

**REFERENČNÍ MATERIÁLY, CERTIFIKOVANÉ Českým metrologickým institutem :****C, S, N v ocelích a litinách****OCELI s certifikovanými obsahy C, S, resp. N – balení 250 g \*****Sada nízkolegovaných ocelí SPL RM 2003 A – 8 A, SPL RM 2025 A, 2026 A**

(po skončení platnosti CRM v roce 2022 byly tyto materiály překlasifikovány na RM)

**CERTIFIKOVANÉ HODNOTY A JEJICH NEJISTOTY (vyjádřeny v % hm.)**

	2003 A	2004 A	2005 A	2006 A	2007 A	2008 A	2025 A*	2026 A*
<b>C</b>	<b>0.0402</b>	<b>0.079</b>	<b>0.358</b>	<b>0.461</b>	<b>0.684</b>	<b>0.977</b>	<b>0.0020</b>	<b>0.068</b>
	0.0008	0.001	0.004	0.002	0.006	0.003	0.0003	0.001
<b>S</b>	<b>0.0316</b>	<b>0.0464</b>	<b>0.0250</b>	<b>0.0172</b>	<b>0.0106</b>	<b>0.0091</b>	<b>0.0018</b>	<b>0.255</b>
	0.0006	0.0010	0.0005	0.0007	0.0004	0.0004	0.0002	0.005
<b>N</b>	<b>0.0046</b>	<b>0.0038</b>	<b>0.0081</b>	<b>0.0066</b>	<b>0.0128</b>	<b>0.0066</b>		
	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003		

\*CRM CZ 2025 A – čisté železo \* (balení 200 g)

\*CRM CZ 2026 A – automatová ocel

Platnost certifikátu do 1.6.2022

**Litiny s certifikovanými obsahy C, S****SPL RM 2015 A - 2024 A****CERTIFIKOVANÉ HODNOTY A JEJICH NEJISTOTY (vyjádřeny v % hm.)**

	2015 A	2016 A	2017 A	2023 A
<b>C</b>	<b>1.996</b>	<b>2.053</b>	<b>2.463</b>	<b>4.029</b>
	0.011	0.016	0.023	0.016
<b>S</b>	<b>0.0157</b>	<b>0.0048</b>	<b>0.0755</b>	<b>0.0886</b>
	0.0004	0.0004	0.0026	0.0028

(balení 100 g)

**CRM SPL CZ 2015B-2024B (certifikovány přes společnost Brammer Standard)**

	2015B	2016B	2017B	2018B	2019B	2020B	2021B	2022B	2023B	2024B
<b>C</b>	<b>1.99</b>	<b>2.15</b>	<b>2.57</b>	<b>3.07</b>	<b>3.43</b>	<b>3.52</b>	<b>3.80</b>	<b>3.86</b>	<b>4.06</b>	<b>4.40</b>
	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
<b>S</b>	<b>0.017</b>	<b>0.0047</b>	<b>0.095</b>	<b>0.014</b>	<b>0.017</b>	<b>0.043</b>	<b>0.043</b>	<b>0.085</b>	<b>0.114</b>	<b>0.047</b>
	0.001	0.0007	0.003	0.001	0.001	0.002	0.002	0.002	0.003	0.002

(balení 200 g)

# CERTIFIKOVANÉ REFERENČNÍ MATERIÁLY

## CRM CZ 02033 and CRM CZ 20034

**CRM CZ 02033 – certifikované LITINY pro spektrometrickou analýzu, sada 1-8**  
 ø 40 mm, h = 18 mm (platnost certifikátu do roku 2027)

Určeny jsou ke kalibraci, validaci a ověření matriční přiměřenosti v analýze litin spektrometrií z plochy pevného vzorku: atomová emisní spektrometrie s buzením jiskrou, doutnavým výbojem a laserem, a rentgenfluorescenční spektrometrie.

Osm CRM 1–8 představuje nejběžnější typy nelegovaných a nízkolegovaných litin, postupně: nelegovanou tvárnou, Ni-Cu legovanou tvárnou, vermikulární litinu, surové železo, temperovanou litinu, Mn-Cr-V a Ni-Mo legované litiny a běžnou šedou litinu

Dodávány jsou jako sada nebo jednotlivé disky 40 mm v průměru a přibližně 18 mm vysoké, s certifikovanými vrstvami 6 mm vysokými po obou stranách. Disky jsou značeny kódem příslušného CRM a hranicemi certifikovaných vrstev. Po dosažení těchto hranic z obou stran se zbytek, který může obsahovat drobnější vady struktury, musí vyřadit

	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Mg	Ce
<b>4B</b>	<b>3.95</b> 0.02	<b>0.145</b> 0.002	<b>0.252</b> 0.004	<b>0.041</b> 0.002	<b>0.046</b> 0.002	<b>0.049</b> 0.001	<b>0.023</b> 0.001	<b>0.062</b> 0.002	<b>0.005</b> 0.001		
<b>4C</b>	<b>4.06</b> 0.02	<b>0.250</b> 0.002	<b>0.423</b> 0.005	<b>0.054</b> 0.002	<b>0.038</b> 0.002	<b>0.080</b> 0.002	<b>0.084</b> 0.001	<b>0.085</b> 0.002	<b>0.002</b> 0.001		
<b>5B</b>	<b>2.42</b> 0.04	<b>0.812</b> 0.005	<b>1.32</b> 0.02	<b>0.033</b> 0.001	<b>0.073</b> 0.003	<b>0.061</b> 0.001	<b>0.188</b> 0.003	<b>0.031</b> 0.001	<b>0.089</b> 0.002		
<b>6B</b>	<b>2.95</b> 0.04	<b>1.15</b> 0.01	<b>3.23</b> 0.04	<b>0.095</b> 0.003	<b>0.020</b> 0.002	<b>1.36</b> 0.002	<b>0.026</b> 0.001	<b>0.272</b> 0.003	<b>0.005</b> 0.001		
<b>7B</b>	<b>3.61</b> 0.03	<b>0.304</b> 0.003	<b>1.82</b> 0.02	<b>0.021</b> 0.002	<b>0.020</b> 0.002	<b>0.536</b> 0.005	<b>1.28</b> 0.01	<b>0.036</b> 0.001	<b>0.96</b> 0.01		

	V	Ti	Al	Sn	Sb	Bi	B	Zn	Pb	W	Co
<b>4B</b>	<b>0.004</b> 0.001	<b>0.006</b> 0.001	<b>0.003</b> 0.001	<b>0.001</b> 0.001	0.001			<b>0.008</b> 0.001	<b>0.004</b> 0.001		<b>0.005</b> 0.001
<b>4C</b>	<b>0.015</b> 0.001	<b>0.010</b> 0.001	<b>0.005</b> 0.001	<b>0.002</b> 0.001	0.001			<b>0.016</b> 0.002	<b>0.003</b> 0.001		<b>0.035</b> 0.002
<b>5B</b>	<b>0.005</b> 0.001	<b>0.007</b> 0.001	<b>0.062</b> 0.001			<b>0.020</b> 0.003	<b>0.014</b> 0.001				
<b>6B</b>	<b>0.083</b> 0.002	<b>0.068</b> 0.003	<b>0.007</b> 0.001	<b>0.140</b> 0.004	<b>0.049</b> 0.003						
<b>7B</b>	<b>0.007</b> 0.001	<b>0.015</b> 0.001	<b>0.022</b> 0.001							<b>0.045</b> 0.004	<b>0.050</b> 0.002

Další necertifikované hodnoty jsou 0.010% As v 4B, 0.008% As v 6B, 0.013% Zr v 1C.

