

PRIMARY ILMENITE

Thunderbird Project



Primary Ilmenite

Sheffield Resources Primary Ilmenite with very low trace elements is suitable as a feed for sulfate and chloride slag manufacture. The ilmenite is characterised by particularly low CaO, MgO and Cr₂O₃ impurity levels. The Primary Ilmenite is a weathered secondary ilmenite that requires pre-reduction prior to smelting due to the high Fe³⁺ content. The TiO₂ content of the Primary Ilmenite is variable (35 – 45% TiO₂), averaging close to 40% TiO₂ however the combined TiO₂, Fe₂O₃ and FeO content is consistent and high, averaging typically 92.5%.

These lower TiO₂ ilmenites with the ability to be upgraded by additional conventional physical processing are sort after feedstock for smelting, as the low relative cost, high TiO₂ and iron content provides suitable thermodynamic conditions for smelting to take place and high-grade pig iron is produced as a valuable by-product. Smelter testwork by Outotec on the Thunderbird primary ilmenite has shown that a high quality TiO₂ slag and high purity pig iron (HPPI) can be produced.

Primary Ilmenite Key Characteristics

The Primary Ilmenite product represents a source of ilmenite with some unique characteristics:

- High combined TiO₂ + Fe₂O₃ + FeO (>92%)
- Fine to medium grained (D₅₀ 71µm)
- Low in key impurities Cr₂O₃, CaO and MgO
- Suitable as feed for high grade titanium slag and pig iron manufacture

Composition	Units	Typical	Range	
			Low	High
TiO ₂	%	38.5	35.0	45.0
Fe ₂ O ₃ (calc)	%	46.0	40.0	49.0
FeO	%	8.0	6.0	9.0
TiO ₂ + Fe ₂ O ₃ + FeO	%	92.5	91.0	95.0
SiO ₂	%	2.8	1.0	4.5
Cr ₂ O ₃	%	0.05	0.04	0.06
MgO	%	0.20	0.15	0.25
CaO	%	0.02	<0.01	0.03
U XRF	ppm	13	<10	40
Th XRF	ppm	180	60	390
Al ₂ O ₃	%	0.60	0.40	1.20
MnO	%	1.05	0.80	1.30
ZrO ₂ +HfO ₂	%	0.10	0.06	0.45
P ₂ O ₅	%	0.16	0.06	0.27
V ₂ O ₅	%	0.14	0.10	0.26
Nb ₂ O ₅	%	0.06	0.05	0.12
K ₂ O	%	0.01	<0.01	0.02
CeO ₂	%	0.08	0.01	0.18

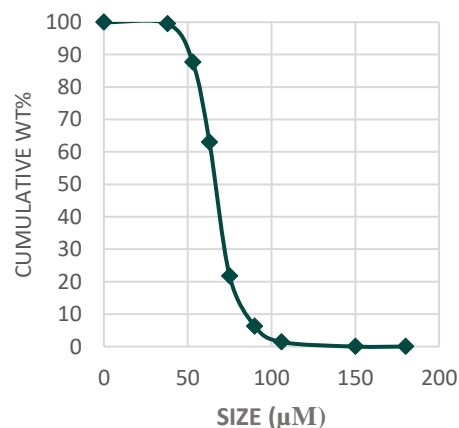


Table 1. Primary Ilmenite product specifications and grain size.

Contact

Neil Patten-Williams, Marketing Manager
 P: +61 (08) 6555 8777 F: +61 (08) 6555 8787
 E: npattenwilliams@sheffieldresources.com.au