



# TECHNICAL COMPARISON CT POLYMERS vs. PCTFE

# WHY VICTREX™ CT POLYMERS ?

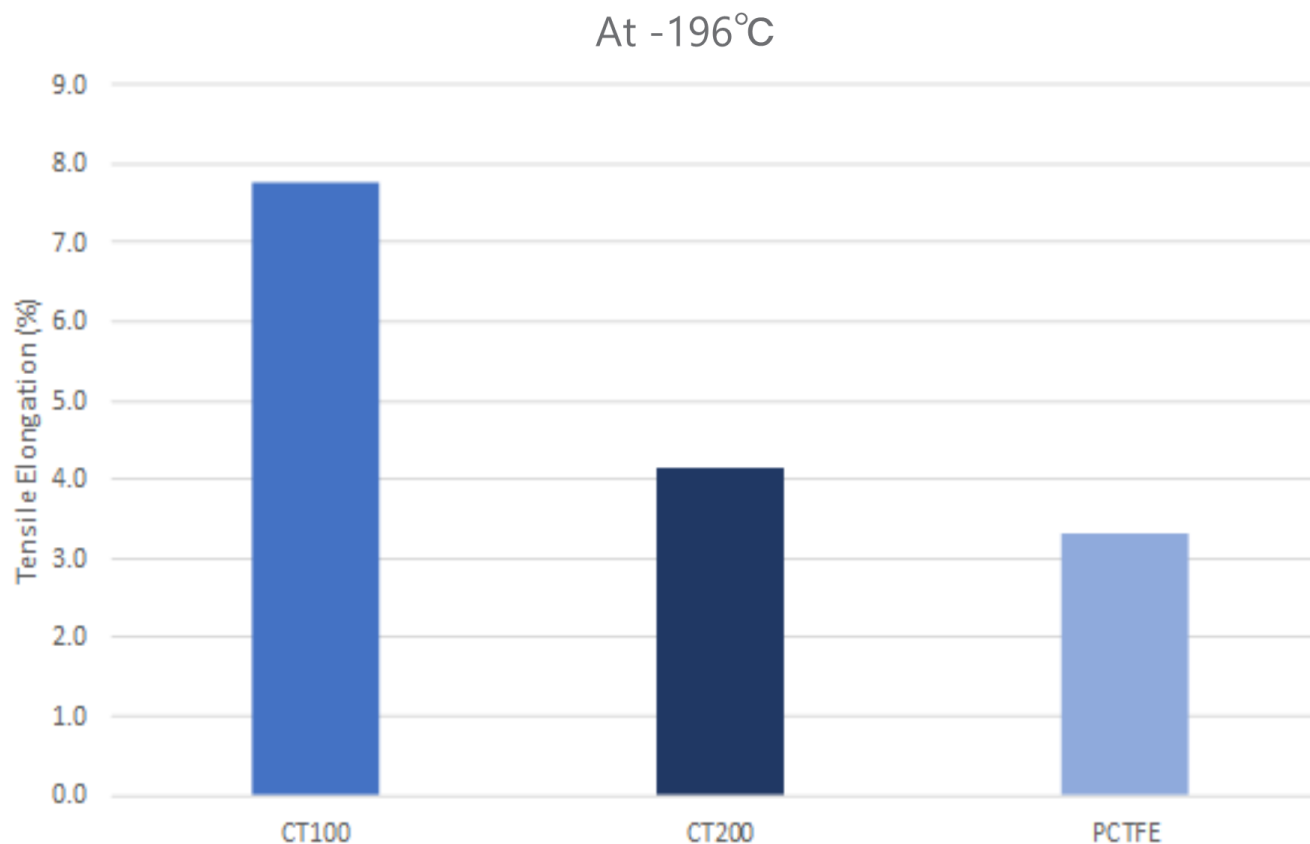
START REALIZING THE BENEFITS  
AND SAVINGS

- The production of natural gas continues to grow globally, representing 22% of the global energy consumption in 2017.
- Liquefied natural gas provides a range of **low temperature engineering challenges** to the industry.
- VICTREX CT polymer offers processors and end-users a **tailor-made** solution to address the challenges of **low temperature** environments.
- The data in this deck is based on results of testing commissioned by Victrex



