Raw Materials for High Performance Adhesives

Acclaim® Bayhydur® Desmocoll® Desmodur® Desmomelt®
Desmophen® Desmoseal® Dispercoll® Mondur® Multranol®

covestro

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Additional Information

The *Raw Materials for High Performance Adhesives* brochure highlights Covestro's most relevant and widely used products in the Adhesives and Sealants industry. If any of the raw materials listed do not match your specific needs, additional products may be available or in development. For supplemental information about our products, or for a general consultation regarding the use and formulation of these raw materials, please contact Covestro at **CAS_NA@covestro.com** or call **412-413-3983**.

Polyurethane Raw Materials for Adhesives

Dispercoll® U Polyurethane Dispersions

Dispercoll® U dispersions are aqueous, anionic dispersions of high molecular weight polyurethanes designed for adhesive applications. Products are available with crystalline or amorphous backbones. Dispercoll® U products do not contain co-solvents, are supplied at a pH of ~7, and may be blended to optimize performance.

Crystalline Dispercoll® U resins are distinguished by rapid development of bond strength in the heat activation bonding processes. Bond strength increases rapidly as the adhesive layer cools and recrystallizes. The amorphous dispersions exhibit room temperature tack and are especially useful for the lamination of flexible films. Dispercoll® U is frequently used with water-dispersible crosslinkers such as Bayhydur for improved performance. Dispercoll® U resins also comply with 21 CFR 175.105 (adhesives).

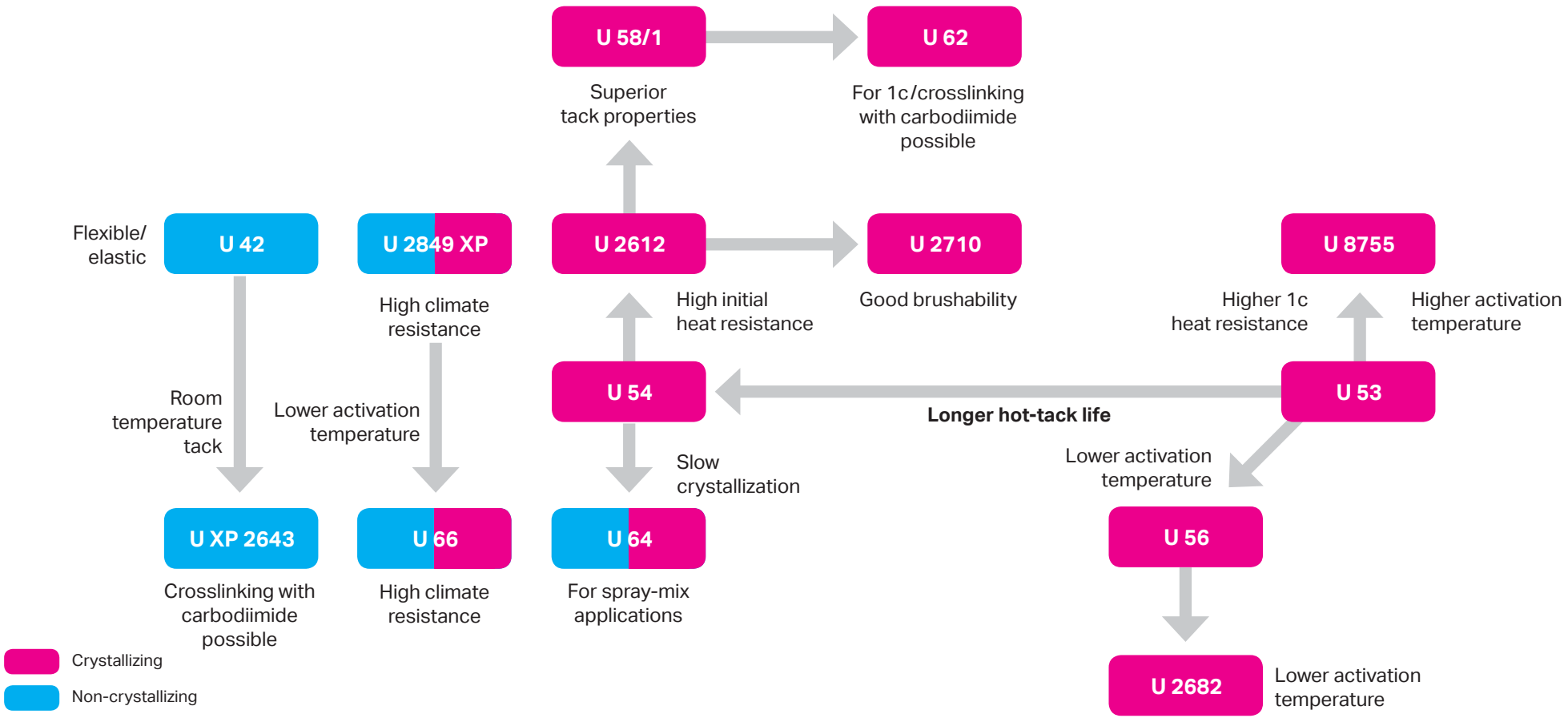
Typical Market Applications: These high performance raw materials can be used to formulate adhesives for the furniture, automotive interior, textile, footwear, construction and flexible packaging markets.

