

DYNAPOL® Polyester Resins

DESIGNED POLYMERS FOR FOOD PACKAGING APPLICATIONS

DYNAPOL®



DYNAPOL® POLYESTER RESINS

*ESTABLISHED AND PROVEN SPECIALITY COATING RESINS
DESIGNED FOR FOOD CONTACT PACKAGING APPLICATIONS*

BACKGROUND

Specially designed saturated copolyester resins from Evonik's brand DYNAPOL® have been used for many years as binder in food packaging applications. The copolyesters are odourless and tasteless, and therefore suitable for packaging with direct food contact. Evonik's polyester resins are specifically developed for an optimal balance between protection properties and the flexibility necessary for the food packaging industry. The copolyesters are used as binder in flexible packaging (film primers, printing inks) and can coatings (food cans, metal packaging).

Frequent changes and new trends in the packaging market have led to polyesters,

of all the currently available binders, increasingly coming into focus due to their excellent properties. Interest in and demand for polyesters in the packaging market has risen significantly.

The reason is the "modular construction system" of polyester chemistry: By the appropriate choice of monomers and their quantitative assembly in the formulation of the polyester, the customer gets exactly the properties required. One of the outstanding features is the balance between flexibility and hardness that can be achieved by adjusting the formulation.

The development, testing, and statutory approval of suitable coating systems for

food contact applications takes several years. This sensitive field of application therefore uses mainly "classics" such as the high molecular weight DYNAPOL® L 912 and DYNAPOL® L 952 grades.

New high molecular weight polyesters, DYNAPOL® L 907 and DYNAPOL® L 914 have recently been developed in particular for interior food contact coatings and were launched into the market.

Evonik's blocked polyisocyanate crosslinker VESTANAT® B 1186A (now in compliance with FDA § 175.300) offers novel opportunities and outstanding performance for food packaging coatings in combination with DYNAPOL® polyesters.



INTERIOR COATINGS BASED ON HIGH MOLECULAR WEIGHT POLYESTERS DYNAPOL® L

“State of the art” technology for interior food contact coatings are high molecular weight polyesters, crosslinked with melamine and/or benzoguanamine resins. Combined with VESTANAT® B 1186A (blocked polyisocyanate, now in compliance with FDA § 175.300 according to FCN 1268) the performance properties of those systems can be further improved (test results below).

DYNAPOL® L 912 laquer formulation and coating properties

Resin / Crosslinker ratio	80 : 20
Solid content (0,5h / 160 °C)	51 ±1 %
Viscosity, DIN cup 4 mm (20 °C)	130 ±10 s
Substrate	Tinplate (ETP 2,8/2,8 T 52 0,20)
Curing conditions	10 min / 200 °C (PMT)
Dry film thickness	5,8g/m ²
Wedge bend test	40 mm
Sterilization in water	1/1/1/1 *)
Sterilization in 3 % acetic acid	1/1/1/1 *)

*) Test can (20mm deep drawing, edge radius 5, 10, 15, 20 mm) after 30 min. 129 °C sterilization, 1=no 4=strong damage

Product information

Saturated, medium and high molecular weight, hydroxylated polyester resins.
Guide formulations for interior can coatings are available on request.

Product	Type	Advantages/ Application	Solid content %	Solvent	FDA status	Glass transition temperature (°C/°F)	Molecular weight Mng/mol
DYNAPOL® LS 415-10	high molecular saturated polyester	excellent flexibility, elastification resin	40	SN*** 150 / DBE / SN***200	+ *)	12/54	25.000
DYNAPOL® LH 318-02	medium molecular saturated polyester	polyester-phenolic systems	55	SN*** 150/ Butylglycol	+ *)	20/68	5.000
DYNAPOL® LH 815-05	medium molecular saturated polyester	good cost/ performance ratio	50	SN*** 150/ SN***200	+ *)	55/122	7.000
DYNAPOL® L 323	high molecular saturated polyester	excellent flexibility	100	solid	+ *)	30/86	15.000
DYNAPOL® L 490	high molecular saturated polyester	excellent flexibility	100	solid	+ **)	40/104	15.000
DYNAPOL® L 651	high molecular saturated polyester	good flexibility	100	solid	+ *)	40/104	15.000
DYNAPOL® L 658	high molecular saturated polyester	good flexibility	100	solid	+ *)	40/104	20.000
DYNAPOL® L 411	high molecular saturated polyester	good hardness/ flexibility balance	100	solid	+ *)	47/117	16.000
DYNAPOL® L 205	high molecular saturated polyester	good sterilization resistance	100	solid	+ *)	67/153	15.000
DYNAPOL® L 206	high molecular saturated polyester	good sterilization resistance	100	solid	+ *)	67/153	20.000
DYNAPOL® L 208	high molecular saturated polyester	good sterilization resistance	100	Solid	+ *)	65/149	20.000
DYNAPOL® L 952	high molecular saturated polyester	excellent sterilization resistance	100	solid	+ *)	70/158	18.000
DYNAPOL® L 907	high molecular saturated polyester	excellent sterilization resistance	100	solid	+ *)	75/167	15.000
DYNAPOL® L 914	high molecular saturated polyester	excellent sterilization resistance	100	solid	+ *)	100/212	15.000
DYNAPOL® L 912	high molecular saturated polyester	super sterilization and acid resistance	100	solid	+ *)	105/221	15.000

*) in compliance with FDA §175.300 (restriction: only for non alcoholic goods)

**) in full compliance with FDA § 175.300

***) SN = Solvent Naphtha

CONCLUSION

- Polyester based laquers provide an excellent hardness/flexibility balance
- No odour and no taste – polyesters are perfectly suitable for food packaging coatings
- High molecular weight polyesters with high glass transition temperature (T_g) are showing most effective performance
- New high molecular weight polyesters especially for interior food contact coatings: DYNAPOL® L 907 and DYNAPOL® L 914
- DYNAPOL® L 323 for flexible packaging applications
- Evonik offers a wide range of polyesters for food contact packaging coatings





EVONIK RESOURCE EFFICIENCY GMBH

Paul-Baumann-Straße 1
45764 Marl
Germany

Phone +49 2365 49-4843
Fax +49 2365 49-5030
dynapol@evonik.com
www.dynapol.com

**EVONIK SPECIALTY CHEMICALS
(SHANGHAI) CO., LTD.**

55 Chundong Road,
Xinzhuang Industry Park,
Shanghai 201108
P.R. China

Phone +86 21 6119-1028
Fax +86 21 6119-1254

EVONIK CORPORATION

Resource Efficiency
299 Jefferson Road
Parsippany, NJ 07054
USA

Phone +1 973 929-8924
Fax +1 973 929-8440

This information and any recommendations, technical or otherwise, are presented in good faith and believed to be correct as of the date prepared. Recipient of this information and recommendations must make their own determination as to its suitability for their purposes. In no event shall Evonik assume liability for damages or losses of any kind or nature that result from the use of or reliance upon this information and recommendations. EVONIK EXPRESSLY DISCLAIMS ANY REPRESENTATIONS AND WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, NON-INFRINGEMENT, MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE) WITH RESPECT TO ANY INFORMATION AND RECOMMENDATIONS PROVIDED. Reference to any trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used. Evonik reserves the right to make any changes to the information and/or recommendations at any time, without prior or subsequent notice.

CONTACT US

