



## BLANK VALUE OF CERAMIC CRUCIBLES

ELTRA offers different ceramic crucibles for the ELEMENTRAC CS-i / CS-d and C(H)S 580 A series. ELTRA offers the part numbers 90149 and 90148 which are packed in units of 100 crucibles in bags (90148) or are packed in units of 10 crucibles in foils. Both crucibles (90148 and 90149) can be used for all of the above mentioned analyzers in general.

Beside the packing the crucibles have a different blank value of carbon (resp. CO<sub>2</sub>) which is present in the pores of the ceramic. This blank value can affect the repeatability and the result of carbon measurement in every analyzer. Depending on the measured carbon content the blank value has a different impact which is illustrated for different samples which have been measured with the ELEMENTRAC CS-i.

### RECOMMENDATIONS

For very low carbon analysis (e.g. 30 ppm of carbon with a nominal sample weight of 500 mg) ELTRA recommends to preheat crucibles in a muffle furnace or a tube furnace (without the foil or the bag) in minimum for 1 hour at 1000°C. These procedure removes residues of carbon dioxide from the crucibles and guarantees a reliable carbon measurement in the lower concentration range. When pre heated crucibles are not used immediately they should be stored in a desiccator. Both part number 90148 and 90149 can be used for preheating in a muffle furnace.

Not preheated crucibles can be used in routine sample analysis depending on the predicted carbon concentration and the advised sample weight. Measurements of samples with a lower sample weight (e.g. 50 mg) are more sensitive versus the blank values of the crucible. This is due to the reduced total amount of carbon which is released during combustion.

### NOTICE

Keep in mind that every crucible (pre heated, 90148, 90149) can show higher blank values when they are not stored correctly. The results in column 6 show results of crucibles which are stored without packing in laboratory atmosphere.



## MEASUREMENTS WITH THE ELEMENTRAC CS-i

Sample weight of 500 mg and 3 times measurement.

CRM	Certified content (1 Sigma deviation)	Results with pre heated crucibles	Results with 90149 foil wrapped crucibles	Results with 90148 bagged crucibles	Results with 90148 bagged crucibles (longer air contact)
92400-3020#312A	C: 29 +- 5 ppm S: 43 +- 3 ppm	C: 29,01+- 0,71 ppm S: 43,00 +- 0,36 ppm	C: 49,57 +- 7,15 ppm S: 40,98 +- 2,49 ppm	C: 55,50 +- 7,00 ppm S: 43,00 +- 0,21 ppm	C: 85,15 +- 11,8 ppm S: 44,27 +- 0,8 ppm
92400-3030#320L	C: 220 +- 10 ppm S: 320 +- 30 ppm	C: 220,02 +- 2,33 ppm S: 320,00 +- 0,95 ppm	C: 235 +- 2,00 ppm S: 321 +- 2,16 ppm	C: 237 +- 5,4 ppm S: 319 +- 0,53 ppm	C: 274 +- 7,00 ppm S: 326 +- 1,00 ppm
92400-3050#814F	C: 0,182 +- 0,002 % S: 0,037 +- 0,002 %	C: 0,1820 +- 0,0009 % S: 0,0370 +- 0,0001 %	C: 0,1820 +- 0,0021 % S: 0,0370 +- 0,0002 %	C: 0,1837+-0,0019 % S: 0,0367 +-0,0002 %	C: 0,184 +-0,0006 % S: 0,037 +- 0,0001 %
<b>Medium Offset to the certified carbon values (based on 500 mg sample weight)</b>	-	-	0-20 ppm	17-25 ppm	20-55 ppm