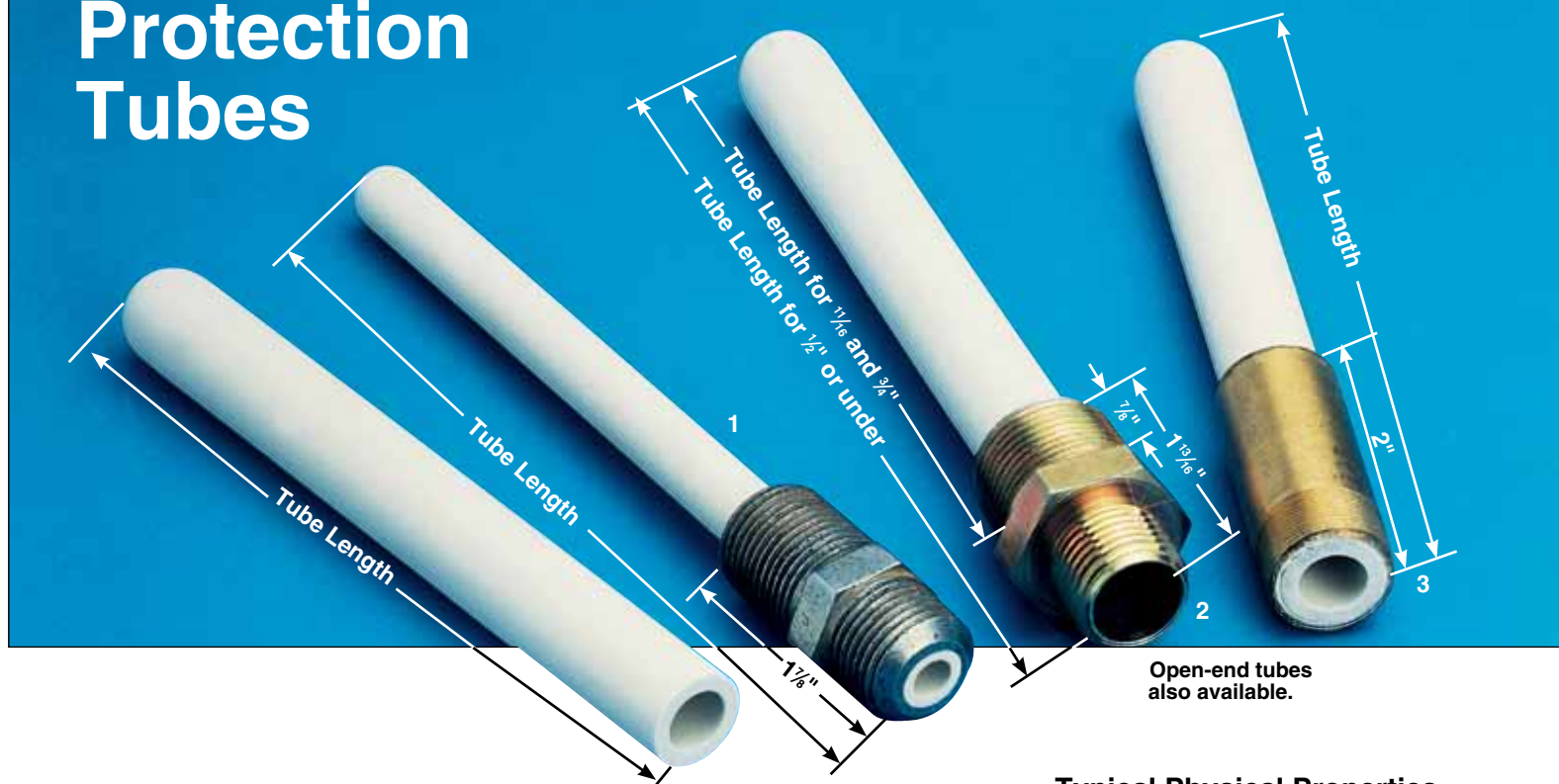


Ceramic Thermocouple Protection Tubes



Open-end tubes
also available.

Typical Physical Properties

Properties	OMEGATITE® 450	OMEGATITE® 300
Composition	99.8% Al ₂ O ₃	85% mullite 15% glass
Water Absorption	0.00	0.00
Specific Gravity KP/CM ³	3.85	2.8
Gas Permeability	Gas tight	Gas tight
Compressive Strength (psi)	>300,000	>190,000
Tensile Strength (psi)	30,000	18,000
Transverse Strength (psi)	55,000	27,000
Coefficient of Linear Thermal Expansion 24 to 250°C (75 to 480°F) 24 to 500°C (75 to 930°F) 24 to 1000°C (75 to 1830°F) 24 to 1500°C (75 to 2730°F)	6.2 x 10 ⁻⁶ 7.4 x 10 ⁻⁶ 8.5 x 10 ⁻⁶ 9.8 x 10 ⁻⁶	3.3 x 10 ⁻⁶ 4.0 x 10 ⁻⁶ 5.0 x 10 ⁻⁶ -
Approximate Thermal Conductivity (BTU)(in)/(hr)(ft ²)(°F) 24°C (75°F) 800°C (1470°F)	230 60	40 25
Maximum Service Temperature	1700°C (3092°F)	1400°C (2552°F)
Dielectric Constant (1MC)	9.29	5.80
Dielectric Strength (volts/mil)	>230	250
Volume Resistivity (ohm cm)	10 ¹³	10 ¹³
Te Value (Volume Resistivity of 1 mega Ω cm)	800°C (1470°F)	800°C (1470°F)
Hardness (Mohs Scale)	9	7.5
Fabrication Methods	Cast	Cast

