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Practical Application Guide for CMR Clearcoats

Liquid laminates (1C/2C)

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General Description:

CMR liquid laminates are transparent, water-based, highly flexible 1 or 2 component protective lacquers for synthetic materials like plastic films or tarpaulins. They protect and refine unprinted and printed surfaces. These materials are especially used in the graphic sector and in outdoor advertising.

Preparation and Handling:

In order to obtain the optimal product properties it is important to strictly follow the processing instructions as detailed below.

Each protective lacquer always has to be stirred well before processing. Using 2-component systems the relevant quantities of lacquer and hardener have to be weighed seperately in clean, cylindric containers and finally mixed up.

A mechanical propeller mixer is recommended for all mixing procedures (appr. 500 - 2,000 rpm). Type and size of stirrer have to be adjusted to the quantity of lacquer and the format of the container.

The hardener has to be stirred slowly into the basic lacquer with a thin jet during the stirring process. If the hardener is added too fast or without stirring it may result in building up clots.

Apart from this please strictly comply with the mixing ratios of basic lacquer and hardener noted in the relevant data sheets.

The mixture of basic lacquer and hardener should be stirred for at least 5 min. The speed should be chosen that a homogenous mixture arises but mixing in too much air is avoided.

As soon as the hardener is completely and homogeneously dispersed, please filter the mixture with a suitable filter (125 µ minimal). Let the mixture rest for degassing for approx. 20 min before application.

The ready mixed protection lacquer can be processed at room temperature for at least 4 hours provided it is not specified otherwise in the data sheets of the relevant product.

Viscosity of some lacquer systems might increase during this time to this extent that the processing gets difficult. The lacquer coagulates and solidifies finally. High temperatures (e. g. in summer) or high humidity can reduce the processing time.

Other systems will reach the end of processing time without an increase of their viscosity. In either case no system should be used after the recommended potlife, because the optimum product properties will no longer be reached.

Applications:

The application of CMR protective lacquers can be performed with the usual methods. Automatically application by means of mayer bar liquid laminators or anilox rolls with pressure chamber knives is as well possible as by several manual applications e. g. rolling, spraying, wiping.

Pretreat the substrates before application with CMR lacquer systems adequately and clean them well in order to achieve an optimal and complete wetting of the substrate and permanent adhesion. Every residues (e. g. grease, silicone, oil ect.) on the substrate which may prevent an adhesion have to be removed.

Processing time is very much depending on the ambient temperature. Recommended temperature is between 18 °C and 30 °C. Relative humidity should not exceed 60 %.

As with all CMR lacquer systems the value of the individual characteristics is determined by the sort of substrate (tarpaulin, foil and / or ink, e. g. UV, solvent or latex ink). Therefore we recommend to strictly conduct adequate tests in advance.

The Viscosity of the lacquer is adjusted to a manual application with a roll made of velours as well as for an application by liquid coater. For use of a spray gun the viscosity of the lacquer probably has to be adjusted. For this method the viscosity should lie in the range of 20 - 30 sec at 20 °C (4mm DIN flow cup). The adding of destilled water should not exceed 10 %.

Roll Application:

Pour prepared lacquer into a suitable paint tray (e. g. a flat pan). Ideal viscosity is 20 - 40 sec in 4mm DIN flow cup at room temperature.

CMR protective lacquers are factory-adjusted to the optimal viscosity. Nevertheless there may be variations in viscosity during storage time, depending on storage duration and storage temperature.

Therefor it may be necessary to reduce the viscosity of the lacquer before processing, respectively to dilute the lacquer. Please dilute by adding max. 5 - 10 % of demineralized water (while stirring mechanically).

Use a wettish (not completely wet) roll. Press out surplus water before taking up the lacquer.

Take up the lacquer by moving the roll in the filled tub. By skimming the roll the air will be pressed out of it.

Apply the lacquer homogeniously on the prepared surface (target coat thickness approx. 50 µ up to 100 µ wet layer).

Avoid too much contact pressure. Apply the lacquer back and forth smoothly with slight pressure over the surface. Avoid a second application on touch dry areas.

