

ELTRA[®]
ELEMENTAL ANALYZERS

part of **VERDER**
scientific

ELTRA Analysers FAQ Document



ELTRA Analysers

FAQ Document

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1) ELEMENTRAC ONH-p // ONH 2000

1.1. How can I use inner and outer crucibles?

Needed ELTRA parts

Part number	Description
88400-0213	Tweezer, curved for graphite crucible
88400-0229	Tweezer 160 mm, acute ending
90180	Inner graphite crucible
90185	Outer graphite crucible

For some applications (oxygen and nitrogen determination in refractory metals) the usage of inner and outer crucibles (90180 and 90185) is recommended instead of single crucibles (90190).

For working with inner and outer crucibles just place the inner crucible (90180) into an outer crucible (90185):



After the measurement just the inner crucible is given into waste and the outer crucible can be used approximately 10 times.

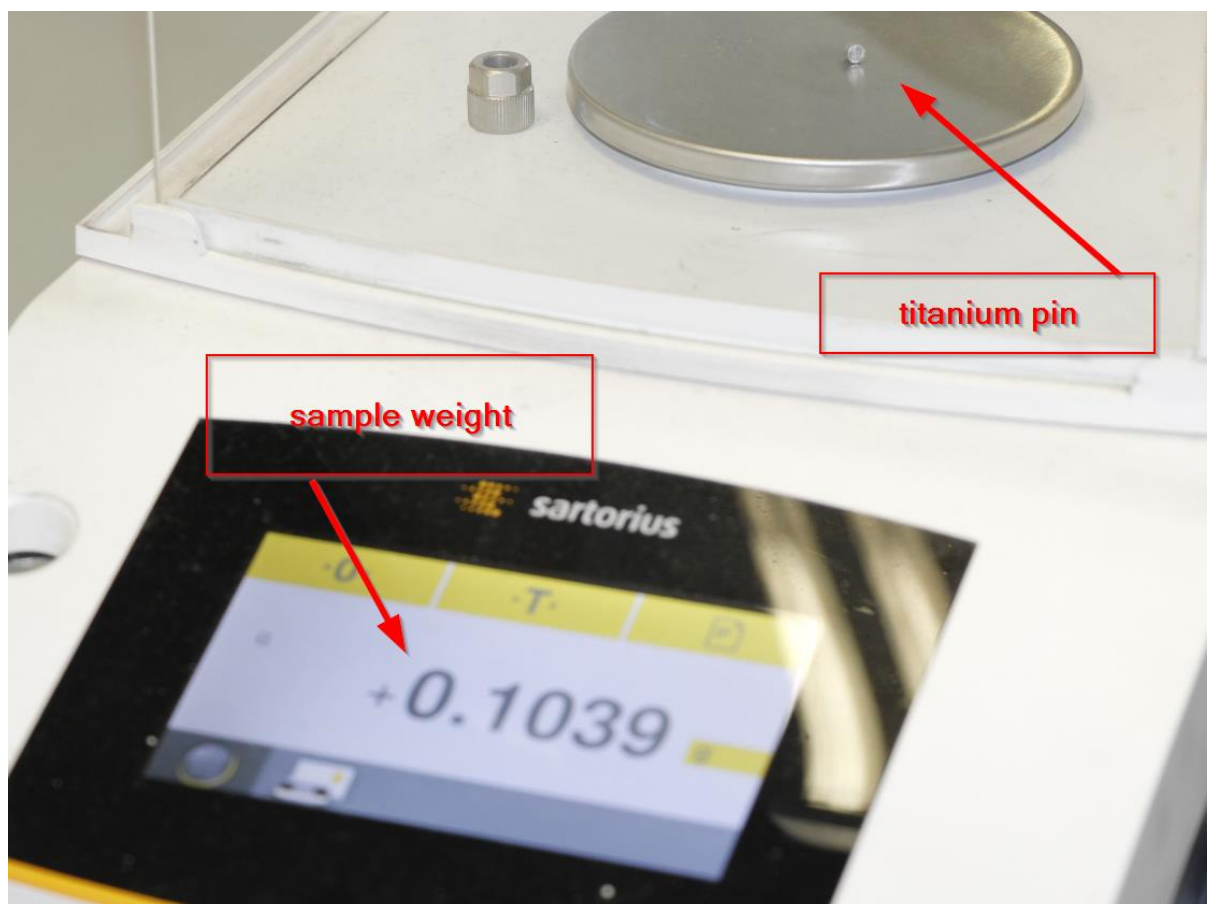
1.2. How can I analyse oxygen and nitrogen in titanium pins?

