

Thermostatic Bimetal



Engineered
Materials Solutions

Wickeder Group

Alloy Composition

High Expansion Alloys (HES)

B 22 Ni, 3 Cr, Bal Fe

C 19.4 Ni, 2.25 Cr, 0.5 C, Bal Fe

F Copper

GB 19 Ni, 7 Cr, Bal Fe

LA 20 Ni, 6Mn, Bal Fe

M 18 Cr, 8 Ni, Bal Fe

N Nickel

P 72 Mn, 18 Cu, 10 Ni

Low Expansion Alloys (LES)

10 36 Ni, Bal Fe

11 38.65 Ni, Bal Fe

14 38 Ni, 7 Cr, Bal Fe

20 40 Ni, Bal Fe

30 42 Ni, Bal Fe

40 45 Ni, Bal Fe

50 50 Ni, Bal Fe

70 17 Cr, Bal Fe

Common Materials

High Expansion Material
Low Expansion Material
High Expansion Material
Intermediate Layer
Low Expansion Material

Basic 2-Layer Bimetal Material System

Typical 3-Layer Bimetal Material System:
Intermediate Layer of Ni or Cu added to alter resistive properties of the material

Specialty Materials

High Expansion Material
Intermediate Layer
Low Expansion Material

Thin exterior Cu layer added to improve welding performance

High Expansion Material
Low Expansion Material

Thin exterior stainless steel layers added to enhance corrosion resistance

Standard Tolerances

Strip Thickness (t)		Tolerance	
in $t \leq 0.005"$	mm $t \leq 0.127$	in $\pm 0.0003"$	mm ± 0.0076
$0.005" < t \leq 0.010"$	$0.127 < t \leq 0.254$	$\pm 0.00035"$	± 0.0089
$0.010" < t \leq 0.015"$	$0.254 < t \leq 0.381$	$\pm 0.0004"$	± 0.0102
$0.015" < t \leq 0.020"$	$0.381 < t \leq 0.508$	$\pm 0.0005"$	± 0.0127
$0.020" < t$	$0.508 < t$	$\pm 2.5\%$	$\pm 2.5\%$

Strip Width (w)		Tolerance	
in $w \leq 0.005"$	mm $w \leq 12.70$	in $\pm 0.003"$	mm ± 0.006
$0.5" < w \leq 1"$	$12.70 < w \leq 25.4$	$\pm 0.004"$	± 0.102
$1" < w \leq 3"$	$25.4 < w \leq 76.2$	$\pm 0.008"$	± 0.203
$3" < w \leq 6"$	$76.2 < w \leq 152.4$	$\pm 0.010"$	± 0.254
$6" < w$	$152.4 < w$	$\pm 0.030"$	± 0.762

Edgewise Camber

Strip Width	Test Length	Max. Camber	Strip Width	Test Length	Max. Camber
in $w < 0.125"$	ft 1	in 0.312"	mm ----	M ---	mm ---
$0.125" \leq w$	3	0.281"	$3.18 \leq w$	1	8.5

Metal Identification

Type	Thickness	Width
Chemical Marking	All gages	All widths
Mechanical Marking	$0.012"$ and thicker	All widths
Engraving	$0.040"$ and thicker	Less than $0.500"$

If not specified by the customer, the low expansion side (LES) is identified by chemical or mechanical marking with the word "Truflex" followed by the metal type designation

Edge Conditions

- > As slit ASTM #3
- > As flattened ASTM #5
- > Burr $< 10\% t$
for $t \leq 0.020"$ (0.508 mm)
- > Burr = $0.002"$ Max (0.05 mm max)
for $t > 0.020"$ (0.508 mm)
- > Edge rounding available upon request

Cross Curvature

$$H = 0.10t + (0.00025w^2/t)$$

Where H = chord height in inches
t = material thickness in inches
w = width of stock in inches

Coiling & Packaging

ID	Thickness	Sleeve Type	Packaging Options
16" to 20"	$< 0.005"$ $0.005" \text{ to } 0.0119"$ $0.012" \text{ to } 0.025"$ $> 0.025"$	Plastic Plastic or Cardboard No ID core unless specified No ID Core	Radial wrap: 1-2 coils @ 55 lb max Vacuum Pack: 55 lbs and 27" OD max Gift wrap or plastic bags Corrugated cardboard or wooden box

Note: Traverse spool winding available upon request.