

RESL CUSTOMER EXPORT CONTROL AGREEMENT

It is the Radiological and Environmental Sciences Laboratory's (RESL) policy to conduct business in accordance with all applicable U.S. export control laws and regulations. It is also RESL's policy that its Customers comply with U.S. export control laws and regulations. Therefore, Customer agrees to the following:

1. Because products, technical data, and technical assistance (i.e., services) provided to Customer by RESL may be subject to U.S. export control laws and regulations, (i) transactions with certain persons and companies and (ii) the export or reexport of certain types and levels of products, technical data, and services are prohibited or restricted.
2. Customer acknowledges that it is responsible for its own compliance with U.S. export control laws and regulations. Customer further agrees that it assumes the responsibility to obtain all necessary U.S. export licenses or other U.S. governmental authorizations, as well as all liability for the failure to do so.
3. Customer acknowledges that export control requirements may change and that the export or reexport of RESL products, technical data, and services without an export license or other appropriate governmental authorization may result in criminal and/or civil liability.
4. The obligations and requirements described herein shall survive the expiration or termination of any agreement or contract between RESL and Customer.

MaSF47 Participating Laboratories

Lab Code	Lab Name	Matrix Code
AFOH01	USAFSAM/OEA	MaF
ERCL01	Washington State Public Health Laboratories	MaF
HCAL01	Lawrence Livermore National Laboratory	MaF
RQCT01	INL Radiobioassay Quality Control Testing	MaF
WIPP01	WIPP Laboratories	MaF
WSHL01	Wisconsin State Laboratory of Hygiene	MaF

Laboratories Not Reporting

Lab Code	Lab Name	Matrix Code
LANL01	Los Alamos National Laboratory	MaF

Study Reference Values

MAPEP-22-MaSF47

Radiological Reference Date: 08/01/2022

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/sample)	
Americium-241	0.0845	0.0013
Cesium-137	6.66	0.10
Cobalt-60	5.35	0.11
Plutonium-238	0.0890	0.0014
Plutonium-239/240	0.0782	0.0012
Strontium-90	5.64	0.12
Uranium-234	0.062	0.002
Uranium-238	0.061	0.002

Sample Statistical Summary

MAPEP-22-MaSF47

Radiological Reference Date: 08/01/2022

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/sample)
Americium-241	5	5			0.0845	0.0013	0.0592 - 0.1099
Cesium-134	5	5					False Positive Test
Cesium-137	5	5			6.66	0.10	4.66 - 8.66
Cobalt-57	5	5					False Positive Test
Cobalt-60	5	4			5.35	0.11	3.75 - 6.96
Curium-244	4	4					False Positive Test
Manganese-54	5	5					False Positive Test
Neptunium-237	2	2					False Positive Test
Plutonium-238	4	4			0.0890	0.0014	0.0623 - 0.1157
Plutonium-239/240	4	4			0.0782	0.0012	0.0547 - 0.1017
Strontium-90	4	2			5.64	0.12	3.95 - 7.33
Uranium-234	4	4			0.062	0.002	0.043 - 0.081
Uranium-238	4	4			0.061	0.002	0.043 - 0.079
Zinc-65	5	5					False Positive Test

- Note:**
- (1) T = Total number of laboratories reporting analyte.
 - (2) A = Number of laboratories with 'Acceptable' performance.
 - (3) Mean excludes values derived as total metals and values indicated as "Not Acceptable".

Results Flags:

- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% <= RP <= 15%
 - ACCEPTABLE WITH WARNING.....15% < RP <= 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

Flag Summary Report

MAPEP-22-MaSF47

Radiological				
Analyte	A	W	RW	N
Americium-241	3	2		
Cesium-134	5			
Cesium-137	4	1		
Cobalt-57	5			
Cobalt-60	4			1
Curium-244	4			
Manganese-54	5			
Neptunium-237	2			
Plutonium-238	4			
Plutonium-239/240	4			
Strontium-90	2			2
Uranium-234	4			
Uranium-238	4			
Zinc-65	5			



