

Date: 12-May-2021

NIHON HANDA CO., LTD.

Arca Central 16F, 1-2-1, Kinshi, Sumida-ku, Tokyo 130-0013, Japan

The following sample(s) was/were submitted and identified by/on behalf of the applicant as:

No.: ETR21500398

Sample Submitted By : NIHON HANDA CO., LTD.

Sample Name : Solder Paste

Lot No. : SULA SAC305(0212)(NH-92M)(250)

Sample Receiving Date : 04-May-2021

Testing Period : 04-May-2021 to 10-May-2021

Test Requested : (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending

Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs,

PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).

(2) Please refer to next pages for the other item(s).

Test Results : Please refer to following pages.

Conclusion : (1) Based on the performed tests on submitted sample(s), the test results of

Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive

2011/65/EU.





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Test Part Description

No.1 : GRAY PASTE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd) (CAS No.: 7440-43-9)	With reference to IEC 62321-5: 2013,	mg/kg	2	n.d.	100
	analysis was performed by ICP-OES.				
Lead (Pb) (CAS No.: 7439-92-1)	With reference to IEC 62321-5: 2013,	mg/kg	2	n.d.	1000
	analysis was performed by ICP-OES.				
Mercury (Hg) (CAS No.: 7439-97-6)	With reference to IEC 62321-4: 2013+	mg/kg	2	n.d.	1000
	AMD1: 2017, analysis was performed				
	by ICP-OES.				
Hexavalent Chromium Cr(VI) (CAS No.:	With reference to IEC 62321-7-2:	mg/kg	8	n.d.	1000
18540-29-9)	2017, analysis was performed by UV-				
	VIS.				
Monobromobiphenyl		mg/kg	5	n.d.	-
Dibromobiphenyl		mg/kg	5	n.d.	-
Tribromobiphenyl		mg/kg	5	n.d.	ı
Tetrabromobiphenyl		mg/kg	5	n.d.	ı
Pentabromobiphenyl		mg/kg	5	n.d.	-
Hexabromobiphenyl		mg/kg	5	n.d.	-
Heptabromobiphenyl		mg/kg	5	n.d.	-
Octabromobiphenyl	_	mg/kg	5	n.d.	-
Nonabromobiphenyl		mg/kg	5	n.d.	-
Decabromobiphenyl		mg/kg	5	n.d.	-
Sum of PBBs	With reference to IEC 62321-6: 2015,	mg/kg	-	n.d.	1000
Monobromodiphenyl ether	analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Dibromodiphenyl ether		mg/kg	5	n.d.	-
Tribromodiphenyl ether		mg/kg	5	n.d.	-
Tetrabromodiphenyl ether		mg/kg	5	n.d.	-
Pentabromodiphenyl ether		mg/kg	5	n.d.	-
Hexabromodiphenyl ether		mg/kg	5	n.d.	-
Heptabromodiphenyl ether		mg/kg	5	n.d.	-
Octabromodiphenyl ether		mg/kg	5	n.d.	-
Nonabromodiphenyl ether	1	mg/kg	5	n.d.	-
Decabromodiphenyl ether	1	mg/kg	5	n.d.	-
Sum of PBDEs		mg/kg	-	n.d.	1000



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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Diisodecyl phthalate (DIDP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
26761-40-0, 68515-49-1)	analysis was performed by GC/MS.				
Butyl benzyl phthalate (BBP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	1000
85-68-7)	analysis was performed by GC/MS.				
Dibutyl phthalate (DBP) (CAS No.: 84-	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	1000
74-2)	analysis was performed by GC/MS.				
Di-(2-ethylhexyl) phthalate (DEHP)	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	1000
(CAS No.: 117-81-7)	analysis was performed by GC/MS.				
Diisobutyl phthalate (DIBP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	1000
84-69-5)	analysis was performed by GC/MS.				
Diisononyl phthalate (DINP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
28553-12-0, 68515-48-0)	analysis was performed by GC/MS.				
Di-n-octyl phthalate (DNOP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
117-84-0)	analysis was performed by GC/MS.				
Di-n-hexyl phthalate (DNHP) (CAS No.:	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
84-75-3)	analysis was performed by GC/MS.				
Bis(2-methoxyethyl) phthalate (DMEP)	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
(CAS No.: 117-82-8)	analysis was performed by GC/MS.				
1,2-Benzenedicarboxylic acid, di-C7-	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
11-branched and linear alkyl esters	analysis was performed by GC/MS.				
(DHNUP) (CAS No.: 68515-42-4)					
1,2-Benzenedicarboxylic acid, di-C6-8-	With reference to IEC 62321-8: 2017,	mg/kg	50	n.d.	-
branched alkyl esters, C7-rich (DIHP)	analysis was performed by GC/MS.				
(CAS No.: 71888-89-6)					
Hexabromocyclododecane (HBCDD)	With reference to IEC 62321: 2008,	mg/kg	5	n.d.	-
and all major diastereoisomers	analysis was performed by GC/MS.	J J			
identified (α- HBCDD, β- HBCDD, γ-					
HBCDD) (CAS No.: 25637-99-4, 3194-					
55-6 (134237-51-7, 134237-50-6,					
134237-52-8))					
PFOS and its salts (CAS No.: 1763-23-1	With an former to CENTIC 15000	mg/kg	0.01	n.d.	-
and its salts)	With reference to CEN/TS 15968:				
PFOA and its salts (CAS No.: 335-67-1	2010, analysis was performed by	mg/kg	0.01	n.d.	-
and its salts)	LC/MS/MS.				



