

TEST REPORT

APPLICANT : KOSTIC KOREA LTD.
ADDRESS : 120, LG-ro 360beon-gil, Wollong-myeon,
Paju-si, Gyeonggi-do, Korea

PAGE: 1 of 8

REPORT NO. RT20R-S0037-006-E

DATE: Jan. 10, 2020

SAMPLE DESCRIPTION : The following submitted sample(s) said to be:-

NAME/TYPE OF PRODUCT : KEP-COMPONENT
NAME OF MATERIAL : PET, PSA
SAMPLE ID NO. : RT20R-S0037-006
ITEM NO. : KEP-PSA Film, KUP-PSA Film
MANUFACTURER/VENDOR : KOSTIC KOREA LTD.
NAME OF BUYER : LG, SAMSUNG

SAMPLE RECEIVED : Jan. 06, 2020
TESTING DATE : Jan. 06, 2020 ~ Jan. 10, 2020

TEST METHOD(S) : Please see the following page(s).
TEST RESULT(S) : Please see the following page(s).

- * Note 1 : The test results presented in this report refer only to the object tested.
- * Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.
- * Note 3 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,



Jade Jang / Lab. Technical Manager

Authorized by,



Bo Park / Lab. General Manager



Authenticity check

Intertek Testing Services Korea Ltd.
Seoul Office: Tel : 02-6090-9550 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Ahasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea
Ulsan Lab. Address : 34, Yongam-gil, Chongryang-myeon, Ulju-gun, Ulsan 44989 Korea



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TEST REPORT

REPORT NO. RT20R-S0037-006-E

SAMPLE ID NO. : RT20R-S0037-006

SAMPLE DESCRIPTION : KEP-COMPONENT

| TEST ITEM | UNIT | TEST METHOD | MDL | RESULT |
|--|-------|--|-----|--------|
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES | 0.5 | N.D. |
| Lead (Pb) | mg/kg | | 5 | N.D. |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES | 2 | N.D. |
| Hexavalent Chromium (Cr ⁶⁺) | mg/kg | With reference to IEC 62321-7-2 Edition 1.0 : 2017, by alkaline/toluene digestion and determined by UV-VIS Spectrophotometer | 8 | N.D. |
| Polybrominated Biphenyl (PBBs) | | | | |
| Monobromobiphenyl | mg/kg | With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS | 5 | N.D. |
| Dibromobiphenyl | mg/kg | | 5 | N.D. |
| Tribromobiphenyl | mg/kg | | 5 | N.D. |
| Tetrabromobiphenyl | mg/kg | | 5 | N.D. |
| Pentabromobiphenyl | mg/kg | | 5 | N.D. |
| Hexabromobiphenyl | mg/kg | | 5 | N.D. |
| Heptabromobiphenyl | mg/kg | | 5 | N.D. |
| Octabromobiphenyl | mg/kg | | 5 | N.D. |
| Nonabromobiphenyl | mg/kg | | 5 | N.D. |
| Decabromobiphenyl | mg/kg | | 5 | N.D. |
| Polybrominated Diphenyl Ether (PBDEs) | | | | |
| Monobromodiphenyl ether | mg/kg | With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS | 5 | N.D. |
| Dibromodiphenyl ether | mg/kg | | 5 | N.D. |
| Tribromodiphenyl ether | mg/kg | | 5 | N.D. |
| Tetrabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Pentabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Hexabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Heptabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Octabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Nonabromodiphenyl ether | mg/kg | | 5 | N.D. |
| Decabromodiphenyl ether | mg/kg | | 5 | N.D. |

Tested by : Jooyeon Lee, Seulgi Park, Miseon Lee

Notes : mg/kg = ppm = parts per million
 < = Less than
 N.D. = Not detected (<MDL)
 MDL = Method detection limit

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PAGE: 3 of 8
DATE: Jan. 10, 2020

REPORT NO. RT20R-S0037-006-E

SAMPLE ID NO. : RT20R-S0037-006

SAMPLE DESCRIPTION : KEP-COMPONENT

| TEST ITEM | UNIT | TEST METHOD | MDL | RESULT |
|----------------|-------|---|-----|--------|
| Bromine (Br) | mg/kg | With reference to EN 14582, by oxygen combustion with bomb and determined by IC | 30 | N.D. |
| Chlorine (Cl) | mg/kg | With reference to EN 14582, by oxygen combustion with bomb and determined by IC | 30 | N.D. |
| Beryllium (Be) | mg/kg | With reference to US EPA 3052, by acid digestion and determined by ICP-OES | 2 | N.D. |
| Antimony (Sb) | mg/kg | With reference to US EPA 3052, by acid digestion and determined by ICP-OES | 2 | 92 |

