roadtechs specialist products



EPOXY RESIN BASED HIGH FRICTION SURFACING SYSTEM

Duragrip is a specially formulated two-part epoxy resin system, developed for application to road surfaces in combination with calcined bauxite to form hard-wearing high performance anti-skid road dressing.

The resultant surfaces are highly resistant to polishing and wear and should maintain high skid resistance values for long periods of time. Duragrip cures to produce a tough hard wearing surface coating binder that adheres to many substrates, has a high degree of toughness and is resilient and hard wearing.

KEY PROPERTIES:

- Convenient mix ratio 1:1 by weight
- Excellent physical properties
- Resistant to oils and solvent spillages
- Non-toxic system

APPLICATIONS:

- Junctions
- Traffic signals
- Roundabouts
- Sharp bends
- Feeder and exit lanes
- Accident "black spots"
- Pedestrian crossings



PERFORMANCE:

Research has shown that resin based anti-skid surfacing, in combination with specified aggregates can result in a reduction in braking distances by up to 33% under wet conditions, in turn reducing wet weather skidding accidents by 67% and total accidents by 31%. The London Accident Analysis Unit has confirmed that 1700 sites treated in 1 year at a total cost of £3 million yielded an estimated saving of £24 million through accident prevention.

NOTE:

New asphalt should be left for a minimum of four weeks, depending upon vehicle traffic. This is necessary to allow any volatile oils in the asphalt to oxidise. Duragrip may be applied to concrete surfaces with a suitable primer.

PHYSICAL PROPERTIES				
	Units	Method ₍₂₎	Minimum	Maximum
Appearance - [To Defined Standard] ₍₂₎	-	BSMT A 1001-001	ETS (3)	-
Colour -	-	BSMT A 1002-001	BUFF	
Viscosity (4)	Poise	BSMT A 1003-005	35.00	55.00
Gel Time	Minutes	BSMT A 1021-001	15.00	25.00
Specific Gravity - [Weigh Cup] (4)	Kilograms/ litre	BSMT A 1010-002	1.10	1.20

PHYSICAL CHARACTERISTICS:

Duragrip PART "A" polymer specification and supplementary physical and handling properties. Table 1 provides details of some of the product characteristics. The values highlighted by the circular symbols [left hand column of table] are properties tested on a batch basis and reported in the certificate of analysis. All other properties are typical of batch manufacture and are for technical information only. They do not constitute a specification.

PROPERTY KEY:

- (1) BSMT Bitrez Standard Method of Test
- (2) FFFM Free from Foreign Matter
- (3) ETS Equal to Standard
- (4) Evaluated at 25°C/77F

Figure 1 viscosity vs temperature





PHYSICAL PROPERTIES				
	Units	Method (2)	Minimum	Maximum
Appearance - [To Defined Standard] $_{\scriptscriptstyle (2)}$	-	BSMT A 1001-001	ETS (3)	-
Colour -	-	BSMT A 1002-001	CLEAR	
Viscosity @ 25°C (4)	Poise	BSMT A 1003-005	35.00	70.00
Gel Time	Minutes	BSMT A 1021-001	15.00	25.00
Specific Gravity - [Weigh Cup] (4)	Kilograms/ litre	BSMT A 1010-002	0.95	1.20

PHYSICAL CHARACTERISTICS:

Duragrip PART "B" polymer specification and supplementary physical and handling properties. Table 1 provides details of some of the product characteristics. The values highlighted by the circular symbols [left hand column of table] are properties tested on a batch basis and reported in the certificate of analysis. All other properties are typical of batch manufacture and are for technical information only. They do not constitute a specification.

PROPERTY KEY:

- (1) BSMT Bitrez Standard Method of Test
- (2) FFFM Free from Foreign Matter
- (3) ETS Equal to Standard
- (4) Evaluated at 25°C/77F

Figure 2 viscosity vs temperature





PROCESSING:

Duragrip Low Odour system has been developed for application via machine or hand mixing operations whereby the correct ratio of components are combined and thoroughly dispersed before being applied to the substrate. Appropriate measures should be taken to ensure accurate mix weights and adequate combination (mixing) of materials. With these application techniques additional care is required with potential exotherm and health and safety control.

Materials should be intimately mixed in the designated ratio and applied evenly to the substrate. Coverage details will vary with the porosity of the substrate and typical application weight details are provided further on. (Details of Bauxite usage are also provided).

COMPONENT	QUANTITY (BY WEIGHT)
DURAGRIP LOW ODOUR PART "A" [for- mulated epoxy resin component]	100
DURAGRIP LOW ODOUR PART "B" [for- mulated epoxy resin component]	100

NOTE:

Variations of +/- have been found to provide product with acceptable performance although as with all materials we advocate full evaluation of the material for specific bonding applications. We will be pleased to take samples of materials and provide bond evaluation and test report.

PROCESSING - REACTIVITY:

The resin and hardener [Parts A and B respectively] have been formulated with additives to enhance cure. The system has been formulated to have high reactivity at ambient temperatures. The gel-time reactivity is affected by several factors with mass and temperature being the most influential. Increasing temperature will reduce gelation times and enable shorter production cycles, this being at the expense of pot-life (working time).

Figure 4 provides typical gel-times for the mixed system at various temperatures. For QA purposes reactivity is tested at 25°C in a 150gm mass.

TEMPERATURE	TIME
5°C	10 hours
25°C	2 hours
50°C	30 mins

PROCESSING - APPLICATION:

The system must be applied to dry substrates, free from oil solvents and loose debris/stone. As stated previously the application rate will vary with substrate porosity. The following coverage levels are suggested.

COMPONENT	KG/M ²
DURAGRIP LOW ODOUR SYSTEM [mixed components]	1.4 - 2.2
CALCINED BAUXITE [graded]	6 - 10

Duragrip Low Odour system is generally applied at a nominal 20 - 30°C mixed temperature (hand mix application) and following intimate mixing is spread evenly to provide the aforementioned coverage. Following application to the substrate, the calcined bauxite is distributed across the surface before the binder has set. The system is allowed to cure and the residual "loose" bauxite is then brushed from the surface and reclaimed.

CALCINED BAUXITE:

Calcined bauxite of refractory quality is utilised in the surface dressing. Further details and suggested suppliers are available on request.

PROPERTY	RESULT
Size Range	1 - 3mm
Grading - Sieve retention [3.55mm BS sieve]	< 5%
Grading - Sieve retention [1.88mm BS sieve]	< 95%

Calcined bauxite is highly resistant to polishing and wear. It will retain its skid resistance values for long periods of time.



MECHANICAL PROPERTIES:

Duragrip Low Odour System has been formulated to provide long term resilient binding of the designated aggregate. Tensile strength and elongation characteristics of the product are evaluated on a batch basis and are typically as detailed below.

PROPERTY	RESULT
Tensile strength	> 10.5mpa
Elongation	> 30%

Effect of tensile/elongation figures with mix ratio deviation is detailed below.



IMPORTANT NOTES:

Storage and handling: Packed in 1000kgs IBC containers + 20kg tins, shelf life in excess of 12 months if unopened and stored in a dry environment, protect from sub-zero temperatures.

Disclaimer: All products should be used in accordance with the manufacturer's instructions. No responsibility can be taken by the manufacturer where conditions of use are beyond our control. Materials are sold only on the basis of conforming to specification, but without warranty expressed or implied in law or in fact of merchantability or fitness for a particular purpose and upon the condition that purchasers make their own tests to determine the suitability of such products for their particular purpose. Issue no: 4 – 27.1.21

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