

Surface additives for solvent based coatings

HANSA® ADD 4035

HANSA® ADD 4050

HANSA® ADD 4090

CHT
SMART CHEMISTRY
WITH CHARACTER.

Surface additives for solvent based coatings

New class of levelling and surface additives

Since a coating film has been applied the solvents within the coating material generally start to evaporate. This evaporation often leads to a cell structure on the surface due to changes in surface tension, temperature, solvent concentration or density. The effect can be avoided by adding suitable siloxane based levelling and surface additives, which decrease the surface tension of the coating to a constant level.

Following properties can be achieved by using these additives.

Properties

- ▶ Levelling
- ▶ Smoothness / Slip
- ▶ Anti-blocking- / Anti-sticking- / Anti-graffiti- effect
- ▶ Substrate wetting

Product overview and properties

Hydroxyl functional siloxanes are particularly suited for the use as levelling and surface additives in solvent based coating systems.

Due to their organic functionality they are able to react with isocyanate hardeners in PU systems so they'll stay durable in the coating matrix.

Which product fits the best depends mainly on the polarity of the whole coating system.

	HANSA [®] ADD 4035	HANSA [®] ADD 4090	HANSA [®] ADD 4050
Polarity (whole coating system)	High	Medium	Low
Dosage [%]	0.1 – 1.0		
OH number [mg KOH/g]	51 - 57	16 - 24	9 - 13
Smoothness/ Slip	+	++	+++
Levelling	+	++	+++
Anti-blocking- / Anti-sticking- / Anti-graffiti- effect	+	++	+++
Substrate wetting	++	+	+

Applications

CHT's surface additives are recommended in a wide range of coatings with different chemical basis like 2K PU- and 1K PU- systems, alkyd- or polyester systems. The additives can be used in clear as well as in pigmented coating systems and can be added to the coating during the production process or afterwards. The two following examples give an idea of possible applications.

Anti-graffiti effect

Exemplary with HANSA[®] ADD 4090 in a polyester stove enamel to achieve:

- ▶ Anti-graffiti properties

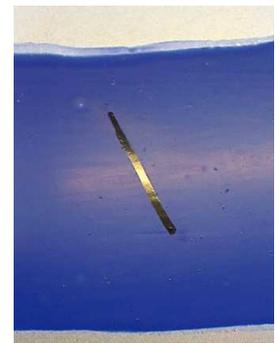
The anti-adhesive effect results from the low surface energy of the coating due to the nonpolar character of the additive on the coating surface. Therefore, it is easy to remove stains and stripes from the surface.

	Surface energy [mN/m]		
	Total	Nonpolar shares	Polar shares
Without additive	31.4	30.87	0.54
1 % HANSA [®] ADD 4090	15.23	14.09	1.14

The surface energy is calculated according to the OWRK method (Owens-Wendt & Kaelble).

The example below demonstrates that a coating with HANSA[®] ADD product cannot be marked properly with a permanent marker; the drawn line contracts and can be easily wiped off.

Without additive



1 %
HANSA[®] ADD 4090



Guide formulation 2K-PU clear coat

Exemplary with HANSA[®] ADD 4090 to achieve:

- ▶ Levelling
- ▶ Excellent slip
- ▶ Anti-sticking / Anti-graffiti properties:

Component A (Clear coat)		[%]	Remarks
1	WorléeCryl A 3160	74,27	OH-value= 6%; 198 mg KOH/g
2	Methoxypropylacetate	8,10	
3	Shellsol D40	2,68	
4	Butylacetate	13,88	
5	HANSA[®] ADD 4090	0,88	OH-value= 0.48-0.72%; 16-24 mg KOH/g
6	Tubassist KAT 1120 L	0,19	
		100,00	

Component B (Hardener)			
7	Desmodur N 3390 BA (Hardener)	39,30	NCO= 19.6%
8	Butylacetate	11,10	
		50,40	

Contrast cardboards - 60 µm	Without additive	HANSA [®] ADD 4090
Appearance	Homogeneous	
Lubricating film	No	
Edding test	Removal / Ghosting	
Edding - test - after 2d	- / -	+ / +
Edding 4000 - test - after 18d	- / - -	+ / +
Edding China slim - after 18d	- / - -	+ / +
Edding China wide - after 18d	- / - -	+ / +

