

Boost your sustainability profile

Sovermol® – natural oil-based,
performance driven polyols



 **BASF**
The Chemical Company

Performance-driven polyols for 2K PU systems based on natural oil

Sovermol® by BASF

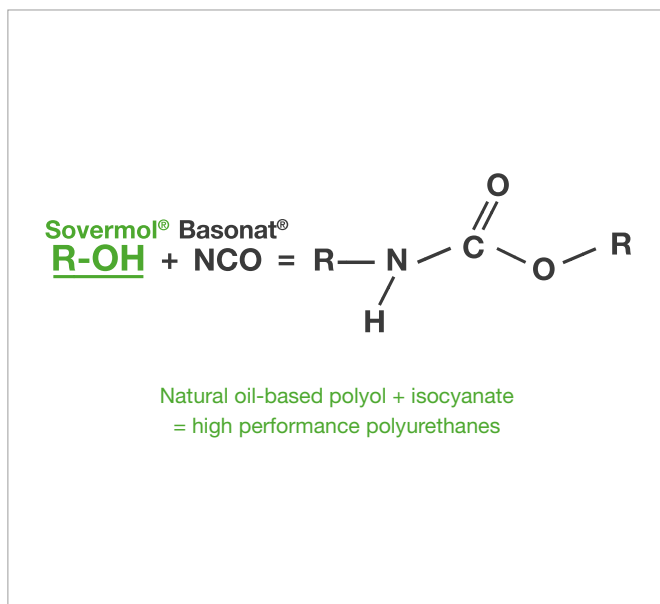
BASF's Sovermol® range of green polyols has been specially designed for use in coating, adhesive and putty applications. These natural oil-based polyols help you to comply with environmental standards while meeting even the toughest production regulations. What's more, improving the environmental profile of your processes will make you more attractive to both existing and new customers. Sovermol® is part of our 2K PU offering containing the crosslinker (Basonat® – NCO) and acrylic polyol (Joncryl®).

Natural-oil polyols are polyfunctional alcohols based on renewable raw materials like rapeseed oil, castor oil, soybean oil and palm kernel oil. The practical advantages of these products include good adhesion, excellent workability and good weathering properties. They can also be used on a wide variety of different substrates.

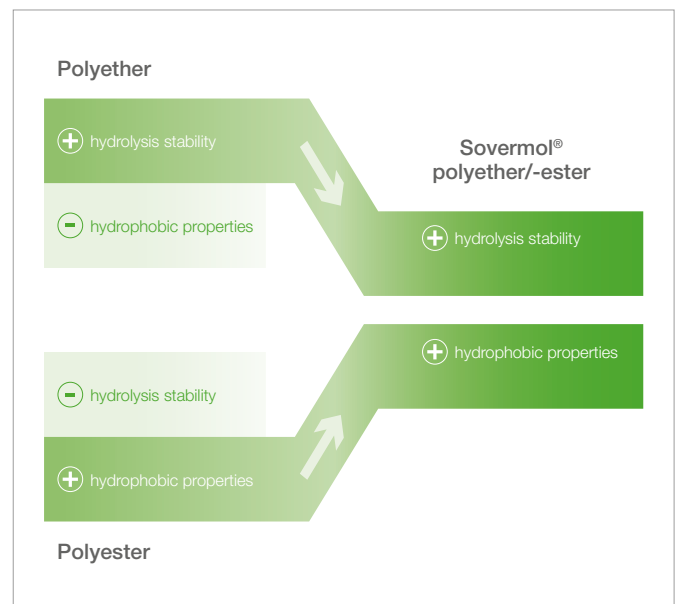
Polyols based on natural oils have a very pronounced hydrophobic character. For this reason, oleochemical polyols create significantly less carbon dioxide as a result of the side reaction of the isocyanate. In high humidity and high temperature conditions, these special polyols are able to create networks without bubbles or foam formation. Besides good hydrophobicity, polyols based on oleochemicals

exhibit excellent hydrolysis resistance, chemical resistance and UV resistance, as well as low viscosity. This latter characteristic is especially important in spraying applications. The modular system of our Sovermol® product group includes other important features, such as being 100 % solid, good gloss development and good pigment wetting characteristics. The latest generation of BASF Sovermol® products combines sustainability with performance, thus meeting the requirements of today's producers and consumers. Hardness can be regulated without using plasticizers and they feature excellent UV stability and long-term weathering performance. Some markets where Sovermol® is being used include concrete flooring, wind blades, pipeline coatings, protective coatings and adhesives.

