Technical Information

Efka® PX 4701

(old: Efka® 7701)

BASF
The Chemical Company

general	high-molecular-weight dispersant Efka® PX 4701 is a 100 % active dispersant of the acrylic block co-polymer family made by Controlled Free Radical Polymerization (CFRP, this technology allows to produce polymeric dispersants with defined polymer architecture and low poly-dispersity). It is well suitable for UV-curable, solvent- and water-based ink formulations. It is especially recommended for high-performance systems such as inkjet inks, UV-curable and water-based flexographic inks. Efka® PX 4701 is a highly efficient dispersant for organic pigments and carbon blacks. It provides a combination of strong viscosity suppression and excellent storage stability. Efka® PX 4701– as a solvent free and liquid product – is ideally suited for use in UV-curable ink systems. It is also well suited for use with the concept of resin-free pigment concentrates (RFPC) in UV-curable, water- and even solvent-based systems.
chemical nature	acrylic block copolymer

Properties

physical form	amber to brownish liquid	
shelf life	Efka® PX 4701 should be stored in a cool dry place. When kept in original unopened containers, it will keep up to 4 years from the date of manufacture.	
typical properties (no supply specification)	active ingredients	~ 100 %
	amine value	~ 40 mg KOH/g

Application

Efka® PX 4701 is a dispersant with broad compatibility towards different ink systems and pigments and is particularly recommended for these applications:

UV-curable	solvent-based	water-based
inkjet inks	inkjet inks ("strong solvent")	inkjet inks
flexographic inks	inkjet inks ("mild solvent")	flexographic inks

Efka® PX 4701 is excellent in stabilizing organic pigments in low-viscosity systems based on acrylate-functional UV monomers and in organic solvents or water.

The stabilizing properties of the dispersant are so strong that even stable resin-free concentrates in organic solvents can be made at use levels that would normally demand a complementary dispersing resin.

recommended concentrations

Appropriate use levels depend on pigment selection, dispersing medium and letdown composition. A ladder study should be performed to determine the optimum use level. Efka® PX 4701 should always be incorporated before addition of pigment.

The optimum use level of Efka® PX 4701 for inkjet ink formulations (UV-curable, solvent- and water-based) can generally be found in the range of 20–90 % Efka® PX 4701 as supplied, calculated on pigment load.

The optimum use level of Efka® PX 4701 for UV-curable flexographic inks can generally be found in the range of 2.5–10 % calculated on pigment load. Such levels offer significantly reduced mill base viscosity and nearly Newtonian flow.

The minimum required amount of dispersant can be estimated from the specific surface area or oil absorption value of the pigment. The calculated amount can be used as a starting point for ladder studies.

inorganic pigments	10–20 % active dispersant on oil absorption
organic pigments	15–45 % active dispersant on BET
carbon blacks	15–20 % active dispersant on DBP absorption

guideline formulations

for UV-curable inkjet mill base formulations with low viscosity and good stability

	Irgalite® Blue GLVO	Cromophtal® Jet Magenta 2BC	Irgazin® Yellow 2088
Colour Index	Pigment Blue 15:4	quinacridone	Pigment Yellow 151
Efka® PX 4701	3	9	6
propoxylated neopentylglycol diacrylate	82	76	79
pigment	15	15	15
total	100	100	100
dispersant on pigment weight	20 %	60 %	40 %

for UV-curable flexographic mill base formulations with good viscosity and flow

	Irgalite® Blue GLVO	Cromophtal® Violet GT	Irgalite® Orange F2G
Colour Index	Pigment Blue 15:4	Pigment Violet 23	Pigment Orange 34
Efka® PX 4701	0.75	1.5	0.75
grinding varnish (see recipe below)	69.25	68.5	69.25
pigment	30	30	30
total	100	100	100
dispersant on pigment weight	2.5 %	5 %	2.5 %

recipe for grinding varnish		
	polyester acrylate	60
	amine-modified polyester acrylate	38.5
	Irgastab® UV 22 liquid	1.5

Safety
When handling this product, please comply with the advice and information given in the safety data sheet and observe protective and workplace hygiene measures adequate for handling chemicals.

Note
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