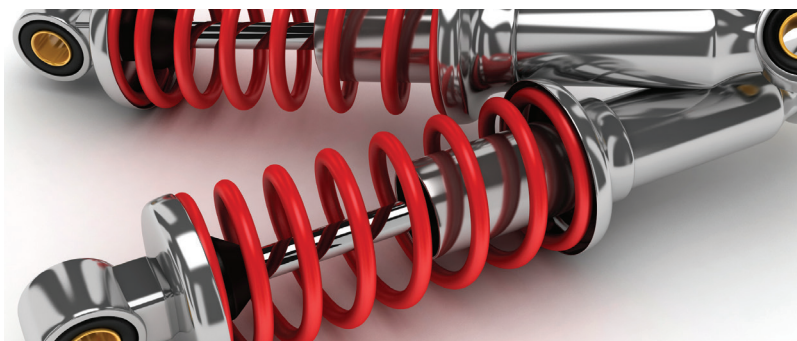


Stepan Polyesters for Polyurethane Elastomers



Founded in 1932 in Chicago, IL, USA, Stepan Company is a publicly traded manufacturer of specialty and intermediate chemicals. These products include commercial and industrial surfactants, nutritional oils, polyester polyols for rigid and flexible foam, coatings, adhesives, sealants, and polyurethane elastomers. Stepan's commitment to the global polyester polyol market has been complemented with recent acquisitions of manufacturing facilities in Europe and the United States bringing our global footprint for polyester polyols production to five sites.

STEPANPOL® aliphatic polyester polyols offer greater light stability and non-yellowing properties while providing durability, solvent resistance, and tear strength.

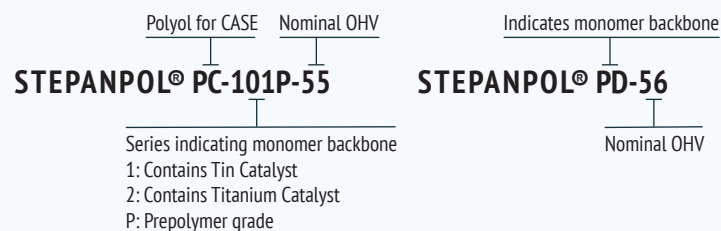
STEPANPOL® aromatic polyester polyols use several aromatic acids. Phthalic anhydride is also utilized to take advantage of ortho-ester linkages for enhanced hydrolytic stability. All of these polyesters offer diverse substrate adhesion while improving abrasion resistance and overall hardness.

STEPANPOL polyester polyols for polyurethane elastomers and thermoplastic polyurethanes

Stepan offers a full range of product backbones and, just as important for prepolymer producers, different reactivities. The “P” in the name of certain products, such as STEPANPOL PC-1040P-55, stands for prepolymer grade, meaning that these are neutralized particularly for use in making prepolymers.

Stepan is dedicated to being a global leader in esterification and the product line reflects that – Stepan remains strictly a raw material supplier providing polyester polyols for the polyurethane elastomer industry, offering polyester polyol technical support with dedicated R&D resources in each region.

Stepan is a global company and as the Company grows and expands, customers can expect to purchase the same STEPANPOL grades produced regionally.



