

Process Area: LMF	Number: AL 41.07
Material: Ferrocolumbium (FeCb) (Ferro Niobium)	Effective Date: 12/07/11
Authorized By: John Ruf	Review Date: 12/07/12

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:

- 3.1 10 pound contained Cb in cans (or bags when cans not available)
- 3.2 Cans in wooden crates or pallets with wings, for lifting with chains or pallet bars.
- 3.3 The North Star BlueScope Steel Raw Material Number must appear on all shipping and billing paperwork.

4.0 Sizing:

2 in. 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:
 - Certification for lbs Columbium contained per bag, Tantalum, Silicon and Aluminum.
 - Quantity
 - Name of material
 - Lot number
 - North Star BlueScope Steel Material Number
- 5.1 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.
- 5.2 Material is subject to inspection at North Star BlueScope Steel to test adherence to specification.
- 5.3 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:

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

Prepared by: Kevin Jessing	Page 1 of 2
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NORTH STAR BLUESCOPE STEEL LLC**Material Specification**

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Rev.	Date	Description of change	Reason for change:
	06/10/08	Reviewed and reauthorized	Annual review
	11/14/08	Reviewed and reauthorized.	Annual review.
	11/17/09	Reviewed and re-authorized	Annual review
	12/02/10	Reviewed and reauthorized	Annual review
	12/07/11	Reviewed and reauthorized	Annual review