



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 \varnothing 30 - 50 mm, one side planed (grain 220, possible influence by abrasive grain Al_2O_3 , SiC) or very finely machined / milled (no grooves / grooves visible)
- **Powder samples**: Must be finely ground, $<63 \mu m$ (tested by sieving).

Wet chemical analyzes and ICP analyzes:

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

Spark- Glowdischarge-spectral analysis (Spark, GDA):

- **Sparkanalyzes**: Metal must have at least one smooth, flat surface, ground, minimum 220 grain or turned / milled area of minimum 2 at 2 cm
- **For GDA** additionally: Samples must not be larger than 100 mm x 100 mm x 30 mm because of the size of the sample chamber.

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)