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47

(AFOH01) USAFSAM/OEA

2510 Fifth Street, Area B

Wright-Patterson AFB, OH 45433-7913

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0761	0.0845	A		-9.9	0.0592 - 0.1099	0.0053	A
Cesium-134	NR					False Positive Test		
Cesium-137	NR	6.66				4.66 - 8.66		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	5.35				3.75 - 6.96		
Curium-244	-0.00004		A			False Positive Test	0.00034	
Manganese-54	NR					False Positive Test		
Neptunium-237	NR					False Positive Test		
Plutonium-238	0.0907	0.0890	A		1.9	0.0623 - 0.1157	0.0059	A
Plutonium-239/240	0.0852	0.0782	A		9.0	0.0547 - 0.1017	0.0056	A
Strontium-90	5.49	5.64	A		-2.7	3.95 - 7.33	0.21	A
Uranium-234	0.0705	0.062	A		13.7	0.043 - 0.081	0.0068	A
Uranium-238	0.0660	0.061	A		8.2	0.043 - 0.079	0.0064	A
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2022

Results Flags:

A = Result acceptable.....|Bias| <= 20%

W = Result acceptable with warning.....20% < |Bias| <= 30%

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP < 2%

ACCEPTABLE.....2% <= RP <= 15%

ACCEPTABLE WITH WARNING.....15% < RP <= 30%

NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47
 (ERCL01) Washington State Public Health Laboratories
 1610 N.E. 150th Street
 Shoreline, WA 98155-9701

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0666	0.0845	W		-21.2	0.0592 - 0.1099	0.0042	A
Cesium-134	-0.022		A			False Positive Test	0.028	
Cesium-137	5.70	6.66	A		-14.4	4.66 - 8.66	0.11	N
Cobalt-57	0.001		A			False Positive Test	0.018	
Cobalt-60	4.74	5.35	A		-11.4	3.75 - 6.96	0.09	N
Curium-244	-0.00015		A			False Positive Test	0.00036	
Manganese-54	0.033		A			False Positive Test	0.038	
Neptunium-237	-0.05		A			False Positive Test	0.11	
Plutonium-238	NR	0.0890				0.0623 - 0.1157		
Plutonium-239/240	NR	0.0782				0.0547 - 0.1017		
Strontium-90	3.74	5.64	N		-33.7	3.95 - 7.33	0.45	A
Uranium-234	0.0733	0.062	A		18.2	0.043 - 0.081	0.0032	A
Uranium-238	0.0655	0.061	A		7.4	0.043 - 0.079	0.0034	A
Zinc-65	-0.037		A			False Positive Test	0.091	

Radiological Reference Date: August 1, 2022

Results Flags:

- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%
- ACCEPTABLE WITH WARNING.....15% < RP <= 30%
- NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47
 (HCAL01) Lawrence Livermore National Laboratory
 Analytical Services and Instrumentation Analytical Lab
 Livermore, CA 94550

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	8.43e-02	0.0845	A		-0.2	0.0592 - 0.1099	3.80e-03	A
Cesium-134	1.82e-01		A			False Positive Test	9.25e-02	
Cesium-137	7.09e+00	6.66	A		6.5	4.66 - 8.66	2.80e-01	A
Cobalt-57	3.37e-02		A			False Positive Test	1.68e-02	
Cobalt-60	5.46e+00	5.35	A		2.1	3.75 - 6.96	1.51E-01	A
Curium-244	5.82e-06		A			False Positive Test	1.25e-05	
Manganese-54	5.08e-02		A			False Positive Test	2.54e-02	
Neptunium-237	NR					False Positive Test		
Plutonium-238	9.34e-02	0.0890	A		4.9	0.0623 - 0.1157	4.40e-03	A
Plutonium-239/240	8.24e-02	0.0782	A		5.4	0.0547 - 0.1017	3.91e-03	A
Strontium-90	NR	5.64				3.95 - 7.33		
Uranium-234	NR	0.062				0.043 - 0.081		
Uranium-238	NR	0.061				0.043 - 0.079		
Zinc-65	6.59e-01		A			False Positive Test	3.29e-01	

Radiological Reference Date: August 1, 2022

Results Flags:

- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%
- ACCEPTABLE WITH WARNING.....15% < RP <= 30%
- NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47
 (RQCT01) INL Radiobioassay Quality Control Testing
 PO Box 1625, MS 2114
 Idaho Falls, ID 83415