Needed ELTRA parts

Part number	Description
91205-1001 (-1005)	Titanium calibration material
88400-0213	Tweezer, curved for graphite crucible
88400-0229	Tweezer 160 mm, acute ending
90180	Inner graphite crucible
90185	Outer graphite crucible
90250 , or	nickel basket, 1g
88600-0012	nickel basket, 1g high purity

* Apply the correct settings in the configuration menu

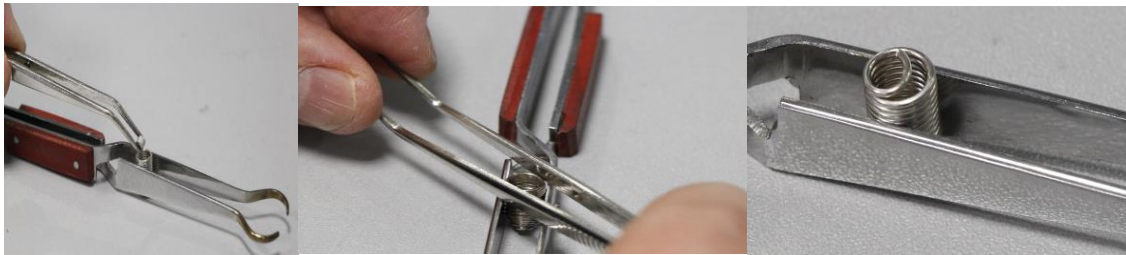
* Weigh the calibration sample (pin, e.g. 91205-1001) and type in the sample weight in the software, or use the balance button (F4)



* Take an empty nickel basket from the bottle by the use of tweezers and fix them with the crucible tweezers



* Apply the titanium pin to the empty nickel basket and seal it



* Apply the nickel basket with the sample to the sample port and start analysis



1.3 How can I analyse hydrogen in titanium pins?

Needed ELTRA parts

Part number	Description
91205-1001 (-1005)	Titanium calibration material
88400-0213	Tweezer, curved for graphite crucible
88400-0229	Tweezer 160 mm, acute ending
90180	Inner graphite crucible
90185	Outer graphite crucible
90251	Tin pellets

- * Choose the correct settings in the configuration menu
- * Weigh the titanium pin and apply the weight to the software (see Chap. 1.2)
- * Fill the titanium sample to the sample port (no basket needed)
- * Fill in two 2 tin tablets (90251) in the inner crucible and place the crucible on the electrode tip



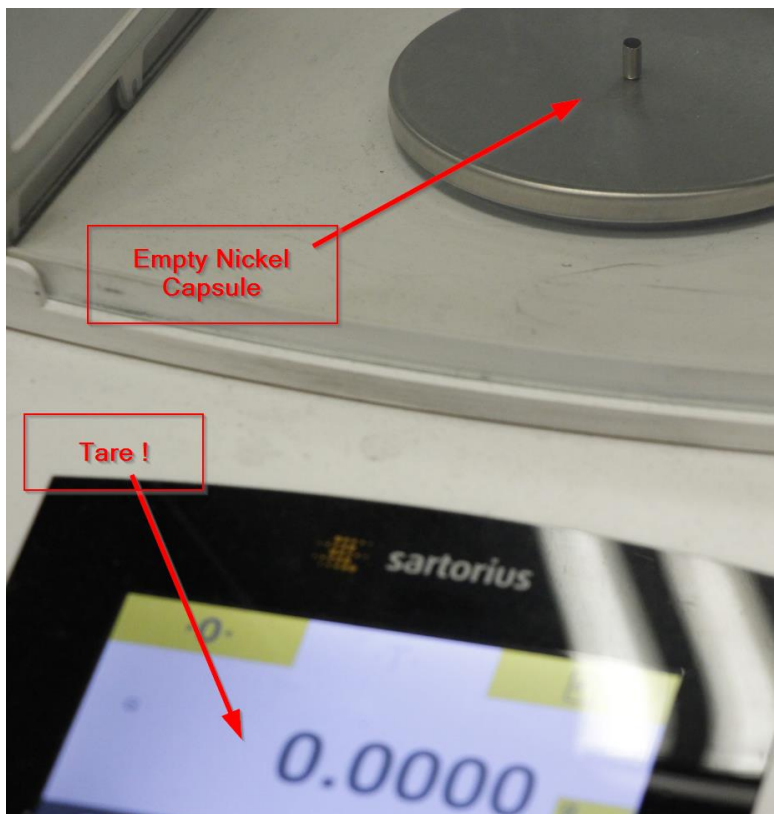
1.4 How can I analyse oxygen, nitrogen and hydrogen in refractory powders?