Typical Chemical Analyses

	Al ₂ O ₃	SiO ₂	MgO	Na ₂ O	CaO	Fe ₂ O ₃	Cr ₂ O ₃	TiO ₂	MnO	ZrO ₂	K ₂ O
OMEGATITE® 450	99.8	0.070	0.050	0.005	0.030	0.025	<.003	0.004	0.001	-	<0.001
OMEGATITE® 300	60.0	38.0	0.2	0.2	0.1	0.5	-	0.5	-	-	0.700

Note: All properties are average for test specimens. Tests were performed according to ASTM specifications.

Ceramic Thermocouple Protection Tubes

To Order				
Dimensions: inches			PTRA OMEGATITE® 450	PTRM OMEGATITE® 300
Inside Diameter	Outside Diameter	Tube Length*	Model Number	Model Number
1/16	1/8	12	PTRA-11618-12	PTRM-11618-12
		18	PTRA-11618-18	PTRM-11618-18
		24	PTRA-11618-24	PTRM-11618-24
5/64	5/32	12	PTRA-564532-12	PTRM-564532-12
		18	PTRA-564532-18	PTRM-564532-18
		24	PTRA-564532-24	PTRM-564532-24
5/32	1/4	12	PTRA-53214-12	PTRM-53214-12
		18	PTRA-53214-18	PTRM-53214-18
		24	PTRA-53214-24	PTRM-53214-24
3/16	1/4	12	PTRA-31614-12	PTRM-31614-12
		18	PTRA-31614-18	PTRM-31614-18
		24	PTRA-31614-24	PTRM-31614-24
3/16	5/16	12	PTRA-316516-12	PTRM-316516-12
		18	PTRA-316516-18	PTRM-316516-18
		24	PTRA-316516-24	PTRM-316516-24
1/4	3/8	12	PTRA-1438-12	PTRM-1438-12
		18	PTRA-1438-18	PTRM-1438-18
		24	PTRA-1438-24	PTRM-1438-24
5/16	7/16	12	PTRA-516716-12	PTRM-516716-12
		18	PTRA-516716-18	PTRM-516716-18
		24	PTRA-516716-24	PTRM-516716-24
5/16	1/2	12	PTRA-51612-12	PTRM-51612-12
		18	PTRA-51612-18	PTRM-51612-18
		24	PTRA-51612-24	PTRM-51612-24
3/8	1/2	12	PTRA-3812-12	PTRM-3812-12
		18	PTRA-3812-18	PTRM-3812-18
		24	PTRA-3812-24	PTRM-3812-24
7/16	1 1/16	12	PTRA-7161116-12	PTRM-7161116-12
		18	PTRA-7161116-18	PTRM-7161116-18
		24	PTRA-7161116-24	PTRM-7161116-24
1/2	3/4	12	PTRA-1234-12	PTRM-1234-12
		18	PTRA-1234-18	PTRM-1234-18
		24	PTRA-1234-24	PTRM-1234-24
5/8	7/8	12	PTRA-5878-12	PTRM-5878-12
		18	PTRA-5878-18	PTRM-5878-18
		24	PTRA-5878-24	PTRM-5878-24
3/4	1	12	PTRA-341-12	PTRM-341-12
		18	PTRA-341-18	PTRM-341-18
		24	PTRA-341-24	PTRM-341-24
7/8	1 1/8	12	PTRA-78118-12	PTRM-78118-12
		18	PTRA-78118-18	PTRM-78118-18
		24	PTRA-78118-24	PTRM-78118-24
1	1 1/4	12	PTRA-1114-12	PTRM-1114-12
		18	PTRA-1114-18	PTRM-1114-18
		24	PTRA-1114-24	PTRM-1114-24
5 mm	7 mm	300 mm	PTRA-5MM7MM-12	PTRM-5MM7MM-12
		450 mm	PTRA-5MM7MM-18	PTRM-5MM7MM-18
		600 mm	PTRA-5MM7MM-24	PTRM-5MM7MM-24

* **Length:** The tube lengths shown are standard lengths for a tube without any fittings. Special lengths are also available. Consult Sales.
Tolerance: $\pm 5\%$. See omega.com for diagrams with fittings.

Important Ordering Notes

Fittings: When ordering tube with fitting specify the fitting number (1, 2, 3) after the model number.

1. 1/2 x 1/2" NPT: Fits tubes from 6.0 to 12.5 mm (1/4 to 1/2") OD
2. 1/2 x 3/4" NPT: Fits tubes from 8.0 to 19.0 mm (3/8 to 3/4") OD
3. 7/8 x 27NS Brass Ferrule 50 mm (2") long: Fits tubes from 17.5 mm (1 1/16") OD tubes to 1/4" OD

Tube with any of the above fittings for an additional cost.

**For Protection Tubes
with Custom Lengths or
Fittings Please Consult
Custom Engineering**

Ordering Examples:

PTRM-11618-12, standard tube
with no fitting.

PTRM-11618-12-1, standard
tube, 1/2 x 1/2" NPT fitting.