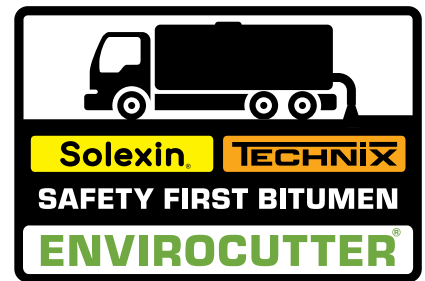


Technix EnviroCutter[®], The replacement for kerosene in cutback bitumen for spray sealing.

Version 1.7



Meet your primary duty of care – USE ENVIROCUTTER

DETAILED INFORMATION

SAFE TO HANDLE

- Flash point >95°C (50°C above kerosene flash point)
- Non flammable • Non corrosive • Non irritant

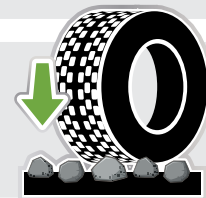


NOT A HAZARDOUS SUBSTANCE

- It safely replaces kerosene cutbacks (Please refer to the Detailed Information brochure pages 2 and 3 for further details. Temperatures of over 100°C are possible depending on concentration of the EnviroCutter)
- Complies with Standard AS-3568-2020 “Oils for Reducing the Viscosity of Residual Bitumen for Pavements”



SIMILAR CHIP ADHESION COMPARED TO KEROSENE CUTBACKS



EVAPORATES FROM BITUMEN AT A SIMILAR RATE TO KEROSENE



ENVIRONMENTALLY SAFE

- Biodegradable • Not a persistent pollutant
- Not harmful to the atmosphere • Has a pleasant aroma



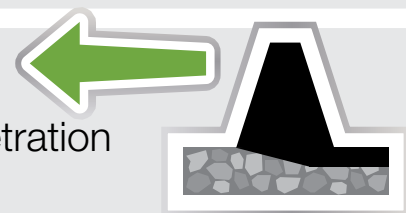
GREATER DILUTION IMPACT

- Less EnviroCutter compared to Kerosene for similar cutback bitumen viscosity at 25°C (Please refer to page 4)



ALSO IDEAL FOR PRIME COATS

- Excellent base course aggregate wetting and penetration
- Safe to use up to 100°C for spraying on cold days



Formulated for safety and improved adhesion

EXPLOSIMETER

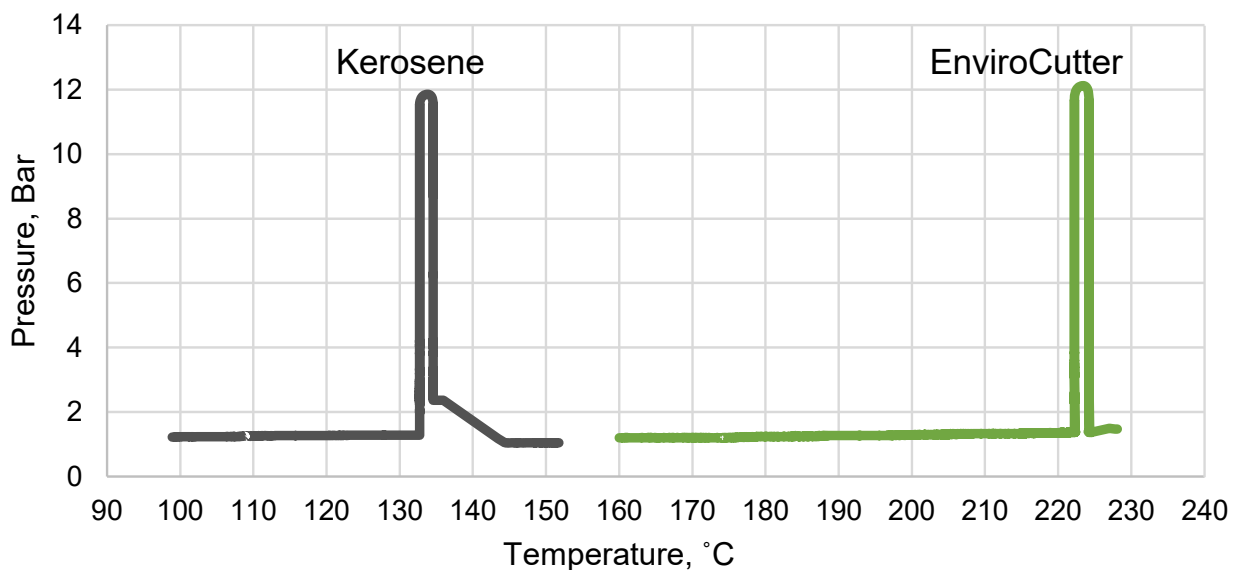
This Technix laboratory equipment compares the maximum explosion pressure resulting from the ignition of EnviroCutter fumes, compared to the maximum explosion pressure resulting from the ignition of kerosene fumes.