Dispercoll® U Dispersions for Adhesive Applications

Product	Chemical Base	Solids %	Viscosity mPa's	High Initial Green Strength	Crystallization Tendency*	Recommended Min. Bondline Temp. (°C)	Properties/Applications
Dispercoll® U 42	PES	50	150-800		--	80-100	Amorphous polyurethane resin for use in flexible packaging and for wet-bonding of textile substrates
Dispercoll® U 53	PES	40	50-600	X	++	60-70	Crystalline polyurethane resin for the formulation of heat activated adhesives. For use in furniture and automotive industries
Dispercoll® U 56	PES	50	50-900		+	55-65	Crystalline polyurethane resin for applications with low heat activation temperatures in the furniture and automotive industries
Dispercoll® U 8755	PES	45	<1000	X	++	80-100	Crystalline polyurethane resin for heat activation above 80ºC. Provides high heat resistance when used without a crosslinker
Dispercoll® U 58	PES	50	50-800	X	++	50-70	Especially suitable for heat activation bonding applications with high initial heat resisitance (e.g., footwear sole bonding). Good tack properties
Dispercoll® U 58/1	PES	50	<1200	X	+	50-70	Especially suitable for heat activation bonding applications with high initial heat resisitance (e.g., footwear sole bonding). Good tack properties
Dispercoll® U 62	PES	50	50-1000	X	+	50-70	Especially suitable for heat-activated one-component footwear adhesives in conjunction with polycarbodiimide crosslinker. Suitable for packaging film lamination
Dispercoll® U XP 2849	PC/PES	50	<2000		-	80-100	Suitable for adhesive applications which require improved climate resistance
Dispercoll® U 64	PES	42	<1000		+	RT-75	Especially suitable for wet adhesive applications with spray-mix coagulation. Also suitable for heat activation bonding
Dispercoll® U 66	PES/PC	48	<1000		-	55-75	Especially suitable for adhesive applications which require improved climate resisitance at low heat activation temperatures
Dispercoll® U 54	PES	50	40-600	X	+	60-70	Crystalline polyurethane resin for the formulation of heat activated adhesives for use in furniture, automotive, and footwear industries
Dispercoll® U XP 2643	PET	40	<1000		--	>RT	Amorphous polyurethane resin for use in flexible packaging applications
Disperocll® U 2612	PES	50	50-800	X	+	65-75	Especially suitable for heat activation bonding applications with high initial heat resistance (e.g., footwear sole bonding). High shear stability
Dispercoll® U 2710	PES	45	<1000	X	+	65-75	Especially suitable for heat activation bonding applications with high initial heat resistance (e.g., footwear sole bonding). High shear stability
Dispercoll® U 2682	PES	50	<1000		0	50-60	Lower molecular weight crystallizing polyurethane dispersion. Especially suitable for applications at low heat activation temperatures in the furniture and automotive industries and for packaging lamination. Good wetting properties due to low melt viscosity.

* ++: very fast | +: fast | 0: medium | - : low | -- : non-crystalizing
PES=Polyester PC=polycarbonate PET=Polyethylene

Dispercoll® U



The product data listed is provided as general information only. They are approximate values and are not considered part of the product specifications.
Note: Viscosity in mPa•s is 23˚C or 25˚C unless otherwise noted. Additional products are available. Contact (412) 413-3983 for more information.

Bayhydur® Water Dispersible Crosslinkers for Polyurethanes

Bayhydur® products are solvent-free water dispersible crosslinkers for use in two-component waterborne polyurethane adhesive applications. These products will not discolor since they are based on modified HDI. They react under ambient conditions and improve the resistance of adhesive bonds to moisture, heat, plasticizers and many solvents.

Bayhydur® Water Dispersible Crosslinkers for Polyurethanes

Product	Solids %	NCO Wt. %	Equiv. Wt.	Viscosity mPa's	Features/Benefits
Bayhydur® 302*	100	17.3	242	2300	Versatile
Bayhydur® 303*	100	19.3	218	2400	Good chemical resistance, weather stable, higher functionality
Bayhydur® 304	100	18.2	230	4000	High functionality, good chemical resistance, good dispersability
Bayhydur® ultra 305*	100	16.2	260	6500	Good dispersability, weather stable, non-yellowing
Bayhydur® ultra XP 2487/1	100	20.3	207	900	Outstanding weather stability and gloss retention, along with high chemical resistance and non-yellowing
Bayhydur® 2547	100	22.5	187	600	Readily dispersible, ionic modification
Bayhydur® 2655	100	20.8	202	3500	Easy mixing, outstanding chemical resistance, fast drying and high ultimate hardness
Bayhydur® 401-70 MPA/X**	70	9.4	440	600	Weather stable, non-yellowing, improved hardness, good adhesion and drying properties

*FDA Compliant | **IPDI Based | ***Solvent: MA/X (1:1)

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Desmocoll® Polyurethanes for Solvent-based Adhesives

Desmocoll® products are hydroxyl-terminated high molecular weight polyurethanes specifically developed for the production of solventborne adhesives and are supplied as small granules. Desmocoll® grades differ in their degree of crystallinity, heat resistance, adhesion to specific substrates and their solution viscosity. Adhesives based on Desmocoll® are used in the heat activation bonding process and produce optimum performance when used with Desmodur® R crosslinkers for polyurethanes.

Desmocoll® resins are suitable for the formulation of adhesives for use on a variety of materials, e.g. leather, rubber, textiles, wood, many plastics (including PU elastomers), plastic films and aluminum foils. The Desmocoll® 400 and 500 series products enable excellent adhesion to PVC substrates and have high resistance to PVC plasticizers. They are suitable for footwear, packaging and furniture applications.

Desmomelt® Polyurethane Resins for Adhesives

The Desmomelt® product line is a series of fast-crystallizing high molecular weight thermoplastic resins designed for use in solvent-free adhesives. Desmomelt® 540 granules can be extruded into high quality hot melt adhesive films and have outstanding adhesion to a wide variety of substrates including plasticized PVC. Desmomelt® VP KA 8702 is supplied as a powder and it is typically used in scatter coating operations for the preparation of technical textiles as well as footwear and leather goods.

