



T-TUBES[®] ADVANCED CLEANROOM INSULATION

Introducing the next generation T-Tubes[®], the world's first closed-cell insulation system specifically designed for use in cleanroom environments. The new T-Tubes have been improved with a flexible Kynar[®] PVDF film that has made this superior product perform even better!

Durability: The new film surface is flexible and puncture resistant. It allows for bending and flexing, and rebounds after impact.

Cleanability: The smooth film provides an easy-to-clean surface free of cracks and cavities that can withstand harsh cleaning agents.

Tape Performance: The even, glossy finish of T-Tubes allows for pressure sensitive tape to adhere securely.

Aesthetics: With the new resilient surface, T-Tubes not only delivers the cleanroom performance, but provides the look and feel as well.

T-Tubes offer functionality and convenience, while ensuring safety and cleanliness:

Save Time: T-Tubes insulation is fast and easy with custom molded fittings and an overlapping self-adhering tape. The closed-cell material allows for cutting and installing in live cleanroom environments.

Save Space: With a wall thickness of 1/4" (6.35 mm), T-Tubes save space and allow for insulation of areas that cannot be covered by existing methods.

Cut Costs: You can expect your T-Tubes insulation system to minimize labor time and increase energy efficiency, resulting in reduced labor and energy costs.

Maintain Cleanliness: Made with high-purity Kynar PVDF resin, T-Tubes are USP Class VI grade.

Ensure Safety: T-Tubes have a temperature range of -80°C to 160°C to accommodate both hot and cold lines. They possess excellent moisture, chemical and UV resistance along with low smoke, flame and toxicity properties. T-Tubes scored a 5/5 (smoke/flame) on the ASTM E84 Test for Surface Burning Materials, far surpassing the qualifications of 25/50 required of cleanroom environments.

Cut costs, cut time and cut the hassle! Conventional insulation takes up too much valuable space, carries expensive labor and energy costs and has the potential to compromise the integrity of your cleanroom space. Outfit your stainless steel process lines with the only insulation designed and qualified to protect the integrity of your cleanroom.



Only Insulation Compliant with
Factory Mutual's Standard for
Cleanroom Materials



SPECIFICATIONS

Material	Zotek F® Kynar® PVDF based foam
Service Temperature	-80°C to 160°C (-112°F to 320°F)
Thermal Conductivity ASTM C-518	k=.22 @ 72°F (k=0.0317 W/m.k)
Flammability ASTM E-84	Flame 5 / Smoke 5
Mold Growth ASTM G21-96	No sign after 28 days
Fungus Growth DOI60D, Sec 13, Cat F	No sign after 28 days
Outgassing (Semiconductor Standards)	29.1µg/g (limit 1000Qg/g)
Permeance	0.02 grains/hr
Cell Size	0.17mm
Density ISO 845	845 2.2 pcf (36 kg/m3)
Compression ISO 7214	15.8psi @ 25% and 26.1 psi @ 50% 109kPa @ 25% and 180 kPa @ 25%
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

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