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cr</b>	<b>Ni</b>	<b>Cu</b>	<b>Mo</b>	<b>Mg</b>	<b>Ce</b>
<b>3C</b>	<b>3.68</b> 0.03	<b>0.333</b> 0.003	<b>2.15</b> 0.02	<b>0.026</b> 0.001	<b>0.007</b> 0.001	<b>0.100</b> 0.002	<b>0.040</b> 0.001	<b>0.421</b> 0.004	<b>0.490</b> 0.006	<b>0.006</b> 0.001	<b>0.013</b> 0.002
<b>4D</b>	<b>4.19</b> 0.03	<b>0.112</b> 0.002	<b>0.259</b> 0.004	<b>0.050</b> 0.002	<b>0.041</b> 0.002	<b>0.056</b> 0.001	<b>0.063</b> 0.002	<b>0.084</b> 0.002	<b>0.024</b> 0.001		
<b>4E</b>	<b>4.45</b> 0.04	<b>0.034</b> 0.002	<b>0.090</b> 0.005	<b>0.023</b> 0.001	<b>0.006</b> 0.001	<b>0.030</b> 0.001	<b>0.049</b> 0.002	<b>0.005</b> 0.001	<b>0.002</b> 0.001		
<b>5C</b>	<b>2.30</b> 0.02	<b>0.704</b> 0.004	<b>1.40</b> 0.02	<b>0.027</b> 0.001	<b>0.091</b> 0.003	<b>0.085</b> 0.002	<b>0.188</b> 0.003	<b>0.013</b> 0.001	<b>0.104</b> 0.002		
<b>6C</b>	<b>3.11</b> 0.03	<b>1.25</b> 0.01	<b>3.25</b> 0.03	<b>0.097</b> 0.003	<b>0.019</b> 0.002	<b>1.33</b> 0.01	<b>0.021</b> 0.001	<b>0.273</b> 0.003	<b>0.006</b> 0.001		
<b>7C</b>	<b>3.55</b> 0.03	<b>0.389</b> 0.004	<b>1.73</b> 0.02	<b>0.028</b> 0.002	<b>0.026</b> 0.002	<b>0.542</b> 0.004	<b>1.26</b> 0.01	<b>0.016</b> 0.001	<b>0.966</b> 0.010		
	<b>V</b>	<b>Ti</b>	<b>Al</b>	<b>Sn</b>	<b>Sb</b>	<b>Bi</b>	<b>B</b>	<b>Zn</b>	<b>Pb</b>	<b>W</b>	<b>Co</b>
<b>3C</b>	<b>0.016</b> 0.001	<b>0.021</b> 0.001	<b>0.024</b> 0.001	<b>0.009</b> 0.001		<b>0.002</b> 0.001	<b>0.0044</b> 0.0002		<b>0.005</b> 0.001	<b>0.003</b> 0.001	<b>0.026</b> 0.001
<b>4D</b>	<b>0.012</b> 0.001	<b>0.009</b> 0.001	<b>0.007</b> 0.001	<b>0.001</b> 0.001		<i>0.002</i>	<i>0.0001</i>	<b>0.009</b> 0.001	<b>0.007</b> 0.001		<b>0.003</b> 0.001
<b>4E</b>	<b>0.015</b> 0.001	<b>0.011</b> 0.001	<b>0.003</b> 0.001	<b>0.001</b> 0.001		<i>0.002</i>			<i>0.002</i>		<b>0.033</b> 0.001
<b>5C</b>	<b>0.054</b> 0.002	<b>0.008</b> 0.001	<b>0.103</b> 0.003	<b>0.002</b> 0.001	<i>0.002</i>	<b>0.007</b> 0.002	<b>0.0078</b> 0.0003				<b>0.013</b> 0.001
<b>6C</b>	<b>0.192</b> 0.002	<b>0.107</b> 0.004	<b>0.024</b> 0.001	<b>0.131</b> 0.003	<b>0.044</b> 0.002		<b>0.0024</b> 0.0002		<b>0.003</b> 0.001	<b>0.007</b> 0.001	<b>0.005</b> 0.001
<b>7C</b>	<b>0.067</b> 0.001	<b>0.026</b> 0.001	<b>0.040</b> 0.002	<b>0.004</b> 0.001		<i>0.002</i>	<b>0.0008</b> 0.0002			<b>0.037</b> 0.002	<b>0.048</b> 0.001

Další necertifikované hodnoty jsou 0.007% As v 3C, 0.018% As v 3D, 0.012% As v 4D, 0.006% As v 8C, 0.007% Te v 1F, 0.006% Te v 2E, 0.004% Te v 2G, 0.005% Te v 3C, 0.010% Te v 5C, 0.006% Te v 7C, 0.007% Zr v 1E 0.008% Zr v 1F,

**CRM CZ 20034 – certifikované LITINY pro spektrometrickou analýzu, sada 11-17**  
 ø 40 mm, h = 18 mm (platnost certifikátu do roku 2029)

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cr</b>	<b>Ni</b>	<b>Cu</b>
<b>11A</b>	<b>2.37</b> 0.02	<b>0.343</b> 0.007	<b>3.31</b> 0.04	<b>0.271</b> 0.009	<b>0.163</b> 0.007	<b>1.219</b> 0.015	<b>0.084</b> 0.002	<b>0.086</b> 0.003
<b>11B</b>	<b>2.44</b> 0.02	<b>0.382</b> 0.008	<b>3.67</b> 0.04	<b>0.271</b> 0.009	<b>0.140</b> 0.007	<b>1.178</b> 0.016	<b>0.082</b> 0.002	<b>0.130</b> 0.003
<b>12A</b>	<b>2.82</b> 0.02	<b>0.996</b> 0.010	<b>2.57</b> 0.03	<b>0.480</b> 0.011	<b>0.073</b> 0.003	<b>0.640</b> 0.008	<b>0.174</b> 0.002	<b>0.160</b> 0.004
<b>12B</b>	<b>2.92</b> 0.02	<b>1.047</b> 0.011	<b>2.96</b> 0.03	<b>0.484</b> 0.011	<b>0.077</b> 0.003	<b>0.638</b> 0.008	<b>0.174</b> 0.002	<b>0.223</b> 0.005
<b>13A</b>	<b>3.13</b> 0.03	<b>0.691</b> 0.006	<b>2.19</b> 0.02	<b>0.0244</b> 0.0016	<b>0.0046</b> 0.0004	<b>0.122</b> 0.003	<b>1.266</b> 0.016	<b>0.021</b> 0.002
<b>13B</b>	<b>3.12</b> 0.03	<b>0.692</b> 0.006	<b>2.12</b> 0.02	<b>0.0243</b> 0.0017	<b>0.0041</b> 0.0004	<b>0.125</b> 0.003	<b>1.313</b> 0.017	<b>0.021</b> 0.002
<b>13C</b>	<b>3.15</b> 0.03	<b>0.704</b> 0.007	<b>2.23</b> 0.02	<b>0.0261</b> 0.0017	<b>0.0044</b> 0.0004	<b>0.124</b> 0.003	<b>1.299</b> 0.017	<b>0.089</b> 0.003
<b>14C</b>	<b>3.14</b> 0.02	<b>0.275</b> 0.003	<b>2.49</b> 0.02	<b>0.0162</b> 0.0011	<b>0.0081</b> 0.005	<b>0.045</b> 0.002	<b>0.030</b> 0.002	<b>0.585</b> 0.008
<b>15C</b>	<b>3.47</b> 0.03	<b>0.060</b> 0.002	<b>1.68</b> 0.02	<b>0.054</b> 0.003	<b>0.0028</b> 0.0003	<b>0.078</b> 0.003	<b>0.728</b> 0.009	<b>1.123</b> 0.018
<b>16A</b>	<b>3.80</b> 0.03	<b>1.292</b> 0.012	<b>1.00</b> 0.01	<b>0.171</b> 0.006	<b>0.0266</b> 0.0014	<b>0.374</b> 0.006	<b>0.390</b> 0.004	<b>0.332</b> 0.007
<b>16B</b>	<b>3.78</b> 0.03	<b>1.327</b> 0.013	<b>1.00</b> 0.01	<b>0.170</b> 0.006	<b>0.0236</b> 0.0014	<b>0.378</b> 0.006	<b>0.388</b> 0.005	<b>0.332</b> 0.007
<b>16C</b>	<b>3.87</b> 0.03	<b>1.311</b> 0.013	<b>0.95</b> 0.01	<b>0.173</b> 0.006	<b>0.0243</b> 0.0014	<b>0.332</b> 0.006	<b>0.376</b> 0.005	<b>0.345</b> 0.007
<b>17A</b>	<b>4.30</b> 0.04	<b>0.494</b> 0.005	<b>0.170</b> 0.008	<b>0.115</b> 0.005	<b>0.0034</b> 0.0004	<b>0.200</b> 0.004	<b>2.38</b> 0.03	<b>0.082</b> 0.004
<b>17B</b>	<b>4.38</b> 0.04	<b>0.501</b> 0.005	<b>0.178</b> 0.009	<b>0.089</b> 0.005	<b>0.0040</b> 0.0004	<b>0.200</b> 0.005	<b>2.34</b> 0.03	<b>0.111</b> 0.005
<b>17C</b>	<b>4.08</b> 0.04	<b>0.503</b> 0.005	<b>0.150</b> 0.008	<b>0.104</b> 0.005	<b>0.0033</b> 0.0004	<b>0.178</b> 0.005	<b>2.32</b> 0.03	<b>0.037</b> 0.002