Desmocoll® and Desmomelt® Hydroxyl Functional Polyurethane Resins for Adhesives

Product	Solution Viscosity at 23 °C (15% in MEK) APPROX. [mPa*s}	Min. Activation Temp °C	Crystallization Time	Thermoplasticity	Softening Point APPROX. [°C]	Appearance	Properties/Applications
Desmocoll® 140	90	45	48h	high	<40	Transparent	Foil lamination
Desmocoll® 176	600	45	48h	high	45	Turbid	Textile lamination, grinding belts
Desmocoll® 400/1 **Desmocoll® 400/2** **Desmocoll® 400/3**	600 1000 1750	50	30 min.	high	50	Transparent	Soluble in methylene chloride, conveyor belt repair
Desmocoll® 406	600	50	72h	high	40	Turbid	Contact adhesives, lamination
Desmocoll® 500/1 **Desmocoll® 500/2**	225 600	50	5 min.	high	50	Transparent	Soluble in toluene and methylene chloride, conveyor belt repair
Desmocoll® 526	600	50	48h	medium	60	Turbid	Contact adhesives, lamination
Desmocoll® 530/1 **Desmocoll® 530/2** **Desmocoll® 530/3**	690 1200 1950	55	30 min.	low	75	Transparent	Fast crystallizing, high 1K heat resistance
Desmocoll® 540/1 **Desmocoll® 540/2** **Desmocoll® 540/3** **Desmocoll® 540/4** **Desmocoll® 540/5**	300 750 1250 1800 2850	60	10 min.	low	80	Slightly turbid	Premium grade, highest in 1k heat resistance
Desmocoll® 621/0 **Desmocoll® 621/1** **Desmocoll® 621/2**	1250 1800 2600	55	2h	low	70	Transparent	General Purpose
Desmocoll® XP 2597/2 **Desmocoll® XP 2597/3** **Desmocoll® XP 2597/4** **Desmocoll® XP 2597/5**	750 1250 1850 2650	45	50 min.	low	75	Slightly turbid	Footwear, good initial heat resistance
Desmomelt® 540 series	300-1200	60	10 min.	low	80	Slightly turbid	Extruded flat products made from this raw material (hot melt adhesive films and fleeces) have outstanding adhesion on a large number of materials. It has high initial bond strength and thermal stability
Desmomelt® VP KA 8702	200	50	10 min.	low	80	Slightly turbid	Powder, mainly used in textile and leather lamination

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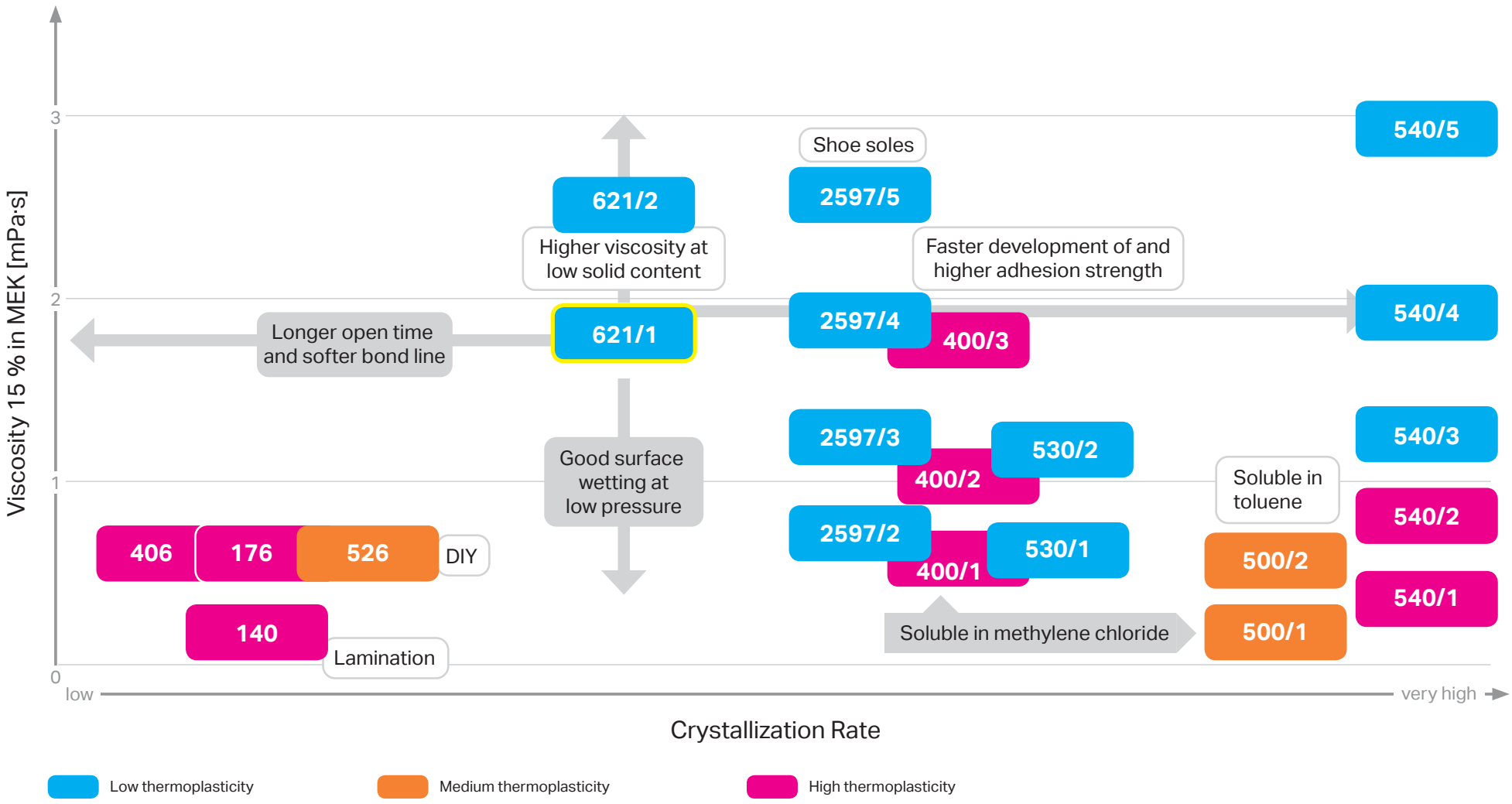
Desmocoll®



Thermoplasticity describes the softening behavior of a thermoplastic polymer. The more the polymer flows at a given temperature, the higher the thermoplasticity.

Desmodur® R and Desmodur® L Crosslinkers for Polyurethane Adhesives

Desmodur® R crosslinkers for polyurethanes are highly effective for solventborne adhesives based on Desmocoll® resins (supplied in ethyl acetate).

