cure and solidify before removing using a shovel or other suitable equipment.

Large Spills:
If the spill occurs on land, use absorbent material such as sand or soil to contain the spill. Allow the material to cure and solidify before removing using earth moving or excavation equipment. Do not allow the material to enter storm water drains, sewage drains or the aquatic environment. If a spillage enters the aquatic environment, contain the spill before removing using a pump.

Environmental Impact:
This product is miscible with water in all proportions and may be harmful to aquatic organisms. It should not be allowed to enter storm water, sewage drains or other bodies of water.

Waste Disposal:
This product can be mixed with soil or aggregates and disposed of as clean fill in Local Authority waste disposal facilities. Once mixed with soil and aggregates the emulsion breaks down into bitumen and water.

Section 7. Handling and Storage

Precautions for Handling:

- This product may require gentle heating to temperatures between 40 and 90°C before pumping. When transferring product, ensure that the receiving vessel is clean and the temperature inside the vessel is less than 100°C.
- Read label before use.
- Wear personal protective clothing when handling (see Section 8).
- Avoid accidental release to the environment.

Precautions for Storage:

- Material can be stored at temperatures between 10 – 90°C. Do not heat above 95°C.
- If storing for prolonged periods of time it is advisable circulate the storage vessel to minimize settlement of the emulsion.
- Store in clean steel tanks.
- The emulsion is acidic and will slowly corrode aluminum or copper vessels, pipework or valves over time.
- Secondary containment is required.
- Store away from incompatible materials listed in Section 10.

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Bitumen Fumes:	5mg/m^3	8 Hour TWA	(NZ/Australian/UK)
	10mg/m^3	10 min TWA	(UK)
	ACGIH (proposed):	0.5mg/m^3 Cyclohexane Soluble Fraction (CHSF)	
Mineral Oil Mist:	5mg/m^3	8 Hour TWA	(NZ)
Hydrogen Chloride:	5ppm (7.5mg/m^3)	8 Hour TWA	(NZ)

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2019 11TH EDITION.

Notes:
This product can form mists or aerosols during use.

Engineering Controls
Provide adequate ventilation to ensure mists and aerosols remain at a minimum level. Avoid operations that foam or splash the product in case tank volume is exceeded.
Do not use aluminum, brass or copper components in process plant construction.
Ensure that product cannot be heated above 95°C.
Secondary containment may be required for volumes in excess of 10,000 litres.

Personal Protection Equipment

Eyes	Full face shields are required when transferring hot bitumen between vessels using flexible hoses, or when filling mobile tanks.
Hands and Skin	Wear PVC or other impervious and heat resistant gloves to prevent burns and splashes when handling hot valves and hoses. Wear full length overalls that fully cover the arms and legs. The overalls must be zipped up. It is advisable to wear a hat to prevent hot bitumen splashes causing burns to the head. The head should be covered when handling bitumen to prevent burns from splashes or accidental release. Wear safety boots that are oil resistant and have slip resistant soles. Overalls should cover the top of the boot.
Respiratory	Respiratory protection or breathing apparatus are not usually required unless engineering controls are inadequate for providing sufficient ventilation.

Section 9 Physical and Chemical Properties

Appearance	Dark brown or black liquid.
Odour	Slight odour at room temperature.
Odour Threshold	Not available
pH	2.0- 7.0
Boiling Point	approximately 100°C
Melting Point	approximately 0°C
Freezing Point	Not available
Flash Point	>218^{0}C
Flammability	Not flammable
Upper and Lower	Not available

Explosive Limits	
Vapour Pressure	2.3 kPa (17mm Hg) @ 20°C (Water) 70 kPa (525mm Hg) @ 90°C (Water)
Vapour Density	Not available
Density @ 25^0	0.99 – 1.03 g/cm^3
Solubilities	Soluble/miscible in all proportions
Partition Coefficient: N octanol/water	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	approximately 100°C
Viscosity (25^0C)	30 – 30,000 mPa.s
Particle Characteristics	Not applicable

Section 10. Stability and Reactivity

Stability of Substance	This product is stable under normal conditions.
Reactivity	Violent, explosive reaction when heated above 100°C explosive reaction when heated above 10due to steam generation.
Conditions to Avoid	Do not heat above 100°C. Emulsion contains water and open vessels will boil over at temperatures above 100°C. Enclosed vessels will develop hazardous steam pressures when heated above 100°C.
Incompatible Materials	This product will decompose to bitumen and water on contact with metal salts, anionic emulsions or anionic emulsifiers, or strong oxidizing and reducing agents, including alkalis and some acids. This product is acidic and will corrode aluminum, brass or copper process plant components.
Hazardous Decomposition Products	Normal combustion forms water vapour, CO_2, H_2O, NO_x, and SO_x. Incomplete combustion may produce CO, H_2S, PCA, PAH, and volatile hydrocarbon and particulate matter.

