



Joint Research Centre

Certified reference materials

for neutron dosimetry



Available materials

A series of reference materials is available to serve as detectors, primarily for safety surveillance of reactor pressure vessels. Materials were chosen to provide a range of detectors with different activation threshold energies to allow reactor neutron energy spectra to be established.

Two types of materials are available, namely Al-alloys and high purity metals.

Materials are available in different forms, namely as foils or wires.

Aluminium alloys for neutron fluence determination

Code	Material	Certified value	Form
IRMM-532	Al – 0.01% Co	Co: 0.1000 ± 0.0025 g/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m
IRMM-527R	Al – 0.1% Co	Co: 1.001 ± 0.024 g/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m
IRMM-528R	Al – 1.0% Co	Co: 10.02 ± 0.23 g/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m
IRMM-530R	Al – 0.1% Au	Au: 1.003 ± 0.012 g/kg	A: 0.1 mm foil, 100 cm ² C: 1.0 mm wire, 1 m
ERM-EB530	Al – 0.1% Au	Au: 1.005 ± 0.007 g/kg	B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m
IRMM-533	Al – 0.1% Ag	Ag: 0.996 ± 0.017 g/kg ¹	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m
IRMM-534	Al – 2.0% Sc	Sc: 19.95 ± 0.20 g/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m C: 1.0 mm wire, 1 m

Confidence in measurements

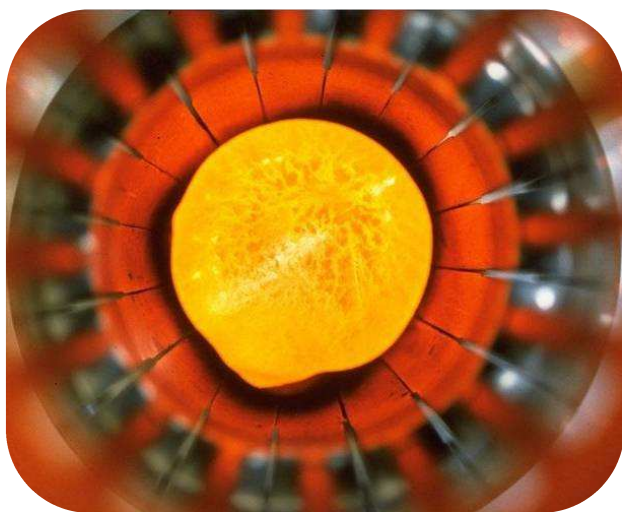
All certificates and detailed production information can be found at <https://crm.irmm.jrc.ec.europa.eu>

<https://ec.europa.eu/jrc/>



Other metals

Code	Material	Certified values	Form
IRMM-521B	Ni	Co: < 0.1mg/kg	0.5 mm wire, 1 m
IRMM-521R	Ni	Co: < 0.26mg/kg	0.1 mm foil, 75 cm ²
IRMM-522	Cu	Co: < 0.05 mg/kg Ag: 0.95 ± 0.04 mg/kg	A: 0.1 mm foil, 100 cm ² B: 1.0 mm foil, 20 cm ² C: 0.5 mm wire, 1 m D: 1.0 mm wire, 1 m
IRMM-523	Al	Na: < 0.1 mg/kg	A: 0.1 mm foil, 100 cm ² B: 1.0 mm foil, 20 cm ² C: 1.0 mm wire, 1 m
IRMM-524	Fe	Co: < 0.05 mg/kg Mn: < 0.1 mg/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm wire, 1 m
IRMM-525	Nb	Ta: 19.6 ± 1.8 mg/kg	A: 0.02 mm foil, 20 cm ² B: 0.1 mm foil, 20 cm ² C: 0.5 mm wire, 1 m
IRMM-526	Nb	Ta: 0.30 ± 0.09 mg/kg	A: 0.02 mm foil, 20 cm ² B: 0.1 mm foil, 20 cm ² C: 0.5 mm wire, 1 m
IRMM-529	Rh	Pt: < 5 mg/kg Ir: 26.0 ± 0.6 g/kg	0.05 mm foil, 20 cm ²
IRMM-531	Ti	Sc: < 0.1 mg/kg	A: 0.1 mm foil, 100 cm ² B: 0.5 mm foil, 20 cm ² C: 0.5 mm wire, 1 m



How to order reference materials

From JRC in Geel

Tel: +32 14 571 705 • Fax: +32 14 590 406
<https://ec.europa.eu/jrc/en/reference-materials>
 E-mail: jrc-irmm-rm-distribution@ec.europa.eu

From authorised distributors

LGC Standards GmbH (DE)
<http://www.lgcstandards.com/>
 E-mail: de@lgcstandards.com

Sigma-Aldrich Chemie GmbH (CH)
<http://www.sigmaaldrich.com/irmm>
 E-mail: flukatec@sial.com

Sigma-Aldrich RTC Inc. (USA)
<http://www.RT-Corp.com>
 E-mail: RTCSalesgroup@sial.com

ARMI (USA)
<http://www.armi.com>
 E-mail: Info@ARMI.com

Industrial Analytical (RSA)
<http://www.industrialanalytical.co.za>
 E-mail: info@industrialanalytical.co.za