

HUNTSMAN

Enriching lives through innovation

Polyurethanes

DALTOPIR[®] *polyol formulated systems*

A family of polyol formulated systems for PUR- and PIR-based foam insulation

A SOLID STORY

SOLID

The story of Huntsman's DALTOPIR® polyol formulated systems is a strong and solid one. It's not 'just' about solid products though. For us, it goes much further than that. It's also about the solid production process that leads to these products, and the solid results enabled by our approach over the long-term.

With excellent thermal properties, foam insulation produced with our patented DALTOPIR® polyol formulated systems deliver optimal fire and smoke properties, without compromising on processing performance or durability. In this way, as a panel producer, you can ensure you are using the right systems available to create solid performance, in the most efficient way possible.



In a few simple steps, this brochure will guide you through the levels of solidness available through our DALTOPIR® polyol formulated systems developed for rigid foam insulation, with a special focus on DALTOPIR® XHFR product, the latest addition to our range of polyols commonly used to produce PIR insulation solutions.

Discover how our DALTOPIR® polyol formulated systems can make your life easier...

SOLID PROCESS

Combining the performance
of PIR with the processability
of PUR

The processing of PIR has never been a simple task, particularly when compared to PUR. That's why, from the start, making our DALTOPIR® polyol formulated systems as processable as PUR, while still offering all the performance advantages of PIR, was one of the main goals of our insulation experts and foam technologists.

With a reaction profile optimized to allow easy and consistent foam processing at high production speeds, our leading-edge, DALTOPIR® XHFR polyol formulated systems offers you the flexibility to quickly and efficiently manufacture rigid foam insulation for fire-rated panels of varying thicknesses.

Using our DALTOPIR® XHFR polyol formulated systems, you can achieve:

- Improved foam wave stability
- Better panel planarity
- Increased line speed

Considerations:

DALTOPIR® XHFR polyol formulated systems help to produce low friability foam insulation at a minimum conveyor temperature of 60°C. The use of a primer (DALTOPIR® PRIM primer) is needed to deliver excellent bottom adhesion and long-term durability. Lambda values can be further improved through the use of specific blowing agents.

SOLID PRODUCT

Combining desired
fire ratings with excellent
foam properties

Our DALTOPIR® XHFR polyol formulated system help to achieve a B-s1,d0 rating in Single Burning Item (SBI) tests when combined with a suitable panel design. With a panel thickness of just 100 mm, a fire resistance of 30 minutes can be achieved.

If desired, the already low thermal conductivity of foam insulation based on our DALTOPIR® polyol formulated system can be reduced further. Additionally, the resulting foam can meet all required physical properties at low competitive densities.

**Using the technology in our DALTOPIR® XHFR products,
you can benefit from:**

- Low smoke and low heat release
- Low thermal conductivity
- Good physical properties and low lambda values at competitive densities

**Our DALTOPIR® polyol formulated systems are the material of choice to help
secure certifications:**



Our range of DALTOPIR® polyol formulated systems have recently been added to the Specification Tested listing as an identified component in the FM Approvals – Approval Guide. This new certification will allow panel manufacturers to benefit from a faster FM approval procedure for their finished products.



The 14001 certifications of our production sites allow panel producers to score credit points under BREEAM Responsible Sourcing criteria.

SOLID RESULTS

Combining the advantages of PIR technology with long-term aesthetics and durability

Our DALTOPIR® polyol formulated systems have been extensively tested for long term durability. With excellent results in prominent durability tests – even at the highest temperatures – our DALTOPIR® polyol formulated systems are developed to remain aesthetically pleasing over the long-term.

In a nutshell, panels taking advantage of the technology in our DALTOPIR® polyol formulated systems offer:

- Long-term durability
- Product quality even in extreme temperatures
- Safety and sustainability

Applications

- Commercial and industrial buildings
- Roofs and walls
- Commercial and residential entry and garage door panels
- Commercial refrigeration

SOLID SOLUTION

Our DALTOPIR® polyol formulated systems developed to produce PIR rigid foam insulation can help meet stringent international fire safety requirements and satisfy the needs of composite panel producers worldwide. With a full range of products, we offer a solid solution for every requirement.

Our range of DALTOPIR® polyol formulated systems consists of:

- DALTOPIR® FR polyol system
- DALTOPIR® FR+ polyol system
- DALTOPIR® HFR polyol system
- DALTOPIR® XHFR polyol system

In addition, our range of DALTOPUR® polyol systems complete our range of solutions to help PUR- and PIR-based foam production of non-fire-rated as well as fire-rated composite panels.

Our full range of polyol formulated systems:

	DALTOPIR® XHFR	DALTOPIR® HFR	DALTOPIR® FR	DALTOPIR® FR+	DALTOPUR® FR	DALTOPUR® NFR
Reaction to fire	B-s1,d0	B-s2,d0	B-s2,d0	B-s2,d0	Min C-s3,d0	F
Fire resistance	EI 30	EI 30	EI 15	EI 15	-	-
These certifications can be achieved in combination with suitable panel design.						
Conveyor temperature (°C)	60°	60°	50°	45°	40°	40°
Iso / Polyol ratio (... / 100)	250/280	250/265	185/210	195/225	165/180	165/190
DALTOPIR® PRIM	required	required	required	required	not required	not required
Applied density (Kg/m³)	40-42	40-42	40-42	40-42	39-41	37-39
Initial lambda (mW/mK @10°C)	19-21	19-21	21-22	21-22	21-22	21-22
FM Approvals Listed Identified Component	✓	✓	✓	✓		

Results generated in lab or field conditions, which are typical for this application. Data variations due to varying processing or ambient conditions cannot be excluded. These properties are not part of the specifications of DALTOPUR® and DALTOPIR® polyol formulated systems.

As a trusted polyurethane partner for panel producers, we also offer a number of complementary solutions:

- DALTOPIR® PRIM primer for PIR cores for fire-rated composite panels
- DALTOSTICK® adhesive for all types of solid insulating cores

DALTOPIR® polyol formulated systems: towards sustainability

All 17 of the 2030 UN Sustainable Development Goals are important to our business – with three of particular relevance to the construction sector:



Self-supporting panels providing fast-erecting, highly insulated buildings and fire safe designs.



Superior processability and long-term panel durability to minimize the extraction of natural resources.



Excellent thermal performance to reduce reliance on fossil fuels and CO₂ emissions.

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SOLID PARTNER

Committed to our customers

Working from a technical center in Ternate, Italy, that's dedicated to insulation innovation, our team ensures that our foam insulation solutions are constantly optimized to anticipate customer needs and meet the legislative requirements of the composite panel sector.

With deep knowledge and expertise in sustainable construction, lifecycle analysis and building fire safety, we are a recognized leader in the polyurethane-based insulation market. Our research experts, foam technologists and adhesive specialists are strongly committed to driving progress in panel production and performance, by offering ever more solid solutions to make your life easier.

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SOLID IDEAS

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Contact a Huntsman representative in your region or visit our website at www.huntsman.com/DALTOPIR

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Products may be toxic and require special precautions in handling. The user should obtain Safety Data Sheets from Huntsman Polyurethanes and Huntsman Performance Products containing detailed information on toxicity, together with proper shipping, handling and storage procedures, and should comply with all applicable safety and environmental standards.

Hazards, toxicity and behavior of the products may differ when used with other materials and are dependent on the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users.

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