Sealing FluoroEtch® Treatment Tubes with MWS-004

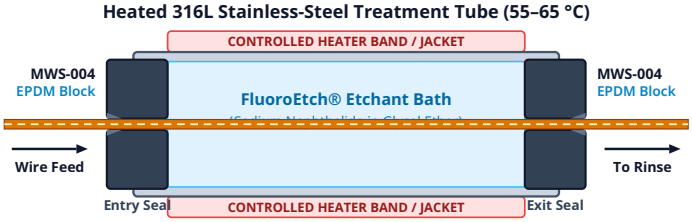
Application Note: MWS-004 EPDM Containment, Elastomer Compatibility & Continuous Etch Line Setup

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1. PROCESS PURPOSE & DUAL-END CONTAINMENT

Continuous fluoropolymer surface etching passes PTFE-coated wire through a heated stainless-steel treatment tube containing sodium naphthalide in glycol ether (FluoroEtch® or equivalent) to defluorinate the outer jacket for adhesive bonding, over-molding, or topcoating.

Mounting an **MWS-004 EPDM** seal block at both entry and exit ports helps contain warm liquid etchant, reduce glycol-ether vapor loss, and limit ambient air and moisture ingress (which degrades active sodium naphthalide reagent) while minimizing mechanical drag on the PTFE jacket.



MWS-004 EPDM seal blocks seated in tube end ports and secured as applicable; tip orifice trimmed to wire OD. Conceptual view; holder hardware varies by line.

Figure 1: Dual-end block installation of **MWS-004 EPDM** seals on a heated 316L stainless-steel FluoroEtch® treatment tube.

2. MWS-004 EPDM INSTALLATION SEQUENCE

1. **Orifice Sizing:** Trim the **MWS-004 EPDM** tip opening cleanly to match the coated wire OD with light wipe contact.
2. **Port Mounting:** Seat both **MWS-004 EPDM** seal blocks into the 316L treatment tube end ports and secure with external clamps or retaining hardware as applicable.
3. **Line Alignment:** Align upstream and downstream guide rollers with the tube centerline to prevent side-loading the seal tip.
4. **Fill & Heat:** Purge moisture, charge with FluoroEtch®, and stabilize bath temperature at 55–65 °C under low head pressure.
5. **Routine Inspection:** Periodically check tips for orifice wear or weeping. **MWS-004 EPDM** units do not have an infinite service life in this application—replace as required.

3. MATERIAL & ELASTOMER COMPATIBILITY IN HEATED FLUOROETCH® (55–65 °C)

Component / Material	Status	Behavior in Sodium Naphthalide / Glycol-Ether Etchant (55–65 °C)
MWS-004 EPDM (Tested MWS-004 Compound)	PROVEN*	Proven in Roth Technologies testing for the specific **MWS-004 EPDM** compound and evaluated operating conditions (not all generic EPDM grades). Resists polar glycol-ether carriers and sodium naphthalide while maintaining block rigidity and tip wipe integrity.
Virgin PTFE / PFA / FEP (Wetted Liners, Sleeves & Fittings)	COMPATIBLE	Inert to glycol-ether carrier solvent; only superficial surface defluorination occurs on wetted skin, preserving bulk dimensional stability for liners, sleeves, and fittings.
316L Stainless Steel (Treatment Tube & Clamps)	COMPATIBLE	No solvent attack, high thermal conductivity for uniform jacket heating, and zero moisture permeation into active etchant.
Unqualified Silicone & Latex (Non-Industrial / Thin-Wall Tips)	AVOID	Unqualified or non-industrial silicone and natural latex tips can swell, soften, lose orifice tension, contaminate the bath, or tear on moving wire (see Section 4).

4. Engineering Warning: Avoid Unqualified Silicone & Natural Latex Materials

Field attempts to seal heated FluoroEtch® treatment tubes (55–65 °C) using unqualified, thin-walled, or non-industrial materials—such as general-purpose silicone cones or natural rubber latex tips—pose significant containment and process risks. These materials are not qualified for warm glycol-ether sodium naphthalide service and can absorb solvent, swell, soften, or tear under continuous wire motion, leading to orifice relaxation, etchant weeping, bath contamination, and moisture ingress. Use purpose-built **MWS-004 EPDM** seal blocks and verify compatibility for your exact line conditions.

5. TYPICAL OPERATING ENVELOPE & PRE-SPECIFICATION INPUTS

BATH TEMPERATURE	TUBE PRESSURE	ETCH CONTACT TIME	SPECIFICATION INPUTS
55 – 65 °C	**Low-Head / Static**	**As Applicable**	**Wire OD • Speed**
Acton general etch range	Non-pressurized containment	Governed by tube length & speed	Share port ID & wire spacing

***Qualification & Application Scope:** Proven performance applies specifically to the tested **MWS-004 EPDM** compound under evaluated conditions and does not extend to all generic EPDM formulations. Chemical resistance, operating temperature, seal life, and wire compatibility must be verified and qualified by the end user for the specific bath chemistry, wire diameter, and line speed. Follow all etchant manufacturer safety, ventilation, and quench procedures. FluoroEtch® is a registered trademark of Acton Technologies, Inc. MWS™ means Moving Wire Seal.

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