## SIGNIFICANTLY HIGHER TENSILE ELONGATION(%)

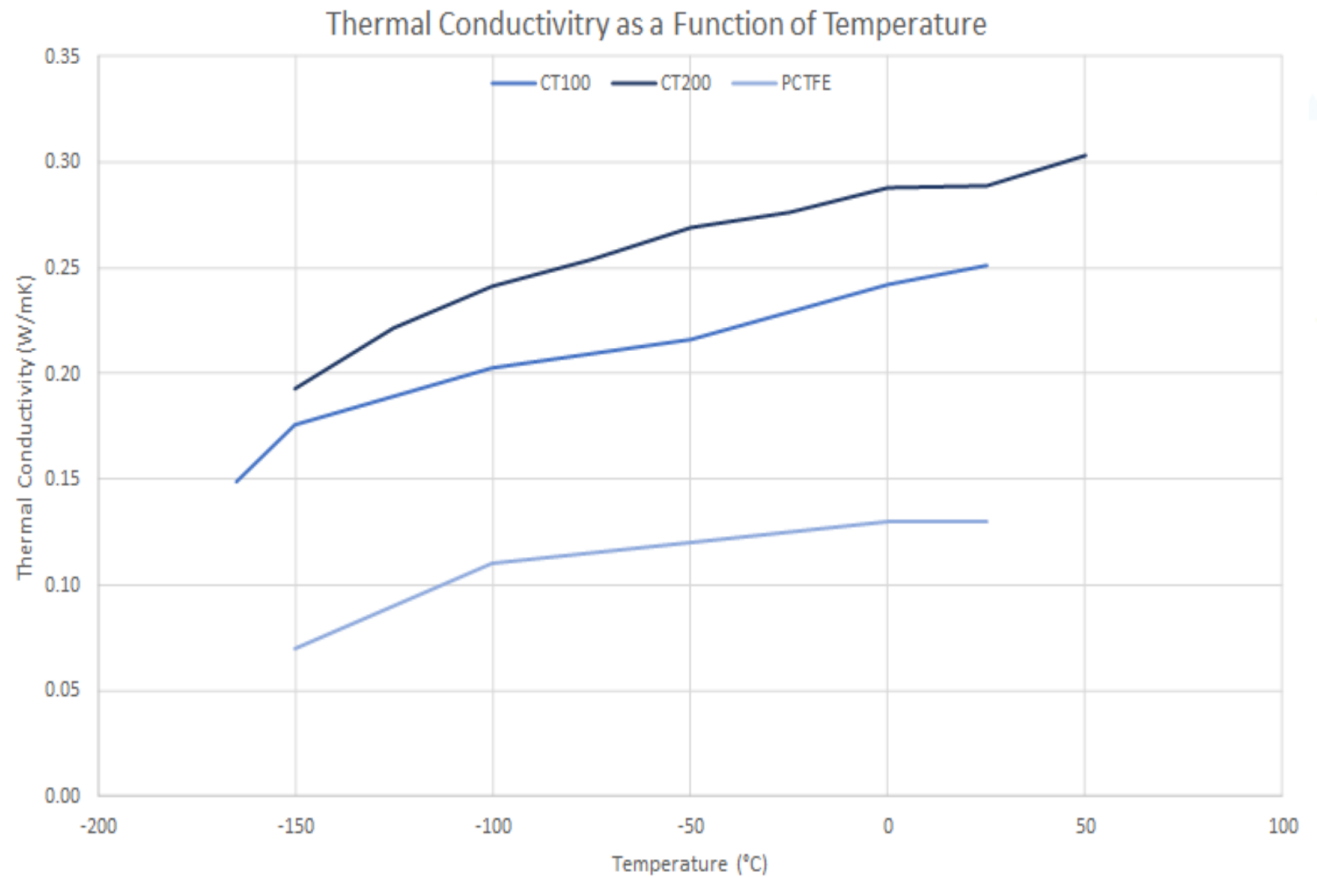
- Tensile Elongation is an indication of the ductility of a thermoplastic polymer.
- A higher Tensile Elongation is another demonstration of robustness in sealing performance.
- Both VICTREX CT™ 100 and VICTREX CT™ 200 show significantly higher elongation than PCTFE.





