

1. IDENTIFICATION OF SUBSTANCE

- Product name** : Dupal.
- Product identifier/synonyms** : Dupal.
- Product description** : Blend of penetration grade bitumen and heavy hydrocarbon solvent.
- Intended use** : Used as a road binder for surface dressing.

2. HAZARDS IDENTIFICATION

- Health hazards** : Static charges generated by emptying package in or near flammable vapours may cause flash fire. May form flammable dust-air mixtures. May cause eye irritation by mechanical abrasion. May cause skin irritation by mechanical abrasion. Inhalation of dust may cause respiratory tract irritation. May cause allergic skin reaction in susceptible individuals.
- Potential health effects** : Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing, or breathing difficulty. Repeated exposure may lead to respiratory sensitisation (asthma) in susceptible individuals.

3. COMPOSITION/INFORMATION ON INGREDIENTS

- Preparation description** : A blend of components derived from crude oil, solvents and additives.

Hazardous components

CHEMICAL IDENTITY	CAS	SYMBOL(S)	R-PHRASE(S)	CONC.
Diesel	68334-30-5	F,T,N	R10; R38; R51/53	> 20 - < 40,00%

- Additional information** : Crude petroleum oil may contain trace levels of hydrogen sulphide (H₂S). Refer to chapter 16 for full text of EC R-phrases.

4. FIRST AID MEASURES

- General information** : DO NOT DELAY. Keep victim calm. Obtain medical treatment immediately.
- Skin burns** : If contact with hot product, cool burn area by flushing with large amounts of water. Do not attempt to remove anything from the burn area or apply burn creams or ointments. Cover burn area loosely with a sterile dressing, if available. Transport to the nearest medical facility for additional treatment. It should be noted that this product contracts on cooling. Where a limb is encased, care should be taken to avoid the development of a tourniquet effect. In the event of this occurring, the adhering product must be softened and/or split to prevent restriction of blood flow. All burns should receive medical attention.

Head Office

Cape Town PO Box 82 Eppindust 7475 **Tel** +27 (0)21 531 6406 **Fax** +27 (0)21 531 5514 **Email** colas@colas.co.za **Website** www.colas.co.za

Colas provides the above data sheet in good faith and it is provided without warranty, representation, inducement or licence of any kind; as such Colas shall not be liable for cost, damages or losses incurred as a result of reliance on the abovementioned information.

Eye contact	: Hot product - if contact with hot product, cool the burn area by flushing with large amounts of water. Do not attempt to remove anything from the burn area or apply creams or ointments. Cover the burn area loosely with a sterile dressing, if available. If persistent irritation occurs, obtain medical attention.
Inhalation	: If inhalation of mists, fumes or vapour causes irritation to the nose or throat, remove to fresh air. If rapid recovery does not occur, obtain medical attention. Casualties suffering ill effects as a result of exposure to hydrogen sulphide should be removed to fresh air. Do not attempt to rescue victim unless proper respiratory protection is worn. If victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardiopulmonary Resuscitation (CPR) as required and transport to the nearest medical facility.
Ingestion	: Do not induce vomiting. Protect airways if vomiting starts. Seek medical assistance if rapid recovery does not occur.
Advice to physician	: Do not attempt to remove the product from the skin as it provides an airtight sterile covering, which will eventually fall away with the scab as the burn heals. If removal is attempted, mineral oil (not mineral spirits) or oil based ointment may be applied to help soften the product to facilitate removal.

5. FIRE-FIGHTING MEASURES

Clear the area of all non-emergency personnel.

Specific hazards	: Flammable vapours may be present even at temperatures below the flash point. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water. Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Boil-over of tanks and violent eruptions may occur in the presence of water.
Suitable fire-fighting agents	: Dry chemical powder. Carbon dioxide. Foam. Sand or earth may be used for small fires only. Do not use water.
Protective equipment for fire-fighters	: Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.
Additional advice	: Keep storage tanks, pipelines, fire exposed surfaces cool with water delivered as a fine spray.

6. ACCIDENTAL RELEASE MEASURES

Evacuate the area of all non-essential personnel. Avoid contact with spilled or released material.

