

TEST REPORT  
(시험성적서)

신청기관 (인) : (주)한샘디지텍  
APPLICANT : Hansaem Digitec  
주소 (한글) : 인천광역시 서구 석남로 15  
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발행면수 (PAGE) : 1 of 18  
발행일자 (DATE) : 2025. 01. 17.

시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료 명세 : 시료에 대한 상세한 정보는 아래와 같음  
(SAMPLE DESCRIPTION) (The following submitted sample(s) said to be)

제품명/형식 : HANSAEM DIGITEC PCB-REACH  
(NAME/TYPE OF PRODUCT) (HANSAEM DIGITEC PCB-REACH)

재질 : PCB  
(NAME OF MATERIAL) (PCB)

시료고유번호 : RT25R-S0267-004  
(SAMPLE ID NO.) (RT25R-S0267-004)

제품 생산자/공급자 : (주)한샘디지텍  
(MANUFACTURER/VENDOR) (Hansaem Digitec)

제출처 : SEC  
(NAME OF BUYER) (SEC)

시료접수일자 : 2025. 01. 09.  
(SAMPLE RECEIVED) (Jan. 09, 2025)

시험일자 : 2025. 01. 09. ~ 2025. 01. 17.  
(TESTING DATE) (Jan. 09, 2025 ~ Jan. 17, 2025)

시험유형 : 화학시험 - REACH관련하여 ECHA에서 공지한 242종의 고 위험성 우려물질  
(TEST TYPE) : Chemical Testing - Two hundred forty-two (242) substances of very high concern (SVHC) based on the SVHC Candidate List announced by European Chemicals Agency (ECHA) regarding Regulation (EC) No 1907/2006 concerning REACH

시험결과요약 : ECHA에서 공표한 고 위험성 우려물질 중에 9개 물질을 제외하고 모두 0.1 % 이하로  
(SUMMARY OF TEST RESULT(S)) 검출됨  
: According to specified test processes in this report, contents of all substances of very high concern (SVHC) in Candidate List published by ECHA are less than 0.1 % (w/w) in submitted sample(s) excepting nine(9) substances. For more details, please see the following page(s).

비고 (Notes) : 1. 이 시험성적서는 제시된 시료 및 시료명으로 시험한 결과로서 유사 대상시료에 적용할 수 없음.  
(The test results presented in this report refer only to the object tested.)  
2. 이 시험성적서는 승인없이 복사 사용을 금함.  
(This report shall not be reproduced except in full without the written approval of the testing laboratory.)

승인자 (Approved by)

이청수/기술책임자  
(Nikkie Lee / Lab. Technical Manager)

권한자 (Authorized by)

장준용/소장  
(Jade Jang / Lab. General Manager)



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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                 | EC No.                 | CAS No.                 | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|---------------------------------------------------------------------|------------------------|-------------------------|-----------------------|-------------------------------|
| 1           | Anthracene                                                          | 204-371-1              | 120-12-7                | 0.02                  | N.D.                          |
| 2           | 4,4'-diaminodiphenylmethane                                         | 202-974-4              | 101-77-9                | 0.02                  | N.D.                          |
| 3           | Dibutyl phthalate(DBP)                                              | 201-557-4              | 84-74-2                 | 0.02                  | N.D.                          |
| 4           | Cobalt dichloride* <sup>2</sup>                                     | 231-589-4              | 7646-79-9               | 0.02                  | N.D.                          |
| 5           | Diarsenic pentaoxide* <sup>6</sup>                                  | 215-116-9              | 1303-28-2               | 0.02                  | N.D.                          |
| 6           | Diarsenic trioxide* <sup>6</sup>                                    | 215-481-4              | 1327-53-3               | 0.02                  | N.D.                          |
| 7           | Sodium dichromate* <sup>6</sup>                                     | 234-190-3              | 7789-12-0<br>10588-01-9 | 0.02                  | N.D.                          |
| 8           | 5-tert-butyl-2,4,6-trinitro-m-xylene(musk xylene)                   | 201-329-4              | 81-15-2                 | 0.02                  | N.D.                          |
| 9           | Bis(2-thyl(hexyl)phthalate)(DEHP)                                   | 204-211-0              | 117-81-7                | 0.02                  | N.D.                          |
| 10          | Hexabromocyclododecane(HBCDD)                                       | 247-148-4<br>221-695-9 | 25637-99-4              | 0.02                  | N.D.                          |
| 11          | Short chain chlorinated paraffins(SCCPs)                            | 287-476-5              | 85535-84-8              | 0.02                  | N.D.                          |
| 12          | Bis(tributyltin)oxide(TBTO)                                         | 200-268-0              | 56-35-9                 | 0.02                  | N.D.                          |
| 13          | Lead hydrogen arsenate* <sup>4</sup>                                | 232-064-2              | 7784-40-9               | 0.02                  | N.D.                          |
| 14          | Triethyl arsenate* <sup>6</sup>                                     | 427-700-2              | 15606-95-8              | 0.02                  | N.D.                          |
| 15          | Benzyl butyl phthalate(BBP)                                         | 201-622-7              | 85-68-7                 | 0.02                  | N.D.                          |
| 16          | Anthracene oil* <sup>8</sup>                                        | 292-602-7              | 90640-80-5              | 0.02                  | N.D.                          |
| 17          | Anthracene oil, anthracene paste, distn, light* <sup>8</sup>        | 295-278-5              | 91995-17-4              | 0.02                  | N.D.                          |
| 18          | Anthracene oil, anthracene paste, anthracene fraction* <sup>8</sup> | 295-275-9              | 91995-15-2              | 0.02                  | N.D.                          |
| 19          | Anthracene oil, anthracene-low* <sup>8</sup>                        | 292-604-8              | 90640-82-7              | 0.02                  | N.D.                          |
| 20          | Anthracene oil, anthracene-paste* <sup>8</sup>                      | 292-603-2              | 90640-81-6              | 0.02                  | N.D.                          |
| 21          | Coal tar pitch, hightemperature* <sup>9</sup>                       | 266-028-2              | 65996-93-2              | 0.02                  | N.D.                          |
| 22          | Acrylamide                                                          | 201-173-7              | 79-06-1                 | 0.02                  | N.D.                          |
| 23          | 2,4-Dinitrotoluene                                                  | 204-450-0              | 121-14-2                | 0.02                  | N.D.                          |

