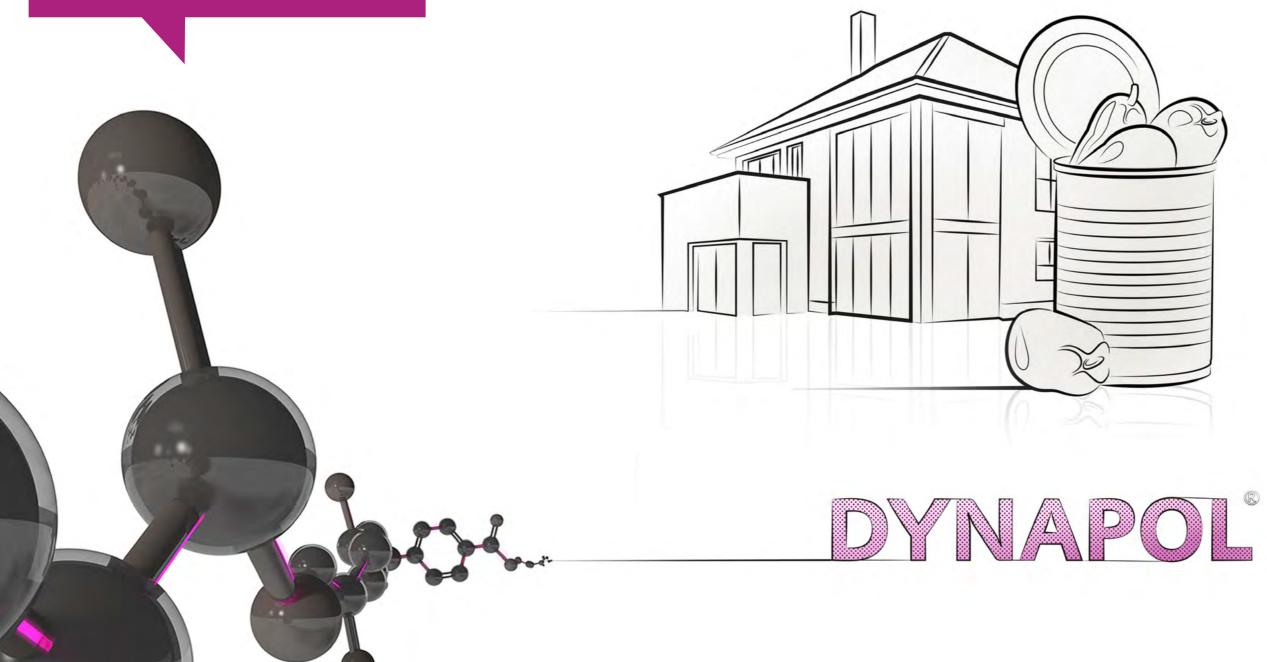
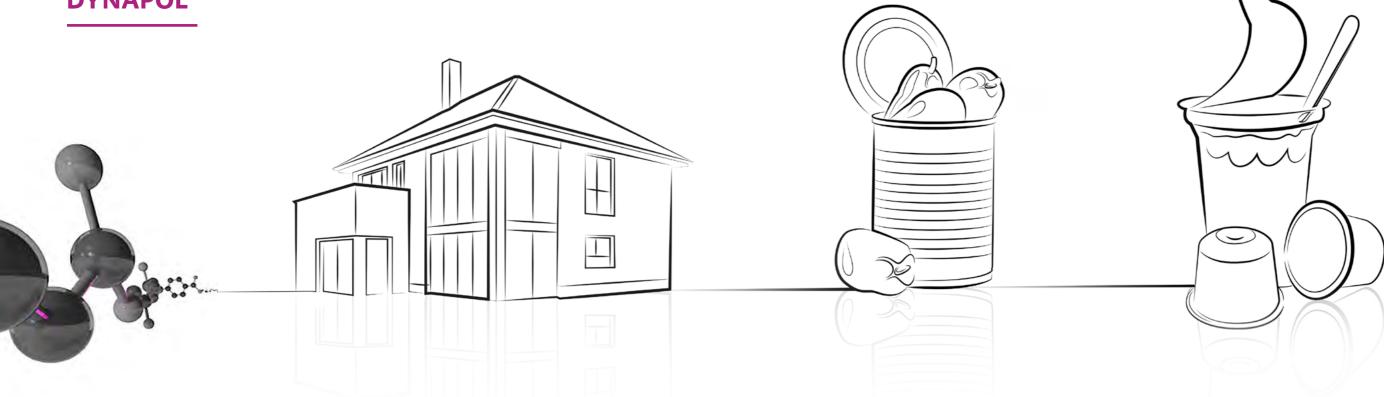
Discover our world of polyesters for the coatings industry.





