

I. 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 CRM CZ 2003 A – 8 A CRM CZ 2025 A, 2026 A

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

| | 2003 A | 2004 A | 2005 A | 2006 A | 2007 A | 2008 A | 2025 A* | 2026 A* |
|----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|
| C | 0.0402 | 0.079 | 0.358 | 0.461 | 0.684 | 0.977 | 0.0020 | 0.068 |
| | 0.0008 | 0.001 | 0.004 | 0.002 | 0.006 | 0.003 | 0.0003 | 0.001 |
| S | 0.0316 | 0.0464 | 0.0250 | 0.0172 | 0.0106 | 0.0091 | 0.0018 | 0.255 |
| | 0.0006 | 0.0010 | 0.0005 | 0.0007 | 0.0004 | 0.0004 | 0.0002 | 0.005 |
| N | 0.0046 | 0.0038 | 0.0081 | 0.0066 | 0.0128 | 0.0066 | | |
| | 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 – balení 100 g

CRM CZ 2015 A - 2024 A

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

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

Platnost certifikátu do 1.6.2022

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 |
|-----------|---------------------|-----------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|
| 5A | 2.30 0.04 | 0.804 0.005 | 1.26 0.02 | 0.035 0.001 | 0.100 0.003 | 0.054 0.001 | 0.096 0.002 | 0.014 0.001 | 0.100 0.002 | | |
| 7A | 3.11 0.03 | 0.321 0.003 | 1.83 0.02 | 0.043 0.002 | 0.019 0.001 | 0.479 0.005 | 1.29 0.01 | 0.022 0.001 | 1.07 0.01 | | |

| | V | Ti | Al | Sn | Sb | Bi | B | Zn | Pb | W | Co |
|-----------|-----------------------|-----------------------|-----------------------|----|----|----|---|----|----|-----------------------|-----------------------|
| 5A | 0.005 0.001 | 0.008 0.001 | 0.060 0.003 | | | | | | | | |
| 7A | 0.005 0.001 | 0.027 0.001 | 0.029 0.001 | | | | | | | 0.022 0.003 | 0.044 0.002 |

