QUALITY PERFORMS.

Urethane Systems

Low Free Isocyanate Prepolymers

X Adiprene® LF
Low Free Prepolymers

QUALITY WORKS.

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LOW FREE ISOCYANANTE PREPOLYMERS
BRINGING UNPARALLELED PERFORMANCE

Low Free (LF) technology for unsurpassed industrial hygiene

Adiprene® LF urethane prepolymers
Due to increasing regulatory concerns about free isocyanate content, it is critical to protect employees and the environment with proper engineering controls and industrial hygiene procedures. LANXESS is highly dedicated to Responsible Care and helps processors to meet these standards through the development of LF prepolymer systems.

LANXESS is a leading innovator in the development of LF isocyanate technology which brings unparalleled performance and industrial hygiene to cast elastomers, coatings, and adhesives applications. LF urethane prepolymers minimize exposure to free isocyanate, a subject of increasing regulatory focus. LANXESS is the only manufacturer offering LF urethane prepolymers with levels of free isocyanate below 0.1% across a wide range of chemistries, including TDI, MDI, pPDI, IPDI, and HDI, and are constantly working to broaden this offering even further.

LANXESS is a leader in low free monomer prepolymer technology -- and prepolymer is the key. Instead of using just raw isocyanate and polyol with a curative to create an elastomer, using prepolymer provides the following benefits:

Performance
- Ability to control the morphology and achieve enhanced phase segregation of the hard and soft segment domains, enabling the creation of high performance materials
- Allows functional groups to be added to the backbone to expand the possibilities and tailor the elastomer performance

Safety
- Eliminates the handling of raw materials containing elevated levels of hazardous isocyanate monomers
- Enables the creation of low free isocyanate systems that reduce potential exposure to free isocyanates

Quality
- Delivers consistent and reliable elastomers, batch to batch, through increased control of chemical reactions during processing

Providing urethane in a prepolymer form enables our scientists to tailor the properties, improve the processing consistency, and control the level of free isocyanate for unsurpassed industrial hygiene.

Benefits of LF technology

Unsurpassed Industrial Hygiene
Adiprene® LF prepolymers have low free monomer content for improved industrial hygiene during handling and processing. These prepolymers protect workers and users from potential exposure to residual isocyanate and minimize EH&S workload.

In adhesives and coatings, Adiprene® LF prepolymers enable the formulator to eliminate the use of solvents and achieve final formulations with reduced hazard classifications.

Excellent Performance
Adiprene® LF prepolymers are chemically structured to provide superior performance, including excellent toughness, fatigue resistance, longer lifetimes when exposed to extreme conditions of temperature and chemicals, and low heat build-up for dynamic applications.

These prepolymers are used in the most extreme environments including oil and gas, wheels and tires, and mining applications, along with many other uses in construction, agriculture, automotive, electrical, office equipment and personal care.

Superior Processing & Productivity
Adiprene® LF prepolymers enable you to streamline your manufacturing processes. With the ability to achieve lower viscosity than conventional alternatives, they can minimize the use of solvents and may be specially formulated for processing at ambient temperature.

Specific processing benefits include prepolymers with lower viscosity, longer pot life and faster demolding with a range of curatives and catalysts to enable very high productivity.

LF technology product range

Adiprene® LF TDI systems for easy processing and excellent dynamics
Adiprene® LF TDI prepolymers take conventional TDI technology to the next level of performance and safety. By reducing free TDI levels to below 0.1%, these systems greatly improve workplace industrial hygiene and enable the use of PU prepolymer systems with lower viscosity, longer pot life, and faster demolding. Adiprene® LF TDI systems offer strong performance and easy processing for a wide range of applications.

Adiprene® LF MDI systems for excellent performance and easy processing
Adiprene® LF MDI prepolymers provide significant health and safety advantages due to low free isocyanate levels (in some cases as low as <0.1%), and the ability to cure with diols, in addition to a range of other suitable curatives. This ground-breaking innovation enables customers to pour parts with outstanding dynamic performance, excellent retention of properties, and high load bearing capabilities. Adiprene® LF MDI prepolymers demonstrate significant improvement in performance, processing, and industrial hygiene.

Adiprene® LF pPDI systems for excellent chemical resistance and high-temperature performance
Adiprene® LF pPDI prepolymers, with <0.1% free isocyanate, offer elastomers designed to withstand extreme conditions, where excellent resistance to high and low temperature, water, and chemicals is critical to performance and long part life. They are often used in dynamic applications because of their long life with very low heat build-up from hysteresis and superior fatigue resistance.

Selected Adiprene® LF pPDI prepolymers can outperform hydrogenated nitrile butadiene rubber (HNBR) at temperatures as high as 150°C (302°F), opening new applications opportunities with performance beyond typical polyurethane elastomers. Adiprene® LF pPDI enables the processor to make parts with excellence performance in extreme environments.

Adiprene® LF HDI and LF IPDI systems for outstanding weatherability and long pot life
Our aliphatic Adiprene® LF HDI and LF IPDI prepolymers have less than 0.1% free monomer and offer excellent physical properties for applications requiring UV stability and weatherability. Adiprene® LF HDI technology enables processors to make elastomers that they won't make with conventional HDI due to volatility concerns. Adiprene® LF IPDI technology enables excellent aesthetics and weatherability for elastomers, adhesives and coatings.