Protective measures	: Avoid contact with skin, eyes and clothing. Do not breathe fumes, vapour. Remove all possible sources of ignition in the surrounding area. Ventilate contaminated area thoroughly. Hot product should be handled so that there is no risk of burns. Use compressed air or fresh air respiratory equipment in confined spaces. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Clean-up methods	: Use sand and spill control material to contain and/or absorb spills. Allow product to cool and solidify. Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.
Additional advice	: Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

General precautions	: Avoid contact with hot liquid to prevent burns. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Take precautionary measures against static discharges. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Handling	: Avoid contact with skin, eyes, and clothing. Avoid inhaling vapour and/or mists. Use only in well ventilated areas. For quality, health and safety reasons do not exceed the recommended storage and handling temperature.
Storage	: Must be stored in a well ventilated area, away from sunlight, ignition sources and other sources of heat. Keep tanks covered and containers tightly closed when not in use. Bulk storage tanks should be diked (bunded). Do not smoke in storage areas. Hydrogen sulphide may accumulate in tanks during long-term storage at high temperatures. For this reason, tank vapour spaces should be regarded as hazardous.
Recommended materials	: For containers and container linings, use stainless steel.
Unsuitable materials	: For containers or container linings, avoid PVC, polyethylene or high density polyethylene.
Precautions during discharge from bitumen tanks	: Tanks may be heated by hot oil, steam, electricity or flame tubes. When pumping product from a storage or road tank, care should be taken to avoid the risk of fire or explosion as a result of exposing hot heater tubes. The tubes should be covered by a minimum of 150 mm of hot product, unless the heat has been switched off for a period of sufficient cooling. Bulk temperature should be kept as low as possible to enable efficient discharge. A check should be made to ensure that the receiving tank has sufficient ullage space to accommodate the load.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values

MATERIAL	SOURCE	TYPE	ppm	mg/m ³	NOTATION
Diesel	ACGIH TLV	TWA (Non-Aerosol)	15 ppm	100 mg/m ³	P: Application restricted to conditions in which there are negligible aerosol exposures as total carbon vapour.
	ACGIH	SKIN_DES (Non-Aerosol)			Can be absorbed through the skin as total hydrocarbon vapour.
Hydrogen sulphide	ACGIH	TWA	10 ppm		
	ACGIH	STEL	15 ppm		

MATERIAL	SOURCE	HAZARD DESIGNATION
Diesel	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.

Exposure controls	: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Use intrinsically safe exhaust ventilation if there is a risk of inhalation of vapours, mists or aerosols. Eye wash and showers for emergency use. Wash hands before eating, drinking, smoking and using the toilet. Contaminated clothing must be removed as soon as possible. It must be laundered before use.
Personal protective equipment	: Heat-resistant gloves with close-fitting cuffs. Heat-resistant, close-fitting safety boots. Overalls with close-fitting cuffs. Safety visor to protect entire face. Respirators if fume exposure is likely to exceed occupational standards. Avoid breathing bitumen fumes and avoid skin contact with product.
Respiratory protection	: In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Hand protection	: Chemical and heat-resistant gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.
Eye protection	: For normal operations with hot material, wear safety hat with visor.
Protective clothing	: For normal operations with hot material, wear chemical and heat-resistant overalls and heavy-duty boots. The use of a neck apron is recommended.
Environmental exposure controls	: Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Black, Viscous liquid
Odour	: Petroleum
Viscosity at 60°C	: < 5000 cSt
Viscosity at 135°C	: 300-400 cSt
Specific gravity (g/cm³)	: 0.98-0,99
Solubility in water	: Insoluble
pH	: N/A
Melting point °C	: N/A
Pour point °C	: > 50
Boiling point °C	: > 160°C
Flash point °C	: > 60°C
Vapour pressure @ 20°C (mm Hg)	: < 0,1
OEL in mg/m³ (TWA)	: 5 (Bitumen fume); 2 (Diesel fume)

10. STABILITY AND REACTIVITY DATA

Stability	: Stable under normal conditions of use.
Conditions to avoid	: Avoid heat, sparks, open flames and other ignition sources.
Incompatibility	: Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material. Reacts strongly with oxidising agents. Avoid contamination of thermal insulation near hot surfaces by oil and bitumen and replace lagging, where necessary, with non-absorbent type of insulation. Self-heating, leading to auto-ignition at the surface of porous or fibrous materials impregnated with bitumen or condensates from bituminous fumes, can occur at temperatures below 100°C.
Hazardous decomposition products	: Hydrogen sulphide.

