



TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-53-384-1910

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Report No. : TAK-2018-194295

Receipt Date : Dec.20.2018

Customer : Byoung-Mu, Do

Test Date : Jan.02.2019

WOOSHIN STEEL CO.,LTD

120, Yeongcheonsandan-ro, Geumho-eup, Yeongcheon-si, Gyeongbuk, Korea

Sample : Metallic Specimen(SWRM10K)

Testing Date : Dec.20.2018 ~ Jan.02.2019

Testing Environment : Temperature (20 ± 5)°C, Relative humidity (40 ± 20) %

Test method : Refer to following pages

Test result : Refer to following pages

Attachment : Flow chart and Sample pictures

USAGE : QUALITY CONTROL

- NOTE : 1. The test results on this test report are only limited to the samples and sample names provided by the customer and KTR does not guarantee the quality of all products of the customer, and you can confirm the authenticity of the test report online (www.ktr.or.kr) or by using the QR code.
2. This test report shall not be used for public relation, advertisement, lawsuit and any other purposes outside the scope of its defined usage.
3. Only original copy (including certified copy) of the test report is valid – electronic copy (hard and/or soft) is for your reference only.

Shin Jonghun

Prepared by Shin Jonghun

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Seo Tae-kyo

Reviewed by Seo Tae-kyo

Technical Manager

Tel : 1577-0091(ARS ①→④)

Jan.02.2019

Korea Testing & Research Institute

President

Byun, Jong-Rip



QR Code to verify Genuineness



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Sample : Metallic Specimen(SWRM10K)

TEST RESULT

Test itmes	Unit	Sample	Results	MDL	Test Methods
Pb	mg/kg	-	Not Detected	10	IEC 62321-5 Ed. 1.0 : 2013(AAS, Apply Correspondingly)
Cd	mg/kg	-	Not Detected	1	IEC 62321-5 Ed. 1.0 : 2013(AAS, Apply Correspondingly)
Hg	mg/kg	-	Not Detected	1	IEC 62321-4 Ed. 1.0 : 2013(CV-AAS, Apply Correspondingly)
Cr ⁶⁺	μg/cm ²	-	Negative	-	IEC 62321-7-1 Ed.1.0 : 2015(UV/Vis, Apply Correspondingly)
Total-PBBs	mg/kg	-	Not Detected	-	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Deca-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Di-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Hepta-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Hexa-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Mono-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Octa-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Penta-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Tetra-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Tri-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Nona-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Total-PBDEs	mg/kg	-	Not Detected	-	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Deca-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Di-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Hepta-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Hexa-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Mono-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Nona-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Penta-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Tetra-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Tri-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)
Octa-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(GC/MS, Apply Correspondingly)



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TEST RESULT

Test itmes	Unit	Sample	Results	MDL	Test Methods
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Notes : mg/kg = ppm (parts per million)

N.D = Not detected(<MDL)

MDL = Method detection limit

* Cr(VI): Negative (below $0.10 \mu\text{g}/\text{cm}^2$),
 Inconclusive ($0.10 \mu\text{g}/\text{cm}^2 \sim 0.13 \mu\text{g}/\text{cm}^2$),
 Positive (over $0.13 \mu\text{g}/\text{cm}^2$)



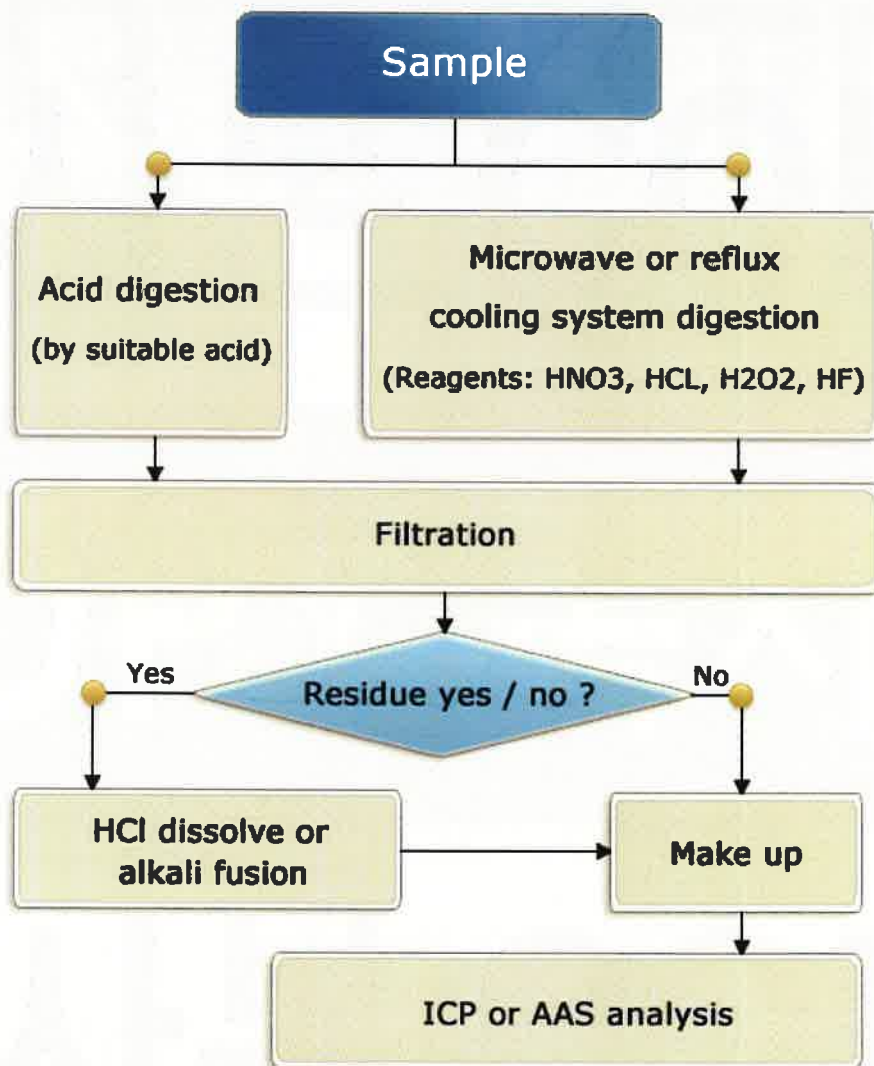
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Sample : Metallic Specimen(SWRM10K)