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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                           |                | EC No.                 | CAS No.                              | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|-------------------------------------------------------------------------------|----------------|------------------------|--------------------------------------|-----------------------|-------------------------------|
| 24          | Diisobutyl phthalate                                                          |                | 201-553-2              | 84-69-5                              | 0.02                  | N.D.                          |
| 25          | Lead chromate* <sup>5</sup>                                                   |                | 231-846-0              | 7758-97-6                            | 0.02                  | N.D.                          |
| 26          | Lead chromate molybdate sulphate red<br>(C.I. pigment red 104) * <sup>5</sup> |                | 235-759-9              | 12656-85-8                           | 0.02                  | N.D.                          |
| 27          | Lead sulfochromate yellow<br>(C.I. pigment yellow 34) * <sup>5</sup>          |                | 215-693-7              | 1344-37-2                            | 0.02                  | N.D.                          |
| 28          | Tris(2-chloroethyl)phosphate                                                  |                | 204-118-5              | 115-96-8                             | 0.02                  | N.D.                          |
| 29          | Trichloroethylene                                                             |                | 201-167-4              | 79-01-6                              | 0.02                  | N.D.                          |
| 30          | Boric acid* <sup>1</sup>                                                      |                | 233-139-2<br>234-343-4 | 10043-35-3<br>11113-50-1             | 0.02                  | 5.29                          |
| 31          | Disodium tetraborate, anhydrous* <sup>1</sup>                                 |                | 215-540-4              | 1330-43-4<br>12179-04-3<br>1303-96-4 | 0.02                  | 0.40                          |
| 32          | Tetraboron disodium heptaoxide, hydrate* <sup>1</sup>                         |                | 235-541-3              | 12267-73-1                           | 0.02                  | 0.43                          |
| 33          | Sodium chromate* <sup>6</sup>                                                 |                | 231-889-5              | 7775-11-3                            | 0.02                  | N.D.                          |
| 34          | Potassium chromate* <sup>6</sup>                                              |                | 232-140-5              | 7789-00-6                            | 0.02                  | N.D.                          |
| 35          | Ammonium dichromate* <sup>6</sup>                                             |                | 232-143-1              | 7789-09-5                            | 0.02                  | N.D.                          |
| 36          | Potassium dichromate* <sup>6</sup>                                            |                | 231-906-6              | 7778-50-9                            | 0.02                  | N.D.                          |
| 37          | Cobalt(II) sulphate* <sup>2</sup>                                             |                | 233-334-2              | 10124-43-3                           | 0.02                  | N.D.                          |
| 38          | Cobalt(II) dinitrate* <sup>2</sup>                                            |                | 233-402-1              | 10141-05-6                           | 0.02                  | N.D.                          |
| 39          | Cobalt(II) carbonate* <sup>2</sup>                                            |                | 208-169-4              | 513-79-1                             | 0.02                  | N.D.                          |
| 40          | Cobalt(II) diacetate* <sup>2</sup>                                            |                | 200-755-8              | 71-48-7                              | 0.02                  | N.D.                          |
| 41          | 2-Methoxyethanol                                                              |                | 203-713-7              | 109-86-4                             | 0.02                  | N.D.                          |
| 42          | 2-Ethoxyethanol                                                               |                | 203-804-1              | 110-80-5                             | 0.02                  | N.D.                          |
| 43          | Chromium trioxide* <sup>6</sup>                                               |                | 215-607-8              | 1333-82-0                            | 0.02                  | N.D.                          |
| 44          | Acids generated from chromium Trioxide and their oligomers* <sup>6</sup>      | Chromic acid   | 231-801-5<br>236-881-5 | 7738-94-5<br>13530-68-2              | 0.02                  | N.D.                          |
|             |                                                                               | Dichromic acid |                        |                                      | 0.02                  | N.D.                          |

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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                            | EC No.    | CAS No.               | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|--------------------------------------------------------------------------------|-----------|-----------------------|-----------------------|-------------------------------|
| 45          | 2-ethoxyethyl acetate                                                          | 203-839-2 | 111-15-9              | 0.02                  | N.D.                          |
| 46          | Strontium chromate* <sup>6</sup>                                               | 232-142-6 | 7789-06-2             | 0.02                  | N.D.                          |
| 47          | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters(DHNUP) | 271-084-6 | 68515-42-4            | 0.02                  | N.D.                          |
| 48          | Hydrazine                                                                      | 206-114-9 | 302-01-2<br>7803-57-8 | 0.02                  | N.D.                          |
| 49          | 1-methyl-2-pyrrolidone                                                         | 212-828-1 | 872-50-4              | 0.02                  | N.D.                          |
| 50          | 1,2,3-trichloropropane                                                         | 202-486-1 | 96-18-4               | 0.02                  | N.D.                          |
| 51          | 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters(DIHP)              | 276-158-1 | 71888-89-6            | 0.02                  | N.D.                          |
| 52          | Zirconia Aluminosilicate Refractory Ceramic Fibres* <sup>7</sup>               | -         | -                     | 0.02                  | N.D.                          |
| 53          | Calcium arsenate* <sup>6</sup>                                                 | 231-904-5 | 7778-44-1             | 0.02                  | N.D.                          |
| 54          | Bis(2-methoxyethyl) ether                                                      | 203-924-4 | 111-96-6              | 0.02                  | N.D.                          |
| 55          | Aluminosilicate Refractory Ceramic Fibres* <sup>7</sup>                        | -         | -                     | 0.02                  | N.D.                          |
| 56          | Potassium hydroxyoctaoxodizincatedichromate* <sup>6</sup>                      | 234-329-8 | 11103-86-9            | 0.02                  | N.D.                          |
| 57          | Lead dipicrate* <sup>4</sup>                                                   | 229-335-2 | 6477-64-1             | 0.02                  | N.D.                          |
| 58          | N,N-dimethylacetamide                                                          | 204-826-4 | 127-19-5              | 0.02                  | N.D.                          |
| 59          | Arsenic acid* <sup>6</sup>                                                     | 231-901-9 | 7778-39-4             | 0.02                  | N.D.                          |
| 60          | 2-Methoxyaniline; o-Anisidine                                                  | 201-963-1 | 90-04-0               | 0.02                  | N.D.                          |
| 61          | Trilead diarsenate* <sup>4</sup>                                               | 222-979-5 | 3687-31-8             | 0.02                  | N.D.                          |
| 62          | 1,2-dichloroethane                                                             | 203-458-1 | 107-06-2              | 0.02                  | N.D.                          |
| 63          | Pentazinc chromate octahydroxide* <sup>6</sup>                                 | 256-418-0 | 49663-84-5            | 0.02                  | N.D.                          |
| 64          | Formaldehyde, oligomeric reaction products with aniline                        | 500-036-1 | 25214-70-4            | 0.02                  | N.D.                          |
| 65          | Bis(2-methoxyethyl) phthalate                                                  | 204-212-6 | 117-82-8              | 0.02                  | N.D.                          |
| 66          | 4-(1,1,3,3-tetramethylbutyl)phenol                                             | 205-426-2 | 140-66-9              | 0.02                  | N.D.                          |
| 67          | Lead diazide, Lead azide* <sup>4</sup>                                         | 236-542-1 | 13424-46-9            | 0.02                  | N.D.                          |

