

# High-Purity Heat Exchangers

## FEATURES

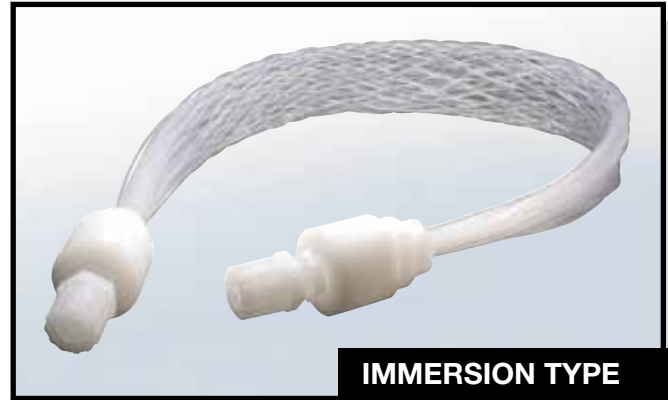
- *High-purity tubing*
- *Low extractables*
- *Corrosion-resistant fluoropolymer construction*
- *High thermal efficiency*
- *Both immersion coils and Shell-and-Tube units available*
- *Shell-and-Tube units include nonmetallic shells*

## DESCRIPTION

AMETEK Immersion Coil and Shell-and-Tube Heat Exchangers are now available produced from ultra high-purity FEP fluoropolymer resins. All wetted surfaces in contact with high-purity process fluids are in UHP materials. Additionally, shell-and-tube configurations are available with nonmetallic shells to eliminate any metal presence in proximity to fluid handling processes. With low extractable levels these units do not add contaminants or detract from the effectiveness of the fluids being heated or cooled. The UHP-FEP provides equivalent purity to UHP-PFA with the advantages of FEP.

The units, produced from UHP-FEP fluoropolymer resins, also retain the universal corrosion resistance that has been the hallmark of AMETEK heat exchangers for over 30 years. They can be used to heat or cool process fluids to optimize process parameters for the semiconductor, medical equipment, and foods industries. Typical chemicals and processes include acids used as etchants, rinsing and washing systems, and other surface treatments.

They are ideal for point of use generation of fluids such as ammonium hydroxide, sulfuric and hydrochloric acid, and chlorine dioxide where the heat of dilution or reaction must be controlled.



**IMMERSION TYPE  
HEAT EXCHANGER**

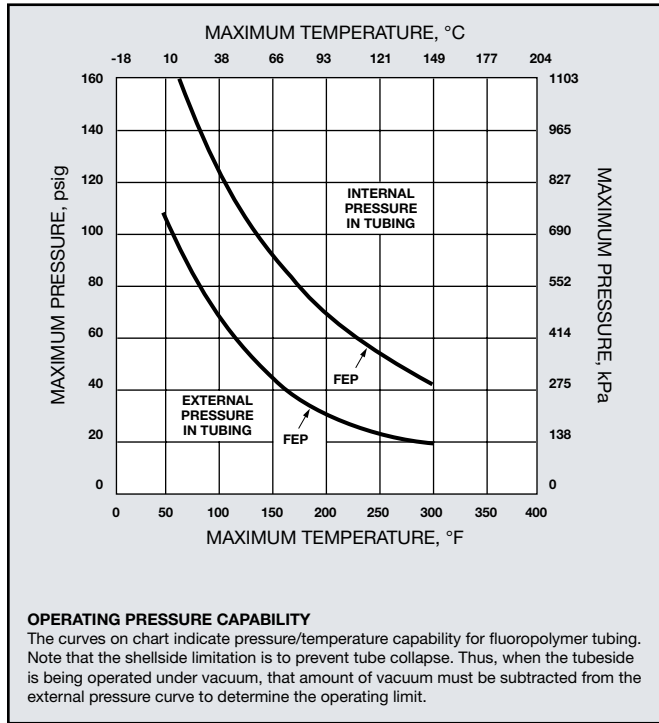


**SHELL-AND-TUBE  
HEAT EXCHANGER**

They can be applied as temperature control in bulk chemical storage systems, or as final temperature control at point of use.

Contact AMETEK to discuss your specific process applications. Our more than 30 years of experience building fluoropolymer heat exchangers can be put to work for your process.

## OPERATING LIMITS



## TUBING EXTRACTION RESULTS (ppb)

ELEMENT	PFA-UHP	FEP-UHP
CATIONS		
Al	0.1	0.5
Ca	ND	ND
Cr	0.4	ND
Cu	2.0	0.1
Fe	ND	ND
Mg	0.4	ND
Mo	0.4	0.1
Ni	3.1	ND
Zn	ND	ND

Testing by Balaze Analytical Laboratory.  
 Cations leached in 70% HNO<sub>3</sub>, R.T., 7 days.  
 Data courtesy of Dyneon, LLC, a 3M Company.

## HEAT EXCHANGER CAPABILITIES

UNIT	TYPE	TYPICAL HEAT TRANSFER COEFFICIENT BTU/HR FT <sup>2</sup>	AREA RANGE FT <sup>2</sup>
MINICOIL	Immersion	35 - 75	2 - 10
SUPERCOIL	Immersion	40 - 60	7 - 113
SLIMLINE	Immersion	40 - 60	35 - 250
PV-4	S&T	25 - 50	5 - 33
105LT30	S&T	25 - 50	19 - 110

Fluoropolymer resins are generally considered inert to most chemicals. Under certain conditions of pressure and temperature, or combinations of chemicals, fluoropolymer tubing should not be used. Please contact AMETEK for discussion of your specific process to be certain that our products are appropriate for your intended use.

Adequate ventilation should be used where fluoropolymers are heated during tube repairs. Flu-like symptoms may occur from exposure to vapors evolved from fluoropolymers at very high temperatures, up to 800°F or from smoking materials that contain particles of fluoropolymers. Symptoms pass within 48 hours and are the only adverse effects observed in humans to date. Unheated fluoropolymers are essentially inert and are nonirritating to the skin.

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**AMETEK®**

FLUOROPOLYMER PRODUCTS

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