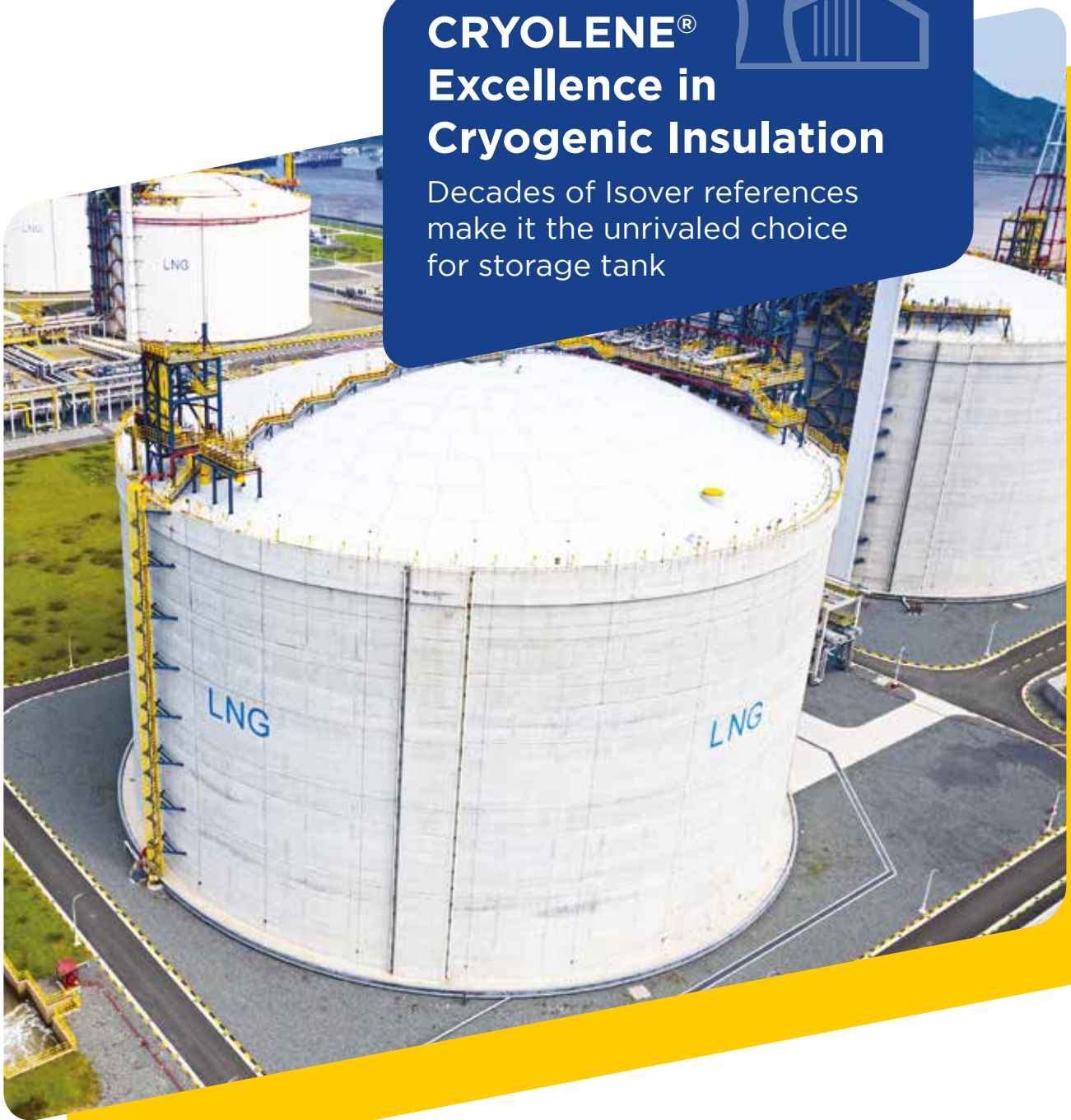
isover
SAINT-GOBAIN

CRYOLENE® Excellence in Cryogenic Insulation

Decades of Isover references make it the unrivaled choice for storage tank



SAINT-GOBAIN

Cryogenic storage tank:
A VERY DEMANDING MARKET

LNG, LPG and Other liquefied gases such as ammonia, ethylene, hydrogen, nitrogen and oxygen are playing a decisive role in the global energy transition. By cooling gases to extremely low temperatures, they are transformed into liquids that are far easier to store and transport, unlocking new possibilities for power generation, industrial use and mobility. LNG, for instance, is cooled to around -162 °C, reducing its volume by a factor of 600, while LPG is liquefied under moderate pressure and used extensively in heating, cooking and off-grid energy systems.