Product	Chemical Description	Solids %	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® RC	TDI Trimer	35	7.0	600	3	Light-colored product, slower cure than Desmodur® RE or RFE
Desmodur® RFE	Tris-(p-isocyanatophenyl) thiophosphate	27	7.2	583	3	Rapid curing, high heat resistance, minimal discoloration of bond
Desmodur® L75	TDI Adduct	75	13.3	315	1600	Crosslinker for two-component adhesives

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Aromatic Raw Materials for Reactive Polyurethane Adhesives

Mondur® Aromatics for Polyurethanes

Mondur® MDI and TDI are raw materials used for the synthesis of prepolymers in order to formulate two-component adhesives or one-component moisture curing adhesives.

Typical Market Applications: These aromatic raw materials can be used to formulate adhesives for flexible packaging, automotive composites, wood for furniture and construction markets.

MDI and TDI Aromatic Crosslinkers

Product	Chemical Description	Commercial Form	NCO Wt. %	Viscosity mPa•s	Equiv. Wt.	Typical Funct.	Features/Benefits
Mondur® MB	4,4'-isomer of MDI	Fused, flaked or molten	33.6	4.1 molten	125	2	High performance aromatic diisocyanates (with BHT); special storage temperature required
Mondur® MQ	4,4'-isomer of MDI	Fused or molten	33.6	4.1 molten	125	2	High performance aromatic diisocyanates; special storage temperature required
Mondur® MLQ	Mixture of 4,4'-and 2,4'-isomers of MDI	Light yellow liquid	33.6	10	125	2	Monomeric liquid at room temperature for flexible prepolymers with lower reactivity
Mondur® TDS	2-4'-isomer of TDI	Clear to light yellow liquid	48	3	87.5	2	For production of high reactivity rate prepolymers with low monomer content
Mondur® TD-65	65/35 mixture of 2,4-and 2,6-isomers of TDI	Clear to light yellow liquid	48	3	87.5	2	Unique isomer ratio
Mondur® TD-80	80/20 mixture of 2,4-and 2,6-isomers of TDI	Clear to light yellow liquid	48	5	87.5	2	Excellent flowability

Reactive Resins for Adhesives

Mondur® polymeric crosslinkers for polyurethanes can be utilized as supplied or can be used to prepare prepolymers for two-component 100% solids adhesives. Products have a range of functionalities to provide formulation flexibility. Products with an enhanced level of 2,4'-MDI exhibit slower reactivity than analogs based solely on 4,4'-MDI. Low viscosity, low functionality grades are preferred for prepolymer preparation.

Mondur® modified MDI products and Mondur® and Desmodur® prepolymers are designed for use in one- and two-component adhesive applications.

Typical Market Applications: Mondur® products are used in the manufacturing of one- and two-component structural adhesives, for automotive, construction and wood bonding.

Polymeric MDI

Product	Chemical Description	Solids %	NCO Wt. %	Viscosity mPa•s	Equiv. Wt.	Typical Functionality
Mondur® MR Light	Polymeric MDI	100	31.5	200	133	2.8
Mondur® MRS	2,4'- enriched Polymeric MDI	100	31.5	200	131	2.8
Mondur® 448	Modified Polymeric MDI	100	27.7	140	152	2.2
Desmodur® VL	Modified Polymeric MDI	100	31.5	90	133	2.4
Mondur® 582	2,4'- enriched Polymeric MDI	100	32.0	70	131	2.5
Mondur® MR-5	Polymeric MDI	100	32.3	55	130	2.4
Mondur® MRS-4	2,4'- enriched Polymeric MDI	100	32.5	40	129	2.4
Mondur® 1488	2,4'- enriched Polymeric MDI	100	32.4	28	130	2.3

MDI Prepolymers

Product	Solids %	NCO Wt. %	Viscosity mPa•s	Equiv. Wt.	Properties/Applications
Desmodur® E 744	100	23.5	600	179	Reduced reactivity version of Mondur® PF
Mondur® 1453	100	16.5	600	254	Enriched in 2,4'-MDI; slower reactivity
Desmodur® E 28	100	16.5	6400	255	One-component moisture-cure adhesives for bonding wood and other substrates
Desmodur® E 23A	100	15.4	1800	272	One-component moisture-cure adhesives for bonding wood and other substrates
Desmodur® MP-101	100	10.0	2500	420	Low viscosity flexible prepolymer
Desmodur® E 743	100	8.0	2500	525	Low viscosity flexible prepolymer