# HIGHER THERMAL CONDUCTIVITY

- The thermal conductivity of a thermoplastic polymer demonstrates how effectively it conducts heat
- The higher thermal conductivity of VICTREX CT™ 100 and VICTREX CT™ 200 allows them to equilibrate faster with their metallic counterparts than PCTFE.
- Thus VICTREX CT™ 100 and VICTREX CT™ 200 are more likely to exhibit consistent sealing throughout temperature changes.

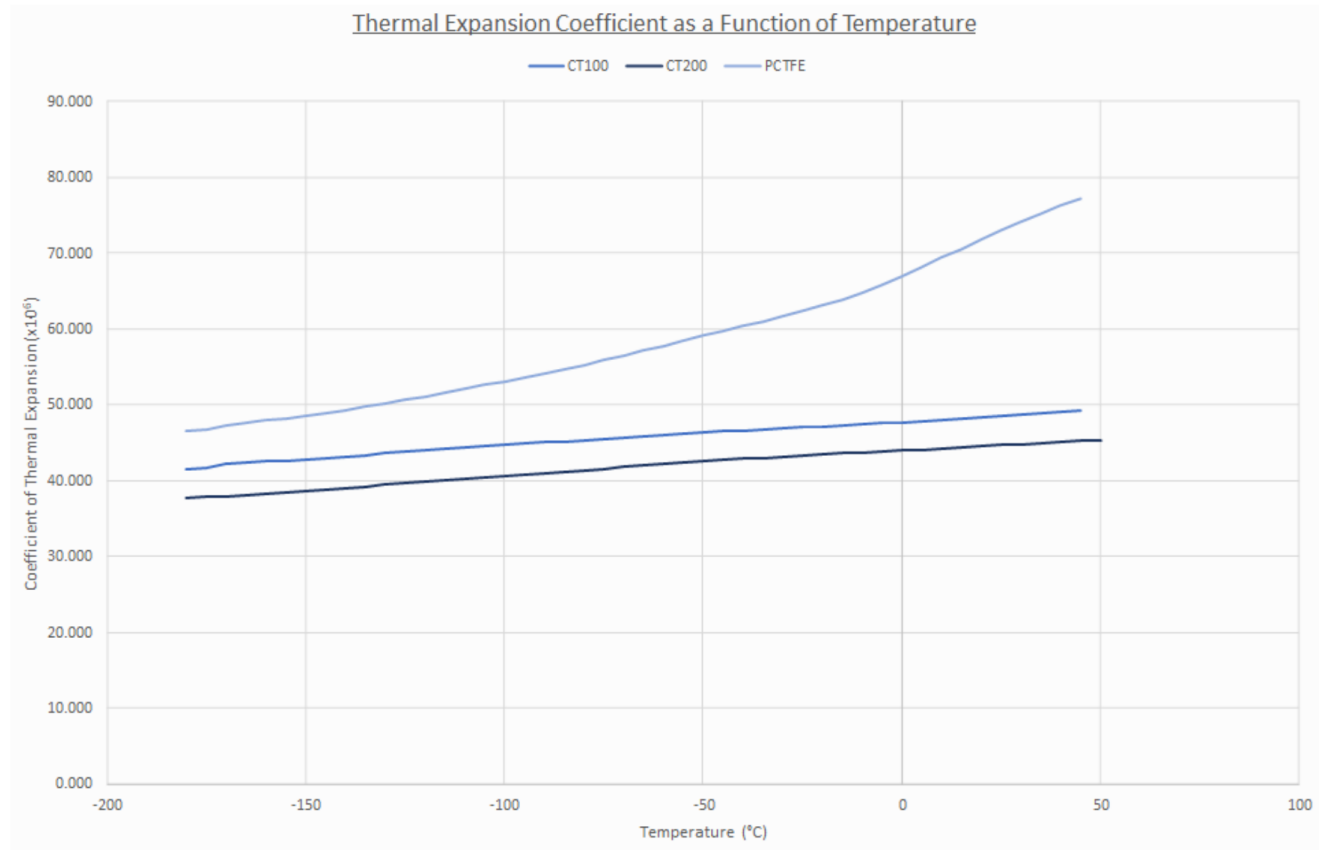


*Supporting information is available on request for claims referenced in this document.*



# COEFFICIENT OF THERMAL EXPANSION

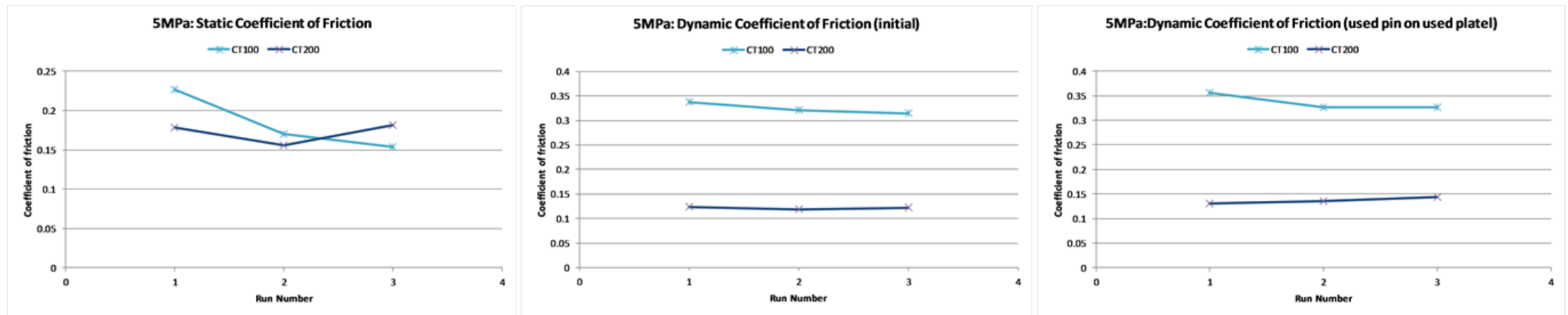
- Coefficient of thermal expansion describes how the size and shape of a material changes as a function of temperature.
- VICTREX CT™ 100 and VICTREX CT™ 200 show a clear benefit over PCTFE and are dimensionally more stable with consistency observed over a wide range of temperature.
- VICTREX CT™ 200 shows approximately a further 10% improvement over VICTREX CT™ 100.
- VICTREX CT™ 100 *ultimate in compressive sealing performance at lower temperatures.*
- VICTREX CT™ 200 *provides a balance of sealing performance and reduction in friction and torque.*



Supporting information is available on request for claims referenced in this document.