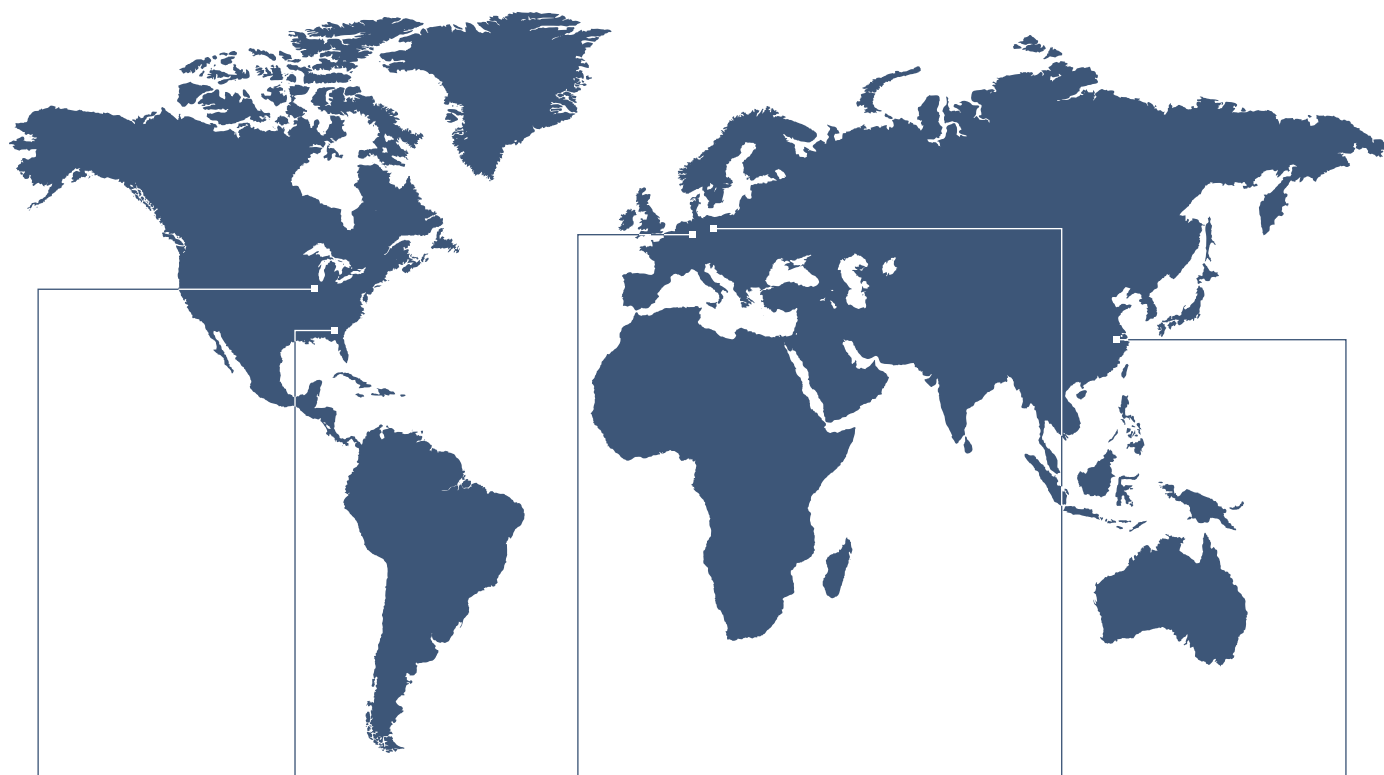
Series	Backbone	Series	Backbone	Series	Backbone
101	EG/AA	1017	EG/PG/AA	PD	DEG/PA
102	BD/AA	1021	BD/IPA/AA	PN	NPG/PA
105	HD/AA	1028	HD/PA	PH	HD/PA
107	NPG/AA	1035	HD/AzA/IPA	PHN	HD/NPG/PA
1011	DEG/AA	1040	BD/EG/AA	BC	Biocontent
1015	HD/NPG/AA	5000	Proprietary	PS	Polyester