Needed ELTRA parts

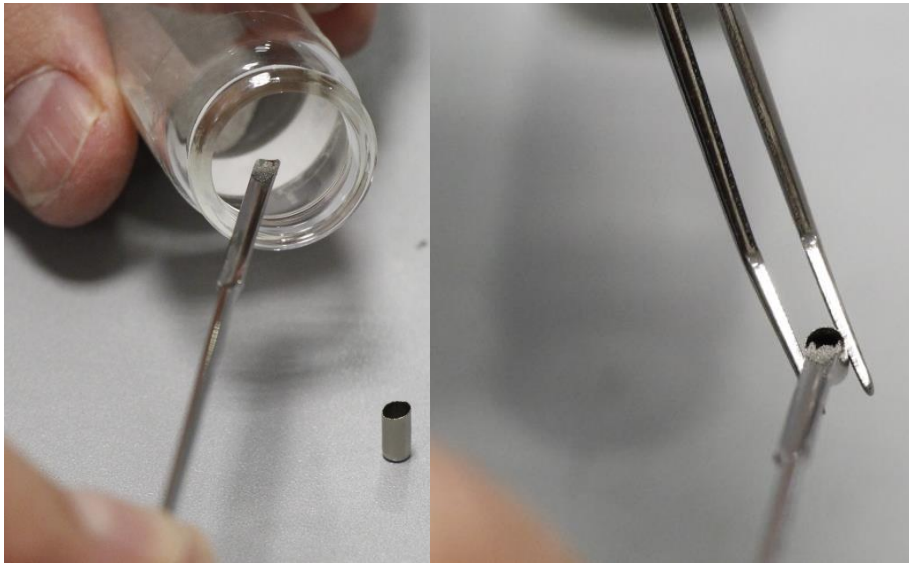
Part number	Description
91205-1001 (-1005)	Titanium calibration material
88400-0213	Tweezer, curved for graphite crucible
88400-0229	Tweezer 160 mm, acute ending
90180	Inner graphite crucible
90185	Outer graphite crucible
90257	Nickel capsule
88400-0476	Mikro spatula
	Tongs to seal the capsule

Fine powders cannot be applied directly to the analyser. They have to be filled into a nickel capsule (90257).

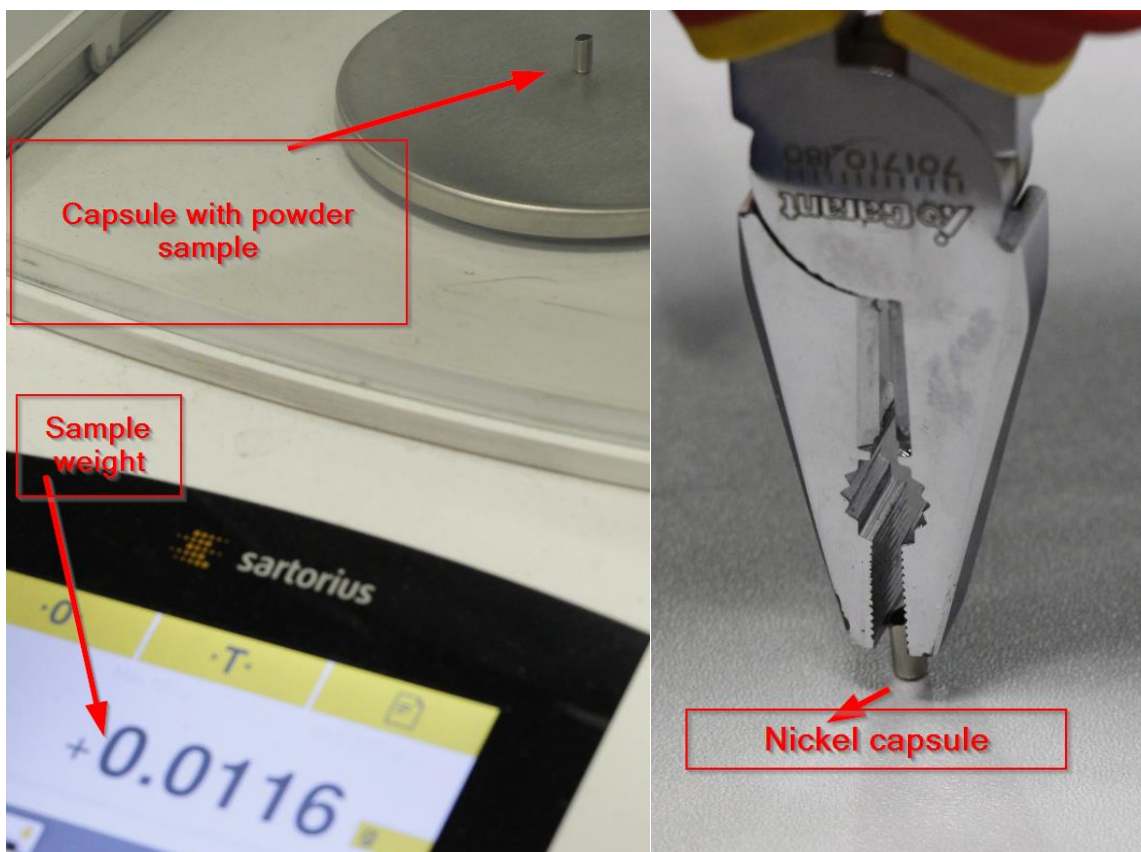
* Put the empty nickel capsule on the balance and tare