But behind this efficiency lies a major engineering challenge: **the safe storage of cryogenic liquids in massive tanks exposed to extreme physical stress.** Tank walls must withstand continuous cycles of expansion and contraction as liquid levels change, while the insulation system must ensure thermal efficiency to minimize boil-off gas, preserve structural integrity, and guarantee long-term safety.

As demand for cryogenic fuels accelerates worldwide, insulation becomes a decisive factor in the performance and reliability of storage infrastructure. The market for cryogenic tanks is therefore not only about handling low-carbon fuels — it is about mastering one of the toughest insulation challenges in the energy industry.

Global LNG demand is set to continue accelerating as new supply enters the market (IEA, 2025). With this heritage and expertise, Isover is uniquely positioned to support the industry in meeting tomorrow's energy challenges.

DID YOU KNOW

Cryogenic equipment plays a crucial role in advancing clean energy solutions by facilitating the storage, transportation, and utilization of alternative fuels.

In this dynamic landscape, Isover stands out as the most advanced player, both through its unmatched **experience since 1983** and its proven track record of more than **200 projects** delivered **worldwide**.

The challenges of
CRYOGENIC STORAGE INSULATION

Storage tanks for cryogenic fluids such as LNG, liquid oxygen, or nitrogen must meet extremely strict requirements, not only in design and construction, but also in the performance of their insulation systems. As liquid levels rise and fall, tank walls expand and contract, subjecting insulation materials to continuous stress. This makes compressibility, resilience, and long-term stability essential.

Cryogenic environments combine some of the harshest thermal, mechanical, and safety challenges in the industry. Insulation must deliver reliable performance at temperatures often below -150 °C, while withstanding thermal cycling, tank wall deformation, and fluctuating operating conditions, particularly in large-scale LNG tanks.

To meet these demands, insulation systems must combine multiple key properties:

- **Thermal efficiency** – Preventing heat ingress is essential to avoid boil-off and maintain energy efficiency. High-performance insulation minimizes boil-off and ensures stable operating conditions.
- **Fire safety** – Industrial environments demand compliance with stringent fire standards. Non-combustible materials and aluminum facings enhance safety and protection. In addition, **CRYOLENE®** solutions feature a uniquely low binder content, setting us apart from competitors and delivering superior fire performance.
- **Mechanical resilience** – Insulation materials must resist compression and movement while maintaining thermal performance, requiring designs that absorb stress yet remain elastic.
- **Ease of installation** – Large cryogenic tanks require fast and effective installation. Long-format rolls reduce joints and thermal bridges, improving both speed and overall system efficiency. With **CRYOLENE®** long rolls, entire tank walls can be covered in a single length, simplifying installation.
- **Durability and compatibility** – Insulation must remain dimensionally stable and chemically inert over decades of application, even in contact with materials like perlite or in humid conditions.

In short, cryogenic insulation is not just about keeping cold in: it is about **ensuring safety, efficiency, and reliability in one of the most demanding environments in energy infrastructure.**

CRYOLENE® BY ISOVER: EVERY CRYOGENIC REQUIREMENT, TICKED

- **Thermal efficiency: minimize boil-off, maintain stability**
- **Mechanical resilience: withstand stress and compression**
- **Simplified installation for even the biggest tanks**
- **Fire safety and durability under harsh conditions**

CRYOLENE®: A DEMANDING SOLUTION FOR A DEMANDING MARKET

To answer the toughest challenges of cryogenic storage, Isover developed the CRYOLENE® range, an advanced insulation solution specifically designed for the walls, suspended decks, and pipe connections of LNG and other cryogenic tanks.

HIGHLY RESILIENT

Made from highly resilient mineral wool rolls, **CRYOLENE®** maintains its elasticity and thermal performance across a wide temperature span, from -170°C to +120 °C. This resilience ensures tanks can safely absorb expansion and contraction during operation, guaranteeing long-term mechanical stability and efficiency.