Section 11 Toxicological Information

Acute Effects:

Swallowed	Not triggered however Ingestion may cause pain, nausea or gastrointestinal irritations. Ingestion of hot bitumen can cause serious burns. LD50: >5000 mg/kg.
Dermal	Not triggered.
Inhalation	Not triggered however inhalation of mists and aerosols can cause throat and lung irritations. Symptoms usually recede once the victim is removed to a well-ventilated area.
Eye	Not triggered however excessive exposure to fumes may cause slight to moderate eye irritation including redness, tearing, swelling and stinging. Irritation quickly subsides once removed from the fumes. Contact with hot bitumen can cause serious burns.
Skin	Not triggered however Repeated skin contact may cause skin irritations and dermatitis. However, this is possibly caused by use of oils, soaps and detergents that are used to remove material from skin. Contact with hot bitumen can cause serious scolding to the skin.

Chronic Effects:

Carcinogenicity	Not triggered.
Reproductive Toxicity	Not triggered.
Germ Cell Mutagenicity	Not triggered.

Aspiration	Not triggered.
STOT/SE	Not triggered.
STOT/RE	Not triggered.
Chronic	Prolonged and/or repeated skin exposure can cause irritation and dermatitis. Numerous studies have concluded that bitumen does not cause any increase in the occurrence of carcinogenic, mutagenic or reproductive toxicity effects in workers.

Section 12. Ecotoxicological Information

May cause long lasting harmful effects to aquatic life.

Ecotoxicity (from Ball et al, 2008)

Bitumen Emulsion LC_{50} ≥ 113 mg/L (Daphna Magna, 48hr – estimated)
Bitumen Emulsion EC_{50} ≥ 753 mg/L (Algae, 72hr – estimated)

Bitumen Emulsion NOEL ≥ 25 mg/L (Daphna Magna, 48hr – estimated)
Bitumen Emulsion NOEL ≥ 250 mg/L (Algae, 72hr – estimated).

Persistence and degradability	Based on its use as a road surfacing material, bitumen is expected to be highly persistant and not degradable in the environment. Alkyl amine derivatives are partially degradable in the environment: 62% @ 28 days CBT based on data for similar materials 72% @ 42 days CBT based on data for similar materials
Bioaccumulation	No data Available
Mobility in Soil	Readily dispersible in water in all proportions. Emulsified bitumen is readily adsorbed onto soil and aggregates. James and Thorstensson (2002) determined that the proportion of alkyl amines in leachates from curing bitumen emulsion was less than 0.5 mg/L. The vast majority of alkyl amines are irreversibly adsorbed onto bitumen and aggregate surfaces. The hazardous components are effectively immobilized in the natural environment and are no longer bioavailable. James and Thorstensson (2002) "Environmental and safety aspects of cationic bitumen emulsions," Proceedings 5th ISSA World Congress, Berlin.
Other adverse effects	No data available

Do not allow to enter waterways.

Section 13. Disposal Considerations

Disposal Method:
Mix product with sand, soil or aggregate and allow to cure (dry). Dispose of as clean fill in accordance with local authority regulations. Packaging can often be recycled, otherwise dispose of packaging in a landfill in accordance with local authority regulations.

Disposal methods to avoid: Do not dispose of into aquatic environments including drains, streams, rivers, lakes, ponds or the ocean. See Section 6 for additional information.

Section 14 Transport Information

This product is **NOT** classified as a Dangerous Good for transport in NZ ; NZS 5433:2012

Section 15 Regulatory Information

EPA Approval Code: Surface Coatings and Colourants (subsidiary) – HSR002670

HSWA & EPA Controls	Trigger Quantity
Certified Handler	Not required
Location Certificate	Not required
Tracking Trigger Quantities	Not required
Signage Trigger Quantities	Not required
Emergency Response Plan	10 000 L
Secondary Containment	10 000 L
Restriction of Use	None

Section 16 Other Information

Glossary

Cat	Category
EC_{50}	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
LC_{50}	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD_{50}	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2017 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2012
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

This document has been prepared by TCC (NZ) Ltd and serves as the suppliers Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to TCC (NZ) Ltd or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer. While TCC (NZ) have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, TCC (NZ) Ltd accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS

The information herein is given in good faith, but no warranty, express or implied is made.

Please contact the New Zealand distributor, if further information is required.

Issue Date: 17 May 2021 Review Date: 17 May 2026