



THE INDUSTRIAL ANALYSIS SERVICE LTD.

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TEST REPORT

Request No. 0105363
 Report No. ES200000000503-01
 Date of issue: 10 February 2020

To. NGK Electronics Devices, Inc.

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

Name of sample: Pd Plating

Date of receipt of sample: 31 January 2020

Measurement days: 31 January 2020 ~ 10 February 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	19	2.0	With reference to IEC62321-5(2013) ICP/MS
Cr6+	ppm	N.D.	0.1	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
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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

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

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mg/kg=ppm

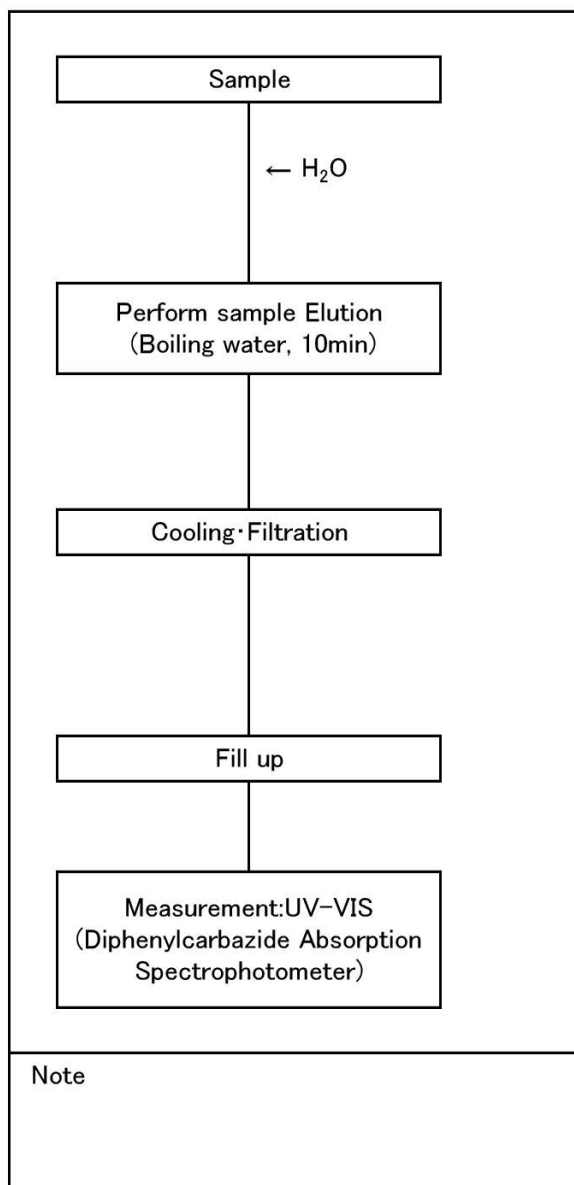
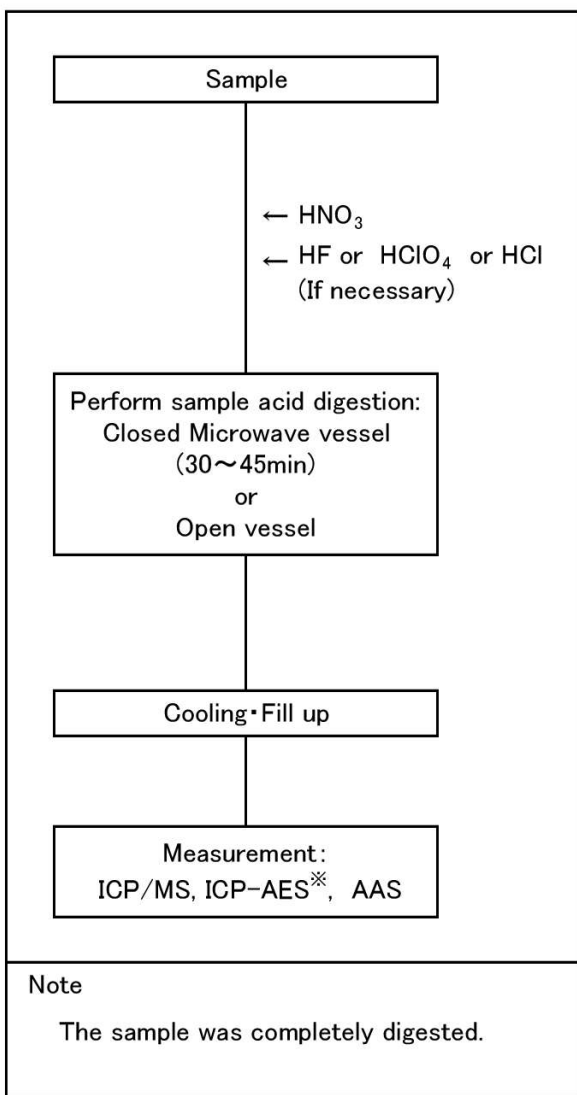


