Screen

Product Data Sheet

UVGS SERIES

UV-CURING SCREEN PRINTING INKS

UVGS series UV curing screen printing inks have been specifically formulated for printing onto glass for a wide range of applications including architectural, furniture, gaming machines and hollowware. They are specially suited to the high demands of glass decoration, having a bright glossy finish, superior abrasion and water resistance and excellent product resistance. UVGS series inks are UV curing inks and require no post baking to reach full hardness and resistance. The range includes a full range of bright glossy colours, a process set and numerous special products such as sandblast and frosted effects.

CHARACTERISTCS

UVGS series inks are UV-curing screen printing inks exhibiting rapid cure speeds, wide ranging adhesion, water and product resistance and resistance to abrasion, cutting and grinding. After UV curing, UVGS series inks are durable enough for further processing and will reach full hardness and resistance without the need for post baking. UVGS series inks also feature an optimised rheology to allow superior print definition and ease of use.

UVGS series inks are suitable for many printed glass and ceramic applications including furniture, bathroom products, mirrors, architectural glass as well as dishwasher safe containers and drinking vessels.

COLOUR RANGE

UVGS series inks are available in the C-Mix 2000 colour range of 9 strong, bright, mono-pigmented shades which together with black, white and varnish form a complete ink blending and mixing system. The C-Mix 2000 blending system allows mixing of practically any colour, including Pantone, RAL, and HKS and is fully compatible with both Formulator and Formulator IDS Ink and Colour Match Systems. A number of special effects are also available.

Should an over print clear be required (C-Mix 2000 shade equivalent of C50) the base UVGSE50 can be used.

UVGS series inks also feature a process set for four colour halftone printing. This process set is matched to the commonly used Euro scale. If necessary colour density can be adjusted with the transparent paste UVGSTP.

See table overleaf for full colour range.

USAGE DATA AND INSTRUCTIONS

UVGS series inks have been formulated for maximum flexibility in use and therefore, depending upon end use requirements, UVGS series inks can be used straight from the can or modified with different additives to suit a specific end use application.

Using UVGS series as it is supplied will give a hard, durable and abrasion resistant film directly after UV curing, however there will be limited water and condensed humidity resistance. When used in this way, UVGS series inks are suitable for use in applications such as the furniture industry (except bathroom furniture), gaming machines and decorative glass.

If superior water resistance is required, the use of UVGSHS adhesion promoter is recommended. UVGSHS should used at a level of 5% by weight and will give much improved water and condensed humidity resistance after UV curing and a post cure period of up to 24 hours.

During the early period of post cure, the ink film is hard and durable, but remains flexible and therefore the glass can be cut and ground without any risk of the ink film splintering or cracking.

Once the addition of adhesion promoter UVGSHS is made the ink will remain useable for up to 7 days, after which the ink should be disposed of and a new batch mixed.

When used in this way, modified UVGS series inks are suitable for use in applications such as furniture, including bathroom furniture and mirrors, gaming machines and decorative glass.

Should yet further increases in water resistance and hardness be required immediately after printing and UV curing, an elevated temperature post cure is recommended. UVGS series inks plus adhesion promoter UVGSHS can be post cured at 140°C for 20 minutes.

When used in this way, modified UVGS series inks are suitable for use in additional applications such as dishwasher resistant glassware, disposable or novelty glassware, cosmetic containers and single trip beverage bottles.

Should oven post curing not be feasible, then an additional hardener can also be used. Used in addition to the UVGSHS, hardener UVGSHF can be added at 3% by weight and will allow the ink film to post cure at room temperature in 24 to 72 hours.

Once the addition of adhesion promoter UVGSHF is made the ink will remain useable for up to 8 hours, after which, for up to 24 hours, the ink can be mixed with 75% of fresh ink to use it away. After 24 hours the ink should be disposed of and a new batch mixed.

Note: Care should be taken to avoid excessive mechanical abrasion of the ink film when in direct contact with water for an extended period of time as this can lead to a loss of adhesion, however, once the ink film has dried out the excellent mechanical resistance and adhesion is restored.

SUBSTRATES

UVGS series inks are suitable for printing onto most types of glass. The surface should be clean and free of dust and fingerprints and therefore cleaning with a suitable cleaning agent is preferred.

