

Auxiliary agents and additives for solvent based screen printing inks

Technical data sheet

Additives

1. INTRODUCTION:

We offer a range of screen printing ink series for use in different applications.

Solvent based ink series cannot be used in their original state and always require added ingredients.

It is necessary to adjust the printing viscosity before the start of the decoration and to make further adjustments during the printing process by adding solvents.

Technical problems caused by difficult substrates, ambient conditions and unfavorable printing parameters can be resolved by adding specific auxiliary agents or additives.

Please use them carefully to improve ink properties.

Detailed information about additives and auxiliaries for each ink series is given in the corresponding technical data sheets.

All addition quantities are in percentage of weight.
Example: 18% to 50 gram of ink = 9 gram addition

2. HOW TO USE:

2.1 Adjustment of rheological properties:

2.1.1 Viscosity is the measure of flow characteristics and the resistance of a printing ink which is being deformed by shear stress. A high viscosity ink is equivalent to a "thicker" ink (lower flow properties). If the viscosity is lower, then the printing ink is thinner (higher flow properties).

The printing viscosity must be adjusted **before** and during the printing process by adding

- **Thinner** and/or
- **Retarder**

The correction of the viscosity affects by print quality of image, ink transfer from screen, drying time (dependent on ambient temperature) as well as machine speed.

For printing onto substrates such as polystyrene, acrylic and moulded plastic parts which are sensitive to cracking we recommend using **mild** solvents.

In general, we differentiate between

- **Thinner, standard** suitable for achieving a processing viscosity with a medium drying time range.
- **Thinner, fast** suitable for achieving a processing viscosity with shorter drying time. This thinner can also be used for **spraying** with help of a spray gun.

- **Thinner, slow** suitable for achieving a processing viscosity with longer drying time and longer mesh opening.

Please note that the drying time will be longer and blocking resistance will be reduced. By adding thinner, the solvent properties of the binder and the dissolving strength will change and therefore the adhesion to the substrate will be influenced.

- **Retarder** reduces the printing viscosity. Used for slower printing speeds and increased mesh size over a longer printing sequence.

- **Retarder paste** has the same function as retarder (see above). Using retarder paste will not change the viscosity of the printing ink.

2.1.2 Thixotropy is the property of printing inks to show a time-dependent change of viscosity under mechanical stress (such as squeegee pressure, squeegee movement, stirring).

The addition of a thixotropic agent will increase the thixotropy of the ink.

2.2. Optimization of Ink properties:

2.2.1 Ink flow (levelling) improvement:

Poor ink levelling or ink flow can be caused by bad wetting properties or unsuitable surface tension of the substrate. This manifests itself as pinholes or "orange peel" effects and can be remedied by adding more thinner (max. 5%) and/or levelling agent (max. 1%).

There are levelling agents available which contain silicone. Please note that the addition of silicone can affect the ink adhesion when overprinting.

2.2.3 Hardener

Ink series are available as 1- component and 2- component versions.

To optimize mechanical and chemical resistance, we recommend the addition of hardener.

Please note that the final chemical and physical resistance of the ink is only achieved after 36 hours at an ambient temperature of 20°C or 48 hours at an ambient temperature of 20°C in case of ink series 380DD.

In general, we distinguish between

- **Hardener, standard:**
100VR1433

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During processing and drying of the printed ink, the temperature should not be lower than 15°C otherwise the chemical cross linking is stopped. Also avoid high humidity for several hours after printing as the hardener is sensitive to humidity. At an ambient temperature of 20°C, a pot life of approximately 8 - 12 hours can be achieved.

- **Hardener, for outdoor usage:**
100VR1491

For improved outdoor resistance, the use of hardener 100VR1491 is recommended. It is less reactive than standard hardener, therefore the drying time is extended. At an ambient temperature of 21°C, the pot life is approx. 16 hours.

When using hardener, please note that multi-colour jobs have to be printed within 24 hours. The completely dried ink cannot be overprinted.

2.2.4 Adhesion modifier

Adhesion modifier and primer should be used in order to achieve good adhesion to substrates such as untreated polypropylene or glass.

The primer has low viscosity and can be applied by spraying or dipping.

Adhesion modifier for untreated PP: 100VR1260

Primer for untreated PP: 100VR1237

Adhesion modifier for glass: 100VR1494

Adhesion modifier for glass: 100VR1410

2.2.5. Special ink effects (matt/ gloss)

The use of matt additive (powder) modifies the gloss level from gloss to matt. The higher the percentage of matt powder, the higher the matt level.

Adding gloss varnish will increase the gloss level of the ink, but will reduce ink opacity.

2.2.6 Other Additives:

- **Slip additive:**
100VR1495

To increase mechanical resistance, we recommend adding a maximum of 1% slip agent 100VR1495.

3. SHELF LIFE:

At a temperature of 21°C, we guarantee a shelf life for

Hardener	of min. 12 months
Adhesion modifier/Primer	of min. 12 months
Thinner	of min. 12 months
Retarder	of min. 12 months

when stored in the original packing container.

At higher storage temperatures the shelf life will be reduced.

Additives applied in ink series such as 10KK0030 achieve the shelf life mentioned in the technical data sheets for the named ink series.