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

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

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

| | C | Mn | Si | P | S | Cr | Ni | Cu | Mo | Mg | Ce |
|----|----------------|----------------|----------------|----------------|----------------|----------------|------------------|----------------|----------------|----------------|----------------|
| 1E | 3.15 0.03 | 0.718 0.005 | 2.72 0.03 | 0.037 0.002 | 0.006 0.001 | 0.037 0.001 | 0.367 0.003 | 0.012 0.001 | 0.185 0.002 | 0.042 0.002 | 0.027 0.002 |
| 1F | 3.23 0.03 | 0.693 0.005 | 2.68 0.03 | 0.043 0.002 | 0.005 0.001 | 0.035 0.001 | 0.373 0.003 | 0.018 0.001 | 0.182 0.002 | 0.070 0.003 | 0.036 0.003 |
| 1G | 3.22 0.03 | 0.701 0.005 | 2.53 0.03 | 0.036 0.002 | 0.007 0.001 | 0.044 0.001 | 0.357 0.003 | 0.027 0.001 | 0.185 0.002 | 0.050 0.003 | 0.023 0.003 |
| 2E | 3.47 0.03 | 0.168 0.002 | 1.03 0.02 | 0.106 0.003 | 0.010 0.001 | 0.043 0.001 | 0.620 0.003 | 0.893 0.010 | 0.002 0.001 | 0.038 0.003 | 0.017 0.002 |
| 2F | 3.77 0.03 | 0.091 0.002 | 1.23 0.02 | 0.159 0.004 | 0.009 0.001 | 0.022 0.001 | 0.658 0.005 | 0.893 0.010 | 0.002 0.001 | 0.053 0.002 | 0.018 0.002 |
| 2G | 3.78 0.04 | 0.096 0.002 | 1.10 0.02 | 0.125 0.003 | 0.009 0.001 | 0.027 0.001 | 0.650 0.005 | 0.880 0.010 | 0.002 0.001 | 0.036 0.002 | 0.013 0.002 |
| 3C | 3.68 0.03 | 0.333 0.003 | 2.15 0.02 | 0.026 0.001 | 0.007 0.001 | 0.100 0.002 | 0.040 0.001 | 0.421 0.004 | 0.490 0.006 | 0.006 0.001 | 0.013 0.002 |
| 3D | 3.24 0.03 | 0.317 0.002 | 2.12 0.02 | 0.008 0.001 | 0.006 0.001 | 0.236 0.003 | 0.025 0.001 | 0.396 0.004 | 0.453 0.005 | 0.016 0.002 | 0.006 0.002 |
| 4D | 4.19 0.03 | 0.112 0.002 | 0.259 0.004 | 0.050 0.002 | 0.041 0.002 | 0.056 0.001 | 0.063 0.002 | 0.084 0.002 | 0.024 0.001 | | |
| 4E | 4.45 0.04 | 0.034 0.002 | 0.090 0.005 | 0.023 0.001 | 0.006 0.001 | 0.030 0.001 | 0.049 0.002 | 0.005 0.001 | 0.002 0.001 | | |
| 5C | 2.30 0.02 | 0.704 0.004 | 1.40 0.02 | 0.027 0.001 | 0.091 0.003 | 0.085 0.002 | 0.188 0.003 | 0.013 0.001 | 0.104 0.002 | | |
| 6C | 3.11 0.03 | 1.25 0.01 | 3.25 0.03 | 0.097 0.003 | 0.019 0.002 | 1.33 0.01 | 0.021 0.001 | 0.273 0.003 | 0.006 0.001 | | |
| 7C | 3.55 0.03 | 0.389 0.004 | 1.73 0.02 | 0.028 0.002 | 0.026 0.002 | 0.542 0.004 | 1.26 0.01 | 0.016 0.001 | 0.966 0.010 | | |
| 8C | 3.41 0.03 | 0.408 0.003 | 1.93 0.02 | 0.168 0.004 | 0.058 0.003 | 0.125 0.002 | 0.102 0.002 | 0.158 0.002 | 0.041 0.001 | | |
| | V | Ti | Al | Sn | Sb | Bi | B | Zn | Pb | W | Co |
| 1E | 0.015 0.001 | 0.046 0.001 | 0.058 0.002 | 0.032 0.002 | | 0.002 0.001 | 0.0036 0.0003 | 0.009 0.001 | 0.007 0.001 | 0.021 0.002 | 0.022 0.001 |
| 1F | 0.014 0.001 | 0.041 0.001 | 0.073 0.003 | 0.030 0.002 | | 0.001 0.001 | 0.0043 0.0003 | 0.004 0.001 | 0.009 0.001 | 0.022 0.001 | 0.024 0.001 |
| 1G | 0.019 0.001 | 0.054 0.001 | 0.062 0.002 | 0.028 0.002 | | 0.005 0.001 | 0.0034 0.0003 | 0.003 0.001 | 0.016 0.002 | 0.015 0.001 | 0.010 0.001 |
| 2E | 0.026 0.001 | 0.039 0.001 | 0.025 0.001 | 0.015 0.001 | 0.028 0.002 | 0.005 0.001 | 0.0024 0.0002 | 0.025 0.002 | 0.004 0.001 | 0.008 0.001 | 0.005 0.001 |
| 2F | 0.010 0.001 | 0.021 0.001 | 0.024 0.001 | 0.014 0.001 | 0.028 0.002 | 0.002 0.001 | 0.0020 0.0002 | 0.018 0.001 | 0.005 0.001 | 0.003 0.001 | 0.003 0.001 |
| 2G | 0.017 0.001 | 0.029 0.001 | 0.019 0.001 | 0.015 0.001 | 0.029 0.002 | 0.006 0.001 | 0.0023 0.0002 | 0.020 0.001 | 0.008 0.001 | 0.004 0.001 | 0.012 0.001 |
| 3C | 0.016 0.001 | 0.021 0.001 | 0.024 0.001 | 0.009 0.001 | | 0.002 0.001 | 0.0044 0.0002 | | 0.005 0.001 | 0.003 0.001 | 0.026 0.001 |
| 3D | 0.072 0.002 | 0.016 0.001 | 0.055 0.002 | 0.009 0.001 | 0.007 0.001 | 0.002 0.001 | 0.0071 0.0003 | | 0.005 0.001 | | 0.014 0.001 |
| 4D | 0.012 0.001 | 0.009 0.001 | 0.007 0.001 | 0.001 0.001 | | 0.002 | 0.0001 | 0.009 0.001 | 0.007 0.001 | | 0.003 0.001 |
| 4E | 0.015 0.001 | 0.011 0.001 | 0.003 0.001 | 0.001 0.001 | | 0.002 | | | 0.002 | | 0.033 0.001 |
| 5C | 0.054 0.002 | 0.008 0.001 | 0.103 0.003 | 0.002 0.001 | 0.002 | 0.007 0.002 | 0.0078 0.0003 | | | | 0.013 0.001 |
| 6C | 0.192 0.002 | 0.107 0.004 | 0.024 0.001 | 0.131 0.003 | 0.044 0.002 | | 0.0024 0.0002 | | 0.003 0.001 | 0.007 0.001 | 0.005 0.001 |
| 7C | 0.067 0.001 | 0.026 0.001 | 0.040 0.002 | 0.004 0.001 | | 0.002 | 0.0008 0.0002 | | | 0.037 0.002 | 0.048 0.001 |
| 8C | 0.015 0.001 | 0.022 0.001 | 0.004 0.001 | 0.067 0.002 | 0.014 0.002 | 0.009 0.001 | | | 0.008 0.001 | | 0.030 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, 0.004% Zr v 1G, 0.005% Zr v 2F, 0.009% Zr v 5C.

