Analytical Testing Report

Indalloy 171 with NC-SMQ75

Report Number: R-20210407-076

Prepared for:

Cliff Talbot
Indium Corporation
1676 Lincoln Avenue
Utica, NY 13503

P.O. #: NA

April 22, 2021

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

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Contents

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 April 7, 2021 and is labeled as indicated below.

Sample Number	Client Label
S-210407-085	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) Sample # S-210407-085	Detection Limit (mg/kg)	Reference Limit (mg/kg)
Lead (Pb)	841000	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: *ND[2] = 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[3] = 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-210407-085	
Antimony (Sb)	14	5
Beryllium (Be)	ND	5
Arsenic (As)	ND	5

Table 3: Halogen and Sulfur Content

Test Item	Results (mg/kg)	Detection Limit (mg/kg)
	Sample # S-210407-085	
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)	Detection Limit (mg/kg)	Reference Limit (mg/kg)
	Sample # S-210407-085		
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)	Detection Limit (mg/kg)	Reference Limit (mg/kg)
	Sample # S-210407-085		
HBCDD	ND	100	

Table 6: PFOA and PFOS Content

Test Item	Results (mg/kg)	Detection Limit (mg/kg)
	Sample # S-210407-085	
PFOA	ND[4]	ND = <20
PFOS	ND[5]	ND = <150

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

Note: *ND[4] = Total F by Ion Chromatography was determined to be < 10 ppm, therefore PFOA was determined by calculation to be <20 ppm*