	Mo	Mg	Ce	V	Ti	Al	Sn	Sb
<b>11A</b>	<b>1.130</b> 0.019			<b>0.184</b> 0.004	<b>0.028</b> 0.002	<b>0.046</b> 0.002	<b>0.070</b> 0.003	<b>0.013</b> 0.003
<b>11B</b>	<b>1.144</b> 0.020			<b>0.182</b> 0.005	<b>0.041</b> 0.002	<b>0.067</b> 0.003	<b>0.074</b> 0.003	<b>0.011</b> 0.003
<b>12A</b>	<b>0.114</b> 0.002			<b>0.340</b> 0.005	<b>0.085</b> 0.003	<b>0.077</b> 0.003	<b>0.041</b> 0.003	<b>0.046</b> 0.004
<b>12B</b>	<b>0.117</b> 0.002			<b>0.326</b> 0.005	<b>0.071</b> 0.003	<b>0.077</b> 0.003	<b>0.042</b> 0.003	<b>0.046</b> 0.004
<b>13A</b>	<b>0.364</b> 0.006	<b>0.053</b> 0.003	<b>0.011</b> 0.002	<b>0.048</b> 0.002	<b>0.014</b> 0.001	<b>0.017</b> 0.001	<b>0.014</b> 0.001	0.002
<b>13B</b>	<b>0.364</b> 0.007	<b>0.054</b> 0.003	<b>0.011</b> 0.002	<b>0.048</b> 0.002	<b>0.012</b> 0.001	<b>0.019</b> 0.001	<b>0.014</b> 0.001	0.002
<b>13C</b>	<b>0.360</b> 0.007	<b>0.064</b> 0.004	<b>0.011</b> 0.002	<b>0.043</b> 0.002	<b>0.015</b> 0.001	<b>0.022</b> 0.001	<b>0.014</b> 0.001	0.002
<b>14C</b>	<b>0.646</b> 0.009	<b>0.017</b> 0.002	<b>0.019</b> 0.003	<b>0.013</b> 0.001	<b>0.018</b> 0.001	<b>0.007</b> 0.001	<b>0.025</b> 0.002	<b>0.020</b> 0.003
<b>15C</b>	<b>0.002</b> 0.001	<b>0.040</b> 0.002	<b>0.030</b> 0.003	<b>0.019</b> 0.001	<b>0.036</b> 0.002	<b>0.010</b> 0.001	<b>0.006</b> 0.001	<b>0.056</b> 0.006
<b>16A</b>	<b>0.203</b> 0.004			<b>0.021</b> 0.001	<b>0.073</b> 0.002	<b>0.007</b> 0.001	<b>0.125</b> 0.006	<b>0.011</b> 0.002
<b>16B</b>	<b>0.202</b> 0.004			<b>0.029</b> 0.001	<b>0.070</b> 0.002	<b>0.007</b> 0.001	<b>0.121</b> 0.006	<b>0.011</b> 0.002
<b>16C</b>	<b>0.195</b> 0.004			<b>0.027</b> 0.001	<b>0.057</b> 0.002	<b>0.004</b> 0.001	<b>0.125</b> 0.006	<b>0.010</b> 0.002
<b>17A</b>	<b>0.030</b> 0.002	<b>0.007</b> 0.001	<b>0.003</b> 0.001	<b>0.086</b> 0.003	<b>0.016</b> 0.001	<b>0.002</b> 0.001	<b>0.002</b> 0.001	
<b>17B</b>	<b>0.030</b> 0.002	<b>0.009</b> 0.001	<b>0.003</b> 0.001	<b>0.086</b> 0.003	<b>0.016</b> 0.001	<b>0.002</b> 0.001	<b>0.002</b> 0.001	
<b>17C</b>	<b>0.030</b> 0.002	<b>0.007</b> 0.001	<b>0.003</b> 0.001	<b>0.076</b> 0.003	<b>0.015</b> 0.001	<b>0.002</b> 0.001	<b>0.002</b> 0.001	

	<b>Bi</b>	<b>B</b>	<b>Zn</b>	<b>Pb</b>	<b>W</b>	<b>Co</b>	<b>Zr</b>	<b>As</b>
<b>11A</b>	<b>0.011</b> 0.001	<b>0.0018</b> 0.0003		<b>0.017</b> 0.003	0.005	<b>0.005</b> 0.001	<b>0.007</b> 0.001	<b>0.005</b> 0.001
<b>11B</b>	<b>0.007</b> 0.001	<b>0.0032</b> 0.0004		<b>0.007</b> 0.001	0.005	<b>0.005</b> 0.001	<b>0.007</b> 0.001	<b>0.005</b> 0.001
<b>12A</b>	<b>0.005</b> 0.001	<b>0.036</b> 0.002	<b>0.003</b> 0.001	<b>0.007</b> 0.001	<b>0.011</b> 0.002	<b>0.004</b> 0.001	0.002	<b>0.022</b> 0.002
<b>12B</b>	<b>0.006</b> 0.001	<b>0.047</b> 0.002	<b>0.004</b> 0.001	<b>0.009</b> 0.001	<b>0.007</b> 0.002	<b>0.008</b> 0.001	0.002	<b>0.024</b> 0.002
<b>13A</b>					0.003	<b>0.024</b> 0.001	<b>0.029</b> 0.003	<b>0.002</b> 0.001
<b>13B</b>					0.003	<b>0.024</b> 0.001	<b>0.023</b> 0.003	<b>0.002</b> 0.001
<b>13C</b>					0.003	<b>0.024</b> 0.001	<i>0.02</i>	<b>0.002</b> 0.001
<b>14C</b>		<b>0.0123</b> 0.0006	<b>0.010</b> 0.001		0.003	<b>0.009</b> 0.001	<b>0.013</b> 0.001	<b>0.035</b> 0.004
<b>15C</b>	<b>0.008</b> 0.001	<b>0.0057</b> 0.0004			<b>0.004</b> 0.001	<b>0.026</b> 0.001		0.003
<b>16A</b>		<b>0.018</b> 0.001	<b>0.019</b> 0.002	<b>0.006</b> 0.001	<b>0.019</b> 0.002	<b>0.010</b> 0.001	0.002	<b>0.005</b> 0.001
<b>16B</b>		<b>0.018</b> 0.001	<b>0.020</b> 0.002	<b>0.007</b> 0.001	<b>0.019</b> 0.002	<b>0.010</b> 0.001	0.002	<b>0.005</b> 0.001
<b>16C</b>		<b>0.020</b> 0.001	<b>0.017</b> 0.002	<b>0.015</b> 0.003	<b>0.015</b> 0.002	<b>0.006</b> 0.001	0.002	<b>0.003</b> 0.001
<b>17A</b>	0.001	0.0002		<b>0.002</b> 0.001	<b>0.004</b> 0.001	<b>0.043</b> 0.002		<b>0.007</b> 0.001
<b>17B</b>	0.001	0.0002		<b>0.002</b> 0.001	<b>0.004</b> 0.001	<b>0.043</b> 0.002		<b>0.008</b> 0.001
<b>17C</b>	0.002	0.0006		<b>0.002</b> 0.001	<b>0.004</b> 0.001	<b>0.043</b> 0.002		<b>0.005</b> 0.001

Další necertifikované hodnoty jsou: Nb: 0.007% v 11A, 0.008% v 12A, 0.01% v 14B, 0.006% v 16A, 0.03% v 16B, Te: 0.005% v 11A, 0.01% v 11B, 0.006% v 16A, 16B a 0.007% v 16C

**RM CI-SPL-17 – RM LITIN pro spektrometrickou analýzu**

ø 40 mm, h = 18 mm

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cr</b>	<b>Ni</b>	<b>Cu</b>	<b>Mo</b>	<b>Mg</b>	<b>Ce</b>	<b>V</b>
<b>31A</b> (ID-0A)	<b>3.54</b>	<b>0.041</b>	<b>2.10</b>	<b>0.025</b>	<b>0.006</b>	<b>0.019</b>	<b>0.538</b>	<b>0.005</b>	<b>0.004</b>	<b>0.070</b>	<i>0.004</i>	<b>0.008</b>
	0.04	0.002	0.02	0.001	0.001	0.001	0.004	0.001	0.001	0.003		0.001
<b>32A</b> (ID-1B)	<b>3.39</b>	<b>0.288</b>	<b>2.74</b>	<b>0.037</b>	<b>0.007</b>	<b>0.060</b>	<b>0.015</b>	<b>0.306</b>	<b>0.116</b>	<b>0.024</b>	<i>0.004</i>	<b>0.005</b>
	0.02	0.003	0.03	0.002	0.001	0.002	0.001	0.005	0.002	0.002		0.001
<b>33A</b> (ID-3B)	<b>2.75</b>	<b>0.710</b>	<b>3.10</b>	<b>0.060</b>	<b>0.007</b>	<b>0.239</b>	<b>0.389</b>	<b>0.730</b>	<b>0.220</b>	<b>0.021</b>	<b>0.026</b>	<b>0.356</b>
	0.02	0.006	0.03	0.002	0.001	0.002	0.004	0.010	0.003	0.002	0.003	0.004
<b>34A</b> (ID-5B)	<b>3.48</b>	<b>0.980</b>	<b>2.29</b>	<b>0.105</b>	<b>0.008</b>	<b>0.102</b>	<b>0.493</b>	<b>0.230</b>	<b>0.072</b>	<b>0.026</b>	<b>0.008</b>	<b>0.073</b>
	0.03	0.010	0.02	0.003	0.001	0.002	0.004	0.004	0.002	0.002	0.002	0.002
<b>36A</b> (IG-0A)	<b>3.02</b>	<b>0.057</b>	<b>2.13</b>	<b>0.026</b>	<b>0.010</b>	<b>0.014</b>	<b>0.011</b>	<b>0.007</b>	<b>0.004</b>	<b>0.012</b>	<b>0.007</b>	<b>0.021</b>
	0.02	0.002	0.02	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
<b>37A</b> (IG-1B)	<b>3.07</b>	<b>0.211</b>	<b>3.30</b>	<b>0.025</b>	<b>0.023</b>	<b>0.328</b>	<b>0.106</b>	<b>0.149</b>	<b>0.325</b>			<b>0.122</b>
	0.02	0.003	0.03	0.001	0.001	0.002	0.002	0.003	0.004			0.003
<b>38A</b> (IG-2B)	<b>3.39</b>	<b>0.401</b>	<b>2.37</b>	<b>0.067</b>	<b>0.036</b>	<b>0.141</b>	<b>0.306</b>	<b>0.510</b>	<b>0.101</b>			<b>0.061</b>
	0.03	0.004	0.02	0.002	0.002	0.002	0.003	0.006	0.002			0.002
<b>39A</b> (IG-3B)	<b>3.70</b>	<b>0.812</b>	<b>1.90</b>	<b>0.160</b>	<b>0.045</b>	<b>0.488</b>	<b>0.032</b>	<b>0.298</b>	<b>0.203</b>			<b>0.232</b>
	0.03	0.011	0.02	0.003	0.002	0.003	0.001	0.005	0.003			0.004
<b>40A</b> (IG-4A)	<b>3.38</b>	<b>0.042</b>	<b>1.98</b>	<b>0.021</b>	<b>0.0035</b>	<b>0.031</b>	<b>0.045</b>	<b>0.010</b>	<b>0.005</b>	<b>0.007</b>	<b>0.012</b>	<b>0.014</b>
	0.02	0.002	0.02	0.002	0.0005	0.001	0.001	0.001	0.001	0.001	0.002	0.001
<b>41A</b> (IG-5B)	<b>3.41</b>	<b>0.512</b>	<b>1.92</b>	<b>0.199</b>	<b>0.068</b>	<b>0.125</b>	<b>0.104</b>	<b>0.151</b>	<b>0.041</b>			<b>0.011</b>
	0.03	0.004	0.02	0.004	0.002	0.002	0.002	0.003	0.003			0.001
<b>42A</b> (ID-2B)	<b>3.94</b>	<b>0.764</b>	<b>1.94</b>	<b>0.294</b>	<b>0.0040</b>	<b>0.145</b>	<b>0.492</b>	<b>0.199</b>	<b>0.021</b>	<i>0.06</i>	<b>0.039</b>	<b>0.093</b>
	0.03	0.010	0.03	0.004	0.0005	0.002	0.004	0.003	0.002		0.003	0.002
<b>43A</b> (ID-4B)	<b>3.98</b>	<b>1.322</b>	<b>1.63</b>	<b>0.190</b>	<b>0.008</b>	<b>0.032</b>	<b>0.411</b>	<b>0.385</b>	<b>0.152</b>	<i>0.04</i>	<b>0.017</b>	<b>0.152</b>
	0.03	0.016	0.02	0.004	0.001	0.002	0.005	0.006	0.003		0.002	0.002

