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CERTIFICATE OF CHEMICAL ANALYSIS No 09 – 22

**SET OF CAST IRON CRM WITH CERTIFIED CONTENT OF
CARBON AND SULPHUR**

SPL RM 2015A-2024A

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

RM		2015A	2016A	2017A	2018A	2019A	2020A	2021A	2022A	2023A	2024A
Carbon	value	1.996	2.053	2.463	3.173	3.270	3.532	3.806	3.826	4.029	4.512
	U	0.011	0.016	0.023	0.020	0.014	0.015	0.012	0.014	0.016	0.022
Sulphur	value	0.0157	0.0048	0.0755	0.0142	0.0116	0.0417	0.0357	0.0768	0.0886	0.0264
	U	0.0004	0.0004	0.0026	0.0005	0.0004	0.0013	0.0011	0.0030	0.0028	0.0004

Reference materials SPL RM 2015A-2024A are identical to the former CRMs CZ 2015A-2024A (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 methods with a minimum sample weight 0.2g. The set covers the most frequent concentration ranges of the certified elements. They may not substitute CRM in establishing traceability of the results.

Manufacture and Technical Parameters

The graphite free candidate material was argon-sprayed, crushed, sieved and homogenised. More than 95% of the material consist of the fraction between 0,25 and 0,75mm grain size. The supply unit is 100g of CRM in a glass bottle with a plastic screw lid, sealed in a plastic container.

Homogeneity was tested by combustion infra-red absorption spectrometry. Both within-bottle and between-bottles inhomogeneity were tested and found statistically insignificant.

Stability and storage

The CRM materials and certified constituents are stable over the entire validity period. The samples must be stored in a dry and non-corrosive enviroment 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 35.

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

Traceability

The results (except of the calculable results - gravimetry, volumetry) were traced to the adequate matrix-compatible CRM.

Methods

The combustion in a stream of oxygen with infra-red molecular absorption spectrometry was applied for both carbon and sulphur, along with gravimetry and volumetry for carbon only.

Participating laboratories

Třinecké železářny a.s., Třinec	Czechia
ŽDAS a.s., Žďár nad Sázavou	Czechia
Chemopetrol a.s., Litvínov	Czechia
ŽDB a.s., Bohumín	Czechia
Moravské železářny a.s., Olomouc	Czechia
Tafonco a.s., Kopřivnice	Czechia
Qualitest lab., Dunayvaros	Hungary
ICRM, Ekaterinburg,	Russia
US Steel Košice-Labortest s.r.o., Košice	Slovakia
Leco Corporation, St. Joseph, MI	USA
BAS, Middlesbrough	United Kingdom
IMŻ, Gliwice	Poland

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