

A valuable by-product: slag

Production of ferronickel generates a significant quantity of slag. In close cooperation with local authorities in Macedonia, FENI's slag was re-classified from waste into a product (by-product). This product is also registered under REACH regulation.

The production process generates two types of slag, as follows:

Type 1: Electric-furnace slag (air-cooled at FENI Industries, water-granulated at NewCo Ferronikeli)

Type 2: Converter slag.

		FENI Industries	NEWCO FERRONIKELI
Generated quantity of elect. furnace slag / year ⁽¹⁾	Tons EF slag	1 130 000	506 000
Generated quantity of converter slag / year ⁽¹⁾	Tons C slag	110 000	54 000
Available stock of electrical furnace slag	Tons EF slag	> 5 million tons	> 5 million tons
Available stock of converter slag	Tons C slag	150 000 tons	300 000 tons

(1): Figures based on a production of 18 000 tons Ni / year at FENI and 8 000 tons Ni/year at NEWCO Ferronikeli

PRODUCT	Electric-furnace slag FENI	Converter slag FENI	Granulated EF slag NEWCO Ferronikeli	Converter slag NEWCO Ferronikeli
REACH registration nb	01-2119557919-18-0001	01-2119557919-18-0001		
Producer	FENI Industries – Macedonia	FENI Industries – Macedonia	NewCo Ferronikeli – Kosovo	NewCo Ferronikeli – Kosovo
SiO ₂ (%)	40-50	0.2-1.0	60	1.0-2.0
Fe total (FeO) (%)	15-20 (19-26)	50- 60 (64– 77)	14 (18)	50-55 (64-70)
MgO (%)	18	1.0 - 5.0	8	1.0-5.0
CaO (%)	3	15-22	9	17-22
Cr ₂ O ₃ (%)	2.5	0.4 - 0.8	1.4	0.5-1.5
Al ₂ O ₃ (%)	2.8	0.1 - 0.6		0.1-0.6
S (%)	0.1	0.3-0.5		0.4-1.0
Ni (%)	0.06	0.3-0.6	0.04	0.3-0.6
Chemical family	Iron oxides and other oxides	Iron oxides and other oxides	Iron oxides and other oxides	Iron oxides and other oxides
Moisture (%)	<0.1	0.5 – 2.0	3	0.5 – 2.0
LOI (%)	<0.01	<0.01	<0.01	<0.01
Leaching (%)	<0.01	<0.01	<0.01	<0.01
Ecotoxicity	None	None	None	None
Specific density (t/m ³)	3.3	4.0 – 4.6	3.3	3.9-4.2
Bulk density loose (t/m ³)	2.3		1.4	
Bulk density compacted (t/m ³)	2.5			

Slag application in industry

Sandblasting / High density submarine oil and gas pipe coating aggregate / Additional iron to clinker (Substituting the raw material in cement industries with our slag allows deduction of the ton of CO₂ that plants would otherwise have accounted in their carbon balance) / Railway ballast / High strength concrete / Beach aggregate / Granular base for road construction.

Updated 31012017