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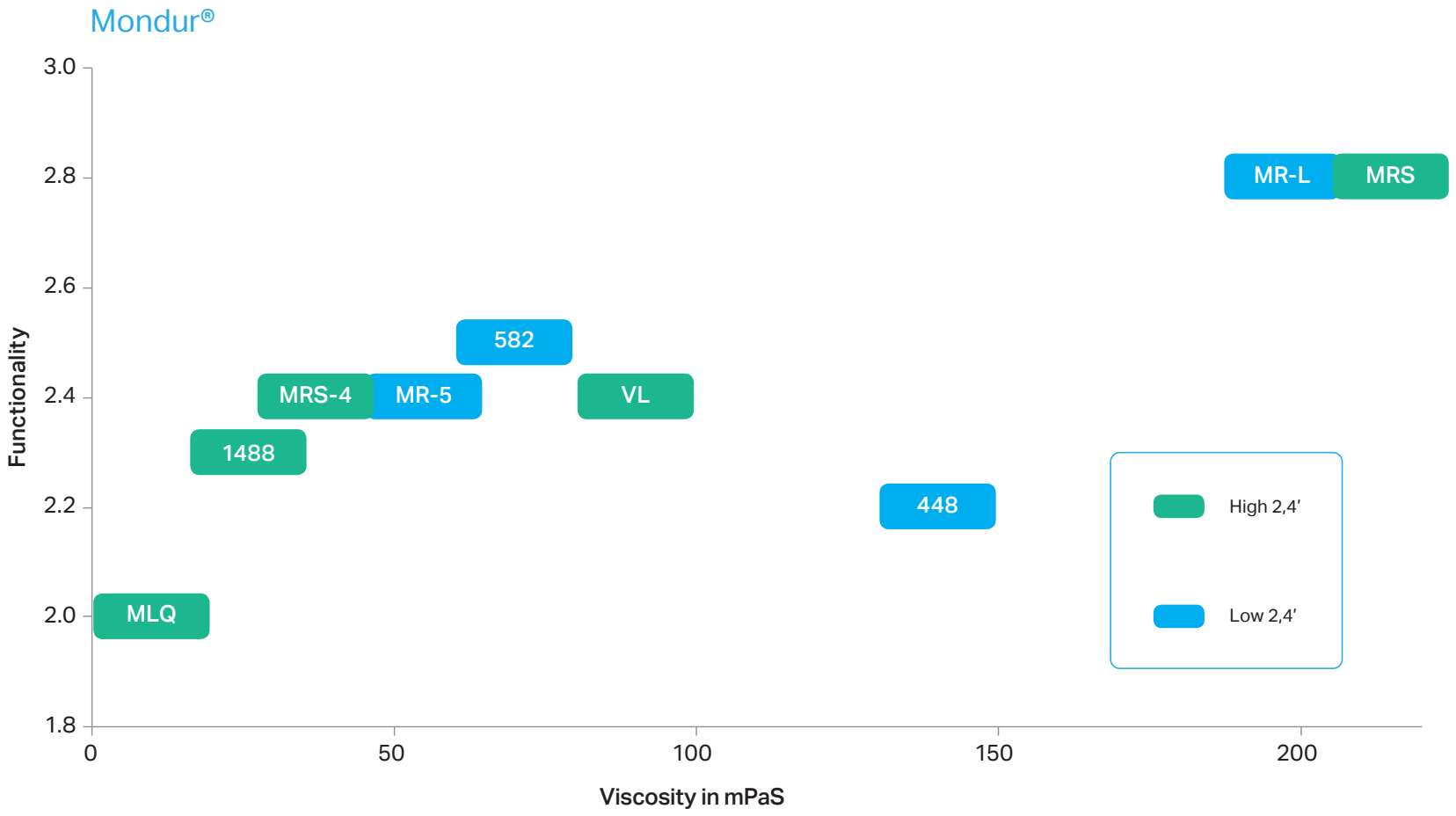
Liquid modified Mondur® products are based on 4,4'-MDI, have high NCO content, and are fast curing co-reactants for two-component adhesives.

Modified MDI

Product	Chemical Description	Commercial Form	Solids wt %	NCO Wt. %	Viscosity mPa•s	Equiv. Wt.	Typical Funct.	Properties/Benefits
Mondur® PF	Modified MDI	Light yellow liquid	100	22.9	650	183	2.0	General purpose liquid-modified MDI
Mondur® CD	Uretonimine modified MDI	Clear to yellow liquid	100	29.5	50	143	2.2	Low viscosity; high NCO content

MDI Allophanates

Product	Chemical Description	Solids %	NCO Wt. %	Viscosity mPa•s	Equiv. Wt.	Typical Funct.	Properties
Mondur® MA 2300	Allophanate-modified 4,4' - MDI	100	23.0	450	183	2.0	Lower freeze point analog to Mondur® PF
Mondur® MA 2603	Allophanate-modified 4, 4'-MDI prepolymer	100	16.0	1050	263	2.0	Flexible prepolymer
Mondur® MA 2902	Allophanate-modified 4,4' - MDI	100	29.0	40	145	2.0	High NCO content



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Aliphatic Raw Materials for Reactive Adhesives

Desmodur®

Desmodur® aliphatic raw materials are designed for specialty adhesive applications requiring light and hydrolytic stability. The monomers are starting materials for the synthesis of high molecular weight polymers. The Desmodur® N series are low monomer (typically less than .15%) HDI based polyisocyanate crosslinkers for two-component polyurethanes. Products are available in a wide variety of NCO content, functionality and viscosity. Aliphatic prepolymers are also available.

Monomeric Aliphatic Diisocyanates

Product	Chemical Basis	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® H	HDI	≥49.7	84	3	Provides flexibility and weather stability
Desmodur® I	IPDI	≥37.5	111	10	Provides optical clarity, hardness and weather stability
Desmodur® W	H_{12}MDI	≥31.8	132	30	Provides optical clarity, weather stability, superior mechanical properties and resistance to hydrolysis

HDI Biuret

Product	Chemical Basis	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® N 100A	HDI	22.0	191	7500	Non-yellowing, high chemical resistance
Desmodur® N 3200A	HDI	23.0	181	2150	Lower viscosity than Desmodur® N 100

HDI Trimer

Product	Chemical Basis	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® N 3300A	HDI	21.8	193	2500	Highly flexible, non-yellowing
Desmodur® N 3800	HDI	11.0	382	6000	Highly flexible, non-yellowing

Low Viscosity Aliphatic Polyisocyanates

Product	Chemical Basis	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® N 3400	HDI	21.8	193	152	Very low viscosity
Desmodur® N 3600	HDI	23.0	183	1100	Low viscosity, non-yellowing
Desmodur® N 3900	HDI	23.5	179	700	Low viscosity, non-yellowing, good functionality/viscosity balance

Aliphatic Prepolymers

Product	Chemical Basis	NCO Wt. %	Equiv. Wt.	Viscosity mPa•s	Features/Benefits
Desmodur® WP 260	H_{12}MDI	26.4	159	≤500	Clear, light-stable, room-temperature processable with high hardness capabilities, used in coatings and adhesives
Desmodur® XP 2617	HDI	12.5	336	4250	Low monomer, largely linear prepolymer
Desmodur® E 30600	HDI	6.0	700	500	Flexibilizing properties

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Polyether Polyols for Reactive Adhesives

Acclaim®, Multranol® and Arcol® polyether polyols are raw materials for the preparation of prepolymers or to formulate two-component reactive adhesives. Acclaim® polyols have a true functionality of two or three and are preferred polyols for prepolymer synthesis. The amine-based Multranol® polyols promote fast gel times and the build-up of high crosslink density. Arcol® and Multranol® specialty polyols have a lower molecular weight and are particularly useful for adhesive applications. Flexible polyols are suitable for general purpose applications.

