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*
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

SPL RM 2015 A - 2024 A

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

	2015 A	2016 A	2017 A	2023 A
C	**1.996**	**2.053**	**2.463**	**4.029**
	0.011	0.016	0.023	0.016
S	**0.0157**	**0.0048**	**0.0755**	**0.0886**
	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
C	**1.99**	**2.15**	**2.57**	**3.07**	**3.43**	**3.52**	**3.80**	**3.86**	**4.06**	**4.40**
	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
S	**0.017**	**0.0047**	**0.095**	**0.014**	**0.017**	**0.043**	**0.043**	**0.085**	**0.114**	**0.047**
	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
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
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
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
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		
	V	**Ti**	**Al**	**Sn**	**Sb**	**Bi**	**B**	**Zn**	**Pb**	**W**	**Co**
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
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

Další necertifikované hodnoty jsou 0.007% As v 3C, 0.012% As v 4D, 0.005% Te v 3C, 0.010% Te v 5C, 0.006% Te v 7C.

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
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
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
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
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
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
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
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
14C		**0.0123** 0.0006	**0.010** 0.001		0.003	**0.009** 0.001	**0.013** 0.001	**0.035** 0.004
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

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

ø 40 mm, h = 18 mm

	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Mg	Ce	V
31A (ID-0A)	**3.54**	**0.041**	**2.10**	**0.025**	**0.006**	**0.019**	**0.538**	**0.005**	**0.004**	**0.070**	*0.004*	**0.008**
	0.04	0.002	0.02	0.001	0.001	0.001	0.004	0.001	0.001	0.003		0.001
32A (ID-1B)	**3.39**	**0.288**	**2.74**	**0.037**	**0.007**	**0.060**	**0.015**	**0.306**	**0.116**	**0.024**	*0.004*	**0.005**
	0.02	0.003	0.03	0.002	0.001	0.002	0.001	0.005	0.002	0.002		0.001
34A (ID-5B)	**3.48**	**0.980**	**2.29**	**0.105**	**0.008**	**0.102**	**0.493**	**0.230**	**0.072**	**0.026**	**0.008**	**0.073**
