

Technix EnviroCutter

The replacement for kerosene in cutback bitumen for spray sealing.



Meet your primary duty of care – USE ENVIROCUTTER

GENERAL INFORMATION

SAFE TO HANDLE

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

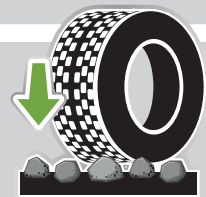


NOT A HAZARDOUS SUBSTANCE

- 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



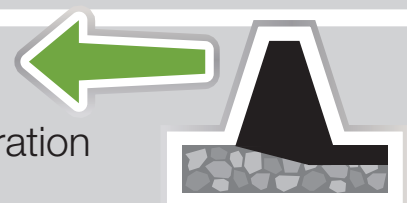
GREATER DILUTION IMPACT

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



ALSO IDEAL FOR PRIME COATS

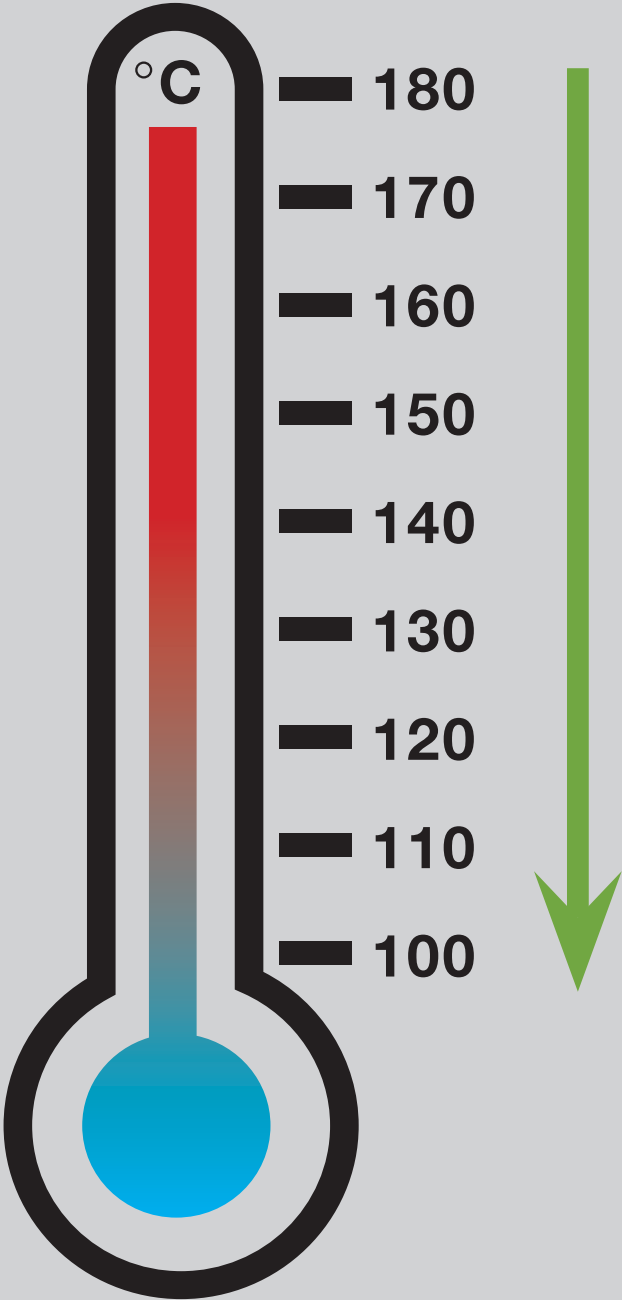
- Excellent base course aggregate wetting and penetration
- Safe to use up to 100°C for spraying on cold days



STOP PRESS!

WORLD FIRST!