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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                         | EC No.    | CAS No.    | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|-----------------------------------------------------------------------------------------------------------------------------|-----------|------------|-----------------------|-------------------------------|
| 68          | Phenolphthalein                                                                                                             | 201-004-7 | 77-09-8    | 0.02                  | N.D.                          |
| 69          | Dichromium tris(chromate) *6                                                                                                | 246-356-2 | 24613-89-6 | 0.02                  | N.D.                          |
| 70          | Lead styphnate*4                                                                                                            | 239-290-0 | 15245-44-0 | 0.02                  | N.D.                          |
| 71          | 2,2'-dichloro-4,4'-methylenedianiline                                                                                       | 202-918-9 | 101-14-4   | 0.02                  | N.D.                          |
| 72          | $\alpha,\alpha$ -Bis[4-(dimethylamino)phenyl]-4<br>(phenylamino)naphthalene-1-methanol                                      | 229-851-8 | 6786-83-0  | 0.02                  | N.D.                          |
| 73          | N,N,N',N'-tetramethyl-4,4'-methylenedianiline<br>(Michler's base)                                                           | 202-959-2 | 101-61-1   | 0.02                  | N.D.                          |
| 74          | 1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-<br>2,4,6-(1H,3H,5H)-trione ( $\beta$ -TGIC)                         | 423-400-0 | 59653-74-6 | 0.02                  | N.D.                          |
| 75          | Diboron trioxide*1                                                                                                          | 215-125-8 | 1303-86-2  | 0.02                  | 2.98                          |
| 76          | 1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)                                                                           | 203-977-3 | 112-49-2   | 0.02                  | N.D.                          |
| 77          | 4,4'-bis(dimethylamino)-4''-(methylamino)<br>trityl alcohol                                                                 | 209-218-2 | 561-41-1   | 0.02                  | N.D.                          |
| 78          | Lead(II) bis(methanesulfonate)*4                                                                                            | 401-750-5 | 17570-76-2 | 0.02                  | N.D.                          |
| 79          | Formamide                                                                                                                   | 200-842-0 | 75-12-7    | 0.02                  | N.D.                          |
| 80          | [4-[4,4'-bis(dimethylamino) benzhydrylidene]<br>cyclohexa-2,5-dien-1-ylidene]dimethylammonium<br>chloride                   | 208-953-6 | 548-62-9   | 0.02                  | N.D.                          |
| 81          | 1,2-dimethoxyethane; ethylene glycol dimethyl ether<br>(EGDME)                                                              | 203-794-9 | 110-71-4   | 0.02                  | N.D.                          |
| 82          | [4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]<br>methylene]cyclohexa-2,5-dien-1-ylidene]<br>dimethylammonium chloride | 219-943-6 | 2580-56-5  | 0.02                  | N.D.                          |
| 83          | 1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazine-2,4,6-<br>trione (TGIC)                                                        | 219-514-3 | 2451-62-9  | 0.02                  | N.D.                          |
| 84          | 4,4'-bis(dimethylamino)benzophenone<br>(Michler's ketone)                                                                   | 202-027-5 | 90-94-8    | 0.02                  | N.D.                          |
| 85          | Bis(pentabromophenyl) ether (decabromodiphenyl<br>ether; DecaBDE)                                                           | 214-604-9 | 1163-19-5  | 0.02                  | N.D.                          |
| 86          | Pentacosfluorotridecanoic acid                                                                                              | 276-745-2 | 72629-94-8 | 0.02                  | N.D.                          |
| 87          | Tricosfluorododecanoic acid                                                                                                 | 206-203-2 | 307-55-1   | 0.02                  | N.D.                          |

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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

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(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                                                                                                                                                                                              | EC No.                                           | CAS No.                                              | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------|-----------------------|-------------------------------|
| 88          | Henicosfluoroundecanoic acid                                                                                                                                                                                                                                                                                                                     | 218-165-4                                        | 2058-94-8                                            | 0.02                  | N.D.                          |
| 89          | Heptacosfluorotetradecanoic acid                                                                                                                                                                                                                                                                                                                 | 206-803-4                                        | 376-06-7                                             | 0.02                  | N.D.                          |
| 90          | Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))                                                                                                                                                                                                                                                                                                | 204-650-8                                        | 123-77-3                                             | 0.02                  | N.D.                          |
| 91          | Cyclohexane-1,2-dicarboxylic anhydride [1]cis-cyclohexane-1,2-dicarboxylic anhydride [2]trans-cyclohexane-1,2-dicarboxylic anhydride [3][The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis-and trans-isomers [1] are covered by this entry]                                                      | 201-604-9<br>236-086-3<br>238-009-9              | 85-42-7,<br>13149-00-3<br>14166-21-3                 | 0.02                  | N.D.                          |
| 92          | Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (including their cis- and trans- stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry] | 247-094-1<br>243-072-0<br>256-356-4<br>260-566-1 | 25550-51-0<br>19438-60-9<br>48122-14-1<br>57110-29-9 | 0.02                  | N.D.                          |
| 93          | 4-Nonylphenol, branched and linear[substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]                                                                | -                                                | -                                                    | 0.02                  | N.D.                          |
| 94          | 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]                                                                                                                                                                                                                  | -                                                | -                                                    | 0.02                  | N.D.                          |
| 95          | Methoxyacetic acid                                                                                                                                                                                                                                                                                                                               | 210-894-6                                        | 625-45-6                                             | 0.02                  | N.D.                          |
| 96          | N,N-dimethylformamide                                                                                                                                                                                                                                                                                                                            | 200-679-5                                        | 68-12-2                                              | 0.02                  | N.D.                          |
| 97          | Dibutyltin dichloride (DBTC)                                                                                                                                                                                                                                                                                                                     | 211-670-0                                        | 683-18-1                                             | 0.02                  | N.D.                          |
| 98          | Lead monoxide (Lead oxide)*4                                                                                                                                                                                                                                                                                                                     | 215-267-0                                        | 1317-36-8                                            | 0.02                  | N.D.                          |
| 99          | Orange lead (Lead tetroxide)*4                                                                                                                                                                                                                                                                                                                   | 215-235-6                                        | 1314-41-6                                            | 0.02                  | N.D.                          |

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## TEST REPORT (시험 성적서)

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발행일자 (DATE) : 2025. 01. 17.