These fumes are contained in the vapour space of a tank holding EnviroCutter and bitumen, or holding kerosene and bitumen.

The equipment is in compliance with the Standard Test Method EN 15967:2011 "Determination of maximum explosion pressure and the maximum rate of pressure rise of gases and vapours"



Explosion Graphs (Cutback Bitumen (7% diluent))



Comparative viscosity properties, EnviroCutter compared to kerosene

CUTBACK BITUMEN PROPERTIES

Properties	Base Bitumen	Cutback Bitumen (Technix EnviroCutter)				Cutback Bitumen (Kerosene)				Test Method
		0	2	4	6	8	2	4	6	
Parts Per Hundred (PPH)	0	2	4	6	8	2	4	6	8	
Viscosity at 60 °C, Pa.s *1	54.400	29.200	16.380	10.500	6.280	34.400	20.670	13.640	8.140	ASTM D4402
Viscosity at 135 °C, Pa.s *1	0.204	0.162	0.133	0.109	0.086	0.169	0.142	0.110	0.096	ASTM D4402
Viscosity at 60 °C, Pa.s *2	94.600	44.530	25.870	14.760	8.480	57.000	38.760	23.330	13.680	ASTM D4402
Viscosity at 135 °C, Pa.s *2	0.292	0.228	0.181	0.142	0.111	0.238	0.196	0.158	0.133	ASTM D4402
Viscosity at 60 °C, Pa.s *3	168.000	91.000	52.070	23.930	11.200	117.700	72.200	35.960	23.870	ASTM D4402
Viscosity at 135 °C, Pa.s *3	0.352	0.276	0.223	0.170	0.134	0.282	0.235	0.185	0.160	ASTM D4402
Flashpoint / °C		148	136	133	126	128	91	88	82	ASTM D93A

