



Pad printing ink for varnished and powder-coated surfaces, ABS, PC, PMMA, PS, as well as some metals

High gloss, good opacity, 1-component ink system drying by oxidation, very good printability

Field of Application

Substrates

Maralox LX is particularly suited to print onto

- Varnished surfaces
- Powder-coated surfaces
- ABS
- Polycarbonat (PC)
- Acrylglas (PMMA)
- Polystyrol (PS)
- Some metals

Since all the print substrates mentioned may be different in printability even within an individual type, preliminary trials are essential to determine the suitability for the intended use.

Field of use

Maralox LX is mainly used to print onto toys but also onto promotional articles and it is ideally suited for applications requiring a high opacity, gloss, as well as a high ink layer thickness.

Since it is a very mild ink system, the use of Maralox LX can also be recommend for injection-moulded parts made of e. g. PS, PC, or PMMA being sensitive to corrosion.

Characteristics

Drying

Parallel to physical surface drying (i. e. evaporation of the solvents used), the actual hardening of the ink film is caused by the oxidative cross-linking reaction between ink and air oxygen.

Since this drying process requires an extended space of time, the use of Maralox LX is not recommended for those parts which have to packed or post-processed immediately after printing.

Extent of drying	temperature	time
touch-dry	20 °C	30 min
stackable	20 °C	2 h
final hardness	20 °C	2-3 days

The times mentioned vary according to substrate, depth of cliché, and auxiliaries used. The processing and curing temperature should not be lower than 15 °C as irreversible damage can occur.

Fade resistance

Pigments of medium fade resistance have been used for the production of Maralox LX.

Maralox LX is generally suited to a medium-term outdoor use. An exception to this, however, are the basic shades LX 924 (Medium Yellow) and 934 (Carmine Red) which expose only a short-term outdoor suitability.

Shades mixed by adding overprint varnish or other colour shades, and especially white, have a reduced fade and weather resistance depending on their mixing ratio. The fade resistance also decreases if the printed ink film thickness is reduced. The pigments used are resistant to solvents and plasticizers.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub and scratch resistance. Maralox LX also displays a good resistance to domestic cleaners.



Range

Basic shades

920	Lemon	950	Violet*
922	Light Yellow*	952	Ultramarine Blue
924	Medium Yellow	954	Medium Blue
926	Orange	956	Brilliant Blue*
930	Vermilion*	960	Blue Green
932	Scarlet Red	962	Grass Green*
934	Carmine Red	970	White
936	Magenta*	980	Black
940	Brown		

(*semi-transparent/transparent)

Please note that even though these colour shades are aligned to System Tampacolor, deviations may occur due to different pigmentation.

All shades are intermixable. Mixing with other ink types or auxiliaries must be avoided in order to maintain the special characteristics of this outstanding ink range.

All basic shades are included in our Marabu-ColorFormulator (MCF). They build the basis for the calculation of individual colour matching formulas, as well as for shades of the common colour reference systems HKS[®], PANTONE[®], and RAL[®]. All formulas are stored in the Marabu-Color Manager software.

The pigments used in the above mentioned standard shades, based on their chemical structure, correspond to the EEC regulations EN 71/part 3, safety of toys - migration of specific elements. All colours are suited for printing onto toys.

Additives

Clears

910 Overprint Varnish, can also be used as a bronze binder

Bronzes

(to be mixed with Overprint Varnish LX 910)

S 181	Aluminium	6:1
S 182	Rich Pale Gold	4:1- 6:1
S 183	Rich Gold	4:1- 6:1
S 184	Pale Gold	4:1- 6:1
S 186	Copper	3:1- 4:1
S 190	Aluminium, rub-resistant	8:1- 10:1

Due to their chemical structure, Pale Gold S 184 and Copper S 186 have a reduced processing time. Please generally prepare fresh mixtures only as they cannot be stored and must be processed within 4 h.

Bronze shades made of bronze powder have a low resistance to dry abrasion which can only be reduced by over-varnishing with LX 910.

The recommended mixing ratio can be varied according to the required opacity and curing properties.

All figures in brackets are guidelines for mixtures with LX 910 bronze binder while the first figure is standing for the parts by weight of LX 910.

Auxiliaries

Thinner:	PPTPV TPV TPV 2, fast thinner TPV 3, slow thinner
Retarder:	SV 1, SV 5
Matting Powder:	MP
Antistatic Paste:	AP
Opaquing Paste:	OP 170
Cleaner:	UR 3, UR 4
Printing Modifier:	ES, addition max. 1%

To adjust printing viscosity, it is generally sufficient to add 10-15% of Thinner PPTPV resp. TPV to the ink. Thinner TPV 2 can be used for fast printing, TPV 3 for slow printing requirements.

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By adding Matting Powder MP, the glossy effect of the ink is reduced to a silky or semi-matt finish. The addition of a low percentage of MP (in the case of 970 White, max. 5%) will not influence significantly the resistances of the ink but reduce its opacity.

For the printing of very fine motives, Retarder SV 1 may be added to the ink. An excessive addition may result in ink transfer problems from pad to substrate.

Attention

For an ink mixture containing retarder, only thinner should be used for additional thinning during the print run.

By adding Opaquing Paste 170, the opacity of colour shades can significantly be increased without influencing the chemical and dry abrasion resistance considerably. Maximum quantity to be added is 15%. OP 170 is not suitable for using it with white shades.

Printing Modifier ES contains silicone. It can be used to rectify flow problems on critical substrates by adding up to 1% by weight to the ink. If an excessive amount of printing modifier is added, flow problems are increased and adhesion may be reduced, especially when overprinting.

Cleaning

For manual cleaning of containers, clichés, and tools our cleaner UR 3 (flash point 42° C) or UR 4 (flash point 52°C) can be used.

Clichés

All commercially available clichés made of ceramic, photopolymer, thin steel, and chemically hardened steel (10 mm) can be used. The recommended cliché depth is 20-28 µm.

Printing pads

As per our experience, all common printing pads consisting of materials cross-linked by condensation or addition can be used.

Printing machines

Maralox LX is suitable for closed ink cup systems, as well as for open ink wells. Depending on type and usage of the machine, it is to accordingly adjust type and amount of the thinner used.

Shelf life

Originally sealed cans of Maralox LX have a shelf life of approx. 2 years if stored in a dark and dry place at 18-24°C (air moisture 20-60% max.). If the cans had once been opened, the ink tends to form a membrane on its surface.

This can be avoided by over-coating the ink with some Thinner PPTPV. The ink should be stirred well before starting to print.

Labelling

For the ink type Maralox LX and its additives and auxiliaries, there are current Material Safety Data Sheets available according to EC-regulation 1907/2006 informing in detail about all relevant safety data including labelling according to the present EEC regulations as to health and safety labelling requirements. Such health and safety data may also be derived from the respective label.

Note

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge to inform about our products and their use. This is not meant as an

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assurance for certain properties of the products nor their suitability for each application.

You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The selection and testing of the ink for specific application is exclusively your responsibility.

Should, however, any liability claims arise, they shall be limited to the value of the goods delivered by us and utilized by you with respect to any and all damages not caused intentionally or by gross negligence.