시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                            | EC No.    | CAS No.     | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|------------------------------------------------------------------------------------------------|-----------|-------------|-----------------------|-------------------------------|
| 100         | Lead bis(tetrafluoroborate) *4                                                                 | 237-486-0 | 13814-96-5  | 0.02                  | N.D.                          |
| 101         | Trileadbis(carbonate)dihydroxide*4                                                             | 215-290-6 | 1319-46-6   | 0.02                  | N.D.                          |
| 102         | Lead titanium trioxide*4                                                                       | 235-038-9 | 12060-00-3  | 0.02                  | N.D.                          |
| 103         | Lead titanium zirconium oxide*4                                                                | 235-727-4 | 12626-81-2  | 0.02                  | N.D.                          |
| 104         | Silicic acid, lead salt*4                                                                      | 234-363-3 | 11120-22-2  | 0.02                  | N.D.                          |
| 105         | Silicic acid (H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> ), barium salt (1:1), lead-doped*4 | 272-271-5 | 68784-75-8  | 0.02                  | N.D.                          |
| 106         | 1-bromopropane (n-propyl bromide)                                                              | 203-445-0 | 106-94-5    | 0.02                  | N.D.                          |
| 107         | Methyloxirane (Propylene oxide)                                                                | 200-879-2 | 75-56-9     | 0.02                  | N.D.                          |
| 108         | 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear                               | 284-032-2 | 84777-06-0  | 0.02                  | N.D.                          |
| 109         | Diisopentylphthalate (DIPP)                                                                    | 210-088-4 | 605-50-5    | 0.02                  | N.D.                          |
| 110         | N-pentyl-isopentylphthalate                                                                    | -         | 776297-69-9 | 0.02                  | N.D.                          |
| 111         | 1,2-diethoxyethane                                                                             | 211-076-1 | 629-14-1    | 0.02                  | N.D.                          |
| 112         | Acetic acid, lead salt, basic*4                                                                | 257-175-3 | 51404-69-4  | 0.02                  | N.D.                          |
| 113         | Lead oxide sulfate*4                                                                           | 234-853-7 | 12036-76-9  | 0.02                  | N.D.                          |
| 114         | [Phthalato(2-)]dioxotrilead*4                                                                  | 273-688-5 | 69011-06-9  | 0.02                  | N.D.                          |
| 115         | Dioxobis(stearato)trilead*4                                                                    | 235-702-8 | 12578-12-0  | 0.02                  | N.D.                          |
| 116         | Fatty acids, C16-18, lead salts*4                                                              | 292-966-7 | 91031-62-8  | 0.02                  | N.D.                          |
| 117         | Lead cyanamidate*4                                                                             | 244-073-9 | 20837-86-9  | 0.02                  | N.D.                          |
| 118         | Lead dinitrate*4                                                                               | 233-245-9 | 10099-74-8  | 0.02                  | N.D.                          |
| 119         | Pentalead tetraoxide sulphate*4                                                                | 235-067-7 | 12065-90-6  | 0.02                  | N.D.                          |
| 120         | Pyrochlore, antimony lead yellow*4                                                             | 232-382-1 | 8012-00-8   | 0.02                  | N.D.                          |
| 121         | Sulfurous acid, lead salt, dibasic*4                                                           | 263-467-1 | 62229-08-7  | 0.02                  | N.D.                          |

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## TEST REPORT (시험 성적서)

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발행일자 (DATE) : 2025. 01. 17.

시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                  | EC No.    | CAS No.     | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|------------------------------------------------------|-----------|-------------|-----------------------|-------------------------------|
| 122         | Tetraethyllead* <sup>4</sup>                         | 201-075-4 | 78-00-2     | 0.02                  | N.D.                          |
| 123         | Tetralead trioxide sulphate* <sup>4</sup>            | 235-380-9 | 12202-17-4  | 0.02                  | N.D.                          |
| 124         | Trilead dioxide phosphonate* <sup>4</sup>            | 235-252-2 | 12141-20-7  | 0.02                  | N.D.                          |
| 125         | Furan                                                | 203-727-3 | 110-00-9    | 0.02                  | N.D.                          |
| 126         | Diethyl sulphate                                     | 200-589-6 | 64-67-5     | 0.02                  | N.D.                          |
| 127         | Dimethyl sulphate                                    | 201-058-1 | 77-78-1     | 0.02                  | N.D.                          |
| 128         | 3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine   | 421-150-7 | 143860-04-2 | 0.02                  | N.D.                          |
| 129         | Dinoseb (6-sec-butyl-2,4-dinitrophenol)              | 201-861-7 | 88-85-7     | 0.02                  | N.D.                          |
| 130         | 4,4'-methylenedi-o-toluidine                         | 212-658-8 | 838-88-0    | 0.02                  | N.D.                          |
| 131         | 4,4'-oxydianiline and its salts                      | 202-977-0 | 101-80-4    | 0.02                  | N.D.                          |
| 132         | 4-aminoazobenzene                                    | 200-453-6 | 60-09-3     | 0.02                  | N.D.                          |
| 133         | 4-methyl-m-phenylenediamine<br>(toluene-2,4-diamine) | 202-453-1 | 95-80-7     | 0.02                  | N.D.                          |
| 134         | 6-methoxy-m-toluidine (p-cresidine)                  | 204-419-1 | 120-71-8    | 0.02                  | N.D.                          |
| 135         | Biphenyl-4-ylamine                                   | 202-177-1 | 92-67-1     | 0.02                  | N.D.                          |
| 136         | o-aminoazotoluene<br>[(4-o-tolylazo-o-toluidine)]    | 202-591-2 | 97-56-3     | 0.02                  | N.D.                          |
| 137         | o-toluidine                                          | 202-429-0 | 95-53-4     | 0.02                  | N.D.                          |
| 138         | N-methylacetamide                                    | 201-182-6 | 79-16-3     | 0.02                  | N.D.                          |
| 139         | Cadmium                                              | 231-152-8 | 7440-43-9   | 0.02                  | N.D.                          |
| 140         | Ammonium pentadecafluorooctanoate (APFO)             | 223-320-4 | 3825-26-1   | 0.02                  | N.D.                          |
| 141         | Pentadecafluorooctanoic acid (PFOA)                  | 206-397-9 | 335-67-1    | 0.02                  | N.D.                          |
| 142         | Dipentyl phthalate (DPP)                             | 205-017-9 | 131-18-0    | 0.02                  | N.D.                          |
| 143         | 4-Nonylphenol, branched and linear, ethoxylated      | -         | -           | 0.02                  | N.D.                          |
| 144         | Cadmium oxide* <sup>3</sup>                          | 215-146-2 | 1306-19-0   | 0.02                  | N.D.                          |

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## TEST REPORT (시험 성적서)

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발행일자 (DATE) : 2025. 01. 17.