1*: 180/200 Bitumen

2*: 130/150 Bitumen

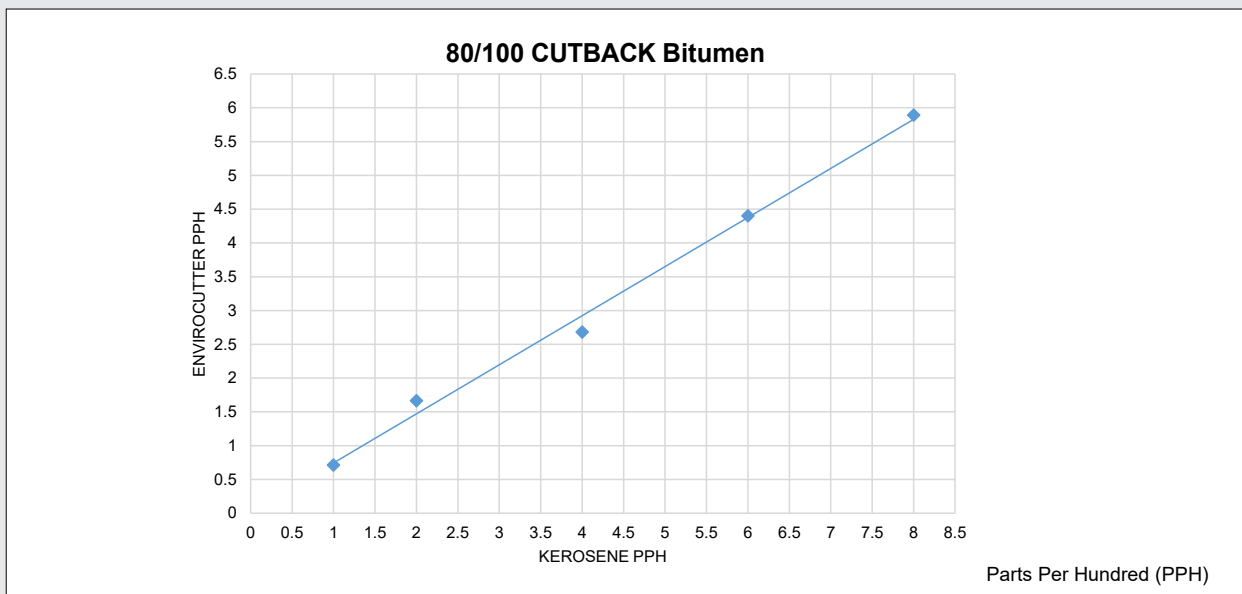
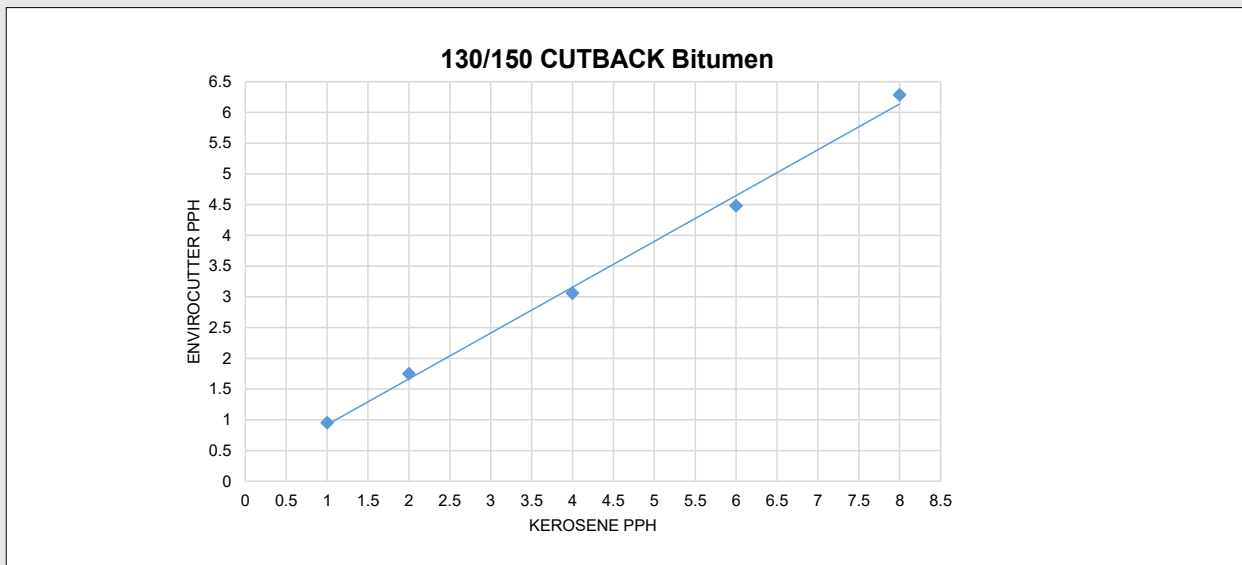
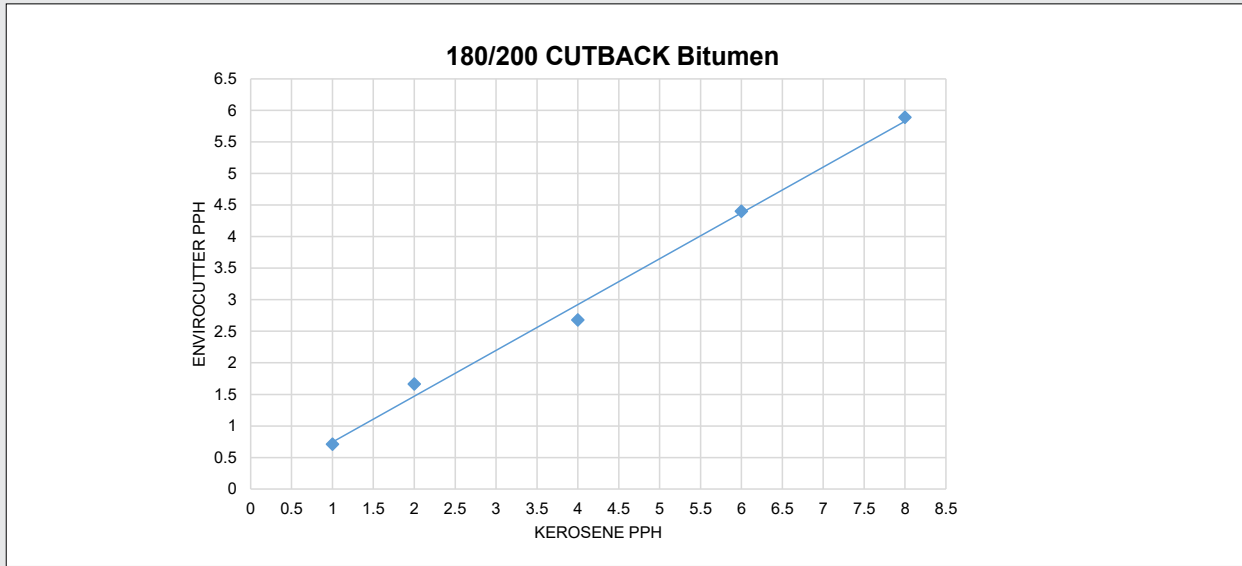
3*: 80/100 Bitumen

