

HIGH, CONSISTENT QUALITY

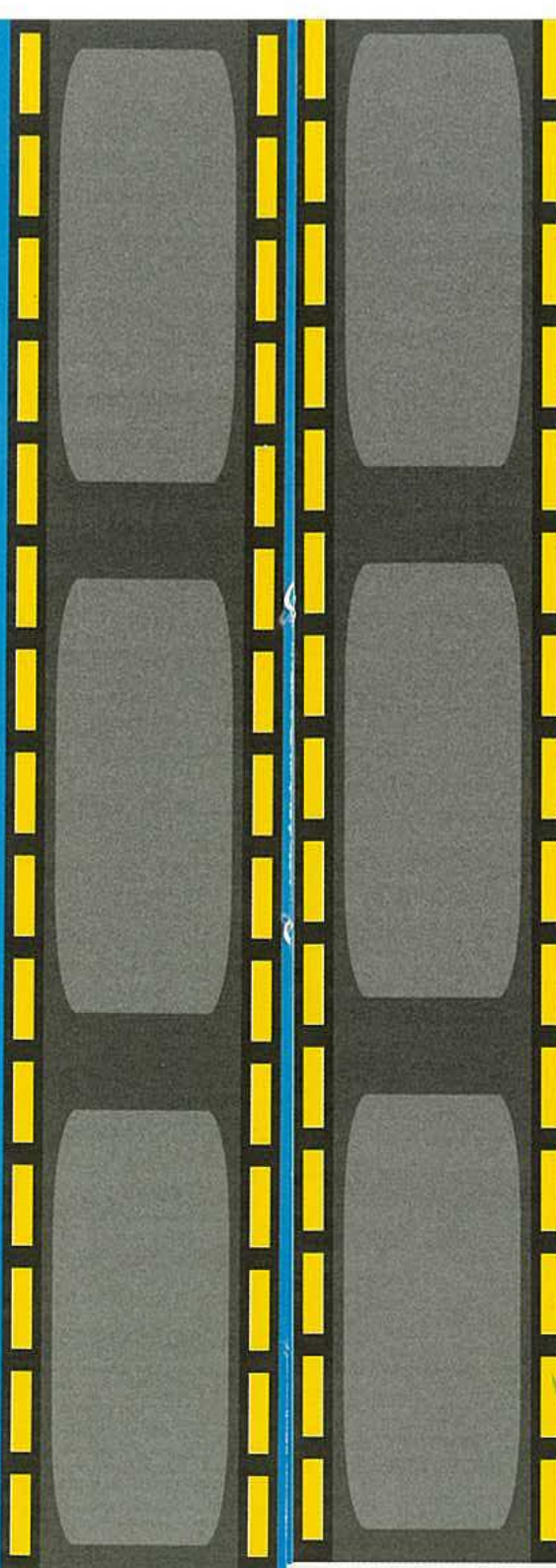
LOW COST APPROACH

ENVIRONMENT FRIENDLY

IDEAL IN STORAGE

NO WASTAGE

GREATER SAFETY



TACK COAT

SURFACE DRESSING

SLURRY SEAL

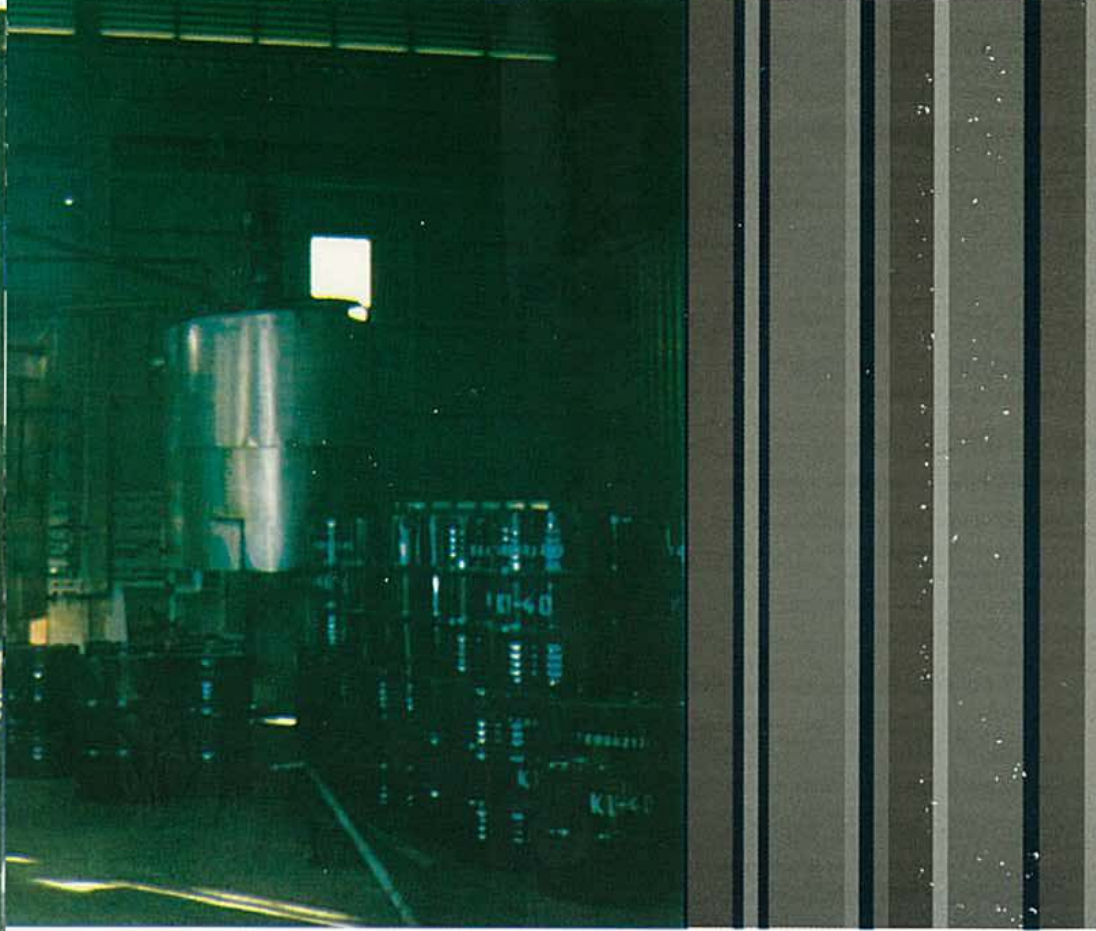
PRIME COAT

DUST BINDING

COLD MIX

MODIFIED BITUMEN

BITUMEN EMULSION



**HERCULES ASPHALT
TECHNOLOGY SDN BHD**

Office : No. 12A, Jalan SB Jaya 1, Taman Industri SB Jaya,
47000 Sungai Buloh, Selangor, Malaysia
Tel: 603-6156 6388 Fax: 603-6156 4399

Factory : Lot.3691, Jalan Kusta, Kampung Jaya Industrial Area,
47000 Sungai Buloh, Selangor, Malaysia
Tel: 603-6148 8860 Fax: 603-6148 8860
e-mail: design@hercules-engineering.com

Hercules Asphalt Technology Sdn Bhd

Hercules Asphalt Technology Sdn Bhd is a wholly owned subsidiary of Hercules group of companies. The company is amalgamated with the skills and expertise to meet the growing needs of the Nation's rapid growth in upgrading the roadmaking and technology.

What is Bitumen Emulsion?

When bitumen (of Asphalt in U.S) is broken into minutes particles and dispersed in water with an emulsifier it becomes a bitumen emulsion. The tiny droplets of bitumen remains uniformly suspended until the emulsion is used for its intended purpose.

Progress in Bitumen Emulsion Usage

Bitumen emulsion are produced in many countries all over the world as the result of introduction of cationic (positive charge) emulsifiers for the manufacturing.

The increase in demand has been steady for what had become a widely used and versatile road binder particularly in the areas of surface dressing, slurry seal, cold mix, patching, penetration macadam, prime coating and tack coating.

