

# Polyurethane - Basic Products for Slabstock Foams:

- Lupranat®
- Lupranol®
- Lupraphen®
- Elastoflex® W



# About Polyurethanes at BASF



BASF Polyurethanes GmbH, Lemförde, Germany

## Portfolio:

BASF develops, produces and sells:

- PU elastomers as thermo-plastic specialty elastomers
- PU elastomers as cellular specialty elastomers
- PU base products, such as isocyanates, polyols, catalysts, auxiliary materials
- PU systems, divided into system groups such as rigid, flexible, integral, compact

## Sites (EMEA)

- Germany (headquarters)
- France
- The UK
- The Netherlands
- Italy
- Russia
- Sweden
- South Africa
- Spain
- Turkey
- Hungary
- Slovakia
- Dubai

## Research and Development

World-wide BASF Polyurethane Research for PU systems and PU special elastomers has been centralized in the newly created Research Centre in Lemförde. Nearly 200 specialists work in this think tank of expertise and creativity for the fields of Research, Development and Applications Technology. With the know-how of this international technology centre we provide our expertise to other BASF Group companies in America and Asia which are active in the field of polyurethane.

## Leader in its Field

BASF is the leading supplier of polyurethane basic products, systems and specialties. With its global network of 35 polyurethane System Houses and its comprehensive product and service portfolio, BASF is the preferred partner of its customers in many industries. With its world-scale plants BASF secures its leading market position in the manufacture of polyurethane basic products in all regions of the world.

In the European Economic Area BASF Polyurethanes GmbH is running the BASF polyurethane business via its 14 System Houses. In Europe, BASF is both the market and technology leader of polyurethane systems and polyurethane specialty elastomers.

## Working hand in hand with our customers

In the highly service-oriented polyurethane systems and specialties business, experience and expertise are what customers require. With its network of System Houses, BASF offers fast local support in the development of individual solutions, including technical service, sales and marketing. BASF ensures reliable supply of basic polyurethane products like MDI, TDI and polyols on a global scale from the company's world-scale plants.

## Individual Innovations

No matter which PU application is involved – BASF turns the apparently impossible into an innovative reality. In close project-related co-operation with the customer our specialist teams of chemists, physicists, engineers and sales experts develop tailor-made, creative and economic solutions. We create a solid and reliable base with our customers through both active dialogue and combined experience. Our sectoral applications technology which stretches throughout Europe is strictly focused on value added benefit.

# Polyurethane Basic Products with a Good Address



BASF Antwerp N.V., Belgium



BASF Schwarzheide GmbH, Germany

## PU basic products

BASF has almost every basic product for the whole spectrum of PU applications in its portfolio.

- Isocyanates = Lupranat
- Polyetherols = Lupranol
- Polyesterols = Lupraphen
- Flexible foam-systems = Elastoflex W

## Isocyanates

- TDI and tailor-made MDI types for the greatest number of different slabstock foam applications

## Polyols

- Flexible foam polyols made by BASF Polyurethanes GmbH do not contain BHT

- Polymer polyols do not contain any succinic acid dinitrile derivatives (e.g. TMSN) and the maximum concentration of styrene and acrylonitrile concentration is below the 5 ppm benchmark
- Lupranol BALANCE 50 is the first flexible foam polyetherol made by BASF Polyurethanes GmbH on the basis of renewable resources

## Isocyanates

Lupranat	NCO content in %	Viscosity at 25 °C in mPa·s	Features
T 80 A	48.2	3	80 : 20 blend of 2,4- and 2,6-TDI
M 20 W	31.5	195	MDI polymer of medium functionality and high reactivity
<b>ISO</b>			
139/1	28.3	60	MDI prepolymer for polyester, HR and viscoelastic slabstock foams
145/8	32.8	30	MDI blend for HR and viscoelastic slabstock foams
139/7	28.5	113	MDI prepolymer for HR slabstock foams
125/3	32.4	45	MDI blend for roof linings
139/4	20.5	395	4,4'-MDI for the manufacture of rebonded foam and moulded composite foam parts with superheated steam
119/1	22.2	490	4,4'-MDI for the manufacture of rebonded foam and moulded composite foam parts with superheated steam

## Non-reactive polyetherols

Lupranol	M <sub>w</sub> in g/mol	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
2084	3500	48	600	Standard polyol
2070	3000	53	540	CME polyol
2050	1900	145	675	Crosslinker polyol
BALANCE 50	3400	50	725	Polyol on the basis of renewable resources

