

# TEST REPORT

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

TEL 82-31-499-5390 FAX 82-31-499-6867

Report No. : TAK-2020-037164

Receipt Date : Mar.03.2020

Customer : Seon-Hwan KIM

Test Date : Mar.17.2020

Daejin Copper Pipe & Tube Manufacturing Co.,Ltd.

#824, Wonsi-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do, Korea.

Sample : Phosphorus Deoxidized Copper pipe (C1220)

Testing Date : Mar.03.2020 ~ Mar.17.2020

Testing Environment : Temperature ( $20 \pm 5$ )°C, Relative humidity ( $40 \pm 20$ ) %

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](http://www.ktr.or.kr)) or by using the QR code.
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3. Only original copy (including certified copy) of the test report is valid - electronic copy (hard and/or soft) is for your reference only.

*Kweon Deok Jun*

Prepared by Kweon Deok Jun

Tel : 02-2092-3792

*Yang-Suek Bhang*

Reviewed by Yang-Suek Bhang

Technical Manager

Tel : 1577-0091(ARS ①-④)

Mar.17.2020

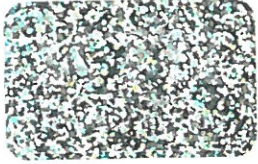
**Korea Testing & Research Institute**

President

*Kwon Oh-jung*



QR Code to verify Genuineness



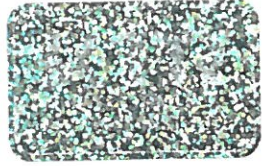
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Report No. : TAK-2020-037164

Sample : Phosphorus Deoxidized Copper pipe (C1220)

## TEST RESULT

Test itmes	Unit	Sample	Results	MDL	Test Methods
Pb	mg/kg	-	Not detected	10	IEC 62321-5 : 2013(Apply Correspondingly)
Cd	mg/kg	-	Not detected	1	IEC 62321-5 : 2013(Apply Correspondingly)
Hg	mg/kg	-	Not detected	1	IEC 62321-4 : 2013(Apply Correspondingly)
Cr <sup>6+</sup>	μg/cm <sup>2</sup>	-	Negative	-	IEC 62321-7-1 : 2015(Apply Correspondingly)
Total-PBBs	mg/kg	-	Not Detected	-	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Mono-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Di-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Tri-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Tetra-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Penta-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Hexa-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Hepta-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Octa-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Nona-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Deca-BB	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Total-PBDEs	mg/kg	-	Not Detected	-	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Mono-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Di-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Tri-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Tetra-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Penta-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Hexa-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Hepta-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Octa-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Nona-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
Deca-BDE	mg/kg	-	Not Detected	10	IEC 62321-6 Ed. 1.0 : 2015(Apply Correspondingly)
DEHP	mg/kg	-	Not Detected	50	IEC 62321-8 Ed. 1.0 : 2017(Apply Correspondingly)



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Sample : Phosphorus Deoxidized Copper pipe (C1220)

## TEST RESULT

Test itmes	Unit	Sample	Results	MDL	Test Methods
BBP	mg/kg	-	Not Detected	50	IEC 62321-8 Ed. 1.0 : 2017(Apply Correspondingly)
DBP	mg/kg	-	Not Detected	50	IEC 62321-8 Ed. 1.0 : 2017(Apply Correspondingly)
DIBP	mg/kg	-	Not Detected	50	IEC 62321-8 Ed. 1.0 : 2017(Apply Correspondingly)

Notes : mg/kg = ppm (parts per million)

N.D = Not detected( <MDL)

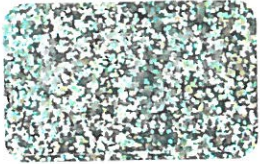
MDL = Method detection limit

\* 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  $0.13 \mu\text{g}/\text{cm}^2$ )

\* DIBP : Di-isobutyl phthalate  
DBP : Di-n-butyl phthalate  
BBP : Butyl benzyl phthalate  
DEHP : Di(ethylhexyl) phthalate