It offers the user a simple to apply material. It does not require heating. It is efficient in performance. It is cost effective and environmentally safe. It is expected that maintenance of roads will become of more and more important. The renovation of existing surface with bitumen emulsion will take central place.

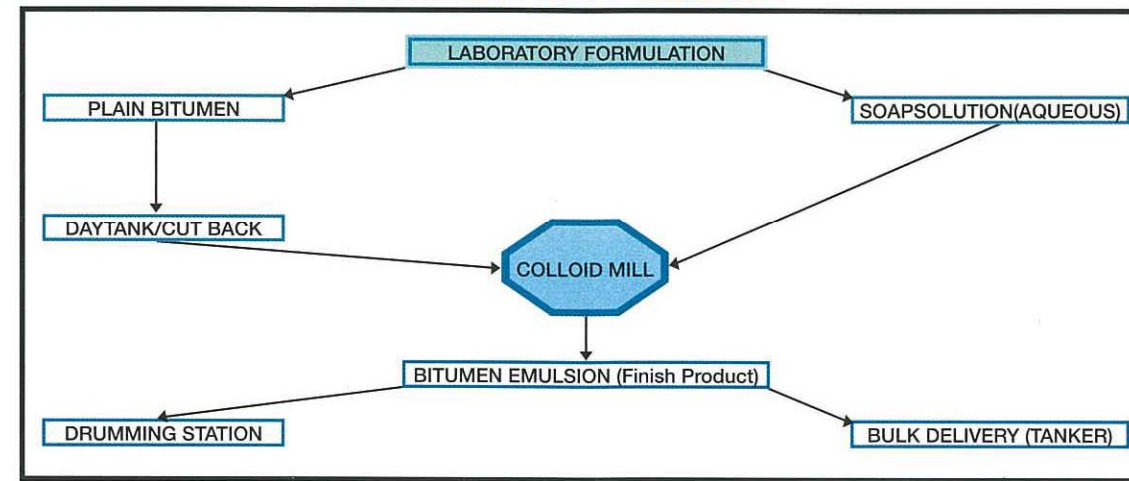
Despite the obvious pressure for energy conservation, there is very reason to suppose that road construction and maintenance will continue to employ extensive use of bituminous binder, whereby greater emphasis will undoubtedly be replaced on developments directed towards their more efficient and economical use. Energy, Environmental, Health and Safety consideration, make it logical the Bitumen Emulsion by virtue of their nature and versatility, have the right potential to meet this trend.

The importance of bitumen emulsion is steadily increasing and replacing cutback bitumen.

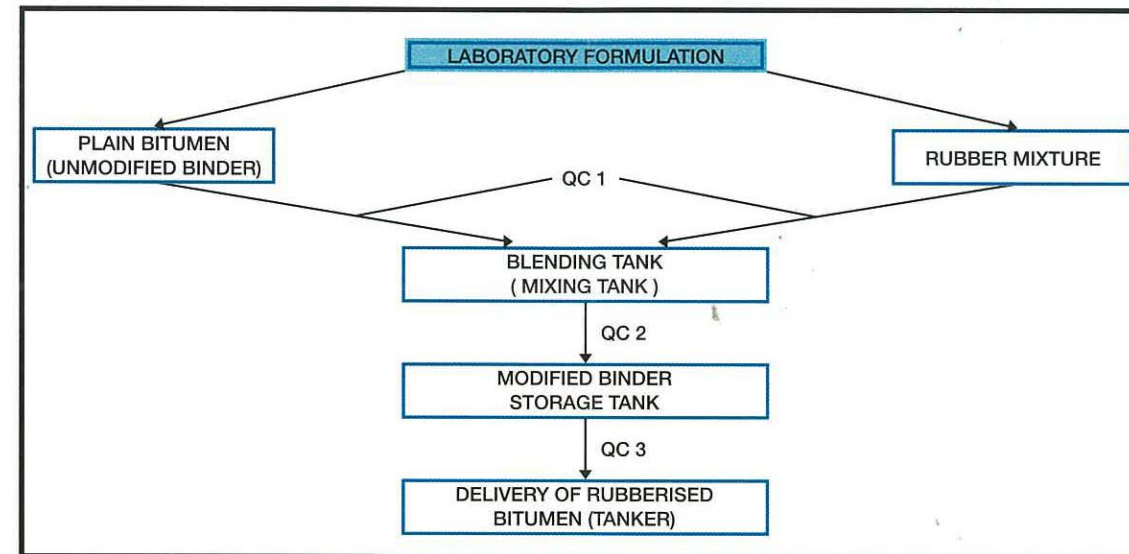
The technology and know how to produce high quality cationic (positive charge) emulsion require a thorough knowledge of the basics of surfactants and emulsion technology as well as precise manufacturing conditions.

