



BRUSH PERFORMANCE ALLOYS
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BWA-70

1. Scope

This specification covers copper beryllium scrap chemistries acceptable for use in the induction furnaces of Materion Brush Elmore. The scrap material is purchased from our customers, distributors, and scrap dealers.

2. Purchasing Information

2.1 Material purchased under this specification shall be suitable shipped in containers with the following information clearly visible on the outside of each container:

- 2.1.1 Name and address of the company providing the material.
- 2.1.2 Gross, tare, and the net weights of each container.
- 2.1.3 Identification of scrap with Brush Alloy number, and/or BCS specification number.
- 2.1.4 Materion Brush Purchase Order.

3. Chemical Composition

All scrap purchased under this specification shall conform to the following composition requirements.
 Copper Beryllium Scrap (BCS)

| | BCS-1 | BCS-2 | BCS-3 | BCS-4 |
|-------|---|-------------|----------|----------------------------------|
| Alloy | MoldMAX 25 190 20C 245C 275C | 165 165C | M25 | PROtherm Phase 3HP 3 3C |
| Be | 1.8 min | 1.6 min | 1.8 min | 0.2 min |
| Co | 0.2 min | 0.2 min | 0.2 min | 0.3 max |
| Ni | 0.1 max | 0.1 max | 0.15 max | 1.4 - 2.2 |
| Fe | 0.15 max | 0.15 max | 0.15 max | 0.1 max |
| Si | 0.15 max | 0.15 max | 0.15 max | 0.1 max |
| Al | 0.1 max | 0.1 max | 0.1 max | 0.1 max |

| | | | | |
|----|----------|----------|----------|-----------|
| Sn | 0.05 max | 0.05 max | 0.05 max | 0.01 max |
| Zn | 0.05 max | 0.05 max | 0.05 max | 0.01 max |
| Cr | 0.01 max | 0.01 max | 0.01 max | 0.01 max |
| Pb | - | - | 0.4 max | 0.005 max |
| Zr | - | - | - | - |

| | BCS-5 | BCS-6 | BCS-7 | BCS-8 |
|-------|---------------------------|------------|----------------|---------------|
| Alloy | Q-Max 10 10C 10X | 17410 | 17460 17450 | 17465 M171 |
| Be | 0.4 min | 0.15 min | 0.23 min | 0.27 min |
| Co | 2.4 - 2.7 | 0.35 - 0.6 | 0.05 max | 0.12 max |
| Ni | 0.1 max | 0.15 max | 0.75 - 1.35 | 0.75 - 1.45 |
| Fe | 0.1 max | 0.1 max | 0.25 max | 0.25 max |
| Si | 0.1 max | 0.1 max | 0.2 max | 0.2 max |
| Al | 0.1 max | 0.1 max | 0.2 max | 0.2 max |
| Sn | 0.01 max | 0.01 max | 0.25 max | 0.2 max |
| Zn | 0.01 max | 0.01 max | - | - |
| Cr | 0.01 max | 0.01 max | - | - |
| Pb | 0.005 max | 0.005 max | 0.01 max | 0.4 max |
| Zr | 0.1 max | - | 0.2 max | 0.07 max |

All values in weight percent.

4. Cleanliness

4.1 All material purchased under this specification must be dry and free of contamination from other metals, plastics, dirt, oil or grease.

5. Scrap Forms

5.1 Beryllium copper scrap purchased under this specification will be classified as one of two forms. These forms are classified as follows:

5.1.1 Solid Scrap

5.1.1.1.1 Bar ends, punchings, sheet, strip, and other solid forms.

5.1.1 Turnings, Borings, Scalpings

5.1.2.1.1 Coarse turnings, borings and scalpings. Fine turnings and sawing scrap are not acceptable.

5.2 Scrap must be in a form that allows inspection. Compressed scrap such as bales, briquettes, or tubing with closed ends is not acceptable.

6. Basis of Acceptance

6.1. All scrap shipments are subject to and governed by Materion Brush's chemical analysis, inspection after delivery, and mill weighting. Any material failing to meet these requirements and/or Materion Brush's Beryllium Copper Scrap (BCS) Specifications is subject to rejection. In the event that some or all of the material has been rejected, the vendor will be promptly notified and the material held pending final disposition. No fine powder, grindings, or oxides will be accepted.