T-TUBES™

a UFP Technologies brand

Only insulation that adheres to Factory Mutual's cleanroom protocol

Clean Environment Insulation

Technical Data

T-Tubes™ are an advanced insulation system specifically developed for stainless steel process lines in clean environments. They require no jacketing and have a temperature range of -50°C to 155°C (-58°F to 311°F). With a wall thickness of only 1/4" they save space and allow for insulating areas that cannot be covered using existing methods. Installation is easy and fast with custom molded fittings and an overlapping self-adhering tape. T-Tubes possess excellent moisture, chemical and UV resistance along with low smoke, flame, and toxicity properties. Their fine close-cell nature allows for cutting and installing in clean environments without the use of bags or hoods.

Technical Data:

Material	ZOTEK F® Kynar® PVDF based foam
Service Temperature	-50°C to 155°C (-58°F to 311°F)
Thermal Conductivity ASTM C-518	k=.22 @ 72ºF (k^2 0.0317 a/m.k)
Flammability ASTM E-84	Flame 5 / Smoke 5
Mold Growth ASTM G21-96	No sign after 28 days
Fungus Growth DO160D, Sec 13, Cat F	No sign after 28 days
Outgassing (Semiconductor Standards)	29.1µg/g (limit 1000µg/g)
Permeance	0.02 grains/hr
Cell Size	0.17mm
Density ISO 845	2.2pcf (36 kg/m^3)
Compression ISO 7214	15.8psi @ 25% and 26.1psi @ 50% 109kPa @ 25% and 180 kPa @ 50%
Tensile Strength ISO 1798	85psi (586 kPa)
Elongation ISO 1798	66%
Tear Strength ISO 8067	5 lbf/in (876 N/m)
Factory Mutual 4924 Pipe Chase Flammability Standard	Approved
Factory Mutual 4910 Cleanroom Materials Test Protocol	Compliant / Listed

Application:

Straight T-Tubes come with an overlapping, self-sealing pressure sensitive adhesive tape, which is also available in rolls. Tape is used on fittings as well. For chill lines and areas where an airtight seal is required, a high temperature silicone adhesive/sealant can be used for seams, ends, and butt-joining.

T-Tubes do not require jacketing as they do not permeate, or absorb moisture or cleaning agents.

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FM APPROVED

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Patent Pending.