

**NORTH STAR BLUESCOPE STEEL LLC****Material Specification**

|   |                         |
|---|-------------------------|
| Process Area: Melt Shop LMF                     | Number: AL 41.04        |
| Material: Ferrocolumbium (FeCb) (Ferro Niobium) | Effective Date: 5/14/04 |
| Authorized By: John Ruf                         | Review Date: 5/14/05    |

**1.0 Application:**

Ladle addition for alloying purposes.

**2.0 Chemical Analysis and Material Properties:**

| Element     | Absolute min. | Preferred min. | Preferred max. | Absolute max. |
|-------------|---------------|----------------|----------------|---------------|
| Columbium   | 60.0%         |                |                | 70.0%         |
| Tantalum    |               |                |                | 2.0%          |
| Carbon      |               |                |                | 0.3%          |
| Manganese   |               |                |                | 2.0%          |
| Silicon     |               |                |                | 3.5%          |
| Aluminum    |               |                |                | 2.0%          |
| Tin         |               |                |                | 0.15%         |
| Phosphorous |               |                |                | 0.15%         |
| Sulfur      |               |                |                | 0.08%         |

**3.0 Packaging:**

3.0 10 pound contained Cb in cans

3.1 Cans in wooden crates or pallets with wings, for lifting with chains or pallet bars.

3.2 The North Star BlueScope Steel Raw Material Number must appear on all shipping and billing paperwork.

**4.0 Sizing:**

4.1 2in. by down.

**5.0 Certification and Control:**

5.1 Each lot received to include statements of conformity and certification. These documents must be handed in at the scales and include:

- 1) Certification for lbs Columbium Contained per bag, Tantalum, Silicon and Aluminum.
- 2) Quantity
- 3) Name of material
- 4) Lot number
- 5) North Star BlueScope Steel Material Number

5.2 All chemical constituents not expressed but are contained in the subject material may not exceed 0.5% collectively. Any material lot exceeding 0.5% must have prior approval by purchasing before shipment is made and analysis included on certification.

5.3 Material is subject to inspection at North Star BlueScope Steel to test adherence to specification.

5.4 All material supplied to this specification must be equivalent in all respects to the material on which approval was originally granted.

**6.0 Relevant Industry Standards (e.g. ASTM): ASTM A 550****7.0 Hazardous Material:**

7.1 If this material is hazardous or requires special handling or storage, this information must be clearly labeled on containers and shipping documents. MSDS Sheets must also be sent to purchasing manager for new materials.

**8.0 Attachments/Reference Documents: N/A**

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| <b>Rev #</b> | <b>Date</b> | <b>Description of Change(s)</b>  | <b>Reason for Change:</b>                                     |
|--------------|-------------|--|---|
| 1            | 2/6/2002    | Changed Si max from 2.5% to 3.5%<br>Changed P max from .05% to .15%<br>Changed S max from .05% to .08% | To match new supplier for 2002 –<br>Shieldalloy               |
| 2            | 2/7/03      | Reviewed and re-authorized   | Annual review   |
| 3            | 4/24/03     | Changed packaging from bags to cans<br>on winged pallets or boxes                                      | Modified packaging requirements to<br>match current practices |
| 4            | 5/14/04     | Reviewed and re-authorized   | Annual review   |