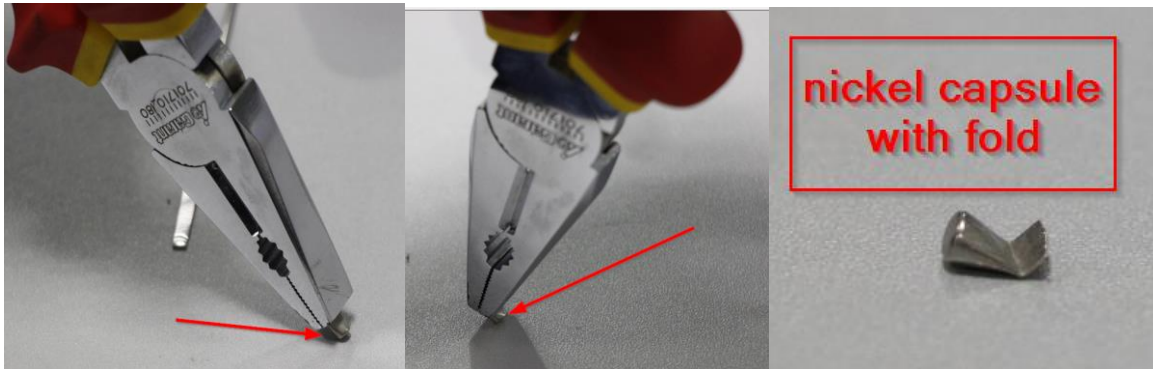
* Fill in the sample by the use of a micro spatula



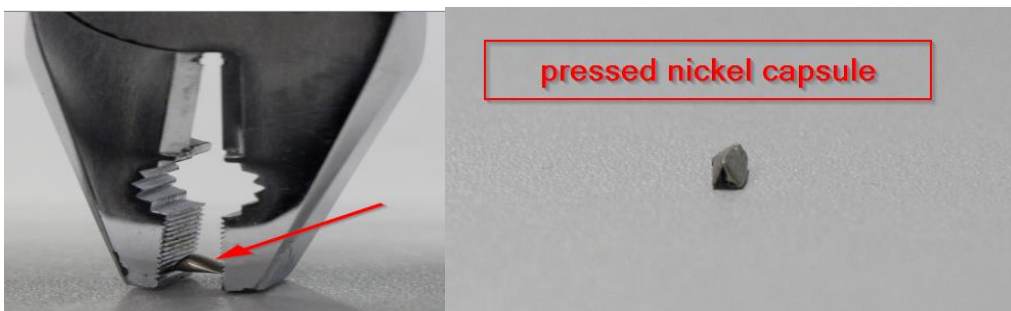
* Weigh the sample containing nickel capsule again and seal the capsule carefully



* Turn the tongs to create a fold

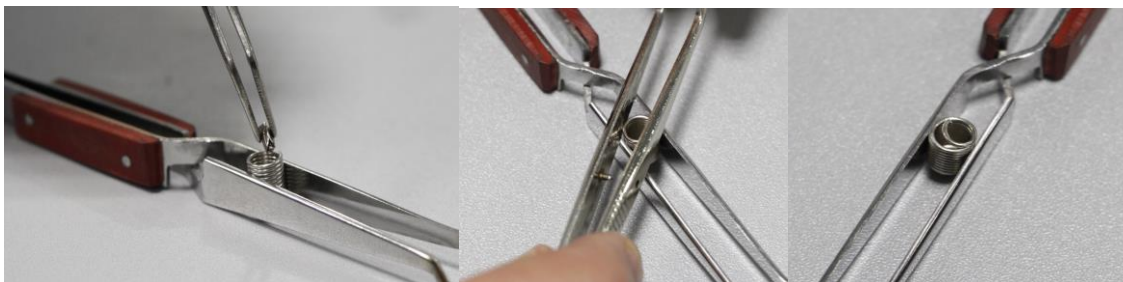


* Press this folded capsule to a minimum volume



For steel, iron, copper powders the sample preparation is finished here. The pressed nickel capsule can be applied directly to the ONH-p sample port.

If the powder is made of refractories (e.g. titanium, zirconium, hafnium) it is necessary to put the pressed nickel capsule in a nickel basket, and the nickel basket has to be sealed.