\*\* GC/MS : Gas chromatograph-Mass spectrometry





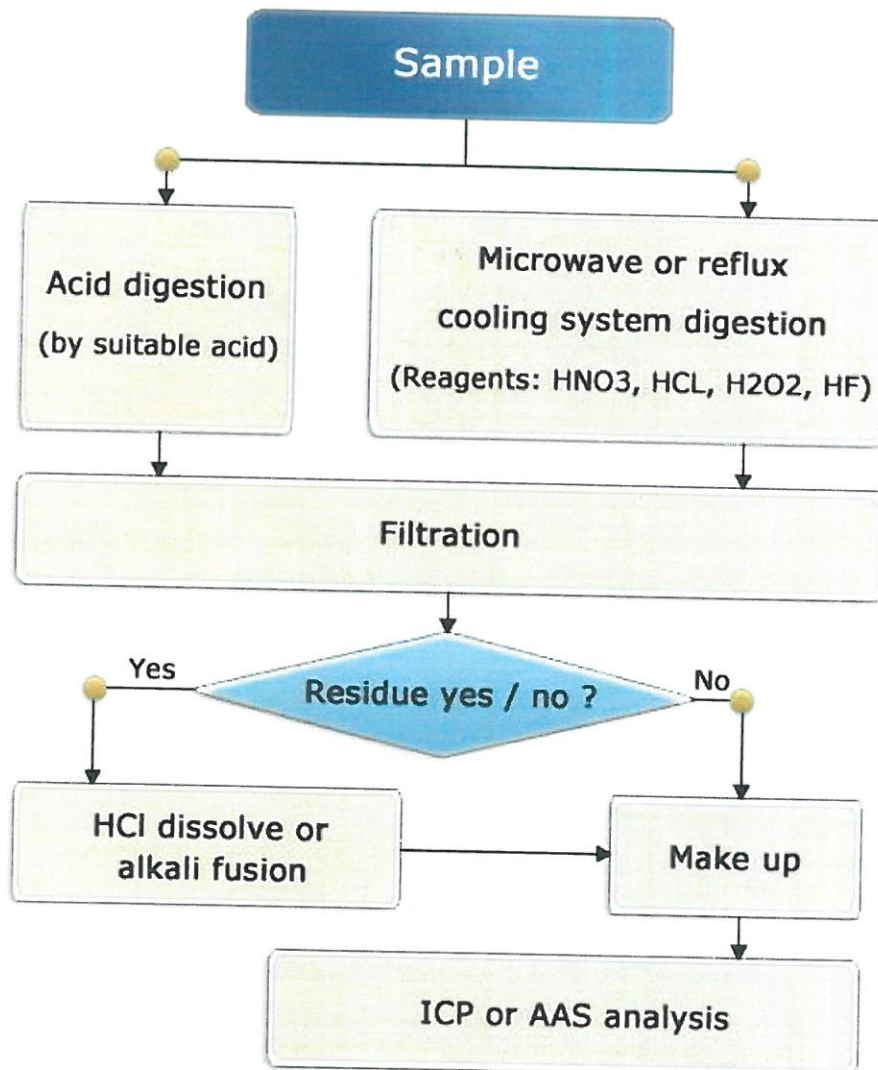
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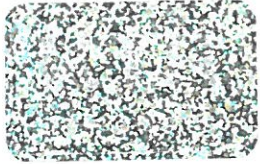
Report No. : TAK-2020-037164

Sample : Phosphorus Deoxidized Copper pipe (C1220)

Pb, Cd, Hg : Tested by Yong-hyeon Lee(Tel : 02-2092-3682)

