



**THE INDUSTRIAL ANALYSIS SERVICE LTD.**

TEL:+81-48-924-7151 FAX:+81-48-928-3587 e-mail:ias@sangyobunseki.co.jp

2-11-7 Yatsuka Souka Saitama 340-0028 Japan

**TEST REPORT**

Request No. 0118169

Report No. ES200000004743-01

Date of issue: 8 October 2020

To. NGK Electronics Devices, Inc.

Address: 2701-1 Higashibun, Ohmine-cho, Mine-Shi, Yamaguchi. 759-2212, Japan

Name of sample: Ni Plating(Ni-Co)

Date of receipt of sample: 25 September 2020

Measurement days: 25 September 2020 ~ 8 October 2020

The following is the report on the requested test of the sample

Test Items	Unit	Test result	D.L.	Test Method
Cd	ppm	N.D.	2.0	With reference to IEC62321-5(2013) ICP/MS
Pb	ppm	N.D.	2.0	With reference to IEC62321-5(2013) ICP/MS
Cr6+	ppm	N.D.	1.0	With reference to IEC62321-7-1(2015) Boiling water extraction/UV-VIS
Hg	ppm	N.D.	2.0	With reference to IEC62321-4(2013)/AMD1(2017) ICP/MS
PBBs	ppm	N.D.	5.0	With reference to IEC62321-6(2015) GC/MS
PBDEs	ppm	N.D.	5.0	With reference to IEC62321-6(2015) GC/MS
Bis(2-ethylhexyl) phthalate (DEHP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Butylbenzyl phthalate (BBP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Dibutyl phthalate (DBP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Diisobutyl phthalate (DIBP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Diisodecyl phthalate (DIDP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Diisononyl phthalate (DINP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
Di-n-octyl phthalate (DNOP)	ppm	N.D.	50	With reference to IEC62321-8(2017) GC/MS
F	ppm	N.D.	50	With reference to EN14582(2016) Furnace combustion/IC

Note: The results shown in this test report refer only to the sample(s) tested.  
Plating part

N.D.means the analysis result is less than fixed quality lower limit level calculated according to our established precision management condition.  
mg/kg=ppm

THE INDUSTRIAL ANALYSIS SERVICE LTD.

TAKANORI YOSHIDA



Test Items	Unit	Test result	D.L.	Test Method
Monobromobiphenyl (MonoBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Dibromobiphenyl (DiBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Tribromobiphenyl (TriBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Tetrabromobiphenyl (TetraBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Pentabromobiphenyl (PentaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Hexabromobiphenyl (HexaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Heptabromobiphenyl (HeptaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Octabromobiphenyl (OctaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Nonabromobiphenyl (NonaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Decabromobiphenyl (DecaBB)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
SUM PBBs	ppm	N.D.	5.0	With reference to IEC62321-6(2015) GC/MS
Monobromodiphenylether (MonoBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Dibromodiphenylether (DiBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Tribromodiphenylether (TriBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Tetrabromodiphenylether (TetraBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Pentabromodiphenylether (PentaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Hexabromodiphenylether (HexaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Heptabromodiphenylether (HeptaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Octabromodiphenylether (OctaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Nonabromodiphenylether (NonaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
Decabromodiphenylether (DecaBDE)	ppm	N.D.	-	With reference to IEC62321-6(2015) GC/MS
SUM PBDEs	ppm	N.D.	5.0	With reference to IEC62321-6(2015) GC/MS
Remainder of page intentionally left blank				

Note: The results shown in this test report refer only to the sample(s) tested.

N.D.means the analysis result is less than fixed quality lower limit level calculated according to our established precision management condition.  
mg/kg=ppm