ENVIROCUTTER PROPERTIES

Properties	Technix EnviroCutter	Kerosene	Test Method
Flash Point, °C	> 95	43	ASTM D93
Initial Boiling Point, °C	> 190	151	ASTM D86
Final Boiling Point, °C	> 300	259	ASTM D86
Viscosity at 40 °C, cSt	> 2.5	1.15	ASTM D445
Water Content, %	< 0.15	-	IP438
Density, kg/l	> 1.05	0.79	D4052

Cutback dilution ratio's

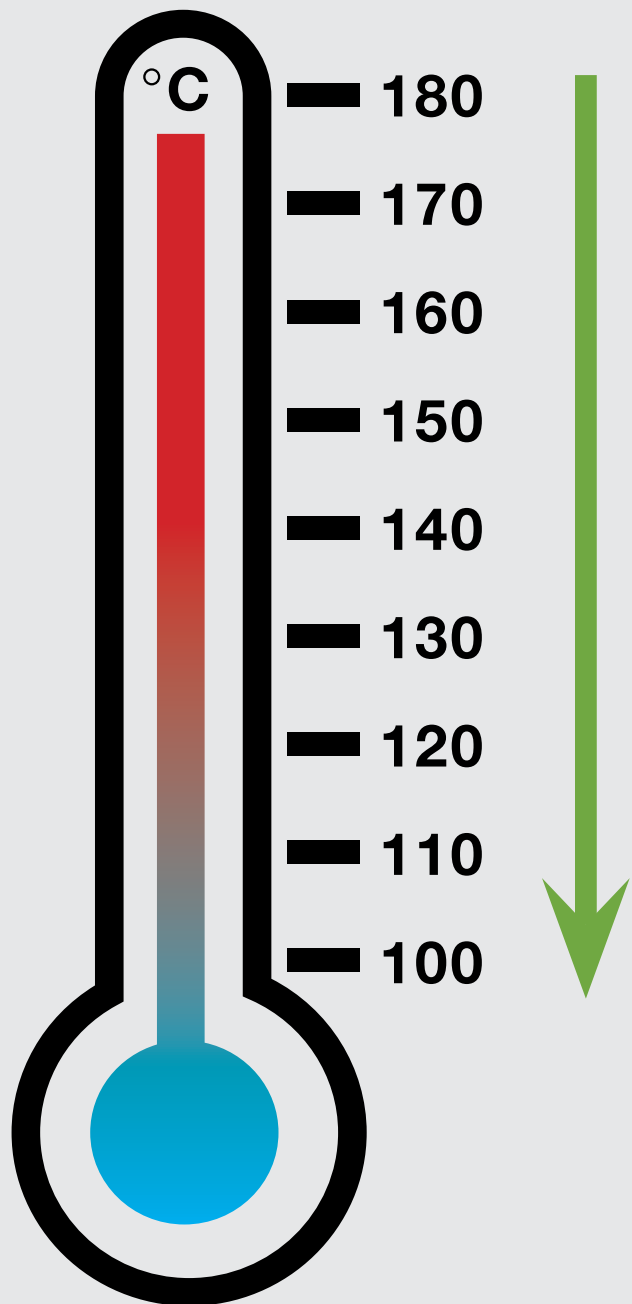
ENVIROCUTTER COMPARED TO KEROSENE



STOP PRESS!