Low-Monol Polyols

Product	Functionality	OH No. mg KOH/g	Molecular Weight	Viscosity mPa•s	EO Tip*
Acclaim® 2200	2	56	2000	370	No
Acclaim® 3300N	3	57.6	3000	524	No
Acclaim® 4200	2	28	4000	968	No
Acclaim® 6300	3	28	6000	1470	No
Acclaim® 8200	2	14	8000	3000	No

Flexible Polyols

Product	Functionality	OH No. mg KOH/g	Molecular Weight	Viscosity mPa•s	EO Tip*
Arcol® 11-34	3	35	4800	840	Yes
Arcol® E-351	2	40	2800	490	Yes
Arcol® F-3022	3	56	3000	480	No
Arcol® F-3222	3	52	3200	520	No
Arcol® LHT-42	3	41	4200	700	No
Arcol® PPG-1000	2	111	1000	145	No
Arcol® PPG-2000	2	56	2000	370	No
Arcol® PPG-3025	2	37	3000	570	No
Arcol® PPG-4000	2	28	4000	980	No
Multranol® 3900	3	35	4800	840	Yes
Multranol® 3901	3	28	6000	1120	Yes
Multranol® 9111	2	28	4000	820	Yes
Multranol® 9139	3	28	6000	1150	Yes
Multranol® 9190	2	28	4000	900	Yes
Multranol® 9199	3	37	4550	1100	Yes

Specialty Polyols

Product	Functionality	OH No. mg KOH/g	Molecular Weight	Viscosity mPa•s	EO Tip*
Arcol® LG-650	3	650	260	820	No
Arcol® LHT-112	3	112	1500	280	No
Arcol® LHT-240	3	238	700	250	No
Arcol® PPG-425	2	263	425	70	No
Arcol® PPG-725	2	147	760	125	No
Multranol® 4012	3	370	450	650	No
Multranol® 9158	3	470	356	455	No
Multranol® 9198	2	515	218	55	No
Softcel® U-1000	3	168	1000	200	No

Amine-Based Polyols

Product	Functionality	OH No. mg KOH/g	Molecular Weight	Viscosity mPa•s	EO Tip*
Multranol® 4050	4	630	360	18000	No
Multranol® 4063	4	460	488	18000	No
Multranol® 8114	4	395	570	8200	No
Multranol® 8120	4	360	623	25000	No
Multranol® 9138	3	700	240	785	No
Multranol® 9170	3	350	480	275	No
Multranol® 9168	4	60	3740	675	No
Multranol® 9181	4	770	290	36000	No

*EO tip indicates capped with ethylene oxide

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Polyester Polycarbonate Diols for Reactive Adhesives

Desmophen® C polyester polycarbonates are aliphatic difunctional polyols used in applications requiring high hydrolytic and elevated temperature stability and lightfastness.

Linear Polycarbonate Polyesters

Product	Equiv. wt.	OH No. mg KOH/g	Water, % max.	Viscosity mPa•s	Acid # mg KOH/g, max.
Desmophen® C 1100	515	110	0.05	3200	0.1
Desmophen® C 1200	1000	56	0.05	16500	0.1
Desmophen® C 2102	500	112	0.05	410@75˚C	0.1
Desmophen® C 2202	1000	56	0.05	2300@75˚C	0.1
Desmophen® C XP 2613	1000	56	0.1	3500@75˚C	0.1
Desmophen® C XP 2716	326	170	0.05	4100	0.1

Moisture-Curing Aliphatic Silane-Terminated Polyurethanes

Desmoseal® S Silane-Terminated Polyurethanes for Sealants and Adhesives

Desmoseal® S silane-terminated polyurethanes (STP) combine the benefits of a polyurethane backbone and a silane-based curing mechanism. STPs provide a unique combination of excellent cohesive strength and adhesive properties.

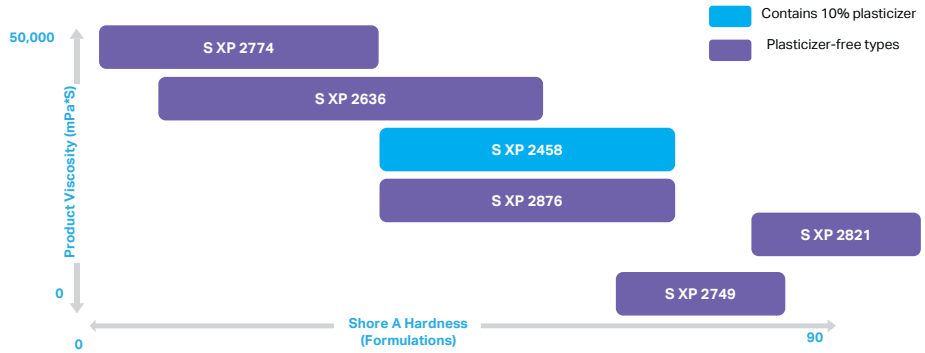
Covestro offers six Desmoseal® S grades from low-modulus with very high elongation for sealants, to high hardness and high tensile strength for structural adhesives.

Typical Market Applications: Desmoseal® S products are used to formulate sealants and adhesives for the building and construction industry, as well as for industrial and transportation applications.

Moisture-Curing Aliphatic STP Prepolymers

Product	Solids %	Viscosity mPa•s	Features/Benefits
Desmoseal® S XP 2458	90% in Mesamoll	38,000	Adhesion to multiple substrates
Desmoseal® S XP 2636	100	40,000	For coatings, sealants and adhesives
Desmoseal® S XP 2749	100	4,500	For flexible adhesives and coatings
Desmoseal® S XP 2774	100	50,000	For highly flexible adhesives and low modulus sealants
Desmoseal® S XP 2821	100	20,000	For hard adhesives and coatings
Desmoseal® S XP 2876	100	25,000	Plasticizer free resin for wood adhesives

Desmoseal® S



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Polychloroprene Latex and Fumed Silica Dispersions

Dispercoll® C Polychloroprene Dispersions

Dispercoll® C latices are used in the formulation of water-based contact adhesives. Adhesives based on Dispercoll® C 74 exhibit a long open tack time and high heat resistance. Dispercoll® C 84 has a strong crystallization rate which produces adhesives that rapidly develop bond strength. Dispercoll® C84 is the main component in foam bonding formulations due to its ability to yield immediate wet tack when properly formulated. Dispercoll® C2325 is a rapidly crystalizing polychloroprene that is designed to have improved pH stability. Dispercoll® C VP LS 2372/1 is a soft polymer with a slow crystallization rate. This raw material is typically blended with other Dispercoll® C products to extend open time, create a softer bond line, and improve wetting of lower surface energy substrates. Dispercoll® C XP 2694 is a fast crystallizing high strength adhesive raw material with excellent shear stability and high wet tack properties. Dispercoll® C dispersions are fully compatible and can be blended to optimize performance for specific applications.