Flow chart

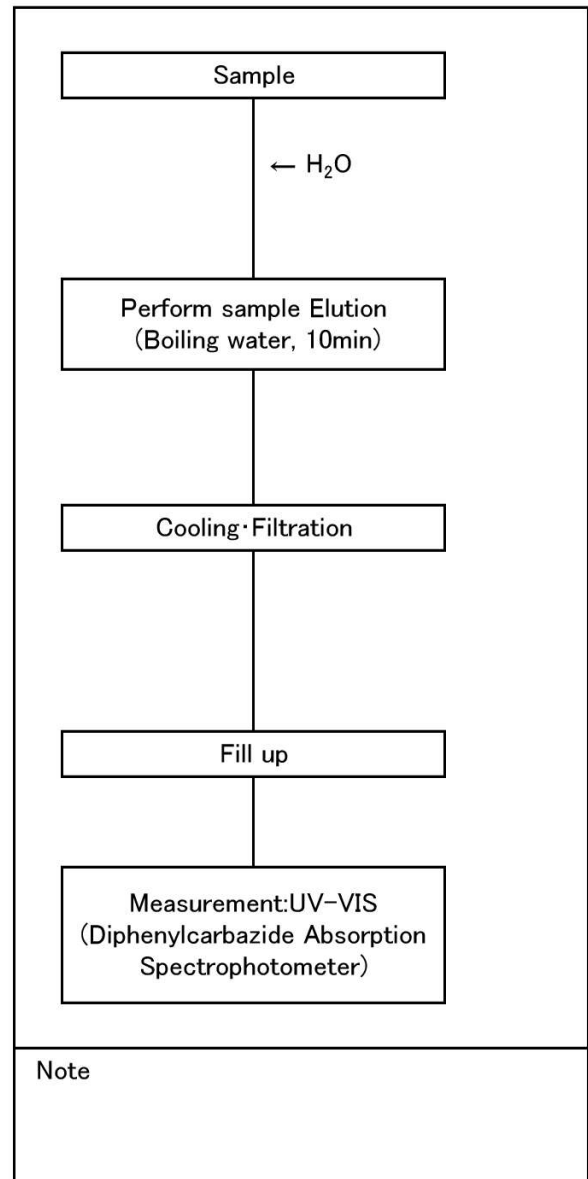
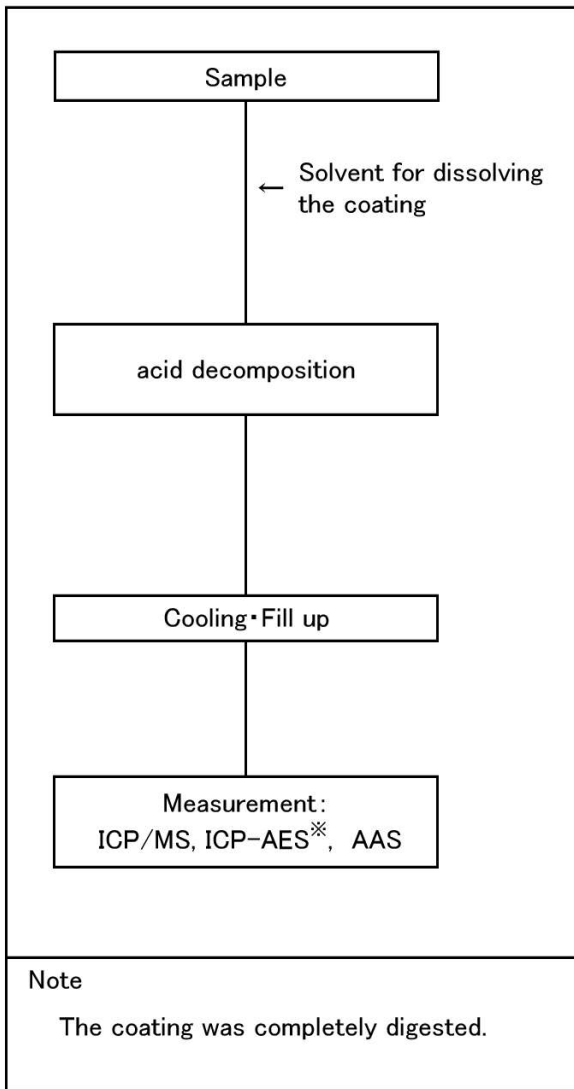
Report No. : ES200000004743-01

Measurement days : 25 September 2020 ~ 8 October 2020

Operator : Kensho Nakajima Wataru Imaoka

Cd, Pb, Hg, Sb, Be, P

Cr6+



ICP/MS : Agilent Technologies 7700X

ICP-AES : Rigaku CIROS CCD

AAS : HIRANUMA MERCURY ANALYZER HG-200

UV-VIS : HITACHI High-Technologies U-2910

\*It is also called ICP-OES.

