

Chemical Resistance & Structural Integrity

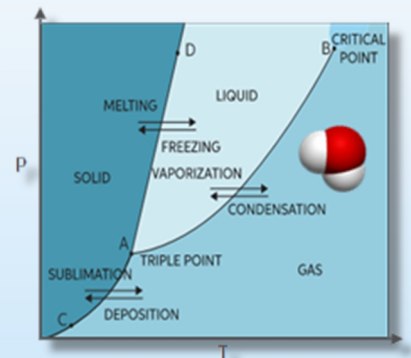
CheFEM 3 enables engineers to evaluate long-term material performance through simulation. This reduces reliance on costly and time-consuming physical testing.

CheFEM 3 combines chemical thermodynamics with finite-element mechanics to predict how polymers and composites respond to real-world chemical exposure. Experimentally calibrated and validated, the integrated framework enables predictive assessment of material performance, including:

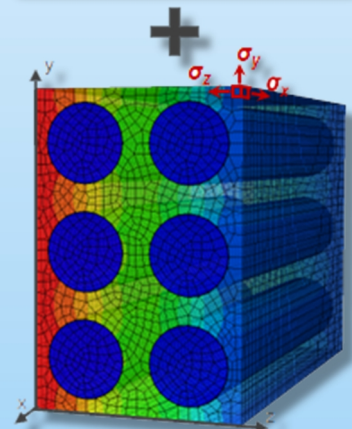
- Permeability & Chemical Resistance
- Chemical Swelling & Expansion
- Mechanical Response & Failure Prediction
- Rapid Gas Decompression (RGD) Behaviour
- Fugitive Emission & Leakage Risk
- Microvoid & Corrosion-Front Evolution
- Thermal & Chemical Spiking Effects
- Vented Annulus Behaviour in Hybrid & Pipe-in-Pipe Systems

Core Technologies

- Thermodynamic Models: Sanchez-Lacombe EoS / GIM & Helmholtz Fluid Thermodynamics
- Coupled Chemical-Mechanical Finite Element Analysis
- Automated Matrix Mechanical Data (MMD) Processing
- Abaqus & Ansys API Support
- Digital Twin & Machine Learning Integration
- AI-Assisted Calibration & Validation



**MATRIX & FLUID
THERMODYNAMICS**



**FINITE ELEMENT
MECHANICS**



Predict virtually. Test selectively. Engineer with confidence.



**SERVICE LIFE
PREDICTION**

Used by Industry Leaders

