

# QUALITY PERFORMS.

## Our Company

LANXESS is a world leader in polyurethane technology, with an excellent reputation for innovation and problem solving. Our brands are well-recognized and respected in the urethanes chemicals markets, where we supply products via a global network of established distributors and agents. We pride ourselves in maintaining and developing our busi-

ness through customer intimacy, by forging close personal contacts at both commercial and technical levels. Emphasis is placed on understanding the market environment and responding quickly to customer needs, often by tailoring products and processes to match specific requirements.

## Our Products

We manufacture a wide range of polyurethanes (in various solvents, as aqueous dispersions and as 100% solids), urethane intermediates, crosslinking agents and associated materials for surface coatings, textile and leather finishes, composites, adhesives, sealants and foam applications.

and other diverse businesses. Prepolymers can be formulated as stable 1-K products that are applied and cured by atmospheric moisture, or as 2-K versions by mixing with reactive extenders immediately prior to use. The polyols can be combined with poly-functional isocyanates into versatile 2-K coating systems. Our additives include chain extenders/crosslinkers and moisture scavengers for formulations containing urethane prepolymers or other isocyanate-tipped binder components.

The prepolymers, polyols and additives can be supplied to the industrial, professional, contract and DIY markets. Typically, they are used in coatings, sealants and adhesives for building and construction, automotive finishing, printing



■ Trixene® SC prepolymers used in combination with tar for flexible 1-K and 2-K weatherproof coatings.



■ Quasilan prepolymers used as protective coatings, and binders for jointing sand in block paving.

## Our Vision

- To be a leading supplier of polyurethanes, urethane intermediates and associated products to industry
- To be our customers' first choice for current & future requirements, as a committed and responsible supplier
- To offer solutions that meet our customers' needs through product differentiation and true innovation
- To invest in line with our customers' growth strategies, regulatory compliances and Corporate responsibilities
- To provide a timely, responsive and reliable service through our Global network of agents and distributors

**LANXESS**  
Energizing Chemistry

**LANXESS Solutions US Inc.**  
formerly Chemtura Corporation

199 Benson Road  
Middlebury, CT 06749  
USA  
Tel: +1-203-573-2000

[ure.lanxess.com](http://ure.lanxess.com)

This information and our advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to check its validity and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactures by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with our General Conditions of Sale and Delivery. Edition 04/2017

® = trademark of LANXESS Deutschland GmbH or its affiliates, registered in many countries in the world.

10205 EN | 0417

**Urethane Systems**  
**Intermediates for Urethane**  
**Surface Coatings**

Polyols – Additives

**QUALITY WORKS.**

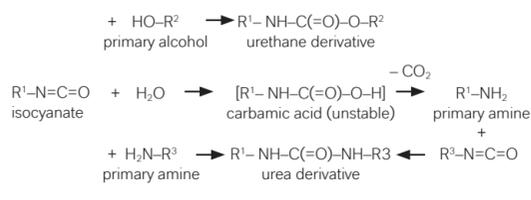
**LANXESS**  
Energizing Chemistry

# OUR TECHNOLOGY

A product range that is based on established PU technology, augmented by LANXESS know-how for maintaining quality and consistency. We continually seek out and find new applications and opportunities for these materials.

## Our Technology

The main reactions taking place in urethane chemistry involve addition of water, alcohols or amines across an isocyanate group. Mono-functional reagents form simple urethane or urea derivatives:

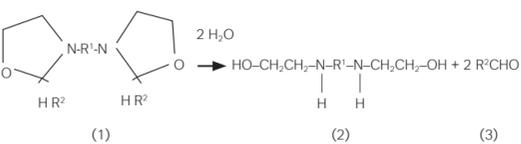


Reaction between diisocyanates and di-functional species leads to formation of linear polyurethanes, polyureas and poly(urethane-ureas). Introducing tri- or higher functionality encourages branching and/or crosslinking in the molecular network. Note that carbon dioxide is always evolved when isocyanate prepolymers or mono-functional scavengers (R1 = R3) react with absorbed moisture. This is an integral feature of the technology, and care must be taken to avoid issues with gassing, and bubble formation or blistering in coatings.

