GX Gray Iron

General Description:
GX is a pearlitic gray iron offered in a variety of small and large rounds and rectangles for non-typical size applications. GX benefits include wear resistance, noise and vibration damping, and can be heat treated using conventional methods.

The core microstructure will consist of Type A graphite flake, per ASTM A247, with a matrix containing a minimum of 90% pearlite. The edge or rim will have a combination of Type D and Type E graphite flake and a matrix with a mixture of ferrite and pearlite. The rim will contain as much as 5% carbides.

Heat Treat Response:
GX can be heat treated by conventional methods. Hardening can be accomplished by heating and quenching the material from 1600° F resulting in Rockwell C hardness up to 50 HRC. Induction and flame hardening can be performed but may require an additional pre-heat treatment to reach the desired hardness and microstructure.

Chemical Composition:

<table>
<thead>
<tr>
<th>Element</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon*</td>
<td>2.95 - 3.45%</td>
</tr>
<tr>
<td>Silicon*</td>
<td>2.10 - 2.90%</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.50 - 0.80%</td>
</tr>
<tr>
<td>Sulfur</td>
<td>0.04 - 0.10%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.15% Max</td>
</tr>
</tbody>
</table>

*Carbon and silicon targets are specified for each bar size in order to control the size and shape of the graphite flake.
Mechanical Properties:

Hardness values listed are minimum and maximum across the bar. Hardness values for rectangles and squares are a function of the height and width ratios and will be supplied on request.

<table>
<thead>
<tr>
<th>Size Range</th>
<th>BHN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>mm</td>
</tr>
<tr>
<td>0.001 – 28.000</td>
<td>25 – 711</td>
</tr>
</tbody>
</table>

GX Gray Iron conforms to ASTM A48 Class 40. Tensile data from the as-cast bar, in conjunction with separately cast tensile data, correlates to a Class 40 Gray Iron.

For more information refer to the GX Class 40 Tensile Table.

Typical Applications:

**Automotive:**
- Gears

**Fluid Power:**
- Cylinder blocks, Gerotors, Glands, Manifolds, Pistons, Rotors, Valves

**Machinery:**
- Cylinder blocks, Gerotors, Glands, Manifolds, Pistons, Rotors, Valves
- Machinery: Barrel Rollers, Bushings, Chain Sheave Rollers, Chuck Bodies, Die Blocks, Flywheels, Gear Racks, Gears, Housings, Pile Drivers, Press Rams, Pulleys, Rams, Rotary Tables, Tie Rod Nuts

**Miscellaneous:**
- Core Boxes, Dies, Disamatic Pouring Rails, Grinding Rolls, Mill Liners, Pattern Plates, Plunger Pin

**Oil and Gas:**
- Slips, Cones, Retainers, Mandrels, Ball Seats, Lock Rings, Completion Tool Components

**Power Transmission:**
- Gears, Pulleys

**Pump and Compressor:**
- Gears, Housings, Liners, Pistons, Rotary Screws, Rotors

**Steel Mill:**
- Guide Rolls, Pinch Rolls, Runout Table Rolls

**Transportation:**
- Gears, Motorcycle Disk Brake, Pulleys, Rail Spacers

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