Properly formulated Dispercoll® C can be used as a substitute for solventborne contact adhesives while maintaining excellent performance and improving environmental and worker safety issues.

Typical Market Applications: The rapid development of bond strength is ideal for furniture foam bonding applications and adhering decorative laminates.

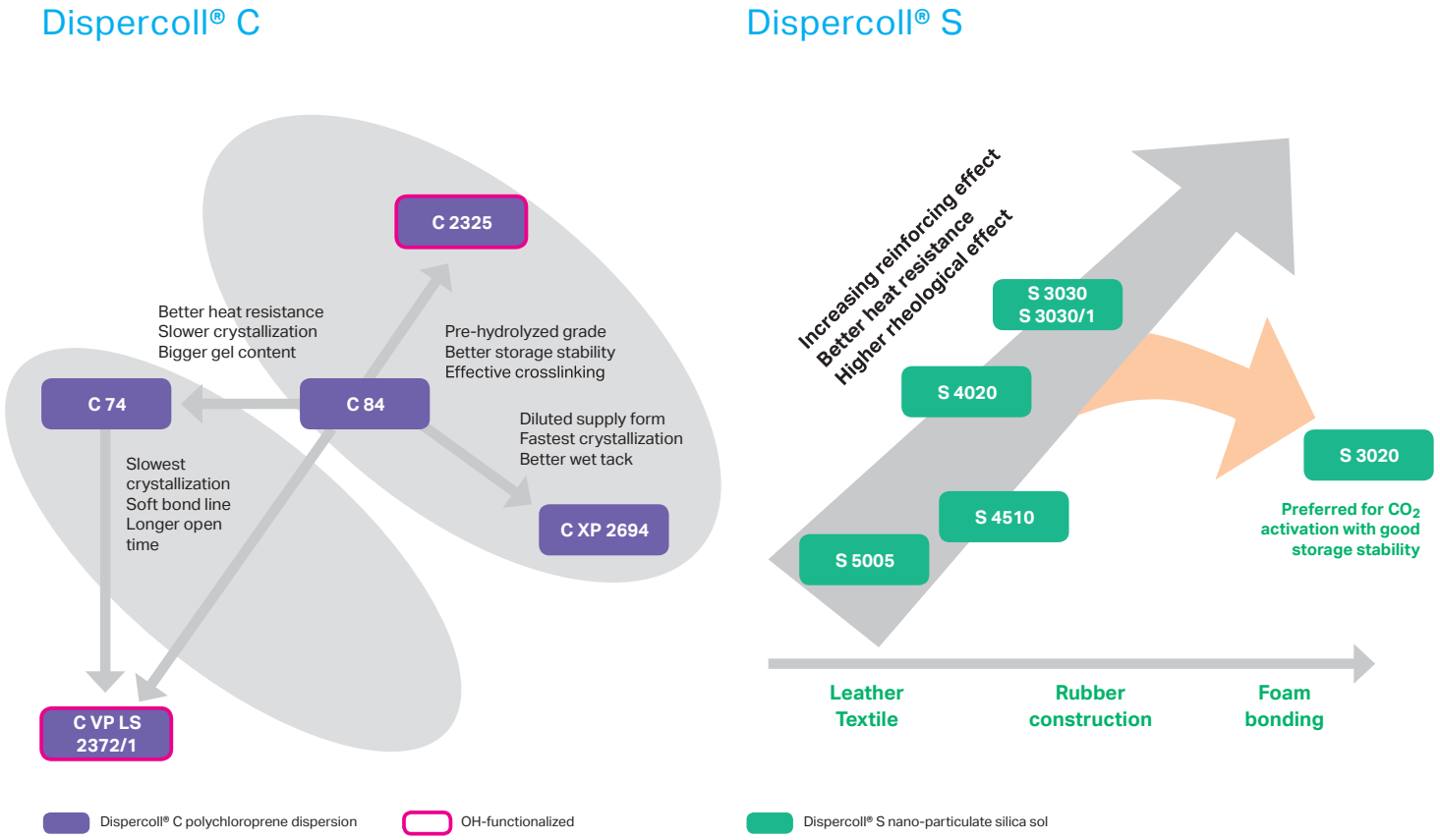
Dispercoll® C Polychoroprene Aqueous Dispersions for Adhesive Applications

Product	Solids wt. %	pHapprox.	Crystallization	Gel Content	Features/Benefits
Dispercoll® C 74	58	13	medium	medium	Provides a medium rate of crystallization featuring heat resistance and long open time
Dispercoll® C 84	55	13	high	very low	Highly crystalline polymer with fast development of high strength bonds
Dispercoll® C 2325	55	12	high	medium-low	Highly crystalline polymer with improved pH stability, contains hydroxyl functionality for crosslinking
Dispercoll® C VP LS 2372/1	58	13	low	medium-low	Low rate of crystallization, produces adhesives with a long open time, outstanding adhesion to non-polar substrates; contains hydroxyl functionality for crosslinking
Dispercoll® C XP 2694	29	9	high	very low	Good storage stability, high green strength, and good spray application properties

Dispercoll® S grades are anionic colloidal solutions of amorphous silicon dioxide that can be formulated with Dispercoll® C to provide unique property improvements. Compounded adhesives show increased heat resistance and initial wet bond strength. Dispercoll® S is also valued as a thickening agent and will allow adjustments to viscosity over a wide range. Property enhancements are most prominent when used with Dispercoll® C 2325 and Dispercoll® C VP LS 2372/1.