## Expertise

Research and development plays a key role in the support that we offer to customers. This may be in the form of modifying an existing grade to meet a particular need or specification, through to the design of completely new products and concepts. LANXESS staff has long-standing experience in urethane and associated chemistries, and a pedigree for innovation. Our laboratories, pilot-plant and main production units are fully-equipped to cater for future trends in the formulation, evaluation and manufacture of urethane materials outlined in this brochure.

## Principles



The final properties of the urethane coating can be modified by carefully formulating the amount of bisoxazolidine and optional catalysts, such that:

- All four sites take part in the curing mechanism, yielding coatings with higher tensile and tear strengths.
- Only the two faster-reacting amine groups are involved, reducing toughness but increasing elongation.

Aldehydes (3) are the natural by-products of this latent-curing process. Differences in the crystallising behaviour, reactivity, and odours of urethane bisoxazolidines are largely determined by choice of ring substituent, R<sup>2</sup>.



# URETHANE SURFACE COATINGS INTERMEDIATES SELECTION GUIDE

These products can be formulated for metal protection, weatherproofing membranes, wood coatings, interior and exterior floors including concrete pavers and jointing compounds/gap fillers, speciality sealants and encapsulants, e.g. for pipelines.

### Key features include:

- Grades with low-free monomer content for 1-K and 2-K coatings meeting latest hazard regulations
- Chemical structures offering a range of flexibility, functionality and branching for the compounder
- Products applied by the usual techniques, under a wide range of factory and field conditions
- Supplementary data (guide formulations and typical properties), available for specific applications

## Trixene® Urethane Prepolymers

A range of isocyanate-terminated prepolymers based on aromatic and aliphatic diisocyanates. The aromatic types are mainly used in combination with certain tars and pitches for 1-K or 2-K flexible roofing membranes, and in 2-K joint-filling compounds. They can also be used as binders for cork,

rubber, foam etc. floorings, and for pipe coatings. Low-free monomer versions are now available. The aliphatic products are mainly exploited for coating applications where good light stability and/or resistance to yellowing are prime requirements.

Trixene® No.	Isocyanate Type	% NCO Content	Solids (%)	Solvent	Viscosity @ 25°C (mPAS)	Free monomer	Main applications
<b>Aromatic</b>							
SC 7702	TDI	3.2–3.6	> 98.0	–	4,000–8,000	< 1.0% TDI	coatings, 1-K roofmembranes
SC 7703	TDI	2.4–2.8	> 98.0	–	4,000–10,000	< 2.0% TDI	coatings, 1-K roofmembranes
SC 7707	TDI	2.3–2.5	> 99.5	–	5,000–11,000	< 1.0% TDI	mainly coating applications
SC 7721	TDI	3.5–3.8	> 99.9	–	4,500–7,500	< 0.1% TDI	low monomer 1,2-K coatings
SC 7722	TDI	3.1–3.5	> 99.9	–	4,000–10,000	< 0.1% TDI	low monomer 1,2-K coatings
SC 7725	TDI	4.2–4.6	> 99.9	–	5,000–8,000	< 0.1% TDI	low monomer 1,2-K coatings
<b>Aliphatic</b>							
SC 7902	IPDI	3.9–4.1	> 98.0	–	10,000–20,000	< 2.0% IPDI	light-stable coatings, sealants
SC 7930	HDI	9.0–12.0	64–66	Shellsol A PMA	50–1,000	< 0.2% HDI	1-K moisture cure coatings
SC 7931	IPDI	2.7–3.2	> 99.5	phtha B	4,000–10,000	< 0.5% IPDI	light-stablecoatings

## Quasilan Urethane Prepolymers

These are moisture-curing products based on TDI prepolymers and supplied as low-viscosity, clear liquids. Their main use is in primers, binders and surface coatings for porous substrates such as stone, concrete and jointing sands. Quasilan CT products can be applied by brush, roller or

spray equipment at recommended working temperatures of 5 – 40°C and ambient humidity. When fully cured, they form continuous, flexible films that help protect against chemicals, abrasion damage and erosion effects, and will improve traffic wear performance.