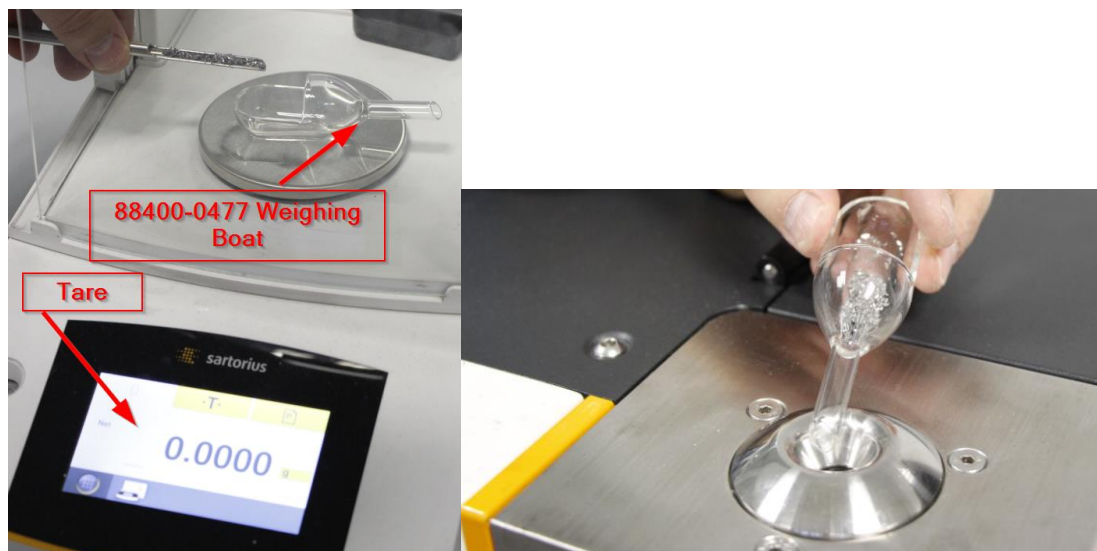
1.5 How to apply iron based granulates?

Iron based powders with higher particle size (granulates) can be analysed directly with the ONH-p series. Granulates from refractories (e.g. titanium, zirconium, hafnium) have to be filled in a nickel capsule (chapter 1.4.). ELTRA recommends to use a weighing boat to apply iron based granulates.

Needed ELTRA parts

Part number	Description
91100-1001 (-1006)	Steel calibration material
88400-0213	Tweezer, curved for graphite crucible
88400-0229	Tweezer 160 mm, acute ending
90180	Inner graphite crucible
90185	Outer graphite crucible
88400-0477	Weighing boat
23110	Spatula 6

- * Place the weighing boat on the balance and tare
- * Fill in the granulate
- * Apply the granulate in the sample load and type in the sample weight in the software



