



## Standard Specification for Thermostat Component Alloys<sup>1</sup>

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### 1. Scope

1.1 This specification describes requirements for alloys to be used as components in the manufacture of bonded multi-component thermostat metal strip. More specifically it describes alloys having composition, and thermal expansion suitable for application in thermostat metal sheet and strip.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

A 480 Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip<sup>2</sup>

B 63 Test Method for Resistivity of Metallically Conducting Resistance and Contact Materials<sup>3</sup>

B 388 Specification for Thermostat Metal Sheet and Strip<sup>3</sup>

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials<sup>4</sup>

E 228 Test Method for Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer<sup>5</sup>

### 3. Ordering Information

3.1 Orders for this material under this specification shall include the following information:

3.1.1 Alloy type,

3.1.2 Size,

3.1.3 Surface finish,

3.1.4 Marking and packaging, and

3.1.5 Certification, if required.

### 4. General Requirements

4.1 The material shall be free of scale, slivers, cracks, seams, corrosion and other defects as best commercial practice will permit. Surfaces shall be uniform and sufficiently clean so

that commonly used methods of surface preparation, or pre-bond cleaning will allow bonding of the entire mating surfaces. Since surface condition can vary for different alloys and because bonding practices vary, product surface condition can be agreed upon between supplier and purchaser.

### 5. Chemical Composition

5.1 The material shall be manufactured to the chemical compositions shown in Table 1.

5.2 The manufacturer will insure uniformity of composition throughout a heat lot to provide uniform thermal expansion and electrical resistivity properties.

### 6. Thermal Expansion Requirements

6.1 Samples tested in accordance with 6.2 shall exhibit thermal expansion properties described in Table 2.

6.2 One test sample representing each heat lot shall be machined to a suitable specimen configuration, heat treated in accordance with instructions in Table 2, and Test Method E 228.

### 7. Electrical Resistivity

7.1 The electrical resistivity measured at room temperature as in Test Method B 63 on suitably prepared and annealed specimens shall conform to Table 3.

### 8. Temper

8.1 This product will be supplied in the annealed condition.

8.2 Hardness shall be measured on representative samples from each heat treat lot and reported as Rockwell B hardness.

8.3 Hardness values shall conform to the requirements in Table 4 tested as in Test Methods E 18.

### 9. Dimensions and Permissible Variations

9.1 Permissible variations in thickness and width shall adhere to those described in Specification A 480. These are shown in Table 5.

9.2 Edge camber shall conform to Specification A 480. (Edge camber for widths >1-1/2 in. shall be a maximum 1/4 in. on any 8-ft length.)

9.3 Maximum deviation across the width of the strip at a given location shall not exceed 3 % of the nominal thickness.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.10 on Thermostat Metals.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 01.03.

<sup>3</sup> Annual Book of ASTM Standards, Vol 02.04.

<sup>4</sup> Annual Book of ASTM Standards, Vol 03.01.

<sup>5</sup> Annual Book of ASTM Standards, Vol 14.02.