11. TOXICOLOGICAL INFORMATION

Basis of assessment	: Toxicological data has not been determined specially for this product. Information given is based on data on the components and toxicology of similar products.
Acute oral toxicity	: Expected to be low toxicity: LD50 > 5000 mg/kg, Rat.
Acute dermal toxicity	: Expected to be low toxicity: LD50 > 5000 mg/kg, Rabbit.
Acute inhalation toxicity	: Not considered to be an inhalation hazard under normal conditions of use. Avoid vapours from heated materials to prevent exposure to potentially toxic/irritating fumes.
Skin irritation	: Expected to be slightly irritating. Contact with hot product may cause thermal burns which may result in permanent skin damage.
Eye irritation	: Expected to be slightly irritating. Hot product may cause severe eye burns and/or blindness.
Respiratory irritation	: Inhalation of vapours or mists may cause irritation to the respiratory system.
Sensitisation	: Not expected to be a skin sensitiser.
Repeated dose toxicity	: Not expected to be a hazard.
Mutagenicity	: Not expected to be a mutagenicity hazard.
Carcinogenicity	: Not classified as dangerous under EC criteria. It contains low concentrations of Polycyclic Aromatic Compounds (PACs). These PACs are not considered to be bioavailable. Despite the known presence of PACs there is no evidence that exposure to the product or their fumes is harmful.
Reproductive and developmental toxicity	: Data not available.

12. ECOLOGICAL INFORMATION

Ecotoxicological data has not been determined specifically for this product. Information given is based on knowledge of the components and the ecotoxicology of similar products.

Acute toxicity	: Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be toxic: LL/EL/IL50 > 1-10 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Mobility	: This product will form a film on the surface of water and spread. The solvent will evaporate and the bitumen will absorb to the sediment. In contact with the soil, it can penetrate the upper layers and/or affect nearby water courses before hardening. In time the solvent will evaporate.
Persistence/degradability	: Expected to be not inherently biodegradable.
Bioaccumulation	: Has the potential to bioaccumulate. In practice, the low water solubilities and high molecular weights of these substances are such that their bioavailability to aquatic organisms is limited and therefore bioaccumulation is unlikely.
Other adverse effects	: Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

Material disposal	: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the materials generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
Container disposal	: Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut, or weld uncleaned drums. Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Local legislation	: Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

IMDG identification number	: UN 1999
Proper shipping name	: TARS, LIQUID
Technical name	: Cutback Liquids
Class/division	: 3
Packaging group	: III
Marine pollutant	: Yes
Additional information	: ITATA - Forbidden for transport on passenger and cargo aircraft.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Classification	: Flammable. Irritant. Dangerous for the Environment.
EC Symbols	: Xi Irritant. N Dangerous for the environment.
EC Risk Phrases	: R10 Flammable. R38 Irritating to skin. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
EC Safety Phrases	: S16 Keep away from sources of ignition - No smoking. S23 Do not breathe fumes, vapour or spray. S51 Use only in well ventilated areas. S29 Do not empty into drains. S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.
EINECS	: All components listed or polymer exempt.
TSCA	: All components listed.
JEX (JP)	: All components listed.
DSL	: All components listed.
AICS	: All components listed.
INV (CN)	: All components listed.
PICCS (PH)	: All components listed or polymer exempt.

16. OTHER INFORMATION

Other information	: No specific notes on this product.
--------------------------	--------------------------------------

To the best of our knowledge, the information contained herein is correct. We do not assume any liability for the consequences of its use, since the information may be applied under conditions beyond our control and with which we may not be familiar, and since data made available following the issuance of this document could suggest modification of this information. Final determination of the suitability of any material is the responsibility of the user. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. All materials may present unknown hazards and should be used with caution.