



FLEXIBLE FLUOROPOLYMER TUBING & FILM ETCH CARTS

Creative
Engineers, Inc.

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CEI'S FLEXIBLE FLUOROPOLYMER TUBING & FILM ETCH CARTS

CEI developed our first etch cart as a custom solution for a world leader in fluoroplastic tubing products. That cart became the basis for all our etch carts.

The original client needed an extruder-to-reel solution to provide continuous, high-quality fluoropolymer etching of many products in their portfolio. Newly extruded tubing must pass through the Etch Cart and be properly etched to allow for any number of additional downstream processes to occur. The solution needed to be simple and easy to use and maintain and be compact to economize on floor space. Operations required that the design minimize the use of etchant and generate minimal waste. An optimum design would consist of an etching chamber, an alcohol wash, and a heated water wash, with an additional feature that the etching chamber be adaptable to a variety of large and small tubing diameters.

Creative Engineers, Inc. responded with the Fluoropolymer Tubing Etch Cart product shown on the previous page. It features a proprietary-designed glass tube etching section, quickly and easily removable to change sizes or for cleaning and maintenance. The design ensures even contact with the etchant while exerting minimal resistance on the tubing travelling through the system. Operating costs are minimized with a tube geometry that uses only a small amount of etchant, with minor carry-over to other parts of the process. Waste is greatly reduced by using carbon filters for the alcohol and water baths with flow proving switches to protect the pumps if there is a filter becoming clogged. The hot water rinse portion is automatically temperature controlled with a redundant over-temperature safety feature. The cart is optimized to work with any of CEI's line of Fluoropolymer Etchants (C Etch-A, -B, -C, -D, -E, -F, -M, or custom formulations). Options for the product include polished stainless steel tanks, air knives, upgraded filter housings, rinse tank level indicators, and more.

CEI ETCHING EQUIPMENT CAPABILITIES

Small Diameter Tubing/Tubing on Wire

CEI's self-contained fluoropolymer tubing etch cart is designed to fit into the customer's system between the extruder or unspooling equipment and the rewind or other downstream equipment.

Thread/Yarn/String/Rod/Wire

The same cart used for small diameter tubing can be adapted to run string or fiber type materials as well as small diameter wire products.

Large Diameter Heavy Wall Tubing

Two options exist:

1. Ammonia etch system: CEI can design and provide a stationary or movable system to make a sodium ammonia solution, expose the tubing to the sodium-ammonia, and then rinse the tube of the sodium ammonia etch. Included would be a method to neutralize the etchant. Scrubber systems to handle the ammonia off-gas can also be provided.
2. Sodium naphthalide etch system: CEI can design and provide a stationary or movable system to make a naphthalene solution, expose the tubing to the sodium naphthalide, and then rinse the tube of the etch solution.

Films

Custom-design fluoropolymer film etch systems are also available.



ABOUT US

Creative Engineers, Inc. (CEI) is a unique and innovative alkali metal engineering company with the capability to design, build, and operate research and pilot-scale systems to meet customer needs. Each of our alkali metal expert engineers has from 5 to 30 years of experience.

The rapid results obtainable from CEI's dedicated resources often accelerate project schedules as opposed to performing the work in-house, where the researcher's efforts are often allocated among multiple projects.

We also work with other liquid metals, such as lead, antimony, bismuth, etc. and their alloys.

Contact us today at (717) 235-5469 to find out more information about our alkali metal experience.



Please refer to our brochure on CEI's line of fluoropolymer etchants for additional information.

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