



# Analytical Testing Report

Indalloy 171 with NC-SMQ75

**Report Number: R-20230217-066**

Prepared for:

*Cliff Talbot*

**Indium Corporation**

1676 Lincoln Avenue

Utica, NY 13503

P.O. #: NA

February 28, 2023

**NSL Analytical Services, Inc.**  
**NSL Analytical**  
**4450 Cranwood Parkway**  
**Cleveland, Ohio 44128**  
**Phone: 216-438-5200**  
**Fax: 216-438-5050**

**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 and Sulfur Content
- HBCDD, DnOP, DINP, DIDP, DnHP
- PFOA, PFOS





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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 and Sulfur content.

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

PFOA, PFOS content.

## Sample Identification

The sample was received on February 17, 2023 and is labeled as indicated below.

Sample Number	Client Label
S-230220-140	Indalloy 171 with NC-SMQ75

## 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 and Sulfur 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).

HBCDD analysis was conducted by Gas Chromatography-Mass Spectrometry (GC-MS).

PFOA and PFOS attained by calculation from Fluoride and Sulfur analysis.

**Table 1: RoHS Results**

Test Item	Results (mg/kg)	Detection Limit (mg/kg)	Reference Limit (mg/kg)
	Sample # S-230220-140		
Lead (Pb)	830000	5	1000
Cadmium	ND	5	100
Chromium	ND	5	
Hexavalent Chromium (Cr(VI))	ND <sup>2</sup>	1	1000
Mercury (Hg)	ND	5	1000
<b>Sum of PBBs</b>	ND <sup>3</sup>	300	1000
Monobromobiphenyl	ND <sup>3</sup>	100	-
Dibromobiphenyl	ND <sup>3</sup>	100	-
Tribromobiphenyl	ND <sup>3</sup>	10	-
Tetrabromobiphenyl	ND <sup>3</sup>	10	-
Pentabromobiphenyl	ND <sup>3</sup>	10	-
Hexabromobiphenyl	ND <sup>3</sup>	10	-
Heptabromobiphenyl	ND <sup>3</sup>	10	-
Octabromobiphenyl	ND <sup>3</sup>	10	-
Nonabromobiphenyl	ND <sup>3</sup>	10	-
Decabromobiphenyl	ND <sup>3</sup>	10	-
<b>Sum of PBDEs</b>	ND <sup>3</sup>	300	1000
Monobromodiphenyl ether	ND <sup>3</sup>	100	-
Dibromodiphenyl ether	ND <sup>3</sup>	10	-
Tribromodiphenyl ether	ND <sup>3</sup>	10	-
Tetrabromodiphenyl ether	ND <sup>3</sup>	10	-
Pentabromodiphenyl ether	ND <sup>3</sup>	10	-
Hexabromodiphenyl ether	ND <sup>3</sup>	10	-
Heptabromodiphenyl ether	ND <sup>3</sup>	10	-
Octabromodiphenyl ether	ND <sup>3</sup>	10	-
Nonabromodiphenyl ether	ND <sup>3</sup>	50	-
Decabromodiphenyl ether	ND <sup>3</sup>	100	-

**Note:** ND = Not Detected

**Note:** mg/kg = ppm

**Note:** ND<sup>2</sup> = 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:** ND<sup>3</sup> = 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
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	Sample # S- 230220-140	(mg/kg)
Antimony (Sb)	7	5
Beryllium (Be)	ND	5
Arsenic (As)	ND	5

**Table 3: Halogen and Sulfur Content**

Test Item	Results (mg/kg) Sample # S- 230220-140	Detection Limit (mg/kg)
Chlorine (Cl)	ND	10
Bromine (Br)	ND	10
Fluorine (F)	ND	10
Iodine (I)	ND	10
Sulfur (S)	ND	10

**Table 4: Phthalates Results**

Test Item	Results (mg/kg) Sample # S- 230220-140	Detection Limit (mg/kg)	Reference Limit (mg/kg)
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	

