



Analytical Testing Report

Indalloy 228

Report Number: R-20210712-052

Prepared for:

Cliff Talbot

Indium Corporation

1676 Lincoln Avenue

Utica, NY 13503

P.O. #: N/A

July 26, 2021

NSL Analytical Services, Inc.
NSL Analytical
4450 Cranwood Parkway
Cleveland, Ohio 44128
Phone: 216-438-5200
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**Tests
Requested:**

- European Directive 2015/863/EU Amending 2011 / 65 / EU Annex II (RoHS; Recasting 2001 / 95 / EC: Cadmium, Lead, Mercury, Hexavalent Chromium, Polybromobiphenyl (PBB), and Polybromodiphenylether (PBDE), (DIBP, DBP, BBP, DEHP) content.
- Antimony, Beryllium and Arsenic Content
- Total Halogen Content
- DnOP, DINP, DIDP, DnHP



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Project Definition and Scope

European Directive 2015/863/EU Amending 2011 / 65 / EU Annex II (RoHS; Recasting 2001 / 95 / EC:

Cadmium, Lead, Mercury, Hexavalent Chromium, Polybromobiphenyl (PBB), and Polybromodiphenylether (PBDE) content.

Antimony, Beryllium, Arsenic Content, Total Halogen content.

DIBP, DBP, BBP, DEHP, DnOP, DINP, DIDP, DnHP content.

Sample Identification

The sample was received on July 12th, 2021 and is labeled as indicated below.

Sample Number	Client Label
S-210712-158	Indalloy 228

Method

With reference to IEC 62321-7-2: 2017: Chromium (VI) analysis was conducted by UV-Visible Spectroscopy.

With reference to IEC 62321-6: 2015: PBB, PBDE analysis was conducted by Gas Chromatography – Mass Spectrometry (GC-MS).

With reference to IEC 62321-4: 2013: Mercury analysis was conducted by Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES).

With reference to IEC 62321-5: 2013: Lead, Cadmium and Chromium analysis was conducted by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS).

Antimony, Beryllium and Arsenic analysis was conducted by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). Following Microwave Assisted Acid Digestion with reference to EPA 3051A/3052

With reference to IEC62321-3-2: 2013, BS EN 14582, ASTM D 7359: Halogen analysis was conducted by Ion Chromatography and SIE.

With reference to IEC62321-8 and CPSC-CH-C1001-09.3: DIBP, DBP, BBP, DEHP, DnOP, DINP, DIDP, DnHP were analyzed by Gas Chromatography – Mass Spectrometry (GC-MS).

Table 1: RoHS Results

Test Item	Results (mg/kg)	Detection Limit (mg/kg)	Reference Limit (mg/kg)
	Sample # S-210712-158		
Lead (Pb)	882000	5	1000
Cadmium	ND	5	100
Chromium	ND	5	
Hexavalent Chromium (Cr(VI))	ND ²	1	1000
Mercury (Hg)	ND	5	1000
Sum of PBBs	ND ³	300	1000
Monobromobiphenyl	ND ³	100	-
Dibromobiphenyl	ND ³	100	-
Tribromobiphenyl	ND ³	10	-
Tetrabromobiphenyl	ND ³	10	-
Pentabromobiphenyl	ND ³	10	-
Hexabromobiphenyl	ND ³	10	-
Heptabromobiphenyl	ND ³	10	-
Octabromobiphenyl	ND ³	10	-
Nonabromobiphenyl	ND ³	10	-
Decabromobiphenyl	ND ³	10	-
Sum of PBDEs	ND ³	300	1000
Monobromodiphenyl ether	ND ³	100	-
Dibromodiphenyl ether	ND ³	10	-
Tribromodiphenyl ether	ND ³	10	-
Tetrabromodiphenyl ether	ND ³	10	-
Pentabromodiphenyl ether	ND ³	10	-
Hexabromodiphenyl ether	ND ³	10	-
Heptabromodiphenyl ether	ND ³	10	-
Octabromodiphenyl ether	ND ³	10	-
Nonabromodiphenyl ether	ND ³	50	-
Decabromodiphenyl ether	ND ³	100	-

Note: ND = Not Detected

Note: mg/kg = ppm

Note: ND² = Total Chromium analysis by ICP-MS was not detected in the submitted samples. Therefore, Hexavalent Chromium determination by UV-Visible spectroscopy was not performed.

