

## Test Report

No. : KA/2019/61260

Date : 2019/06/24

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HITACHI METALS,LTD.YASUGI WORKS  
2107-2, YASUGI-CHO, YASUGE-SHI, SHIMANE-KEN, JAPAN.

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

Sample Submitted By : HITACHI METALS,LTD.YASUGI WORKS  
Sample Description : YEF42(Ni-Fe ALLOY)  
Style/Item No. : IRON, NICKEL ALLOY(Ni:42%,Fe:BALANCE)  
Buyer. : ER19-201  
Sample Receiving Date : 2019/06/17  
Testing Period : 2019/06/17 to 2019/06/24

Test Result(s) : Please refer to next page(s).

  
Ray Chang Ph.D. / Manager -  
Signed for and on behalf of  
SGS Taiwan Limited  
Chemical Laboratory-Kaohsiung



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## Test Result(s)

PART NAME NO.1 : SILVER COLORED METAL

Test Item (s)	Unit	Method	MDL	Result
				No.1
<b>Halogen</b>				
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 335-67-1)	mg/kg		10	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA 3052: 1996. Analysis was performed by ICP-AES.	2	n.d.
Beryllium (Be)	mg/kg		2	n.d.
Arsenic (As)	mg/kg		2	19.7
DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0, 68515-48-0)	%		0.01	n.d.
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0, 68515-49-1)	%		0.01	n.d.
DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)	%		0.003	n.d.
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%		0.003	n.d.
DIPP (Di-isopentyl phthalate) (CAS No.: 605-50-5)	%		0.003	n.d.
DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (CAS No.: 71888-89-6)	%		0.01	n.d.
DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (CAS No.: 68515-42-4)	%		0.01	n.d.

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Test Item (s)	Unit	Method	MDL	Result
				No.1
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	With reference to IEC 62321: 2008. Analysis was performed by GC/MS.	5	n.d.

**Note :**

1. mg/kg = ppm : 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit

**PFOS Reference Information : POPs - (EU) 757/2010**

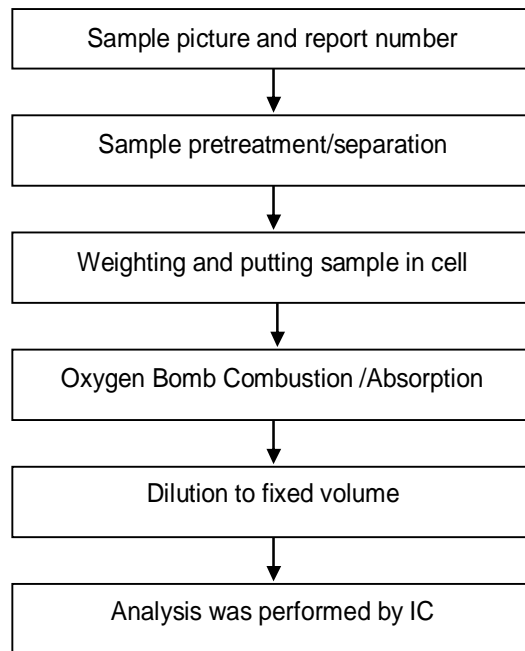
Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1 $\mu$ g/m<sup>2</sup>. PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluorooctanesulfonic acid, Perfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamide, N-Ethylperfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamidoethanol and N-Ethylperfluorooctane sulfonamidoethanol.

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 2107-2, YASUGI-CHO, YASUGE-SHI, SHIMANE-KEN, JAPAN.

### Analytical flow chart of halogen content

- Technician : Jean Hung
- Supervisor: Ray Chang

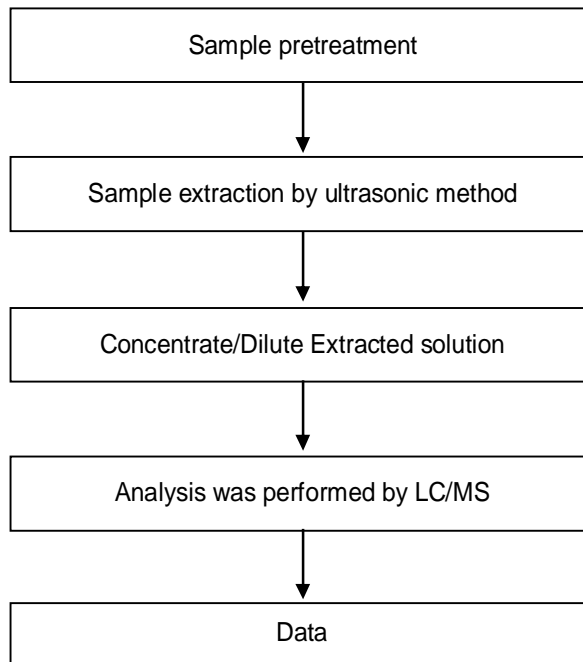


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### Analytical flow chart of PFOA/PFOS content

