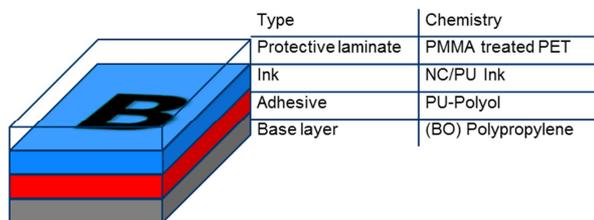


KETJENFLEX® 8 in Lamination Inks

KETJENFLEX® 8 is a renowned plasticizer and gloss enhancer in the ink industry. This study shows KETJENFLEX® 8 acts as adhesion promotor in lamination inks.

Multiwall packaging systems are built from multiple layers of plastic film brought together via lamination. On the inside of the top film also called the protective laminate the ink is reverse printed. This film is subsequently laminated using adhesives onto the base layer film. It has been proven that an ink containing KETJENFLEX® 8 *promotes adhesion* of protective laminate to the base layer.



In our test system we have used PMMA treated PET as protective laminate, a polyurethane adhesive as lamination bond and an OPP base layer. The ink was printed on the protective laminate. The formulation of NC/PU based white ink is described in below table. The purpose of the test was to compare KETJENFLEX® 8 (form. 1) vs 'standard' Dioctylsebacate (form. 2) as plasticizer.

Ink

NC/PU ink for Lamination	Form. 1	Form. 2	Function
TR 52 Titanium oxide	34	34	Color
Surkopak 5255 Polyurethane resin	8	8	Flexible resin system
DLX 3/5 Nitrocellulose (in ethanol)	50	50	Resin system
KETJENFLEX® 8	4		Plasticizer/adhesion promotor
Dioctylsebacate (DOS)		4	Plasticizer
N-propyl alcohol	4	4	Solvents
	100	100	

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Method

- Ink at 6 μm applied on PMMA treated PET by wire wound bar
- 1.6 μm film weight of Coim Novacote SF PU adhesive applied to unprinted OPP base layer
- Lamination of Printed PET – PU coated OPP
- Cure for 1 week at room temperature

Results

Test	Form. 1	Form. 2
Tensile Strength 25mm strip 180° peel	Film tear	120g/m ²
Failure Mode	Ink to PET	

In the case of form. 1 with KETJENFLEX® 8 as plasticizer the high bond (or tensile) strength of the lamination system caused film tear. With form. 2 based on DOS the films were relatively easily debonded at a force of 120g/m². With DOS the ink failed to adhere strongly to the PMMA treated PET.

Alternative films

Next to PMMA treated PET lamination systems might be built from other protective laminates and base layers. KETJENFLEX® 8 might be used in inks for those systems as well. Please see below a list of compatible lamination systems for inks formulated with KETJENFLEX® 8:

- PMMA treated PET
- Corona/flame treated PP
- PVCD coated BOPP
- Polyamide
- HDPE and LDPE
- Aluminium metallized PE