## Flow Chart of heavy metals analysis





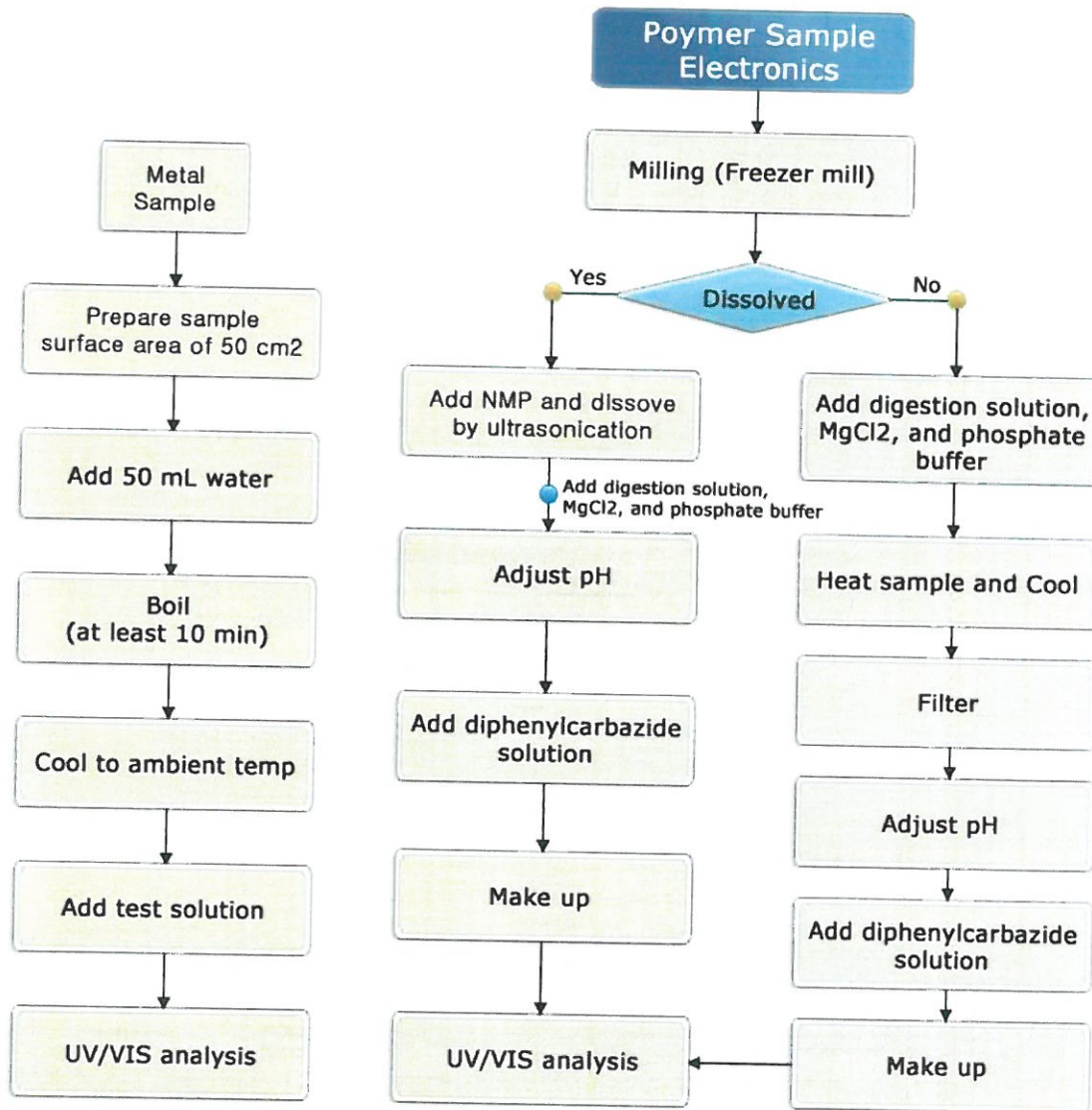
# TEST REPORT

Report No. : TAK-2020-037164

Sample : Phosphorus Deoxidized Copper pipe (C1220)

Cr<sup>6+</sup> : Tested by Yong-hyeon Lee(Tel : 02-2092-3682)