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	6.96E-02	0.0845	A		-17.6	0.0592 - 0.1099	4.37E-03	A
Cesium-134	1.04E-01		A			False Positive Test	8.85E-02	
Cesium-137	5.96E+00	6.66	A		-10.5	4.66 - 8.66	3.61E-01	A
Cobalt-57	-5.11E-02		A			False Positive Test	5.68E-02	
Cobalt-60	5.88E+00	5.35	A		9.9	3.75 - 6.96	3.35E-01	A
Curium-244	8.88E-05		A			False Positive Test	8.88E-05	
Manganese-54	-2.88E-02		A			False Positive Test	8.84E-02	
Neptunium-237	2.15E-04		A			False Positive Test	2.34E-04	
Plutonium-238	8.99E-02	0.0890	A		1.0	0.0623 - 0.1157	5.62E-03	A
Plutonium-239/240	7.88E-02	0.0782	A		0.8	0.0547 - 0.1017	4.96E-03	A
Strontium-90	4.77E+00	5.64	A		-15.4	3.95 - 7.33	5.22E-01	A
Uranium-234	5.31E-02	0.062	A		-14.4	0.043 - 0.081	4.29E-03	A
Uranium-238	5.39E-02	0.061	A		-11.6	0.043 - 0.079	4.40E-03	A
Zinc-65	-2.56E-01		A			False Positive Test	2.16E-01	

Radiological Reference Date: August 1, 2022

Results Flags:

- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%
- ACCEPTABLE WITH WARNING.....15% < RP <= 30%
- NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47

(WIPP01) WIPP Laboratories

1400 University Drive

Carlsbad, NM 88220

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0637	0.0845	W		-24.6	0.0592 - 0.1099	0.00287	A
Cesium-134	-0.0292		A			False Positive Test	0.0745	
Cesium-137	7.33	6.66	A		10.1	4.66 - 8.66	0.209	A
Cobalt-57	-0.0420		A			False Positive Test	0.0556	
Cobalt-60	5.55	5.35	A		3.7	3.75 - 6.96	0.196	A
Curium-244	NR					False Positive Test		
Manganese-54	0.0355		A			False Positive Test	0.0847	
Neptunium-237	NR					False Positive Test		
Plutonium-238	0.0896	0.0890	A		0.7	0.0623 - 0.1157	0.0105	A
Plutonium-239/240	0.0760	0.0782	A		-2.8	0.0547 - 0.1017	0.00897	A
Strontium-90	3.17	5.64	N		-43.8	3.95 - 7.33	0.157	A
Uranium-234	0.0608	0.062	A		-1.9	0.043 - 0.081	0.00711	A
Uranium-238	0.0647	0.061	A		6.1	0.043 - 0.079	0.00739	A
Zinc-65	0.107		A			False Positive Test	0.231	

Radiological Reference Date: August 1, 2022

Results Flags:

A = Result acceptable.....|Bias| <= 20%

W = Result acceptable with warning.....20% < |Bias| <= 30%

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP < 2%

ACCEPTABLE.....2% <= RP <= 15%

ACCEPTABLE WITH WARNING.....15% < RP <= 30%

NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaSF47
 (WSHL01) Wisconsin State Laboratory of Hygiene
 2601 Agriculture Drive
 Madison, WI 53718

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0845				0.0592 - 0.1099		
Cesium-134	0.033		A			False Positive Test	0.03	
Cesium-137	4.69	6.66	W		-29.6	4.66 - 8.66	0.146	A
Cobalt-57	0.0227		A			False Positive Test	0.0299	
Cobalt-60	3.55	5.35	N		-33.6	3.75 - 6.96	0.202	A
Curium-244	NR					False Positive Test		
Manganese-54	0.0416		A			False Positive Test	0.0294	
Neptunium-237	NR					False Positive Test		
Plutonium-238	NR	0.0890				0.0623 - 0.1157		
Plutonium-239/240	NR	0.0782				0.0547 - 0.1017		
Strontium-90	NR	5.64				3.95 - 7.33		
Uranium-234	NR	0.062				0.043 - 0.081		
Uranium-238	NR	0.061				0.043 - 0.079		
Zinc-65	0.0335		A			False Positive Test	0.0826	

Radiological Reference Date: August 1, 2022

Results Flags:

- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%
- ACCEPTABLE WITH WARNING.....15% < RP <= 30%
- NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100