Reaction scheme



Sovermol® – a chemical "hybrid" combining two singular good properties in one molecule



Natural oil-based polyols for polyurethane manufacture

Sovermol® by BASF

Product	Renewable raw material content	Type	Functionality	Medium OH-value	Medium OH-equivalent weight	Medium viscosity mPa·s (25°C)	Applications / properties
Sovermol® 45		branched polyether	4.0	570	98	3,000	co-polyol for floorings (combined with Sovermol® 750 UV stable), adhesives and casting materials <ul style="list-style-type: none"> ▪ improvement of glass transition temperature Tg ▪ high cross-linking density ▪ hydrophilic ▪ improvement of chemical resistance
Sovermol® 100		branched polyether	3.0	880	64	6,000	co-polyol for floorings (combined with Sovermol 750 UV stable), adhesives and casting materials <ul style="list-style-type: none"> ▪ improve glass transition temperature Tg ▪ high cross-linking density, hydrophilic ▪ improvement of chemical resistance ▪ drinking and potable water application possible upon product specific confirmation according to local legislation
Sovermol® 320	■ ■ ■ ■	branched polyether	2.8	310	180	1,000	<ul style="list-style-type: none"> ▪ drinking and potable water application possible upon product specific confirmation according to local legislation ▪ high shore D hardness (D~80) ▪ good mechanical properties
Sovermol® 650 NS	■ ■ ■ ■	dimer diol/ trimer triol	2.2	190	295	3,900	polyol for solvent-based printing inks <ul style="list-style-type: none"> ▪ high saponification stability ▪ tear resistance
Sovermol® 750	■ ■ ■	branched polyether/-ester	3.0	315	178	1,100 (20 °C)	polyol for UV stable and weathering resistant coatings and floorings <ul style="list-style-type: none"> ▪ high shore D hardness (D~80) ▪ hydrophobic ▪ high saponification stability ▪ excellent chemical resistance ▪ hydrolysis stable ▪ high Tg-polyol
Sovermol® 760	■ ■ ■	branched polyether/-ester	3.5	390	145	2,300	polyol for UV stable and weathering resistant coatings and floorings <ul style="list-style-type: none"> ▪ high shore D hardness (D~90) ▪ hydrophobic ▪ high saponification stability ▪ excellent chemical resistance ▪ hydrolysis stable ▪ extremely high Tg-polyol ▪ high heat resistance

■ ■ ■ ■ 80 - 100 %

■ ■ ■ 65 - 80 %

■ ■ 50 - 65 %

■ 30 - 50 %

Natural oil-based polyols for polyurethane manufacture

Sovermol® by BASF

Product	Renewable raw material content	Type	Functionality	Medium OH-value	Medium OH-equivalent weight	Medium viscosity mPa·s (25 °C)	Applications / properties
Sovermol® 805	■ ■ ■	branched polyether/-ester	3.5	170	330	3,500	universal polyol <ul style="list-style-type: none"> excellent impact resistance shore D hardness (D~70)
Sovermol® 810	■ ■ ■	branched polyether/-ester	3.3	230	244	900	polyol for encapsulation systems <ul style="list-style-type: none"> hydrolysis stable hydrophobic low viscosity high filler content possible
Sovermol® 815	■ ■ ■ ■	branched polyether/-ester	3.5	215	260	1,600	low viscosity universal polyol <ul style="list-style-type: none"> binder for pigment pastes crack-bridging floorings good chemical resistance hydrophobic good elastic memory effect
Sovermol® 818	■ ■ ■ ■	fatty-chemistry polyester	2.6	236	238	750	low viscosity universal polyol <ul style="list-style-type: none"> extremely hydrophobic good self-leveling properties excellent flexibility at temperatures below 0 °C good bonding properties
Sovermol® 819	■ ■ ■ ■	fatty-chemistry polyester	2.6	240	234	850	low viscosity universal polyol <ul style="list-style-type: none"> extremely hydrophobic good self-leveling properties good bonding properties drinking and potable water application possible upon product specific confirmation according to local legislation
Sovermol® 860	■ ■ ■ ■	aliphatic polyol	2.5	210	270	530 (20 °C)	<ul style="list-style-type: none"> gel time prolonger reactive diluent hydrophobic good adhesive properties on metal surfaces contains epoxy groups (Ep-O = 0.3 to 1.4 %)
Sovermol® 908	■ ■ ■ ■	aliphatic dimer alcohol	2.0	206	272	2,300	<ul style="list-style-type: none"> crack-bridging coatings good saponification stability hard elastic performance hydrophobic
Sovermol® 920		polycarbonat diol	2.0	55	1,020	9,500	<ul style="list-style-type: none"> for TPU applications
Sovermol® 1005	■ ■ ■ ■	slightly branched aliphatic diol	2.2	122	460	800 (20 °C)	<ul style="list-style-type: none"> hydrophobic plasticizer for polyol soft elastic performance drinking and potable water application possible upon product specific confirmation according to local legislation
Sovermol® 1006		polyester diol	2.0	60	935	8,000 (20 °C)	co-polyol for performance driven PU coatings (e.g. sports floor), elastomers and sealants <ul style="list-style-type: none"> good hydrolysis stability soft elastic performance