## Flow Chart of Cr<sup>6+</sup> analysis





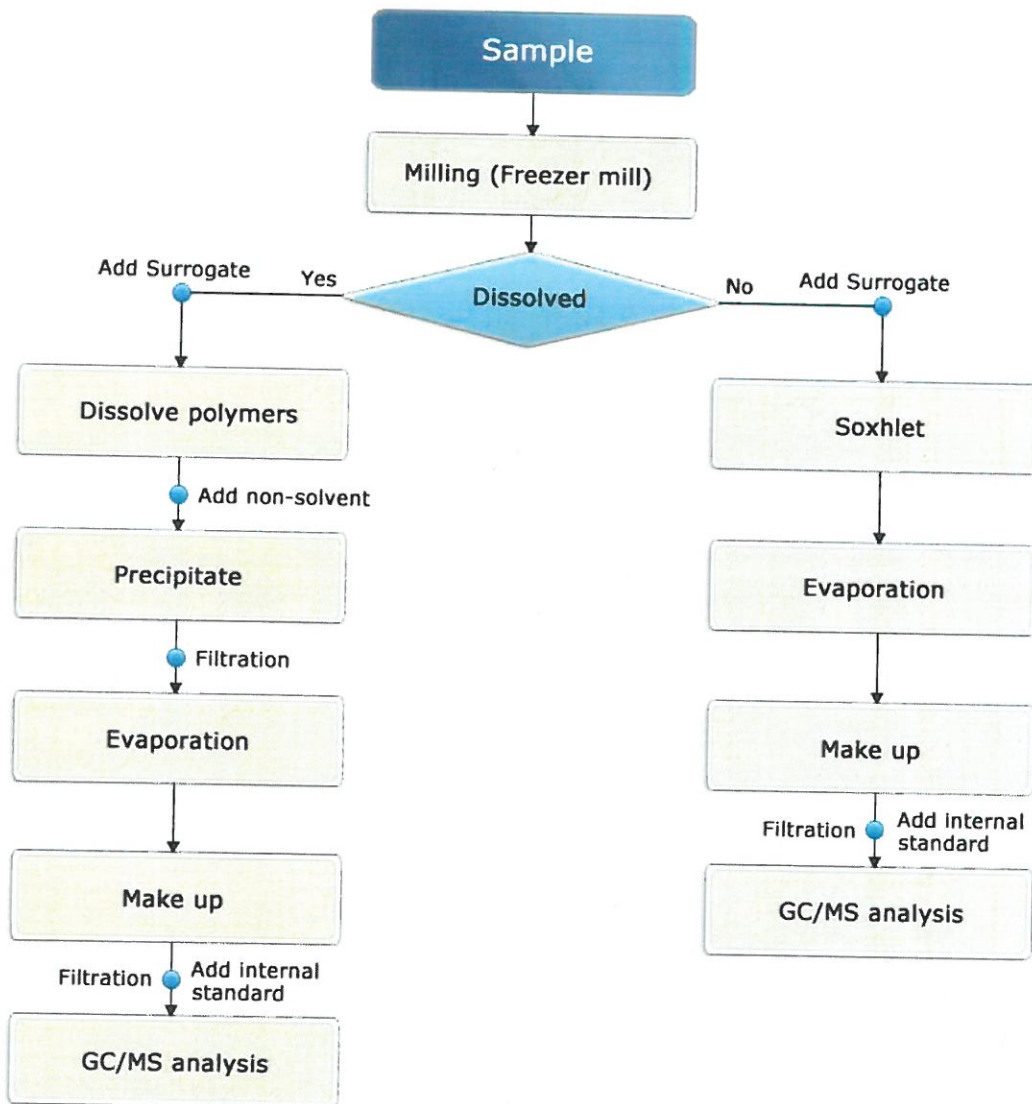
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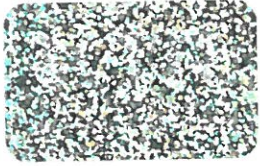
Sample : Phosphorus Deoxidized Copper pipe (C1220)

PBBs, PBDEs : Tested by Kweon Deok Jun(Tel : 02-2092-3792)

