

Test Report No. 3811533

Date : 28-Feb-2018

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**Client : Oriental Copper Co.,Ltd.
27 th FL, Bangkok Insurance / Y.W.C.A. Building , 25 Sathon Rd.
Thungmahamek , Sathon Bangkok 10120 Thailand**

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

Sample Name : Cu-OFE Copper Busbar
Sample No. : 3915461
Sample Condition : As per attached photograph.
Quantity Submitted : 2 pcs
Manufacturer/Vendor : Oriental Copper Co., Ltd.
Country of Origin : Thailand
Buyer's Name : Domestic and Export Sales

Sample Receiving Date : 7-Feb-2018
Testing Period : 07-Feb-2018 to 13-Feb-2018

Test Requested : In accordance with the RoHS Directive 2011/65/EU (Annex II) [amended by Directive (EU) 2015/863] .Selected test (s) as requested by client.

Test Method : (1) IEC 62321-5 edition 1.0 : 2013 for Lead content, Analyzed by ICP-OES.
(2) IEC 62321-5 edition 1.0 : 2013 for Cadmium content, Analyzed by ICP-OES.
(3) IEC 62321-4 ,edition 1.1 : 2017 for Mercury Content, Analyzed by ICP-OES.
(4) IEC 62321-7-1 edition 1.0 : 2015 for Hexavalent Chromium Content, Analyzed by UV/Vis Spectrometry.
(5) IEC 62321-6 edition 1.0 : 2015 for PBBs/PBDEs content, Analyzed by GC/MS.

Test Results : Please refer to next page.

**Signed for and on behalf of
SGS (Thailand) Limited**



**Patcharee Treeporncharoen
Laboratory manager - Chemical**

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TEST RESULTS

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Lead (Pb)	(1)	n.d.	2	1000
Cadmium (Cd)	(2)	n.d.	2	100
Mercury (Hg)	(3)*	n.d.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction # (Unit : (ug/cm2))	(4)	n.d.	0.10	-

Test Part Description
Result (1) metal

Note :

(a) mg/kg = ppm ; 0.1wt% = 1000 ppm

(b) ug/cm2 = microgram/centremeter square

(c) n.d. = Not Detected

(d) MDL = Method Detection Limit

(e) # = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 ug/cm2. The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is n.d. (concentration less than 0.10 ug/cm2). The coating is considered a non-CrVI based coating

c. The result between 0.10 ug/cm2 and 0.13 ug/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

(f) "-" = Not regulated

(g) For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing represent status of the sample at the time of testing.

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TEST RESULTS

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Sum of PBBs	(5)*	n.d.	-	1000
Monobromobiphenyl		n.d.	5	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
Decabromobiphenyl		n.d.	5	-

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TEST RESULTS

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Sum of PBDEs	(5)*	n.d.	-	1000
Monobromodiphenyl ether		n.d.	5	-
Dibromodiphenyl ether		n.d.	5	-
Tribromodiphenyl ether		n.d.	5	-
Tetrabromodiphenyl ether		n.d.	5	-
Pentabromodiphenyl ether		n.d.	5	-
Hexabromodiphenyl ether		n.d.	5	-
Heptabromodiphenyl ether		n.d.	5	-
Octabromodiphenyl ether		n.d.	5	-
Nonabromodiphenyl ether		n.d.	5	-
Decabromodiphenyl ether		n.d.	5	-

Test Part Description
Result (1) metal

Note :

- (a) mg/kg = ppm ; 0.1 wt% = 1000 ppm
- (b) n.d. = Not Detected
- (c) MDL = Method Detection Limit
- (d) "-" = Not regulated
- (e) Test done on client submitted sample

"Test(s) marked * on this report are not included in the NSC-ONSC accreditation scope"