TAILORED SOLUTIONS FOR BOTH TANK

The range includes tailored solutions for both tank shells and suspended decks, with formats optimized for large surfaces. Thanks to their extended roll length, **CRYOLENE®** products reduce the number of joints, minimizing thermal bridges and accelerating installation, a decisive advantage on large-scale industrial sites.

GREATER DURABILITY AND STRENGTH

For even greater durability and strength, **CRYOLENE®** is available with reinforced glass tissue or aluminum foil facings. These robust finishes provide high tensile resistance and maintain integrity even under demanding conditions, such as contact with **settling perlite.**

OUTSTANDING PERFORMANCE

CRYOLENE®'s outstanding performance has been validated through **independent laboratory tests** and proven by **decades of use in the most demanding LNG and chemical environments worldwide,** making it the trusted insulation solution for the world's cryogenic industry.

CRYOLENE®

Isover's engineered solution for cryogenic tanks

- → Resilience across -170°C to +120°C
- → Extended roll length and width to reduce joints and thermal bridges
- → High mechanical strength with reinforced facings
- → Proven performance: tested and validated worldwide

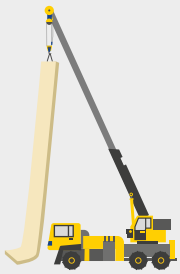
CRYOLENE, A PROVEN TECHNOLOGY

Unique on the market,
over **200 projects** delivered

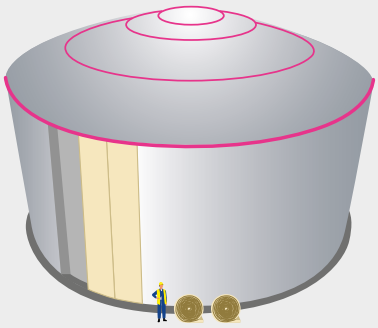
Since
1983

In more than
40 countries
in every continent

Up to
40 meters



With tanks up to
270,000 m³
already insulated



The biggest roll on the market, up to:
40 meters long, 2,4 meters width

CRYOLENE®: DELIVERING VALUE AT EVERY STAGE OF CRYOGENIC INSULATION

Originally developed to meet the stringent requirements of one of our customers, Isover's CRYOLENE® range has since become a benchmark in cryogenic insulation. Every feature of CRYOLENE® is designed to solve the specific challenges faced in cryogenic storage tanks ensuring long-term safety, performance, and efficiency.

1. RESILIENCE TO TANK DEFORMATION

Cryogenic tanks constantly expand and contract as environmental temperature and stress change. Insulation must therefore combine compressibility with resilience to adapt to these stresses.

CRYOLENE® rolls retain their elasticity over time, ensuring reliable mechanical stability and consistent insulation performance, even under repeated thermal cycling.

2. ONE-PASS INSTALLATION (Optimized for large-scale projects)

Large LNG tanks demand insulation solutions that save both time and labor.

- **CRYOLENE® long rolls** (up to 40 m × 2.4 m) drastically reduce the number of joints, speeding up installation, minimizing thermal bridges, and improving overall efficiency.
- Simplified installation reduces man-hours, shortens time on site, and lowers the risk of accidents.
- Reinforced facings (glass tissue or aluminum foil) provide **high tensile strength** and resist damage during handling. These robust finishes not only enhance durability but also maintain their integrity under the most demanding conditions, such as mechanical stress or contact with **settling perlite.**

Easier to install
↓
Less man hour
↓
Less time on site
↓
Less accident risk

3. SUPERIOR THERMAL PERFORMANCE

In cryogenic environments, preventing heat ingress is critical.

- **CRYOLENE®** delivers excellent thermal resistance, reducing boil-off and ensuring stable operating conditions.
- The **CRYOLENE® 682 long roll** format enhances thermal continuity across large wall sections, further improving efficiency and reducing energy losses.

4. ENHANCED FIRE SAFETY

Safety is non-negotiable in LNG storage. **CRYOLENE®** leverages the **inherent fire-resistant properties of mineral wool,** protecting tanks and equipment in the event of a nearby fire.

- Helps prevent dangerous temperature rises that could trigger explosions or vapor release.
- Classified according to European standards:
  - **A1** with reinforced glass veil (V.V.)
  - **A2-s1, d0** with aluminum foil (A.A.)
- Classified according ASTM E84 standards
- Simplified installation reduces man-hours, shortens time on site, and lowers the risk of accidents.