Dispercoll® S Nano-Silica Additives for Dispercoll® C

Product Name	Solids wt. %	Particle Size, nm	Specific Surface Area , m^2/g	pH	Features/Benefits
Dispercoll® S 3020	30	15	200	3	Small particle size; delivers significant improvement in bond strength and heat resistance; provides large thickening effect when compounded with ZnO; preferred for CO2 activation and improved storage stability
Dispercoll® S 3030	30	9	300	10	Small particle size; delivers significant improvement in bond strength and heat resistance; provides large thickening effect when compounded with ZnO
Dispercoll® S 4020	40	15	200	10	Small particle size; delivers significant improvement in bond strength and heat resistance; provides large thickening effect when compounded with ZnO
Dispercoll® S 4510	45	30	100	10	Larger particle size; produces moderate improvement in bond strength and heat resistance; thickening effect with ZnO is less pronounced
Dispercoll® S 5005	50	55	50	9	Larger particle size; produces moderate improvement in bond strength and heat resistance; thickening effect with ZnO is less pronounced



The product data listed is provided as general information only. They are approximate values and are not considered part of the product specifications.
Note: Viscosity in mPa•s is 23˚C or 25˚C unless otherwise noted. Additional products are available. Contact (412) 413-3983 for more information.

Specialty Raw Materials for Adhesives

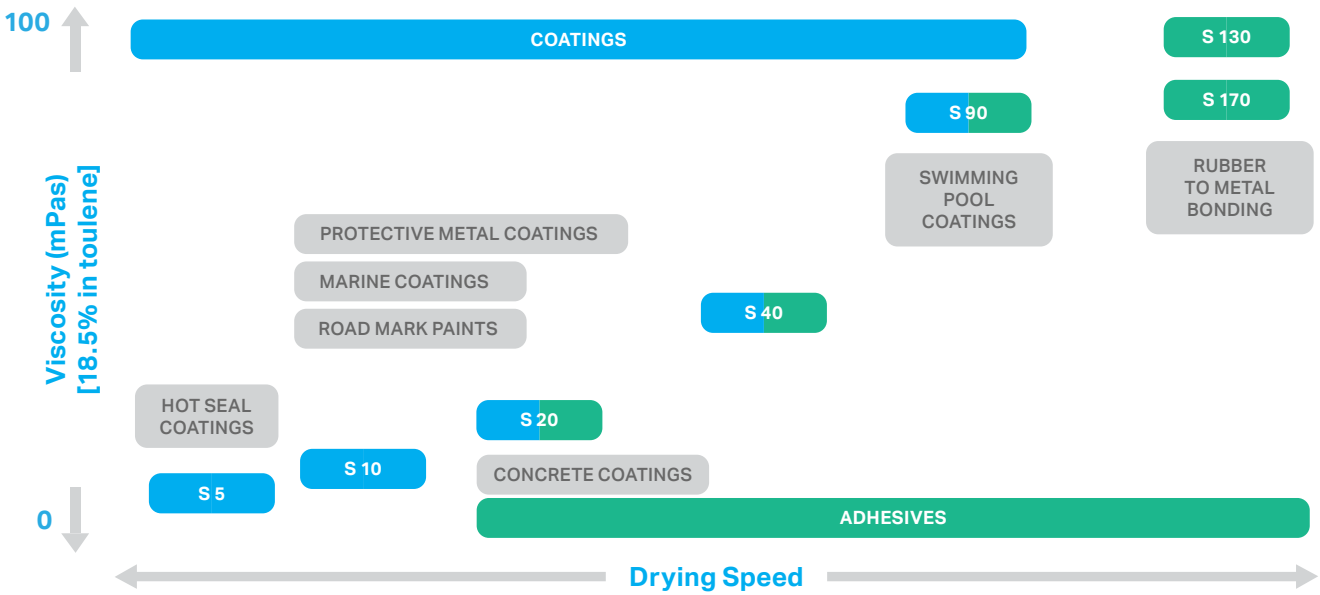
Pergut® Chlorinated Rubber

Pergut® is a chlorinated rubber supplied in powder form. Due to its high polarity, Pergut® is especially suitable for the production of primers and adhesion promoters for rubber-metal bonding.

Pergut® Chlorinated Rubber

Product Name	Viscosity mPa*s 18.5% in Toluene	Features/Benefits
Pergut® B 10	10	Good weather stability and resistance to water and chemicals
Pergut® B 20	20	Good weather stability and resistance to water and chemicals
Pergut® S 5	5	Good weather stability and resistance to water and chemicals
Pergut® S 10	11	Good weather stability and resistance to water and chemicals
Pergut® S 20	20	Good weather stability and resistance to water and chemicals
Pergut® S 40	42	Improves drying properties and resistance to inorganic acids, good weather stability and resistance to water and chemicals
Pergut® S 90	92	Good weather stability and resistance to water and chemicals
Pergut® S 130	120	High Polarity
Pergut® S 170	165	High Polarity

Pergut®



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Desmocap® – Epoxy Flexibilizers

Desmocap® prepolymers are used in epoxy coatings, adhesives and sealants to increase flexibility, improve adhesion, increase impact resistance and improve toughness. These capped prepolymers can also react with a wide variety of amines to produce polyurea elastomers.

Desmocap® Prepolymers for Epoxy Adhesives

Product	Chemical Basis	Solids %	Content of Reactive Groups	Apparent Epoxy Equiv. Wt.	Viscosity mPa•s	Product Type and Description	Properties/Applications
Desmocap® 11A	TDI	100	3.0	1400	90000	Branched aromatic urethane polymer with ether groups	High viscosity; used as an epoxy flexibilizer and to formulate liquid, solvent-free polyurethane systems
Desmocap® 12A	TDI	100	1.95	2154	33000	Linear aromatic urethane polymer with ether groups	Epoxy flexibilizer; also used to produce membranes, sealants and casting compounds
Desmocap® 14 CNB	TDI	100	2.7	930	30000	Linear aromatic urethane polymer with ether groups	Low viscosity epoxy toughener; easy to handle and pour

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Note: Viscosity in mPa•s is 23˚C or 25˚C unless otherwise noted.

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