

## Test Report

No. : CE/2019/13842

Date : 2019/01/22

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HITACHI CHEMICAL CO., LTD.

1500 OGAWA, CHIKUSEI-SHI IBARAKI, 308-8521, JAPAN

**The following samples was/were submitted and identified by/on behalf of the applicant as :**

Sample Submitted By : HITACHI CHEMICAL CO., LTD.  
Sample Description : COPPER CLAD LAMINATES WITHOUT COPPER (PLASTIC PART OF MCL) /  
GLASS EPOXY PREPREG  
Style/Item No. : MCL-E-679FGB(R) PLASTIC PART / MCL-E-679FG(R) PLASTIC PART /  
MCL-E-679FG(RM) PLASTIC PART / MCL-E-679FGB PLASTIC PART /  
MCL-E-679FG PLASTIC PART / GEA-679FG(R) / GEA-679FG  
Sample Receiving Date : 2019/01/16  
Testing Period : 2019/01/16 to 2019/01/22

=====  
**Test Result(s)** : Please refer to following pages.

  
  
Troy Chang, Manager - Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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## Test Result(s)

PART NAME No.1 : BLACK SHEET

Test Item(s)	Unit	Method	MDL	Result
				No.1
Antimony (Sb)	mg/kg	With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2	n.d.
<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	928
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	155
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.

### Note :

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

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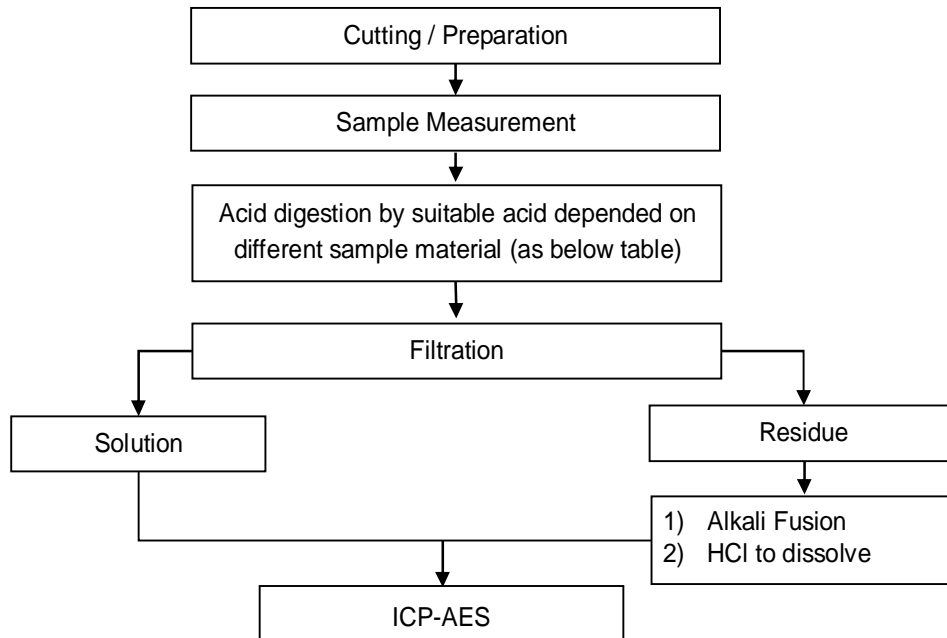
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These samples were dissolved totally by pre-conditioning method according to below flow chart.

- Technician: Rita Chen
- Supervisor: Troy Chang

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



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	Added appropriate reagent to total digestion

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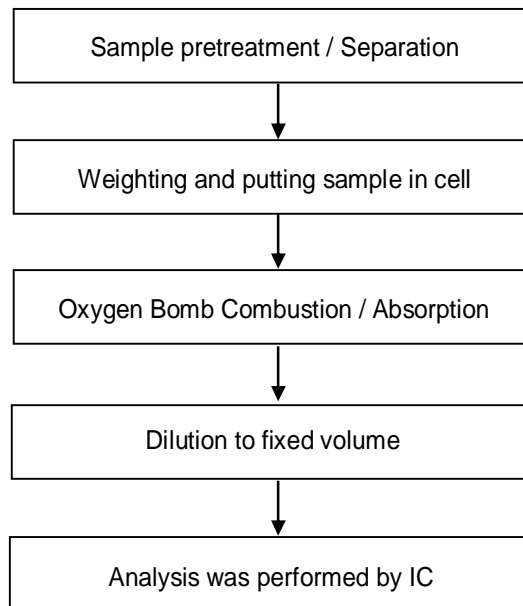
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### Analytical flow chart - Halogen

- Technician: Rita Chen
- Supervisor: Troy Chang



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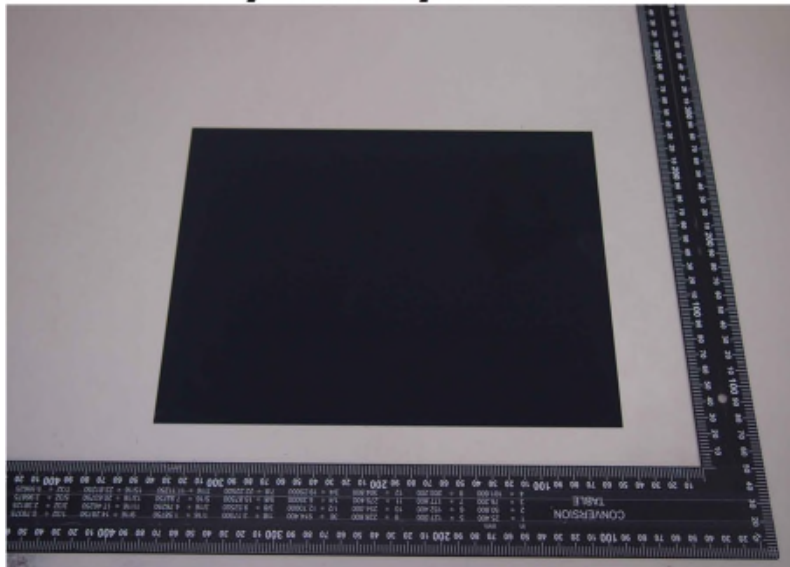
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\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### CE/2019/13842



\*\* End of Report \*\*

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