Note: *ND[5]= 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: Dan Mauser

Carm D'Agostino-Technical Services
cdagostino@nslanalytical.com

Process Flow – Analytical Methods for Chemical Analysis

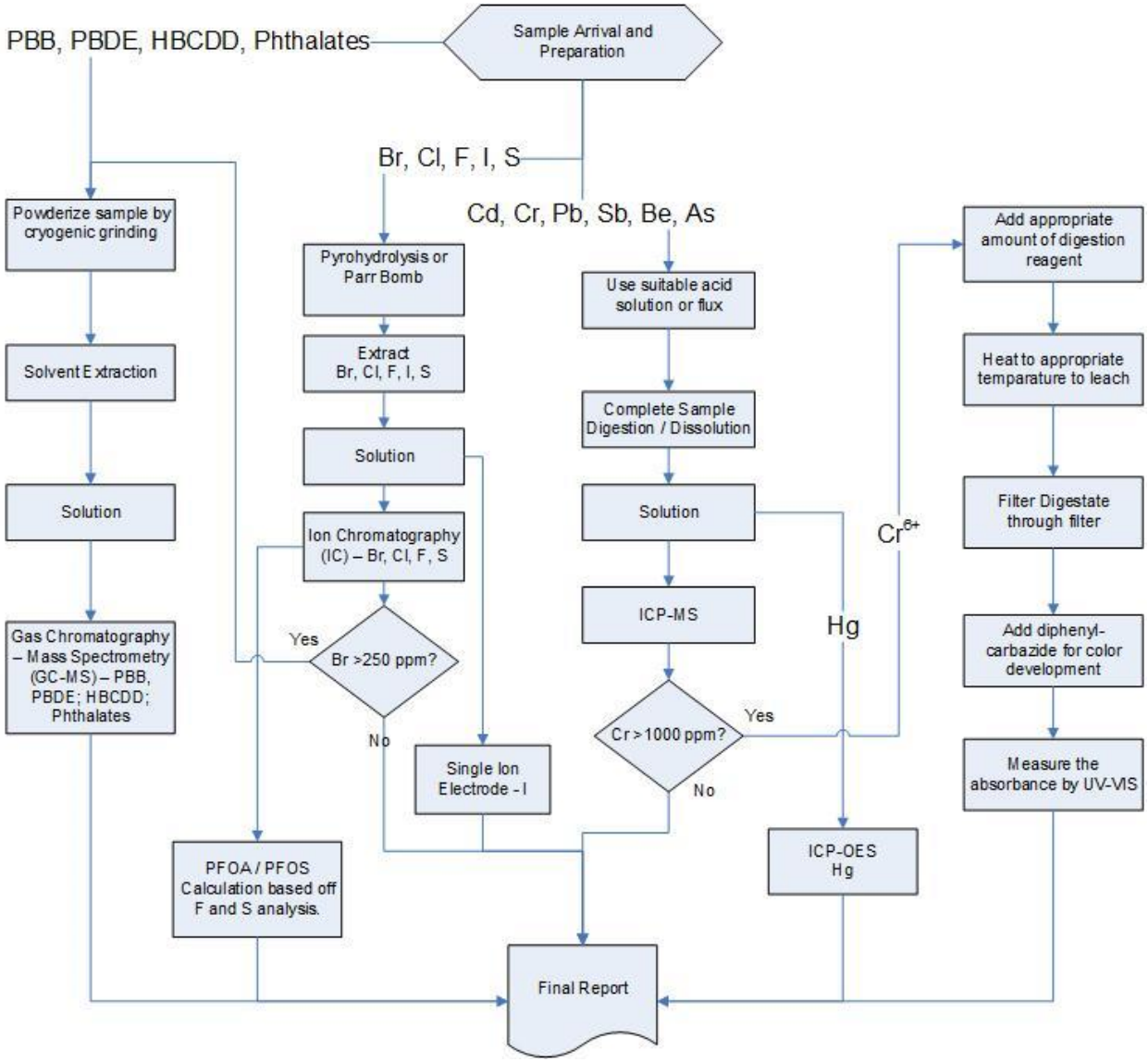
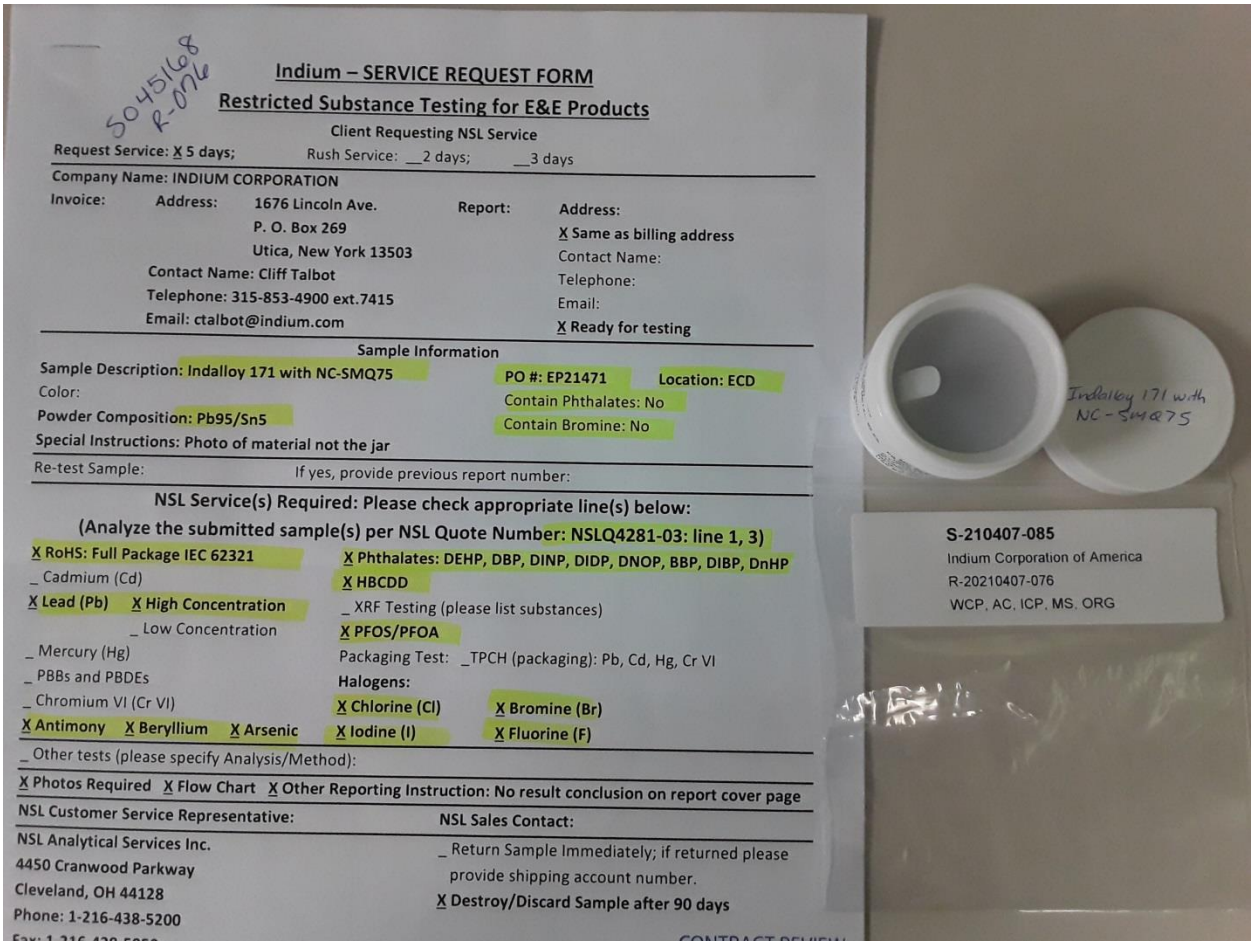


Photo: Sample # S-210407-085



5045168
R-076

Indium – SERVICE REQUEST FORM
Restricted Substance Testing for E&E Products
Client Requesting NSL Service

Request Service: X 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:
X Same as billing address
Contact Name:
Telephone:
Email:
X Ready for testing

Sample Information

Sample Description: Indalloy 171 with NC-SMQ75
Color:
Powder Composition: Pb95/Sn5
Special Instructions: Photo of material not the jar

PO #: EP21471 Location: ECD
Contain Phthalates: No
Contain Bromine: No

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: NSLQ4281-03: line 1, 3)

X RoHS: Full Package IEC 62321
_ Cadmium (Cd)
X Lead (Pb) X High Concentration
_ Low Concentration
_ Mercury (Hg)
_ PBBs and PBDEs
_ Chromium VI (Cr VI)
X Antimony X Beryllium X Arsenic

X Phthalates: DEHP, DBP, DINP, DIDP, DNOP, BBP, DIBP, DnHP
X HBCDD
_ XRF Testing (please list substances)
X PFOS/PFOA
Packaging Test: _TPCH (packaging): Pb, Cd, Hg, Cr VI
Halogens:
X Chlorine (Cl) X Bromine (Br)
X Iodine (I) X Fluorine (F)

_ Other tests (please specify Analysis/Method):

X Photos Required X Flow Chart X 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

NSL Sales Contact:
_ Return Sample Immediately; if returned please provide shipping account number.
X Destroy/Discard Sample after 90 days

Indalloy 171 with NC-SMQ75

S-210407-085
Indium Corporation of America
R-20210407-076
WCP, AC, ICP, MS, ORG