KAST-25-177

20th November 2013

TEST REPORT

Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for air purification performance of photocatalytic materials — Part 2: Removal of acetaldehyde JIS R 1701–2:2008

On behalf of:

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センター長	センター長代理	グループリーダー	担当者	公印使用者

1. Subject matter of the work

The subject matter of this test report is the determination of the air purification performance of materials that contain a photocatalyst or have a photocatalytic film on the surface.

2. Test method

Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for air-purification performance of semiconducting photocatalytic materials — Part 2: Removal of acetaldehyde (JIS R 1701–2:2008)

3. Overview of the tested samples

Sagancoat Photocatalyst coating agent TPX-HL

4. Reporting matters under the provision of JIS

a) JIS standard number; test period; laboratory conditions; tester

JIS R 1701-2:2008

25/10/2013; 23.5±1°C, 65±1%

19/11/2013; 23.5±1°C, 65±1%

20/11/2013; 23.5±1°C, 65±1%

Norihisa Muramatsu

b) Description of the sample (material, size, shape, etc.)

Photocatalyst coated polyester cloth with the dimensions : 50 mm×100 mm×0.2 mm

c) Description of test equipment

1. Precision humidity generator: SRG-1R-1L (DaiichiKagaku Inc.)
   Humidity discharge range: 0-100%rh; Rated air volume: 1.0 L/min
2. Hydrogen flame ionization detector: GC-2014AFF (Shimadzu)
   Detection limit of acetaldehyde and CO_2: 0.01 ppm
3. Gas blender: GB-2C (Kofloc)
   Line 1: ≦1.0 L/min; Line 2: ≦50 mL/min
4. UV irradiation device: custom-made item (Toho Sanso Kogyo Co.,Ltd.)
   10 W/m^2 at the surface of the sample
5. Reactor: custom-made item (Eda Shokai Inc.)
   Reactor under the provision of JIS R 1701-2:2008
6. Tubing: custom-made item (Toho Sanso Kogyo Co.,Ltd.)
   SUS and Teflon

d) Testing conditions

1. Supply concentration of acetaldehyde: 5.0 ppm
2. Conditions of pretreatment: 20 W/m², exposure over 24 h, continual
3. Water-vapour concentration: 1.56 vol%
4. Flow rate: 1.0 L/min
5. Detailed description of light source: FL10BLB×2 (Toshiba)
6. Irradiance: 10 W/m² at the surface of the sample
7. Number of sample: 1
8. Analyser used: Hydrogen flame ionization detector with a methanizer furnace
9. Radiometer used: UV power meter C9536-01, H9958-01(Hamamatsu Photonics)

e) Removal percentage of acetaldehyde and conversion to CO_2 during 1 h of irradiation
For reference, removal percentage of acetaldehyde and conversion to CO_2

Q_A is the quantity of acetaldehyde removed during 1 h of irradiation (μmol/h)
Q_C is the quantity of CO_2 converted from acetaldehyde during 1 h of irradiation (μmol/h)
R_A is the removal percentage of acetaldehyde (%)
R_c is the conversion from acetaldehyde to CO_2 (%)

sample name	Q_A(μmol/h)	Q_c(μmol/h)	R_A(%)	R_c(%)
TPX-HL	6.7	11.8	50.3	43.2

f) Special report

- N/A .