5. DURABILITY AND COMPATIBILITY

Cryogenic insulation must deliver **decades of reliable performance.**

- **CRYOLENE®** is chemically inert and fully compatible with perlite-based systems.
- Robust facings resist tearing and abrasion, maintaining integrity through installation, handling, and long-term operation.

6. SUSTAINABLE BY DESIGN

CRYOLENE® supports more sustainable construction and operation of cryogenic infrastructure:

- **Longer rolls** (up to 40 m) reduce packaging, handling operations, and transport emissions.
- Long-lasting performance and minimal waste support more responsible insulation practices in heavy industry.

CRYOLENE® by Isover is more than an insulation material, it's a complete solution that combines safety, efficiency, durability, and sustainability to meet the world's most demanding cryogenic storage challenges.

Focus on CRYOLENE® 682:

THE BIGGEST ROLL IN CRYOGENIC INSULATION

- → **40**-meter roll length: **market's biggest roll**
- → Width on demand **0.4 to 2.4m**
- → Covers **full tank height in one layer**
- → Unrolling process **top down or bottum-up**
- → Fewer joints = **faster installation** and **better insulation**
- → **No scaffolding** needed for most operations
- → **Less manpower**, reduced risk on site
- → Dust-free **handling, clean and safe**
- → **Integrated facing** for material integrity
- → Optimized logistics **fewer deliveries, lower emissions**

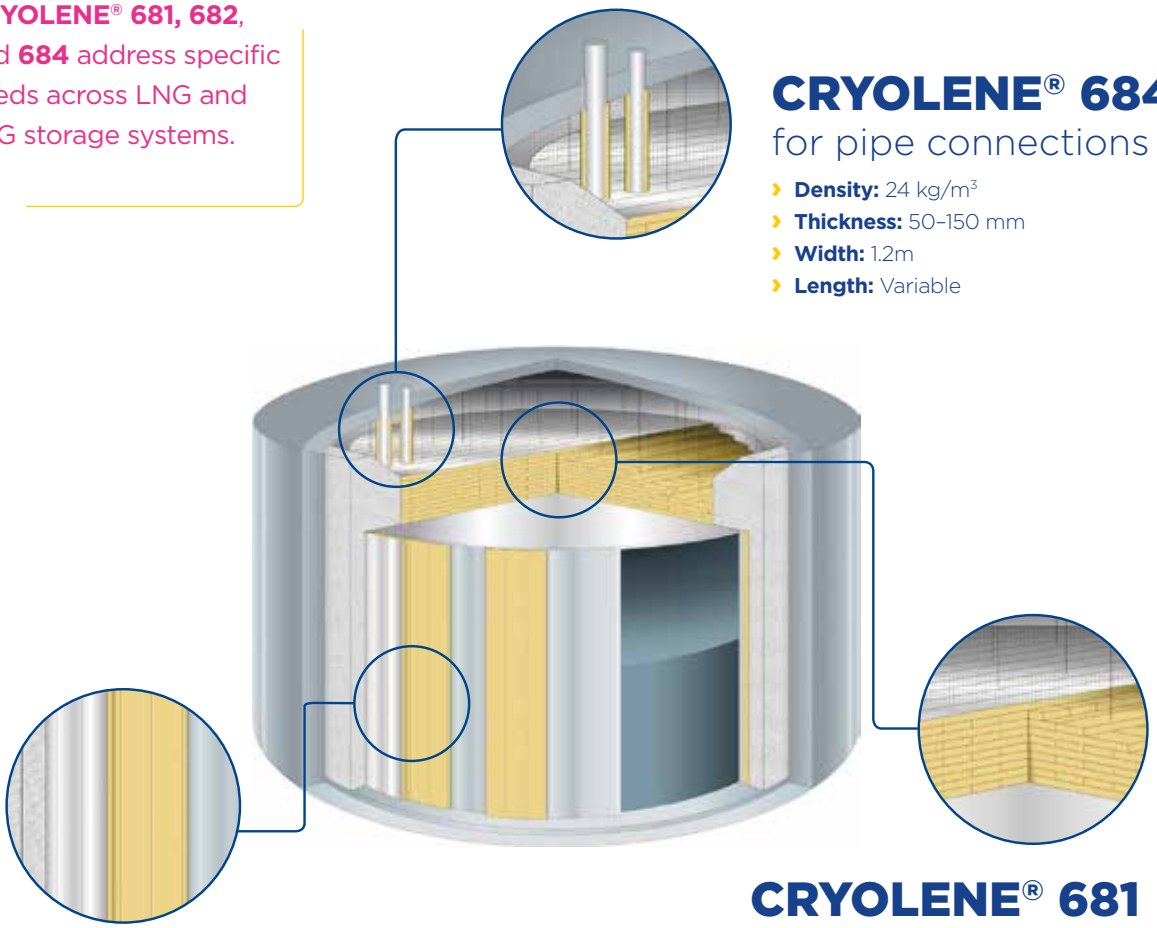
CRYOLENE®: a complete range
FOR WALLS, SUSPENDED DECK AND PIPE CONNECTIONS