WORLD FIRST!

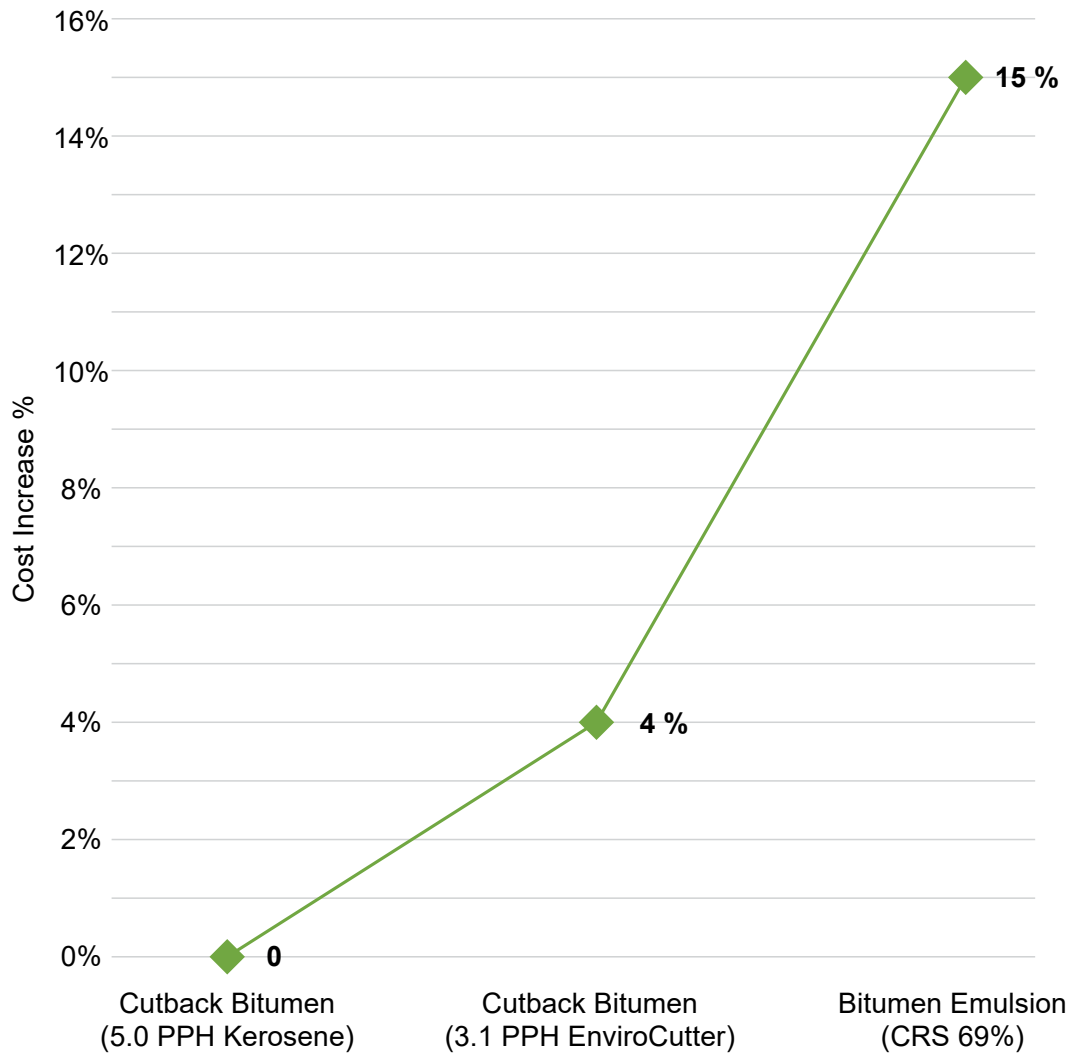
SAFELY SPRAY WARM BITUMEN AT LESS THAN 100°C!



