Leaflet on the requirements for the samples to be examined for the IME laboratory.

sample request

The main requirement is that all (partial) samples must have a negligible inhomogeneity and be representative of the holistically of the sample.

To ensure this we refer to the following literature:
1. **Analyse der Metalle**: Third volume · **Probenahme** published by: „Chemikerausschuss der Gesellschaft Deutscher Metallhütten-und Bergleute e.V."
2. **Handbuch für das Eisenhüttenlaboratorium** Volume 5 **Probenahme** published by: „Chemikerausschuss des Vereins Deutscher Eisenhüttenleute"

In addition to sufficient sample quantity and the above-mentioned requirements, the following requirements are also listed:

X-ray fluorescence analysis:

- Metals: Minimum surface Ø 30 - 50 mm, one side planed (grain 220, possible influence by abrasive grain Al2O3, SiC) or very finely machined / milled (no grooves / grooves visible)
- Powder samples: Must be finely ground, <63 µm (tested by sieving).

Wet chemical analyzes and ICP analyzes:

- Metals: hard brittle materials <90 µm, otherwise fine turning or drilling chips
- Other solids (slags, ores, stone-dust, dusts, etc.) Finely ground, <90 µm (tested by sieving)
- Dissolved samples (leachings, galvanic baths, eluates, etc.) Clearly filtered solutions, filter <0.45 µm; Pay attention to storage conditions to prevent precipitation / over-saturation of the solutions, possibly dilute / acidify after consultation.

Spark analysis (Spark):

- Sparkanalyzes: Metal must have at least one smooth, flat surface, ground, minimum 220 grain or turned / milled area of minimum 2 at 2 cm

Carbon-sulfur determination (combustion method):

- Metal: grease-free drilling or turning chips, pay attention to the temperature during drilling, turning (possibly cooling, so that the C-, S-value is not falsified).
- Other solids (slags, ores, stone-dust, dusts, etc.): Fine-grained, <90 µm (tested by sieving)

Nitrogen- oxygen- Hydrogen- determination:

- Metal: Non-porous pieces, wire or pins (Diameter <6mm) without inclusions or cavities which can be cut with a normal bolt cutter (surface as small as possible) The surface must not be tarnished/ oxidized.
- During sample preparation the samples should not get warm !!

Thermobalance (TG-DTA):

- Metal: usually about 100 mg pens with a maximum diameter of 5 mm round and maximum height of 10 mm per measurement.
- Other solids (slags, ores, stone dust dusts etc.) Finely ground, smaller than 90 µm (tested by sieving)

TOC (TN) Determination in Solutions:

- If solutions have to be acidified, then not with nitric acid but with hydrochloric acid.
- Solutions containing solids, especially graphite, must be filtered.