

EURONORM – CRM No. 882-1
METHODS USED

Element	Line number	Analytical methods
Fe	2.5.15	FAAS
	3.6.9.13.14.17	ICP-OES
	4	ICP-MS
	7	Titration with Cr (VI) after reduction with Sn (II)
	8	Titration with Mn (VII) after reduction with Sn (II)
	10.11.12.16.18	XRF
Ca	2.14.15.17.18	XRF
	3.4.7.13	FAAS
	5.6.8.9.10.11.12.16	ICP-OES
Al	1.2.3.4.7.9.11.12.14.15.17.18	ICP-OES
	5.13.19	XRF
	6.8.16	FAAS
	10	ICP-MS
Na	1.3.8.10.11.12.14.15	ICP-OES
	2	ICP-MS
	4.5.7.13	FAAS
	6	FES
	9	PAA
K	1.2.3.7.9.10.12.15.16	ICP-OES
	4.5.6.14	FAAS
	8	ICP-MS
	11	FES
	13	XRF
Zn	2.6.11.12.19.20.22	ICP-OES
	3.7.9.10.15	Complexometric titration, visual end point
	4	ICP-MS
	5.8	FAAS
	13	Titration with ferrocyanide, potentiometric end point
	14.16.17.18.21	XRF
Pb	1.3.8.13.14.16	FAAS
	2.10.18	XRF
	4.5.6.7.9.11.12.15.19.20.22	ICP-OES
	17	ICP-MS
	21	PAA
Cd	1.3.6.7.8.10.11.13.14.20.22.23	ICP-OES
	2.5.16.18.19	FAAS
	4.9.15.17.21	ICP-MS
Cr	1.2.3.5.6.10.11.12.13.15.20.21	ICP-OES
	4.14	XRF
	7.8.9.17	FAAS
	16.18	ICP-MS
	19	PAA
Ni	1.5.7.10.12.13.14.15.17.20	ICP-OES
	2.3.9.11.18	FAAS
	4.16.19	ICP-MS
	6	XRF
Cu	2.6.7.8.10.11.12.14.17.19.21	ICP-OES
	3.4.5.9.15.20	FAAS
	13	ICP-MS
	16	XRF
V	1	FAAS
	2.3.4.7.9.11.12.13.14	ICP-OES
	5.6.8.10	ICP-MS
As	1.4.8.11.21	ICP-OES
	2.10.12.14.20	AAS, evolution as arsine
	5.13.16	ETAAS
	6	MAS, diethyldithiocarbamate, separation as arsine
	7	ICP-OES, evolution as arsine
	9.15.18.19	ICP-MS
	17	PAA
Bi	1.9	FAAS
	2.4.5.8	ICP-MS
	3.10.11.13.14	ICP-OES
	6.12	AAS, hydride generation
	7	ETAAS
Sb	1.5.13.20	ICP-MS
	2.12.16.18	ICP-OES
	3.6.11	FAAS
	4.21	AAS, hydride generation
	7.8.14.15.19	ETAAS
	9	ICP-OES, hydride generation
	10	AFS
17	PAA	
Hg	1.3.4.5.7.8.9.10	AAS, cold vapour
	2	ICP-MS
	6	AFS

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<i>Element</i>	<i>Line number</i>	<i>Analytical methods</i>
<i>Sn</i>	1.2.10.11 3.5.9.13.14.15.18.20.24 4.6.7.16.19.22 8 12.17 23	FAAS ICP-OES ICP-MS XRF ETAAS PAA
<i>Si</i>	1 2.4 3	Gravimetry, dehydration with perchloric acid ICP-OES XRF
<i>Mn</i>	1.2 3	ICP-OES XRF
<i>Mg</i>	1.3 2	ICP-OES XRF
<i>Cl</i>	2 3.4.5	Ion chromatography Titration with Ag ⁺ , potentiometric end point
<i>C</i>	1.2.3	Combustion: Infrared absorption
<i>S</i>	1 2 3.5 4.6	Gravimetry as BaSO ₄ without separation Ion chromatography Combustion: Infrared absorption ICP-OES after dissolution in nitric and hydrochloric acid in presence of potassium nitrate
<i>F</i>	1 2 3 4	Ion chromatography Direct potentiometry after steam distillation Ion chromatography after alkaline fusion Specific ion electrode, alkaline fusion, separation of hydroxides

Abbreviations:

AAS	Atomic Absorption Spectrometry
AFS	Atomic Fluorescence Spectrometry
ETAAS	Electrothermal Atomic Absorption Spectrometry
FAAS	Flame Atomic Absorption Spectrometry
FES	Flame Emission Spectrometry
ICP-OES	Inductively Coupled Plasma – Optical Emission Spectrometry
ICP-MS	Inductively Coupled Plasma – Mass Spectrometry
MAS	Molecular Absorption Spectrometry
PAA	Photon Activation Analysis
XRF	X-ray Fluorescence Spectrometry

DESCRIPTION OF THE SAMPLE

The ECRM 882-1 is available in the form of ash powder in bottles containing 100 g.

INTENDED USE & STABILITY

The ash, ECRM 882-1, is intended for the verification of analytical methods, such as those used by the participating laboratories, for the calibration of analytical instruments in cases where the calibration with primary substances (pure stoichiometric metals or compounds) is not possible and for establishing values for secondary reference materials.

It will remain stable provided that the bottle remains sealed and is stored in a cool, dry atmosphere. When the bottle has been opened the lid should be secured immediately after use. If the contents should become discoloured (eg oxidised) due to atmospheric contamination they should be discarded.

TRACEABILITY

The traceability of ECRM 882-1 has been established in accordance with principles of ISO Guides 30 – 35 and the International vocabulary of basic and general terms in metrology.

The characterisation of this material has been achieved by inter-laboratory study, each laboratory using the method of their choice, details of which are given above. These methods are either stoichiometric analytical techniques or methods which are calibrated against pure metals or stoichiometric compounds. Most methods used were either international or national standard methods or methods which are technically equivalent.

FURTHER INFORMATION

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For Nordic CRM Working Group



A handwritten signature in blue ink, which appears to read 'Rein Vainik'.

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