(platnost certifikátu do roku 2030)

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

| | C | Mn | Si | P | S | Cr | Ni | Cu |
|------------|---------------------|-----------------------|-----------------------|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|
| 11A | 2.37 0.02 | 0.343 0.007 | 3.31 0.04 | 0.271 0.009 | 0.163 0.007 | 1.219 0.015 | 0.084 0.002 | 0.086 0.003 |
| 11B | 2.44 0.02 | 0.382 0.008 | 3.67 0.04 | 0.271 0.009 | 0.140 0.007 | 1.178 0.016 | 0.082 0.002 | 0.130 0.003 |
| 12A | 2.82 0.02 | 0.996 0.010 | 2.57 0.03 | 0.480 0.011 | 0.073 0.003 | 0.640 0.008 | 0.174 0.002 | 0.160 0.004 |
| 12B | 2.92 0.02 | 1.047 0.011 | 2.96 0.03 | 0.484 0.011 | 0.077 0.003 | 0.638 0.008 | 0.174 0.002 | 0.223 0.005 |
| 13A | 3.13 0.03 | 0.691 0.006 | 2.19 0.02 | 0.0244 0.0016 | 0.0046 0.0004 | 0.122 0.003 | 1.266 0.016 | 0.021 0.002 |
| 13B | 3.12 0.03 | 0.692 0.006 | 2.12 0.02 | 0.0243 0.0017 | 0.0041 0.0004 | 0.125 0.003 | 1.313 0.017 | 0.021 0.002 |
| 13C | 3.15 0.03 | 0.704 0.007 | 2.23 0.02 | 0.0261 0.0017 | 0.0044 0.0004 | 0.124 0.003 | 1.299 0.017 | 0.089 0.003 |
| 14A | 3.29 0.02 | 0.218 0.003 | 2.25 0.02 | 0.0115 0.0011 | 0.0103 0.005 | 0.042 0.002 | 0.021 0.002 | 0.578 0.008 |
| 14B | 3.26 0.02 | 0.240 0.003 | 2.34 0.02 | 0.0115 0.0011 | 0.0096 0.005 | 0.042 0.002 | 0.020 0.002 | 0.640 0.008 |
| 14C | 3.14 0.02 | 0.275 0.003 | 2.49 0.02 | 0.0162 0.0011 | 0.0081 0.005 | 0.045 0.002 | 0.030 0.002 | 0.585 0.008 |
| 15A | 3.54 0.03 | 0.051 0.002 | 1.68 0.02 | 0.054 0.003 | 0.0029 0.0003 | 0.070 0.002 | 0.661 0.008 | 1.322 0.017 |
| 15B | 3.52 0.03 | 0.048 0.002 | 1.66 0.02 | 0.054 0.003 | 0.0031 0.0003 | 0.067 0.002 | 0.681 0.008 | 1.322 0.018 |
| 15C | 3.47 0.03 | 0.060 0.002 | 1.68 0.02 | 0.054 0.003 | 0.0028 0.0003 | 0.078 0.003 | 0.728 0.009 | 1.123 0.018 |
| 16A | 3.80 0.03 | 1.292 0.012 | 1.00 0.01 | 0.171 0.006 | 0.0266 0.0014 | 0.374 0.006 | 0.390 0.004 | 0.332 0.007 |
| 16B | 3.78 0.03 | 1.327 0.013 | 1.00 0.01 | 0.170 0.006 | 0.0236 0.0014 | 0.378 0.006 | 0.388 0.005 | 0.332 0.007 |
| 16C | 3.87 0.03 | 1.311 0.013 | 0.95 0.01 | 0.173 0.006 | 0.0243 0.0014 | 0.332 0.006 | 0.376 0.005 | 0.345 0.007 |
| 17A | 4.30 0.04 | 0.494 0.005 | 0.170 0.008 | 0.115 0.005 | 0.0034 0.0004 | 0.200 0.004 | 2.38 0.03 | 0.082 0.004 |
| 17B | 4.38 0.04 | 0.501 0.005 | 0.178 0.009 | 0.089 0.005 | 0.0040 0.0004 | 0.200 0.005 | 2.34 0.03 | 0.111 0.005 |
| 17C | 4.08 0.04 | 0.503 0.005 | 0.150 0.008 | 0.104 0.005 | 0.0033 0.0004 | 0.178 0.005 | 2.32 0.03 | 0.037 0.002 |