# COEFFICIENT OF FRICTION

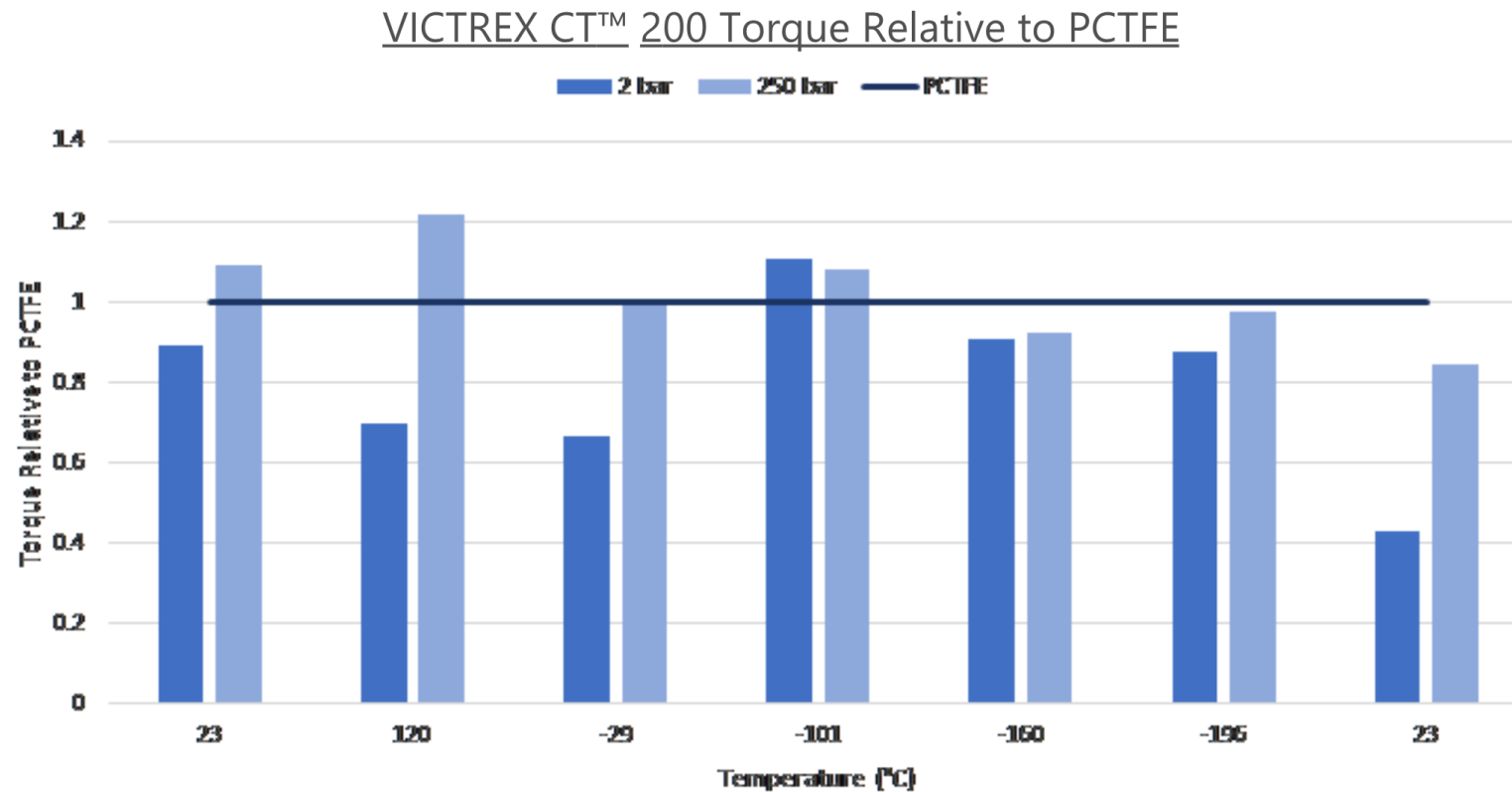
## Static & Dynamic



- ▶ The **static coefficient** is a measure of the force required to get the object moving after it has been stationary on a surface for a period of time. The **dynamic coefficient** of friction is a measure of the force required to keep the object moving.
- ▶ PCTFE Coefficient of Friction = 0.35 (Testing method: on steel)
- ▶ VICTREX CT™ 100 and VICTREX CT™ 200 provides low and stable static and dynamic coefficients of friction which allows lower opening force and turning force for ball valves.
- ▶ VICTREX CT™ 200 is suggested over VICTREX CT™ 100 when ball valves are made of soft steel and lower friction is required.