	0.03	0.010	0.02	0.003	0.001	0.002	0.004	0.004	0.002	0.002	0.002	0.002
36A (IG-0A)	**3.02**	**0.057**	**2.13**	**0.026**	**0.010**	**0.014**	**0.011**	**0.007**	**0.004**	**0.012**	**0.007**	**0.021**
	0.02	0.002	0.02	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
37A (IG-1B)	**3.07**	**0.211**	**3.30**	**0.025**	**0.023**	**0.328**	**0.106**	**0.149**	**0.325**			**0.122**
	0.02	0.003	0.03	0.001	0.001	0.002	0.002	0.003	0.004			0.003
38A (IG-2B)	**3.39**	**0.401**	**2.37**	**0.067**	**0.036**	**0.141**	**0.306**	**0.510**	**0.101**			**0.061**
	0.03	0.004	0.02	0.002	0.002	0.002	0.003	0.006	0.002			0.002
39A (IG-3B)	**3.70**	**0.812**	**1.90**	**0.160**	**0.045**	**0.488**	**0.032**	**0.298**	**0.203**			**0.232**
	0.03	0.011	0.02	0.003	0.002	0.003	0.001	0.005	0.003			0.004
40A (IG-4A)	**3.38**	**0.042**	**1.98**	**0.021**	**0.0035**	**0.031**	**0.045**	**0.010**	**0.005**	**0.007**	**0.012**	**0.014**
	0.02	0.002	0.02	0.002	0.0005	0.001	0.001	0.001	0.001	0.001	0.002	0.001
	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
31A (ID-0A)	**0.007**	**0.005**	*0.003*			*0.0004*			*0.005*	**0.022**		**0.0042**
	0.001	0.001								0.001		0.0003
32A (ID-1B)	**0.044**	**0.029**	*0.012*	**0.023**	*0.007*	*0.0005*	**0.011**	**0.022**	*0.008*	*0.002*		**0.0042**
	0.001	0.001		0.002			0.001	0.002				0.0003
33A (ID-3B)	**0.130**	**0.054**	**0.039**	**0.019**	*0.002*	**0.0064**	**0.009**	**0.010**	**0.079**	**0.015**	**0.032**	**0.0043**
	0.005	0.002	0.001	0.002		0.0003	0.001	0.001	0.003	0.001	0.002	0.0003
34A (ID-5B)	**0.044**	**0.010**	**0.051**	**0.007**	*0.005*	**0.0076**	**0.007**	*0.006*	**0.016**	**0.025**	**0.014**	**0.0041**
	0.001	0.001	0.002	0.002		0.0003	0.001		0.002	0.001	0.001	0.0003
36A (IG-0A)	**0.021**	*0.003*	*0.002*		*0.007*	**0.022**	*0.002*	**0.016**		*0.004*		**0.0038**
	0.001					0.002		0.002				0.0003
37A (IG-1B)	**0.008**	**0.039**	**0.073**		*0.002*	**0.0124**	*0.001*	*0.002*	**0.026**	**0.031**		**0.0089**
	0.001	0.002	0.002			0.0005			0.002	0.001		0.0004
38A (IG-2B)	**0.012**	**0.034**	**0.032**	**0.018**	*0.002*	**0.0027**	**0.028**	*0.003*	*0.005*	**0.021**	**0.008**	**0.0100**
	0.001	0.001	0.001	0.002		0.0002	0.002			0.001	0.002	0.0004
39A (IG-3B)	*0.074*	**0.008**	*0.003*	**0.037**	**0.008**	**0.0195**	**0.035**	**0.017**		*0.002*		**0.0037**
		0.001		0.002	0.002	0.0006	0.003	0.002				0.0003
40A (IG-4A)	**0.015**	**0.096**	*0.004*			**0.0008**	*0.002*			**0.027**		**0.0063**
	0.001	0.003				0.0002				0.001		0.0004