Flow chart

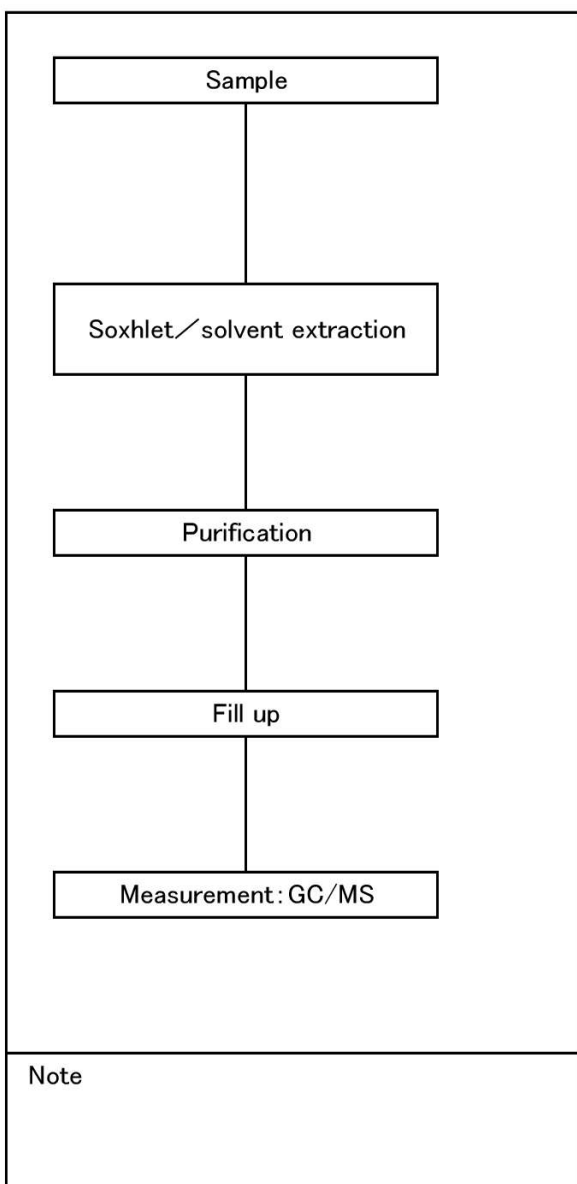
Report No. : ES200000004743-01

Measurement days : 25 September 2020 ~ 8 October 2020

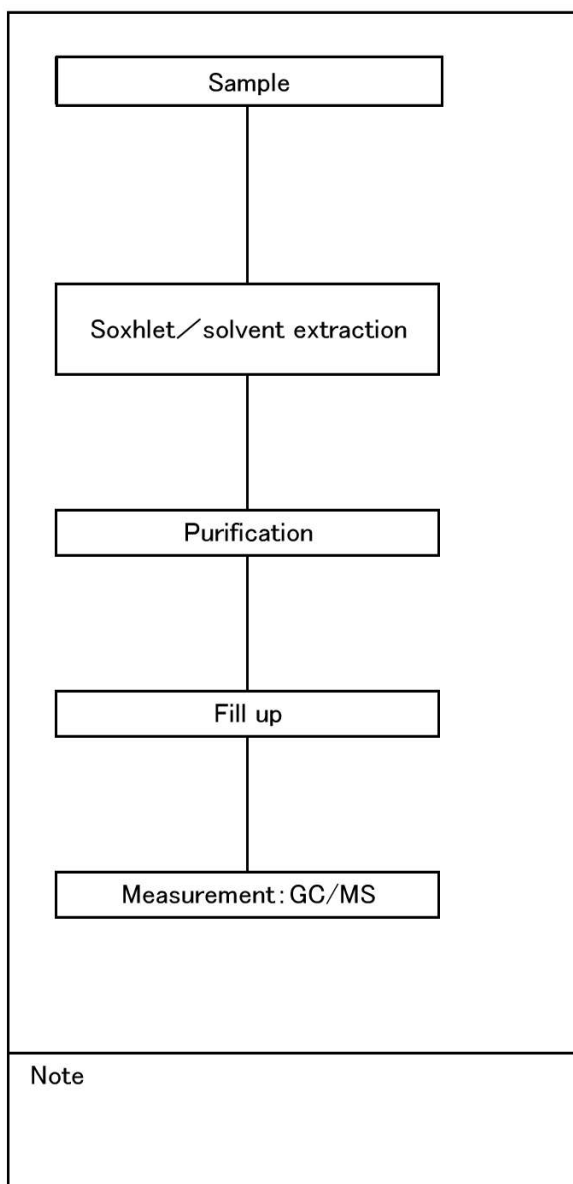
Operator : Yuichi Kuboji

PBBs, PBDEs,  
Hexabromocyclododecane (HBCDD)