Flow chart

Report No.	: ES200000000503-01
Measurement days	: 31 January 2020 ~ 10 February 2020
Operator	: Kensho Nakajima Wataru Imaoka

Cd, Pb, Hg

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

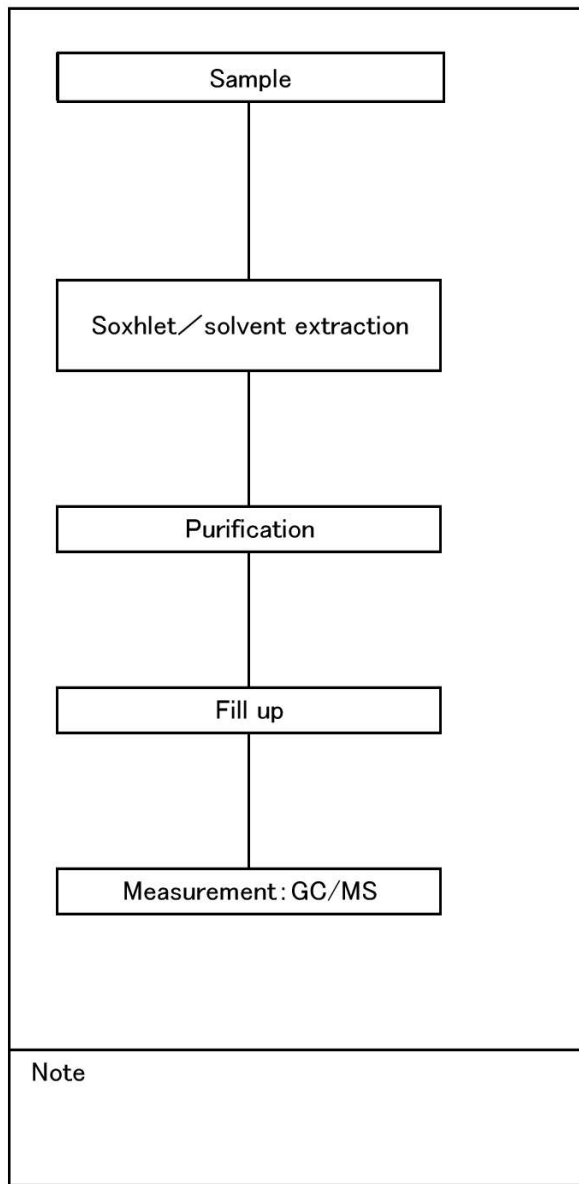
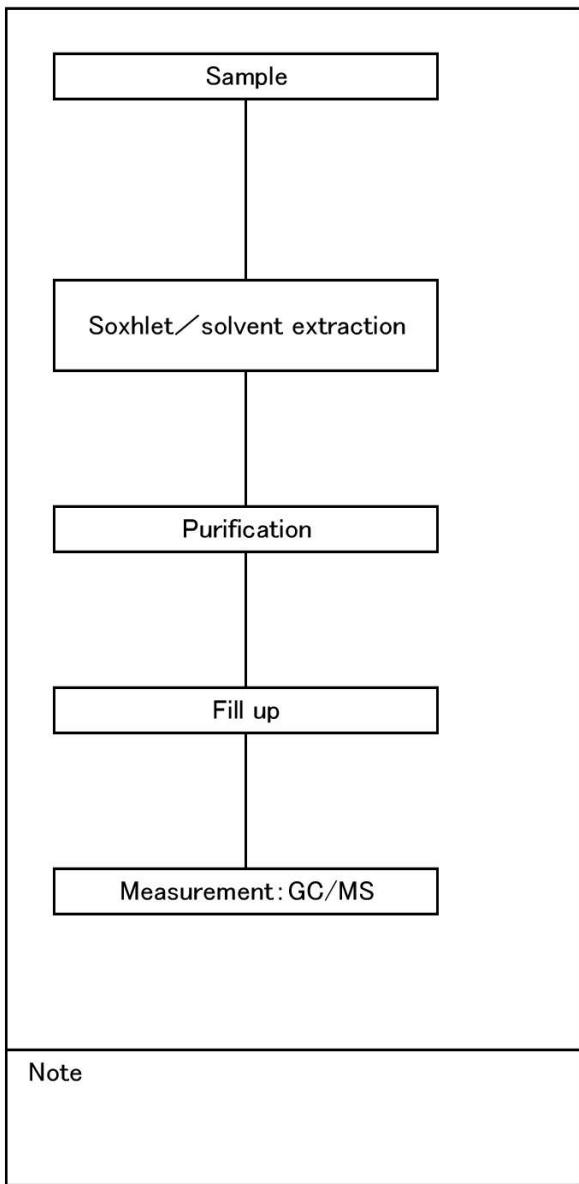
Report No. : ES200000000503-01

Measurement days : 31 January 2020 ~ 10 February 2020

Operator : Yuichi Kuboji

PBBs, PBDEs

phthalates



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

GC/MS : SHIMADZU GCMS-QP2020

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