Product Data Sheet
Screen Printing Varnish

SunChemical®
Coates Screen Inks

MLS Floor Graphic Varnishes:
MLS 70/00 (fine structure)
MLS 70/02 (coarse structure)
MLS 70/03 (medium structure)

UV-Curing Floor Graphic Varnishes, 1-Component

APPLICATION
UV-curing screen printing varnishes for printing tactile effects with rough structures. Suitable for floor graphics, advertising and decorative effects.
Suitable for paper, cardboard, rigid PVC, PVC- self-adhesive foils and polystyrene (PS).

PROPERTIES

- Solvent-free UV-curing screen varnishes MLS 70/00, MLS 70/02 and MLS 70/03 have a medium reactivity.
- All three varnishes are delivered in a ready-to-print adjustment with a medium viscosity. After curing the varnishes show a matt to satin gloss finish and good transparency.
- Depending on the layer thickness a slight yellow discoloration may occur, especially when printing MLS 70/02, which requires a very coarse fabric.
- The surface roughness is produced by structure agents contained in the varnishes.
- The cured film shows a medium flexibility and hardness.
- MLS 70/00, MLS 70/02 and MLS 70/03 have a low to medium weather resistance.
- **Anti-slip properties:**
  Anti-slip properties of MLS floor graphic varnishes were evaluated according to DIN EN 16165:2021-12 Annex B (superseding DIN 51130) and ASR A1.5/1,2 – March 2022. The test reports of German Institute of Occupational Safety (IFA) are available upon request (only in German).

MLS 70/00:	Assessment class R 9	(maximum average inclination 9°)
MLS 70/02:	Assessment class R 11	(maximum average inclination 23°)
MLS 70/03:	Assessment class R 10	(maximum average inclination 15°)

- Note: Because of the variety of substrates and partially very high layer thicknesses, pre-tests to determine suitability of MLS 70/00, MLS 70/02 and MLS 70/03 are essential, also in respect to handling (stacking properties etc.) and further processing of prints. The high layer thicknesses may significantly change the properties of substrates. Therefore it is essential to evaluate printed samples and check factors such as brittleness, impact strength, edge curl etc.

PRODUCT - OVERVIEW

• Floor graphic varnish:	MLS 70/00	Medium viscosity, fine structure	Particle sizes up to approx. 35µ
• Floor graphic varnish:	MLS 70/02	Medium viscosity, coarse structure	Particle sizes up to approx. 200µ
• Floor graphic varnish:	MLS 70/03	Medium viscosity, medium structure	Particle sizes up to approx. 70 µ

LIGHT FASTNESS
Applied on suitable substrates MLS 70/00, MLS 70/02 and MLS 70/03 are suitable for short to medium-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing varnishes MLS 70/00, MLS 70/02 and MLS 70/03 are supplied in a ready-to-print adjustment.
- Generally, addition of auxiliary agents is not necessary. For some rare and special applications and depending on local conditions, addition of certain agents/additives is possible.
- Prior to printing, the varnishes should be stirred well to obtain a homogeneous dispersion of all ingredients.

AUXILIARY AGENTS

Application	Product	Addition in % by weight	Additional Information
Thinning	Additive UV/V*	Max. 10%	Standard thinner
Viscosity increase	Thickening powder	1 - 2%	Stir with mixer
Reactivity increase	LAB-N 560700	1 - 3%	Photoinitiator
Flow agent	Additive UV/VM	1 - 2%	Do not overdose!
	Additive UV/N	1 - 2%	Wetting agents, improves flow properties

* Thinner Additive UV/V is a reactive UV monomer, not a commercial solvent!

DRYING / UV-CURING

- MLS 70/00, MLS 70/02 and MLS 70/03 only dry/cure under UV-radiation.
- Suitable UV-driers with Hg medium-pressure lamps (250 – 400 nm) and an efficiency between 80 and 200 W/cm have to be used.
- Preferably, use reflectors with a focussed radiation.
- Ensure an even radiation (intensity/distance to the lamps) of the whole printed image.
- The UV-energy required depends on construction/performance of the UV drier, the thickness of the printed varnish layer and type of substrate. Hence, printers should determine the exact required energy with their own UV-drier.
- **UV-curing energy guide values for all three varnishes:**
  UV-energy: **250-400 mJ/cm²**
  (measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
  Belt speed: **UV-radiator:** **1 x 120 W/cm: 8 - 12 m/min.**
  2 x 120 W/cm: 16 - 24 m/min.
- Adhesion should only be checked several minutes after curing. Due to the post-curing process of the varnish and depending on the substrate, sufficient adhesion may sometimes only be achieved after up to 24 hours.

SCREEN FABRIC / STENCILS

MLS 70/00, MLS 70/02 and MLS 70/03 have been formulated for printing with specified fabrics (threads/cm).

- MLS 70/00 fine structure fabric: 98-*48* to 100-*40*
- MLS 70/02 coarse structure fabric: 24-*140* to 27-*140*
- MLS 70/03 medium structure fabric: 43-*80* to 54-*64*

Printing with coarser or finer fabrics is not recommended. Coarser or finer fabrics will cause a significant change of structure properties.

All copy emulsions and capillary films suitable for solvent based and UV-curing screen inks can be used, such as our program of SunCoat or Murakami products.

SCREEN PRINTING

Processing **MLS 70/00** with fabrics of 90 – 100 threads/cm is easy and similar to processing “standard” UV matt varnishes.

Because of the very coarse fabrics required printers have to be quite experienced when processing **MLS 70/03 and especially MLS 70/02.** Depending on local requirements hardness, angle, edge (possibly slightly rounded) and speed (slower) of squeegee have to be adapted. Same applies to the flood squeegee. If flood squeegee moves too quickly and/or has a sharply shearing adjustment there will be an insufficient fill-level in the screen mesh and the resulting structure in the printed image will not be satisfactory.

CLEANING

Uncured UV varnishes can be removed from stencils and tools using our solvent based universal cleaning agents of the URS range.
Cleaning of cured UV varnishes is very time-consuming and hardly ever possible.
Note: As the acrylates contained in these UV varnishes may cause skin irritation, clean contaminated skin with water and soap immediately. Remove and clean contaminated clothing straightaway.

PACK SIZE

Screen printing varnishes MLS 70/00, MLS 70/02 und MLS 70/03 are delivered in 1 and 5 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, MLS 70/00, MLS 70/02 und MLS 70/03 screen varnishes generally have a shelf life of 1 year from date of production.
For exact date of expiry, please refer to the label.

SAFETY DATA SHEETS

Read safety data sheet prior to processing.
Safety data sheets comply with Regulation (EC) No. 1907/2006 (REACH), Appendix II.

CLASSIFICATION AND LABELLING

Hazard classification and labelling comply with Regulation (EC) No. 1272/2008 (CLP/GHS).

CONFORMITY

Coates Screen Inks GmbH does not use any of the substances or mixtures for the production of printing inks, which are banned according to the EUPIA (European Association of the Printing Inks Industry) exclusion policy.
Further compliance confirmations are available upon request.

ADDITIONAL INFORMATION ABOUT OUR PRODUCTS

Product data sheets:	Auxiliary Agents for UV-Curing Screen Printing Inks
Brochures:	UV-Curing Screen Printing Inks
Internet:	Various technical articles are available for download on www.coates.de, section “SN-Online”

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