

NORTH STAR BLUESCOPE STEEL LLC Material Specification

Process Area: LMF	Number: AL 52.01
Material: High Carbon Ferrochromium FeCr	Effective Date: 01/16/18
Authorized By: Jim Fox	Review Date: 01/16/19

1.0 Application:

Ladle addition for alloying purposes.

2.0 Chemical Analysis and Material Properties:

Element	Absolute min.	Preferred min.	Preferred max.	Absolute max.
Chromium	60%			70%
Carbon	6.0%			8.0%
Silicon				3.0%
Phosphorous				0.030%
Sulfur				0.50%
Nitrogen				0.050%
Manganese				.75%
Nickel				.50%
Vanadium				.50%

3.0 Packaging:

- 3.0 20 lb contained Cr (all sizing / forms for manual addition use) poly-mesh bags in 55 gal. drums banded to winged pallets that have horizontal slats extending beyond the vertical 2x4 main members (wings) to facilitate lifting via pallet chain / bar lifting rig. Packages must be stenciled with the North Star BlueScope Raw Materials Number (AL52), contained Cr weight (lbs) per package, and material name (abbreviated) when ordered this way.
- 3.1 50 lb bulk weight polymesh bags in 55 gal. steel drums– 2500 lb / pallet or specified order weight (all sizing / forms for manual additions), banded to winged pallets that have horizontal slats extending beyond the vertical 2x4 main members (wings) to facilitate lifting via pallet chain / bar lifting rig. Packages must be stenciled with the North Star BlueScope Raw Materials Number (AL52), bulk weight (lbs) per package, and material name (abbreviated) when ordered this way.
- 3.2 3000 – 4400 lb bulk weight supersacks or as specified for trial (all sizing and forms approved for bulk addition use) polymesh sacks with lifting loops at top 4 corners and no bottom spout (flat bottom) – **shrunk wrapped for outside storage when packaged this way**, packages must be stenciled with North Star BlueScope Raw Materials Number (AL52), bulk weight (lbs) per package, and material name (abbreviated) when ordered this way
- 3.3 Bulk Dump Truck, trucks must be tarped and material dry - each shipment to be identified with lot number.
- 3.4 The North Star BlueScope Steel Raw Material Number must appear on all shipping and billing paperwork.
- 3.5 Prefer (packaged material) shipped on flatbed but can take specified tailgate delivery from van.

4.0 Sizing:

- 4.1 4 in. By 2 in. with 10% max retained on 4” screen (not to be larger than 4 ½”) and less than 10% passing 2” screen. (Review sizing verbiage at time of contract bids) – approved for bulk additions
- 4.2 2 in. By ½ in for 50 lb. bulk weight bags. & 20 lb. contained weight bags – approved for manual additions

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 Chromium, Carbon, Silicon, Phosphorous, and Sulfur.
 - Quantity
 - Name of material

Prepared by: Jim Nevins	Page 1 of 2
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- Lot number

- 5.1 All chemical constituents not expressed but are contained in the subject material may not exceed 0.5% (except for Al) 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 A101 – Grade C

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

Rev.	Date	Description of change	Reason for change:
	12/07/11	Reviewed and reauthorized	Annual review
	12/14/12	Reviewed and reauthorized	Annual review
	12/17/13	Reviewed and reauthorized	Annual review
	11/20/14	Reviewed and reauthorized	Annual review
	10/22/15	Reviewed and reauthorized	Annual review
01	01/19/16	Changed structure to make uniform with other specs and modify packaging to for use in new micro alloy system	Accommodate use in new alloy system
	01/04/17	Reviewed and reauthorized	Annual review
	01/16/18	Reviewed and reauthorized	Annual review

Prepared by: Jim Nevins	Page 2 of 2
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