	Ti	Al	Sn	Sb	Bi	B	Zn	Pb	W	Co	Nb	N
<b>31A</b> (ID-0A)	<b>0.007</b>	<b>0.005</b>	<i>0.003</i>			<i>0.0004</i>			<i>0.005</i>	<b>0.022</b>		<b>0.0042</b>
	0.001	0.001								0.001		0.0003
<b>32A</b> (ID-1B)	<b>0.044</b>	<b>0.029</b>	<i>0.012</i>	<b>0.023</b>	<i>0.007</i>	<i>0.0005</i>	<b>0.011</b>	<b>0.022</b>	<i>0.008</i>	<i>0.002</i>		<b>0.0042</b>
	0.001	0.001		0.002			0.001	0.002				0.0003
<b>33A</b> (ID-3B)	<b>0.130</b>	<b>0.054</b>	<b>0.039</b>	<b>0.019</b>	<i>0.002</i>	<b>0.0064</b>	<b>0.009</b>	<b>0.010</b>	<b>0.079</b>	<b>0.015</b>	<b>0.032</b>	<b>0.0043</b>
	0.005	0.002	0.001	0.002		0.0003	0.001	0.001	0.003	0.001	0.002	0.0003
<b>34A</b> (ID-5B)	<b>0.044</b>	<b>0.010</b>	<b>0.051</b>	<b>0.007</b>	<i>0.005</i>	<b>0.0076</b>	<b>0.007</b>	<i>0.006</i>	<b>0.016</b>	<b>0.025</b>	<b>0.014</b>	<b>0.0041</b>
	0.001	0.001	0.002	0.002		0.0003	0.001		0.002	0.001	0.001	0.0003
<b>36A</b> (IG-0A)	<b>0.021</b>	<i>0.003</i>	<i>0.002</i>		<i>0.007</i>	<b>0.022</b>	<i>0.002</i>	<b>0.016</b>		<i>0.004</i>		<b>0.0038</b>
	0.001					0.002		0.002				0.0003
<b>37A</b> (IG-1B)	<b>0.008</b>	<b>0.039</b>	<b>0.073</b>		<i>0.002</i>	<b>0.0124</b>	<i>0.001</i>	<i>0.002</i>	<b>0.026</b>	<b>0.031</b>		<b>0.0089</b>
	0.001	0.002	0.002			0.0005			0.002	0.001		0.0004
<b>38A</b> (IG-2B)	<b>0.012</b>	<b>0.034</b>	<b>0.032</b>	<b>0.018</b>	<i>0.002</i>	<b>0.0027</b>	<b>0.028</b>	<i>0.003</i>	<i>0.005</i>	<b>0.021</b>	<b>0.008</b>	<b>0.0100</b>
	0.001	0.001	0.001	0.002		0.0002	0.002			0.001	0.002	0.0004
<b>39A</b> (IG-3B)	<i>0.074</i>	<b>0.008</b>	<i>0.003</i>	<b>0.037</b>	<b>0.008</b>	<b>0.0195</b>	<b>0.035</b>	<b>0.017</b>		<i>0.002</i>		<b>0.0037</b>
		0.001		0.002	0.002	0.0006	0.003	0.002				0.0003
<b>40A</b> (IG-4A)	<b>0.015</b>	<b>0.096</b>	<i>0.004</i>			<b>0.0008</b>	<i>0.002</i>			<b>0.027</b>		<b>0.0063</b>
	0.001	0.003				0.0002				0.001		0.0004
<b>41A</b> (IG-5B)	<b>0.048</b>	<i>0.003</i>	<b>0.066</b>	<b>0.016</b>	<i>0.007</i>	<i>0.0004</i>	<i>0.001</i>	<b>0.010</b>	<b>0.012</b>	<b>0.031</b>		<b>0.0070</b>
	0.001		0.002	0.002				0.001	0.002	0.001		0.0003
<b>42A</b> (ID-2B)	<b>0.126</b>	<b>0.087</b>	<b>0.027</b>	<b>0.015</b>	<i>0.002</i>	<b>0.0036</b>	<b>0.013</b>	<b>0.020</b>	<b>0.020</b>	<b>0.010</b>	<b>0.045</b>	<b>0.0027</b>
	0.005	0.003	0.001	0.002		0.0003	0.002	0.003	0.002	0.001	0.002	0.0003
<b>43A</b> (ID-4B)	<b>0.065</b>	<b>0.024</b>	<b>0.067</b>	<i>0.004</i>	<i>0.002</i>	<b>0.0014</b>	<b>0.013</b>	<b>0.014</b>	<b>0.038</b>	<b>0.045</b>	<b>0.008</b>	<b>0.0045</b>
	0.002	0.001	0.003			0.0002	0.002	0.002	0.002	0.001	0.002	0.0003

Další necertifikované hodnoty jsou 0.041% As v 37A, 0.025% As v 32A, 0.016% As v 33A, 0.008% As v 41A, 0.008% Te v 33A, 0.007% Te v 37A a 39A.



