



MILWAUKEE VALVE

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From: Geoff McLaughlin *GM*
To: Milwaukee Field and Inside Sales
Subject: Ultra-Pure Valves - Soldering Considerations

Milwaukee Valve as you are aware has introduced many valve configurations using low/no lead alloys under our Ultra-Pure brand, consistent with the evolving specification and standards landscape and the associated markets for valves to be used for drinking water for human consumption. This memo addresses some considerations our customers should bear in mind with respect to soldering these valves into their systems, as applicable.

The low lead alloys generally have lower thermal conductivity and heat transfer coefficients, so that local temperature increases in the joint, as are seen in soldering operations, don't smooth out as rapidly. This means higher temperature spikes can be seen if extra care isn't taken. These consequences can in turn create problems for the valve. In extreme cases, overheating the valve could lead to a stress rupture somewhere in the metal itself. Less severe overheating could easily damage or destroy the valve seats.

To prevent these problems, installers should always direct the heat source AWAY from the center of the valve, and keep the flame at sufficient distance to prevent overheating, which is first indicated by the appearance of a tawny or brownish hue to the valve exterior. Placing a wet rag on the tubing AWAY from the valve (never around the valve body, which would draw all the heat across the seats and thereby ensure a problem), is a way to actively heat sink the installation and prevent seat overheating, often a good idea on larger valves. Placing a wet rag directly on the joint immediately following soldering can even the distribution of heat energy in the joint and improve the overall quality of the made-up connection.

Milwaukee Valve recommends the use of lower melt temperature solders wherever possible, consulting the local regulations, job specs, material suppliers for the solder and flux, and ASME standards (in this case ASME B16.18) for guidance. Fluxes must be appropriate for the selected solder and valve materials.



Beyond this, the engineer or installer should make sure that the flux either contains no ammonia compounds, or at least has a very low level of these (<5% by weight for example), as they can release corrosive materials into the valve which could in turn create adverse corrosion issues. Fluxes that are certified compliant to ASTM B 813 are acceptable with ammonium chloride levels up to 10% by weight.

If more guidance is required, we recommend our customers contact their flux suppliers for guidance, and rely on their own experience first, e.g. if you're using a product giving you satisfactory results, that is good justification to continue, and to share data with other Milwaukee Valve customers who might likewise have good success with certain products. Milwaukee Valve sales personnel can assist in connecting users to foster such a dialogue.

If you have any questions, please contact the writer at 262 432 2853, Bob Rudman at 262 432 2728, or Gary Schommer at 262 432 2854.