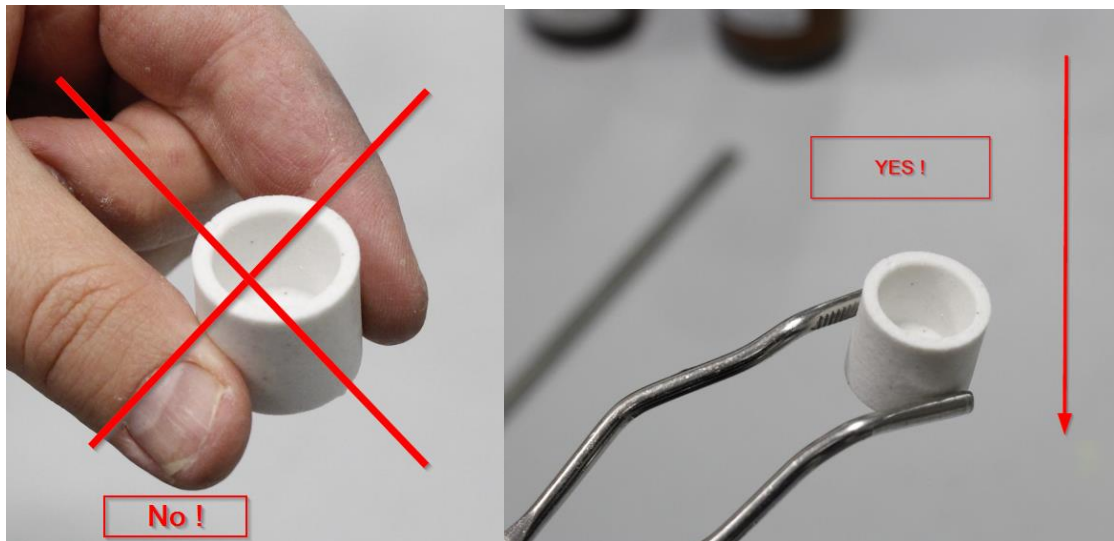
2) CS 800 / CS 2000 Induction furnace

2.1 Advise for best repeatable results

Needed ELTRA parts

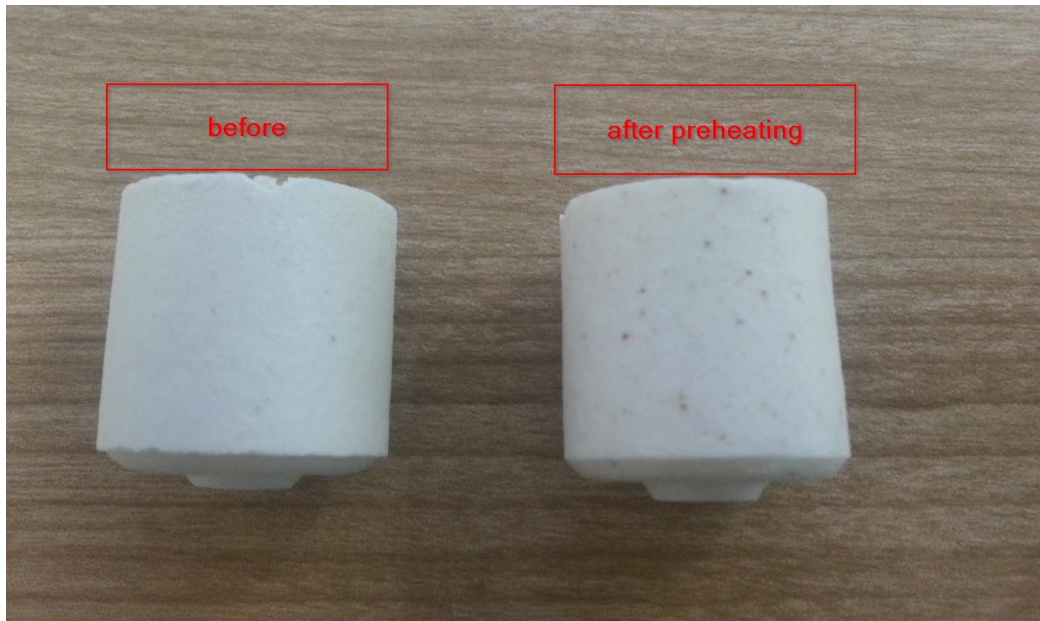
Part number	Description
92400-3010 -> 92400-3100	Steel and cast iron calibration material
90145	Tongs for ceramic crucibles
88400-0229	Tweezer 160 mm, acute ending
23113	Spoon for dosing accelerator
23110	Spatula 6 or
23111	Spatula 8 for applying sample
90149	Ceramic crucibles, foil wrapped, 1000 pcs.
90148	Ceramic crucibles, bagged, 1000 pcs.
88600-0014	Ceramic lids for crucibles
36999	HTF 540 crucible pre heating furnace
90220	Tungsten accelerator
90260	Iron accelerator, or
88600-0010	Iron accelerator high purity

* Do not touch the crucibles with a hand, please use tongs:



* Additionally preheat the crucibles (90148 or 90149) in a muffle furnace or in a HTF 540 for 40 minutes at 1000° C in minimum. Store the preheated crucible in a desiccator and use tongs for handling.

* Some crucible lots can slightly change colour when they are preheated for a long time in a muffle furnace. This colour changing does not influence the analytical results:



* apply a constant mass of iron and tungsten accelerator by the use of the Eltra spoon (23113)

A spoon of iron accelerator is about 0.7 g and a spoon of tungsten is about 1.5 g

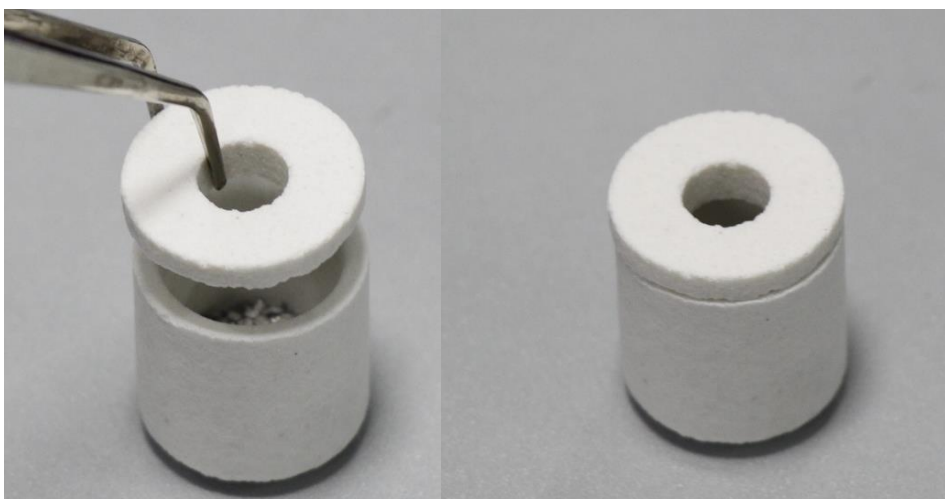


ELTRA recommends to fill in the accelerators like this:

1. Sample
2. Iron accelerator (if needed*1)
3. Tungsten accelerator

*1 = Iron accelerator in general is recommended when not metalbased samples has to be analysed like: slags, oxides, ceramics, ores, soil...