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

RM CI-SPL-22 – RM LITIN pro spektrometrickou analýzu
ø 40 mm, h = 18 mm

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

	Al	Sn	Sb	Bi	B	Zn	Pb	W	Co	Nb	Zr	As
44A (1H)	**0.046**	**0.026**	**0.018**	**0.009**	**0.0037**	**0.009**	**0.017**	**0.018**	**0.024**	*0.014*	*0.007*	-
	0.002	0.002	0.002	0.001	0.0003	0.002	0.002	0.002	0.002			
45A (1J)	**0.078**	**0.034**	-	-	**0.022**	-	**0.005**	**0.015**	**0.031**	-	*0.015*	-
	0.003	0.002			0.002		0.001	0.002	0.001			
46A (2H)	**0.026**	**0.014**	**0.024**	**0.005**	**0.0021**	**0.018**	**0.021**	**0.008**	-	*0.012*	*0.004*	*0.003*
	0.001	0.001	0.002	0.001	0.0002	0.002	0.002	0.001				
47A (2J)	**0.024**	**0.016**	**0.026**	-	*0.0005*	**0.027**	**0.012**	**0.004**	*0.002*	-	*0.010*	-
	0.001	0.001	0.002			0.002	0.001	0.001				
48A (3E)	**0.021**	**0.010**	-	-	**0.0045**	-	**0.015**	-	**0.025**	-	-	*0.021*
	0.001	0.001			0.0002		0.001		0.001			
49A (3F)	**0.064**	**0.011**	*0.007*	-	**0.0075**	*0.003*	**0.008**	**0.013**	**0.094**	*0.005*	-	**0.020**
	0.003	0.001			0.0005		0.001	0.001	0.003			0.001
50A (8E)	**0.004**	**0.068**	**0.011**	**0.011**	*0.0008*	-	**0.004**	*0.006*	**0.029**	-	-	-
	0.001	0.002	0.002	0.002			0.001		0.001			
51A (8F)	**0.006**	**0.072**	**0.012**	*0.008*	-	*0.002*	**0.006**	*0.005*	**0.035**	-	-	*0.007*
	0.001	0.002	0.002				0.001		0.001			
52A (14D)	**0.011**	**0.032**	**0.014**	**0.011**	**0.0082**	**0.004**	*0.003*	*0.004*	**0.010**	*0.003*	**0.015**	**0.041**
	0.001	0.001	0.001	0.001	0.0004	0.001			0.001		0.001	0.003
53A (15D)	**0.047**	**0.007**	**0.066**	*0.007*	**0.0046**	*0.004*	-	**0.010**	**0.032**	-	-	*0.004*
	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	**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-0B	**0.0036** ±0.0011	**0.0380** ±0.0014	*0.0043*	**0.0037** ±0.0007	**0.0023** ±0.0003	**0.0074** ±0.0005	**0.0091** ±0.0016	**0.0070** ±0.0009
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-3G	**0.626** ±0.004	**0.687** ±0.010	**1.296** ±0.011	**0.0472** ±0.0010	**0.0351** ±0.0011	**0.236** ±0.004	**1.377** ±0.007	**1.019** ±0.010
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-4D	**1.143** ±0.005	**1.266** ±0.009	**0.181** ±0.005	**0.0289** ±0.0011	**0.0091** ±0.0002	**0.066** ±0.004	**1.831** ±0.021	**0.367** ±0.007
LA-5C	**0.439** ±0.007	**1.873** ±0.012	**0.394** ±0.008	**0.0179** ±0.0011	**0.0088** ±0.0008	**0.138** ±0.002	**3.815** ±0.026	**2.591** ±0.020

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-0B	**0.0010** ±0.0005	0.0016				0.0017	**0.0024** ±0.0004	0.0013
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-3G	**0.047** ±0.002	**0.326** ±0.005	**0.105** ±0.004	**0.232** ±0.002	**0.143** ±0.004	**0.127** ±0.003	**0.051** ±0.004	**0.031** ±0.001
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-4D	**0.067** ±0.002	**0.136** ±0.004	**0.0251** ±0.0025	**0.103** ±0.002	**0.0154** ±0.0007	**0.0370** ±0.0013	**0.0104** ±0.0016	**0.0142** ±0.0010
LA-5C	**0.081** ±0.003	**0.867** ±0.011	**0.631** ±0.008	**0.536** ±0.006	**0.048** ±0.001	**0.088** ±0.002	**0.026** ±0.002	**0.031** ±0.001