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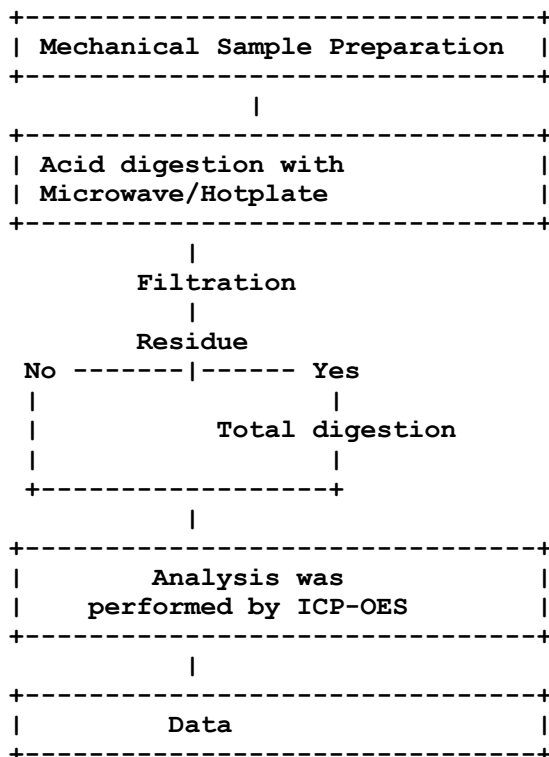
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Flow chart of Pb,Cd,Hg Testing

(Test method : IEC 62321)



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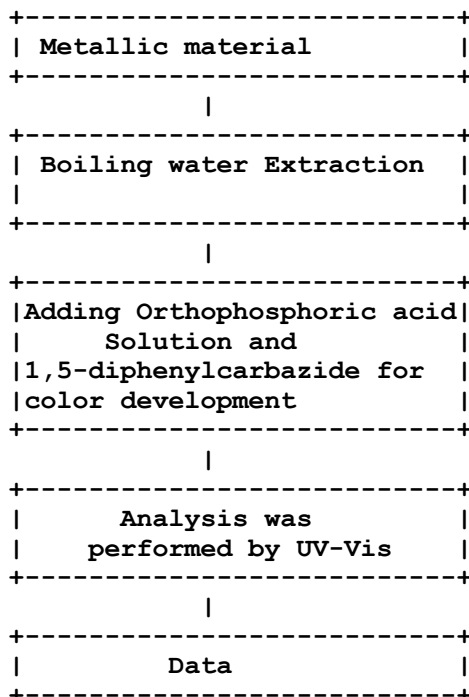
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Flow chart of Hexavalent Chromium Testing

(Test method : IEC 62321)



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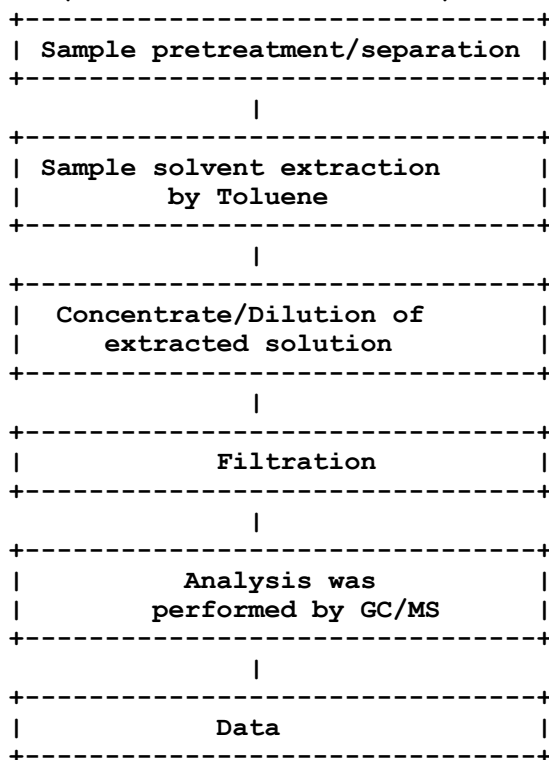
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Flow chart of PBBs, PBDEs Testing

(Test method : IEC 62321)



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SAMPLE/ATTACHMENT PICTURE



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