

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

|   |                          |
|---|--------------------------|
| Process Area: LMF                                       | Number: AL 38.08         |
| Material: Low Carbon Ferromanganese (LC FeMn) - Grade A | 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. |
|-------------|---------------|----------------|----------------|---------------|
| Manganese   | 79.0%         |                |                | 85%           |
| Carbon      |               |                | .3%            | .5%           |
| Silicon     |               |                |                | 2.0%          |
| Phosphorous |               |                |                | 0.30%         |
| Sulfur      |               |                |                | 0.020%        |
| Arsenic     |               |                |                | 0.20%         |
| Tin         |               |                |                | 0.01%         |
| Lead        |               |                |                | 0.02%         |
| Chromium    |               |                |                | 0.50%         |

### **3.0 Packaging:**

- 3.1 Supersacks - one 3000 or 4000lb. sack per pallet must be shipped on flatbed truck - each shipment identified by lot number – **shrunk wrapped for outside storage when packaged this way**
- 3.2 Bulk Dump Truck, trucks must be tarped and material dry - each shipment to be identified with lot number. (when ordered this way)
- 3.3 50lb. bags - 4000lb./ pallet (when ordered this way)
- 3.4 The North Star BlueScope Steel Raw Material Number must appear on all shipping and billing paperwork.

### **4.0 Sizing:**

- 4.1 2 ½ in. By ½ in. with 10% max retained on 3” screen (not to be larger than 4”) and less than 10% passing ½” screen. (Review sizing verbiage at time of contract bids)
- 4.2 2in. By ½ in. for 50lb. bags

### **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 Manganese, Carbon, Silicon, Phosphorous, and Sulfur.
  - 2) Quantity
  - 3) Name of material
  - 4) 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 A99 (1.02) Grade A

### **7.0 Hazardous Material:**

|                            |             |
|----------------------------|-------------|
| Prepared by: Kevin Jessing | Page 1 of 2 |
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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

| <b>Rev</b> | <b>Date</b> | <b>Description of change</b> | <b>Reason for change:</b> |
|------------|-------------|------------------------------|---------------------------|
|            | 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             |
|            | 01/04/17    | Reviewed and reauthorized    | Annual review             |
|            | 01/16/18    | Reviewed and reauthorized    | Annual review             |