

## Use of Hot Briquetted Iron (HBI) in the Electric Arc Furnace (EAF) for Steelmaking

- Steel production in the EAF continues to grow both in North America and worldwide. The past 5 years have seen increases in the supply and use of Pig Iron, Direct Reduced Iron (DRI), and Hot Briquetted Iron (HBI) in the EAF.
- HBI should not be considered as a scrap substitute but rather as a source of clean iron units that can be used to supplement and enhance the scrap charge
- HBI is a high Fe, low residual metallic material for producing high quality iron and steel products in a wide variety of furnaces

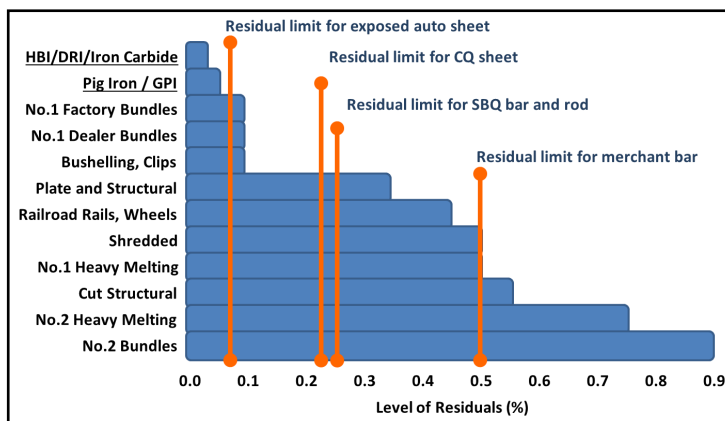
The value-in-use of HBI is different for each melt shop and will depend on local scrap supply, production facilities, metallurgical practice and steel product mix.

### Benefits of Using HBI in the EAF

- **Very low residual element content** enables production of high quality steel products or use of higher percentage of lower cost scrap in the charge mix
- **Known and consistent chemistry**, certified by analysis, assists melt consistency
- **Consistent shape and form** enable efficient material handling and storage
- **High density** can reduce the number of bucket charges, allows for increased use of lower cost, less dense feedstock and reduces storage space requirements
- Can be **continuously charged** to the furnace
- **Acts as N scavenger** = low N content in steel



Hot Briquetted Iron (HBI)



<b>General Specifications for HBI (Ranges % by Weight)</b>	
(based on 65.5 — 68.0% Fe Iron Ore)	
<b>Metallization</b>	94.0%
<b>Fe (Total)</b>	88.3 - 94.0%
<b>Fe (Metallic)</b>	83.0 - 88.4%
<b>C</b>	0.5 - 1.6
<b>S</b>	0.001 - 0.03%
<b>P<sub>2</sub>O<sub>5</sub></b>	0.005 - 0.09%
<b>Gangue*</b>	3.9 - 8.6%
<b>Mn, Cu, Ni, Cr, Mo, Sn, Pb, Zn</b>	Traces
<b>Size (typical)</b>	(90 - 140) x (48 - 58) x (32 - 34) mm
<b>Fines &amp; chips</b>	≤ 5.0%
<b>Apparent Density</b>	> 5.0 t/m <sup>3</sup>
<b>Bulk Density</b>	2.5 - 3.3 t/m <sup>3</sup>
* residual unreduced oxides, mainly SiO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> , but also CaO, MgO, MnO, etc.	

<b>EU steel scrap specifications</b>				
<b>Category</b>	<b>Grade</b>	<b>Cu %</b>	<b>Sn %</b>	<b>Cr, Ni, Mo %</b>
<b>Old scrap</b>	E3	≤ 0.250	≤ 0.010	Σ ≤ 0.250
	E1	≤ 0.400	≤ 0.020	Σ ≤ 0.300
<b>New scrap, low residuals, uncoated</b>	E2	Σ ≤ 0.300		
	E8	Σ ≤ 0.300		
	E6	Σ ≤ 0.300		
<b>Shredded</b>	E40	Σ ≤ 0.250	Σ ≤ 0.020	
<b>Steel turnings</b>	E5M	≤ 0.400	Σ ≤ 0.030	Σ ≤ 1.0
<b>High residual scrap</b>	EHRB	≤ 0.450	Σ ≤ 0.030	Σ ≤ 0.350
	EHRM	≤ 0.400	Σ ≤ 0.030	Σ ≤ 1.0
<b>Fragmented scrap from incineration</b>	E46	≤ 0.500	≤ 0.070	
<b>Ore-based metallics *</b>	pig iron, DRI, HBI	0.002	trace	Σ ≤ 0.15
* Dependent on source iron ore				

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