Tested by : Hyojoo Kim, Jooyeon Lee

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SAMPLE ID NO. : RT20R-S0037-006

SAMPLE DESCRIPTION : KEP-COMPONENT

| TEST ITEM | CAS NO. | UNIT | TEST METHOD | MDL | RESULT |
|-----------------------------------|----------|-------|---|-----|--------|
| Dibutyl phthalate (DBP) | 84-74-2 | mg/kg | With reference to IEC 62321-8 Edition 1.0 : 2017, by solvent extraction and determined by GC/MS | 50 | N.D. |
| Di(2-ethylhexyl) phthalate (DEHP) | 117-81-7 | mg/kg | | 50 | N.D. |
| Benzyl butyl phthalate (BBP) | 85-68-7 | mg/kg | | 50 | N.D. |
| Diisobutyl phthalate (DIBP) | 84-69-5 | mg/kg | | 50 | N.D. |

Tested by : Miseon Lee

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* View of sample as received;-



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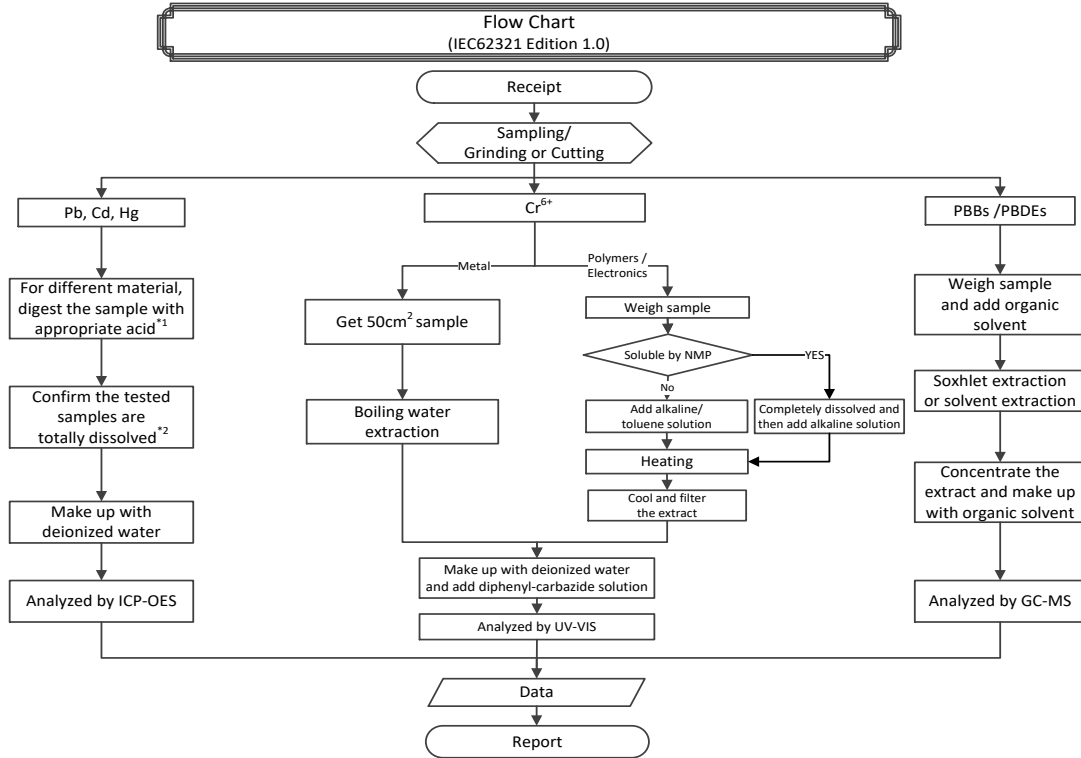
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SAMPLE ID NO. : RT20R-S0037-006

SAMPLE DESCRIPTION : KEP-COMPONENT



Remarks :

*1 : List of appropriate acid :

| Material | Acid added for digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |

*2 : The samples were dissolved totally by pre-conditioning method according to above flow chart.