**SAFELY SPRAY WARM BITUMEN
AT LESS THAN 100°C!**



SAFETY FIRST BITUMEN **MINIMISE THE RISK - USE ENVIROCUTTER**

Formulated for safety and improved adhesion

EXPLOSIMETER

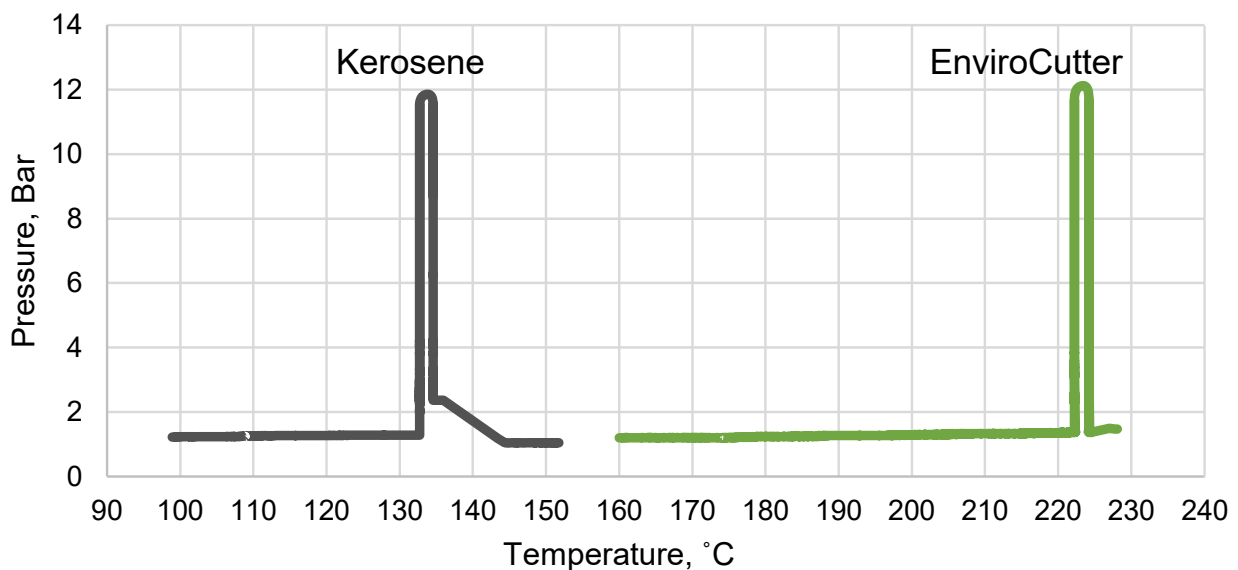
This Technix laboratory equipment compares the maximum explosion pressure resulting from the ignition of EnviroCutter fumes, compared to the maximum explosion pressure resulting from the ignition of kerosene fumes.

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))