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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Polychlorinated biphenyls (PCBs)	With reference to US EPA 3550C:	mg/kg	0.5	n.d.	=
Polychlorinated naphthalene (PCNs)	2007, analysis was performed by	mg/kg	5	n.d.	-
Polychlorinated terphenyls (PCTs)	GC/MS.	mg/kg	0.5	n.d.	-
Short Chain Chlorinated Paraffins(C10-	With reference to ISO 18219: 2015,	mg/kg	50	n.d.	-
C13) (SCCP) (CAS No.: 85535-84-8)	analysis was performed by GC/MS.				
Tributyl tin (TBT)		mg/kg	0.03	n.d.	-
Triphenyl tin (TPhT)	With reference to ISO 17353: 2004,	mg/kg	0.03	n.d.	-
Dibutyl tin (DBT)	analysis was performed by GC/FPD.	mg/kg	0.03	n.d.	-
Dioctyl tin (DOT)		mg/kg	0.03	n.d.	-
Bis(tributyltin) oxide (TBTO) (CAS No.:	Calculated from the result of Tributyl	mg/kg	0.03 🛦	n.d.	-
56-35-9)	Tin (TBT).				
Polyvinyl chloride (PVC)	With reference to ASTM E1252: 2013,	**	-	Negative	-
	analysis was performed by FT-IR and				
	Flame Test.				
Antimony (Sb) (CAS No.: 7440-36-0)	With reference to US EPA 3052: 1996,	mg/kg	2	n.d.	-
	analysis was performed by ICP-OES.				
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3052: 1996,	mg/kg	2	n.d.	-
	analysis was performed by ICP-OES.				
Arsenic (As) (CAS No.: 7440-38-2)	With reference to US EPA 3052: 1996,	mg/kg	2	n.d.	-
	analysis was performed by ICP-OES.				
Fluorine (F) (CAS No.: 14762-94-8)	With reference to BS EN 14582: 2016,	mg/kg	50	n.d.	-
	analysis was performed by IC.				
Chlorine (Cl) (CAS No.: 22537-15-1)	With reference to BS EN 14582: 2016,	mg/kg	50	n.d.	-
	analysis was performed by IC.				
Bromine (Br) (CAS No.: 10097-32-2)	With reference to BS EN 14582: 2016,	mg/kg	50	203	-
	analysis was performed by IC.				
lodine (I) (CAS No.: 14362-44-8)	With reference to BS EN 14582: 2016,	mg/kg	50	n.d.	-
	analysis was performed by IC.				

Note:

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. MDL = Method Detection Limit
- 3. n.d. = Not Detected (Less than MDL)
- 4. "-" = Not Regulated
- 5. **= Qualitative analysis (No Unit)
- 6. Negative = Undetectable; Positive = Detectable



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7. PFOS and its salts including:

CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.

8. PFOA and its salts including:

CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.

9. ▲ : The MDL was evaluated for element / tested substance.

Conversion Formula : $AX = A \times F$

AX	Α	F
Bis(tributyltin)oxide (TBTO)	Tributyl Tin (TBT)	1.024

Parameter Conversion Table: https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc

10. The statement of compliance conformity is based on comparison of testing results and limits.



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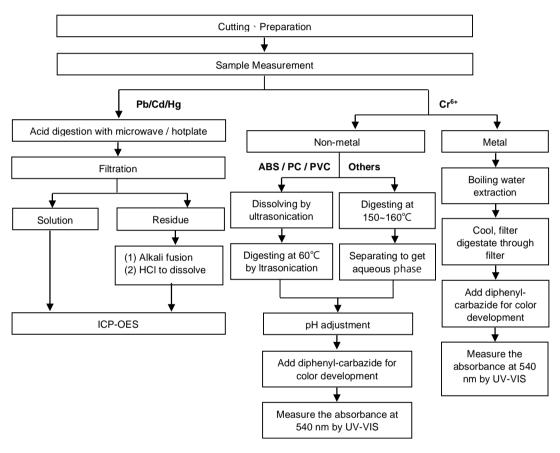
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Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr6+ test method excluded)