DYNAPOL®



With more than 40 years of experience in polyester technology, we are working on smart solutions for a sustainable future.

DYNAPOL® stands for high quality polyesters for the coatings industry.

Our product portfolio contains high and medium molecular weight co-polyesters ideally suited for the packaging and coil coating industries.

DYNAPOL® L: Saturated, high molecular hydroxylated co-polyesters

DYNAPOL® LH: Saturated, medium molecular hydroxylated co-polyesters in solution

DYNAPOL® UB: Systems made from saturated, hydroxylated polyester resins and blocked cycloaliphatic polyisocyanate crosslinkers

DYNAPOL® LS: Highly flexible saturated co-polyesters

DYNAPOL® Catalysts: Specifically designed for pre-coated metal applications

We welcome you to discover our world of polyesters!

DYNAPOL®

CO-POLYESTERS

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BPA-NI co-polyesters designed for the food industry.

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Co-polyesters used as binders or co-binders for food and non-food flexible packaging applications.

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Wide range of co-polyesters for interior and exterior pre-coated metal applications.

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3

DYNAPOL® FOR CAN COATINGS

DYNAPOL® saturated co-polyesters by Evonik have been used for many years as binders in food packaging applications. Our specially designed paint binders are the premier choice for every paint layer on pre-coated metal containers for food and non-food applications. They combine superior protection properties with high flexibility, adhesion, film hardness and scratch resistance for the manufacturing, processing and storage of cans for a broad variety of filling goods.

DYNAPOL® polyesters offer excellent bisphenol A non intent (BPA-NI) solutions for packaging coatings, with many grades also being in compliance with common food contact legislation.

APPLICATION AREAS

- Food contact coatings for can interior
- Exterior base coats, printing inks and overprint varnishes for cans, caps and closures
- Decorative enamels for tubes and aerosol cans
- Adhesion promoter for caps and closures

PROPERTIES

- BPA-NI and no use of PVC
- Superior chemical resistance
- Paint films without off-taste nor smell
- Resistance to yellowing even after overbaking
- Good reactivity with a variety of crosslinkers



DYNAPOL® FOR FLEXIBLE PACKAGING COATINGS

DYNAPOL® co-polyesters are used in a variety of flexible packaging formulations to improve printability, adhesion (interlayer), flexibility and hardness. Especially the high molecular weight DYNAPOL® L grades are suitable for flexible packaging coatings.

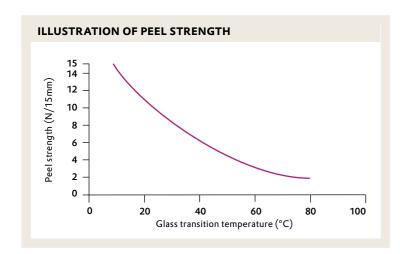
Properties like molecular weight, softening point, glass transition temperature and balance between flexibility and hardness can be tailored in a wide range to meet special customer requirements.

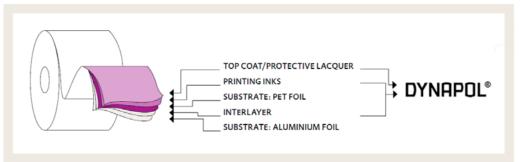
APPLICATION AREAS

- Foil primer
- Pre-print primer
- Printing ink
- Overprint varnish
- Foil coatings
- Heat-seal lacquers
- Interlayer

PROPERTIES

- BPA-NI and no use of PVC
- Excellent adhesion to aluminum foil
- Excellent adhesion to PET-, PC- and PA-film
- Outstanding flexibility







DYNAPOL® FOR COIL COATINGS

Our paint binders are designed to meet different requirements of the industry. The outstanding performance of our portfolio is the foundation for safety and reliability when used for wall claddings, roofing, garage doors, blinds, window frames, domestic appliance housings, ceiling panels, air conditioners, pre-coated automotive parts and other interior and exterior pre-coated metal applications.

