

Technical Information

EVP 002605 e, March 2005

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Page 1 of 3


The Chemical Company

® = registered trademark of
BASF Aktiengesellschaft,
unless otherwise indicated

Basonat® HI grades

aliphatic polyisocyanates for lightfast and weather-resistant two-pack polyurethane coatings

Nature

polyisocyanates based on isocyanurated hexamethylene diisocyanate

Range

Basonat® HI 100	solvent-free
Basonat® HI 168 S	68 % solution in Solvesso® ¹ 100
Basonat® HI 190 B/S	90 % solution in a 1:1 blend of n-butyl acetate and Solvesso® ¹ 100
Basonat® HI 268 B/S	68 % solution in a 1:1 blend of n-butyl acetate and Solvesso® ¹ 100
Basonat® HI 290 B	90 % solution in n-butyl acetate

Properties

Physical form

liquid

Shelf life

Basonat® HI grades are sensitive to humidity and must be stored in tightly sealed containers. In their original containers, they can be stored for at least ½ year at temperatures between 10 °C (50 °F) and 30 °C (86 °F). After re-filling from original containers, a shorter shelf life must be expected.

Product specification

		Basonat®				
		HI 100	HI 168 S	HI 190 B/S	HI 268 B/S	HI 290 B
NCO content (DIN EN ISO 11909)	%	21.5–22.5	14.5–15.5	19.3–20.3	14.5–15.5	19.3–20.3
non-volatile fraction (DIN EN ISO 3251)	%		67–69	89–91	67–69	89–91
viscosity at 23 °C (73 °F) (DIN EN ISO 3219)	mPa·s	2,500–4,000	50–65	450–650	39–55	400–600
shear rate D	s ⁻¹	2,500	500	10,000	500	10,000
color number (DIN ISO 6271)		≤ 60	≤ 60	≤ 60	≤ 60	≤ 60

Other properties

NCO equivalent weight (quantity of Basonat® as supplied, containing 1 Mol active NCO)	~ 191	~ 280	~ 212	~ 280	~ 212
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¹ registered trademark of Exxon Mobil Corporation

Crosslinking

Basonat® HI grades are used to crosslink most hydroxy acrylic resins, e. g., Macrynal^{®2} SM grades, and hydroxy polyesters.

Diluent tolerance

Basonat® HI grades can be diluted with esters such as butylacetate, ketones such as methyl ethyl ketone, glycolether acetates such as methoxypropyl acetate or with aromatic hydrocarbons such as Solvesso^{®1} 100 or xylene.

Basonat® HI grades should not be diluted to a polyisocyanate fraction of less than 40 % since otherwise turbidity, flocculation and/or sedimentation may occur during storage. Storage trials must be carried out in all cases.

Application**Field of application**

Basonat® HI grades are used to formulate particularly lightfast and weather-resistant coatings. Basonat® HI 268 S, Basonat® HI 190 B/S, Basonat® HI 268 B/S and Basonat® HI 290 B are solutions of Basonat® HI 100. There is not always sufficient compatibility with polyester resins containing hydroxyl groups.

Basonat® HI 100, being solvent-free, allows a broad choice of solvents. For instance, when – as in furniture coating – less volatile solvents would retard drying excessively, highly volatile solvents can be chosen.

Results from long-term weathering tests show that in most cases gloss retention is better than with polyisocyanates based on biurets of hexamethylene diisocyanate (Basonat® HB grades).

Their low viscosity allows the non-volatile fraction of coatings to be increased when Basonat® HI grades are used instead of Basonat® HB grades.

Processing

Computing of the theoretical equivalent quantity of polyisocyanate required for crosslinking is shown using Basonat® HI 100 and Macrynal^{®2} SM 636. Computation formula

$$\frac{0.075 \times [\text{OH value}] \times [\text{non - volatile fraction of OH component}]}{[\text{NCO}]}$$

Example: Macrynal^{®2} SM 636

non-volatile fraction (nvf)	70
OH value	135
Basonat® HI 100, NCO %	22

$$\frac{0.075 \times 70 \times 135}{22} = 32.2$$

² registered trademark of UCB Surface Specialties

Dosage rate for 100 g Macrynal^{®2} SM 636 as supplied:

Basonat® HI 100	32.2 g
Basonat® HI 168 S	47.3 g
Basonat® HI 190 B/S	35.8 g
Basonat® HI 268 B/S	47.3 g
Basonat® HI 290 B	35.8 g

It must be ensured that any solvents, pigments or extenders etc. used are free from compounds containing active hydrogen groups, e.g., water.

Safety

Basonat® HI grades are reactive polyfunctional isocyanates containing traces of hexamethylene-1,6-diisocyanate, requiring adequate protection measures. Thus they may only be used in industrial or professional applications. They are not suitable for do-it-yourself applications.

When handling these products, advice and information given in the safety data sheet must be complied with. Further, protective and workplace hygiene measures adequate for handling chemicals must be observed.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights, etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.