Polyester Polyols for Polyurethane Elastomers and Thermoplastic Urethanes

			TYPICAL CHEMICAL PROPERTIES*			
STEPANPOL® Products	Region	Performance Features	Backbone	Viscosity at 60°C (cP)	Average Molecular Weight	Hydroxyl Value (mgKOH/g)
STEPANPOL PS-2002	A E C	Low viscosity, increases flexibility	DEG-PA	26000 at 25°C	575	195
STEPANPOL PS-3152	A E C	Low viscosity, great insulation ability for thermal break	DEG-PA	2800 at 25°C	350	320
STEPANPOL PS-1752	A E C	Low viscosity, increases flexibility	DEG-PA	3900 at 25°C	640	175
STEPANPOL PC-1011-45	A E	Solvent resistance, general purpose	DEG-AA	1425	2490	45
STEPANPOL PC-1011-55	A E C	Solvent resistance, general purpose	DEG-AA	1075	2040	55
STEPANPOL PC-1011P-110	A E	Solvent resistance, general purpose	DEG-AA	775 at 40°C	1020	110
STEPANPOL PC-2011-45	A E	Solvent resistance, general purpose	DEG-AA	1425	2490	45
STEPANPOL PC-1017P-55	A E	Tensile and tear strength, primary and secondary hydroxyls	EG/PG-AA	1200	2040	55
STEPANPOL PC-2017P-35	A E	Tensile and tear strength, primary and secondary hydroxyls	EG/PG-AA	2520	3200	35
STEPANPOL PC-2017P-144	A E	Tensile and tear strength, primary and secondary hydroxyls	EG/PG-AA	230	780	144
STEPANPOL PC-101P-55	A E C	Tensile and tear strength, solvent resistance	EG-AA	1200	2040	55
STEPANPOL PC-201P-110	A E	Tensile and tear strength, solvent resistance	EG-AA	400	1020	110
STEPANPOL PC-201-165	A E C	Tensile and tear strength, solvent resistance	EG-AA	350 at 45°C	680	165
STEPANPOL PC-102P-34	A E	Tensile and tear strength, improve flexibility	BDO-AA	5000	3200	34
STEPANPOL PC-102-56	A E	Tensile and tear strength, improve flexibility	BDO-AA	685 at 73°C	2000	56
STEPANPOL PC-102P-110	A E	Tensile and tear strength, improve flexibility	BDO-AA	320	1020	110
STEPANPOL PC-202P-110	A E	Tensile and tear strength, improve flexibility	BDO-AA	322	1020	110
STEPANPOL PC-1040-55	A E	Balance of tensile and tear strength and flexibility	EG/BDO-AA	1300	2040	55
STEPANPOL PC-1040P-55	A E C	Balance of tensile and tear strength and flexibility	EG/BDO-AA	1300	2040	55
STEPANPOL PC-1040P-110	A E	Balance of tensile and tear strength and flexibility	EG/BDO-AA	350	1020	110
STEPANPOL PC-1041P-40	E	Tensile and tear, wet slip resistance	DEG/EG-AA	2150	2800	40
STEPANPOL PC-1041P-56	E	Tensile and tear, wet slip resistance	DEG/EG-AA	1100	2000	56
STEPANPOL PC-105P-30	A E	Improve flexibility, tear strength, and cold crack resistance	HDO-AA	5500	3740	30
STEPANPOL PC-205P-30	A E C	Improve flexibility, tear strength, and cold crack resistance	HDO-AA	3500 at 80°C	3740	30
STEPANPOL PC-105P-42	A E	Improve flexibility, tear strength, and cold crack resistance	HDO-AA	2650	2670	42
STEPANPOL PC-205P-56	A E	Improve flexibility, tear strength, and cold crack resistance	HDO-AA	2800 at 80°C	2000	56
STEPANPOL PC-105P-110	A E	Improve flexibility, tear strength, and cold crack resistance	HDO-AA	295	1020	110
STEPANPOL PC-107P-55	A E	Improve durability, UV stable	NPG-AA	2300	2040	55
STEPANPOL PC-107-110	A E	Improve durability, UV stable	NPG-AA	565	1020	110
STEPANPOL PC-207-125	A E	Improve durability, UV stable	NPG-AA	6700 at 25°C	900	125
STEPANPOL PC-1021P-70	A E	Balance of hardness and toughness, oxidation resistance	BDO-AA/ PIA	1900	1600	70
STEPANPOL PC-5050P-60	A E	Solvent resistance, flexibility	Proprietary	1750	2300	60
STEPANPOL PC-5070P-56	A E	Durability and flexibility	Proprietary	7000 at 75°C	2000	56
STEPANPOL PC-5090P-56	A E	Tensile and tear strength, primary and secondary hydroxyls	Proprietary	1300	2000	56
STEPANPOL PC-5110-58	A E	For use in combination with other polyols for additional flexibility	Proprietary	21500 at 25°C	2524	58
STEPANPOL PD-320	A E	Low viscosity, inherent UV stability	DEG-PA	2800 at 25°C	350	320
STEPANPOL PDP-70	A E C	Imparts low viscosity, flexibility, and ester/ether compatibility	Proprietary	1900 at 25°C	1600	70
STEPANPOL PS-4002	A	Very low viscosity	DEG-PA	1300 at 25°C	300	400

A=Americas E=Europe C=Asia

*Property values are typical and based on product concentration and/or mathematical and statistical calculations.



Millsdale, IL, USA

- Production Plant
- Pilot Reactors



Columbus, GA, USA

- Production Plant, liquid and powder products



Wesseling, Germany

- Production Plant



Brzeg Dolny, Poland

- R&D Center
- Production Plant



Nanjing, China JV

- R&D Center
- Production Plant
- Esterification Pilot Reactor
- Propoxylation Pilot Reactor

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