What is ePTFE?
Expanded Polytetrafluoroethylene

Expanded
- Refers to the mechanical state of the material.
- Expansion process, innovated by W.L. Gore & Associates, is what makes GORE products so unique. (*We’ll come back to that in a moment…*)

Polytetrafluoroethylene (or PTFE)
- Chemical name for a unique plastic with extraordinary material properties.
- Most commonly known for its use as a material within the DuPont Teflon® brand of non-stick cookware.
Discovery of PTFE

• Discovered in 1938 by Roy Plunkett; an unintended consequence of a “failed” refrigeration gas experiment.

• Revolutionized plastics industry, and led to countless new innovations.

Roy Plunket (on the right), reenacts discovery of PTFE powder with assistants Jack Rebok (left) and Bob McHaress
Polymerization of Tetrafluoroethylene

- PTFE is produced by polymerization of a $\text{C}_2\text{F}_4$ (tetrafluoroethylene) monomer to produce a very long chain macro molecule.

- The Carbon-Fluorine chemical bond is the strongest known producing superior protection against chemical attack.
Properties of PTFE

Advantages

• Chemically inert to nearly all media (pH 0-14)
• Wide range of thermal resistance
  – -268˚C to +315˚C (-450˚F to +600˚F)
• Non-aging, weather and UV resistant
• Low coefficient of friction
• Physiologically harmless
• Wide application versatility

Disadvantage

• Mechanically weak
Discovery of expanded PTFE

In 1969, Bob Gore discovered expanded PTFE.

Unique process significantly improved the mechanical properties while maintaining all the positive chemistry attributes of the base PTFE material.
What is ePTFE?

Gasket Performance Benefits of ePTFE

Improved mechanical properties offer key advantages over other PTFE materials. GORE® gaskets more reliably withstand the harsh environment of dynamically operated bolted flange connections:

- Highly conformable to achieve incredible tightness
- Capable of sealing damaged flange surfaces
- Resistance to creep and cold flow
- Superior blowout and high temperature resistance
- Longer service life without the need for retorque
- Superior reliability performance