	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cr</b>	<b>Ni</b>	<b>Cu</b>	<b>Mo</b>	<b>Mg</b>	<b>Ce</b>	<b>V</b>	<b>Ti</b>
<b>44A (1H)</b>	<b>3.20</b>	<b>0.711</b>	<b>2.51</b>	<b>0.033</b>	<b>0.005</b>	<b>0.063</b>	<b>0.521</b>	<b>0.018</b>	<b>0.174</b>	<b>0.015</b>	<b>0.005</b>	<b>0.014</b>	<b>0.084</b>
	0.03	0.005	0.03	0.002	0.001	0.002	0.006	0.001	0.003	0.001	0.002	0.001	0.002
<b>45A (1J)</b>	<b>3.33</b>	<b>0.778</b>	<b>2.83</b>	<b>0.031</b>	<b>0.010</b>	<b>0.058</b>	<b>0.405</b>	<b>0.008</b>	<b>0.182</b>	<b>0.066</b>	<b>0.032</b>	<b>0.022</b>	<b>0.079</b>
	0.03	0.005	0.02	0.002	0.001	0.002	0.004	0.001	0.004	0.003	0.003	0.001	0.001
<b>46A (2H)</b>	<b>3.66</b>	<b>0.098</b>	<b>1.42</b>	<b>0.109</b>	<b>0.010</b>	<b>0.014</b>	<b>0.628</b>	<b>0.86</b>	<b>0.011</b>	<b>0.047</b>	<b>0.005</b>	<b>0.008</b>	<b>0.046</b>
	0.03	0.002	0.02	0.003	0.001	0.001	0.005	0.02	0.001	0.002	0.001	0.001	0.002
<b>47A (2J)</b>	<b>3.82</b>	<b>0.084</b>	<b>1.07</b>	<b>0.137</b>	<b>0.011</b>	<b>0.016</b>	<b>0.606</b>	<b>0.82</b>	<i>0.002</i>	<b>0.035</b>	<b>0.010</b>	<b>0.007</b>	<b>0.027</b>
	0.04	0.002	0.02	0.003	0.001	0.001	0.005	0.02		0.002	0.001	0.001	0.001
<b>48A (3E)</b>	<b>3.63</b>	<b>0.338</b>	<b>2.15</b>	<b>0.025</b>	<b>0.006</b>	<b>0.128</b>	<b>0.043</b>	<b>0.407</b>	<b>0.482</b>	<b>0.019</b>	<b>0.009</b>	<b>0.016</b>	<b>0.030</b>
	0.03	0.003	0.03	0.001	0.001	0.002	0.001	0.005	0.006	0.002	0.002	0.001	0.002
<b>49A (3F)</b>	<b>3.12</b>	<b>0.328</b>	<b>2.06</b>	<b>0.038</b>	<b>0.009</b>	<b>0.300</b>	<b>0.132</b>	<b>0.384</b>	<b>0.475</b>	<b>0.007</b>	<i>0.005</i>	<b>0.081</b>	<b>0.024</b>
	0.02	0.003	0.03	0.002	0.001	0.004	0.003	0.004	0.006	0.002		0.003	0.001
<b>50A (8E)</b>	<b>3.39</b>	<b>0.529</b>	<b>2.14</b>	<b>0.179</b>	<b>0.055</b>	<b>0.137</b>	<b>0.113</b>	<b>0.151</b>	<b>0.045</b>	-	-	<b>0.015</b>	<b>0.030</b>
	0.02	0.005	0.02	0.004	0.002	0.002	0.002	0.003	0.001			0.001	0.001
<b>51A (8F)</b>	<b>3.46</b>	<b>0.405</b>	<b>1.63</b>	<b>0.147</b>	<b>0.044</b>	<b>0.075</b>	<b>0.111</b>	<b>0.152</b>	<b>0.037</b>	-	-	<b>0.017</b>	<b>0.033</b>
	0.03	0.005	0.02	0.004	0.003	0.001	0.002	0.003	0.001			0.001	0.001
<b>52A (14D)</b>	<b>3.03</b>	<b>0.301</b>	<b>2.38</b>	<b>0.021</b>	<b>0.0094</b>	<b>0.025</b>	<b>0.021</b>	<b>0.607</b>	<b>0.621</b>	<b>0.008</b>	<b>0.012</b>	<b>0.023</b>	<b>0.029</b>
	0.02	0.003	0.02	0.001	0.0005	0.001	0.001	0.009	0.009	0.001	0.002	0.001	0.001
<b>53A (15D)</b>	<b>3.56</b>	<b>0.052</b>	<b>1.60</b>	<b>0.053</b>	<b>0.0097</b>	<b>0.071</b>	<b>0.687</b>	<b>1.357</b>	<b>0.002</b>	<b>0.032</b>	<b>0.023</b>	<b>0.013</b>	<b>0.035</b>
	0.03	0.002	0.02	0.003	0.0005	0.002	0.008	0.018	0.001	0.002	0.003	0.001	0.002

	<b>Al</b>	<b>Sn</b>	<b>Sb</b>	<b>Bi</b>	<b>B</b>	<b>Zn</b>	<b>Pb</b>	<b>W</b>	<b>Co</b>	<b>Nb</b>	<b>Zr</b>	<b>As</b>
<b>44A (1H)</b>	<b>0.046</b>	<b>0.026</b>	<b>0.018</b>	<b>0.009</b>	<b>0.0037</b>	<b>0.009</b>	<b>0.017</b>	<b>0.018</b>	<b>0.024</b>	<i>0.014</i>	<i>0.007</i>	-
	0.002	0.002	0.002	0.001	0.0003	0.002	0.002	0.002	0.002			
<b>45A (1J)</b>	<b>0.078</b>	<b>0.034</b>	-	-	<b>0.022</b>	-	<b>0.005</b>	<b>0.015</b>	<b>0.031</b>	-	<i>0.015</i>	-
	0.003	0.002			0.002		0.001	0.002	0.001			
<b>46A (2H)</b>	<b>0.026</b>	<b>0.014</b>	<b>0.024</b>	<b>0.005</b>	<b>0.0021</b>	<b>0.018</b>	<b>0.021</b>	<b>0.008</b>	-	<i>0.012</i>	<i>0.004</i>	<i>0.003</i>
	0.001	0.001	0.002	0.001	0.0002	0.002	0.002	0.001				
<b>47A (2J)</b>	<b>0.024</b>	<b>0.016</b>	<b>0.026</b>	-	<i>0.0005</i>	<b>0.027</b>	<b>0.012</b>	<b>0.004</b>	<i>0.002</i>	-	<i>0.010</i>	-
	0.001	0.001	0.002			0.002	0.001	0.001				
<b>48A (3E)</b>	<b>0.021</b>	<b>0.010</b>	-	-	<b>0.0045</b>	-	<b>0.015</b>	-	<b>0.025</b>	-	-	<i>0.021</i>
	0.001	0.001			0.0002		0.001		0.001			
<b>49A (3F)</b>	<b>0.064</b>	<b>0.011</b>	<i>0.007</i>	-	<b>0.0075</b>	<i>0.003</i>	<b>0.008</b>	<b>0.013</b>	<b>0.094</b>	<i>0.005</i>	-	<b>0.020</b>
	0.003	0.001			0.0005		0.001	0.001	0.003			0.001
<b>50A (8E)</b>	<b>0.004</b>	<b>0.068</b>	<b>0.011</b>	<b>0.011</b>	<i>0.0008</i>	-	<b>0.004</b>	<i>0.006</i>	<b>0.029</b>	-	-	-
	0.001	0.002	0.002	0.002			0.001		0.001			
<b>51A (8F)</b>	<b>0.006</b>	<b>0.072</b>	<b>0.012</b>	<i>0.008</i>	-	<i>0.002</i>	<b>0.006</b>	<i>0.005</i>	<b>0.035</b>	-	-	<i>0.007</i>
	0.001	0.002	0.002				0.001		0.001			
<b>52A (14D)</b>	<b>0.011</b>	<b>0.032</b>	<b>0.014</b>	<b>0.011</b>	<b>0.0082</b>	<b>0.004</b>	<i>0.003</i>	<i>0.004</i>	<b>0.010</b>	<i>0.003</i>	<b>0.015</b>	<b>0.041</b>
	0.001	0.001	0.001	0.001	0.0004	0.001			0.001		0.001	0.003
<b>53A (15D)</b>	<b>0.047</b>	<b>0.007</b>	<b>0.066</b>	<i>0.007</i>	<b>0.0046</b>	<i>0.004</i>	-	<b>0.010</b>	<b>0.032</b>	-	-	<i>0.004</i>
	0.002	0.001	0.006		0.0003			0.001	0.001			

## Sada RM ocelí pro spektrometrii

RM LA 0–LA 5, průměr vzorku 35 až 43mm, výška 25mm nebo dle dohody

RM	C	Mn	Si	P	S	Cu	Cr	Ni
LA-0A	<b>0.006</b> ±0.0015	<b>0.045</b> ±0.005	<b>0.0015</b> ±0.0003	<b>0.005</b> ±0.0005	<b>0.005</b> ±0.0003	<b>0.012</b> ±0.001	<b>0.022</b> ±0.002	<b>0.028</b> ±0.002
LA-0B	<b>0.0036</b> ±0.0011	<b>0.0380</b> ±0.0014	<i>0.0043</i>	<b>0.0037</b> ±0.0007	<b>0.0023</b> ±0.0003	<b>0.0074</b> ±0.0005	<b>0.0091</b> ±0.0016	<b>0.0070</b> ±0.0009
LA-1B	<b>0.005</b> ±0.001	<b>0.13</b> ±0.006	<b>0.020</b> ±0.002	<b>0.004</b> ±0.001	<b>0.017</b> ±0.002	<b>0.01</b> ±0.002	<b>0.042</b> ±0.003	<b>0.014</b> ±0.002
LA-3G	<b>0.626</b> ±0.004	<b>0.687</b> ±0.010	<b>1.296</b> ±0.011	<b>0.0472</b> ±0.0010	<b>0.0351</b> ±0.0011	<b>0.236</b> ±0.004	<b>1.377</b> ±0.007	<b>1.019</b> ±0.010
LA-4C	<b>0.95</b> ±0.012	<b>1.63</b> ±0.025	<b>0.07</b> ±0.01	<b>0.021</b> ±0.003	<b>0.012</b> ±0.001	<b>0.056</b> ±0.002	<b>1.78</b> ±0.03	<b>0.045</b> ±0.004
LA-4D	<b>1.143</b> ±0.005	<b>1.266</b> ±0.009	<b>0.181</b> ±0.005	<b>0.0289</b> ±0.0011	<b>0.0091</b> ±0.0002	<b>0.066</b> ±0.004	<b>1.831</b> ±0.021	<b>0.367</b> ±0.007
LA-5C	<b>0.439</b> ±0.007	<b>1.873</b> ±0.012	<b>0.394</b> ±0.008	<b>0.0179</b> ±0.0011	<b>0.0088</b> ±0.0008	<b>0.138</b> ±0.002	<b>3.815</b> ±0.026	<b>2.591</b> ±0.020