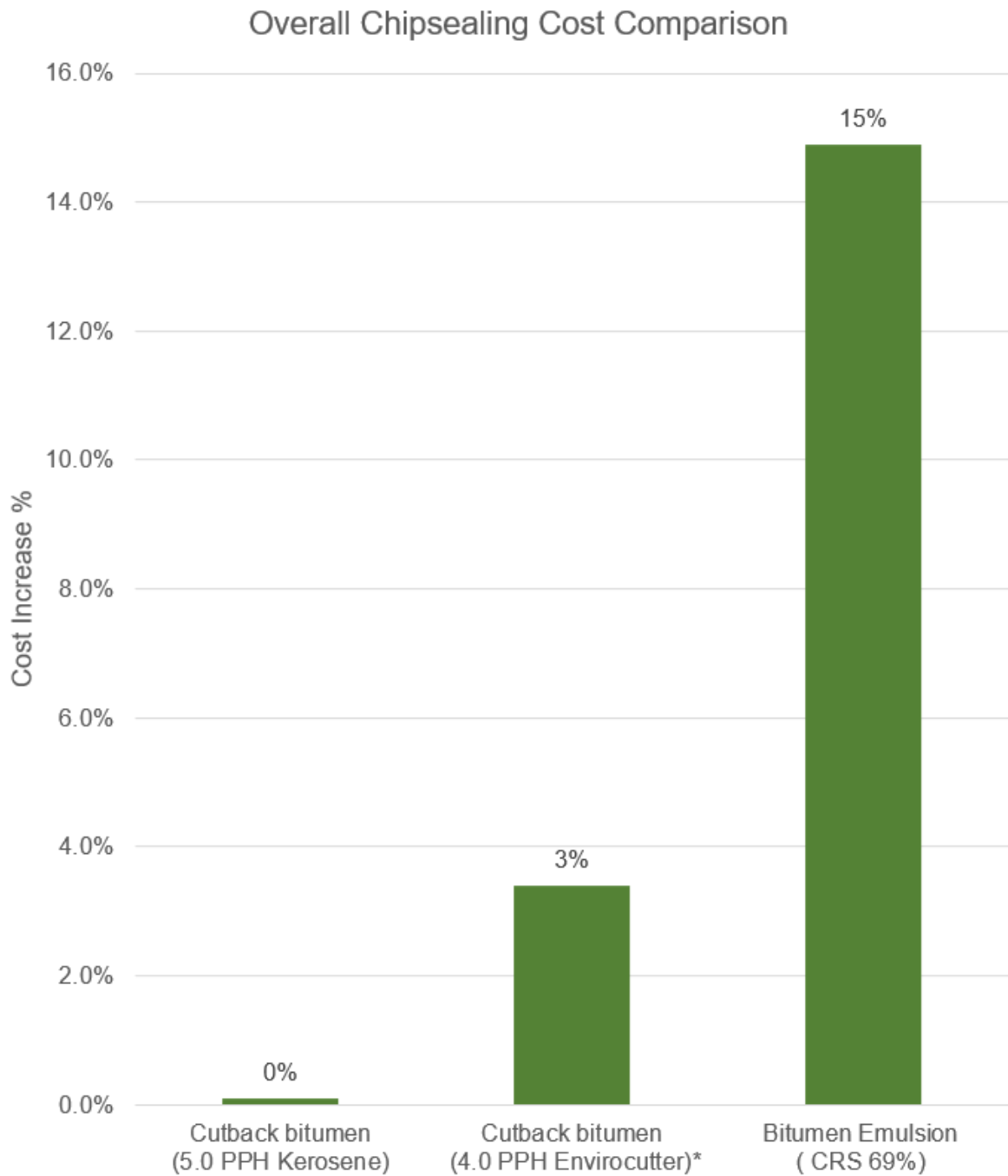


SAFETY FIRST BITUMEN

MINIMISE THE RISK - USE ENVIROCUTTER

EnviroCutter cost comparison

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



*4.0 PPH Cutback Bitumen with EnviroCutter has similar field performance to 5.0 PPH Cutback Bitumen with Kerosene

SAFETY FIRST BITUMEN

MINIMISE THE RISK - USE ENVIROCUTTER

Comparative viscosity properties, EnviroCutter compared to kerosene

CUTBACK BITUMEN PROPERTIES

Properties	Base Bitumen	Cutback Bitumen (Technix EnviroCutter)				Cutback Bitumen (Kerosene)				Test Method
		2	4	6	8	2	4	6	8	
Parts Per Hundred (PPH)	0	2	4	6	8	2	4	6	8	
Viscosity at 60 °C, Pa.s *1	54	29.2	16.4	10.5	6.3	34.4	20.7	13.6	8.1	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	94.6	44.5	25.9	14.8	8.5	57	38.8	23.3	13.7	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	168.0	91.0	52.1	23.9	11.2	117.7	72.2	36.0	23.9	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

