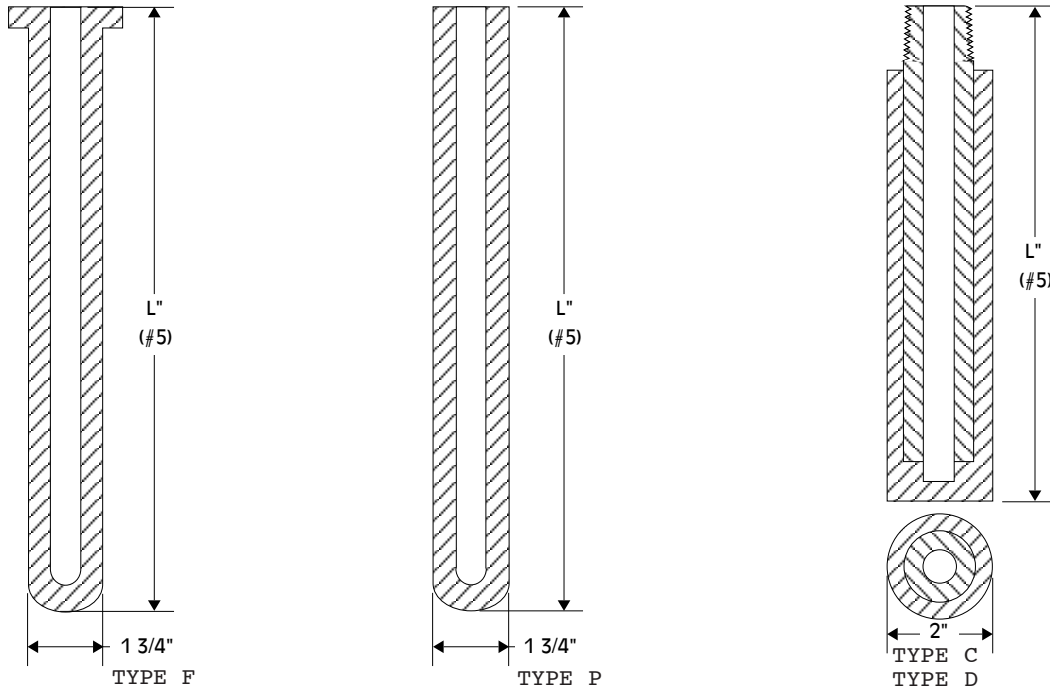


BONDED SILICON CARBIDE PROTECTION TUBES

Silicon carbide protection tubes provide excellent thermal conductivity for quick response to temperature changes. They can be used to replace cast iron tubes, eliminating the possibility of iron pick-up. Spread surface treatment assures adequate protection of the thermocouple.

JMS Southeast offers two types of silicon carbide protection tubes. Type A and B are dense silica bonded silicon carbide and are manufactured with a flange or a plain end as the following drawings indicate.

Type C and D are carbon bonded silicon carbide and graphite. They are manufactured with a black steel pipe located down the center. They have a 1/2" or 3/4" NPT connection to thread into place instead of a flange for mounting as Type A.



SECTION 5

#1	SERIES			
5B	Protection Tube - Add "W" here for a cap and chain to fit over open end. (i.e. 5BW)			
#2	MATERIAL			
SC	Silicon carbide			
#3	MOUNTING			
F	Flange silicon carbide tube (1" I.D. x 1 3/4" O.D.)			
P	Plain end silicon carbide tube (1" I.D. x 1 3/4" O.D.)			
C	1/2" NPT threaded silicon carbide tube with reinforced pipe			
D	3/4" NPT threaded silicon carbide tube with reinforced pipe			
#4	SIZE			
2	1/2" I.D. x 2" O.D.			
3	3/4" I.D. x 2" O.D.			
4	1" I.D. x 1 3/4" O.D. (for symbols F & P above)			
#5	LENGTH (L)			
A	18"			
B	24"			
X	Other, specify			
5B	SC	F	4	18"

BONDED SILICON CARBIDE PROTECTION TUBES

TYPE 5BSCF CLASSIFICATION

Physical Data: (Typical)	English Units	S.I. Units
Porosity:	14-17%	14-17%
Bulk Density:	161-168 lb/ft ³	2,570-2,690 kg/m ³
True Specific Gravity:	.112-.113 lb/in ³	3.10-3.12 gm/cm ³
Crushing Strength (RT):	14000-18000 psi	96.5-124.0 MPa
Modulus of Rupture (RT):	3000-4000 psi	20.7-27.6 MPa
Modulus of Elasticity (RT):	9-13 x 10 ⁶ psi	62-90 kPa
Load Test, Fail Temperature with 25 psi (172 kPa) Load:	Above 3000°F	Above 1650°C
Coef. of Thermal Expansion: (100 to 1000°C)	2.6 x 10 ⁻⁶ /°F	4.7 x 10 ⁻⁶ /K
Thermal Conductivity:	<u>BTU/hr/ft²/°F/in</u> 105	<u>W/mK</u> 15.1
Chemical Analysis: (Typical)		
Silicon Carbide	(SiC)	86.10%
Silica	(SiO ₂)	11.75%
Alumina	(Al ₂ O ₃)	0.78%
Iron Oxide	(Fe ₂ O ₃)	1.05%
Lime	(CaO)	0.21%
Magnesia	(MgO)	0.10%
Alkalies	(Na ₂ O, K ₂ O)	Trace

CARBON BONDED SILICON CARBIDE & GRAPHITE

TYPE 5BSCP, 5BSCC CLASSIFICATION

Physical Data: (Typical)	English Units	S.I. Units
Porosity:	27-33%	27-33%
Bulk Density:	112-125 lb/ft ³	1800-2000 kg/m ³
Crushing Strength (RT):	1500 psi	10.3 MPa
Modulus of Rupture (2250°F):	200-500 psi	1.4-3.4 MPa
Coef. of Thermal Expansion:	1.5 x 10 ⁻⁶ /°F	2.7 x 10 ⁻⁶ /K
Specific Heat	0.20 BTU/lb/°F	.84 kJ/kgK
Thermal Conductivity:	105 BTU/ft ² /hr/°F/in	15.1 W/mK
Electrical Resistivity (@ RT) 0.012 ohm-cm (@ 2200°F)	0.0076 ohm-cm	
Thermal Shock Resistance	Excellent	
Chemical Analysis: (Typical)		
Silicon Carbide	(SiC)	44.52%
Carbon	(C)	28-36%
Silica	(SiO ₂)	11%
Alumina	(Al ₂ O ₃)	5%
Iron Oxide	(Fe ₂ O ₃)	0.7%
Glaze	—	3%

The information contained in this data sheet has been determined through the application of accepted engineering practice and is believed to be reliable. Since the conditions of application and use of our products are beyond our control, no warranty is expressed or implied regarding accuracy of the information, the results to be obtained from the use of the product, or that such use will not infringe on any patent. This information is furnished with the express condition that you will make your own tests to determine the suitability of the product for your particular use.