After the first wetting of the surface please fill the roll with much lacquer. Finish with a few rolling movements so that the whole area appears completely wet.

After application the lacquer has to defoam and level out to form a mirrow-like surface.

Some CMR lacquer systems can be recoated as far as the surface is dried well (after at least 12 hours). Blemishes can be restored afterwards.

Spray Gun Application:

CMR lacquer systems can by applied with an appropriate spray gun. Depending on the spray gun it may be necessary to dilute the lacquer. Dilution should be effected by adding max. 5 - 10 % distilled water (also under mechanical stirring).

Choose the settings that way, that there is not too much spray mist.

Then fill in the diluted lacquer by passing through a filter directly into the gun. It is recommended to use the low pressure Airmix procedure. A nozzle size of 1.2 -1.8 mm has been proved to be successful. Air pressure should be between 2 - 3 bar.

The application of the lacquer should be done rapidly in one step. Please avoid to overspray already dried areas.

On use of small vinyl banners spray the lacquer completely wet cross-coating to the banner. Big banners should be applied by moving back and forth with the spray gun. Appropriate breathing protection is recommended.

Liquid Coater Application:

Most of the CMR lacquer systems (1C/2C) are appliable by using liquid coaters.

A smooth application will be achieved by using a Mayer bar (thickness 32 µ, 50 µ or 100 µ wet layer).

The required viscosity of the lacquer as well as the speed and the drying temperature are depending on the machine type and the thickness of the wet layer.

CMR 2-component clearcoats can be used by liquid coaters too. It is important not to use the usual way of the liquid circle. A 2-pack system reacts too fast, so it will clog the pump, tubes, nozzles and valves.

Please fill in manually or use a separate infilling system for the lacquer/hardener mixture (further advises and details you can get from us directly). Please use dam stops to prevent the lacquer from flowing into the drip tray.

Drying-conditions:

The drying of the CMR lacquers is physical, that means the level of temperature and the convection determine the time that is required for drying.

The ambient temperature, the humidity and the convection are decisive for the optimal drying of the lacquered surface. Deviations from the ideal value of temperature (18 - 25 °C) an humidity (40 - 60 %) may have negative effects. It could come to a disturbance of leveling, degassing and/ or defoaming. The optimal glossiness may be decreased.

The coated surface will be dust-dry after 30 - 60 min at room temperature (20 - 25 °C). After 12 h at room temperature the lacquering will be touch-dry. The lacquered film or banner can be rolled up carefully now.

A forced drying between 60 - 80 °C shortens the process of drying significantly. In any case a sufficient air circulation will improve the drying conditions.

The cross-linking process is not actually finished with a dry lacquer surface. Physical characteristics and chemical consistencies will be reached after 7 - 10 days, when the interconnection process has been finished.

Only then the sealing surface will reach its final properties, that means that the full mechanical robustness and chemical resistances (water, detergents, solvents, etc.) are given.

Due to different chemical compositions of plastics, films and inks we recommend to have suitability tests of your own.

Cleaning of Equipment:

Clean all rolls and all devices with lukewarm tap water immediately after use (dry lacquer is not water soluble anymore). A small amount of slightly alkaline detergents added to the water can enhance effectiveness. Dry lacquer residues must be removed mechanically or with the aid of suitable solvents.

Storage:

When the original containers are kept closed tightly and are stored in a cool place (at average temperatures between 10° C and 25° C, without frost or sudden temperature changes) shelf life is 6 months.

Open containers should be used up as soon as possible. This is a especially necessary for the hardener component. Because some hardeners react with humidity, its container must be closed tightly.

Safety:

Information on necessary personal protective equipment (gloves, protective goggles, etc.) as well as instructions regarding hygiene and waste disposal are contained in respective material safety data sheet Therein you will also find advise for appropiate product waste disposal.

Please take notice of additional and specific information of technical data and processing instructions of the relevant system that may be available!

These information reflect our current state of knowledge and they are intended to inform on our products and its application possibilities. You cannot deduce any legally binding guarantee regarding specific properties of the products or their suitability for definite applications. Also they do not release the user to make test of our products concerning its suitability for the planned applications. Rights regarding trademarks and patents also will have to be observed.