Some samples (tin, ferromanganese,..) produce a lot of dust during combustion. To reduce dust and improve standard deviation a crucible lid is recommended. It is just placed on top of the crucible.



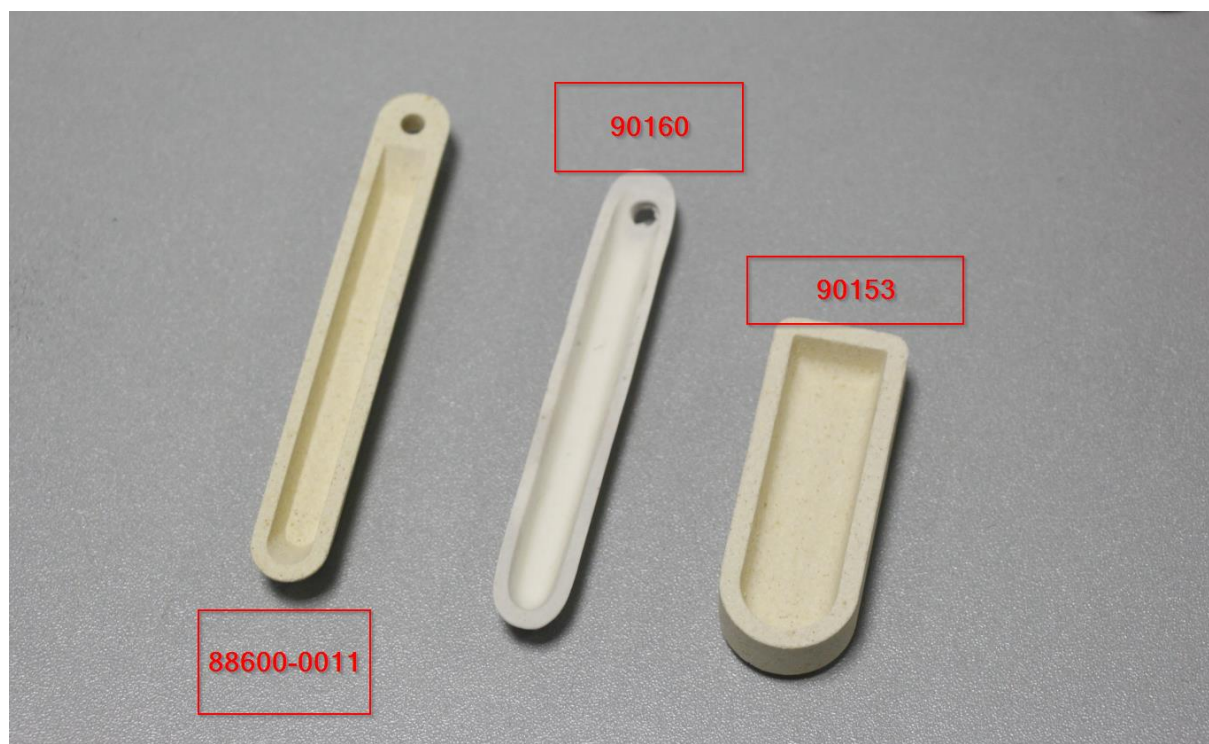
3) CS 2000 resistance furnace; C(H)S 580

3.1 Advices for best repeatable results

Needed ELTRA parts

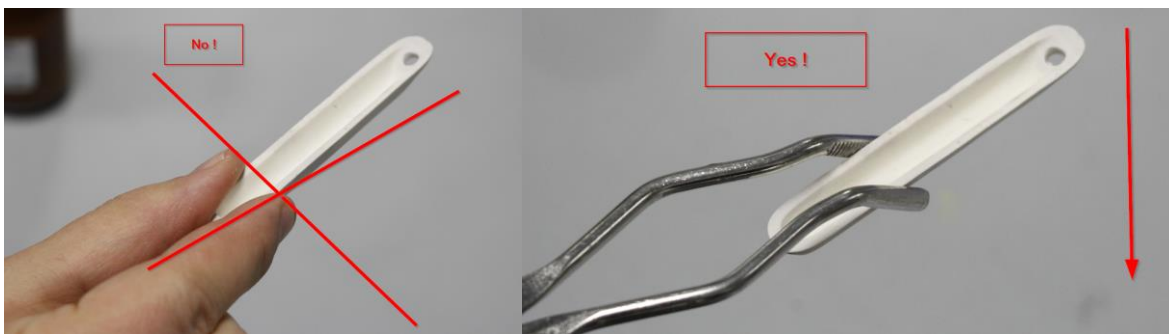
Part number	Description
90145	Tongs for ceramic crucibles /boats
23110	Spatula 6 or
23111	Spatula 8
90153	Re usable ceramic boats, 500 pieces
90160	Diposable porcelain boat, 1000 pieces
88600-0011	Re-Usable ceramic boats, 95x13x10 mm, 500 pieces
90840	Quartz sand
88600-0008	Combsolid
88400-0517	Transfer pipette