- Technician : Ginny Huang
- Supervisor: Ray Chang



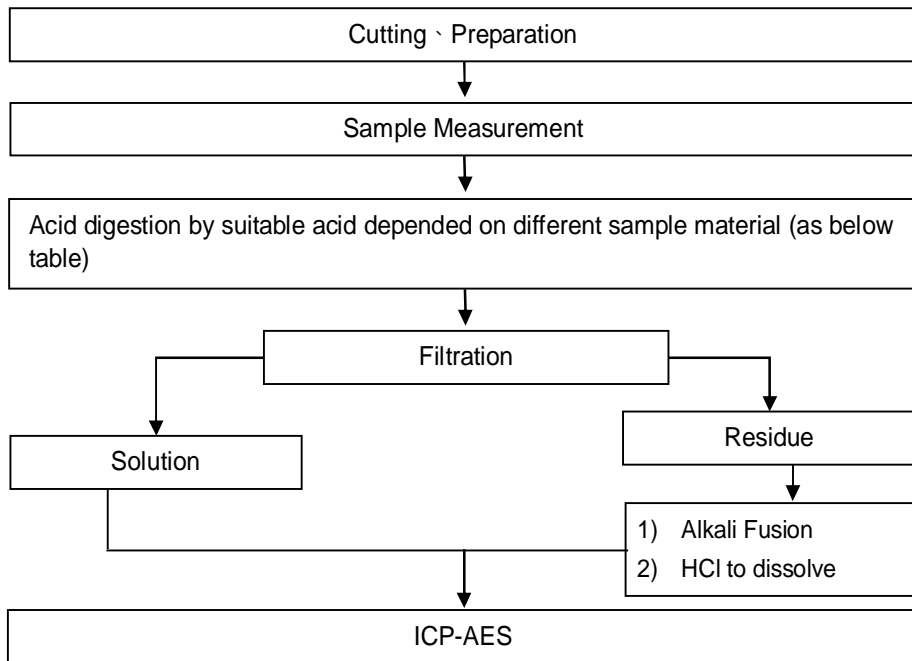
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### Flow Chart of digestion for the elements analysis performed by ICP-AES

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

- Technician : Jony Liu
- Supervisor: Ray Chang



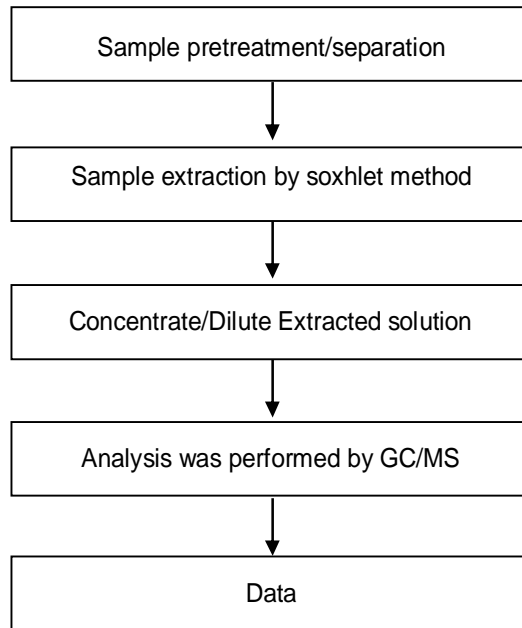
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

HITACHI METALS,LTD.YASUGI WORKS

2107-2, YASUGI-CHO, YASUGE-SHI, SHIMANE-KEN, JAPAN.

### Analytical flow chart of phthalate content

- Technician: Dorothy Chen
- Supervisor: Ray Chang



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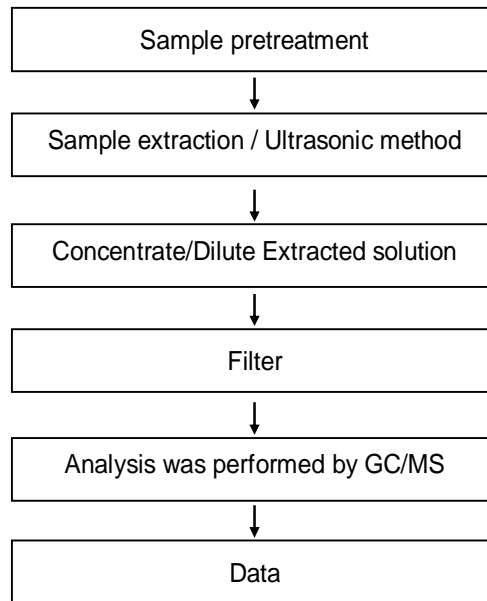
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## HBCDD analytical flow chart

- Technician : Dorothy Chen
- Supervisor: Ray Chang



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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 \*\*

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