Quasilan No.	Isocyanate Type	% NCO Content	Solids (%)	Solvent	Viscosity @ 25°C (mPAS)	Free monomer	Main applications
<b>Aromatic</b>							
CT 23	TDI	1.0 max	19–21	naphtha 100	< 50	< 0.5% TDI	surface coatings and bindings
CT 29	TDI	1.65–2.35	28–30	xylene	< 50	< 1.0% TDI	surface coatings and bindings

## Quasilan Polyols

Branched polyols containing both ether and ester groups in the molecular backbone, and supplied as clear-hazy amber liquids. Alongside the appropriate crosslinkers, Quasilan polyols can be formulated as 2-K systems mainly for DIY and flooring markets. The co-reactant(s) can be selected from

a range of multi-functional isocyanates (e.g. crude MDI) or tipped prepolymers, all based on aromatic or aliphatic chemistry. This gives the formulator a wide range of options to achieve the best balance of high performance and cost efficiency.

Quasilan No.	OH value (mg KOH/g)	Acid value (mg KOH/g)	Water content (%)	Viscosity @ 25°C (mPas)	Equivalent weight	Main applications
RB 1150	150 - 160	3.0 max	0.1 max	3,330–3,700	ca. 360	2-K coatings and sealants
RB 1943	250 - 280	3.0 max	0.2 max	81,100–1,800	200–225	2-K coatings and sealants
RB 1999	160 - 190	3.0 max	0.2 max	1,500–2,500	295–350	2-K coatings and sealants

## Trixene® Additives

These are latent additives, mainly employed with isocyanate-tipped prepolymers in fully-formulated, 1-K and 2-K coatings and sealants. There are two distinct types that react with adventitious moisture, which have specific functions in our urethane technology. Trixene® SC 7906 is a urethane bisoxazolidine that readily reacts with water and will undergo chain

extension and crosslinking with moisture-cure, prepolymer coatings. This product tends to crystallize on storage, but can be melted out before its formulations are used in high-build, void-free coatings. Trixene® 7907 is a new, improved version that is non-crystallizing and stable down to –15°C in general use.

Trixene® No.	Solids (%)	NCO Equivalent Weight NH	NCO Equivalent Weight NH/OH	Viscosity @ 40°C (mPas)	Viscosity @ 25°C (mPas)	Main applications
SC 7906	96 min	244	122	1,000–2,500	6,000–12,000	bisoxazolidinecrosslinker
SC 7907	96 min	299	150	–	5,000–10,000	bisoxazolidine crosslinker, non-crystallizing

On the other hand, Trixene® AS is a mono-functional isocyanate derivative, widely used as an in-can stabilizer and moisture scavenger. As well as removing traces of water, it neutralizes any free hydroxyl and amine groups present, for

example, in coal tar/urethane blends and helps prevent premature gelling. To complement this range, Trixene® ASF is a more efficient and fasterreacting alternative based on p-toluenesulphonyl isocyanate (PTSI).

Trixene® No.	Solids (%)	% NCO Content	Boiling Point (°C)	Freezing Point (°C)	Viscosity @ 25°C (mPas)	Free monomer	Main applications
AS	> 99	10–14	190	10	500–2,500	< 0.1% TDI	active-hydrogen scavenger, for PU prepolymer systems
ASF	> 98	–	270	5	10 approx.	-	faster-reacting scavenger, for PU prepolymer systems

## Innovation

Our R&D effort focuses on the health, safety and environmental impacts of polyurethane technology, as well as on purely technical advances. Primary aims are to minimize hazards associated with free isocyanates, reduce VOC emissions and to lower the energy requirements of typical processes for manufacturing and using our materials. In addition to standard grades listed in Tables above, we have other products in regular manufacture and usually, a number of experimen-

tal products at different stages of evaluation. Customers can keep abreast of these activities through their normal service channels, or by registering their interest using contact details provided on the back of this brochure. Additional information is given in technical and material safety data sheets for individual Trixene® and Quasilan products. Samples, supplementary data, and formulating advice giving further details of our urethane products can often be supplied on request.