Pb, Cd, Hg : Tested by Shin Jonghun(Tel. : 02-2092-3782)

Flow Chart of heavy metals analysis





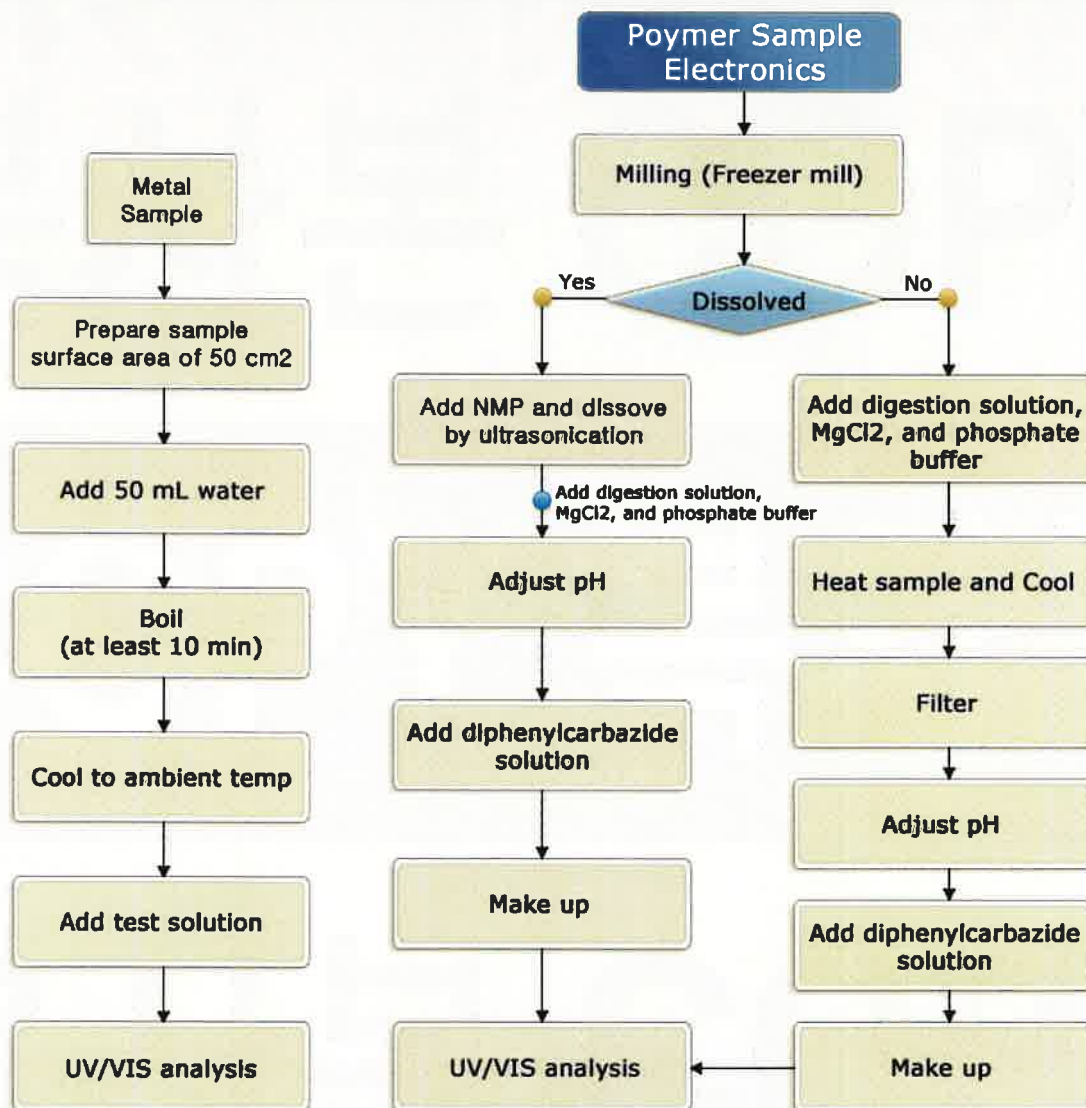
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Sample : Metallic Specimen(SWRM10K)

