

# Product Characteristics

	<b>DRI</b>	<b>Hot DRI</b>	<b>HBI</b>
<b>Metallization</b>	<b>92–95</b>	<b>92–95</b>	<b>92–95</b>
<b>Carbon <sup>1</sup></b>	<b>1.2–5.0</b>	<b>2.0–5.0</b>	<b>0.8–3.0</b>
<b>Total iron (%) <sup>2</sup></b>	<b>89–93</b>	<b>91–94</b>	<b>92–94</b>
<b>Metallic iron (%) <sup>2</sup></b>	<b>82–89</b>	<b>84–89</b>	<b>84–89</b>
<b>Temperature (°C)</b>	<b>40</b>	<b>&gt; 600</b>	<b>720</b>
<b>Bulk density (ton/m<sup>3</sup>)</b>	<b>1.6</b>	<b>1.6</b>	<b>2.5</b>
<b>App. density (ton/m<sup>3</sup>)</b>	<b>3.2</b>	<b>3.2</b>	<b>5.0</b>
<b>Nominal size (mm)</b>	<b>6–13</b>	<b>6–13</b>	<b>110 x 60 x 30</b>

**1 Typical figures, depending on process options**

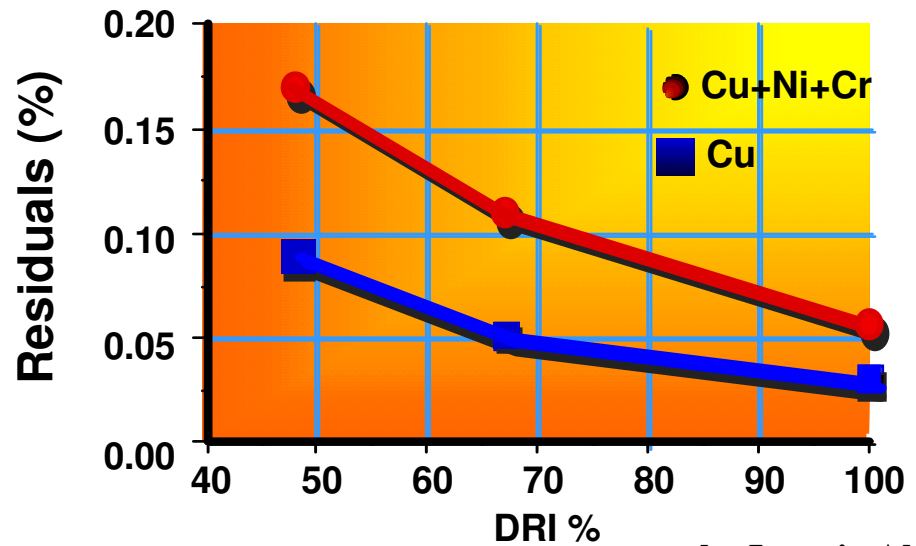
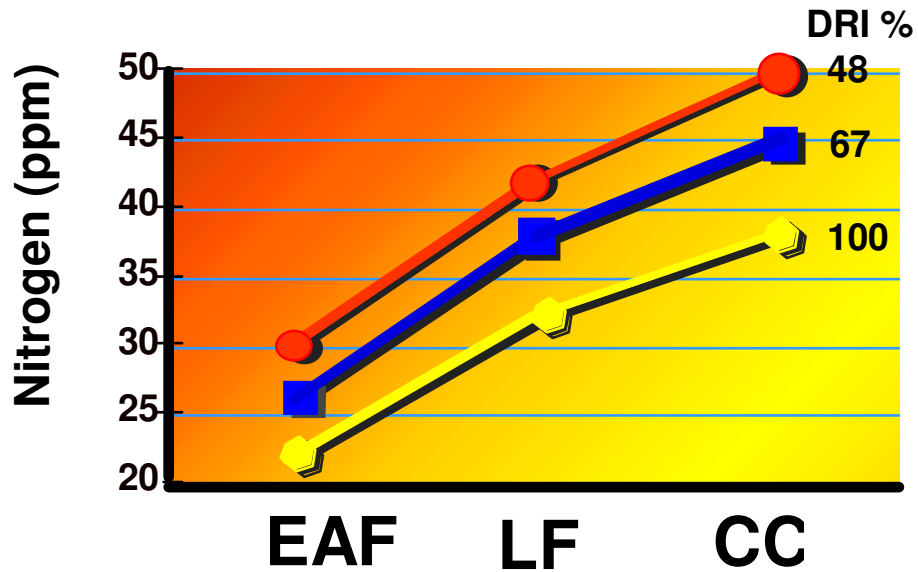
**2 Depending on iron ore characteristics**



# **DRI Advantages**

- **Higher Volumetric Weight**
- **Uniformity of Chemical Analysis**
- **Freedom from Undesirable Elements**
- **Continuous Charging**
- **Less Flicker**
- **Less noise level**
- **Better Bath Steering**
- **Lower Nitrogen Content**
- **Foamy Slag Practice**
- **10 to 100 % higher than that of the various types of scrap.**
- **Avoids product quality deviations.**
- **Free of residual elements.**
- **Eliminates scrap recharging**
- **More uniform power loading during melting.**
- **Noise level significantly lower than with scrap.**
- **CO boiling produces a highly effective bath stirring.**
- **~ 20 ppm or lower of N for 100% DRI.**
- **Easy generation of foamy slag.**