RM	Al	Mo	W	V	Ti	Co	As	Sn
LA-0A	<b>0.0015</b> ±0.0005	<b>0.0044</b> ±0.0010			<b>0.001</b> ±0.0003	<b>0.002</b> ±0.0003	0.0015	0.001
LA-0B	<b>0.0010</b> ±0.0005	0.0016				0.0017	<b>0.0024</b> ±0.0004	0.0013
LA-1B	<b>0.003</b> ±0.001	<b>0.007</b> ±0.001	<b>0.010</b> ±0.002	<b>0.004</b> ±0.001	0.001	0.002	0.002	0.001
LA-3G	<b>0.047</b> ±0.002	<b>0.326</b> ±0.005	<b>0.105</b> ±0.004	<b>0.232</b> ±0.002	<b>0.143</b> ±0.004	<b>0.127</b> ±0.003	<b>0.051</b> ±0.004	<b>0.031</b> ±0.001
LA-4C	<b>0.048</b> ±0.003	<b>0.008</b> ±0.001	<b>0.008</b> ±0.001	<b>0.010</b> ±0.002	<b>0.002</b> ±0.001	<b>0.006</b> ±0.002	<b>0.003</b> ±0.001	<b>0.006</b> ±0.001
LA-4D	<b>0.067</b> ±0.002	<b>0.136</b> ±0.004	<b>0.0251</b> ±0.0025	<b>0.103</b> ±0.002	<b>0.0154</b> ±0.0007	<b>0.0370</b> ±0.0013	<b>0.0104</b> ±0.0016	<b>0.0142</b> ±0.0010
LA-5C	<b>0.081</b> ±0.003	<b>0.867</b> ±0.011	<b>0.631</b> ±0.008	<b>0.536</b> ±0.006	<b>0.048</b> ±0.001	<b>0.088</b> ±0.002	<b>0.026</b> ±0.002	<b>0.031</b> ±0.001

RM	B	Nb	Pb	Sb	Zr	Ca	Ta	N
LA-0A			0.001	0.0007				<b>0.0023</b> ±0.0002
LA-0B								<b>0.0027</b> ±0.0005
LA-1B	<b>0.010</b> ±0.001	0.001	0.0007	0.002	0.002	<b>0.0016</b> ±0.0003		<b>0.003</b> ±0.0004
LA-3G	<b>0.0039</b> ±0.0002	<b>0.0711</b> ±0.0015	<b>0.0098</b> ±0.0005	<b>0.0242</b> ±0.0036	<b>0.068</b> ±0.003	<b>0.0016</b> ±0.0002		<b>0.0115</b> ±0.0010
LA-4C	<b>0.0005</b> ±0.0001	<b>0.053</b> ±0.004						<b>0.012</b> ±0.001
LA-4D		<b>0.0046</b> ±0.0009	<b>0.0401</b> ±0.0035					<b>0.0064</b> ±0.0005
LA-5C		<b>0.057</b> 0.002	<b>0.0156</b> 0.0011	<b>0.018</b> ±0.003			<i>Zn 0.013</i>	<b>0.0248</b> 0.0012

### RM ocelí CM a SP

průměr vzorku 37 až 40mm, výška 25mm nebo dle dohody

RM	C	Mn	Si	P	S	Cu	Cr	Ni	Al	Mo	W	V
CM-1D	<b>0.735</b>	<b>1.800</b>	<b>0.341</b>	<b>0.0218</b>	<b>0.0268</b>	<b>0.186</b>	<b>0.456</b>	<b>0.547</b>	<b>0.0245</b>	<b>0.100</b>	<b>0.063</b>	<b>0.089</b>
	0.005	0.015	0.006	0.0004	0.0011	0.003	0.007	0.006	0.0011	0.002	0.002	0.002
CM-2B	<b>0.247</b>	<b>0.894</b>	<b>1.950</b>	<b>0.082</b>	<b>0.0114</b>	<b>0.994</b>	<b>1.538</b>	<b>1.205</b>	<b>0.0464</b>	<b>0.332</b>	<b>0.223</b>	<b>0.109</b>
	0.004	0.007	0.040	0.002	0.0007	0.019	0.015	0.014	0.0011	0.011	0.013	0.005
CM-3A	<b>0.295</b>	<b>0.37</b>	<b>0.27</b>	<b>0.016</b>	<b>0.0013</b>	<b>0.16</b>	<b>1.87</b>	<b>1.82</b>	<b>0.05</b>	<b>0.33</b>	<b>0.015</b>	<b>0.007</b>
	0.013	0.01	0.02	0.002	0.0003	0.005	0.04	0.04	0.002	0.01	0.003	0.002
CM-4B	<b>0.72</b>	<b>0.50</b>	<b>0.80</b>	<b>0.023</b>	<b>0.012</b>	<b>0.40</b>	<b>2.23</b>	<b>1.40</b>	<b>0.025</b>	<b>0.33</b>	<b>0.116</b>	<b>0.18</b>
	0.02	0.01	0.02	0.003	0.002	0.01	0.03	0.03	0.002	0.01	0.005	0.01
CM-5C	<b>1.04</b>	<b>1.17</b>	<b>0.54</b>	<b>0.029</b>	<b>0.021</b>	<b>0.151</b>	<b>2.45</b>	<b>0.42</b>	<b>0.063</b>	<b>0.132</b>	<b>0.034</b>	<b>0.106</b>
	0.02	0.02	0.02	0.002	0.002	0.004	0.05	0.01	0.003	0.003	0.005	0.002
CM-6A	<b>0.52</b>	<b>0.37</b>	<b>0.27</b>	<b>0.016</b>	<b>0.058</b>	<b>0.05</b>	<b>0.37</b>	<b>0.19</b>	<b>0.02</b>	<b>0.04</b>	<b>0.04</b>	<b>0.05</b>
	0.015	0.013	0.014	0.002	0.003	0.003	0.01	0.006	0.002	0.003	0.003	0.003
CM-7A	<b>0.05</b>	<b>1.17</b>	<b>0.56</b>	<b>0.011</b>	<b>0.016</b>	<b>0.09</b>	<b>0.10</b>	<b>0.05</b>	<b>0.13</b>	<b>0.015</b>	<b>0.01</b>	<b>0.012</b>
	0.005	0.02	0.016	0.002	0.002	0.003	0.006	0.003	0.01	0.002	0.002	0.001
CM-8B	<b>0.185</b>	<b>1.95</b>	<b>0.112</b>	<b>0.015</b>	<b>0.014</b>	<b>0.081</b>	<b>1.22</b>	<b>0.032</b>	<b>0.0028</b>	<b>0.011</b>	<i>0.009</i>	<b>0.0078</b>
	0.006	0.02	0.003	0.001	0.001	0.003	0.02	0.002	0.0006	0.001		0.0005
CM-9B	<b>0.17</b>	<b>2.27</b>	<b>0.89</b>	<b>0.008</b>	<b>0.010</b>	<b>0.04</b>	<b>1.36</b>	<b>0.023</b>	<b>0.049</b>	<i>0.002</i>		<b>0.006</b>
	0.01	0.03	0.02	0.002	0.002	0.003	0.01	0.003	0.003			0.001
CM-12C	<b>0.0389</b>	<b>0.275</b>	<b>3.770</b>	<b>0.0103</b>	<b>0.0110</b>	<b>0.175</b>	<b>0.081</b>	<b>0.046</b>	<b>0.145</b>	<b>0.0128</b>	<i>0.004</i>	<b>0.0271</b>
	0.0017	0.003	0.150	0.0006	0.0004	0.004	0.002	0.002	0.005	0.0011		0.0014
CM-14C	<b>0.586</b>	<b>1.723</b>	<b>1.352</b>	<b>0.0169</b>	<b>0.0266</b>	<b>0.365</b>	<b>1.316</b>	<b>1.141</b>	<b>0.226</b>	<b>0.432</b>	<b>0.0238</b>	<b>0.325</b>
	0.005	0.009	0.014	0.0009	0.0006	0.004	0.008	0.008	0.005	0.005	0.0019	0.004
CM-15C	<b>0.075</b>	<b>1.13</b>	<b>0.006</b>	<b>0.063</b>	<b>0.32</b>	<b>0.141</b>	<b>0.052</b>	<b>0.072</b>		<b>0.021</b>		
	0.006	0.04	0.002	0.003	0.01	0.004	0.003	0.004		0.003		
CM-16B	<b>0.421</b>	<b>0.762</b>	<b>0.574</b>	<b>0.0508</b>	<b>0.0376</b>	<b>0.296</b>	<b>0.635</b>	<b>0.733</b>	<b>0.128</b>	<b>0.424</b>	<b>0.141</b>	<b>0.272</b>
	0.002	0.003	0.005	0.0011	0.0006	0.002	0.004	0.004	0.003	0.003	0.002	0.002
CM-17A	<b>0.142</b>	<b>0.524</b>	<b>0.612</b>	<b>0.0310</b>	<b>0.0175</b>	<b>0.201</b>	<b>9.58</b>	<b>0.520</b>	<b>0.0089</b>	<b>1.116</b>	<b>0.099</b>	<b>0.247</b>
	0.003	0.006	0.009	0.0010	0.0012	0.004	0.05	0.015	0.0012	0.017	0.004	0.005
CM-18A	<b>0.143</b>	<b>1.792</b>	<b>0.903</b>	<b>0.0182</b>	<b>0.0119</b>	<b>2.393</b>	<b>20.59</b>	<b>20.44</b>	<b>0.0344</b>	<b>2.282</b>	<b>0.097</b>	<b>0.113</b>
	0.003	0.018	0.021	0.0015	0.0009	0.041	0.12	0.09	0.0027	0.037	0.007	0.004
CM-19A	<b>0.361</b>	<b>0.783</b>	<b>1.588</b>	<b>0.0440</b>	<b>0.0182</b>	<b>0.986</b>	<b>13.12</b>	<b>15.27</b>	<b>0.0788</b>	<b>1.023</b>	<b>0.311</b>	<b>1.235</b>
	0.008	0.010	0.015	0.0020	0.0008	0.031	0.11	0.16	0.0045	0.018	0.022	0.055
CM-20A	<b>0.63</b>	<b>0.594</b>	<b>1.74</b>	<b>0.0383</b>	<b>0.020</b>	<b>0.237</b>	<b>0.97</b>	<b>1.007</b>	<b>0.076</b>	<b>0.365</b>	<b>0.104</b>	<b>0.225</b>
	0.01	0.005	0.02	0.0015	0.001	0.008	0.01	0.015	0.002	0.007	0.007	0.004
CM-23A	<b>0.917</b>	<b>0.803</b>	<b>0.934</b>	<b>0.0609</b>	<b>0.0348</b>	<b>0.234</b>	<b>3.064</b>	<b>0.230</b>	<b>0.323</b>	<b>0.816</b>	<b>0.104</b>	<b>0.157</b>
	0.004	0.010	0.020	0.0035	0.0011	0.005	0.022	0.007	0.011	0.010	0.005	0.006
CM-25A	<b>0.097</b>	<b>0.781</b>	<b>0.656</b>	<b>0.0036</b>	<b>0.0051</b>	<b>0.0040</b>	<b>0.0248</b>	<b>0.0214</b>	<b>0.0030</b>		<b>0.0048</b>	<b>0.0161</b>
	0.002	0.004	0.008	0.0006	0.0004	0.0004	0.0006	0.0006	0.0006		0.0020	0.0006
SP-1B	<b>0.050</b>	<b>1.67</b>	<b>0.505</b>	<b>0.039</b>	<b>0.30</b>	<b>0.47</b>	<b>17.42</b>	<b>8.32</b>	<i>0.003</i>	<b>0.40</b>	<b>0.032</b>	<b>0.060</b>
	0.002	0.03	0.017	0.003	0.02	0.01	0.12	0.16		0.01	0.003	0.004
SP-2C	<b>1.40</b>	<b>14.50</b>	<b>0.29</b>	<b>0.037</b>	<b>0.016</b>	<b>0.35</b>	<b>1.56</b>	<b>0.050</b>	<b>0.030</b>	<b>0.050</b>	<b>0.033</b>	<b>0.051</b>
	0.03	0.21	0.02	0.003	0.002	0.03	0.03	0.003	0.002	0.002	0.005	0.003
SP-2D	<b>1.369</b>	<b>26.90</b>	<b>0.558</b>	<b>0.0725</b>	<b>0.0031</b>	<b>0.106</b>	<b>1.507</b>	<b>0.388</b>	<b>0.0043</b>	<b>0.391</b>	<b>0.083</b>	<b>0.178</b>
	0.009	0.32	0.012	0.0018	0.0009	0.005	0.008	0.007	0.0013	0.009	0.007	0.004
SP-3C	<b>0.30</b>	<b>0.43</b>	<b>0.84</b>	<b>0.026</b>	<b>0.011</b>	<b>0.185</b>	<b>16.42</b>	<b>5.31</b>	<b>0.095</b>	<b>0.26</b>	<b>0.12</b>	<b>0.19</b>
	0.02	0.03	0.04	0.003	0.003	0.011	0.11	0.07	0.010	0.01	0.01	0.01
SP-3D	<b>0.171</b>	<b>0.34</b>	<b>0.71</b>	<b>0.021</b>	<b>0.015</b>	<b>0.73</b>	<b>16.44</b>	<b>5.36</b>	<b>0.037</b>	<b>0.25</b>	<b>0.12</b>	<b>0.11</b>
	0.007	0.02	0.03	0.003	0.003	0.04	0.23	0.15	0.003	0.01	0.01	0.01
SP-4C	<b>0.34</b>	<b>1.66</b>	<b>1.75</b>	<b>0.020</b>	<b>0.010</b>	<b>0.056</b>	<b>22.1</b>	<b>37.1</b>	<b>0.011</b>	<b>0.105</b>	<i>0.01</i>	<b>0.059</b>
	0.02	0.04	0.04	0.004	0.002	0.007	0.1	0.2	0.003	0.008		0.005
BO-2B	<b>0.515</b>	<b>0.745</b>	<b>0.309</b>	<b>0.0093</b>	<b>0.0016</b>	<b>0.100</b>	<b>0.212</b>	<b>0.057</b>	<b>0.0196</b>	<b>0.006</b>	<i>0.005</i>	<i>0.001</i>
	0.010	0.011	0.007	0.0007	0.0003	0.005	0.004	0.002	0.0008	0.001		