BITUMEN EMULSION

PRODUCTION PROCESS



MODIFIED BITUMEN



TACK COAT (COLD PAVE)

Tack coat is the use of a bitumen emulsion to bind together two surface layers.

- a base course and a wearing course
- an old and a new wearing course.

The goal is a thin but uniform coating of asphalt left on the surface when the emulsion has broken.

If applied correctly, tackcoating will lengthen the life of the road surface and is cheap way of insuring against problem that may arise with new surface.

Unfortunately this work is often done carelessly, frequently because the wrong kind of equipment chemical is used. It may even create "fat spot's or Bleeding on the surface of the new pavement. Too much asphalt emulsion may create a plane of slippage between two pavement courses, as the asphalt acts as a lubricant rather than an adhesive.

Too little will cause problem, peeling is an example of the type of damage that occurs when tackcoating is not done, or when the surface is not clean.

Advantages of using Bitumen Emulsion as Tack Coat. Good working environment, no solvent fumes. No danger of fire. Rapid setting time given short interval between tack coating and paving.

Rubberised Modified Bitumen

Made from bitumen and rubber has been developed to provide a more cost-effective binder for roads. This modified bitumen has the appropriate properties to enhance binder resistance to aging, rutting and cracking which will result in reduced pavement maintenance cost.

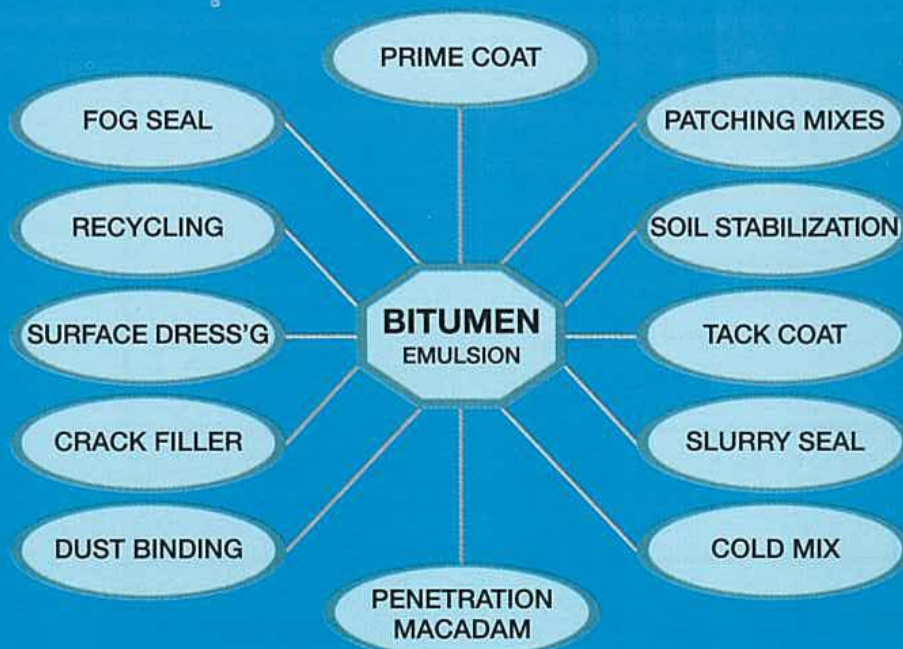
Higher resistance against rutting and cracking. Increased durability, offering two and half times longer life cycle than the normal bitumen, hence lowering maintenance cost. Better skid resistance. Greater stability and flexibility due to rubber elasticity. Rubberised modified bitumen is suitable for use in dense and porous mix and can be applied on all types of roads, cycle paths and sidewalks such as: Highways, Residential and Cornering roads. School and Parking areas, Climbing lanes. Thin overlays on existing roads.

