

FACTORS AFFECTING HOSE SERVICE LIFE

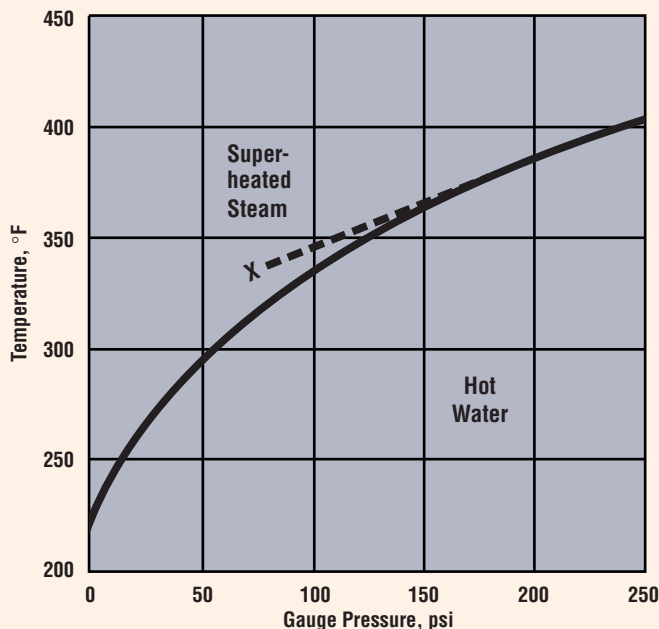
All hose has a limited life for a given application. This is true even if the proper hose has been selected for the application; it is used within rated pressures, temperatures and environmental conditions; and it is properly inspected and maintained. This is because the elastomers and reinforcement used to construct the hose will break down over time and with use. In addition, there are a number of factors that can adversely affect the service life of a hose. The major ones are:

- External Abuse** – Kinking, bending, high end pull, crushing, abrasion, exceeding the recommended minimum bend radius, exposure to chemicals and other abuse or damage will reduce the service life and performance of you hose. This may be the case even though the hose may appear to be undamaged from exterior appearance. Hoses should not be stretched, run over by equipment, or used to hoist, carry or pull objects. Hoses should not be bent beyond recommended minimum bend radius. This could result in kinks which could increase pressure and hose damage that could reduce pressure resistance. Large diameter hoses may require additional support to reduce stretching, kinking and external abuse.
- System Pressures** – **Never use hose at pressures that exceed its ratings.** A system (or device or application) can have varied pressures caused by source, operator action or mechanical components. It is the responsibility of the purchaser or user to accurately determine the maximum system pressure. Steady state pressure can be measured readily by gauges. Surge pressures are difficult to measure and may require the use of electronic pressure sensing devices. "Hammer effects" refers to sudden blockage or stoppage of the system that causes pressure spikes. This can damage or even cause catastrophic failure of the hose or system.
- High Temperatures** – Never use hose at temperatures that exceed its ratings. **High temperatures can degrade a hose very quickly**, resulting in shortened service life. The allowable temperature ranges for the Thermoid hoses are shown on the following pages. These are for **internal product temperatures** and assume external or ambient temperatures do not exceed the recommended working temperature of the fluid. Where external temperatures are higher than these ranges, contact your HBD/Thermoid Customer Service Representative for recommendations. **Fluid and environmental temperatures that are high, but within working temperature of hose, still shorten hose life.**
- Low Temperatures** – Never use hose at lower temperatures than recommended. Doing so could cause the hose to crack or break.
- Misapplication** – HBD/Thermoid designs and supplies a variety of hoses. **Always select the right hose for the application.** HBD/Thermoid disclaims liability for misapplication of its product. Contact your HBD/Thermoid Customer Service Representative for application assistance.
- Internal Abrasion** – Applications involving abrasive fluids, particularly where the hose makes one or more bends, will reduce the service life of the hose.
- Flexing and Vibration** – Flexing, twisting, vibration or other movement of the hose may shorten service life.
- Modifications to the Hose** – Repairing the hose, improperly coupling or re-coupling of the hose, or use of inappropriate fittings and other modifications to the hose will shorten service life and possibly cause immediate failure.
- Improper Installation** – Installing hose assemblies in a manner where the hose is subjected to a **torqued condition (twisted layline)**, will reduce the life of the hose significantly.

STEAM HOSE WARNING

Steam heat is hotter than boiling water (212°F, 100°C) and increases in temperature as pressure increases. The danger from steam in industrial applications is due to the great heat and pressures involved. Water changes to steam at higher temperatures when under pressure. If the steam escapes, massive quantities of heat are released. This, combined with high pressures, can prove to be dangerous for the operator. **Use only steam hoses designed for these applications. A steam hose should never be used to carry pressures or temperatures higher than it is rated to handle, in spite of any safety factor.**

STEAM CHART



The dotted line shows the process of saturated steam being transformed into superheated steam. If a steam line is at a pressure of 150 psi, and a temperature of 366°F, it contains saturated steam. If the pressure is substantially reduced by the expansion of the steam (such as the sudden opening of a valve or the steam passing into a larger pipe or hose), the condition of the steam follows the dotted line to some point X in the superheated steam area. This condition may not last very long, but the superheated steam tends to deteriorate the tube stock in ordinary steam hose intended for use with saturated steam. This usually results in hose failure.