From standard wall insulation to large-scale tank sections and complex suspended decks, the **CRYOLENE®** range offers tailored solutions to meet every cryogenic insulation challenge. Each product in the portfolio is designed to optimize performance, simplify installation, and ensure long-term reliability whatever the configuration.

Full product portfolio: 681, 682, 684

CRYOLENE® standard product range

Explore below how **CRYOLENE® 681, 682,** and **684** address specific needs across LNG and LPG storage systems.



CRYOLENE® 684
for pipe connections

- **Density:** 24 kg/m³
- **Thickness:** 50–150 mm
- **Width:** 1.2m
- **Length:** Variable

CRYOLENE® 681
for suspended decks

- **Density:** 12 kg/m³
- **Thickness:** 50–150 mm
- **Width:** 1.2m
- **Length:** Variable

CRYOLENE® 682
for tankshells

- **Density:** 17.5 kg/m³
- **Thickness:** 50–150 mm
- **Width:** up to 2.4m
- **Length:** up to 40 m

OUR SOLUTIONS IN ACTION

Trusted by customers around the world, our insulation solutions for cryogenic tanks are widely used to improve energy efficiency, optimise processes and ensure safety, for all types of industrial tanks.

Gate terminal B.V.
LNG Storage Tank 24-T-01 -
Rotterdam, The Netherlands

Isover is proud to have contributed its expertise to the Gate terminal B.V. project in Rotterdam, which involves the construction of a new 180,000 m³ LNG storage tank 24-T-01. This major facility combines an internal steel tank with an external prestressed concrete enclosure.

For this project, Isover supplied high-performance cryogenic insulation with **CRYOLENE® 681** AA&VV, covering more than 19,000 m² in total.

The project was built on more than 15 years of successful collaboration between Isover and Entrepose Contracting (in joint-venture with VINCI Construction Grands Projets), during which numerous LNG projects have been delivered worldwide.

Our early involvement, combined with our deep technical know-how in LNG insulation, audits, and project monitoring, ensured the highest standards of quality and traceability throughout.

The strategic location of our production facilities in France offers a strong competitive advantage in terms of reduced transport costs compared to overseas suppliers.

Gate terminal B.V. demonstrates Isover's position as a trusted partner for large-scale cryogenic storage projects and highlights its ability to support the energy industry with innovative insulation solutions.

Thi Vai LNG – Vietnam

CRYOLENE® solution was chosen, by EPC SCT and Whessoe, for Vietnam's largest LNG receiving terminal. The project features a 180,000 m³ full containment storage tank at Thi Vai LNG, a landmark installation that established CRYOLENE® as the reference solution in Southeast Asia.

For Thi Vai LNG, Isover supplied a complete solution with **CRYOLENE® 682** in long-roll format (full-height wall insulation) and **CRYOLENE® 681** for the deck, representing more than 140,000 kg of insulation material in total. The combination of tensile strength and resilience, along with proven thermal conductivity, was key to meeting the project's stringent technical specifications.

Isover also provided on-site support for the first-ever deployment of long-roll units by SCT, ensuring safe handling, packaging compression control, and optimized installation efficiency.

Chosen despite strong international competition, Thi Vai LNG stands as a flagship reference for Isover in Southeast Asia and joins a portfolio of iconic LNG projects worldwide, from Tianjin to Al Zour and Samcheok, confirming **CRYOLENE®** as the trusted solution for large-scale cryogenic storage.

Our INDUSTRY MANUAL offers a comprehensive guide to our energy-efficient and sustainable insulation solutions for industry. It includes theoretical insights, standards, technical documents, energy audit schemes, and installation guidelines.

You can access it from our website

Notes

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