**Table 5: HBCDD Results**

Test Item	Results (mg/kg) Sample # S- 230220-140	Detection Limit (mg/kg)	Reference Limit (mg/kg)
HBCDD	ND	100	

**Table 6: PFOA and PFOS Content**

Test Item	Results (mg/kg)	Detection Limit (mg/kg)
	Sample # S-230220-140	
PFOA	ND <sup>4</sup>	ND = <20
PFOS	ND <sup>5</sup>	ND = <150

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

Note: ND<sup>4</sup> = Total F by Ion Chromatography was determined to be < 10 ppm, therefore PFOA was determined by calculation to be <20 ppm

Note: ND<sup>5</sup> = Total F by Ion Chromatography was determined to be < 10 ppm and total S by Ion Chromatography was determined to be <10ppm, therefore PFOS was determined by calculation to be <150 ppm

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

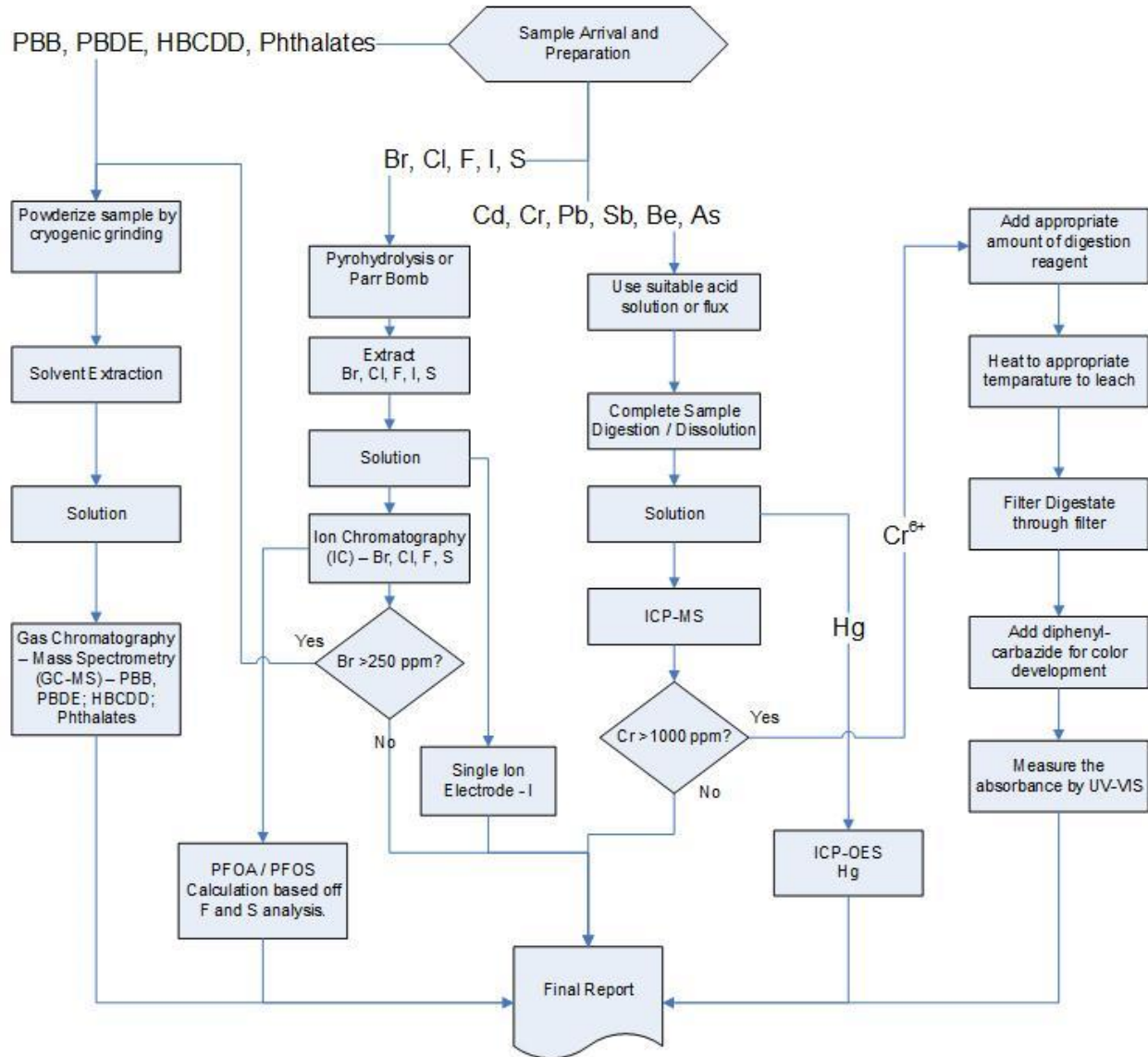
Report Prepared By: Rebecca Bailey



Lisa Simko

Technical Specialist

### Process Flow - Analytical Methods for Chemical Analysis



**Photo: Sample # S-230220-140**

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OWP

**Indium - SERVICE REQUEST FORM**  
**Restricted Substance Testing for E&E Products**

Client Requesting NSL Service

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

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Company Name: **INDIUM CORPORATION**

Invoice: Address: 1676 Lincoln Ave. Report: Address:  
P. O. Box 269  Same as billing address  
Utica, New York 13503 Contact Name:  
Contact Name: Cliff Talbot Telephone:  
Telephone: 315-853-4900 ext.7415 Email: *ACT 14 10:00*  
Email: ctalbot@indium.com  Ready for testing

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Sample Information

Sample Description: **Indalloy 171 with NC-SMQ75** PO #: **EP26410** ✓  
Color:  Contain Phthalates: No  
Powder Composition: **Pb95/Sn5**  Contain Bromine: No  
Special Instructions: Photo of material not the jar Location: **ECD**

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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: **NSLQ20867: line 1, 3**)

