INDUSTRIAL TEMPERATURE LLC & SILSE S.A.

Thermocouple consists of two wires, each made of different metal, welded together at one end. When the welded point(measuring junction) is heated, a thermoelectromotive force is produced that is proportional of the temperature difference between the welded point and the other end (reference junction). Therefore, by messuring this thermoelectromotive force either with the reference junction temperature kept constant or by using an automatic compensation curciut, the measuring junction temperature can be measured.
The thermoelectromotive force of a thermocouple is independent of the diameter or length of the wire used and depends only on the type of wire used.

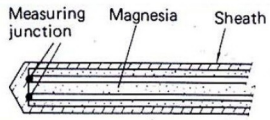
(a). Type of Thermocouple Core

Material Type	Leg	core material	Leg dia		JIS C 1602		ANSI
			JIS	ANSI	Max.operating temp . In normal application(℃)	Max.operating temp . In overheated application(℃)	Max.operaring temp.(℃)
B	+	Platinum 70% + rhodium 30%	0.5	0.5	1500	1700	1700
	-	Platinum 94% + rhodium 6%	0.5	0.5			
R	+	Platinum 87% + rhodium 13%	0.5	0.5	1400	1600	1480
	-	high purity platinum	0.5	0.5			
S	+	Platinum90%+ rhodium 10%	0.5	0.5			
	-	high purity platinum	0.5	0.5			
K	+	Nickel 90% + chromiun 10% Nickel 95% + Manganese 2% +Aluminum 2%	3.2	3.2	1000	1200	1260
			2.3	1.6	900	1100	1090
			1.6	0.8	850	1050	980
			1	0.5	750	950	870
			0.65	0.32	650	850	870
E	+	Nickel 90% +chromiun 10% Copper 55%+nickel 45 %	3.2	3.2	700	800	870
	-		2.3	1.6	600	750	650
			1.6	0.8	550	650	540
			1	0.5	500	550	430
			0.65	0.32	450	550	430
J	+	high purity iron Copper 55%+nickel 45 %	3.2	3.2	600	750	760
	-		2.3	1.6	550	750	590
			1.6	0.8	500	650	480
			1	0.5	450	650	370
			0.65	0.32	400	500	370
T	+	high purity copper Copper 55%+nickel 45 %	1.6	1.6	300	350	370
	-		1	0.8	250	300	260
			0.65	0.5	200	250	200
			0.32	0.32	200	250	200

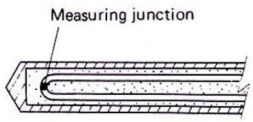
In addition to the above, special thermocouples such as L type, C type (W-W26% Re), Cu-CoAu etc,are available

(b). Standard type of hot junctions

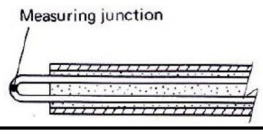
Grounded



Un-grounded



Exposed



(c). MI type probe data

Sheath Material				Outer Sheath(mm)		Core Wire Dia.(mm)	
K, N Types	E, J, T Types	S, R Types	B Types	Out Dia.	Wall Thickness	K,N,E,J,T Types	S,R,B Types
SS304, SS321, SS316, SS310, Incl600, Nicrobell	SS304, SS321, SS316	Incl600, Nicrobell	Incl600, Nicrobell	0.5	0.05-0.10	0.08-0.12	---
				1.0	0.10-0.20	0.15-0.20	---
				1.5	0.15-0.25	0.23-0.30	---
				1.6	0.16-0.26	0.26-0.36	---
				2.0	0.25-0.35	0.40-0.50	0.25-0.30
				3.0	0.38-0.48	0.50-0.60	0.30-0.40
				3.2	0.48-0.58	0.58-0.68	0.30-0.40
				4.0	0.52-0.62	0.60-0.70	0.35-0.40
				4.8	0.73-0.83	0.75-0.85	0.40-0.45
				5.0	0.78-0.88	0.80-0.90	0.40-0.45
				6.0	0.98-1.08	0.90-1.10	0.45-0.50
				6.4	1.05-1.15	1.02-1.12	0.45-0.50
				8.0	1.30-1.44	1.30-1.40	0.45-0.50
				12.7	1.75-1.90	1.95-2.05	---