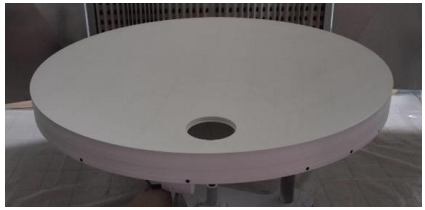
White UV-reflective coating

Reference: TD-DE-1052

TECHNOLOGY DESCRIPTION

For the ESA/JAXA mission BepiColombo to the planet Mercury, a special coating for titanium and titanium alloy was needed. For this, an aqueous coating system for Ti-Grade 5/Ti-Grade 2 and aluminium surfaces was developed. The coating only needs to be dried, but can be baked at 500°C in air/1h. It is sprayed by hand using an HVLP spray gun and can be used for complex 3D geometries up to 1700 mm max. length. In addition, it can be sealed with a thin layer of boehmite glass to avoid contamination and it fulfills the REACH requirements. Cleaning with ozone and/or UV-C radiation is possible.



INNOVATIVE ASPECTS

Thermo-optical properties:

- Excellent a/e ratio before and after life cycle test with 28,000 ESH (equivalent sun hours at 430°C in vacuum incl. IR component)
- completely diffusive coating with no measurable specularity
- Very good substrate adhesion
- Pores can be sealed with a sol-gel glass in combination with UV/03
- Layer thickness adjustable between 10 and 100 µm with an accuracy of 5 µm
- Excellent ductility and TWB: -196°C to 500°C in 30 seconds (repeated 10 times)
- 03/UV cleaning without sealing also possible

TECHNOLOGY READINESS (in space application)

TRL 9 (2024)

COUNTRY OF ORIGIN

Germany

LATEST UPDATE

06/2024

TAGS

#aqueous coating | #UV-reflective | #titanium | #complex geom. | #good adhesion | #REACH compliant

APPLICATION AREAS

Aviation | Construction & Civil Engineering | Energy | Electrical & Electronic Engineering | Health | Mechanical Engineering | Space technologies

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