시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                                                        | EC No.                  | CAS No.                  | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|-----------------------|-------------------------------|
| 145         | Cadmium sulphide* <sup>3</sup>                                                                                                                                                                             | 215-147-8               | 1306-23-6                | 0.02                  | N.D.                          |
| 146         | Diethyl phthalate                                                                                                                                                                                          | 201-559-5               | 84-75-3                  | 0.02                  | N.D.                          |
| 147         | Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate)(C.I. Direct Red 28)                                                                                                  | 209-358-4               | 573-58-0                 | 0.02                  | N.D.                          |
| 148         | Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate(C.I. Direct Black 38)                                                        | 217-710-3               | 1937-37-7                | 0.02                  | N.D.                          |
| 149         | Imidazolidine-2-thione; 2-imidazoline-2-thiol                                                                                                                                                              | 202-506-9               | 96-45-7                  | 0.02                  | N.D.                          |
| 150         | Lead di(acetate) * <sup>4</sup>                                                                                                                                                                            | 206-104-4               | 301-04-2                 | 0.02                  | N.D.                          |
| 151         | Triethyl phosphate                                                                                                                                                                                         | 246-677-8               | 25155-23-1               | 0.02                  | N.D.                          |
| 152         | 1,2-Benzenedicarboxylic acid, diethyl ester, branched and linear                                                                                                                                           | 271-093-5               | 68515-50-4               | 0.02                  | N.D.                          |
| 153         | Cadmium chloride* <sup>3</sup>                                                                                                                                                                             | 233-296-7               | 10108-64-2               | 0.02                  | N.D.                          |
| 154         | Sodium perborate;<br>perboric acid, sodium salt* <sup>1</sup>                                                                                                                                              | 239-172-9;<br>234-390-0 | -                        | 0.02                  | 0.39                          |
| 155         | Sodium peroxometaborate* <sup>1</sup>                                                                                                                                                                      | 231-556-4               | 7632-04-4                | 0.02                  | 0.32                          |
| 156         | Cadmium fluoride* <sup>3</sup>                                                                                                                                                                             | 232-222-0               | 7790-79-6                | 0.02                  | N.D.                          |
| 157         | Cadmium sulfate* <sup>3</sup>                                                                                                                                                                              | 233-331-6               | 10124-36-4<br>31119-53-6 | 0.02                  | N.D.                          |
| 158         | 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)                                                                                                                                                       | 223-346-6               | 3846-71-7                | 0.02                  | N.D.                          |
| 159         | 2-(2H-Benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)                                                                                                                                                   | 247-384-8               | 25973-55-1               | 0.02                  | N.D.                          |
| 160         | 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate                                                                                                                            | 239-622-4               | 15571-58-1               | 0.02                  | N.D.                          |
| 161         | 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate | -                       | -                        | 0.02                  | N.D.                          |

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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                                                                                                                         | EC No.                 | CAS No.                             | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------|-----------------------|-------------------------------|
| 162         | 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters;<br>1,2-benzenedicarboxylic acid, mixed decyl and hexyl<br>and octyl diesters with ≥ 0.3% of dihexyl phthalate                                                                                                          | 271-094-0<br>272-013-1 | 68515-51-5<br>68648-93-1            | 0.02                  | N.D.                          |
| 163         | 5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-<br>methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-<br>dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2]<br>[covering any of the individual stereoisomers of [1]<br>and [2] or any combination thereof]                     | -                      | -                                   | 0.02                  | N.D.                          |
| 164         | 1,3-propanesultone                                                                                                                                                                                                                                                          | 214-317-9              | 1120-71-4                           | 0.02                  | N.D.                          |
| 165         | 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol<br>(UV-327)                                                                                                                                                                                                           | 223-383-8              | 3864-99-1                           | 0.02                  | N.D.                          |
| 166         | 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)<br>phenol (UV-350)                                                                                                                                                                                                    | 253-037-1              | 36437-37-3                          | 0.02                  | N.D.                          |
| 167         | Nitrobenzene                                                                                                                                                                                                                                                                | 202-716-0              | 98-95-3                             | 0.02                  | N.D.                          |
| 168         | Perfluorononan-1-oic acid<br>(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-<br>heptadecafluorononanoic acid and its sodium and<br>ammonium salts                                                                                                                                         | 206-801-3              | 375-95-1<br>21049-39-8<br>4149-60-4 | 0.02                  | N.D.                          |
| 169         | Benzo[def]chrysene (Benzo[a]pyrene)                                                                                                                                                                                                                                         | 200-028-5              | 50-32-8                             | 0.02                  | N.D.                          |
| 170         | 4,4'-isopropylidenediphenol (Bisphenol-A)                                                                                                                                                                                                                                   | 201-245-8              | 80-05-7                             | 0.02                  | N.D.                          |
| 171         | Nonadecafluorodecanoic acid (PFDA) and its sodium<br>and ammonium salts                                                                                                                                                                                                     | 206-400-3<br>221-470-5 | 3108-42-7<br>335-76-2<br>3830-45-3  | 0.02                  | N.D.                          |
| 172         | P-(1,1-dimethylpropyl)phenol                                                                                                                                                                                                                                                | 201-280-9              | 80-46-6                             | 0.02                  | N.D.                          |
| 173         | 4-Heptylphenol, branched and linear                                                                                                                                                                                                                                         | -                      | -                                   | 0.02                  | N.D.                          |
| 174         | Perfluorohexane-1-sulphonic acid and its salts<br>(PFHxS)                                                                                                                                                                                                                   | 206-587-1              | 355-46-4                            | 0.02                  | N.D.                          |
| 175         | 1,6,7,8,9,14,15,16,17,17,18,18-<br>Dodecachloropentacyclo<br>[12.2.1.1 <sup>6,9</sup> .0 <sup>2,13</sup> .0 <sup>5,10</sup> ]octadeca-7,15-diene<br>("Dechlorane Plus" <sup>TM</sup> ) [covering any of its individual<br>anti- and syn-isomers or any combination thereof] | 236-948-9              | 13560-89-9                          | 0.02                  | N.D.                          |
| 176         | Benz[a]anthracene                                                                                                                                                                                                                                                           | 200-280-6              | 56-55-3<br>1718-53-2                | 0.02                  | N.D.                          |
| 177         | Cadmium nitrate*3                                                                                                                                                                                                                                                           | 233-710-6              | 10325-94-7                          | 0.02                  | N.D.                          |

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발행일자 (DATE) : 2025. 01. 17.