| | Mo | Mg | Ce | V | Ti | Al | Sn | Sb |
|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 11A | 1.130 0.019 | | | 0.184 0.004 | 0.028 0.002 | 0.046 0.002 | 0.070 0.003 | 0.013 0.003 |
| 11B | 1.144 0.020 | | | 0.182 0.005 | 0.041 0.002 | 0.067 0.003 | 0.074 0.003 | 0.011 0.003 |
| 12A | 0.114 0.002 | | | 0.340 0.005 | 0.085 0.003 | 0.077 0.003 | 0.041 0.003 | 0.046 0.004 |
| 12B | 0.117 0.002 | | | 0.326 0.005 | 0.071 0.003 | 0.077 0.003 | 0.042 0.003 | 0.046 0.004 |
| 13A | 0.364 0.006 | 0.053 0.003 | 0.011 0.002 | 0.048 0.002 | 0.014 0.001 | 0.017 0.001 | 0.014 0.001 | 0.002 |
| 13B | 0.364 0.007 | 0.054 0.003 | 0.011 0.002 | 0.048 0.002 | 0.012 0.001 | 0.019 0.001 | 0.014 0.001 | 0.002 |
| 13C | 0.360 0.007 | 0.064 0.004 | 0.011 0.002 | 0.043 0.002 | 0.015 0.001 | 0.022 0.001 | 0.014 0.001 | 0.002 |
| 14A | 0.633 0.009 | 0.015 0.002 | 0.009 0.002 | 0.013 0.001 | 0.018 0.001 | 0.009 0.001 | 0.027 0.002 | 0.015 0.002 |
| 14B | 0.635 0.009 | 0.015 0.002 | 0.012 0.002 | 0.012 0.001 | 0.021 0.001 | 0.012 0.001 | 0.028 0.002 | 0.016 0.003 |
| 14C | 0.646 0.009 | 0.017 0.002 | 0.019 0.003 | 0.013 0.001 | 0.018 0.001 | 0.007 0.001 | 0.025 0.002 | 0.020 0.003 |
| 15A | 0.005 0.001 | 0.031 0.002 | 0.026 0.003 | 0.014 0.001 | 0.034 0.001 | 0.026 0.001 | 0.005 0.001 | 0.058 0.006 |
| 15B | 0.004 0.001 | 0.037 0.002 | 0.021 0.003 | 0.013 0.001 | 0.025 0.002 | 0.029 0.002 | 0.005 0.001 | 0.058 0.006 |
| 15C | 0.002 0.001 | 0.040 0.002 | 0.030 0.003 | 0.019 0.001 | 0.036 0.002 | 0.010 0.001 | 0.006 0.001 | 0.056 0.006 |
| 16A | 0.203 0.004 | | | 0.021 0.001 | 0.073 0.002 | 0.007 0.001 | 0.125 0.006 | 0.011 0.002 |
| 16B | 0.202 0.004 | | | 0.029 0.001 | 0.070 0.002 | 0.007 0.001 | 0.121 0.006 | 0.011 0.002 |
| 16C | 0.195 0.004 | | | 0.027 0.001 | 0.057 0.002 | 0.004 0.001 | 0.125 0.006 | 0.010 0.002 |
| 17A | 0.030 0.002 | 0.007 0.001 | 0.003 0.001 | 0.086 0.003 | 0.016 0.001 | 0.002 0.001 | 0.002 0.001 | |
| 17B | 0.030 0.002 | 0.009 0.001 | 0.003 0.001 | 0.086 0.003 | 0.016 0.001 | 0.002 0.001 | 0.002 0.001 | |
| 17C | 0.030 0.002 | 0.007 0.001 | 0.003 0.001 | 0.076 0.003 | 0.015 0.001 | 0.002 0.001 | 0.002 0.001 | |

| | Bi | B | Zn | Pb | W | Co | Zr | As |
|-----|----------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 11A | 0.011 0.001 | 0.0018 0.0003 | | 0.017 0.003 | 0.005 | 0.005 0.001 | 0.007 0.001 | 0.005 0.001 |
| 11B | 0.007 0.001 | 0.0032 0.0004 | | 0.007 0.001 | 0.005 | 0.005 0.001 | 0.007 0.001 | 0.005 0.001 |
| 12A | 0.005 0.001 | 0.036 0.002 | 0.003 0.001 | 0.007 0.001 | 0.011 0.002 | 0.004 0.001 | 0.002 | 0.022 0.002 |
| 12B | 0.006 0.001 | 0.047 0.002 | 0.004 0.001 | 0.009 0.001 | 0.007 0.002 | 0.008 0.001 | 0.002 | 0.024 0.002 |
| 13A | | | | | 0.003 | 0.024 0.001 | 0.029 0.003 | 0.002 0.001 |
| 13B | | | | | 0.003 | 0.024 0.001 | 0.023 0.003 | 0.002 0.001 |
| 13C | | | | | 0.003 | 0.024 0.001 | 0.02 | 0.002 0.001 |
| 14A | 0.007 0.001 | 0.0096 0.0005 | 0.010 0.001 | 0.005 | 0.005 | 0.005 0.001 | 0.011 0.001 | 0.036 0.004 |
| 14B | 0.007 0.001 | 0.0100 0.0006 | 0.009 0.001 | 0.005 | 0.005 | 0.005 0.001 | 0.014 0.001 | 0.034 0.004 |
| 14C | | 0.0123 0.0006 | 0.010 0.001 | | 0.003 | 0.009 0.001 | 0.013 0.001 | 0.035 0.004 |
| 15A | 0.012 0.001 | 0.0041 0.0003 | | | 0.006 0.001 | 0.027 0.001 | | 0.003 |
| 15B | 0.010 0.001 | 0.0033 0.0003 | | | 0.007 0.001 | 0.027 0.001 | | 0.003 |
| 15C | 0.008 0.001 | 0.0057 0.0004 | | | 0.004 0.001 | 0.026 0.001 | | 0.003 |
| 16A | | 0.018 0.001 | 0.019 0.002 | 0.006 0.001 | 0.019 0.002 | 0.010 0.001 | 0.002 | 0.005 0.001 |
| 16B | | 0.018 0.001 | 0.020 0.002 | 0.007 0.001 | 0.019 0.002 | 0.010 0.001 | 0.002 | 0.005 0.001 |
| 16C | | 0.020 0.001 | 0.017 0.002 | 0.015 0.003 | 0.015 0.002 | 0.006 0.001 | 0.002 | 0.003 0.001 |
| 17A | 0.001 | 0.0002 | | 0.002 0.001 | 0.004 0.001 | 0.043 0.002 | | 0.007 0.001 |
| 17B | 0.001 | 0.0002 | | 0.002 0.001 | 0.004 0.001 | 0.043 0.002 | | 0.008 0.001 |
| 17C | 0.002 | 0.0006 | | 0.002 0.001 | 0.004 0.001 | 0.043 0.002 | | 0.005 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