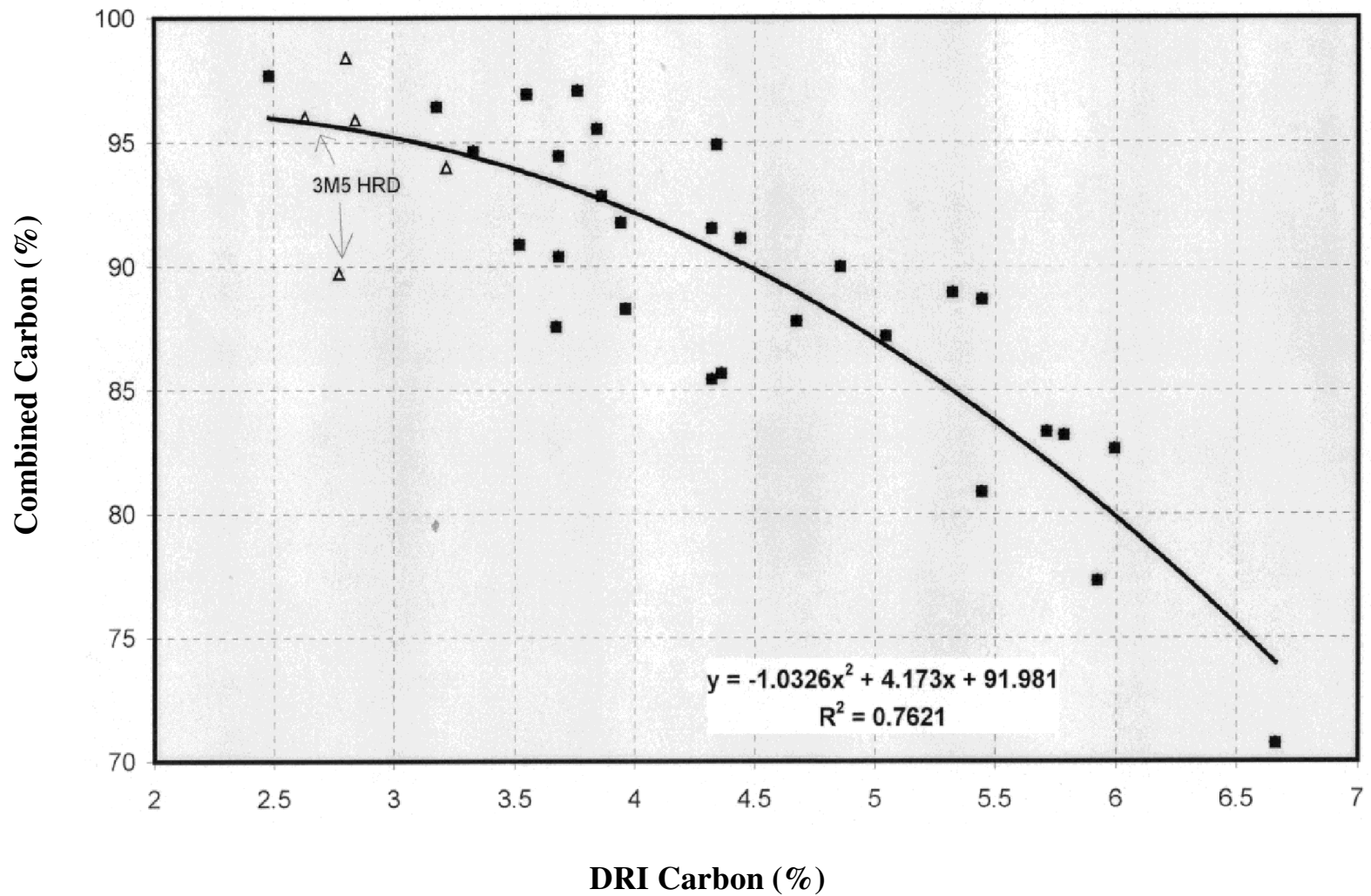
# Nitrogen and Residual Content in Liquid Steel



DRI Handling, Shipping and Use

by Ignacio Alvarez

# Combined Carbon vs Total Carbon in DRI



# **C**hemical Analysis for EAF Dust

<b>Compound</b>	<b>60% DRI</b>	<b>100% Scrap</b>
<b>Fe total</b>	<b>47.67</b>	<b>34.07</b>
<b>Fe O</b>	<b>9.91</b>	<b>4.71</b>
<b>Fe<sub>2</sub>O<sub>3</sub></b>	<b>57.14</b>	<b>43.38</b>
<b>C</b>	<b>0.81</b>	<b>1.25</b>
<b>SiO<sub>2</sub></b>	<b>4.07</b>	<b>4.49</b>
<b>Al<sub>2</sub>O<sub>3</sub></b>	<b>1.05</b>	<b>1.48</b>
<b>CaO</b>	<b>7.90</b>	<b>4.30</b>
<b>Ni</b>	<b>0.03</b>	<b>0.04</b>
<b>Cr</b>	<b>0.07</b>	<b>0.19</b>
<b>Pb</b>	<b>0.49</b>	<b>1.75</b>
<b>Zn</b>	<b>6.76</b>	<b>17.86</b>

# TCLP Test for K061

Element	60% DRI (mgr/l)	100% Scrap (mgr/l)	Regulatory Limits (mgr/l)
Arsenic	0.18	<0.1	5
Barium	0	4.2	100
Cadmium	0.04	17	1
Chromium	0.1	2.07	5
Lead	0.14	91.5	5
Mercury	0	<0.1	0.2
Silver	0	<0.1	5
Selenium	0	0.2	1