EnviroCutter cost comparison

ENVIROCUTTER/KEROSENE/BITUMEN EMULSION SPRAYED ON THE ROAD COST DIFFERENCE

**Comparative overall Chipsealing Cost Increases using 3.1 Parts per 100
EnviroCutter Cutback Bitumen, or alternatively CRS 69 (69% Cationic Rapid Setting)
Bitumen Emulsion compared to 5.0 Parts per 100
Kerosene Cutback Bitumen**

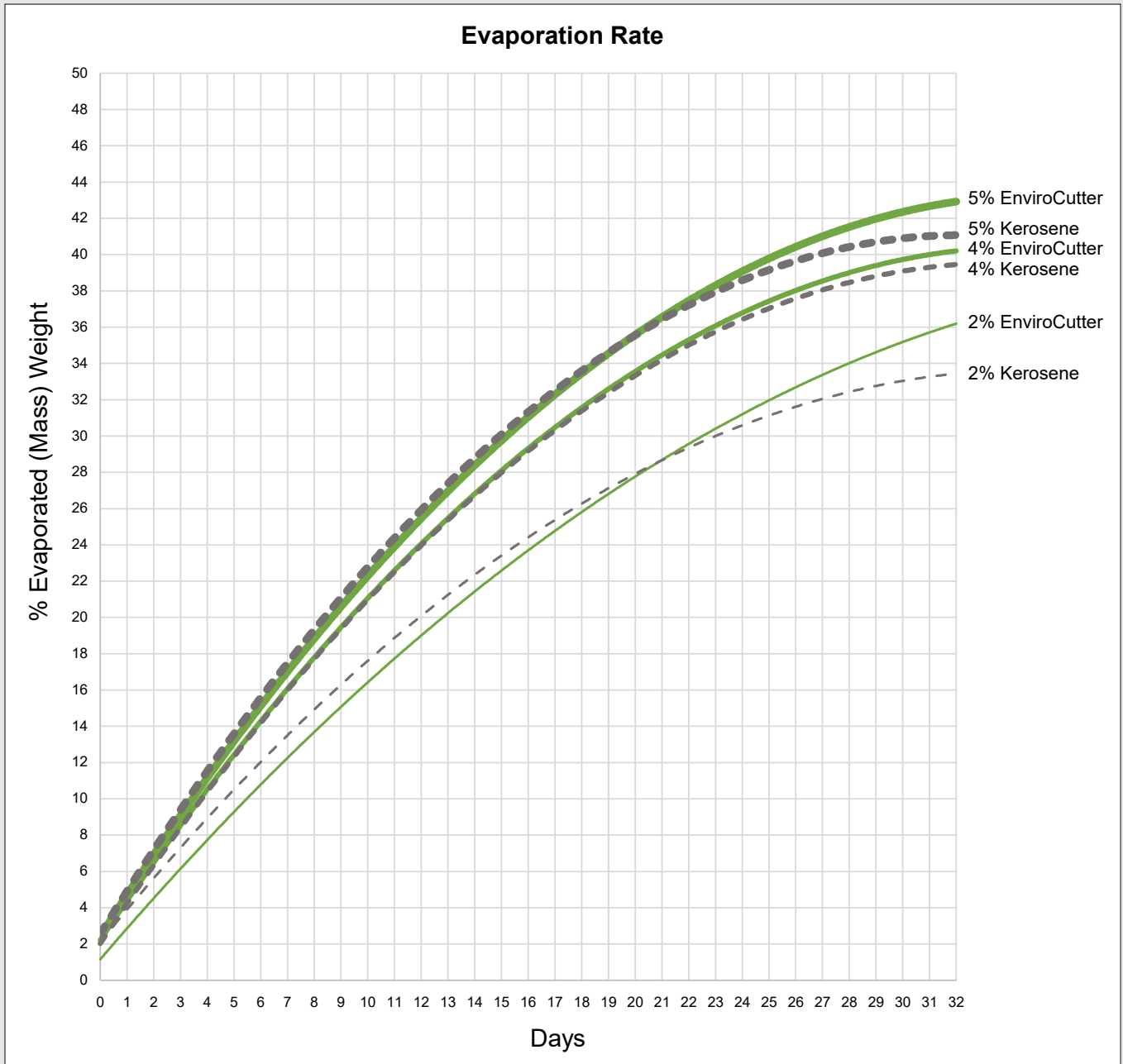


Comparative evaporation rates

EVAPORATION TEST ENVIROCUTTER COMPARED TO KEROSENE

Five hundred gram of samples of 2%, 4% and 5% blends of EnviroCutter and Kerosene in 130/150 bitumen were prepared at 120°C.