APPLICATION AREAS

- Exterior and interior architecture
- Appliance finishing
- Traffic and transportation uses
- Top coats and clear coats
- Back coats
- Primer for galvanized steel or aluminum
- Hot laminating adhesives for foils and films

PROPERTIES

- Very good adhesion to aluminum, steel and galvanized steel
- Excellent flexibility and formability
- Good to excellent weathering resistance
- Good processability (reactivity, solids content, overbake resistance)
- Wide range of grades with special properties for different applications



DYNAPOL® LS

PRODUCT RANGE**

	Characteristic Values 1) 2)				Solu	bility	3)		Fields of application												
	Glass transition temperature $^{**}(^{\circ}C)$	Molecular mass (g/mol)	Viscosity number (cm^3/g)	Structure 4)	OH value ($mg KOH/g$)	Acid value $(mg KOH/g)$	Solvent Naphtha 150	Solvent Naphtha 200	Methoxypropyl acetate	Dibasic ester mixture (DBE)	Interior coatings	Metal decorating enamels	Tube and aerosol can coatings	Foil primers, printing inks	Heat sealing lacquers	Adhesion promoters	Primer for hot dip galv. steel	Primer for aluminum	Hot laminating adhesives	Appliance finishing	Elastification resin
Grades ⁵⁾											FLI	EX PA	CK &	CAN (COATI	NG		COIL	COAT	ring	
L 912	105	15000	55	L	5	3	+	+	-	-	•	0									
L 914	100	15000	55	L	7	4	+	+	-	-	•	0									
L 907	75	15000	55	L	7	4	+	+	-	-	•	0									
L 952	70	18000	56	L	6	2	-	+	+	+	•	0					0			•	
L 205	67	15000	55	L	6	2	-	+	+	+	0	0					•	0		0	
L 206	67	20000	63	L	5	2	-	+	+	+				•	0					0	
L 208	65	20000	70	В	6	6	-	+	+	+				0			•	•	•		
L 210	63	20000	63	L	5	2	-	+	+	+				•	0				•		
L 411	47	16000	61	L	5	2	-	+	+	+	•	•		•	•	0	•	•	•	0	•
L 490	40	15000	60	В	9	3	-	+	+	+	•	•	•			0					0
L 651	40	15000	64	L	5	2	+	+	+	+	•	0			0	•					
L 658	40	20000	65	В	8	4	-	+	+	+	•	0									0
L 850	40	15000	62	L	4	2	+	+	+	+		0	•								•
L 323	30	15000	65	L	6	2	+	+	+	+		0		0		•					

- 1) Test methods
- 2) Typical values
- 3) 30 % solutions: + = soluble, = insoluble, at best suitable as thinner;
 (ketones always +, glycolethers as thinners only; aliphatic hydrocarbons and alcohols -)
- 4) L = linear, B = branched
- 5) Further DYNAPOL® grades available on request

- ** in order of decreasing glass transition temperature
- important use
- O less important use

	Solut		Characte	eristic Valu	1) 2)				Stold	a of an	plicatio					
	Solut	10115	Characte	eristic vait	ies 7-7				rieid	із от ар	piicatio) II				
	Solvent blend code	Supply form (% by weight)	Glass transition temperature** $(^{\circ}C)^{\scriptscriptstyle{3})}$	Molecular mass (g/mol)	Structure 4)	OH value (mg KOH/g)	Acid value (mg KOH/g)	Compatibility with DYNAPOL* L 5)	Interior coatings	Metal decorating enamels	Adhesion promoters	Foil primers, printing inks	Heat sealing lacquers	Exterior architecture	Interior architecture	Appliance finishing
Grades 6)									FLE	X PACK	(& CAI	N COAT	ΓING	COII	_ COAT	ING
LS 415-10B	-10B	40	12	25000	L	5	3	+	•	•	•	•	0		0	0
LS 436-12	-12	60	-5	7000	L	15	2	+				0		•	•	
LS 615		100	-50	4000	L	25	2	(+)	0			•	0			