*Supporting information is available on request for claims referenced in this document.*

# BETTER PERFORMANCE IN TORQUE



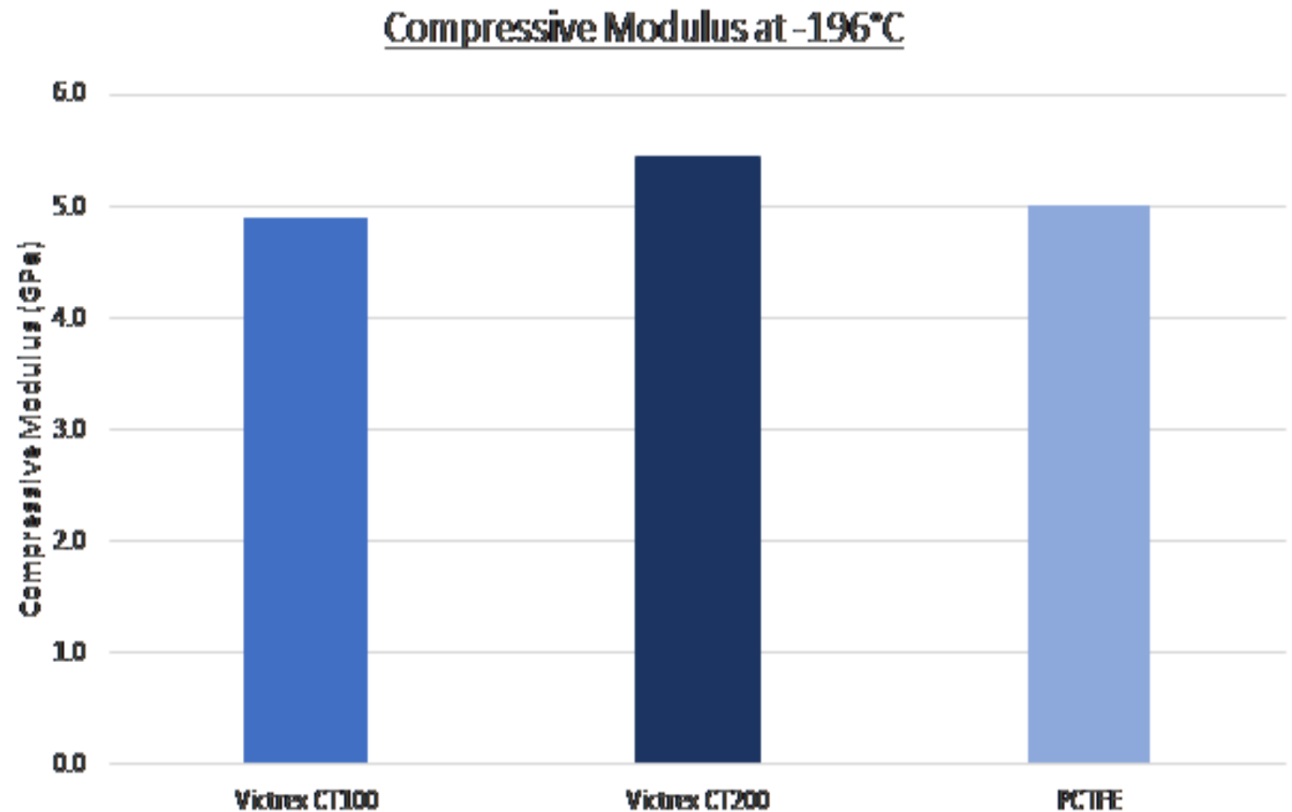
**Over a range of temperature from -196°C to +120°C we see an equivalent or better performance in torque requirement relative to PCTFE**

*Supporting information is available on request for claims referenced in this document.*



- Modulus indicates how much a material will deform under an applied load.
- Compressive modulus indicates the typical sealing performance of a thermoplastic material where a lower modulus allows a greater deformation and therefore sealing capacity.
- VICTREX CT™ 100 has equivalent Compressive Modulus to PCTFE
- VICTREX CT™ 200 has a slightly higher compressive modulus
- Sealing performance is however a balance of a number of properties, such as strength and tribology in addition to modulus. Performance is also highly application specific.

# COMPRESSIVE MODULUS



*Supporting information is available on request for claims referenced in this document.*





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