

# K1-70

## Conventional Grade Surface Dressing Emulsion



### General

K1-70 is a Conventional Grade cationic bitumen emulsion which complies with grade K1-70 of BS 434-1 and grade C69B3 of BS EN 13808. It has been designed to meet the requirement for a surface dressing emulsion in situations where conventional K1-70 bitumen emulsion will perform satisfactorily.

K1-70 is manufactured by Ayton Products within Management Systems accredited to BS EN ISO 9001:2000, BS EN ISO 14001:1996 and OHSAS 18001:1999.

### Properties

K1-70 achieves Conventional Grade classification in discriminatory tests as defined by Specification for Highway Works Clauses 919 and 922 and has been used successfully as a Conventional Grade surface dressing emulsion since the 1980's.

### Surface dressing design

The design and implementation of surface dressing using K1-70 should be carried out in accordance with Road Note 39, Design Guide for Surface Dressing, Design Manual for Roads and Bridges Volume 7 Section 5 Part 2: HD 37/99 and Sector Scheme Document 13A.

K1-70 is applied using conventional spray equipment, pressures, temperatures and spread rates.

K1-70 is usually applied at road surface temperatures between 12 °C – 35 °C, in dry conditions, normally between May and August, depending on dressing design.

### Health & Safety

K1-70 is not classified as hazardous to health or the environment. For further information refer to our relevant Material Safety Data Sheet or contact our Safety, Health and Environment Department.

### Supply

Availability, prices and conditions of sale are available from our Bitumen Products Sales Department.

### Technical Service

Further technical information and advice is available from our Technical Department.

Emulsion Specification to BS EN 13808			Emulsion As Supplied
Binder Content	BS EN 1428		67 – 71 %
Efflux Time (4mm at 40 °C)	BS EN 12846		10 – 45 s
Breaking Value	BS EN 13075-1		50 - 100
Adhesivity	BS EN 13614		> 75 %
Typical Binder Properties		After recovery to BS EN 13074	After aging to prEN 14769
Penetration 25 °C / 100 g / 5 s	BS EN 1426	210 dmm	60 dmm
Penetration 5 °C / 200 g / 60 s	BS EN 1426	130 dmm	50 dmm
Softening Point	BS EN 1426	36 °C	49 °C
Typical Binder Rheology to prEN 14770 (SHW Clause 928)		After recovery to BS EN 13074	After aging to prEN 14769
High Equi-stiffness Temperature	T <sub>2kPa</sub>	47 °C	58 °C
Low Equi-stiffness Temperature	T <sub>2MPa</sub>	-5 °C	7 °C
Complex Stiffness Modulus at 5 °C	G* <sub>(5 °C)</sub>	6.73 x 10 <sup>5</sup> Pa	2.58 x 10 <sup>6</sup> Pa
Complex Stiffness Modulus at 25 °C	G* <sub>(pen)</sub>	5.00 x 10 <sup>4</sup> Pa	2.61 x 10 <sup>5</sup> Pa
Complex Stiffness Modulus at 60 °C	G* <sub>(60 °C)</sub>	3.53 x 10 <sup>2</sup> Pa	1.67 x 10 <sup>3</sup> Pa
Phase Angle at 5 °C	δ <sub>(low)</sub>	71.0 °	57.5 °
Phase Angle at 60 °C	δ <sub>(high)</sub>	88.7 °	84.3 °
Typical Binder Cohesion to BS EN 13588 (SHW Clause 939)		After recovery to BS EN 13074	After aging to prEN 14769
Maximum Cohesion	C <sub>M</sub>	0.70 J cm <sup>-2</sup>	0.80 J cm <sup>-2</sup>
Temperature of Maximum Cohesion	T <sub>M</sub>	35 °C	45 °C
Temperature Range for Cohesion Value > 0.5 Jcm <sup>-2</sup>	-	15 °C	15 °C

# Safety Data Sheet



## 1. Identification of the substance/preparation and the company

Identification of the product: **K1-70 bitumen emulsion**

Product description: Cationic bitumen emulsion, water based, brown/black liquid

Supplier: Ayton Products  
Browick Road  
Wymondham  
Norfolk NR18 ORJ  
Tel : 01953 602002  
Fax : 01953 604965  
email: sales@ayton.co.uk

Emergency phone number: 01953 602002

## 2. Composition/information on ingredients

K1-70 bitumen emulsion comprises mainly of bitumen emulsified in water. Emulsifying agents and other additives are also present in varying small quantities.