- 1) Test methods
- 2) Typical values
- 3) Measured on solvent free polyester resin
- 4) L = linear, B = branched
- 5) + = compatible, (+) = compatibility very limited, = incompatible
- 6) Further DYNAPOL® grades available on request

- ** in order of decreasing glass transition temperature
- important use
- O less important use

11 12

PRODUCT RANGE **

	Soluti	ons	S Characteristic Values 1) 2)					Field	ds of a	pplica	ation							
	Solvent blend code	Supply form (% by weight)	Glass transition temperature ** (°C) $^{3)}$	Molecular mass (g/mol)	Structure 4)	OH value (mg KOH/g)	Acid value (mg KOH/g)	Compatibility with DYNAPOL® L 5)	Metal decorating enamels	Tube- and aerosol can coatings	Interior can coatings	Exterior architecture	Interior architecture	Appliance finishing	Traffic uses	Prime for hot dip galv. steel	Primer for aluminum	Back coatings
Grades 6)									CAN	COA	TING			COIL	COAT	ING		
LH 820-16	-16	55	60	5000	L	20	2	+						0		•		
LH 815-05	-05	50	55	7000	L	20	4	+	•	•	•					0	0	
LH 833-03	-03	50	55	4000	В	35	2	+	0					0		•	•	
LH 818-05	-05	50	30	6000	L	20	1	+	•				•	•		0	•	
LH 826-05A	-05A	55	30	6000	L	20	2	+	•				•	0		0	0	
LH 538-02	-02	65	20	3000	В	45	2	+				•		•	•			
LH 898-13	-13	65	20	3000	L	35	2	+				•	•		0			
LH 830-02	-02	60	20	4000	В	35	2	+	0	0		•	•	•	•			
LH 775-52	-52	55	20	4000	В	40	3	+	•	•								
LH 318-02	-02	55	20	5000	L	20	2	+	0		•							
LH 823-01	-01	60	20	6000	В	20	10	+	0	•								
LH 822-01	-01	55	15	6000	L	20	2	+	0				•	0	•			
LH 832-02	-02	60	15	4000	В	35	2	+	0			•	•	•	•			
LH 838-02	-02	65	10	3000	L	35	2	+	0			•	•		0			
LH 831-24	-24	70	10	2000	L	50	5	+	0			•	•		0		0	
LH 727-02	-02	65	5	2000	В	100	10	-										•

- 1) Test methods
- 2) Typical values
- 3) Measured on solvent free polyester resin
- 4) L = linear, B = branched
- 5) + = compatible, (+) = compatibility very limited, = incompatible
- 6) Further DYNAPOL® grades and solvent blends available on request

PRODUCT RANGE **

DYNAPOL® UB

	Solut	ions	Charact	eristic Va	lues 1) 2)	Field	s of ap	plication	on		
	Solvent blend code	Supply form (% by weight)	Approx. glass transisiton temperature (°C) of cured paint film $^4\rangle$	Class ⁵⁾	Reactivity ⁶⁾	Exterior architecture	Interior architecture	Appliance finishing	Trafficuses	Primer for hot dip galv. steel	Primer for aluminum
Grades 7)							c	OIL CC	ATING		
UB 790-03	-03	60	35	I	В	•	•	0	•	•	•
UB 791-03	-03	60	35	I	С	•	•	0	0	•	•
UB 1052-03	-03	60	35	II	С	•			•		
UB 877-01	-01	60	40	I	С			•		•	
UB 1256-06	-06	60	50	III	С	•		0	•		

- - 6) Minimum stoving temperature (°C): B: 160 resp. 220 PMT; C: 180 resp. 230 MT (peak metal temperature) 7) Further DYNAPOL® grades available on request
 - ** in order of increasing glass transition temperature
 - important use
 - O less important use

