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B. Harmatz
H. C. McCurdy
F. N. Case

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ELECTRONUCLEAR RESEARCH DIVISION

Robert S. Livingston, Director

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ABSTRACT

This catalog lists the isotopes of uranium, thorium, and plutonium which have been separated electromagnetically and are now available. Further separations of plutonium isotopes are scheduled.

INTRODUCTION

Gram quantities of highly enriched isotopes of uranium, thorium, and plutonium have been prepared for use on projects sponsored by the Atomic Energy Commission. The following isotopes* are now available: U-234, U-235, U-236, U-238, Th-230, Pu-239, Pu-240, and Pu-241. The isotopic composition of each batch of enriched material and the amount in the inventory are listed below. Most of these materials are in the form of the oxide.

These isotopes were separated in improved electromagnetic separation equipment operated by the Oak Ridge National Laboratory. Mass analyses were performed by the Mass Spectrometer Laboratory, Y-12.

Persons in need of these materials should communicate with the Oak Ridge Operations Office, Division of Research and Medicine, Oak Ridge, Tennessee. The proposed use of the desired isotopes, the quantity, and the batch number should be specified.

This catalog supersedes the previous issue dated February 1952, Report ORNL-1237.

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*For a catalog of the stable isotopes of lighter elements, see: Keim, C. P., Normand, C. E., and Weaver, B., The Inventory of Electromagnetically Enriched Isotopes, February 22, 1954. ORNL-1691.

ENRICHED URANIUM-235

Enriched Batch No.	Isotopic Composition (weight percent)				Quantity on Hand (grams uranium)
	U-235	U-238	U-234	U-236	
WR-1**	99.994	0.001*	0.0013	0.004*	7.05
R-1	99.94	0.038	0.022		3.30
R-2, 4	99.93	0.043	0.027		10.66
R-5	99.92	0.049	0.031		1.70
R-11	99.91	0.070	0.020		9.83
R-3, 8, 12	99.90	0.069	0.031		15.04
R-20**	99.88	0.09	0.03		21.27
R-21**	99.78	0.15	0.07		8.04
VR-25**	99.86	0.07	0.03	0.04	46.62
VR-14	99.80	0.08	0.05	0.07	22.10
VR-15	99.79	0.09	0.04	0.08	17.65
VR-16	99.78	0.12	0.04	0.06	19.71
VR-17	99.76	0.12	0.06	0.06	154.65
VR-26**	99.72	0.13	0.05	0.10	11.24
VR-20	99.61	0.25	0.05	0.09	17.03
VR-21	99.50	0.39	0.03	0.08	5.87

*Estimated values.
**Composite of several physically distinct batches.

ENRICHED URANIUM-236

Enriched Batch No.	Isotopic Composition (weight percent)				Quantity on Hand (grams uranium)
	U-236	U-235	U-238	U-234	
2V-1	96.65	3.09	0.21	0.05	0.089
2V-3	94.90	4.63	0.40	0.07	0.020
2V-4	94.77	4.62	0.54	0.07	0.172
2V-10*	95.36	4.14	0.43	0.07	0.398
1V-0	37.60	58.74	3.03	0.63	0.030
1V-1	28.92	57.43	12.47	1.18	14.005
2V-40	17.83	39.46	42.07	0.64	0.159
2V-17	16.58	51.21	31.23	0.98	3.411

*Composite of several salvage batches.

ENRICHED URANIUM-234

Enriched Batch No.	Isotopic Composition (weight percent)			Quantity on Hand (grams uranium)
	U-234	U-235	U-238	
W-1	95.99	3.02	0.98	0.300
W-11	94.00	4.45	1.53	0.030
WS-1*	93.01	5.27	1.72	0.662
W-5	51.7	35.6	12.70	0.170
W-7	17.3	61.0	21.6	3.709
W-8	13.5	21.9	64.6	30.510
WS-2*	13.5	21.9	64.6	7.070

* Composite of several salvage batches.

ENRICHED URANIUM-238

Enriched Batch No.	Isotopic Composition (weight percent) U-238	U-235	U-234	Quantity on Hand (grams uranium)
Q-505	99.9999	0.00008		0.76
Q-510	99.9997*	0.00030*		275.1
Q-25**	99.9993	0.00076		8.5
QS-1	99.9988	0.00119		52.7
QS-3	99.9956	0.00440		91.2
BQ-11	99.992	0.008	0.00009	7.0
BQ-12	99.990	0.010	0.00011	66.3
BQ-15	99.985	0.015	0.00017	134.8
BQ-13	99.973	0.027	0.00031	6.0
BQ-14	99.972	0.028	0.00032	15.6
BQ-30**	99.970	0.030	0.00034	48.6
BQ-35**	99.957	0.043	0.00049	127.6

*Estimated values.
**Composite of several physically distinct batches.

ENRICHED PLUTONIUM

Enriched Batch No.	Isotopic Composition (atom percent) Pu-239	Pu-240	Pu-241	Quantity on Hand (grams plutonium)
P1-40	36.55	62.80	0.61	0.295
P2-40	38.52	61.01	0.47	0.418
P1-41	65.92	19.66	14.30	0.084
P2-41	63.23	20.65	16.07	0.179
P0-49	99.80	0.20		0.988
P4*	85.35	12.66	1.77	136.590

*Feed for future isotope separations.

ENRICHED THORIUM-230 (Ionium)

Enriched Batch No.	Isotopic Composition (atom percent) Th-230	Th-232	Quantity on Hand (grams thorium)
T2-30	87.85	12.15	0.180
T3-30	90.02	9.98	0.565