시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                        | EC No.    | CAS No.    | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|-----------------------|-------------------------------|
| 178         | Cadmium carbonate*3                                                                                                                                                        | 208-168-9 | 513-78-0   | 0.02                  | N.D.                          |
| 179         | Cadmium hydroxide*3                                                                                                                                                        | 244-168-5 | 21041-95-2 | 0.02                  | N.D.                          |
| 180         | Chrysene                                                                                                                                                                   | 205-923-4 | 218-01-9   | 0.02                  | N.D.                          |
| 181         | Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear] | -         | -          | 0.02                  | N.D.                          |
| 182         | Benzo[ghi]perylene                                                                                                                                                         | 205-883-8 | 191-24-2   | 0.02                  | N.D.                          |
| 183         | Decamethyl-cyclopentasiloxane (D5)                                                                                                                                         | 208-764-9 | 541-02-6   | 0.02                  | N.D.                          |
| 184         | Disodium octaborate*1                                                                                                                                                      | 234-541-0 | 12008-41-2 | 0.02                  | 0.67                          |
| 185         | Dodecamethyl-cyclohexasiloxane (D6)                                                                                                                                        | 208-762-8 | 540-97-6   | 0.02                  | N.D.                          |
| 186         | Ethylenediamine (EDA)                                                                                                                                                      | 203-468-6 | 107-15-3   | 0.02                  | N.D.                          |
| 187         | Lead                                                                                                                                                                       | 231-100-4 | 7439-92-1  | 0.02                  | N.D.                          |
| 188         | Octamethyl-cyclotetrasiloxane (D4)                                                                                                                                         | 209-136-7 | 556-67-2   | 0.02                  | N.D.                          |
| 189         | Terphenyl hydrogenated                                                                                                                                                     | 262-967-7 | 61788-32-7 | 0.02                  | N.D.                          |
| 190         | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride; TMA)                                                                                                | 209-008-0 | 552-30-7   | 0.02                  | N.D.                          |
| 191         | Dicyclohexyl phthalate (DCHP)                                                                                                                                              | 201-545-9 | 84-61-7    | 0.02                  | N.D.                          |
| 192         | 2,2-bis(4'-hydroxyphenyl)-4-methylpentane                                                                                                                                  | 401-720-1 | 6807-17-6  | 0.02                  | N.D.                          |
| 193         | Fluoranthene                                                                                                                                                               | 205-912-4 | 206-44-0   | 0.02                  | N.D.                          |
| 194         | Benzo[k]fluoranthene                                                                                                                                                       | 205-916-6 | 207-08-9   | 0.02                  | N.D.                          |
| 195         | Pyrene                                                                                                                                                                     | 204-927-3 | 129-00-0   | 0.02                  | N.D.                          |
| 196         | Phenanthrene                                                                                                                                                               | 201-581-5 | 85-01-8    | 0.02                  | N.D.                          |
| 197         | 1,7,7-trimethyl-3-(phenylmethylene) bicyclo[2.2.1]heptan-2-one                                                                                                             | 239-139-9 | 15087-24-8 | 0.02                  | N.D.                          |

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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                                                        | EC No.                              | CAS No.                                         | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------|-----------------------|-------------------------------|
| 198         | 4-tert-butylphenol                                                                                                                                                                                         | 202-679-0                           | 98-54-4                                         | 0.02                  | N.D.                          |
| 199         | 2-methoxyethyl acetate                                                                                                                                                                                     | 203-772-9                           | 110-49-6                                        | 0.02                  | N.D.                          |
| 200         | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP)                                                                               | -                                   | -                                               | 0.02                  | N.D.                          |
| 201         | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)                                               | -                                   | -                                               | 0.02                  | N.D.                          |
| 202         | 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone                                                                                                                                                        | 404-360-3                           | 119313-12-1                                     | 0.02                  | N.D.                          |
| 203         | 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one                                                                                                                                                   | 400-600-6                           | 71868-10-5                                      | 0.02                  | N.D.                          |
| 204         | Diisohexyl phthalate                                                                                                                                                                                       | 276-090-2                           | 71850-09-4                                      | 0.02                  | N.D.                          |
| 205         | Perfluorobutane sulfonic acid (PFBS) and its salts                                                                                                                                                         | -                                   | -                                               | 0.02                  | N.D.                          |
| 206         | 1-vinylimidazole                                                                                                                                                                                           | 214-012-0                           | 1072-63-5                                       | 0.02                  | N.D.                          |
| 207         | 2-methylimidazole                                                                                                                                                                                          | 211-765-7                           | 693-98-1                                        | 0.02                  | N.D.                          |
| 208         | Dibutylbis(pentane-2,4-dionato-O,O')tin                                                                                                                                                                    | 245-152-0                           | 22673-19-4                                      | 0.02                  | N.D.                          |
| 209         | Butyl 4-hydroxybenzoate                                                                                                                                                                                    | 202-318-7                           | 94-26-8                                         | 0.02                  | N.D.                          |
| 210         | Bis(2-(2-methoxyethoxy)ethyl) ether                                                                                                                                                                        | 205-594-7                           | 143-24-8                                        | 0.02                  | N.D.                          |
| 211         | Dioctyltin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety | -                                   | -                                               | 0.02                  | N.D.                          |
| 212         | 1,4-dioxane                                                                                                                                                                                                | 204-661-8                           | 123-91-1                                        | 0.02                  | N.D.                          |
| 213         | 2,2-bis(bromomethyl)propane1,3-diol (BMP) 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA) 2,3-dibromo-1-propanol (2,3-DBPA)                                   | 221-967-7<br>253-057-0<br>202-480-9 | 3296-90-0<br>36483-57-5<br>1522-92-5<br>96-13-9 | 0.02                  | N.D.                          |

