







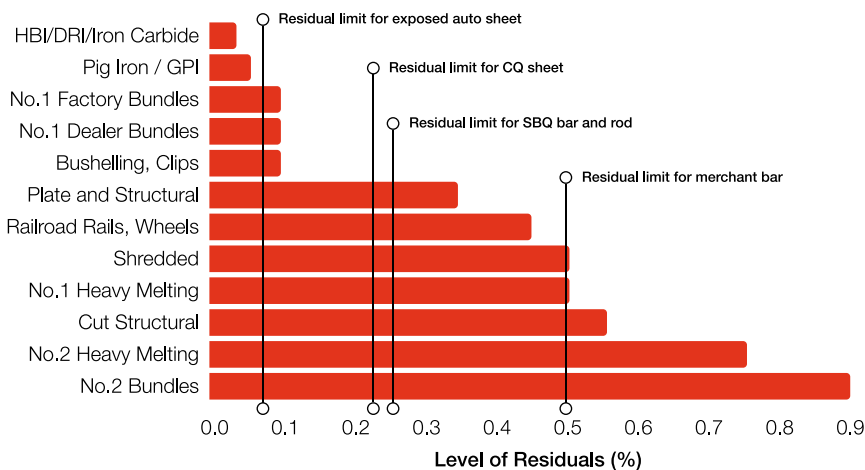
## Use of Hot Briquetted Iron (HBI) in the Electric Arc Furnace (EAF) for Steelmaking

- 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)



## General Characteristics for HBI (Ranges % by Weight)

(based on 65.5 - 68.0% Fe Iron Ore)

Metallization	94.0%
Fe (Total)	88.3 - 94.0%
Fe (Metallic)	83.0 - 88.4%
C	0.5 - 1.6%
S	0.001 - 0.03%
P <sub>2</sub> O <sub>5</sub>	0.005 - 0.09%
Gangue*	3.9 - 8.6%
Mn, Cu, Ni, Cr, Mo, Sn, Pb, Zn, V	Traces
Size (typical)	(90 - 140) x (48 - 58) x (32 - 34) mm
Fines & Chips*	≤ 5.0%
Apparent Density	> 5.0 t/m <sup>3</sup>
Bulk Density	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.

## EU Steel Scrap Specifications

Category	Grade	Cu %	Sn %	Cr, Ni, Mo %
Old scrap	E3	≤ 0.250	≤ 0.010	Σ ≤ 0.250
	E1	≤ 0.400	≤ 0.020	Σ ≤ 0.300
New scrap, low residuals, uncoated	E2		Σ ≤ 0.300	
	E8		Σ ≤ 0.300	
	E6		Σ ≤ 0.300	
Shredded	E40	Σ ≤ 0.250	Σ ≤ 0.020	
Steel turnings	E5M	≤ 0.400	Σ ≤ 0.030	Σ ≤ 1.0
High residual scrap	EHRB	≤ 0.450	Σ ≤ 0.030	Σ ≤ 0.350
	EHRM	≤ 0.400	Σ ≤ 0.030	Σ ≤ 1.0
Fragmented scrap from incineration	E46	≤ 0.500	≤ 0.070	
Ore-Based Metallics*	pig iron, DRI, HBI	0.002	trace	Σ ≤ 0.015

\* Dependent on source iron ore