MODIFIED BITUMEN BITUMEN EMULSION FOR TODAY, TOMORROW AND FUTURE'S ROADS

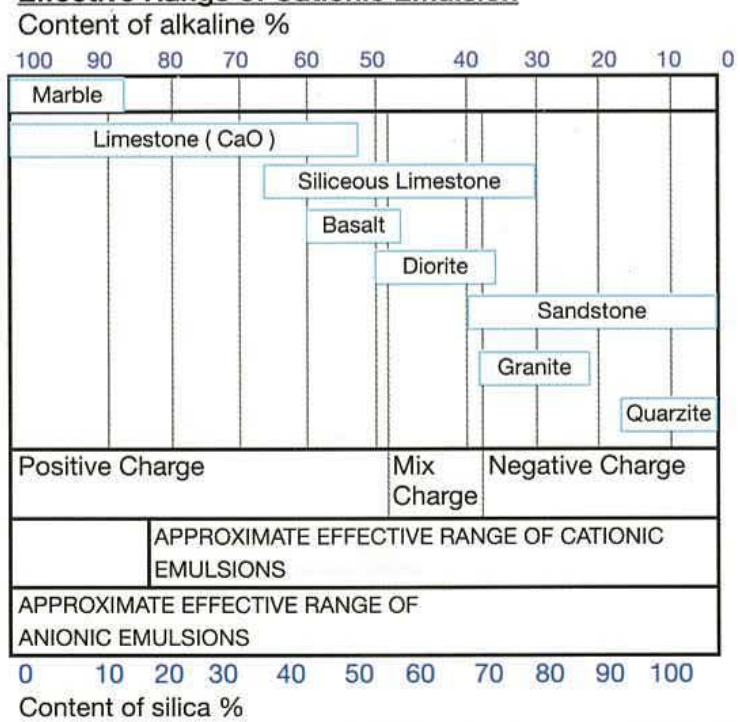


CATIONIC BITUMEN EMULSION FOR USE IN PAVEMENT CONSTRUCTION

MS161: 1973 (MS 1.44 : 1973)



Effective Range of Cationic Emulsion



SELECTION OF CATIONIC BITUMEN EMULSIONS FOR USE IN PAVEMENT CONSTRUCTIONS

MANUFACTURED IN ACCORDANCE WITH MS161:1973 (MS 1.44:1973)

TYPE	GRADE	BITUMEN CONTENT	SUGGESTED MAIN USES
RAPID SETTING	RS-1K	50%	TACK COATING
	RS-2K	60%	TACK COATING, PENETRATION MACADAM (SEMI-GROUTING)
	RS-3K	65%	SURFACE DRESSING, PENETRATION MACADAM (SEMI-GROUT'G)
MEDIUM SETTING	MS-1K	60%	COLD MIX
	MS-2K	65%	COLD MIX
SLOW SETTING	SS-1K	57%	PRIME COAT, SLURRY SEAL
BS434:1984	K1-40	38%	TACK COATING

RUBBERISED MODIFIED BITUMEN

PROPERTY	UNITS	TYPICAL TEST FIGURE	TEST METHOD
ORIGINAL BINDER			
Penetration @ 25c (100g/5 sec)	dmm	63	ASTM D5
Specific Gravity		1.02	ASTM D70
Flash Point	C	290	AASHTO T48
Softening Point	C	54	ASTM D36
RTFOT AGED BINDER			
Mass Loss	%	0.05	ASTM 1754
Penetration @25c (100g/5 sec)	dmm	49	ASTM D5
Softening Point	C	65	ASTM D36
Difference in softening point	C	7	

HIGHER RESISTANCE AGAINST RUTTING AND CRACKING.

GREAT STABILITY AND FLEXIBILITY DUE TO RUBBER ELASTICITY.

BETTER SKID RESISTANCE.