

Sulfur determination in coke



Suitable analyzers

- ELEMENTRAC CS-*i*

Used accessories

- Ceramic crucibles (90149)
- Tungsten (90220)
- High purity iron accelerator (88600-0013)
- Suitable calibration material (NIST or other)



Application Settings

I) General

| | |
|------------------------|----------|
| Sample type: | Advanced |
| Standby flow: | 10 l/h |
| Purging while closing: | no |
| Open Furnace: | yes |
| Furnace purge through: | Exhaust |
| Furnace purge time: | 3 sec |
| Furnace purge flow: | 180 l/h |

Stabilizing

| | |
|---------------------|--------|
| Stabilize by time: | on |
| Stabilize duration: | 20 sec |

II) Analysis

| | |
|---------------------|---------|
| Voltage: | 100 % |
| Power duration: | 90 sec |
| Flow: | 180 l/h |
| Chamber only: | 5 sec |
| Lance and chamber: | 5 sec |
| Drift compensation: | on |

| Channel | Max time [sec] | Min time [sec] | Integration delay [sec] | Comparator peak [%] |
|---------|----------------|----------------|-------------------------|---------------------|
| Low S | 90 | 60 | 5 | 0.1 |

III) Postwaiting

| | |
|-------------------|--------|
| Postwaiting time: | 10 sec |
|-------------------|--------|

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Sample preparation

Make sure that your sample is free from contaminations and shows a homogeneous size distribution. Pre-heat the crucibles at least for 1 h at 1000 °C. Let the crucibles cool down in a desiccator.

Procedure

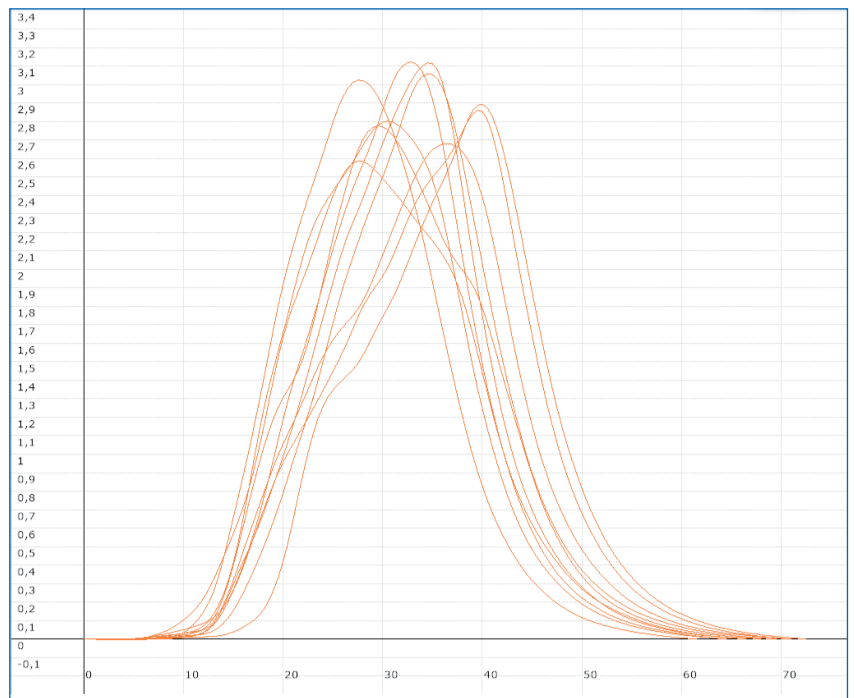
- Prepare ELTRA analyzer (e.g. exchange anhydron, sodium hydroxide, platin catalyst if necessary); clean the combustion tube, brush, heat shield, dust trap
 - Run three warm up samples (e.g. steel samples (92400-3050) with a minimum weight of 500 mg; add 1.7 g tungsten)
 - Calibrate the analyzer with suitable calibration material (NIST or other)
- Analysis procedure:
- (1) Weigh in approx. 70 mg of sample into the crucible
 - (2) Add 0.7 g of high purity iron accelerator (88600-0013)
 - (3) Add 1.7 g of tungsten (90220)

Repeat steps (1) – (3) at least three times;
Mark the results and use the calibration function in the software.

→ Now start with the actual analysis.



| Typical results | | |
|---|-------------|---------------|
| ELTRA 92560-3010 Lot 721009 ¹⁾²⁾ | | |
| Id | Weight (mg) | Sulfur (%) |
| 92560-3010 | 73.4 | 0.760 |
| 92560-3010 | 72.7 | 0.770 |
| 92560-3010 | 72.3 | 0.757 |
| 92560-3010 | 78 | 0.760 |
| 92560-3010 | 72 | 0.756 |
| 92560-3010 | 73.5 | 0.767 |
| 92560-3010 | 71.4 | 0.771 |
| 92560-3010 | 72.5 | 0.760 |
| 92560-3010 | 71.5 | 0.747 |
| 92560-3010 | 73 | 0.752 |
| Average value | | 0.760 |
| Deviation / rel. deviation (%) | | 0.008 / 1.004 |



¹⁾ certified: %S: 0.76 ± 0.01
²⁾ a reliable sulfur analysis is only possible when the sample has a moisture and/or hydrogen concentration below < 0.1%

Subject to technical modification and errors