

TITE LINER® HC SYSTEM

High performance thermoplastic liner for elevated temperature and extreme conditions



Tite Liner® HC System

United Pipeline System's Tite Liner® HC is a high performance thermoplastic lining system designed for severe conditions present in oil & gas and industrial environments. The Tite Liner® HC system utilizes EVONIK's VESTAMID® NRG Polyamide 12 resin that provides excellent protection in hydrocarbon service, elevated temperatures, as well as reducing permeation.

Tite Liner® HC is an excellent choice for the Oil & Gas and Petrochemical industries due to its outstanding corrosion protection, even in the harshest environments. Our custom lined pipe systems provide a complete corrosion resistant solution, significantly extending the operational life of your infrastructure.

Highlights of the Tite Liner® HC System

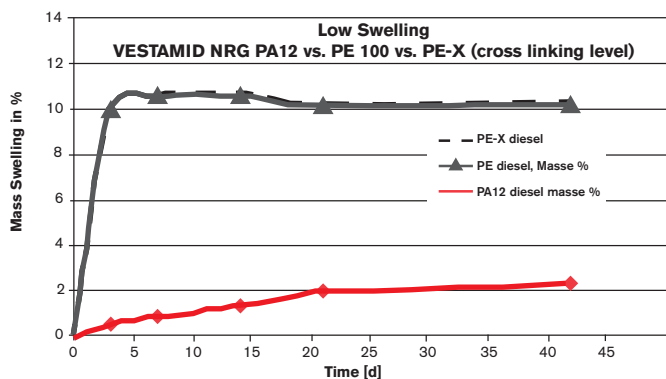
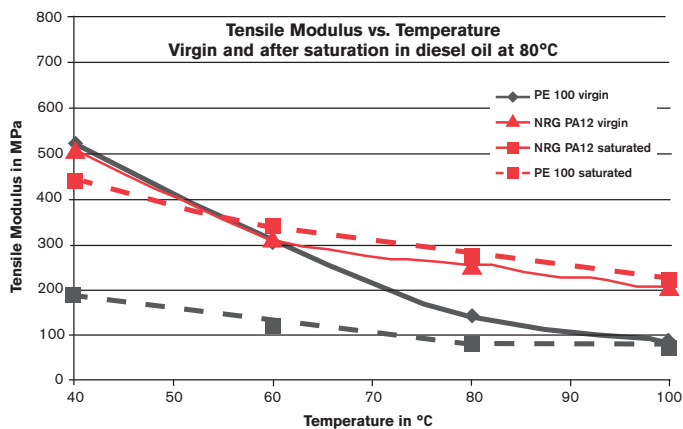
- High temperature resistance – up to 210°F (100°C)
- Compressed fit liner utilizing the Tite Liner® system
- Excellent performance in hydrocarbon service
- Enhanced resistance to collapse and buckling
- Improved performance in high sour gas environments with ultra-low gas permeation
- Extended service life resulting in lower cost of ownership versus alternatives such as CRA
- Reliable and safe performance record

TITE LINER® HC SYSTEM

Performance Highlights

- Extends the application range of Tite Liner® PE
 - Excellent mechanical strength in crude up to 100°C
 - Good chemical resistance under sour gas conditions
- Improved reliability of Tite Liner® PE in hydrocarbon service
 - Higher tensile modulus
 - Lower swelling in oil
 - No loss of mechanical strength after saturation in oil
 - Improved abrasion resistance
 - Higher critical pressure
- Reduces venting needs and improves environmental performance
 - Lower BTX permeation
 - Lower gas permeation

High Mechanical Strength and Low Swelling After Saturation in Oil



Tite Liner® HC

Tite Liner® utilizes VESTAMID® NRG (Polyamide 12) and is highly compatible with hydrocarbons and is also highly resistant to CO₂ and H₂S. Compared to polyethylene, Tite Liner® HC has improved mechanical properties, reduced swelling in hydrocarbons, and lower permeation of gases over a wide temperature range. Tite Liner® HC is expected to deliver lifetimes of 20 years and longer even at high temperatures and low pH in multiphase hydrocarbon flow versus polyethylene liners.

VESTAMID® NRG was thoroughly tested to demonstrate compliance with the international standards API 17J and ISO 13628-2. On the basis of these results, Lloyd's Register granted approval in June 2006 for the use of VESTAMID® NRG in the manufacture of flexible pipes for conveying production and injection fluids in offshore crude oil production.

Tite Liner® HC (utilizing VESTAMID® NRG) is the material of choice for harsh oilfield applications extending the lifetime of assets.

High Permeation Resistance

VESTAMID® NRG addresses the environmental issue of BTX permeation.

- BTX Permeation is a **factor of 150 lower**
 - compared to PE 100 at 40°C
- BTX Permeation is a **factor of 40 lower**
 - compared to PE 100 at 60°C

Reducing the need for frequent venting, resulting in lower cost of maintenance and ownership.

