Product: UV Hardcoat *For non-forming applications*
Series: MTG-NF™

DESCRIPTION: MTG-NF is a system of UV hardcoats that are used as overprint varnishes to impart superior protection and resistance properties to printed parts.

MTG-NF includes 3 separate components (**M**atte, **T**exture & **G**loss) which can be printed as stand-alone UV hardcoats, or blended together in any ratio to produce a UV hardcoat that meets virtually any requirement for texture, gloss and finish.

NOTE: MTG-NF is not suitable for use on parts that will undergo subsequent forming operations.

PRODUCT FEATURES:

- When properly printed and cured, the MTG-NF system will pass the rigorous Ford WSS-M2P184-A Interior Appliques & Instrument Cluster Performance Specification.
- MTG Hardcoats impart exceptional abrasion, scratch, rub and chemical resistance to finished parts.
- All MTG components can be cured without nitrogen, using standard mercury vapor, iron-doped or microwave lamps.
- MTG Hardcoats can be printed over the top of most UV-curable and conventional solvent-based ink systems, but should be pre-tested prior to commencing a full-scale print run.
- All MTG components are NVP-Free.

The MTG-NF system includes the following 3 distinct components:

1. MTG-NFM Matte UV Hardcoat – An extremely low gloss (3-4% when printed over PD-N70 Black)[1] UV hardcoat designed for use in the following 3 ways:

- As an overprint without modification for applications where a UV hardcoat with an exceedingly matte finish is required.
- As a blending component to reduce the gloss of MTG-NFG.
- As a blending component to reduce the texture of MTG-NFT while maintaing a low gloss.

•2. MTG-NFT UV Texture Hardcoat – A UV hardcoat with a textured finish and 6-7%[1] gloss (when printed over PD-N70 Black) designed for use in the following 2 ways:

- As an overprint without modification for applications where a UV hardcoat with a textured finish is required.
- As a blending component used together with MTG-NFM and/or MTG-NFG to produce a UV hardcoat with specific gloss and texture requirements.

NOTE: Since it is significantly easier to increase gloss levels rather than reduce them, MTG-NFT UV Texture Hardcoat was purposely formulated to have a gloss level that is lower than what is required for many applications. The gloss level of MTG-NFT can easily be increased by blending with MTG-NFG UV Gloss Hardcoat. The gloss level of the product can not be reduced. If a lower gloss texture effect is required, print MTG-NFM Matte first and subsequently print MTG-NFT Texture over the matte.

NOTE: Due to the particle size of the texturizing agents, any blend containing MTG-NFT UV Texture Hardcoat must be printed through a 305/in. (120/cm) mesh count or lower to allow good printability.

3. MTG-NFG UV Gloss Hardcoat – A high gloss (85-90% when printed over PD-N70 Black)[1] UV hardcoat which can be used in the following 2 ways:

- As an overprint without modification for applications where a UV hardcoat with high gloss is required.
- As a blending component to increase the gloss and reduce the texture of MTG-NFM and/or MTG-NFT.

SUBSTRATES AND APPLICATIONS: MTG Hardcoats were specifically formulated to be printed over the top of virtually all UV-curable and solvent-based inks, or directly onto polycarbonate and most treated polyester substrates.

MTG Hardcoats have excellent adhesion to polycarbonate, but various grades and thicknesses of polycarbonate have differing receptivity to UV inks and should be pre-tested for aging effects.

NOTE: Pretest all substrates prior to use in production.

[1]Gloss figures are only approximations. Actual gloss of cured prints will depend on film thickness, curing equipment and other processing parameters. Gloss figures were measured with the Hardcoat printed over PD-N70 Black. When printing directly on films, gloss figures will be higher.

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RECOMMENDATIONS FOR ACHIEVING A REPRODUCIBLE FINISH:

Virtually every aspect of the screen printing process will affect the finish of a UV hardcoat. Some of the more critical variables include: curing parameters (type and wattage of UV lamps, UV dosage etc.); gloss/finish/color of underlying ink layers; gloss/finish of unprinted substrate; type of substrate; print speed; film thickness of the printed hardcoat; and subsequent processing of prints (box-baking, additional passes through a UV curing unit, etc.)

The most reliable way to reproduce the gloss and finish of UV hardcoats during subsequent print runs is to record and duplicate all of the processing conditions. Keeping an accurate log of the conditions used during an initial prototype print run and duplicating those conditions the next time the job is run will enable printers to achieve very similar results. Small additions of the appropriate matte, texture or gloss component will help compensate for minor differences in processing conditions.

SCREEN MESH:

• To allow good printability, 305/in. (130/cm), or lower, mesh count is recommended for printing MTG-NFT Texture Hardcoat or any blend of MTG components containing MTG-NFT.

• 355/in. (150/cm) - 390/in. (165/cm.) monofilament polyester mesh is recommended for printing Matte and Gloss Hardcoat components MTG-NFM, MTG-NFG.

Sun Chemical has the mesh best suited for your particular printing requirements. Contact your local Sun representative for details.

SQUEEGEE: Sharp urethane squeegee of approx. 75-85 durometer. **Sun Chemical has the best squeegee for your particular application. Contact your local Sun representative for recommendations.**

MODIFICATION: MTG Series components do not require any addition of catalyst or initiator.
ST-319 Viscosity Modifier may be added if viscosity reduction is required, to a recommended maximum of 10% by weight.

NOTE: The addition of ST-319 will affect the gloss and textured finish of cured prints. Pretest prior to use in production.

NOTE: Power mixing each component before use is recommended. The addition of heat or using a batch oven is also recommended. **Do not exceed 140° F.**

CURING: Actual cure speeds will vary depending on the UV curing unit and lamps, as well as the screen mesh and other printing parameters that affect ink deposit. Typical UV output in the 350-450 mJ/cm2, as measured with an IL390 International Light Radiometer, is recommended.

If using a Power Puck and measuring the "A" range, an output of .200-.250 J/cm^2 (200-250 mJs) is recommended.

WASH-UP: Screens may be cleaned with ET-5 Retarder, VL Wash, or many commercial screen washes. **Sun Chemical has a variety of wash-ups including ECO friendly screen washes available for your particular needs. Contact us for *all* of your pre and post-press chemical requirements.**

HEALTH AND SAFETY: MTG is formulated free of NVP (n-vinyl pyrrolidone). As with all inks, gloves and safety goggles should be used when handling this product. For more complete information, refer to the relevant MSDS before use.

STORAGE: When stored in black polyethylene containers at temperatures between 40-90°F (5-32°C), MTG-NF has a shelf-life of 12 months.

MTG-NF Non-Formable Texture Hardcoat System:

MTG-NFM Non-Formable Matte Hardcoat
MTG-NFT Non-Formable Texture Hardcoat
MTG-NFG Non-Formable Gloss Hardcoat
ST-319 Viscosity Modifier

In accordance with information received from suppliers, the full MTG series is formulated without heavy metals and complies with 16 CFR, Part 1303, ANSI Z66.1-1964, ASTM F 963, CONEG packaging regulations, EC Packaging Waste Directive EC/94/62 and EN71, section 3; RoHS 2002/95/EC; WEEE 2002/96/EC; E2003/11/EC.

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