

## KETJENFLEX® in Coatings&Inks

The coatings market is an important sector for Axcentive. The KETJENFLEX® range is specifically designed to aid superior film formation to obtain smooth, shiny films with no surface defects.

- KETJENFLEX® 8 is a sulfonamide specialty flexibilizer used in NC laquers and antifouling coatings
- KETJENFLEX® 12 is a biobased plasticizer, efficient as phthalate replacement in PVC plastisols
- KETJENFLEX® CP catalyzes amino resin systems like used in alkyd melamine or polyester melamine coatings. Below table gives some examples of use of the KETJENFLEX® range.

	KETJENFLEX® 8	KETJENFLEX® 12	KETJENFLEX® CP
Nitrocellulose lacquers	X		
Acid cured coatings			X
Antifouling coatings	X		
PVC plastisols		X	

KETJENFLEX® 8 is known to give *high gloss* to **nitrocellulose coatings** for example used on instruments.

It is also providing better *stain resistance* to oils and liquids when the coating is applied on furniture like tables and chairs.



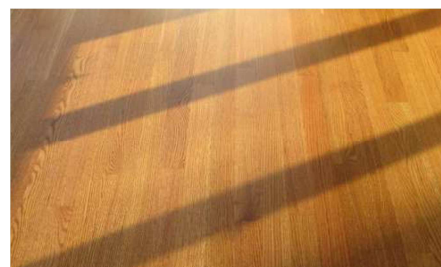
Another application for KETJENFLEX® 8 is in marine coatings. Specifically in **ablative antifouling coatings** KETJENFLEX® 8 provides *flexibility and adhesion promotion* on primer layers.



**Plastisols** from PVC are typically formulated with high amounts of plasticizer (up to 50-100 phr). In some cases still hazardous phthalate plasticizers are used. Certain phthalate plasticizers (DEHP, DBP, BDP) are banned in childrens toys in both EU and USA and the plan is to expand the ban in numerous consumer use applications.

KETJENFLEX® 12 forms a safe, *biobased alternative* for formulating PVC plastisols with *good rheology and excellent flexibility*. Typically plastisols for medical equipment, gloves and toys are made from PVC and KETJENFLEX® 12.

**Acid cured amino resins** are typically used in wood coatings for indoor use such a floors. In being essentially a 2 component system, KETJENFLEX® CP forms the hardener component *accelerating* the cure of the resin. Typically KETJENFLEX® CP is added at 2% to 3% based on solids to provide maximum cure response. Care should be taken not to overdose as it will cause hydrolysis of the resin forming butyric acids and other components.



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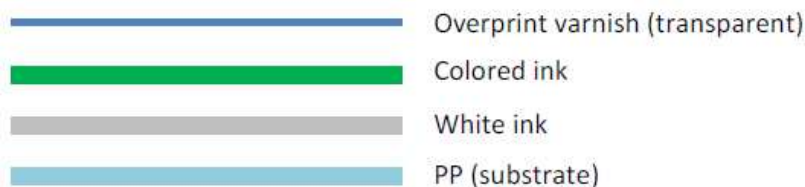
### KETJENFLEX® in Packaging Inks

Packaging systems are often consisting of different layers of inks directly printed on plastic films or based on laminated films printed in a reverse mode.

KETJENFLEX® MH and MS80 are coresins with strong plasticizing effect providing high gloss in OVP.

KETJENFLEX® 8 is a sulfonamide specialty flexibilizer and adhesion promotor used in lamination Inks.

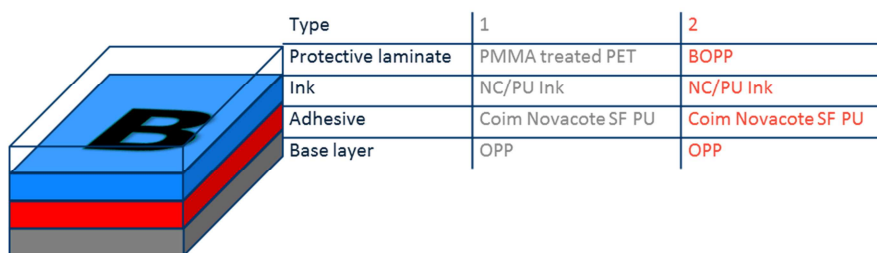
In **direct printing** the film is printed with multiple layers of white and colored ink. The print is sealed with a protective layer called overprint varnish (OVP) shown in picture below.



KETJENFLEX® MH resinous plasticizer is used in nitrocellulose based overprint varnishes to improve the *gloss and flexibility*. For polyamide based inks it increases flexibility below the freezing point.

NC based Overprint Varnish	Weight	Function
Polyamide resin	12.00	Resin system
Nitrocellulose varnish	17.50	Resin system, adhesion
PE wax	1.50	Mar/slip/scuff resistance
KETJENFLEX® MH	6.00	Flexibilizer/gloss
Isopropyl acetate	35.00	Solvents
N-propyl alcohol	25.00	Solvents
Additives	3.00	Modifiers
	100.00	

In **laminating systems** the ink is reverse printed on the PET or BOPP transparent top layer. It has been proven that an ink containing KETJENFLEX® 8 *prevents delamination* of the top layer from the base layers.



NC/PU ink for Lamination	Weight	Function
TR 52 Titanium oxide	34.00	Color
Surkopak 5255 Polyurethane resin	8.00	Flexible resin system
Nitrocellulose 70% in ethanol	50.00	Resin system
KETJENFLEX® 8	4.00	Flexibilizer
N-propyl alcohol	4.00	Solvents
	100.00	

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