The use of flame treatment or for best results UVitro® or Pyrosil® pre-treatment has been found to give improved adhesion and resistance.

However, due to the variable nature of glass surfaces (glass is often treated or coated with chemicals and coatings) it is recommended that adhesion and product resistance is tested prior to commencing a full production run.

RESISTANCE

UVGS series inks will give a hard and durable film immediately after UV curing. Should a more water resistant print be required, the use of adhesion promoter, UVGSHS, hardener and oven post curing are recommended.

It is also recommended that UVGS is tested under production conditions so users can satisfy themselves that the product will meet their ongoing resistance needs.

CURING

UVGS series inks are cured with ultraviolet light. Conventional metal halide or microwave initiated UV bulbs should be used with a power output of not less than 80watt/cm. Typically the inks will require a dose of 500-1000mJ/cm^2 depending on ink layer thickness and colour shade.

UV curing is dependant upon many factors, including efficiency of the bulbs, the reflectors, the focussing, ink layer thickness, ink shade, substrate and temperature, and should be thoroughly checked prior to commencing a full production run.

UVGS series inks can also benefit from an oven post cure at 140°C for 20 minutes with an increase in water and humidity resistance the result.

THINNING

UVGS series inks are supplied press ready and do not normally require viscosity modification. If absolutely necessary up to 5% thinner TU11 can be used.

PRINTING MATERIALS

High quality stencil materials such as those in the SunCoat range are recommended for best results. Fine nylon or polyester mesh with a mesh count of 120-150 threads/cm and a medium/hard sharp polyurethane squeegee should be used.

For special effect inks, such as frosted effects, a coarser mesh may be required.

Product data sheets and detailed specialist advice on choice of emulsions, films and all related stencil products can be obtained from your local Sun Chemical Screen branch.

COVERAGE
Up to 80m^2/kg may be expected, but coverage is dependant on a number of printing factors including mesh choice, stencil thickness, squeegee etc.

WASHING UP
Commercial screen cleaners, such as those in the SunCoat range are recommended for best results. Product data sheets and advice on the SunCoat range of screenwashes is available from your local Sun Chemical Screen branch.

STORAGE AND SHELF LIFE
UVGS series inks should be stored in sealed light safe containers at temperatures between 5 - 30°C. Unmodified they have a minimum shelf life of 12 months, but can remain usable for longer periods depending on storage conditions.
If adhesion promoter and hardener have been used the pot life is greatly reduced, see the section on usage data for further advice.

HANDLING
The raw materials in UVGS series inks are strictly assessed by independent laboratories for skin irritation and toxicity effects. As a result the inks are described as mild to moderate skin irritants. In practice this means that irritation is of a low order and the inks are well within recognised safety limits. As a sensible precaution we recommend that any ink transferred to the skin is removed immediately by washing with soap and copious amounts of water. For further details on the handling of UV materials please refer to the Printing Ink Advisory Committee book entitled 'The Printers Guide to Health and Safety', chapter 4 deals with this issue in detail. Concise health and safety data sheets will be provided by your local Sun Chemical Screen branch.

UVGS series inks have been formulated to the latest raw material guidelines and do not contain NVP.

TOYS (SAFETY) REGULATIONS BS5665 PART 3 1989/EN71/3 1989
UVGS series inks have been formulated to exclude heavy metal based pigments. However inks 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 inks may be analysed or alternatively the finished toy. Please refer to our company statement concerning inks for toys.

UVGS SERIES INKS C-MIX 2000 BASE COLOURS			
Primrose	UVGSY30	Violet	UVGSV50
Golden Yellow	UVGSY50	Blue	UVGSB50
Orange	UVGSO50	Green	UVGSG50
Scarlet	UVGSR20	Black	UVGSN50
Red	UVGSR50	White	UVGSW50
Magenta	UVGSM50	Varnish	UVGSE50
SPECIAL EFFECTS			
Transparent Paste	UVGSTP	Frosted Effect	UVGS63177
EURO SCALE PROCESS COLOURS			
Yellow	UVGS180HDP	Cyan	UVGS182HDP
Magenta	UVGS181HDP	Black	UVGS65HDP
ADDITIVES			
Thinner	TU11	Hardener	UVGSHF
Adhesion Promoter	UVGSHS		

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