Auxiliary agents and additives for solvent based screen printing inks

4. OVERVIEW of auxiliaries and agents:

Ink series 10KK:

Article No.	Product Name	Function	Addition
38571	Thinner, standard	Reduces viscosity	15 – 25%
35353	Thinner, fast	Reduces viscosity with shorter drying time	15 – 25%
100VR1390	Thinner, for glass	Reduces viscosity	15 – 25%
35696	Thinner, mild	Reduces viscosity (e.g. acrylic, moulded plastic parts from PC, polystyrene)	15 – 25%
35928	Retarder, standard	Reduces viscosity	5 – 10%
34392	Retarder, slow	Reduces viscosity with longer drying time	2 – 5%
100VR1170	Retarder, for glass	Reduces viscosity	10 – 20%
100VR1482	Retarder, mild	Reduces viscosity (e.g. acrylic, moulded plastic parts from PC)	5 – 10%
10KK0030	Retarder paste	Longer drying time, viscosity remains unchanged	2 – 10%
10KK0026	Varnish	Improves adhesion, but reduces opacity	2 – 10 %
100VR1194	Matting powder	Matting agent, reduces gloss level, increases viscosity	2 – 8%
100VR133	Levelling agent, contains silicone	Improves ink flow, levelling and wetting	0,5 – 1%
100VR1433	Hardener, standard	Improves adhesion and resistance. Pot life: 8-12 hours at 21°C	2 – 20%
100VR1494	Adhesion modifier, for glass	Improves ink adhesion to the substrate With oven drying (25 min at 180°C)	2 – 5%
100VR1410	Adhesion modifier, for glass	Improves ink adhesion onto the substrate Without oven drying	2 – 7%
100VR1495	Slip additive	Increases mechanical resistance	0,5 – 1%

Ink series 110GE:

Article No.	Product Name	Function	Addition
38571	Thinner, standard	Reduces viscosity	15 – 25%
35353	Thinner, fast	Reduces viscosity with shorter drying time	15 – 25%
35928	Retarder, standard	Reduces viscosity	5 – 10%
34392	Retarder, slow	Reduces viscosity with longer drying time	2 – 5%
100VR1393	Retarder, very slow	Reduces viscosity with longer drying time, longer mesh opening	2 – 5%
110GE0070	Varnish	Improves adhesion, but reduces opacity	2 – 10%
110GE0083	Retarding paste	Increases drying, viscosity remains unchanged	2 – 10%
110GE0081	Raster paste	Improves halftone printing, to achieve sharper dots and fine types and lines	2 – 10%
100VR1494	Adhesion modifier, for glass	Improves ink adhesion to the substrate (after 24-48 hours) With oven drying (25 min at 180°C). Pot life: 8 hours at 20°C	0,5 – 2%
100VR133	Levelling agent, contains silicone	Improves ink flow, levelling and wetting	0,5 – 1%
100VR1495	Slip additive	Increases mechanical resistance	0,5 – 1%

The above statements are accurate to our best knowledge and belief. However, due to the great number of possible influences during the manufacture of the substrate and the variation in the application process we suggest that suitability testing take place under actual conditions before production. No legally binding guarantee of certain properties or of the suitability for a definite application purpose can be derived from the above information.

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Ink series 110ZS:

Article No.	Product Name	Function	Addition
35696	Thinner, mild	Reduces viscosity (for polystyrene)	15 – 25%
100VR1482	Retarder, mild	Reduces viscosity (for polystyrene)	5 – 10%
110ZS0061	Varnish	Improves adhesion, but reduces opacity	2 – 10%
110ZS0062	Retarding paste	Increases drying, viscosity remains unchanged	2 – 10%
100VR1194	Matting powder	Matting agent, reduction of gloss level, increase of viscosity	2 – 8%
100VR133	Levelling agent, contains silicone	Improves ink flow, levelling and wetting	0,5 – 1 %

Ink series 380DD:

Article No.	Product Name	Function	Addition
38571	Thinner, standard	Reduces viscosity	15 – 25%
35353	Thinner, fast	Reduces viscosity with shorter drying time	15 – 25%
35928	Retarder, standard	Reduces viscosity	5 – 10%
34392	Retarder, slow	Reduces viscosity with longer drying time	2 – 5%
380DD0026	Retarding paste	Increases drying time, viscosity remains unchanged	2 – 10%
380DD0017	Varnish	Improves adhesion, but reduces opacity	2 – 10%
100VR1194	Matting powder	Matting agent, reduces gloss level, increases viscosity	2 – 8%
100VR133	Levelling agent, contains silicone	Improves ink flow, levelling and wetting	0,5 – 1 %
100VR1433	Hardener, standard	Improves adhesion and resistance. Pot life: 8-12 hours at 21°C	50%
100VR1491	Hardener, weatherproof	Improves adhesion and resistance. Pot life: 8-12 hours at 21°C	50 %

Series T200:

Article No.	Product Name	Function	Addition
100VR1450	Thinner, standard	Reduces viscosity	25 – 35%
100VR1170	Retarder, very slow	Reduces viscosity with extended drying time, very good mesh opening	25 – 35%
T200-0001	Verschnitt	Improves reactivity and adhesion, but reduces opacity	2 – 10%
100VR133	Levelling agent, contains silicone	Improves ink flow, levelling and wetting	0,5 – 1 %
100VR1433	Hardener	Improves adhesion and resistance. Pot life: 12 hours at 21°C	Max. 20%
100VR1491	Hardener, weatherproof	Improves adhesion and resistance. Pot life: 12 – 14 hours at 21°C)	Max. 20%
100VR1495	Slip additive	Increases mechanical resistance	0,5 – 1%

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