TYPE B

MAXIMUM TEMPERATURE RANGE

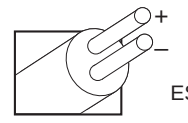
Thermocouple Grade
32 to 3092°F
0 to 1700°C

Extension Grade
32 to 212°F
0 to 100°C

LIMITS OF ERROR
(whichever is greater)
Standard: 0.5°C over 800°C
Special: NOT ESTABLISHED

COMMENTS, BARE WIRE ENVIRONMENT:
Oxidizing or Inert; Do Not Insert in Metal Tubes; Beware of Contamination; High Temperature; Common Use in Glass Industry

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

NONE ESTABLISHED

Platinum-30% Rhodium vs. Platinum-6% Rhodium

Extension Grade

TYPE B
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE C

MAXIMUM TEMPERATURE RANGE

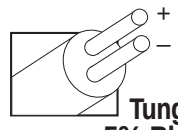
Thermocouple Grade
-32 to 4208°F
-0 to 2320°C

Extension Grade
32 to 1600°F
0 to 870°C

LIMITS OF ERROR
(whichever is greater)
Standard: 4.5°C to 425°C
1.0% to 2320°C
Special: Not Established

COMMENTS, BARE WIRE ENVIRONMENT:
Vacuum, Inert; Hydrogen; Beware of Embrittlement; Not Practical Below 750°F; Not for Oxidizing Atmosphere

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

NONE ESTABLISHED

Tungsten-5% Rhenium vs. Tungsten-26% Rhenium

Extension Grade

TYPE C
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE E

MAXIMUM TEMPERATURE RANGE

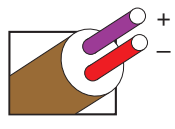
Thermocouple Grade
– 328 to 1652°F
– 200 to 900°C

Extension Grade
32 to 392°F
0 to 200°C

LIMITS OF ERROR
(whichever is greater)
Standard: 1.7°C or 0.5% Above 0°C
1.7°C or 1.0% Below 0°C
Special: 1.0°C or 0.4%

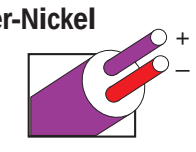
COMMENTS, BARE WIRE ENVIRONMENT:
Oxidizing or Inert; Limited Use in Vacuum or Reducing; Highest EMF Change per Degree

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Nickel-Chromium vs. Copper-Nickel



Extension Grade

TYPE E

TYPE J

MAXIMUM TEMPERATURE RANGE

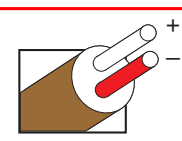
Thermocouple Grade
32 to 1382°F
0 to 750°C

Extension Grade
32 to 392°F
0 to 200°C

LIMITS OF ERROR
(whichever is greater)
Standard: 2.2°C or 0.75%
Special: 1.1°C or 0.4%

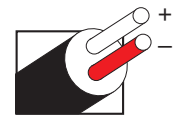
COMMENTS, BARE WIRE ENVIRONMENT:
Reducing, Vacuum, Inert; Limited Use in Oxidizing at High Temperatures; Not Recommended for Low Temperatures

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Iron vs. Copper-Nickel



Extension Grade

TYPE J

TYPE K

MAXIMUM TEMPERATURE RANGE

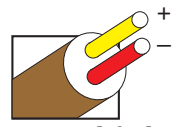
Thermocouple Grade
– 328 to 2282°F
– 200 to 1250°C

Extension Grade
32 to 392°F
0 to 200°C

LIMITS OF ERROR
(whichever is greater)
Standard: 2.2°C or 0.75% Above 0°C
2.2°C or 2.0% Below 0°C
Special: 1.1°C or 0.4%

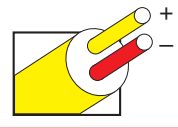
COMMENTS, BARE WIRE ENVIRONMENT:
Clean Oxidizing and Inert; Limited Use in Vacuum or Reducing; Wide Temperature Range; Most Popular Calibration

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Nickel-Chromium vs. Nickel-Aluminum



Extension Grade

TYPE K
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE N

MAXIMUM TEMPERATURE RANGE

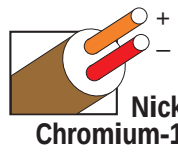
Thermocouple Grade
– 450 to 2372°F
– 270 to 1300°C

Extension Grade
32 to 392°F
0 to 200°C

LIMITS OF ERROR
(whichever is greater)
Standard: 2.2°C or 0.75% Above 0°C
2.2°C or 2.0% Below 0°C
Special: 1.1°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:
Alternative to Type K; More Stable at High Temperatures

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Nickel-14.2% Chromium-1.4% Silicon vs. Nickel-4.4% Silicon-0.1% Magnesium

Extension Grade

TYPE N
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE R

MAXIMUM TEMPERATURE RANGE

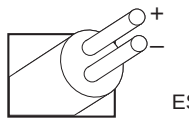
Thermocouple Grade
32 to 2642°F
0 to 1450°C

Extension Grade
32 to 300°F
0 to 150°C

LIMITS OF ERROR
(whichever is greater)
Standard: 1.5°C or 0.25%
Special: 0.6°C or 0.1%

COMMENTS, BARE WIRE ENVIRONMENT:
Oxidizing or Inert; Do Not Insert in Metal Tubes; Beware of Contamination; High Temperature

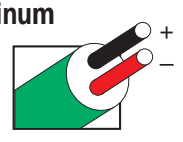
TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

NONE ESTABLISHED

Platinum-13% Rhodium vs. Platinum



Extension Grade

TYPE R
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE S

MAXIMUM TEMPERATURE RANGE

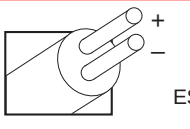
Thermocouple Grade
32 to 2642°F
0 to 1450°C

Extension Grade
32 to 300°F
0 to 150°C

LIMITS OF ERROR
(whichever is greater)
Standard: 1.5°C or 0.25%
Special: 0.6°C or 0.1%

COMMENTS, BARE WIRE ENVIRONMENT:
Oxidizing or Inert; Do Not Insert in Metal Tubes; Beware of Contamination; High Temperature

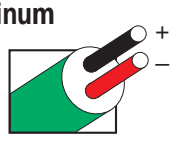
TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

NONE ESTABLISHED

Platinum-10% Rhodium vs. Platinum



Extension Grade

TYPE S
Reference Tables N.I.S.T. Monograph 175 Revised to ITS-90

TYPE T

MAXIMUM TEMPERATURE RANGE

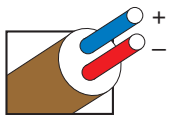
Thermocouple Grade
– 328 to 662°F
– 200 to 350°C

Extension Grade
– 76 to 212°F
– 60 to 100°C

LIMITS OF ERROR
(whichever is greater)
Standard: 1.0°C or 0.75% Above 0°C
1.0°C or 1.5% Below 0°C
Special: 0.5°C or 0.4%

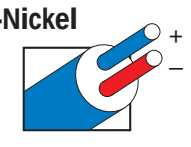
COMMENTS, BARE WIRE ENVIRONMENT:
Mild Oxidizing, Reducing Vacuum or Inert; Go Where Moisture Is Present; Low Temperature and Cryogenic Applications

TEMPERATURE IN DEGREES °C
REFERENCE JUNCTION AT 0°C



Thermocouple Grade

Copper vs. Copper-Nickel



Extension Grade

TYPE T