For combustion analyser with resistance furnace several combustion boats are available:



Part Nr.	Name	Recommended Application
90153	Re usable ceramic boats, 58 x 22 x 14 mm	Coal, coke, oil, (fuels), soil
90160	Disposable porcelain boot 86 x 13 x 10 mm	Fuels, soil, building materials
88600-0011	Re usable ceramic boats 95 x 13 x 10 mm	All applications, esp. when good repeatability is needed or temperatures about 1500 ° C.

* Do not touch the boats with hands, please use tongs:

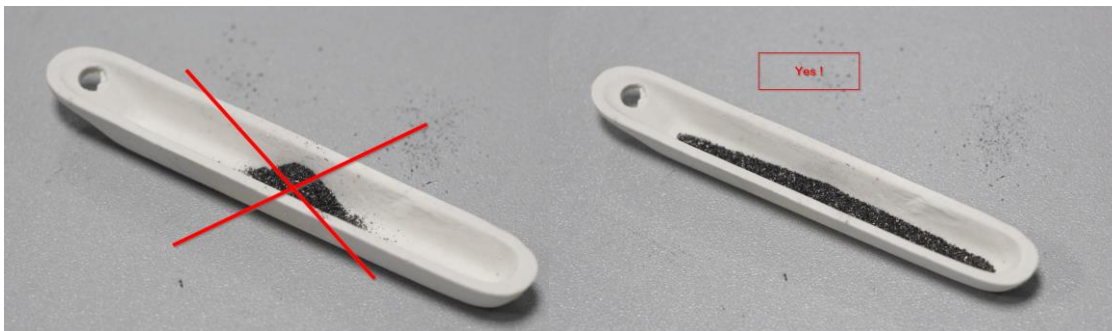


* For best repeatability of carbon/sulfur (hydrogen) results a preheating of the boats (1 hour at 1000 ° C) is recommended.

3.2 Recommendations when disposable porcelain boats (90160) breaks during analysis



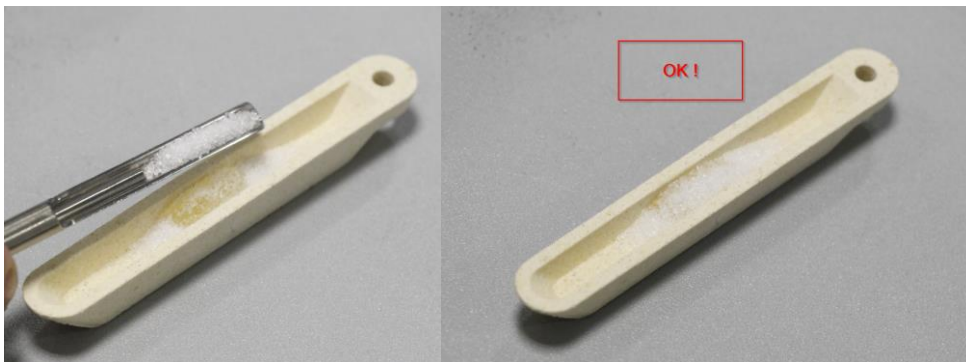
- a) Please preheat the porcelain boats at 1000 °C for 1 hour
- b) Avoid to place intensive burning samples (like chemicals or fuels) on one spot, spread the sample on the whole boat



- c) For temperatures above 1400 °C the 88600-0011 boats should be the first choice. When disposable boats 90160 should be used an increased preheating time (6 hours at 1000 °C) and storage in a desiccator is recommended.

3.3 Applying oil samples

Oil samples should not be placed directly on the porcelain boat. Please add quartz sand first, afterwards the oil sample, followed by additional quartz sand



3.4 Analysing slow burning samples

Some samples also needs accelerators in a resistance furnace. Combsolid provides additional oxygen and should be used for samples like cement, BaSO₄, ores.

Please use a small boat (90160 or 88600-0011), add the sample and cover the sample completely with combsolid. Afterwards it can be analysed in a resistance furnace.

