

CANADA CENTRE FOR MINERAL AND ENERGY TECHNOLOGY

**REFERENCE URANIUM-THORIUM ORE DL-1a**

CERTIFICATE OF ANALYSIS

Recommended Value		95% Confidence Interval	
U	0.0116%	±	0.0003%
Th	0.0076%	±	0.0004%
Ra-226	1.40 Bq/g	±	0.04 Bq/g
Pb-210	1.40 Bq/g	±	0.02 Bq/g

DESCRIPTION

DL-1a is intended as a replacement for DL-1 of which the stock is exhausted. It is waste rock typical of the property of Denison Mines Limited in Elliot Lake, Ontario, and is a pale yellow arkose sandstone containing uraninite and brannerite and possibly traces of monazite and uranothorite. The bulk material was dry-ground to minus 74  $\mu\text{m}$ , blended, sampled systematically for analysis by optical fluorimetric and chemical methods to demonstrate homogeneity suitable for use as a reference material, and bottled in 200-g units. Evidence is available that DL-1a is in secular equilibrium.

CERTIFICATION

The consensus value for uranium is the unweighted mean of 286 accepted analytical determinations by 20 laboratories. Methods included titrimetry, colorimetry, fluorimetry, X-ray fluorescence, neutron activation analysis and radiochemistry.

The consensus value for thorium is the unweighted mean of 187 accepted analytical determinations by 14 laboratories. Methods included colorimetry, X-ray fluorescence, neutron activation analysis, radiometry and isotope dilution-mass spectrometry.



NON-CERTIFIED CONSTITUENTS

The concentration of the following constituents are given for information only.

	Value
Fe	0.93%
S	0.41%

INSTRUCTIONS FOR USE

The recommended values for DL-1a pertain to an "as is" basis.

LEGAL NOTICE

The Canadian Certified Reference Materials Project has prepared this reference material and statistically evaluated the analytical data for the interlaboratory certification program to the best of its ability. The Purchaser by receipt hereof releases and indemnifies the Canadian Certified Reference Materials Project from and against all liability and costs arising out of the use of this material and information.

REFERENCE

The preparation and certification procedures used for DL-1a are given in CANMET Reports 80-10 "DL-1a: A Certified Uranium-Thorium Reference Ore", 83-9E "Radium-226 in Certified Uranium Reference Ores DL-1a, BL-4a, DH-1a and BL-5" and 84-11E "Lead-210 in Certified Uranium Reference Ores DL-1a, BL-4a, DH-1a and BL-5" which are available free of charge on application to:

Coordinator, CCRMP

CANMET

555 Booth Street

Ottawa, Ontario K1A 0G1

Canada

This Certificate of Analysis is available in French on request to the Coordinator, CCRMP.