

® = Registered trademark of
BASF SE

Helizarin[®] Binder TOW Plus

Acrylic binder for pigment printing. The prints are fast to dry, cleaning, have a pleasingly soft handle and excellent all-round fastness properties.

Chemical nature	Thermally crosslinkable, aqueous acrylate dispersion.
Physical form	Low-viscosity liquid.
Shelf life	Helizarin® Binder TOW Plus can be kept in the original sealed containers at temperatures between 5 and 35 °C for at least 12 months. Once containers have been opened, the contents should be used up quickly. Containers should be closed tightly after use because the product tends to form a skin on exposure to air.
Note on storage	Helizarin® Binder TOW Plus should be stored under frost-free conditions.

Properties

Density	Approx. 1 g/cm ³
Setting point	Approx. 0 °C
Boiling point	Approx. 100 °C
PH	Approx. 6 – 8 (undiluted)
Solubility	Miscible with water in all proportions

The above values characterize the physical range of properties. Details of the tolerances are provided in the product specification.

Action

Helizarin® Binder TOW Plus has been developed specially for pigment printing. It allows the production of prints with a pleasingly soft handle and very good general-use fastness properties.

Prints produced with Helizarin® Binder TOW Plus are resistant to dry cleaning and ageing. They are also very resistant to aqueous detergent liquors.

Helizarin® Binder TOW Plus has very little effect on the viscosity of synthetic thickenings.

In combination with Helizarin ECOSOFT printing auxiliaries and under well-controlled processing, very low free formaldehyde on printed fabrics can be obtained (measured by LAW 112).

Application

Helizarin® Binder TOW Plus can be used in conjunction with Lutexal® grades in aqueous pigment printing systems. The print pastes have very good running properties. In the case of printing formulations that contain white spirit, preliminary trials should be carried out because here the running properties are very dependent on the recipe and the quality of the white spirit used.

The good wet fastness properties of the binder, especially on woven cotton fabrics, can be further improved by adding a crosslinking agent such as Helizarin® Fixing Agent LF. However, optimal fixation of the prints is necessary (see below).

Fields of application**Direct printing**

Multicolor, matt white and matt multicolor printing on white and predyed materials.

Discharge printing

Suitable (in some cases preliminary trials are recommended).

Processing notes

Helizarin® Binder TOW Plus is compatible with the auxiliaries normally employed in pigment printing and can be mixed in all proportions with other Helizarin® Binders. If it is necessary to store the print pastes for an extended period, the containers should be covered with plastic film or a thin layer of white spirit should be poured over the surface of the paste. This white spirit can be readily emulsified into the paste with a high-speed stirrer prior to printing.

To ensure that prints produced with solvent-free formulations have the required depth of shade, definition and surface-printing effect, the print paste must generally have a higher viscosity than is normally employed with white spirit emulsion systems.

Guideline recipes

The guideline recipes given below were prepared with water of medium hardness and adjusted to the following viscosities:

Aqueous: approx. 80 dPa·s (=poise)

Low-solvent: 0 – 70 dPa·s

(measured with viscotester VT 02 made by Haake Mess-Technik GmbH & Co., Karlsruhe).

The recipes are intended as a guide and should be adapted as necessary to suit the local conditions (e.g. water hardness, processing conditions, substrate, etc.)

1. Standard recipe for cellulosic-fiber fabrics and blends**(solvent-free)**

x g water
 25 g Luprintol® Multifunction MCL
 80 – 220 g Helizarin® Binder TOW Plus
 30 – 35 g Lutexal® Thickener HIT Plus
 _____ 10 g Urea
 1000 g

2. Economical prints on cotton fabrics (solvent-free)

x g water
 5 g Luprintol® Emulsifier PE new
 80 – 220 g Helizarin® Binder TOW Plus
 2 g Lutexal® Additive TX 4744
 28 – 32 g Lutexal® Thickener HIT Plus
 _____ 10 g Urea
 1000 g

3. “ECOSOFT” recipe for producing soft pigment prints

x g water
12 -15 g Luprintol® Multifunction CF
80 – 220 g Helizarin® Binder TOW Plus
10 – 15 g Luprintol® Soft VSN
32 - 35 g Lutexal® Thickener HIT Plus
_____ 10 g Urea
1000 g

The Helizarin® “ECOSOFT” System was developed to allow very soft pigment prints to be obtained. In combination with specially selected auxiliary compounds (see recommended recipe), Helizarin® Binder TOW Plus produces an attractively soft handle.

Other additives

A smoother print surface is obtained by adding 5 g/kg Luprintol® Soft SIG or Luprintol® Soft VSN. This addition also further improves the fastness properties (especially the fastness to dry rubbing) and has a positive effect on the handle and brilliance of the prints. When Luprintol® Soft SIG is to be incorporated into solvent-free formulations; a high-speed stirrer should be available to ensure that the product is dispersed homogeneously.

On substrates composed of synthetic fibers and their blends with cellulose fibers, and also on regenerated cellulose materials, an addition of 3 - 8 g/kg Helizarin® Fixing Agent LF is necessary to improve the fastness. An addition of Helizarin® Fixing Agent LF can also further improve the fastness on cotton to a certain extent (particularly the wet fastness).

Preparation of a pigment thickening

Run the requisite amount of water into the mixing vessel and, if necessary, add suitable antifoam (e. g. 0.5 –1.5 g/kg Defoamer TC ECO). The Luprintol types, the Helizarin® Binder TOW plus and, if required, Helizarin® Fixing Agent LF and Luprintol® Soft SIG or Soft VSN are then added successively, with stirring.

Finally, the Lutexal® Thickener HIT Plus is stirred in, after which the mix is stirred with a high-speed stirrer until the thickener has swollen to its full extent (approx. 8 –10 min). With low-solvent formulations, the white spirit is next emulsified into the mix, which is finally homogenized by stirring for a further 12 –15 minutes.

pH

The print pastes should have a pH of at least 7.5 – 8. Lower value must be corrected by adding ammonia.

Viscosity adjustment

Subsequent adjustments can be made to the viscosity of the mix. To **increase the viscosity** of aqueous pastes. Lutexal® Thickener HIT Plus can be stirred into the paste. Pastes that contain white spirit are best thickened by adding 0.5 – 2 g/kg Lutexal® Additive TX 4744.

A **reduction in viscosity** of pastes that contain Lutexal® Thickener HIT Plus can be achieved by stirring in small amounts of an aqueous solution of diammonium phosphate or ammonium sulfate.

Fixation

Hot-air fixation produces the optimum standard of fastness. The following conditions are recommended:

4 – 5 min at 150 °C or

2 – 3 min at 160 –170 °C.

Fixation with **superheated steam** should be carried for 5 – 7 min at a minimum temperature of 160 °C.

While this method of fixation also produces a good standard of fastness, it is still somewhat below that of prints fixed in hot air.

Safety

When using this product, the information and advice given in our **Safety Data Sheet** should be observed. Due attention should also be given to the **precautions** necessary for handling chemicals.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. Responsibility for compliance with the requirements of the downstream textile market rests with the textile processor.