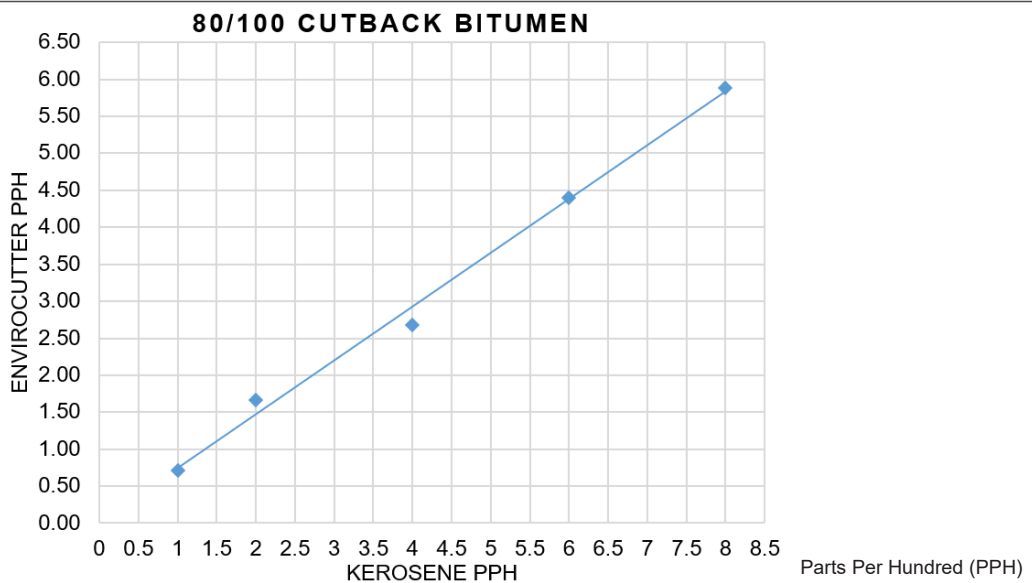
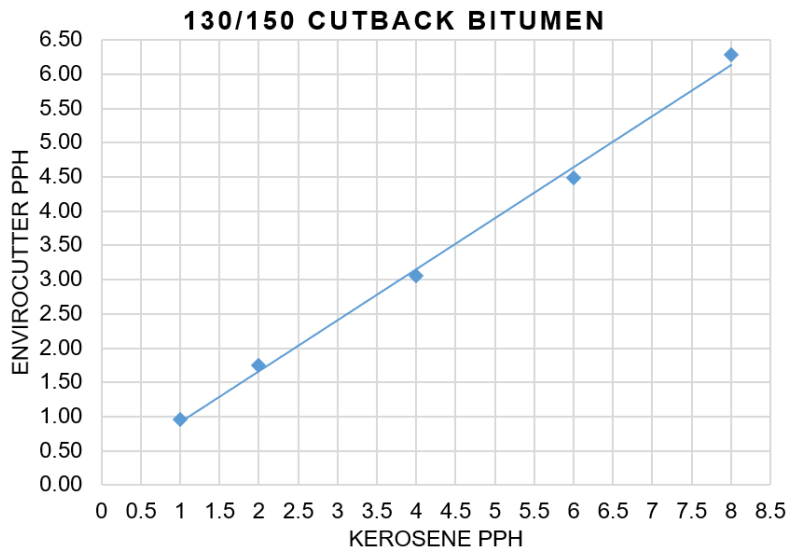
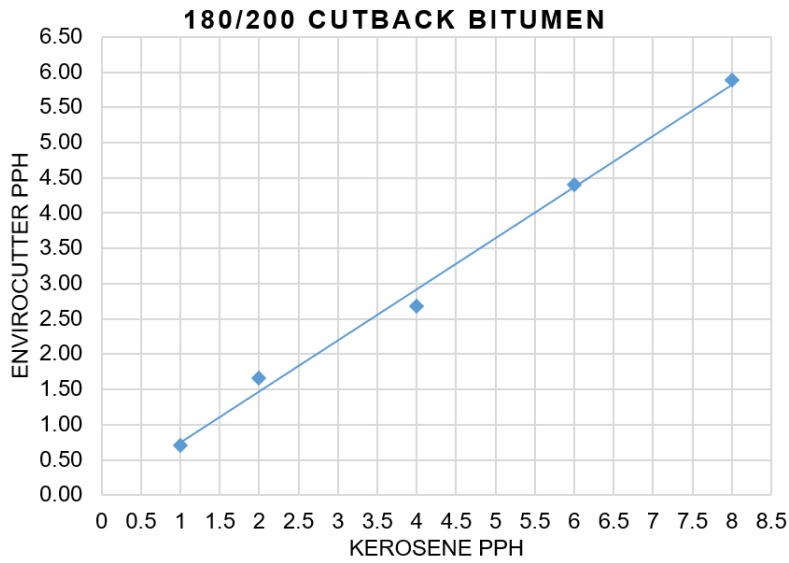
Properties	Technix EnviroCutter	Kerosene	Test Method
Flash Point, °C	> 95	43	ASTM D93
Initial Boiling Point, °C	> 190	151	ASTM D86
Final Boiling Point, °C	> 300	259	ASTM D86
Viscosity at 40 °C, cSt	> 2.5	1.15	ASTM D445
Water Content, %	< 0.15	-	IP438
Density, kg/l	> 1.05	0.79	D4052

