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CERTIFICATE OF CHEMICAL ANALYSIS No 08 – 22

**SET OF LOW ALLOY STEEL RMs WITH CERTIFIED CONTENT OF CARBON,
SULPHUR AND NITROGEN**

SPL RM 2003A-2008A

CERTIFIED VALUES AND THEIR UNCERTAINTIES (expressed in % m/m)

RM		2003A	2004A	2005A	2006A	2007A	2008A
Carbon	value	0.0402	0.079	0.358	0.461	0.684	0.977
	U	0.0008	0.001	0.004	0.002	0.006	0.003
Sulphur	value	0.0316	0.0464	0.0250	0.0172	0.0106	0.0091
	U	0.0006	0.0010	0.0005	0.0007	0.0004	0.0004
Nitrogen	value	0.0046	0.0038	0.0081	0.0066	0.0128	0.0066
	U	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003

Reference materials SPL RM 2003A-2008A are identical to the former CRMs CZ 2003A-2008A (certified 6/1/2007). Since the validity of this CRM certificate expired recently, we have arranged for it to be re-issued as RM given the temporal stability of these materials.

Designed for the calibration and validation of combustion and thermoevolution methods with a minimum sample weight 0.25g. The set covers the certified elements in their most frequent concentration ranges. They may not substitute CRM in establishing traceability of the results.

Manufacture and Technical Parameters. The candidate materials were wires cut to the typical grain mass of 0.005g, cleaned and homogenized. CRM are available in 250 g glass bottles with a plastic screw lid, sealed in a plastic container.

Homogeneity was tested by combustion - IR MAS and Thermoevolution - thermoconductivity methods within the interlaboratory certification experiment and evaluated by “two-nest” modification of ANOVA according to the ISO REMCO Guide 35. The homogeneity contribution, when statistically significant, was combined to the uncertainty of the certified values.

Stability and storage

The RMs are stable by a nature of material. The samples must be stored in dry and non-corrosive environment, with the lid replaced immediately after each weighing.

CERTIFICATION

Procurements, production and characterisation were carried out in compliance with the quality requirements of the ISO/REMCO Guide 34.

Characterisation was based on the interlaboratory experiment carried out by selected competent laboratories, in compliance with the ISO/REMCO Guide 35.

Traceability

The results were traced to the adequate matrix-matching CRMs and validated by primary substances.

Methods

The combustion in a stream of oxygen with infra-red molecular absorption spectrometry was applied for both carbon and sulphur, and thermoevolution with thermoconductivity measurement for nitrogen.

Participating laboratories

Azovstal,	Mariupol, Ukraine
Brammer Standard Company,	Houston, Texas, USA
HUTA BAILDON,	Katowice, Poland
LECO Corporation,	St. Joseph, Texas, USA
MMZ Rybnica,	Moldova
MTL Chomutov,	Czechia
Nová huť, Ostrava,	Czechia
Škoda výzum, Plzeň,	Czechia
Třinecké železárny,	Třinec, Czechia
Vítkovice, Ostrava,	Czechia
VSŽ Labortest,	Slovakia
ZPS-sléváma,	Zlín, Czechia
Železárny Hrádek,	Czechia
ŽDB,	Bohumín, Czechia
ŽĐAS,	Žďár nad Sázavou, Czechia

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