Product	Renewable raw material content	Type	Functionality	Medium OH-value	Medium OH-equivalent weight	Medium viscosity mPa·s (25°C)	Applications / properties
Sovermol® 1014	■ ■ ■ ■ ■	aliphatic triol	2.5	160	350	700	<ul style="list-style-type: none"> soft elastic performance drinking and potable water application possible upon product specific confirmation according to local legislation
Sovermol® 1052		linear polyether	2	55	1,020	325	<ul style="list-style-type: none"> co-polyol, in combination with other Sovermol® grades like 805 and 815 remarkably flexible coatings can be achieved hydrophilic
Sovermol® 1055	■ ■ ■ ■ ■	fatty acid ester with epoxy groups	-	Ep-content 4.6 - 5.0 %	EEW = 333	15 (20 °C)	<ul style="list-style-type: none"> non reactive diluent non VOC acc. to 2004/42/EU UV-stable performance plasticizer for polyols and epoxy-resins
Sovermol® 1058	■ ■ ■ ■ ■	fatty acid ester	-	-	-	5 (20 °C)	<ul style="list-style-type: none"> non-reactive diluent non VOC acc. to 2004/42/EU hydrophobic plasticizer for polyols
Sovermol® 1083	■ ■ ■ ■	branched polyether/-ester	3.3	170	330	2,100	<ul style="list-style-type: none"> universal polyol excellent impact resistance shore D hardness (D~60)
Sovermol® 1092	■ ■ ■ ■	branched polyether/-ester	2.8	283	198	800	<ul style="list-style-type: none"> high performance polyol for coatings, putties and adhesives low viscosity extremely hydrophobic hardness similar to epoxy systems hard elastic performance good self-leveling properties
Sovermol® 1093	■ ■ ■ ■	branched polyether/-ester	2.8	229	245	2,500	<ul style="list-style-type: none"> hardness similar to epoxy systems hard elastic performance
Sovermol® 1102	■ ■ ■ ■ ■	slightly branched polyether/-ester	2.1	230	245	400 (20 °C)	<ul style="list-style-type: none"> universal co-polyol gel time prolonger reactive diluent hydrophobic UV-stable soft elastic performance
Sovermol® 1106		branched polyether/-ester	-	245	229	115	<ul style="list-style-type: none"> high reactive polyol high shore D hardness (D~80) extremely short gel time usable as internal catalyst in PU systems
Sovermol® 1111	■ ■ ■ ■ ■	branched polyether/-ester	3.0	160	350	500	<ul style="list-style-type: none"> universal polyol for adhesives gel time prolonger soft flexible performance low viscosity hydrophobic
Sovermol® 1140	■ ■ ■ ■ ■	fatty chemistry polyester	2.7	210	267	1,000	<ul style="list-style-type: none"> universal polyol for adhesives gel time prolonger hard flexible performance hydrophobic

■ ■ ■ ■ ■ 80 - 100 % ■ ■ ■ ■ 65 - 80 % ■ ■ 50 - 65 % ■ 30 - 50 %

Properties of Sovermol® PUR raw materials

after stoichiometric cross-linking with MDI polymer

(NCO = 31 %, Functionality = 2,4)