<input checked="" type="checkbox"/> RoHS: Full Package IEC 62321	<input checked="" type="checkbox"/> Phthalates: DEHP, DBP, DINP, DIDP, DNOP, BBP, DIBP, DnHP
<input type="checkbox"/> Cadmium (Cd)	<input checked="" type="checkbox"/> HBCDD
<input checked="" type="checkbox"/> Lead (Pb) <input checked="" type="checkbox"/> High Concentration	<input type="checkbox"/> XRF Testing (please list substances)
<input type="checkbox"/> Low Concentration	<input checked="" type="checkbox"/> PFOS/PFOA
<input type="checkbox"/> Mercury (Hg)	Packaging Test: <input type="checkbox"/> TPCH (packaging): Pb, Cd, Hg, Cr VI
<input type="checkbox"/> PBBs and PBDEs	Halogens:
<input type="checkbox"/> Chromium VI (Cr VI)	<input checked="" type="checkbox"/> Chlorine (Cl) <input checked="" type="checkbox"/> Bromine (Br)
<input checked="" type="checkbox"/> Antimony <input checked="" type="checkbox"/> Beryllium <input checked="" type="checkbox"/> Arsenic	<input checked="" type="checkbox"/> Iodine (I) <input checked="" type="checkbox"/> Fluorine (F)

Other tests (please specify Analysis/Method): \_\_\_\_\_

Photos Required  Flow Chart  Other Reporting Instruction: No result conclusion on report cover page

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NSL Customer Service Representative: \_\_\_\_\_ NSL Sales Contact: \_\_\_\_\_

NSL Analytical Services Inc. *CONTRACT REVIEW DM 2/17/23*  Return Sample Immediately; if returned please provide shipping account number.

4450 Cranwood Parkway  Destroy/Discard Sample after 90 days

Cleveland, OH 44128

Phone: 1-216-438-5200

Fax: 1-216-438-5050

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Client Confirmation: We confirm that the above information is complete and understand that the performances of the services described are governed by NSL General Conditions of Service.

Authorized Signature: *[Signature]* Date: 02/10/2023







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