

Introduction & Principles

HFS is the aggregate bonding resin for the Star Uretech high-friction surfacing system. Its installation is broadly similar to any other cold-applied system which uses a synthetic resin as the means of bonding the prescribed aggregate (calcined bauxite or equivalent) to the road surface.

The layer of resin adhesive must be evenly spread and of the correct depth to anchor the aggregate particles securely. The optimum thickness of resin should be 50-60% of that of the aggregate particle size and this equates to 1.5mm, or 2 kg/m². This figure does not, however take account of variations in road surfaces and in practice a greater depth may be necessary.

Uretech HFS has a number of practical advantages over other synthetic resin systems in that:-

- ▶ It bonds well to concrete as well as bituminous surfacing, and also to ductile iron without the need for a primer.
- ▶ It has good low-temperature cure, even at temperatures approaching 0°C.

Uretech HFS Product Description

Uretech HFS is a cold-applied polyurea (highly modified urethane) and is supplied in a 20kg pre-measured, 3-component kit comprising of:

- ▶ Part A – 14.200kg of brown/grey paste in a 20 litre plastic bucket.
- ▶ Part B – 2.700kg of low viscosity white/clear emulsion in a 2.5 litre plastic “jerry” bottle.
- ▶ Part C – 3.100kg of low viscosity dark brown isocyanate in a 2.5 litre plastic “jerry” bottle.

All three components are reactive and contribute to the cure and ultimate performance of the resin in bonding the aggregate to the road surface.

Uretech HFS has excellent adhesion to both concrete and bituminous surfaces (blacktop). It can also be used on ductile iron and wood and does not require a primer to bond to any of these surfaces. As a polyurea (rather than a polyurethane), it is tolerant to damp surfaces as long as there is no glistening moisture apparent. If the surface is too wet the resin cannot adequately adhere.

When mixed the resin has a viscous ‘custard-like’ consistency which means that it readily maintains an adequate wet film thickness in which to embed the aggregate particles, and also prevent flow on an inclined surface. The product technical data sheet should be read in conjunction with this section.

Application Methods

Masking

Once the traffic management is in place, use 100mm wide Scapa tape or duct tape to mask the following:-

- ▶ Manholes (and their keyways) within the area to prevent the ingress of resin between frame and cover.
- ▶ Gullies to prevent the ingress of resin & aggregate.
- ▶ Road markings unless they are to be replaced.
- ▶ Edges of the area to be treated, including gutters, so that the anti-skid surfacing will not impede the flow of draining water.

Mixing

When mixing the resin components it is essential to use a drill and paddle of sufficient power (such as a 1500w paddle mixer) to ensure the mix is completed in no more than 60 seconds.

Before mixing the components together, mix the ‘A’ component in order to disperse any settlement. To mix the system pour the ‘B’ & ‘C’ components into the bucket containing the ‘A’ component and mix until a smooth and uniform blend has been achieved. This should take no longer than 60 seconds.

It is detrimental to the performance of the system to mix for longer as the curing reaction starts as soon as the components are together.

Mixed resin must not be left in the tub in bulk as this will severely reduce the pot-life, rendering the material unusable. If there are any signs of the resin thickening up or starting to crust in the tub it is too late to attempt to apply it. The curing reaction has proceeded too far for an adequate bond to be achieved.

Application Methods (continued)

Spreading

As soon as the resin has been mixed pour it out onto the road surface without delay. Spread by means of a 5-6mm serrated squeegee and a short pile fabric roller.

A combination of the two, squeegee to spread the resin and roller to unify the resin layer, will give the best result. The wet edge must be maintained throughout to ensure consistency and uniformity of the treatment.

Aggregate scattering

Aggregate scatter must follow on close behind the resin application, but stay about 1 metre back from the wet edge of the resin. The aggregate must completely obliterate (blind) the wet resin and it will be found that a minimum application rate of 10 kg/m² is necessary to achieve this. Aggregate application can be:-

- 1) Scatter from a shovel with aggregate in wheelbarrows.
- 2) Spread by means of a flat bladed squeegee from a pile dumped at the start of the area.
- 3) Tipping from the back of a suitable vehicle reversing over the area.

The latter two methods will inevitably incur a greater aggregate application rate.

The area can be trafficked at this point by operatives and vehicles moving slowly in a straight line, but turning vehicles will scuff the uncured resin.

Site Clearance & Completion

Remove the masking tape within 20 minutes of spreading the adhesive.

The time taken for the resin to cure will depend on the temperature. At 25°C a cure will be achieved in approximately 1 hour. At 5°C the cure time will be extended to around 4 hours.

Excess loose aggregate should be removed by either manual sweeping or a road sweeper using only the vacuum element, not the brushes. Recovered aggregate can be reused as long as it is uncontaminated and kept dry.

Operational Procedures & Admin

It is a requirement of the HAPAS/BBA certificate that proper QA administration procedures are followed by both the system manufacturer (Star Uretech Ltd) and the Installer/Contractor. Uretech HFS is made by an ISO 9001 accredited manufacturer so that all batches of product are identified and their constituent raw materials are traceable, and product batches are traceable to customer orders and deliveries.

Installers are required to continue this line of traceability by recording material batch numbers used on specific jobs, as well as the ambient conditions at the time of working. This information must include air temperature and road surface temperature.

Health & Safety

Before using Uretech HFS, the products safety data sheets should be referred to. Uretech HFS should always be stored in a dry, covered area and good standards of industrial hygiene should be observed when handling all components. The recommendations made in the Health and Safety data sheet for this product should be observed at all times.

▶ Component 'A'

Store in a dry, covered area between 15°C and 25°C. Expected shelf life of 6 months.

▶ Component 'B'

Store in a dry, covered area between 5°C and 25°C. Expected shelf life of 12 months.

▶ Component 'C'

Store in a dry, covered area between 5°C and 25°C. Expected shelf life of 12 months.

Contact details

Star Uretech
Enterprise House
Hollin Bridge Street
Blackburn, Lancashire
BB2 4AY

Tel: +44 (0)1254 663444
Fax: +44 (0)1254 681886
Email: info@star-uretech.com
Web: www.star-uretech.com