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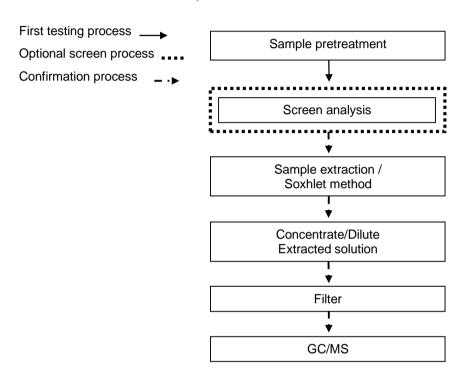
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Analytical flow chart - PBBs / PBDEs



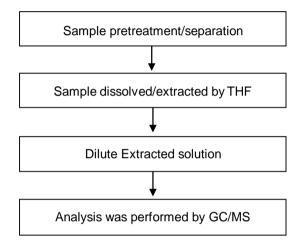


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Analytical flow chart - Phthalate

[Test method: IEC 62321-8]

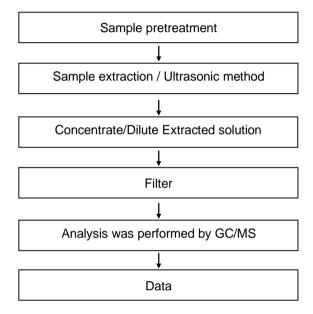




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Analytical flow chart - HBCDD

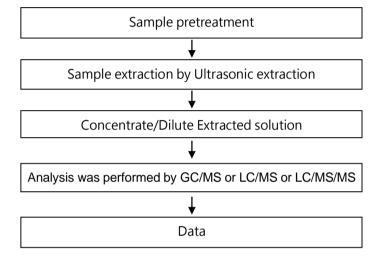




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Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



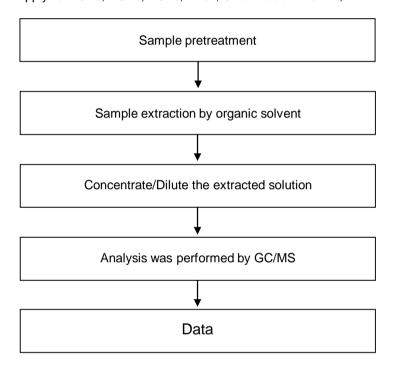


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Analytical flow chart

* Apply to: PCBs, PCNs, PCTs, Mirex, Chlorinated Paraffins, DBBT

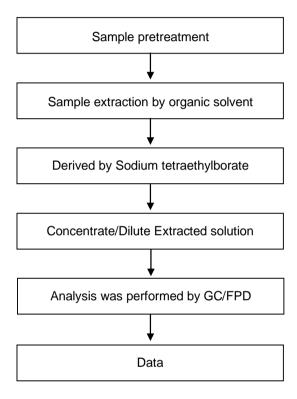




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Analytical flow chart - Organic-Tin

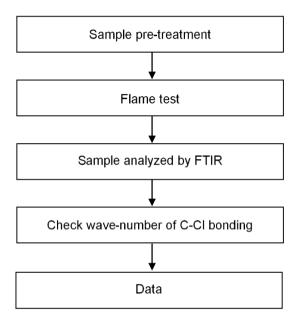




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Analysis flow chart - PVC





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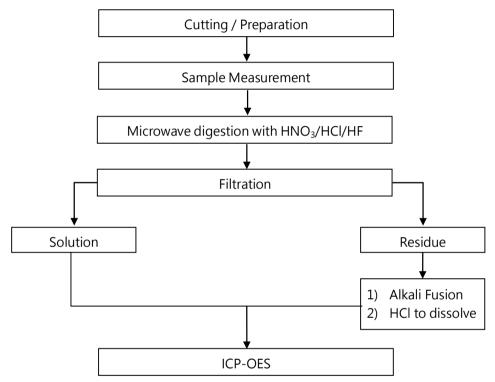
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Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart.

【Reference method: US EPA 3051A \ US EPA 3052】



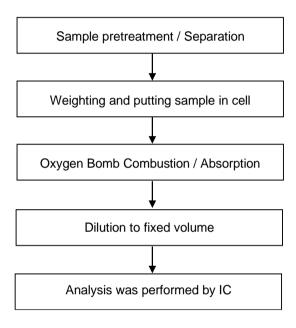
* US EPA 3051A method does not add HF.



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Analytical flow chart - Halogen





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* The tested sample / part is marked by an arrow if it's shown on the photo. *

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** End of Report **