

# How Weld Hose Materials Affect Shielding Gas Quality

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*Every component of a gas delivery system can contribute contaminants*

Many defects in welds made with gas tungsten arc welding (GTAW), gas metal arc welding (GMAW) and plasma arc welding (PAW) processes can be traced to contaminants such as oxygen and moisture in the shielding gas. Often the entire gas delivery system, rather than just the gas cylinder, is the cause. Commonly used materials of construction for weld torch tubing and hoses — such as PVC and other plastics — can significantly degrade shielding gas quality because atmospheric moisture and oxygen can permeate through the hose walls.

## Areas of Concern

While determining sources of impurities in gas delivery systems, the major areas of concern include the gas cylinder, piping system, hoses, tubing and other plastic/nonmetallic components.

## Gas Cylinders

Occasionally, a gas cylinder runs dry, allowing moist air to back flow into the cylinder, which causes rust formation on the cylinder's inner wall. Acting like a sponge, the rust soaks up air and moisture during subsequent fillings, then releases a portion of these contaminants to the cylinder gas, perhaps continually over the life of the cylinder. Thus, a single accident can result in dirtier gas to all subsequent users of the cylinder.

Gas suppliers conduct a hydrostatic pressure test of their

cylinders every five years, also causing rust formation and resulting in moisture contamination.

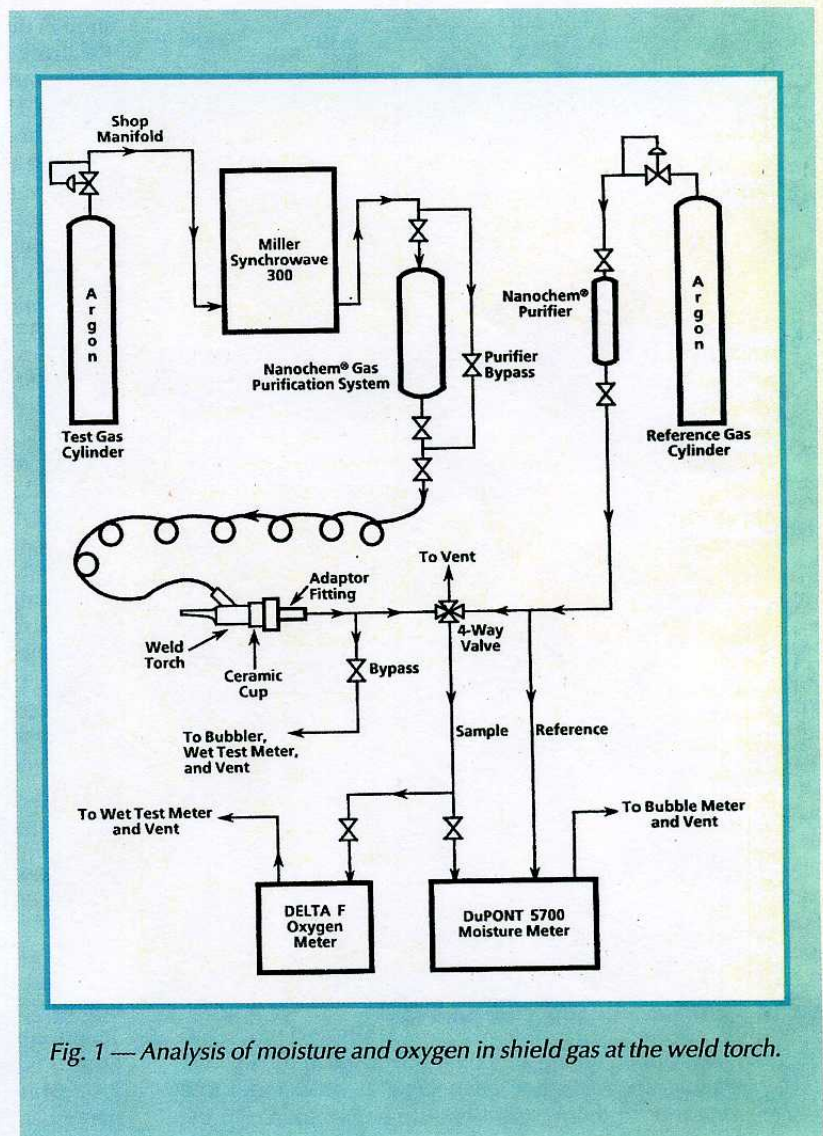


Fig. 1 — Analysis of moisture and oxygen in shield gas at the weld torch.