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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                                                          | EC No.    | CAS No.     | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|-----------------------|-------------------------------|
| 214         | 2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers                                                                                                                       | -         | -           | 0.02                  | N.D.                          |
| 215         | 4,4'-(1-methylpropylidene)bisphenol; (bisphenol B)                                                                                                                                           | 201-025-1 | 77-40-7     | 0.02                  | N.D.                          |
| 216         | Glutaral                                                                                                                                                                                     | 203-856-5 | 111-30-8    | 0.02                  | N.D.                          |
| 217         | Medium-chain chlorinated paraffins (MCCP)<br>[UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17]       | -         | -           | 0.02                  | N.D.                          |
| 218         | Orthoboric acid, sodium salt*1                                                                                                                                                               | 237-560-2 | 13840-56-7  | 0.02                  | 0.17                          |
| 219         | Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/or combinations thereof (PDDP) | -         | -           | 0.02                  | N.D.                          |
| 220         | (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)                                       | -         | -           | 0.02                  | N.D.                          |
| 221         | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol                                                                                                                                                 | 204-327-1 | 119-47-1    | 0.02                  | N.D.                          |
| 222         | S-(tricyclo(5.2.1.0' <sup>2</sup> 2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate                            | 401-850-9 | 255881-94-8 | 0.02                  | N.D.                          |
| 223         | Tris(2-methoxyethoxy)vinylsilane                                                                                                                                                             | 213-934-0 | 1067-53-4   | 0.02                  | N.D.                          |
| 224         | N-(hydroxymethyl)acrylamide                                                                                                                                                                  | 213-103-2 | 924-42-5    | 0.02                  | N.D.                          |
| 225         | 1,1'-[ethane-1,2-diylbis(oxy)]bis[2,4,6-tribromobenzene]                                                                                                                                     | 253-692-3 | 37853-59-1  | 0.02                  | N.D.                          |
| 226         | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol                                                                                                                                             | 201-236-9 | 79-94-7     | 0.02                  | N.D.                          |
| 227         | 4,4'-sulphonyldiphenol                                                                                                                                                                       | 201-250-5 | 80-09-1     | 0.02                  | N.D.                          |
| 228         | Barium diboron tetraoxide*1                                                                                                                                                                  | 237-222-4 | 13701-59-2  | 0.02                  | 1.11                          |
| 229         | bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof                                                                                     | -         | -           | 0.02                  | N.D.                          |
| 230         | Isobutyl 4-hydroxybenzoate                                                                                                                                                                   | 224-208-8 | 4247-02-3   | 0.02                  | N.D.                          |

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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

| 번호<br>(No.) | 시험항목<br>(TEST ITEM)                                                                                                                                           | EC No.    | CAS No.     | 검출한계(RL)<br>(% (w/w)) | 시험결과<br>(RESULT)<br>(% (w/w)) |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|-----------------------|-------------------------------|
| 231         | Melamine                                                                                                                                                      | 203-615-4 | 108-78-1    | 0.02                  | N.D.                          |
| 232         | Perfluoroheptanoic acid and its salts                                                                                                                         | -         | -           | 0.02                  | N.D.                          |
| 233         | reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine | 473-390-7 | -           | 0.02                  | N.D.                          |
| 234         | Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide                                                                                                               | 278-355-8 | 75980-60-8  | 0.02                  | N.D.                          |
| 235         | Bis(4-chlorophenyl) sulphone                                                                                                                                  | 201-247-9 | 80-07-9     | 0.02                  | N.D.                          |
| 236         | Bumetrizole                                                                                                                                                   | 223-445-4 | 3896-11-5   | 0.02                  | N.D.                          |
| 237         | 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol                                                                                                   | 221-573-5 | 3147-75-9   | 0.02                  | N.D.                          |
| 238         | 2,4,6-tri-tert-butylphenol                                                                                                                                    | 211-989-5 | 732-26-3    | 0.02                  | N.D.                          |
| 239         | Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol                                                                                | 700-960-7 | -           | 0.02                  | N.D.                          |
| 240         | 2-(dimethylamino)-2-[[4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one                                                                          | 438-340-0 | 119344-86-4 | 0.02                  | N.D.                          |
| 241         | Bis(α,α-dimethylbenzyl) peroxide                                                                                                                              | 201-279-3 | 80-43-3     | 0.02                  | N.D.                          |
| 242         | Triphenyl Phosphate (TPhP)                                                                                                                                    | 204-112-2 | 115-86-6    | 0.02                  | N.D.                          |

Tested by : Jooyeon Lee, Chano Kim, Hayan Park

Notes : 1 % (w/w) = 10000 ppm = 10000 mg/kg

< = Less than

N.D. = Not detected (< RL)

RL = Reporting limit

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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

- Remark :
- \*1 The concentration of the substance is calculated on the basis of the content of specific elements, such as B, Na, P, S and Ba.
  - \*2 The concentration of the substance is calculated on the basis of the content of specific elements, such as Co, Cl.
  - \*3 The concentration of the substance is calculated on the basis of the content of specific elements, such as Cd, Cl.
  - \*4 The concentration of the substance is calculated on the basis of the content of specific elements, such as Pb, As, B, Ti and Zr.
  - \*5 The concentration of the substance is calculated on the basis of the content of specific elements, such as Pb, Cr and Cr<sup>6+</sup>.
  - \*6 The concentration of the substance is calculated on the basis of the content of specific elements, such as As, Ca, Cr, Cr<sup>6+</sup>, K, Na, Sr and Zn.
  - \*7 The existence of RCFs would be checked using the PLM after screening test of inorganic elements such as Al, Zr and Si. If positive, the concentration of the substances would be calculated on the basis of the content of specific elements.
  - \*8 The concentration of the various anthracene oils is based on screening test result of anthracene.
  - \*9 The concentration of coal tar pitch, high temp. is calculated on sum total of 12 PAHs.

