Technical Data Sheet

Waterbased Hardcoat

SunHytek™ family of Screen Automotive Products

1. Description

SunHytek™ Waterbased Hardcoat is a two pack catalysed waterbased, screen printable matt varnish that has been specifically formulated for use on 2 or 3 dimensional automotive dashboard appliqués and fascias.

2. Product features*

- Consistent, Fully Matt Finish
- Soft Feel
- High Degree of Scratch Resistance
- Tough Self Healing Surface
- Excellent Adhesion
- Superior Forming Characteristics
- Chemical Resistant

*Specific application performance data, where available can be provided by your Sun Chemical representative.

3. Product Suitability*

3.1 Applications

SunHytek™ Waterbased Hardcoat is designed for use as a first surface, low gloss, protective hardcoat finish for the production of 2 and 3 dimensional automotive appliqués and fascia panels and is commonly used and recommended for the production of automotive dashboard panels and interior fascias.

3.2 Substrates

SunHytek™ Waterbased Hardcoat is recommended for use on polycarbonate, print receptive polyester and PVC and can be printed over a number of conventional solvent and UV curing inks commonly printed on these substrates.

It should be noted that full adhesion to ink layers or substrate does not fully develop for 12 to 24 hours after drying. Immediately after drying SunHytek™ Waterbased Hardcoat can be scratched off, but is mar and scratch resistant enough for stacking.

3.3 Overprinting

SunHytek™ Waterbased Hardcoat is not generally overprinted, but is fully suited for first surface overprinting of underlying, automotive application suitable coloured inks, including dense blacks and opaque whites.

SunHytek™ Waterbased Hardcoat can also be used as a protective, release layer on the second surface (underside) of automotive appliqués that are to be formed.

For recommended automotive printing inks please refer to your local Sun Chemical representative.

3.4 Automotive Product Suitability

SunHytek™ Waterbased Hardcoat has been tested for automotive appliqué suitability and under the test conditions was found fully suitable for use. Common tests include:

Environmental cycle testing
Heat ageing
Scratch adhesion and resistance
Cross cut and adhesive tape adhesion
Non-yellowing and colour change

However, customers should always satisfy themselves of full suitability for specific final use under their print conditions prior to commencing full production runs.

3.5 Forming

SunHytek™ Waterbased Hardcoat is suitable for both 2 and 3 dimensional automotive appliqués and has been designed to have good elongation characteristics when formed with common forming techniques.

It is however essential to observe the forming window that exists between 24 hours and 5 days after printing and drying. Outside of this window the ability to form and forming characteristics may be reduced.

The use of an oven stoving step post printing can also affect the ability to form by reducing the length of the forming window. If a post print oven stoving step is used, customers should test dwell times to establish the real forming window timescale.

As with any post print, formed product, pre-testing is recommended to ensure the geometry of the part is not outside the varnish elongation and forming capabilities.

3.6 Surface Finish

SunHytek™ Waterbased Hardcoat has a very matt appearance usually less then 5 gloss units when measured at a 60° angle. The surface finish is not generally affected by the surface finish of underlying inks and therefore provides an even and consistent gloss level across the part.

SunHytek™ Waterbased Hardcoat dries and cures to give a soft feel, scratch and chemical resistant film, which has a degree of self healing ability.

3.7 Durability

SunHytek™ Waterbased Hardcoat is only recommended for internal use and is not suitable for outdoor exposure.

3.8 Chemical Resistance

SunHytek™ Waterbased Hardcoat exhibits excellent resistance to cleaning chemicals, water and alcohol once fully cured.

*Please refer to your local Sun Chemical representative for specific details.

4. Product Range

SunHytek™ Waterbased Hardcoat			
Waterbased Hardcoat	26900121Q	Waterbased Hardcoat Catalyst	26900101
SunHytek™ Waterbased Hardcoat Thinner / Retarder			
Deionised Water	No code	Thinner / Retarder	TS22

5. General Handling

5.1 Storage and shelf life

SunHytek™ Waterbased Hardcoat should be stored in the original sealed containers at temperatures of 10 – 25 °C. Extreme cold (<5 °C) and freezing can cause irreversible damage. They have a shelf life of 12 months, but it is considered good practice to rotate stocks regularly to ensure older batches are used first.

SunHytek™ Waterbased Hardcoat catalyst has a shelf life of 6 months and is hydroscopic in nature and therefore should be re-sealed securely after use.

SunHytek™ Waterbased Hardcoat thinner / retarder has a shelf life of 5 years.

