KEY EFFECTS OF ELEVATED TEMPERATURES ON PVC AND THERMOPLASTIC HOSES

Reduction in Working Pressure Capacity:

- At higher temperatures, PVC and **thermoplastic materials become more pliable**, causing a decline in pressure ratings.
- A typical PVC hose rated for **200 PSI at 70°F (21°C)** may experience a **pressure drop to 100 PSI at 120°F (49°C)**, illustrating a significant reduction in strength.
- Most manufacturers provide **pressure derating charts** to adjust for temperature effects.

Softening and Material Deformation:

- PVC hoses begin softening **above 100°F (38°C)** and can lose their shape under pressure.
- Prolonged exposure to elevated temperatures can lead to **permanent deformation or kinking**, affecting flow efficiency and durability.

Coupling and Fitting Retention Issues:

- High temperatures cause **hose expansion,** which can result in **loosening of fittings or couplings**.
- Hose assemblies should be tested in real-world conditions to verify secure fitting retention, especially in high-pressure applications.

Loss of Abrasion and Chemical Resistance:

- At high temperatures, **PVC and thermoplastics may experience increased permeability,** making them more susceptible to fluid absorption and chemical attack.
- Some materials become brittle after prolonged exposure to high temperatures, leading to cracking or premature failure

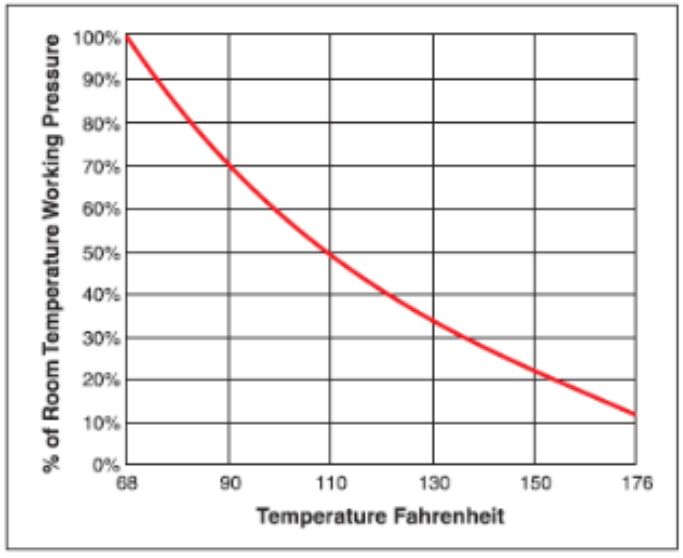
Temperature Cycling Stress:

- Applications with frequent **temperature fluctuations** can accelerate hose degradation.
- Expansion and contraction cycles **weaken the hose walls over time**, reducing service life.

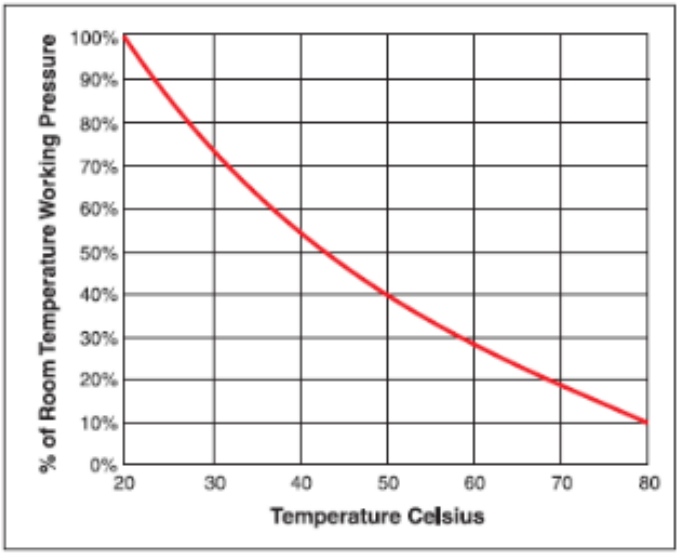
TYPICAL PRESSURE DERATING CHART FOR PVC/THERMOPLASTIC HOSES

Temperature (°F)	Working Pressure Reduction (%)
70°F (21°C)	100% (Full Rated Pressure)
90°F (32°C)	80%
100°F (38°C)	62%
120°F (49°C)	50%
140°F (60°C)	35%
160°F (71°C)	20%
180°F (82°C)	Not Recommended

***Note:** These values above are general estimates. Always refer to the hose manufacturer's specific pressure-temperature ratings for exact data.*



Example from the Fahrenheit Chart
If Working Pressure at 68°F is 200 PSI, then the WP at 110°F is 200 x 50%, or 100 PSI.



Example from the Celsius Chart
If Working Pressure at 20°C is 14 bar, then the WP at 50°C is 14 x 40%, or 5.6 bar.