

TEST REPORT

Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for air purification performance of photocatalytic materials — Part 4: Removal of formaldehyde JIS R 1701-4:2008

On behalf of:

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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 4: Removal of formaldehyde (JIS R 1701-4:2008)

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 1701-4:2008

9/1/2014; 23.5±1°C, 65±1%

10/1/2013; 23.5±1°C, 65±1%

14/1/2013; 23.5±1°C, 65±1%

Norihisa Muramatsu

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

Photocatalyst coated ceramic tile with the dimensions : 45 mm × 45 mm × 7 mm

c) Description of test equipment

1. Precision humidity generator: SRG-1R-1L (DaiichiKagaku Inc.)

Humidity discharge range: 0-100%rh; Rated air volume: 3.0 L/min

2. Hydrogen flame ionization detector: GC-2014AFF (Shimadzu)

Detection limit of formaldehyde: 0.01 ppm

3. Gas blender: GB-2C (Kofloc)

Line 1: ≤3.0 L/min; Line 2: ≤200 mL/min

4. UV irradiation device: custom-made item (Toho Sanso Kogyo Co.,Ltd.)

10 W/m² at the surface of the sample

5. Reactor: custom-made item (Eda Shokai Inc.)

Reactor under the provision of JIS R 1704-4:2008

6. Tubing: custom-made item (Toho Sanso Kogyo Co.,Ltd.)

SUS and Teflon

d) Testing conditions

1. Supply concentration of formaldehyde: 1.0 ppm
2. Conditions of pretreatment: 20 W/m², exposure over 24 h, continual
3. Water-vapour concentration: 1.56 vol%
4. Flow rate: 3.0 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: 2
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 formaldehyde during 1 h of irradiation

For reference, removal percentage of formaldehyde

Q is the quantity of formaldehyde removed during 1 h of irradiation (μmol/h)

R is the removal percentage of formaldehyde (%)

sample name	Q(μmol/h)	R(%)
TPX-HL	1.43	17.5

f) Special report

- Although a size of the test-piece (45 mm × 90 mm) was smaller than the provision of JIS (49.5±0.5 mm × 99.5±0.5 mm), the test-piece was subjected to the test without area correction.