Cr⁶⁺ : Tested by Shin Jonghun(Tel : 02-2092-3782)

Flow Chart of Cr⁶⁺ analysis





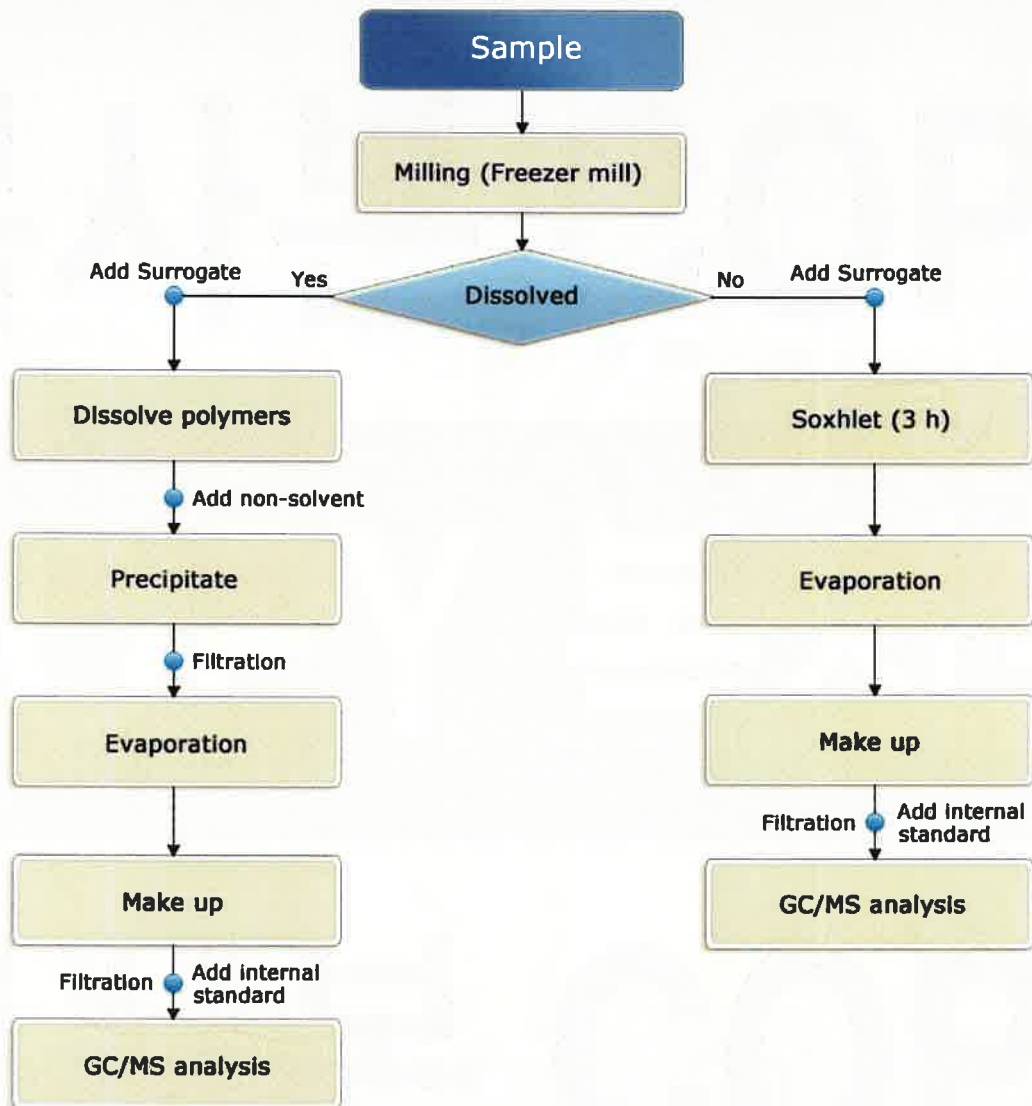
TEST REPORT

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Sample : Metallic Specimen(SWRM10K)

PBBs, PBDEs : Tested by Shin Jonghun(Tel : 02-2092-3782)

Flow Chart of PBBs and PBDEs analysis





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Sample



- End of Report -