phthalates



GC/MS: Agilent Technologies GC 7890B MS 5977A



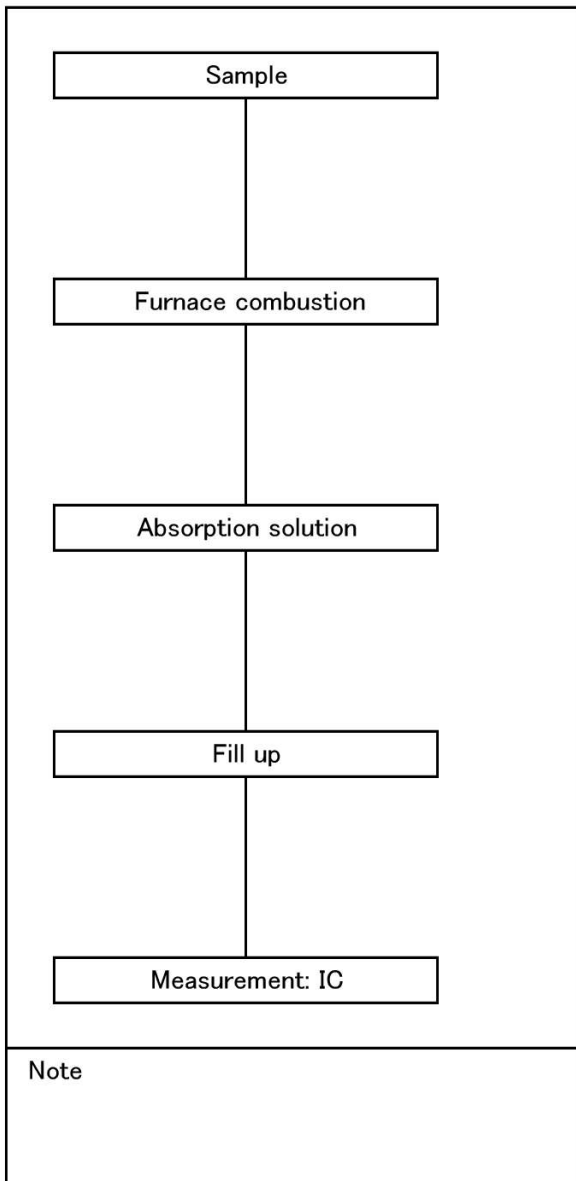
GC/MS : SHIMADZU GCMS-QP2020

Flow chart

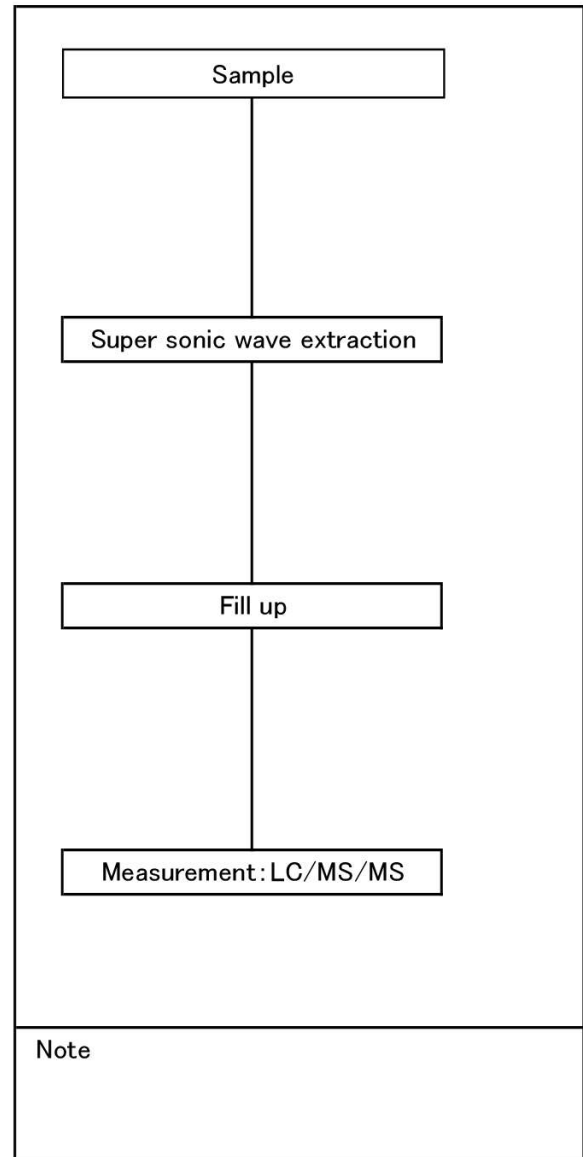
Report No. : ES200000004743-01  
Measurement days : 25 September 2020 ~ 8 October 2020  
Operator : Norio Watanabe Risa Minowada

F, Cl, Br, I

PFOS, PFOA



IC : DIONEX ICS-1100 RFIC



LC/MS/MS : Waters Xevo-TQ

Report No. ES200000004743-01