Note: ND³ = Total Bromine by Ion Chromatography was determined to be < 250 ppm, therefore PBB and PBDE analysis by Gas Chromatography – Mass Spectrometry was not performed.

Table 2: Antimony, Beryllium and Arsenic Content

Test Item	Results (mg/kg)	Detection Limit (mg/kg)
	Sample # S-210712-158	
Antimony (Sb)	19	5
Beryllium (Be)	ND	5
Arsenic (As)	ND	5

Table 3: Halogen Content

Test Item	Results (mg/kg)	Detection Limit (mg/kg)
	Sample # S-210712-158	
Chlorine (Cl)	ND	10
Bromine (Br)	ND	10
Fluorine (F)	ND	10
Iodine (I)	ND	10

Table 4: Phthalates Results

Test Item	Results (mg/kg)	Detection Limit (mg/kg)	Reference Limit (mg/kg)
	Sample # S-210712-158		
DIBP	ND	100	
DBP	ND	100	1000
BBP	ND	100	1000
DEHP	ND	200	1000
DnOP	ND	100	1000
DINP	ND	500	1000
DIDP	ND	500	1000
DnHP	ND	100	

Note: ND = Not Detected Note: mg/kg = ppm

If you have any questions regarding these results, please contact us.

Report Prepared By: Jonathan Crandall

A handwritten signature in black ink, appearing to read "Roxanne Skinner".