Sada RM ocelí pro spektrometrii

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

| RM | C | Mn | Si | P | S | Cu | Cr | Ni |
|-------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------------|------------------------|--------------------------|
| LA-0A | 0.006 ±0.0015 | 0.045 ±0.005 | 0.0015 ±0.0003 | 0.005 ±0.0005 | 0.005 ±0.0003 | 0.012 ±0.001 | 0.022 ±0.002 | 0.028 ±0.002 |
| LA-1B | 0.005 ±0.001 | 0.13 ±0.006 | 0.020 ±0.002 | 0.004 ±0.001 | 0.017 ±0.002 | 0.01 ±0.002 | 0.042 ±0.003 | 0.014 ±0.002 |
| LA-2D | 0.065 ±0.005 | 0.26 ±0.008 | 1.48 ±0.028 | 0.011 ±0.002 | 0.052 ±0.004 | 0.53 ±0.01 | 0.135 ±0.005 | 2.00 ±0.03 |
| LA-3E | 0.60 ±0.01 | 0.70 ±0.006 | 1.19 ±0.015 | 0.044 ±0.002 | 0.026 ±0.003 | 0.22 ±0.007 | 0.94 ±0.01 | 1.01 ±0.016 |
| LA-4C | 0.95 ±0.012 | 1.63 ±0.025 | 0.07 ±0.01 | 0.021 ±0.003 | 0.012 ±0.001 | 0.056 ±0.002 | 1.78 ±0.03 | 0.045 ±0.004 |
| LA-5B | 0.38 ±0.01 | 1.75 ±0.03 | 0.39 ±0.014 | 0.017 ±0.002 | 0.010 ±0.001 | 0.12 ±0.005 | 3.60 ±0.04 | 2.43 ±0.03 |
| RM | Al | Mo | W | V | Ti | Co | As | Sn |
| LA-0A | 0.0015 ±0.0005 | 0.0044 ±0.0010 | | | 0.001 ±0.0003 | 0.002 ±0.0003 | 0.0015 | 0.001 |
| LA-1B | 0.003 ±0.001 | 0.007 ±0.001 | 0.010 ±0.002 | 0.004 ±0.001 | 0.001 | 0.002 | 0.002 | 0.001 |
| LA-2D | 0.18 ±0.01 | 0.57 ±0.01 | 0.29 ±0.02 | 0.30 ±0.01 | 0.30 0.01 | 0.26 ±0.015 | 0.095 ±0.008 | 0.085 ±0.003 |
| LA-3E | 0.061 ±0.003 | 0.32 ±0.008 | 0.10 ±0.02 | 0.22 ±0.005 | 0.135 ±0.005 | 0.11 ±0.005 | 0.056 ±0.010 | 0.026 ±0.002 |
| LA-4C | 0.048 ±0.003 | 0.008 ±0.001 | 0.008 ±0.001 | 0.010 ±0.002 | 0.002 ±0.001 | 0.006 ±0.002 | 0.003 ±0.001 | 0.006 ±0.001 |
| LA-5B | 0.073 ±0.005 | 0.75 ±0.02 | 0.59 ±0.03 | 0.47 0.014 | 0.05 ±0.004 | 0.075 ±0.005 | 0.016 ±0.002 | 0.028 ±0.002 |
| RM | B | Nb | Pb | Sb | Zr | Ca | Ta | N |
| LA-0A | | | 0.001 | 0.0007 | | | | 0.0023 ±0.0002 |
| LA-1B | 0.010 ±0.001 | 0.001 | 0.0007 | 0.002 | 0.002 | 0.0016 ±0.0003 | 0 | 0.003 ±0.0004 |
| LA-2D | 0.007 ±0.001 | 0.24 ±0.015 | 0.050 ±0.007 | 0.040 ±0.005 | 0.003 ±0.001 | 0.0004 | | 0.008 ±0.0012 |
| LA-3E | 0.005 ±0.001 | 0.077 ±0.003 | 0.009 ±0.002 | 0.024 ±0.001 | 0.13 ±0.01 | 0.001 | | 0.01 ±0.001 |
| LA-4C | 0.0005 ±0.0001 | 0.053 ±0.004 | | | | | | 0.012 ±0.001 |
| LA-5B | 0.0009 ±0.0001 | 0.060 ±0.005 | 0.015 ±0.002 | 0.011 0.002 | 0.017 ±0.002 | | | 0.02 ±0.001 |