The samples were transferred to a room with a controlled temperature of $25 \pm 0.5^\circ\text{C}$ for a period of thirty days. The mass loss of samples were recorded daily.



Validation

An independent third party laboratory has tested the solvency effect for cutback bitumens made from both EnviroCutter and kerosene. That laboratory has confirmed that the cutback bitumens made from EnviroCutter had a lower viscosity than cutback bitumens made from kerosene's. The independent third party

laboratory conducted the evaporation test for cutback bitumens made from both EnviroCutter and kerosene. It has confirmed that the rate of evaporation of EnviroCutter from bitumen is about the same as, if not slightly faster than that of the kerosene.

| Technix Spray Booth

FEATURES

Technix within its comprehensive bitumen laboratory facilities has a sophisticated bitumen spraying booth.

The facility enables Technix to under take bitumen spraying trials for the complete range of bitumen products designed for spraying onto road pavements.

The application rates for various bitumen temperatures and viscosities can be tested.

Aggregates of various sizes can be applied at different rates.

Different spray nozzles can be tested. Environmental effects of atmospheric temperatures and winds can be simulated.



| EnviroCutter Miscibility test

MISCIBILITY TEST

Standard AS 3568 includes a qualitative miscibility requirement which is based on a visual assessment of a blend of bitumen and oil.

AS 3568 indicates that an oil is suitable for use in terms of its miscibility with bitumen if the bitumen-oil blend visually does not separate, or there is no obvious precipitation of bitumen.

This miscibility assessment is performed by mixing one part by weight of the EnviroCutter at ambient temperature with one part by weight of bitumen at a temperature of 120 °C.

The mixture is then allowed to cool to ambient temperature and is inspected for any visible separation or precipitation. The results show that EnviroCutter and bitumen are miscible.

EnviroCutter Vialet bitumen adhesion test

VIALET BITUMEN ADHESION TEST - ENVIROCUTTER AND KEROSENE COMPARISON

Samples of 180/200 grade bitumen with polyamine adhesion agent and Grade 3 greywacke aggregate were tested.

The following additives were tested:

1. 3% weight (3.1 Parts Per Hundred) EnviroCutter and 0.5% adhesion agent
2. 3% weight (3.9 Parts Per Hundred) kerosene and 0.5% adhesion agent

NOTE: Amine based adhesion agents are strongly recommended. If alternative adhesion agents are used Vialet bitumen adhesion tests should be undertaken

VIALET TEST ENVIROCUTTER



100%



1. Chip retention percentage with Adhension Agent

VIALET TEST KEROSENE CUTTER



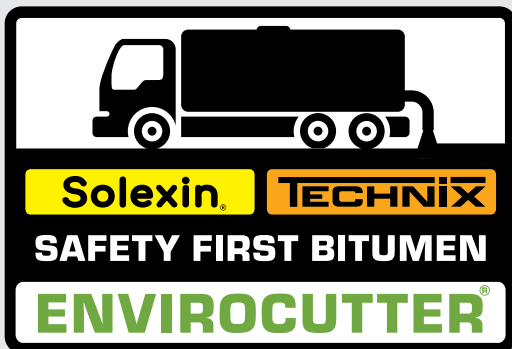
98%



2. Chip retention percentage with Adhension Agent

ENVIROCUTTER FOR SAFETY FIRST BITUMEN SPRAYING





ENVIROCUTTER DEVELOPED BY NEW ZEALAND COMPANY TECHNIX INDUSTRIES LIMITED. MANUFACTURED BY, AND AVAILABLE FROM, SOLEXIN INDUSTRIES LIMITED, (A TECHNIX COMPANY) IN SAFETY SEALED 1000 LITRES IBC'S, 20 FEET ISO BULK CONTAINERS OR BULK ROAD TANKERS.

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