## Non-reactive polymer polyols

Lupranol	Solid matter in weight %	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
4600	45	31	4550	Highly filled polymer polyol for HLB and HR slabstock foams
4682-10	10	44	730	Polyol blend for HLB slabstock foams
4682-15	15	42	860	Polyol blend for HL slabstock foams
4682-40	40	33	3155	Polyol blend for HLB slabstock foams
4684-10	10	44	820	Polyol blend for HLB slabstock foams
4684-15	15	42	965	Polyol blend for HLB slabstock foams

## Reactive polyetherols

Lupranol	M <sub>w</sub> in g/mol	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
2090	6000	28	1125	Reactive standard polyol for HR slabstock foams
2092	6000	28	1125	Reactive standard polyol for HR slabstock foams
2095	4800	35	850	Reactive standard polyol for HR slabstock foams
2048	4000	41	1000	Flexible and cell-opener polyol

## Reactive polymer polyols

Lupranol	Solid matter in weight %	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
4800 N	45	20	7300	Highly filled polymer polyol for HR slabstock foams
4895-10 N	10	32	1100	Polyol blend of Lupranol 4800 N and 2095 for HR slabstock foams
4895-15 N	15	29	1525	Polyol blend of Lupranol 4800 N and 2095 for HR slabstock foams
4895-25 N	25	26	2280	Polyol blend of Lupranol 4800 N and 2095 for HR slabstock foams
4895-30 N	30	24	2830	Polyol blend of Lupranol 4800 N and 2095 for HR slabstock foams
4895-40 N	40	22	5030	Polyol blend of Lupranol 4800 N and 2095 for HR slabstock foams
4890-15 N	15	25	1820	Polyol blend of Lupranol 4800 N and 2090 for HR slabstock foams
4890-25 N	25	23	2520	Polyol blend of Lupranol 4800 N and 2090 for HR slabstock foams
4852-25 N	25	25	2500	Polyol blend based on a polyol with higher functionalities for HR slabstock foams

## Polyesterols

Lupraphen	M <sub>w</sub> in g/mol	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
8107	2400	61	20200	Slightly branched standard polyesterol
8607	2400	59	18500	Slightly branched standard polyesterol
8117	2400	61	20200	Slightly branched standard polyesterol, reduced reactivity
8149	2500	59	21650	Slightly branched polyesterol with improved fogging
8125	2400	53	18100	Standard polyesterol with antioxidant package against thermo-oxidative decomposition
8515	650	223	20500	Standard polyesterol with antioxidant package against thermo-oxidative decomposition for improved cutting and punching

## Specialties

Elastoflex W	OH number in mg KOH/g	Viscosity at 25 °C in mPa·s	Features
5918/100	150	335	VE polyol for TDI 80 formulations
5916/101	159	220	VE polyol for MDI formulations
5918/102	30	1350	10% SAN reactive graft polyol for optimised block stability in HR slabstock foams



## Responsible Care®

BASF supports Responsible Care, the worldwide initiative of the chemical industry, and thus commits itself to continual safety, health and environmental protection.

For us Responsible Care is an issue for safety, health and environmental protection, which – for the sake of environmental sustainability – is considered as being a corporate value as important as economic criteria for boosting the company's success.

The whole process of development, production and storage of our products as well as their transport, application and finally also their disposal or recycling is evaluated and continually further developed with respect to the reduction of possible environmental impact.

This includes, in particular, the protection of resources as well as prevention of emissions and waste. We appropriately inform customers, partners and neighbours about environmental aspects of products and processes. Our environmental management system is geared to the guidelines of Responsible Care and meets the requirements of the international standard ISO 14001.

## Recycling

Methods for recycling polyurethanes are as diverse as their use. In order to find the right method, it is necessary to clarify their specific origin and use.

Alongside thermal re-utilisation of PU products, the recycling of production waste also plays an important role. The following processes are already being introduced on a practical scale:

- Flock-bond
- Particle-bond
- Chemical recycling
- Raw material processes

It is generally not possible to state whether such processes are more ecologically beneficial than thermal re-utilisation.

## Quality Management

Customer satisfaction is the basis for sustained business success. Therefore, we want to meet the customers' requirements for our products and services now and for the long term futures.

To ensure success in a reliable way, we introduced a quality management system several years ago including all divisions.

Each business process is regularly assessed and further developed based on informative performance indicators. The target is to reach optimum efficiency and almost perfect coordination of all activities and operations. Each employee is asked to make a contribution to quality assurance and continuous improvement with its capabilities and ideas at its workplace.

Our quality management system is based on the international standard ISO 9001, supplemented by the additional requirements of the automotive industry ISO/TS 16949.

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