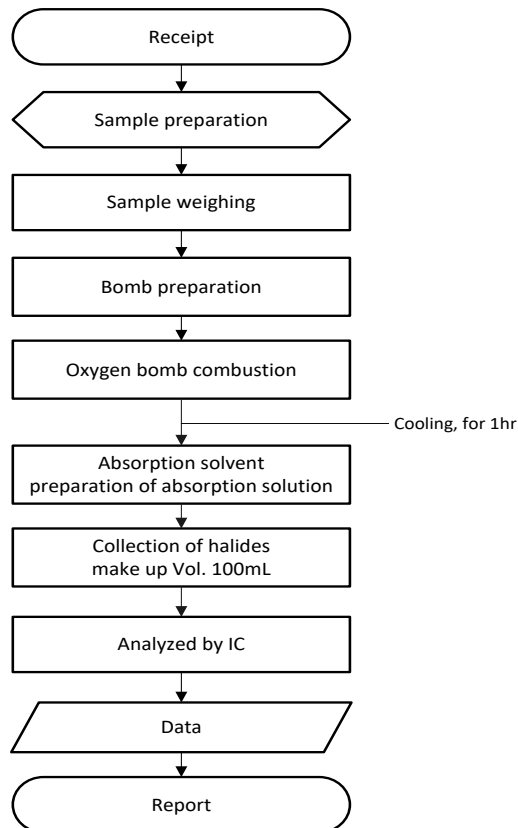
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SAMPLE DESCRIPTION : KEP-COMPONENT

Flow Chart (EN14582)



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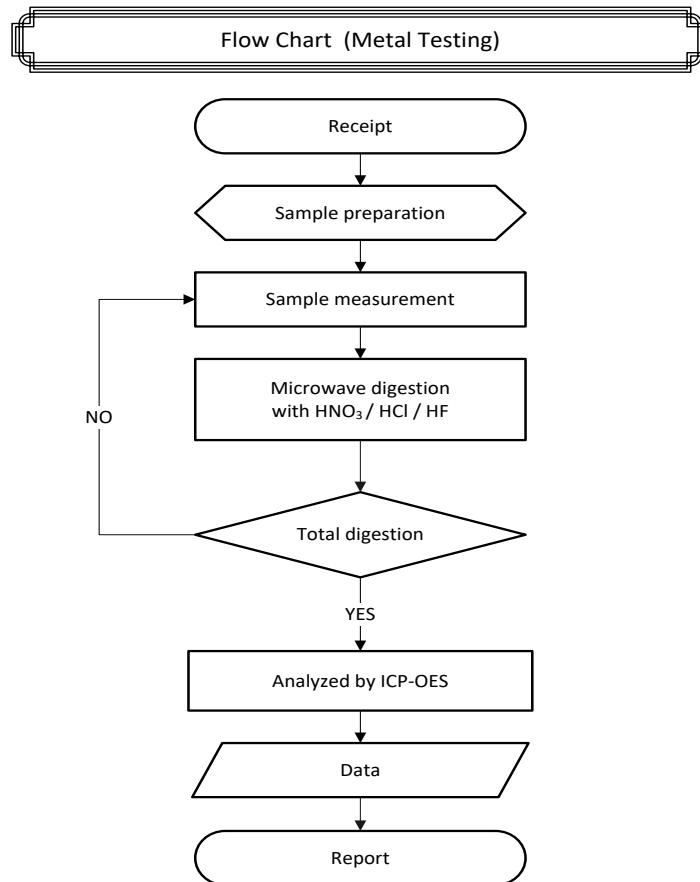
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SAMPLE DESCRIPTION : KEP-COMPONENT



** Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.



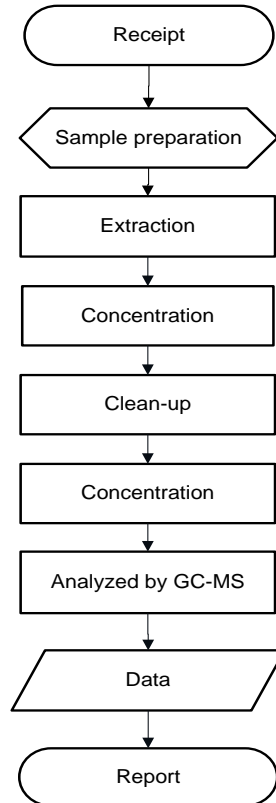
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SAMPLE ID NO. : RT20R-S0037-006

SAMPLE DESCRIPTION : KEP-COMPONENT

Flow Chart (Phthalates)



***** End of Report *****

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