

Test Report

No. CRSSA/15144-2/17
CRS Ref. CRSSA/17/3145/Hitachi

Date : 29/12/2017

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HITACHI CHEMICAL (MALAYSIA) SDN. BHD.
PLOT 501, PRAI INDUSTRIAL ESTATE, 13600 PRAI, PENANG, MALAYSIA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	DIE Bonding Paste
Sample Name	:	EN4088Z
Sample Receiving Date	:	12/12/2017
Testing Period	:	12/12/2017 to 20/12/2017
Date Completed	:	20/12/2017
Reporting Date	:	29/12/2017

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analyst	:	Ling Yii Ming

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(Company No. 10871-T)

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Test result:

Test Part Description :

Sample Description : DIE Bonding Paste
Sample Name : EN4088Z

Optional: RoHS Directive 2011/65/EU, priority substances

Test Item(s):	Unit	Test Method	Results	MDL	Limit
Hexabromocyclododecane (HBCDD) (Cas#25637-99-4 & 3194-55-6)	mg/kg	Based on IEC 62321:2008 (Determination of HBCDD by GC-MS)	N.D.	10	-

Note:

- (a) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD), Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.
- (b) - = not regulated
- (c) N.D. = Not Detected
- (d) Testing based on dry basis

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Test result:

Test Part Description :

Sample Description : DIE Bonding Paste
Sample Name : EN4088Z

RoHS Directive 2011/65/EU Annex II (amended by Directive (EU) 2015/863)

Test Item(s):	Unit	Test Method	Results	MDL	Limit
Bis (2-ethylhexyl) phthalate (DEHP) (CAS No. 117-81-7)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	N.D.	50	1000
Butyl benzyl phthalate (BBP) (CAS No. 85-68-7)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	N.D.	50	1000
Dibutyl phthalate (DBP) (CAS No. 84-74-2)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	N.D.	50	1000
Diisobutyl phthalate (DIBP) (CAS No. 84-69-5)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	N.D.	50	1000

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

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) - = Not regulated

(e) On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than 0.1% in each homogeneous material of an electrical product.

(a) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

(b) The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the market before 22 July 2019, and of medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, placed on the market before 22 July 2021.

(i) The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

(f) Testing based on dry basis

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[Signature]



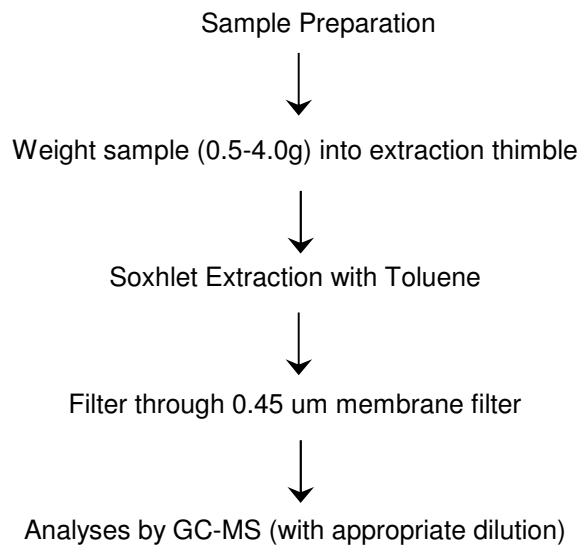
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DETERMINATION OF HBCDD CONTENT



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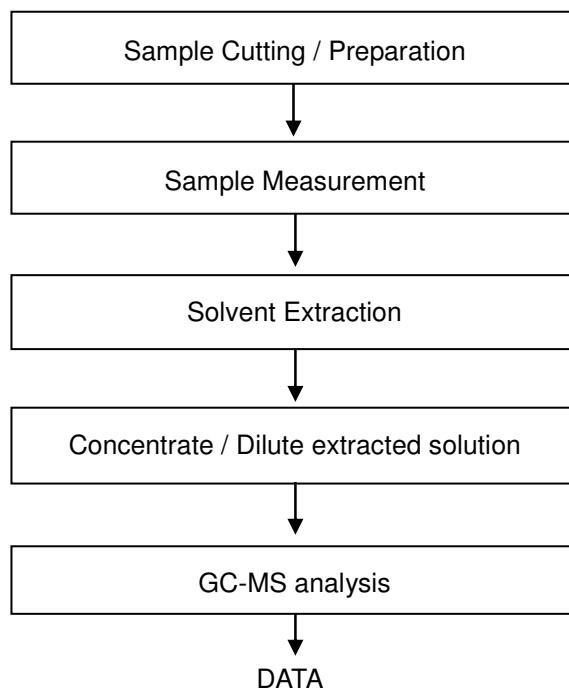
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Flowchart for Phthalates Measurement

Method: IEC62321



****End of Report****

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