Definition under 67/548/EEC and Regulation (EC) No 1907/2006

Substances of very high concern (SVHC) are defined in Article 57 of Regulation (EC) No 1907/2006 (the REACH Regulation) and the candidate list published by European Chemicals Agency (ECHA) before and 07 Nov 2024 and the main categories of SVHCs are CMR, PBT and vPvB compounds. The Candidate List will be regularly updated by ECHA when more substances are identified as SVHC; (Referred to <http://echa.europa.eu/candidate-list-table>)

- **C** Carcinogenic - category 1 or 2 (Directive 67/548/EEC)
- **M** Mutagenic - category 1 or 2 (Directive 67/548/EEC)
- **R** toxic for Reproduction - category 1 or 2 (Directive 67/548/EEC)
- **PBT** Persistent, Bioaccumulative and Toxic -see Annex XIII
- **vPvB** very Persistent and very Bioaccumulative - see Annex XIII
- Substances of equivalent level of concern (like endocrine disruptors)

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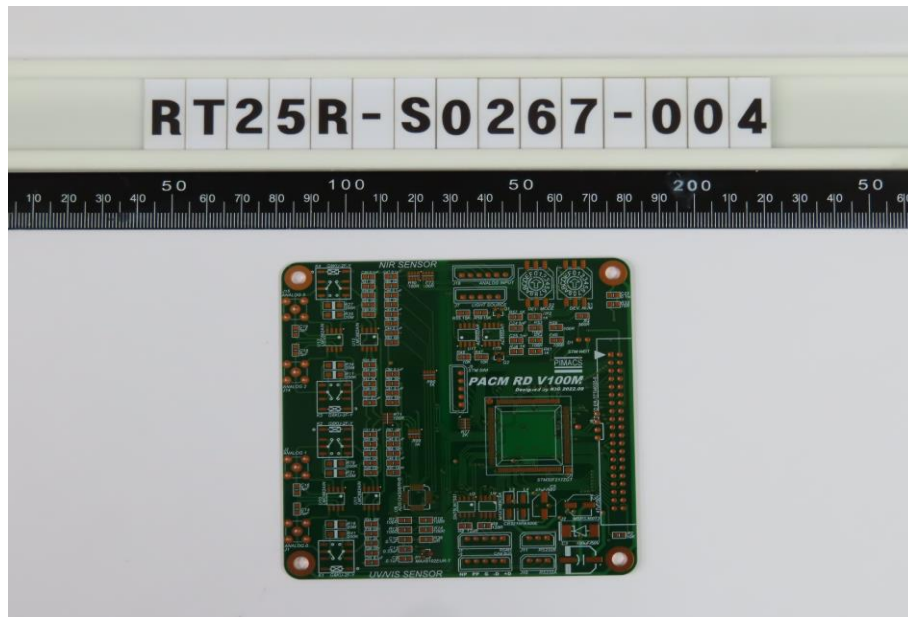
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시험성적서 번호 (REPORT NO.) : RT25R-S0267-004-K3

시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

\* 시료 접수 시 시료 상태 :  
(View of sample as received)



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시료고유번호 (SAMPLE ID NO.) : RT25R-S0267-004

시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

\* REACH 규정에 따른 물질, 제제 및 완제품에 대한 정의  
(Definition of a substance, a preparation and an article according Article 3 of the REACH Regulation)

- a **substance** is a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition;
- a **preparation** is a mixture or solution composed of two or more substances;
- an **article** (product) is an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition.

\* 화학물질 안전자료 자료제공에 대한 의무 및 관련정보  
(Available information for general obligation and information requirements)

- 물질 (Substances)

**Provide safety data sheet** ; As per Article 31 of the REACH Regulation (EC No. 1907/2006), suppliers of substances on the Candidate List have to provide their customers with a safety data sheet from the date of inclusion.

- 제제 (Preparations)

**Provide safety data sheet** ; As per Article 31 of the REACH Regulation (EC No. 1907/2006), supplier of preparation not classified as dangerous according to Directive 1999/45/EC must provide the recipients, at their request, with a safety data sheet if the preparation contains at least one of the tested substances at 0.1 % (w/w) or above for non gaseous preparation and at least 0.2 % by volume for gaseous preparations sheet from the date of inclusion.

- 완제품 (Articles)

**Notification** ; As per Article 7(2) of Regulation (EC) No 1907/2006 (REACH), EU and EEA producers or importers of articles have to notify ECHA if their article contains a substance on the Candidate List. This obligation applies if the substance is present above 0.1 % (w/w) and its quantities in the produced/imported articles are above 1 tonne in total per year per company. Notification is required beginning June 1, 2011.

**Safe use information** ; As per Article 33 of Regulation (EC) No 1907/2006 (REACH), EU or EEA suppliers of articles which contain substances on the Candidate List in a concentration above 0.1 % (w/w) have to provide sufficient information, available to them, to their customers or upon requests, to a consumer within 45 days of the receipt of the request. This information must ensure safe use of the article and as minimum contain the name of the substance. The effective date for the safe use information requirement is six months after the SVHC is placed on the Candidate List.

Disclaimers ;

This testing report for 15 new substances of very high concern (SVHC) in Candidate List announced by European Chemicals Agency (ECHA) is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in assessment report is sufficient for its/his/her purposes.

The quantitative screening results shown in this testing report will be in relation to various factors, including but not limited to, the weight or size of dismantled component and composite test approach, etc. If the contents of SVHC are out of the threshold, further identification is recommended to obtain the information of SVHC in each material.

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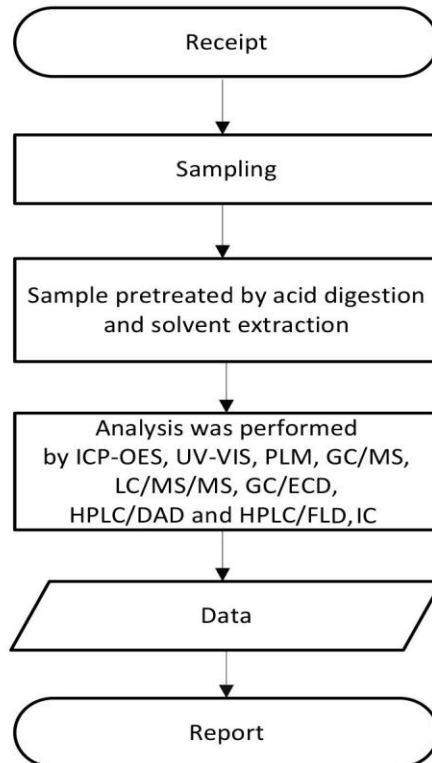
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시료명 (SAMPLE DESCRIPTION) : HANSAEM DIGITEC PCB-REACH  
(HANSAEM DIGITEC PCB-REACH)

### Flow Chart (SVHC)



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

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