SAFETY FIRST BITUMEN

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Cutback dilution ratio's

ENVIROCUTTER COMPARED TO KEROSENE



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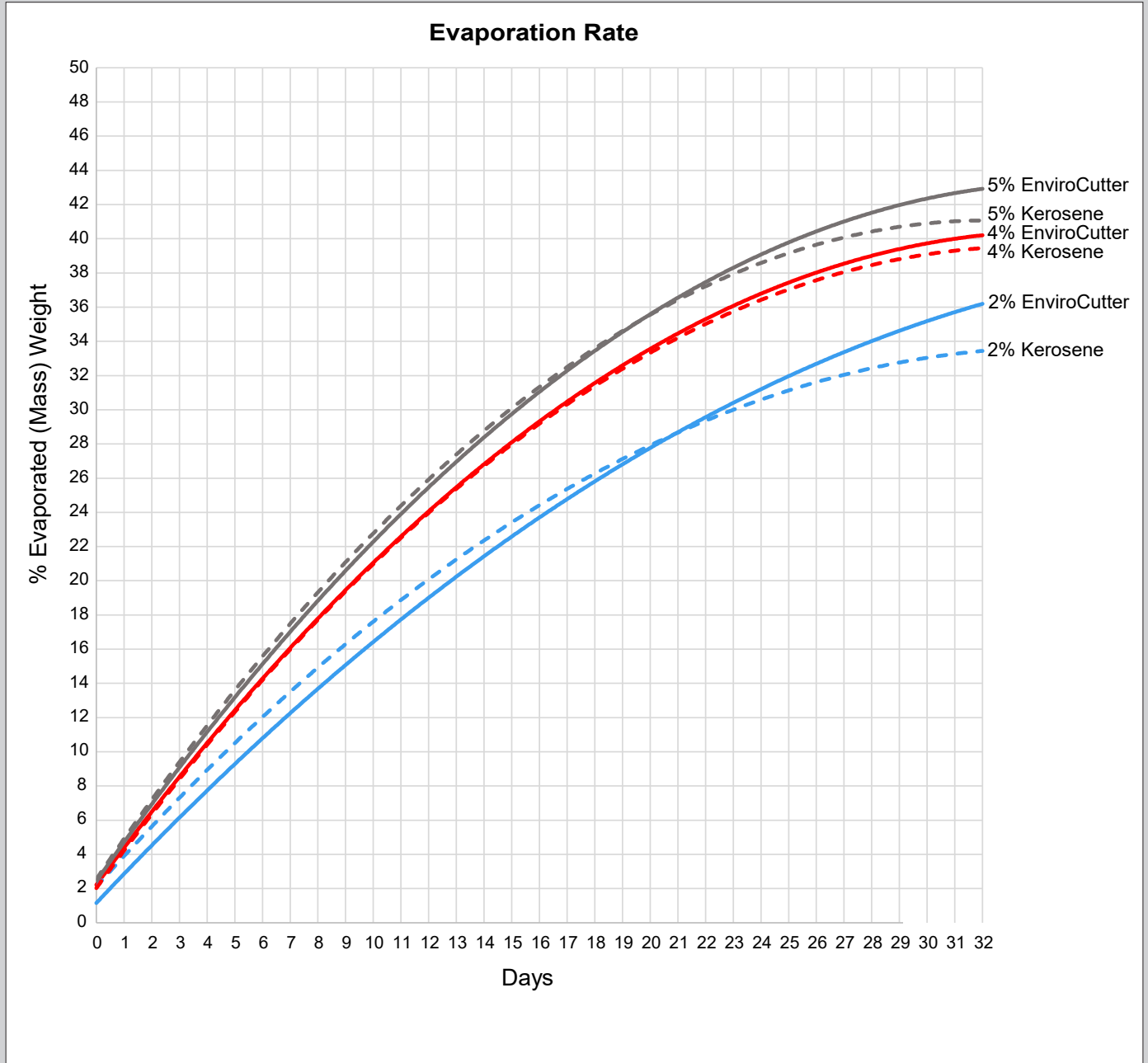
MINIMISE THE RISK - USE ENVIROCUTTER

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

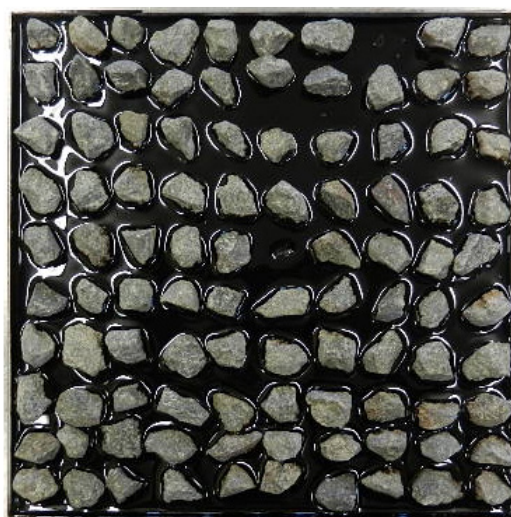
NOTE: Amine based adhesion agents are strongly recommended. If alternative adhesion agents are used Vialet bitumen adhesion tests should be undertaken