## Flow Chart of PBBs and PBDEs analysis







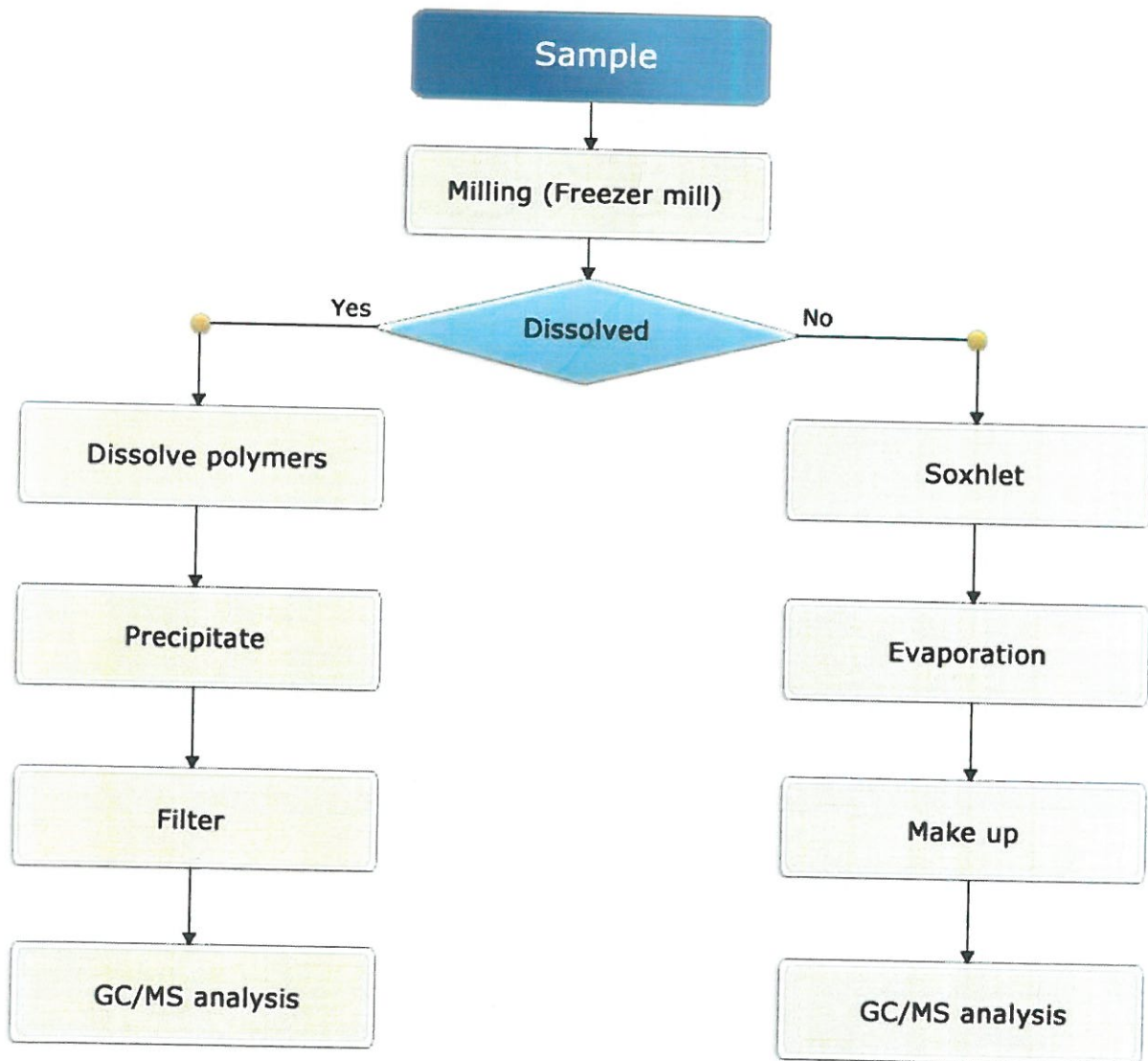
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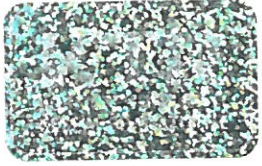
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Sample : Phosphorus Deoxidized Copper pipe (C1220)