RM	Ti	Co	As	Sn	B	Nb	Pb	Sb	Zr	Ca	Ta	N
CM-1D	0.054	0.029		0.0144	0.0017	0.050		0.0112				0.0124
	0.004	0.001		0.0009	0.0002	0.004		0.0008				0.0005
CM-2B	0.342	0.454	0.120	0.091	0.0010	0.58	0.087	0.020	0.013			0.0062
	0.008	0.022	0.017	0.003	0.0001		0.008	0.004	0.002			0.0007
CM-3A	0.006	0.012	0.005	0.007	0.0002	0.006						0.007
	0.0003	0.002	0.002	0.002	0.0001	0.001						0.001
CM-4B	0.12	0.115	0.015	0.028	0.017	0.071	0.022	0.052		Zn 0.007		0.013
	0.01	0.004	0.001	0.002	0.001	0.002	0.003	0.002		0.001		0.001
CM-5C	0.031	0.022	0.020	0.018	0.0012	0.014	0.009	0.005	0.07	0.0006		0.014
	0.002	0.002	0.003	0.003	0.0002	0.001	0.002	0.002				0.001
CM-6A	0.03	0.03	0.025	0.017	0.015	0.028	0.017	0.03	0.04			0.009
	0.003	0.005	0.002	0.002	0.001	0.002	0.001	0.003	0.003			0.001
CM-7A	0.14	0.007	0.005	0.008	0.0003	0.004	0.0014	0.0003	0.042			0.01
	0.005	0.001	0.001	0.002	0.0001	0.001			0.003			0.002
CM-8B	0.0008	0.007	0.0035	0.0126	0.0023	0.002	0.003	0.004	0.002			0.0075
	0.0002	0.001	0.0003	0.0007	0.0003							0.0004
CM-9B	0.002	0.004	0.002	0.003	0.004	0.06	0.002	0.003	0.003			
	0.001	0.001		0.001	0.001	0.01	0.001	0.001	0.001			
CM-12C	0.0128	0.0044	0.0030	0.0055	0.0033	0.0066				0.0010		0.0056
	0.0004	0.0006	0.0007	0.0010	0.0002	0.0005				0.0002		0.0005
CM-14C	0.420	0.0306	0.0165	0.048	0.0249	0.248	0.0090	0.0170	0.037			0.0092
	0.008	0.0009	0.0006	0.002	0.0015	0.007	0.0009	0.0018	0.002			0.0005
CM-15C		0.01					0.29					
							0.01					
CM-16B	0.121	0.058	0.065	0.0289	0.0128	0.094	0.0294	0.0282	0.102	0.00033	Bi 0.045	0.0154
	0.002	0.001	0.001	0.0003	0.0004	0.002	0.0015	0.0008	0.005	0.00004	Zn 0.0156	0.0002
CM-17A	0.0236	0.0329	0.0105	0.0109	0.0060		0.0177					0.0743
	0.0016	0.0022	0.0014	0.0011	0.0005		0.0032					0.0040
CM-18A		0.097										0.0848
		0.005										0.0029
CM-19A	0.254	0.222		0.0283	0.091	0.091				0.0036		0.021
	0.009	0.007		0.0030		0.004						
CM-20A	0.175	0.124	0.073	0.033	0.0071	0.074	0.015	0.025	0.083		Zn 0.007	0.0086
	0.008	0.002	0.005	0.001	0.0004	0.003	0.002	0.001	0.004		0.001	0.0012
CM-23A	0.154	0.510	0.0146	0.059	0.0129	0.628	0.0034	0.137	0.137	0.0004	0.051	0.0149
	0.004	0.008	0.0011	0.002	0.0014	0.021	0.0005	0.011	0.010	0.0002	Zn 0.025	0.0007
CM-25A												0.0061
												0.0004
SP-1B	0.002	0.161	0.003	0.013	0.0007	0.012						0.063
		0.003		0.001	0.0002	0.002						0.005
SP-2C	0.014	0.044	0.005	0.037	0.003							0.027
	0.001	0.003		0.003								0.001
SP-2D	0.0213	0.0432	0.0031	0.0026	0.0008	0.0163						0.0203
	0.0012	0.0019				0.0014						0.0009
SP-3C	0.17	0.041	0.03	0.02	1.67	0.04						
		0.004			0.03							
SP-3D	0.088	0.033	0.03	0.04	2.45	0.04						
	0.008	0.004			0.03							
SP-4C	0.031	0.065				0.022				Fe 36.6		0.04
	0.003	0.007				0.002						
BO-2B	0.0017	0.0055	0.0057	0.0062						0.0008		0.004
	0.0003	0.0005	0.0005	0.0005								0.001