RM	B	Nb	Pb	Sb	Zr	Ca	Ta	N
LA-0A			0.001	0.0007				**0.0023** ±0.0002
LA-0B								**0.0027** ±0.0005
LA-1B	**0.010** ±0.001	0.001	0.0007	0.002	0.002	**0.0016** ±0.0003		**0.003** ±0.0004
LA-3G	**0.0039** ±0.0002	**0.0711** ±0.0015	**0.0098** ±0.0005	**0.0242** ±0.0036	**0.068** ±0.003	**0.0016** ±0.0002		**0.0115** ±0.0010
LA-4C	**0.0005** ±0.0001	**0.053** ±0.004						**0.012** ±0.001
LA-4D		**0.0046** ±0.0009	**0.0401** ±0.0035					**0.0064** ±0.0005
LA-5C		**0.057** 0.002	**0.0156** 0.0011	**0.018** ±0.003			*Zn 0.013*	**0.0248** 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	**0.735**	**1.800**	**0.341**	**0.0218**	**0.0268**	**0.186**	**0.456**	**0.547**	**0.0245**	**0.100**	**0.063**	**0.089**
	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	**0.247**	**0.894**	**1.950**	**0.082**	**0.0114**	**0.994**	**1.538**	**1.205**	**0.0464**	**0.332**	**0.223**	**0.109**
	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	**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-8B	**0.185**	**1.95**	**0.112**	**0.015**	**0.014**	**0.081**	**1.22**	**0.032**	**0.0028**	**0.011**	*0.009*	**0.0078**
	0.006	0.02	0.003	0.001	0.001	0.003	0.02	0.002	0.0006	0.001		0.0005
CM-9B	**0.17**	**2.27**	**0.89**	**0.008**	**0.010**	**0.04**	**1.36**	**0.023**	**0.049**	*0.002*		**0.006**
	0.01	0.03	0.02	0.002	0.002	0.003	0.01	0.003	0.003			0.001
CM-12C	**0.0389**	**0.275**	**3.770**	**0.0103**	**0.0110**	**0.175**	**0.081**	**0.046**	**0.145**	**0.0128**	*0.004*	**0.0271**
	0.0017	0.003	0.150	0.0006	0.0004	0.004	0.002	0.002	0.005	0.0011		0.0014
CM-14C	**0.586**	**1.723**	**1.352**	**0.0169**	**0.0266**	**0.365**	**1.316**	**1.141**	**0.226**	**0.432**	**0.0238**	**0.325**
	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	**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-16B	**0.421**	**0.762**	**0.574**	**0.0508**	**0.0376**	**0.296**	**0.635**	**0.733**	**0.128**	**0.424**	**0.141**	**0.272**
	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	**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
CM-20A	**0.63**	**0.594**	**1.74**	**0.0383**	**0.020**	**0.237**	**0.97**	**1.007**	**0.076**	**0.365**	**0.104**	**0.225**
	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	**0.917**	**0.803**	**0.934**	**0.0609**	**0.0348**	**0.234**	**3.064**	**0.230**	**0.323**	**0.816**	**0.104**	**0.157**
	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	**0.097**	**0.781**	**0.656**	**0.0036**	**0.0051**	**0.0040**	**0.0248**	**0.0214**	**0.0030**		**0.0048**	**0.0161**
	0.002	0.004	0.008	0.0006	0.0004	0.0004	0.0006	0.0006	0.0006		0.0020	0.0006
SP-1B	**0.050**	**1.67**	**0.505**	**0.039**	**0.30**	**0.47**	**17.42**	**8.32**	*0.003*	**0.40**	**0.032**	**0.060**
	0.002	0.03	0.017	0.003	0.02	0.01	0.12	0.16		0.01	0.003	0.004
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-2D	**1.369**	**26.90**	**0.558**	**0.0725**	**0.0031**	**0.106**	**1.507**	**0.388**	**0.0043**	**0.391**	**0.083**	**0.178**
	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	**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**	*0.01*	**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**	*0.005*	*0.001*
	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

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

	Al	Mo	W	V	Ti	Co	As	Sn
SST-1A	**0.061**	*0.002*	-	**0.006**	**0.004**	**0.005**	**0.002**	**0.110**
	0.003			0.002	0.001	0.001	0.001	0.006
SST-2A	**0.010**	**0.054**	**0.019**	**0.024**	**0.016**	**0.022**	**-**	**0.055**
	0.002	0.002	0.002	0.002	0.002	0.002		0.004
SST-3A	**0.009**	**0.036**	**0.016**	**0.041**	**0.009**	**0.038**	**0.003**	**0.015**
	0.002	0.002	0.002	0.002	0.001	0.003	0.001	0.002

	B	Pb	Sb	Zr	Zn	N
SST-1A	**0.0003**	*0.002*	*0.002*			**0.0059**
	0.0001					0.0005
SST-2A	**0.0089**	**0.015**	**0.008**	**0.017**	**0.011**	**0.0078**
	0.0006	0.003	0.002	0.002	0.003	0.0007
SST-3A	**0.0019**	**0.013**			**0.011**	**0.0088**
	0.0004	0.002			0.003	0.0012

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