For more specific handling advice refer to the Safety Data Sheet.

6. Printing Conditions

6.1 Press Preparation

SunHytek™ Waterbased Hardcoat requires addition of a catalyst to ensure curing to the required hardness and to develop full adhesion.

The ratio of varnish to catalyst should be carefully controlled at 20 parts varnish to 1 part catalyst by weight. Deviation from this catalyst level is not recommended and can effect on press and post press properties.

Once catalysed and mixed thoroughly, de-ionised water or more usually, thinner / retarder can be added to meet print viscosity requirements. A maximum addition of 10% de-ionised water or thinner / retarder should be used.

Example mixing recipe:

Varnish 26900121Q	-	100 parts
Catalyst 26900101	-	5 parts
Thinner / Retarder TS22	-	10 parts

6.2 Mixing

SunHytek™ Waterbased Hardcoat requires thorough mixing prior to use on press. To achieve optimum mixing the use of an industrial shaker is recommended. Shaking for 2 minutes usually ensures thorough mixing. When fully mixed, the varnish liquid appears smooth and without any larger lumps or particles.

A further filtration step, through a common kitchen sieve can also minimize possible contamination from larger dry varnish particles that may be present.

6.3 Catalysed Pot Life

Once catalysed, mixed and reduced, SunHytek™ Waterbased Hardcoat has a press working life of 1 to 2 hours and therefore regular, but small amounts should be made as required on press.

6.4 On Press Recommendations

SunHytek™ Waterbased Hardcoat is waterbased and therefore more susceptible to environmental conditions than some products, ideal running conditions would, for example be 20 ^{O}C and 65% relative humidity (ROH%).

On press, it is recommended that regular small varnish additions are made to the screen and large pools of unmoved product is regularly fed back into the print area to avoid the varnish drying at the side of the screen.

Pinholes or small, white dots appearing on print are a tell tale sign of contamination from either badly mixed or dried varnish particles existing in the bulk wet material. Should these dots appear the screen should be removed cleaned and fresh varnish mixed for use.

6.5 Drying

SunHytek™ Waterbased Hardcoat dries by evaporation of water and then cures by cross linking of the resin binder system. SunHytek™ Waterbased Hardcoat is best dried through a commercial jet drier at 65 to 85 ^{O}C, although prints can be air dried on racks or dried in an oven. It is always advisable to determine optimum drying schedules under specific conditions.

Note that SunHytek™ Waterbased Hardcoat will be touch dry and stackable after the drier, but not fully scratch resistant. Full scratch resistance usually takes 12 to 24 hours.

Note if using an oven to dry SunHytek™ Waterbased Hardcoat care should be taken not to over stove otherwise the subsequent dwell time of the forming window may be reduced.

6.6 Printing materials

SunHytek™ Waterbased Hardcoat is a waterbased product and therefore all stencil materials must be water resistant. High quality stencil materials such as those in the SunCoat range are recommended for best results and product data sheets and detailed specialist advice on choice of waterproof emulsions and all related stencil products can be obtained from your local Sun Chemical branch. Fine polyester mesh with a mesh count of 48 to 90 threads/cm and a medium/hard sharp polyurethane squeegee should be used.

6.7 Coverage

Coverage of 30 m^2/kg may be expected, but coverage is dependant on a number of printing factors including, mesh choice, stencil thickness, squeegee, etc.

6.8 Washing up

SunHytek™ Waterbased Hardcoat should be washed up with thinner / retarder TS22. Many commercial screen cleaners may not be suitable. Care should be taken to avoid allowing the varnish to dry on screens, as once dry, SunHytek™ Waterbased Hardcoat will not wash out of the mesh and a new screen will be required.

7. End-use safety

7.1 Handling

SunHytek™ Waterbased Hardcoat should be used in accordance with normal standards of industrial hygiene. Please refer to the information provided on product labels and relevant safety data sheets.

7.2 Toys (Safety) Regulations EN71-3: 1995

SunHytek™ Waterbased Hardcoat has been formulated to exclude heavy metal based pigments. However, products are supplied without warranty due to risk of contamination throughout the many processing steps from raw materials to finished toy. To ensure conformity analysis is therefore essential. The products may be analysed or alternatively the finished toy (note however that the legislative limits apply to the toy itself and not to the wet ink as supplied). Please refer to our company statement concerning inks for toys.

8. Technical Assistance / Contacts

For further information, please contact your local Sun Chemical team.

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