## RM křemíkové oceli SST – (1A, 2A, 3A, 4A)

průměr vzorku 37, výška 25mm nebo dle dohody

	<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>SST-1A</b>	<b>0.072</b> 0.003	<b>0.062</b> 0.004	<b>2.57</b> 0.04	<b>0.041</b> 0.002	<b>0.0043</b> 0.0004	<b>0.654</b> 0.013	<b>0.209</b> 0.005	<b>0.155</b> 0.004
<b>SST-2A</b>	<b>0.083</b> 0.003	<b>0.160</b> 0.004	<b>3.07</b> 0.04	<b>0.026</b> 0.002	<b>0.0089</b> 0.0008	<b>0.205</b> 0.006	<b>0.138</b> 0.004	<b>0.066</b> 0.002
<b>SST-3A</b>	<b>0.035</b> 0.003	<b>0.221</b> 0.005	<b>3.27</b> 0.05	<b>0.007</b> 0.002	<b>0.0093</b> 0.001	<b>0.096</b> 0.004	<b>0.043</b> 0.002	<b>0.061</b> 0.002
<b>SST-4A</b>	<b>0.062</b> 0.004	<b>0.376</b> 0.010	<b>4.73</b> 0.05	<b>0.031</b> 0.003	<b>0.020</b> 0.002	<b>0.111</b> 0.004	<b>0.105</b> 0.005	<b>0.082</b> 0.002

	<b>Al</b>	<b>Mo</b>	<b>W</b>	<b>V</b>	<b>Ti</b>	<b>Co</b>	<b>As</b>	<b>Sn</b>
<b>SST-1A</b>	<b>0.061</b> 0.003	<i>0.002</i>	-	<b>0.006</b> 0.002	<b>0.004</b> 0.001	<b>0.005</b> 0.001	<b>0.002</b> 0.001	<b>0.110</b> 0.006
<b>SST-2A</b>	<b>0.010</b> 0.002	<b>0.054</b> 0.002	<b>0.019</b> 0.002	<b>0.024</b> 0.002	<b>0.016</b> 0.002	<b>0.022</b> 0.002	-	<b>0.055</b> 0.004
<b>SST-3A</b>	<b>0.009</b> 0.002	<b>0.036</b> 0.002	<b>0.016</b> 0.002	<b>0.041</b> 0.002	<b>0.009</b> 0.001	<b>0.038</b> 0.003	<b>0.003</b> 0.001	<b>0.015</b> 0.002
<b>SST-4A</b>	<b>0.514</b> 0.018	<b>0.019</b> 0.002	<b>0.026</b> 0.003	<b>0.031</b> 0.002	<b>0.035</b> 0.002	<b>0.012</b> 0.002	<b>0.004</b> 0.001	<b>0.025</b> 0.003

	<b>B</b>	<b>Pb</b>	<b>Sb</b>	<b>Zr</b>	<b>Zn</b>	<b>N</b>
<b>SST-1A</b>	<b>0.0003</b> 0.0001	<i>0.002</i>	<i>0.002</i>			<b>0.0059</b> 0.0005
<b>SST-2A</b>	<b>0.0089</b> 0.0006	<b>0.015</b> 0.003	<b>0.008</b> 0.002	<b>0.017</b> 0.002	<b>0.011</b> 0.003	<b>0.0078</b> 0.0007
<b>SST-3A</b>	<b>0.0019</b> 0.0004	<b>0.013</b> 0.002			<b>0.011</b> 0.003	<b>0.0088</b> 0.0012
<b>SST-4A</b>	<b>0.0006</b> 0.0002	<b>0.008</b> 0.002	<i>0.003</i>	<i>0.003</i>	<i>0.002</i>	<b>0.0058</b> 0.0007

## QCM:

Univerzální sada QCM ocelí pro spektrometrii, viz. tabulky složení

### QCM SL 1 – SL – 6, HS 1 – HS 2

průměr vzorku 35 až 43mm, 25mm nebo dle dohody

QCM	C	Mn	Si	P	S	Cu	Cr	Ni	Al	Mo
SL-1A	0.078	0.46	1.39	0.024	0.011	0.09	13.4	0.23	0.86	0.03
SL-2A	0.015	1.84	0.64	0.025	0.027	0.50	16.9	11.0	0.005	2.03
SL-3A	0.043	1.73	0.53	0.024	0.002	0.22	24.6	19.6	0.007	0.38
SL-4A	1.38	2.85	2.28	0.038	0.017	0.75	26.3	2.04	0.12	0.92
SL-5A	0.37	5.8	0.36	0.021	0.014	2.90	11.7	4.94	0.035	4.12
HS-1A	0.72	0.28	0.28	0.023	0.011	0.08	4.15	0.14	0.03	0.06
HS-2A	1.24	0.27	0.24	0.024	0.017	0.08	4.15	0.21	0.035	3.75
QCM	W	V	Ti	Co	As	Sn	Nb	N	B	Ta
SL-1A	0.1	0.017	0.004	0.02		0.01		0.025		
SL-2A	0.03	0.075	0.06	0.09	0.008	0.01		0.04	0.002	
SL-3A	0.03	0.066	0.003	0.06		0.006	0.013	0.065	0.002	
SL-4A	0.35	0.54	0.8	0.11		0.02	1.11		0.0013	
SL-5A	0.78	0.21	0.004	0.26	0.005	0.004	0.20			0.07
HS-1A	17.5	1.33	0.003	4.7		0.02				
HS-2A	9.3	3.4	0.003	9.9		0.01				

### QCM SP-3B, 8B

průměr vzorku 35 až 43mm, 25mm nebo dle dohody

QCM	C	Mn	Si	P	S	Cu	Cr	Ni	Al	Mo
SP-3B	0.27	0.29	0.72	0.023	0.008	0.62	15.1	5.65	0.08	0.24
SP-8B	2.37	0.86	1.40	0.022	0.012	0.075	37.6	2.72	0.13	0.10
QCM	W	V	Ti	Co	As	Sn	B	Nb	Pb	Sb
SP-3B	0.12	0.10	0.13	0.02		0.01	0.88			
SP-8B	0.05	0.13	0.13	0.075	0.05	0.06	0.03	0.04		

### QCM CM

průměr vzorku 35 až 43mm, 25mm nebo dle dohody

QCM	C	Mn	Si	P	S	Cu	Cr	Ni
CM-5B	1.09	1.28	0.39	0.021	0.012	0.13	2.07	0.23
QCM	Al	Mo	W	V	Ti	Co	As	Sn
CM-5B	0.083	0.10	0.03	0.06	0.02	0.022	0.018	0.012
QCM	B	Nb	Pb	Sb	N	Zr	Ta	Zn
CM-5B	0.002	0.015	0.01	0.006	0.0135	0.09		

## REFERENČNÍ MATERIÁLY PEVNÉ PALIVO A POPEL

Sada je určena pro zkoušení základních chemických a technologických vlastností pevných paliv. Referenční materiály SF a SFA vznikly v souladu s ISO Guide 34 a 35. Jsou určeny pro kontrolu a validaci metod pro měření spalného tepla, elementární analýzy pro prvky C, N, H, S a stanovení obsahu těkavých látek a popela. Všechny členy sady jsou dodávány v 50 g balení.

SF-2014								
Parametr	Spalné teplo		Elementární analýza				Prchavá hořlavina	Popel
			C	H	N	S		
označení	kJ/kg	BTU/Lb	[ %hm. ]				[ %hm. ]	
SF-01-14 hnědé uhlí Uc	14617	6284	36.40	3.31	0.60	1.33	31.72	44.90
	±49	±21	±0.30	±0.07	±0.04	±0.03	±0.17	±0.14
SF-02-14 černé uhlí Uc	33090	14226	91.84	2.09	0.65	0.16	13.10	2.80
	±58	±25	±0.46	±0.10	±0.04	±0.01	±0.18	±0.06
SF-03-14 černé uhlí Uc	32060	13783	96.30	0.21	0.32	0.14	1.15	2.98
	±115	±49	±0.50	±0.06	±0.04	±0.01	±0.15	±0.03
SF-04-14 černé uhlí Uc	34618	14883	85.53	4.59	1.35	0.48	22.95	4.43
	±80	±34	±0.45	±0.10	±0.04	±0.01	±0.22	±0.06
SF-05-14 koks Uc	30410	13074	90.40	0.20	0.98	0.45	1.28	7.84
	±110	±47	±0.44	±0.06	±0.03	±0.01	±0.12	±0.04
SF-06-14 černé uhlí Uc	23990	10314	58.28	3.51	3.80	3.13	26.84	27.21
	±93	±40	±0.36	±0.05	±0.05	±0.05	±0.23	±0.11
SF-07-14 hnědé uhlí Uc	21023	9173	50.97	4.26	1.05	2.52	38.80	28.73
	±140	±37	±0.28	±0.08	±0.04	±0.04	±0.20	±0.05
SFA-01-14 popel Uc			3.10			0.029		96.60
			±0.19			±0.008		±0.17