



**DEGALAN<sup>®</sup>**  
**UV-Curing Coatings**

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## Using Acrylic Resins to Enhance Properties of UV-Curing Coatings

Evonik Industries offers high-quality polymers that are suitable for modifying UV-curing coatings. UV-curing coatings, known as 100 % systems, are ideal for coating paper, wood and metal substrates, as well as plastic films. Rapidly soluble polymers are the key to success. The polymer is first dissolved in monomers. The solution thus obtained is then homogenized with oligomers, initiators, additives and optionally with pigments. After application, this liquid paint film cures within fractions of a second upon exposure to short-wave UV light. This curing process releases no volatile constituents such as solvents, and the resulting homogeneous paint film adheres mostly better than conventional coating systems.

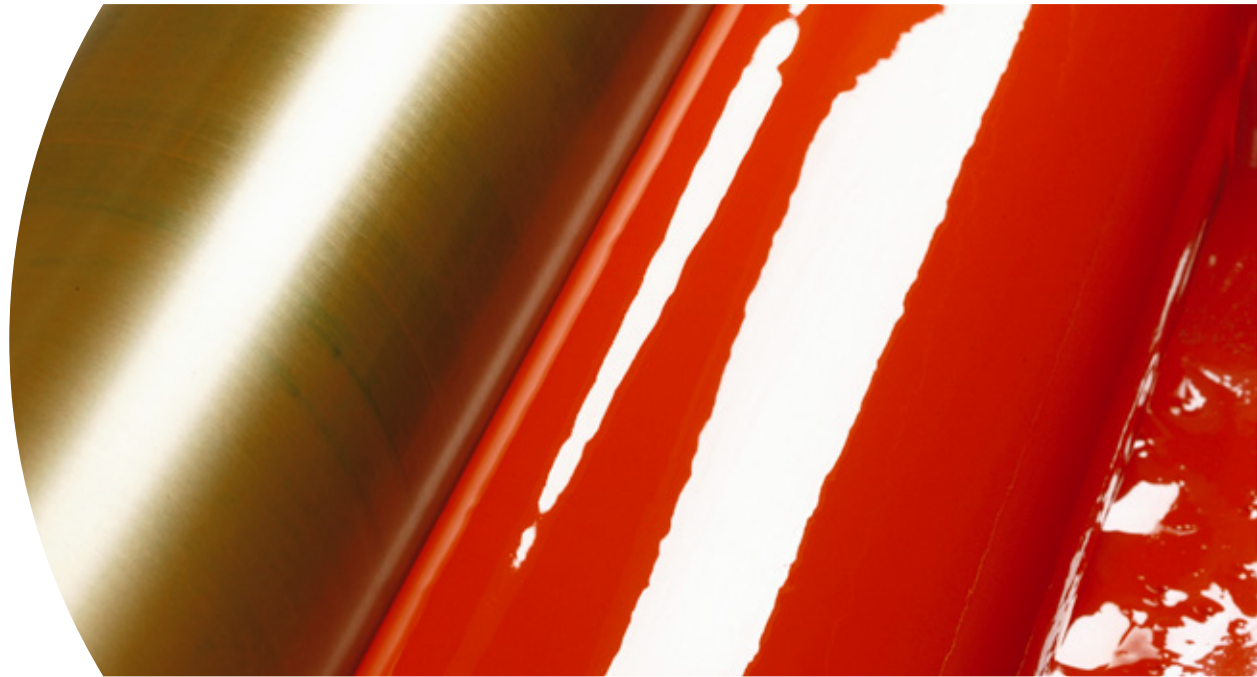
### Advantages of adding DEGALAN® products to UV-formulations:

- Increased adhesion, especially on plastic and metal surfaces
- Reduced shrinking of the coating
- Reduced cost of the formulation
- Low increase in viscosity of the UV-coating lacquers
- Good compatibility with oligomers

### Many DEGALAN® types are soluble in monomers with good viscosity.

Optimal results are attained by using low molecular types containing a low proportion of methyl methacrylate. The following table shows the viscosity of DEGALAN® types combined with the most widely used monomers. The values are based on a 30 wt.% polymer solution and viscosity expressed in mPas.





#### Viscosity (mPas) of DEGALAN® – Types in Monomers (30 wt.%)

Monomer/DEGALAN®	PQ 611 N	P 28 N	PM 381 N	PM 602	N 742 N	P 24 N	64/12 N
Isobornyl acrylate	2100	4600	3800	5700	11000	8600	4500
Trimethylolpropan triacrylate	not soluble	not soluble	not soluble	not soluble	not soluble	not soluble	not soluble
Tripropylen glykol diacrylate	4600	8800	6000	9500	18300	37500	8200
Hexandiol diacrylate	950	1700	1400	2000	3200	4400	1600

Monomer/DEGALAN®	LP 64/12	LP 64/11	LP 67/11	LP 63/11	LP 65/11	MB 319	
Isobornyl acrylate	3600	1500	not soluble	700	1200	20600	-
Trimethylolpropan triacrylate	75400	24500	not soluble	not soluble	19200	105000	-
Tripropylen glykol diacrylate	5500	1900	7800	950	1600	17200	-
Hexandiol diacrylate	1300	500	1700	300	450	750	-

#### Examples of Guideline Formulations

To improve the adhesion of UV-curing inks on plastic substrates add 10 % to 40 % of the following solution:

- 40 parts DEGALAN® LP 64/12
- 60 parts Tripropylene Glycol Diacrylate

Primer for BOPP-Foils:

- 20 to 40 parts DEGALAN® PQ 611 N
- 80 to 60 parts Hexandiol Diacrylate
- 2 to 8 parts initiator
- 0.6 parts defoamer

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**Evonik Industries AG**

Kirschenallee  
64293 Darmstadt  
Germany

PHONE +49 6151 18-4716

FAX +49 6151 1884-4716

[www.evonik.com](http://www.evonik.com)

[degalan@evonik.com](mailto:degalan@evonik.com)

[www.degalan.com](http://www.degalan.com)

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