RM CM (1C, 3A, 4B, 5C, 6A, 7A, 8A, 9B, 14A, 14B, 15C, 16A, 17A, 18A, 19A) a SP 2B, 2C, 3C, 3D, 4C, BO-2B

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

| RM | C | Mn | Si | P | S | Cu | Cr | Ni | Al | Mo | W | V |
|--------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|
| CM-1C | 0.72 | 1.73 | 0.31 | 0.023 | 0.025 | 0.18 | 0.47 | 0.52 | 0.034 | 0.084 | 0.064 | 0.073 |
| | 0.01 | 0.01 | 0.01 | 0.001 | 0.002 | 0.01 | 0.015 | 0.015 | 0.001 | 0.004 | 0.002 | 0.002 |
| CM-3A | 0.295 | 0.37 | 0.27 | 0.016 | 0.0013 | 0.16 | 1.87 | 1.82 | 0.05 | 0.33 | 0.015 | 0.007 |
| | 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 | 0.72 | 0.50 | 0.80 | 0.023 | 0.012 | 0.40 | 2.23 | 1.40 | 0.025 | 0.33 | 0.116 | 0.18 |
| | 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 | 1.04 | 1.17 | 0.54 | 0.029 | 0.021 | 0.151 | 2.45 | 0.42 | 0.063 | 0.132 | 0.034 | 0.106 |
| | 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 | 0.52 | 0.37 | 0.27 | 0.016 | 0.058 | 0.05 | 0.37 | 0.19 | 0.02 | 0.04 | 0.04 | 0.05 |
| | 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 | 0.05 | 1.17 | 0.56 | 0.011 | 0.016 | 0.09 | 0.10 | 0.05 | 0.13 | 0.015 | 0.01 | 0.012 |
| | 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-8A | 0.16 | 2.13 | 0.18 | 0.007 | 0.011 | 0.03 | 1.38 | 0.03 | 0.02 | <i>0.001</i> | 0.01 | 0.008 |
| | 0.006 | 0.03 | 0.006 | 0.001 | 0.002 | 0.003 | 0.01 | 0.003 | 0.003 | | 0.002 | 0.002 |
| CM-9B | 0.17 | 2.27 | 0.89 | 0.008 | 0.010 | 0.04 | 1.36 | 0.023 | 0.049 | <i>0.002</i> | | 0.006 |
| | 0.01 | 0.03 | 0.02 | 0.002 | 0.002 | 0.003 | 0.01 | 0.003 | 0.003 | | | 0.001 |
| CM-14A | 0.523 | 1.58 | 1.15 | 0.051 | 0.028 | 0.30 | 1.13 | 1.14 | 0.063 | 0.395 | 0.021 | 0.345 |
| | 0.012 | 0.03 | 0.02 | 0.003 | 0.002 | 0.01 | 0.02 | 0.02 | 0.003 | 0.010 | 0.002 | 0.01 |
| CM-14B | 0.55 | 1.63 | 1.18 | 0.017 | 0.023 | 0.36 | 1.38 | 1.10 | 0.26 | 0.40 | 0.03 | 0.36 |
| | 0.012 | 0.03 | 0.02 | 0.002 | 0.002 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.002 | 0.01 |
| CM-15C | 0.075 | 1.13 | 0.006 | 0.063 | 0.32 | 0.141 | 0.052 | 0.072 | | 0.021 | | |
| | 0.006 | 0.04 | 0.002 | 0.003 | 0.01 | 0.004 | 0.003 | 0.004 | | 0.003 | | |
| CM-16A | 0.355 | 0.92 | 0.77 | 0.043 | 0.033 | 0.293 | 0.70 | 0.72 | 0.125 | 0.405 | 0.141 | 0.319 |
| | 0.007 | 0.02 | 0.01 | 0.002 | 0.002 | 0.003 | 0.01 | 0.01 | 0.004 | 0.007 | 0.003 | 0.006 |
| CM-17A | 0.142 | 0.524 | 0.612 | 0.0310 | 0.0175 | 0.201 | 9.58 | 0.520 | 0.0089 | 1.116 | 0.099 | 0.247 |
| | 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 | 0.143 | 1.792 | 0.903 | 0.0182 | 0.0119 | 2.393 | 20.59 | 20.44 | 0.0344 | 2.282 | 0.097 | 0.113 |
| | 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 | 0.361 | 0.783 | 1.588 | 0.0440 | 0.0182 | 0.986 | 13.12 | 15.27 | 0.0788 | 1.023 | 0.311 | 1.235 |
| | 0.008 | 0.010 | 0.015 | 0.0020 | 0.0008 | 0.031 | 0.11 | 0.16 | 0.0045 | 0.018 | 0.022 | 0.055 |
| SP-2B | 1.42 | 26.1 | 0.51 | 0.10 | 0.009 | 0.096 | 1.36 | 0.32 | 0.008 | 0.38 | 0.084 | 0.155 |