CATALYSTS

DYNAPOL® Catalyst 1203	Supply form (% by weight) 50% (b.w.) in xylene	Comments Non-ionic blocked sulfonic acid catalyst for aminoplast crosslinking
DYNAPOL® Catalyst C31	50% (b.w.) in xylene	Tin (IV) alkoxylate catalyst for polyisocyanate crosslinking

SOLVENT BLEND CODE

-01	Solvent Naphtha 150
-02	Solvent Naphtha 150 /Butylglycol
-03	Solvent Naphtha 150 / DBE
-05/-05A	Solvent Naphtha 150 / Solvent Naphtha 200
-06	Solvent Naphtha 150 / Methoxypropylacetate (MPA)
-10B	Solvent Naphtha 150 / DBE / Solvent Naphtha 200
-12	Solvent Naphtha 150 / DBE
-13	Solvent Naphtha 150 / Solvent Naphtha 100 / Xylene
-16	Solvent Naphtha 150 / MPA / Methoxypropanol
-24	Solvent Naphtha 100 / Butylglycol
-52	Methoxypropanol / Methyldiproplyeneglycol

13 14

** in order of decreasing glass transition temperature

important use

O less important use

CONTINUAL INNOVATION AND DEVELOPMENT

Methods of determining characteristic values

Glass transistion temperature

Determination by DSC method (differential scanning calorimetry)

Molecular mass

Values calculated based on contents of hydroxyl- and carboxyl endgroups

Viscosity number

DIN 53 728. The procedure is to dissolve 0.5 g of the substance in 100 ml of solvent, consisting of 50 parts by weight of phenol and 50 p.b.w. of 1,2-dichlorobenzene, and to measure the efflux time of this solution in an Ubbelohde capillary viscometer at a temperature of 25 °C.

The viscosity number is calculated with the following formula:

$$VZ = 100 \quad \frac{t_1 - t_2}{t_2} \quad (cm^3/g)$$

t1 = efflux time of the solution

t2 = efflux time of the solvent

OH value (hydroxyl value)

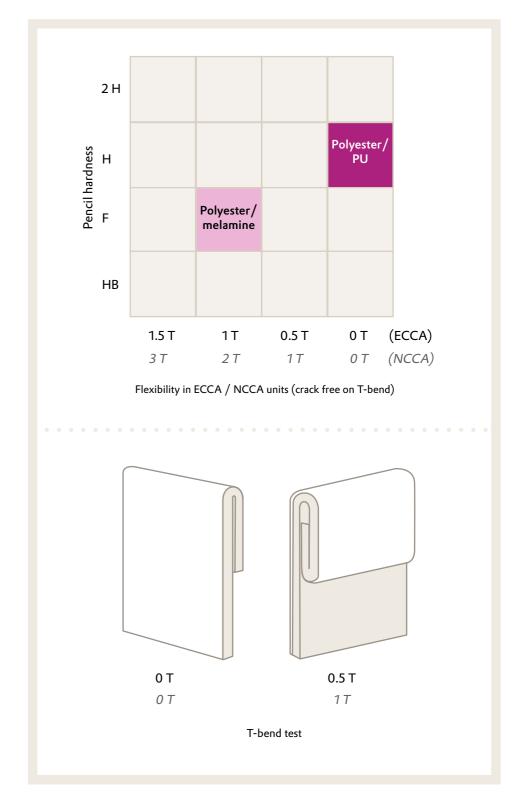
DIN EN ISO 4629-2. Approx. 3 g of polyester are dissolved in dichloromethane.

The OH groups contained in the solution are esterified at room temperature with acetic anhydride, 4,4-dimethyl amino-pyridine being used as a catalyst. Following the hydrolysis of the anhydride, the titration is made using 0.5 N methanolic KOH solution.

Acid value

DIN EN ISO 2114. Approx. 4 g of polyester are dissolved in 50 ml of dichloromethane or tetrahydrofurane. A titration is made with 0.1 N methanolic or ethanolic KOH with phenolphthalein as indicator.

Balance of hardness and flexibility polyester PU vs. polyester/melamine



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7/2022/e/hg

We design polymers.