VIALET TEST ENVIROCUTTER



1. Chip retention percentage with Adhension Agent

VIALET TEST KEROSENE CUTTER



2. Chip retention percentage with Adhension Agent

ENVIROCUTTER FOR SAFETY FIRST BITUMEN SPRAYING



SAFETY FIRST BITUMEN

MINIMISE THE RISK - USE ENVIROCUTTER

OVER 100 YEARS OF INGENUITY

THE TECHNIX ORGANISATION HAS A LONG HISTORY AS A MARKET LEADER IN BITUMEN TECHNOLOGIES

- 1914 Applied the first bitumen to a road surface in New Zealand.
- 1972 Set up the world's first bagged bitumen patented packaging system.
- 1981 Made New Zealand's first polymer-modified bitumen.
- 1982 Designed and made the world's first fully-computerised bitumen sprayers.
- 1990 Proposed and assisted in the establishment of the New Zealand Institute of Highway Technologies.
- 1991 Created New Zealand's first polymer-modified bitumen friction course pavements.
- 1992 Developed one of the world's first fully-computerised micro-surfacing machines for road pavements.
- 1994 Made New Zealand's first polymer-modified bitumen emulsions.
- 1994 Developed the innovative and patented treatment TECHNISEAL for bitumen-flushed pavements.
- 1995 Built and operated New Zealand's first diesel/electric heated bulk bitumen rail tank cars.
- 1995 Introduced the first bulk bitumen containers to the South Pacific Islands.
- 1996 Introduced GRIPFIBRE – a polymer-modified bitumen micro-surfacing system – to New Zealand.
- 1996 Created and laid New Zealand's first SAFEGRIP skid-resistant pavement products.
- 1996 Applied New Zealand's first chip-sealing interfacial adhesion agents.
- 1997 Became the first non-oil company in New Zealand to import cargos of bulk bitumen.
- 1998 Transported the largest storage tank in the world, across an ocean by barge, from New Zealand to Fiji.
- 1998 Built the South Pacific Islands' first and only bulk bitumen terminal.
- 1998 Designed and installed the world's first floating, 1 km long, ship-to-shore bulk bitumen transfer pipeline.
- 2004 Designed and built the world's first Technix Multistage Bitumen Modification Plant.
- 2005 Became the South Pacific Islands' first supplier of Multigrade bitumens.
- 2005 Started operating the first and only plant in the world that can produce bitumen products to Australian, European, USA, GOST and New Zealand specifications.
- 2011 Developed the world's first, containerised, Technix Multistage Bitumen Modification Plant.
- 2014 Designed and produced world's first fully integrated High Cube Bulk Bitumen shipping container.
- 2016 Designed and built the world's first Technix Multistage Bitumen Manufacturing and Modification Plant for the production of a full range of bitumen products including Multigrade and industrial grades of bitumen.
- 2017 Manufactured and supplied the first Multigrade bitumen in New Zealand.
- 2018 Designed the Technix 10 tonnes per hour relocatable Multistage Bitumen Plant.
- 2019 Designed and introduced 80 tonnes per hour Technix Multistage Bitumen Plant.
- 2021 Developed and produced Technix EnviroCutter – a patented world first safer, environmentally sensitive and better performing cutter, for the replacement of kerosene cutters in bitumen spray sealing.
- 2021 Designed and introduced the Technix Solo Bitumen Plant.
- 2022 Designed and produced, Technix EnviroCutter Rapid - A faster evaporating EnviroCutter.

..... WATCH THIS SPACE!



OUR VALUES

MISSION - EMBRACE INGENUITY

VISION - STRIVE FOR EXCELLENCE

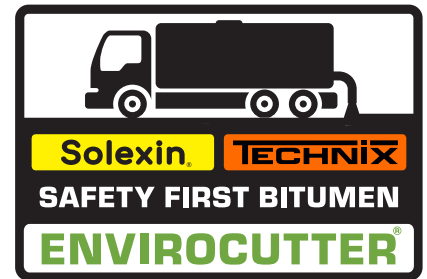
ETHICS - PRACTICE INTEGRITY

ENVIRONMENT - PROTECT NATURE

SOCIAL - RESPECT INDIVIDUALITY

SAFETY - NO INJURIES - EVER!

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



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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Technix Pacific PTE Limited EnviroCutter in IBC's or blended with bulk bitumen

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