| | 0.03 | 0.25 | 0.02 | 0.01 | 0.001 | 0.006 | 0.03 | 0.03 | 0.002 | 0.02 | 0.006 | 0.009 |
| SP-2C | 1.40 | 14.50 | 0.29 | 0.037 | 0.016 | 0.35 | 1.56 | 0.050 | 0.030 | 0.050 | 0.033 | 0.051 |
| | 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-3C | 0.30 | 0.43 | 0.84 | 0.026 | 0.011 | 0.185 | 16.42 | 5.31 | 0.095 | 0.26 | 0.12 | 0.19 |
| | 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 | 0.171 | 0.34 | 0.71 | 0.021 | 0.015 | 0.73 | 16.44 | 5.36 | 0.037 | 0.25 | 0.12 | 0.11 |
| | 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 | 0.34 | 1.66 | 1.75 | 0.020 | 0.010 | 0.056 | 22.1 | 37.1 | 0.011 | 0.105 | <i>0.01</i> | 0.059 |
| | 0.02 | 0.04 | 0.04 | 0.004 | 0.002 | 0.007 | 0.1 | 0.2 | 0.003 | 0.008 | | 0.005 |
| BO-2B | 0.515 | 0.745 | 0.309 | 0.0093 | 0.0016 | 0.100 | 0.212 | 0.057 | 0.0196 | 0.006 | <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-1C | 0.066 | 0.026 | | 0.012 | 0.0020 | 0.054 | 0.005 | 0.01 | | 0.0007 | | 0.009 |
| | 0.002 | 0.001 | | 0.001 | 0.0002 | 0.002 | 0.002 | 0.002 | | 0.0002 | | 0.001 |
| 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-8A | 0.001 | 0.004 | 0.002 | 0.003 | 0.004 | 0.034 | | | | | | |
| | | 0.001 | | | 0.001 | 0.003 | | | | | | |
| 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-14A | 0.40 | 0.015 | 0.016 | 0.027 | 0.0062 | 0.115 | 0.013 | 0.006 | 0.044 | 0.004 | 0.015 | 0.0095 |
| | 0.01 | 0.002 | 0.001 | 0.002 | 0.0005 | 0.005 | 0.001 | 0.001 | 0.003 | | 0.002 | 0.0010 |
| CM-14B | 0.36 | 0.026 | 0.015 | 0.040 | 0.0205 | 0.165 | 0.007 | 0.010 | 0.040 | | | 0.0072 |
| | 0.01 | 0.002 | 0.001 | 0.003 | 0.0010 | 0.006 | 0.001 | 0.001 | 0.003 | | | 0.001 |
| CM-15C | | 0.01 | | | | | 0.29 | | | | | |
| | | | | | | | 0.01 | | | | | |
| CM-16A | 0.099 | 0.056 | 0.058 | 0.025 | 0.012 | 0.066 | 0.053 | 0.027 | 0.062 | 0.0006 | | 0.015 |
| | 0.002 | 0.003 | 0.003 | 0.001 | 0.001 | 0.002 | 0.006 | 0.001 | 0.003 | 0.0001 | | 0.001 |
| 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 | | | | | | |
| SP-2B | 0.025 | 0.040 | | | | | | | | | | |
| | 0.003 | 0.006 | | | | | | | | | | |
| SP-2C | 0.014 | 0.044 | 0.005 | 0.037 | 0.003 | | | | | | | 0.027 |
| | 0.001 | 0.003 | | 0.003 | | | | | | | | 0.001 |
| 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, 25mm nebo dle dohody

| | C | Mn | Si | P | S | Cu | Cr | Ni |
|---------------|-----------------------|-----------------------|---------------------|-----------------------|-------------------------|-----------------------|-----------------------|-----------------------|
| SST-1A | 0.072 0.003 | 0.062 0.004 | 2.57 0.04 | 0.041 0.002 | 0.0043 0.0004 | 0.654 0.013 | 0.209 0.005 | 0.155 0.004 |
| SST-2A | 0.083 0.003 | 0.160 0.004 | 3.07 0.04 | 0.026 0.002 | 0.0089 0.0008 | 0.205 0.006 | 0.138 0.004 | 0.066 0.002 |
| SST-3A | 0.035 0.003 | 0.221 0.005 | 3.27 0.05 | 0.007 0.002 | 0.0093 0.001 | 0.096 0.004 | 0.043 0.002 | 0.061 0.002 |
| SST-4A | 0.062 0.004 | 0.376 0.010 | 4.73 0.05 | 0.031 0.003 | 0.020 0.002 | 0.111 0.004 | 0.105 0.005 | 0.082 0.002 |