Roxanne Skinner -Technical Service

rskinner@nslanalytical.com

Process Flow - Analytical Methods for Chemical Analysis

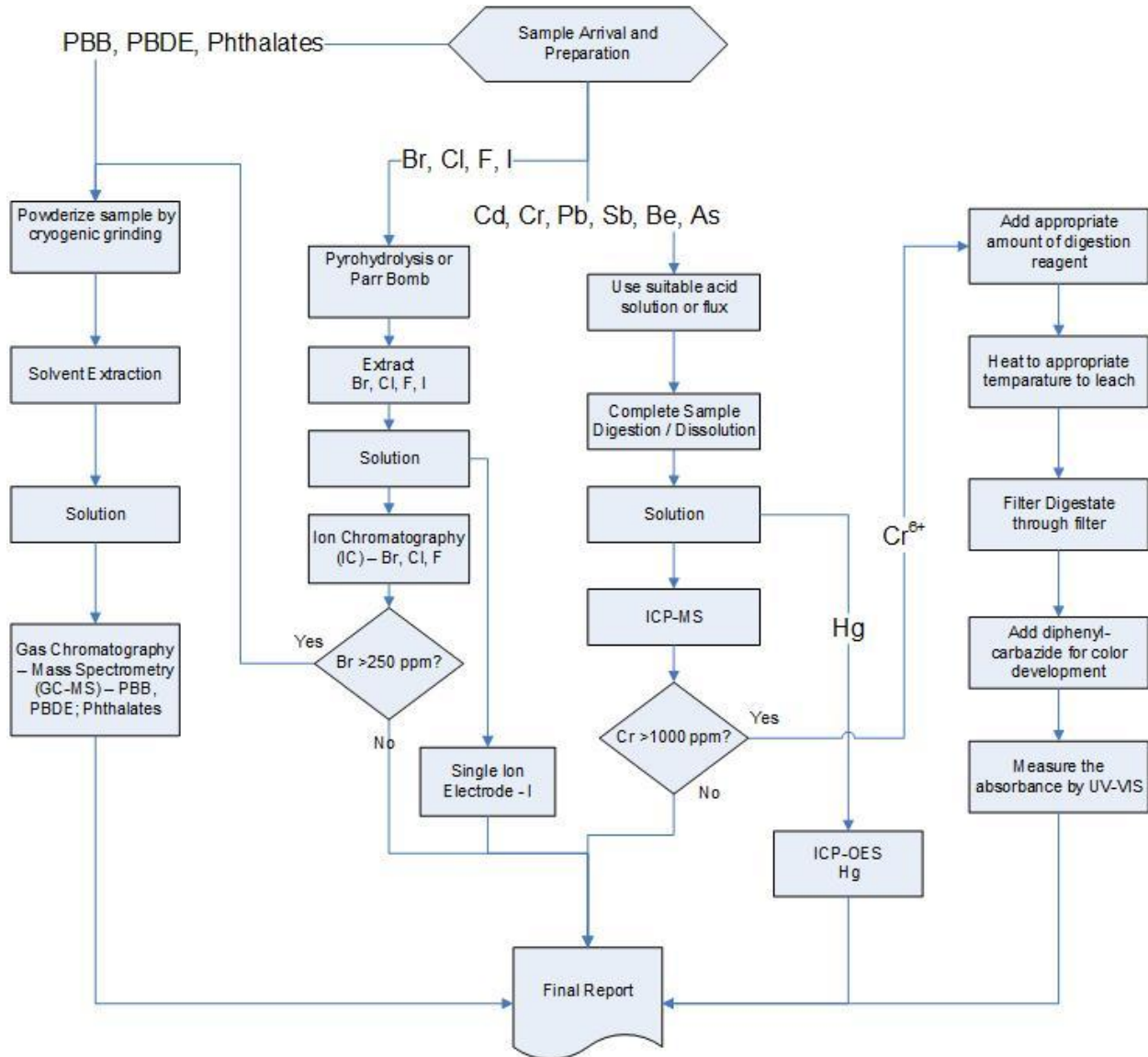


Photo: Sample # S-210712-158

3050143
R-052

CONTRACT REVIEW

Indium – SERVICE REQUEST FORM

Restricted Substance Testing for E&E Products 12:10:12

Client Requesting NSL Service m4 1/12/2021

Request Service: 5 days; Rush Service: 2 days; 3 days

Company Name: INDIUM CORPORATION

Invoice: Address: 1676 Lincoln Ave. P. O. Box 269 Utica, New York 13503 Contact Name: Cliff Talbot Telephone: 315-853-4900 ext.7415 Email: ctalbot@indium.com	Report: Address: <input checked="" type="checkbox"/> Same as billing address Contact Name: Telephone: Email: <input checked="" type="checkbox"/> Ready for testing
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Sample Information

Sample Description: Indalloy 228 PO #: EP21471 Location: ECD

Color: Contain Phthalate: No

Powder Composition: Pb88/Sn10/Ag2 Contain Bromine: No

Special Instructions: Photo of material not the jar

Re-test Sample: If yes, provide previous report number:

NSL Service(s) Required: Please check appropriate line(s) below:

(Analyze the submitted sample(s) per NSL Quote Number: NSLQ16763: line 7)

<input checked="" type="checkbox"/> RoHS: Full Package IEC 62321 <input type="checkbox"/> Cadmium (Cd) <input checked="" type="checkbox"/> Lead (Pb) <input checked="" type="checkbox"/> High Concentration <input type="checkbox"/> Low Concentration <input type="checkbox"/> Mercury (Hg) <input type="checkbox"/> PBBs and PBDEs <input type="checkbox"/> Chromium VI (Cr VI) <input checked="" type="checkbox"/> Antimony <input checked="" type="checkbox"/> Beryllium <input checked="" type="checkbox"/> Arsenic <input type="checkbox"/> Other tests (please specify Analysis/Method):	<input checked="" type="checkbox"/> Phthalates: DEHP, DBP, DINP, DIDP, DNOP, BBP, DiBP, DnHP <input type="checkbox"/> HBCDD <input type="checkbox"/> XRF Testing (please list substances) <input type="checkbox"/> PFOS/PFOA Packaging Test: <input type="checkbox"/> TPCH (packaging): Pb, Cd, Hg, Cr VI Halogens: <input checked="" type="checkbox"/> Chlorine (Cl) <input checked="" type="checkbox"/> Bromine (Br) <input checked="" type="checkbox"/> Iodine (I) <input checked="" type="checkbox"/> Fluorine (F)
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Photos Required Flow Chart Other Reporting Instruction: No result conclusion on report cover page

NSL Customer Service Representative: NSL Analytical Services Inc. 4450 Cranwood Parkway Cleveland, OH 44128 Phone: 1-216-438-5200 Fax: 1-216-438-5050	NSL Sales Contact: <input type="checkbox"/> Return Sample Immediately; if returned please provide shipping account number. <input checked="" type="checkbox"/> Destroy/Discard Sample after 90 days
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Sample# S-210712-158
 Customer: Indium Corp. of A
 Request: R-20210712-052
 Lab Areas: WCP, AC, ICP, MS