The following components are present:

Conc <sup>n</sup> .	Component	Class	Risk phrases
< 0.25%	Cationic surfactants	C, N	R22 Harmful if swallowed R34 Causes burns R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

## 3. Hazards identification

May cause irritation to skin and eyes

Hot emulsion may cause burns

## 4. First-aid measures

Inhalation: No known hazard

Skin: HOT EMULSION: flush affected area immediately with cold water, DO NOT REMOVE BITUMEN, seek medical advice

COLD EMULSION: flush affected area with cold water, wash with suitable proprietary skin cleanser and water. Do not use solvents

Eyes: Irrigate thoroughly with water, seek medical advice

Ingestion Do not induce vomiting. give water to drink, seek medical advice

## 5. Fire-fighting measures

Non-flammable

Dried film supports combustion

Use carbon dioxide, dry powder or foam extinguishers

## 6. Accidental release measures

Contain/absorb spillage with proprietary absorbent material, sand or earth

Transfer to waste disposal site in sealed containers

Prevent entry into water courses or drains

Inform authorities if material enters drains or water courses



## 7. Handling and storage

Storage of bitumen emulsion should be in accordance with the Oil Storage Regulations:

- 200lt drum in drip tray with a capacity of 25% of the drum.
- Storage tank: within impermeable bund with a capacity of not less than 110% of the volume of the storage tank.

Protect from freezing conditions

Roll/invert containers before use and at regular intervals to prevent settlement

Bulk stores should be circulated/agitated before use

Hot emulsion must not be heated above 90°C (boiling/frothing hazard)

## 8. Exposure controls and personal protection

No Occupational Exposure Limits listed in EH40 apply

Wear rubber/PVC gloves, eye protection and protective clothing, use barrier cream on hands

## 9. Physical and chemical properties

Formula:	n/a	Flammability:	non-flammable
Appearance:	brown/black liquid	Flash point:	n/a
Density:	0.95-1.05	Boiling point:	~100 °C
Odour:	characteristic	Acidity/alkalinity:	pH 2 to 5

## 10. Stability and reactivity

Conditions to avoid: Do not heat above 90°C as boiling/frothing will result  
Do not store below 2°C to avoid freezing

Materials to avoid: alkalis (will cause emulsion to coagulate)

## 11. Toxicological information

Inhalation: not considered hazardous

Skin contact: due to small quantities of emulsifying agents, frequent or prolonged skin contact may cause skin sensitisation. Hot emulsion can cause scalding

Eye contact: may irritate eyes

Ingestion: minimal toxicity

### Notes to doctors

Bitumen will cause burns on contact. Initial treatment should be confined to rapid cooling under cold running water. There is no need to remove bitumen from the skin, this will provide a sterile covering that will detach itself in a few days. Where burn and bitumen encircles limb or digit the adhering bitumen should be split to avoid a tourniquet effect

## 12. Ecological information

K1-70 bitumen emulsion contains components (<0.25 %) which are classified as dangerous for the environment.

Air: at normal temperature water component will evaporate leaving solid layer of bitumen

Water: emulsion will disperse in water, the bitumen and emulsifier components will persist in the environment for a considerable period of time

Soil: emulsion will 'break' and form a solid bitumen layer on the surface on evaporation of water content

## 13. Disposal considerations

Must be disposed of to Registered Waste Disposal Contractor. Disposal to comply with local and national regulations

#### 14. Transport information

K1-70 bitumen emulsion is not classified as hazardous for transport  
Bulk hot supplies to be labelled in accordance with Chemical Industries Association Black and White Marking Scheme:

Emergency Action Code: **2X**  
Description: **HOT LIQUID**

#### 15. Regulatory information

K1-70 bitumen emulsion does not require classification or labelling under the Chemicals (Hazards, Information and Packaging) Regulations

The information contained in this safety data sheet does not constitute an assessment of workplace risks. Users are advised to refer to the following legislation for further information:

##### Legislation

Health and Safety at Work etc. Act 1974  
Control of Substances Hazardous to Health Regulations  
ADR International Agreement for the Transport of Dangerous Goods by Road  
Environmental Protection Act 1990, Environmental (Duty of Care) Regulations  
Control of Pollution (Oil Storage)(England) Regulations 2001

##### Guidance

IP Bitumen Safety Code  
Bitumen Burns – Notes for Guidance. available from the European Bitumen Association  
(email: [dupont@eurobitume.org](mailto:dupont@eurobitume.org))

#### 16. Other information

##### Recommended use: Surface Dressing.

Users are advised to refer to British Standard BS 434 for Bitumen Road Emulsions and the Road Emulsion Association (REAL) technical data sheets

The above information is based on our current knowledge of the product and produced in accordance with the requirements of the Chemicals (Hazards, Information and Packaging) Regulations. The purpose of this data sheet is to describe the product in terms of its safety requirements. It is the user's responsibility to satisfy themselves as to the adequacy and completeness of this information for their own particular use.