Product	Gel time ASTM D 2471-88 (30g mass) (h:min)	1st day	2nd day	14th day	28th day
shore hardness A/D (EN ISO 868)					
Sovermol® 100	00:20	100 / 77	100 / 77	100 / 80	100 / 80
Sovermol® 320	00:46	71 / 22	98 / 64	100 / 81	100 / 83
Sovermol® 650 NS	00:10	85 / 39	90 / 48	94 / 51	94 / 54
Sovermol® 750	00:38	100 / 74	100 / 80	100 / 86	100 / 87
Sovermol® 760	00:19	100 / 86	100 / 88	100 / 90	100 / 90
Sovermol® 805	00:47	75 / 30	86 / 42	98 / 64	98 / 69
Sovermol® 810	00:55	77 / 32	86 / 42	98 / 66	98 / 67
Sovermol® 815	01:00	83 / 39	92 / 52	99 / 75	99 / 77
Sovermol® 818	01:24	60 / 18	78 / 31	94 / 50	96 / 60
Sovermol® 819	00:59	69 / 24	85 / 39	96 / 62	97 / 64
Sovermol® 860	06:10	n.m.	n.m.	85 / n.m.	97 / 62
Sovermol® 908	00:12	66 / 24	78 / 34	84 / 40	84 / 42
Sovermol® 920	06:36	n.m.	9 / n.m.	41 / n.m.	55 / 20
Sovermol® 1005	01:47	n.m.	4 / n.m.	22 / n.m.	38 / 10
Sovermol® 1014	01:35	50 / 17	62 / 24	67 / 26	67 / 26
Sovermol® 1052	n.m.	n.m.	n.m.	2 / n.m.	3 / n.m.
Sovermol® 1083	01:00	65 / 23	74 / 32	92 / 52	94 / 57
Sovermol® 1092	01:09	90 / 45	97 / 65	100 / 84	100 / 86
Sovermol® 1093	00:59	96 / 60	n.m.	100 / 87	100 / 87
Sovermol® 1102	03:15	n.m.	39 / 10	89 / 45	94 / 56
Sovermol® 1106	00:03	100 / 82	100 / 82	100 / 82	100 / 84
Sovermol® 1111	07:57	52 / n.m.	56 / n.m.	62 / 13	79 / 26
Sovermol® 1040	06:07	n.m.	50 / n.m.	98 / 61	99 / 69

Product	Tensile strength (MPa)	Elongation (%)	Tear resistance (N/mm)	Compression strength (MPa)	Bending strength (MPa)	Impact resistance (mJ/mm ²)	Abrasion (mg) (CS17 – 1000 g – 1000 rounds)
	ISO 527-3 Typ 5	ISO 527-3 Typ 5	ISO 34-1	ISO EN ISO 604	ISO EN ISO 178	DIN 53453	DIN 53754
Sovermol® 100	n.m.	n.m.	n.m.	n.m.	107	2	n.m.
Sovermol® 320	30	4	30	n.m.	36	12	n.m.
Sovermol® 650 NS	13	64	83	n.m.	5	126	8
Sovermol® 750	45	3	9	36	53	6	34
Sovermol® 760	42	1	6	45	57	4	15
Sovermol® 805	17	65	88	n.m.	8	121	68
Sovermol® 810	18	39	60	n.m.	10	34	79
Sovermol® 815	21	34	70	n.m.	22	24	28
Sovermol® 818	18	58	64	n.m.	6	113	77
Sovermol® 819	18	66	70	n.m.	7	107	88
Sovermol® 860	13	17	48	n.m.	6	9	100
Sovermol® 908	14	122	38	n.m.	1	96	n.m.
Sovermol® 920	1	91	3	n.m.	n.m.	7	n.m.
Sovermol® 1005	1	24	3	n.m.	0.3	n.m.	n.m.
Sovermol® 1014	3	59	6	n.m.	1	3	7
Sovermol® 1052	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Sovermol® 1083	14	76	46	n.m.	3	132	25
Sovermol® 1092	39	3	21	31	43	34	61
Sovermol® 1093	43	4	25	n.m.	54	34	n.m.
Sovermol® 1102	13	52	47	n.m.	2	38	75
Sovermol® 1106	46	4	22	40	63	13	n.m.
Sovermol® 1111	5	36	12	n.m.	1	33	n.m.
Sovermol® 1140	10	1	14	9	16	10	n.m.