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

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

III. 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 |
| SL-6A | 0.17 | 0.24 | 0.23 | 0.015 | 0.029 | 0.22 | 6.8 | 32.3 | 0.26 | 0.13 |
| 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 |
| SL-6A | 1.74 | 0.15 | 1.8 | 0.69 | 0.004 | 0.006 | 0.36 | | | |
| 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 1 – SP 8

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

| QCM | C | Mn | Si | P | S | Cu | Cr | Ni | Al | Mo |
|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|------|
| SP-1A | 0.047 | 1.87 | 0.33 | 0.024 | 0.26 | 0.52 | 17.7 | 8.6 | 0.004 | 0.42 |
| SP-3B | 0.27 | 0.29 | 0.72 | 0.023 | 0.008 | 0.62 | 15.1 | 5.65 | 0.08 | 0.24 |
| SP-5B | 0.20 | 1.86 | 3.07 | 0.108 | 0.023 | 0.15 | 0.38 | 3.00 | 0.18 | 0.13 |
| SP-6A | 0.10 | 0.38 | 4.65 | 0.017 | 0.009 | 0.12 | 0.11 | 0.04 | 0.32 | 0.01 |
| SP-7A | 0.006 | 0.08 | 0.036 | 0.007 | 0.010 | 0.08 | 0.01 | 47.3 | 0.003 | 0.01 |
| 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-1A | 0.03 | 0.058 | 0.02 | 0.095 | 0.006 | 0.01 | 0.0007 | 0.012 | | |
| SP-3B | 0.12 | 0.10 | 0.13 | 0.02 | | 0.01 | 0.88 | | | |
| SP-5B | 0.62 | 0.71 | 0.35 | 0.135 | 0.19 | 0.08 | 0.14 | 0.09 | 0.09 | 0.07 |
| SP-6A | 0.02 | 0.016 | 0.008 | 0.003 | 0.003 | 0.01 | | | | |
| SP-7A | | 0.001 | 0.004 | 0.003 | | | | | | |
| SP-8B | 0.05 | 0.13 | 0.13 | 0.075 | 0.05 | 0.06 | 0.03 | 0.04 | | |

QCM CM (2A, 5B, 10A, 12A)

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

| QCM | C | Mn | Si | P | S | Cu | Cr | Ni |
|--------|--------|-------|-------|-------|--------|-------|-------|-------|
| CM-2A | 0.20 | 0.97 | 1.66 | 0.10 | 0.012 | 1.01 | 1.50 | 1.20 |
| CM-5B | 1.09 | 1.28 | 0.39 | 0.021 | 0.012 | 0.13 | 2.07 | 0.23 |
| CM-10A | 0.694 | 1.00 | 0.817 | 0.040 | 0.022 | 0.31 | 5.48 | 2.38 |
| CM-12A | 0.031 | 0.17 | 3.21 | 0.013 | 0.011 | 0.173 | 0.067 | 0.03 |
| QCM | Al | Mo | W | V | Ti | Co | As | Sn |
| CM-2A | 0.03 | 0.33 | 0.23 | 0.10 | 0.34 | 0.43 | 0.11 | 0.08 |
| CM-5B | 0.083 | 0.10 | 0.03 | 0.06 | 0.02 | 0.022 | 0.018 | 0.012 |
| CM-10A | 0.086 | 1.234 | 0.96 | 0.908 | 0.0189 | 0.114 | 0.03 | 0.062 |
| CM-12A | 0.098 | 0.008 | | | 0.005 | 0.003 | 0.003 | 0.007 |
| QCM | B | Nb | Pb | Sb | N | Zr | Ta | Zn |
| CM-2A | 0.0005 | 0.48 | 0.06 | 0.008 | | 0.03 | 0.027 | |
| CM-5B | 0.002 | 0.015 | 0.01 | 0.006 | 0.0135 | 0.09 | | |
| CM-10A | 0.05 | | | | | | | |
| CM-12A | | | | | 0.007 | | | |

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 | 23.67 | 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 | 27.36 | 27.21 |
| | ±93 | ±40 | ±0.36 | ±0.05 | ±0.05 | ±0.05 | ±0.22 | ±0.11 |
| SF-07-14 hnědé uhlí Uc | 21337 | 9173 | 50.97 | 4.26 | 1.05 | 2.52 | 38.80 | 28.73 |
| | ±86 | ±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 |