



## SPL Bohumín

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CERTIFICATE No 06 – 17

**REFERENCE MATERIAL OF LOW ALLOY STEEL  
for solid sample spectrometry, combustion and wet-way methods**

### SPL CM-8B

**Certified** fully compliant with the ISO Guide 35 definition of Reference Material – with the characterization for determining the property values and their associated uncertainties.

**Intended** for calibration, matrix-match verification and statistical process control of low alloy steel spectrometric analysis from a plane of solid sample. They may not substitute CRM in a statement of metrological traceability, method validation. A single analysis area of at least 4 mm in diameter defines the minimum sample intake. They may be used for combustion and wet-way methods too.

**Manufactured** by casting to a special ingot with discarding of the parts, which have been suspected inhomogenous and the rest has been machined to the samples of the ultimate size.

**Supplied** as discs 37 mm in diameter and 25 mm of standard height, as option is possible up to 50 mm high and on request steel chips for combustion and wet-way methods.

**Homogeneity** (random and trend, within- and between- samples) was tested by various analytical techniques of adequate repeatability. Its uncertainty contribution, when statistically significant, was combined to the ultimate uncertainty statement. The RM are stable by a nature of material.

**Characterised** by inter-laboratory study of the expert laboratories listed below by various spectrometric methods (AES spark, glow discharge, XRF) and alternative methods (combustion, thermoevolution, wet-way) standard methods, with measurements metrological **traceabled** to adequate CRM (CZ 2001, 2003 - 2008, BAS, Brammer Standard).

*ARCELORMITTAL a.s., Ostrava, Czechia*

*BONATRANS GROUP a.s., Czechia*

*ENVIFORM a.s., Třinec, Czechia*

*U. S. STEEL KOŠICE – LABORTEST, Košice, Slovakia*

*VIADRUS a.s., Bohumín, Czechia*

*VÍTKOVICE TESTING CENTER s.r.o., Ostrava, Czechia*

*ZPS-SLÉVÁRNA a.s., Zlín, Czechia*

*ŽĎAS a.s., Žďár nad Sázavou, Czechia*

**Certified values** in % m/m, tabulated below in bold, are robust means of a minimum five accepted laboratory means. They are rounded to the same digit as their uncertainty statement.

**Uncertainty** is expressed as a  $\pm$  half width interval combined from the standard uncertainty, expanded by the coverage factor  $k = 2$  (corresponding to 95% level of confidence). It does not exceed 1,5 multiple of the typical uncertainty of the matching CRM.

**Non-certified values** in regular without the uncertainty statement do not meet the requirements for certification and are intended for the matrix information.

<b>RM</b>	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cu</b>	<b>Cr</b>	<b>Ni</b>	<b>Al</b>
<b>CM-8B</b>	<b>0.185</b> 0.006	<b>1.95</b> 0.02	<b>0.112</b> 0.003	<b>0.015</b> 0.001	<b>0.014</b> 0.001	<b>0.081</b> 0.003	<b>1.22</b> 0.02	<b>0.032</b> 0.002	<b>0.0028</b> 0.0006
<b>RM</b>	<b>Mo</b>	<b>W</b>	<b>V</b>	<b>Ti</b>	<b>Co</b>	<b>As</b>	<b>Sn</b>	<b>B</b>	<b>Nb</b>
<b>CM-8B</b>	<b>0.011</b> 0.001	<i>0.009</i>	<b>0.0078</b> 0.0005	<b>0.0008</b> 0.0002	<b>0.007</b> 0.001	<b>0.0035</b> 0.0003	<b>0.0126</b> 0.0007	<b>0.0023</b> 0.0003	<i>0.002</i>
<b>RM</b>	<b>Pb</b>	<b>Sb</b>	<b>Zr</b>	<b>Ca</b>	<b>Zn</b>	<b>N</b>			
<b>CM-8B</b>	<i>0.003</i>	<i>0.004</i>	<i>0.002</i>			<b>0.0075</b> 0.0004			

**User instruction:** the surface of the specimens and RM should be prepared in a similar manner in accordance with manufacture's instructions of spectrometers. It is recommended to storage of RM in dry and non-corrosive conditions.

**Produced by:** SPL, the authorised producer of CRM for the Czech Metrology Institute and the provider of the interlaboratory Proficiency Testing accredited by the Czech Accreditation Institute, in a strict compliance with ISO/IEC 17025, 17043 and in particular with ISO Guide 34 and 35.

**Responsible person:** Martin Bogumský

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Ing. Iva Bogumská - SPL

Služby pro laboratoře

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