Phthalates : Tested by Kweon Deok Jun(Tel : 02-2092-3792)

## Flow Chart of Phthalates analysis





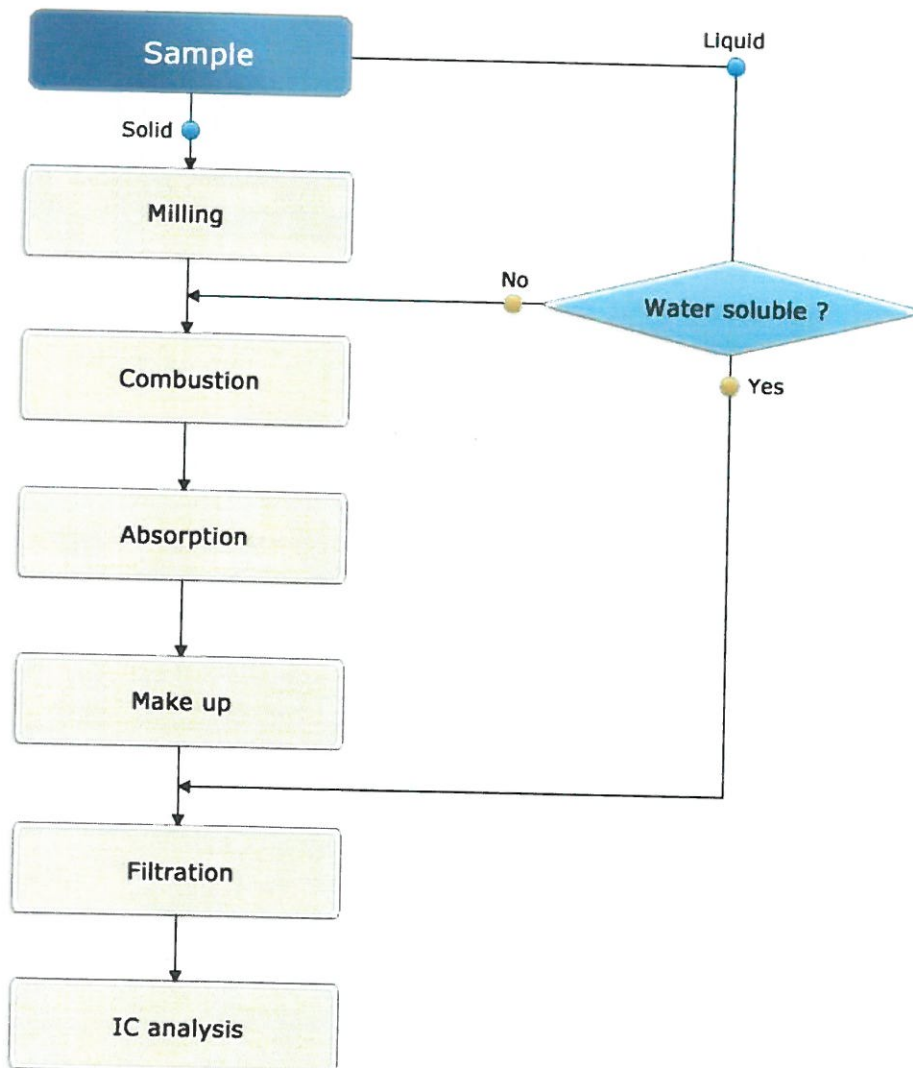
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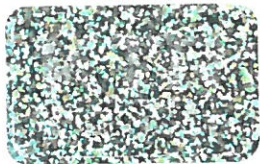
Sample : Phosphorus Deoxidized Copper pipe (C1220)

F, Cl, Br, I : Tested by Kweon Deok Jun(Tel : 02-2092-3792)

## Flow Chart of Halogen analysis







# TEST REPORT

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Sample : Phosphorus Deoxidized Copper pipe (C1220)

## Sample



- End of Report -