Technical data sheet: RS 111
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PU1

Low outgassing black polyurethane paint

cnes

Licence n°88/CNES/6304

Coating characteristics (1/2)

Polymer matrix	Polyurethane
Pigment	Carbon black
Solvent	Aromatic & aliphatic
Density	1.12 ± 0.05
Solids content	64 % ± 3 %
V.O.C.	521 g/L
Solar absorptance	$\alpha_{2\pi S}$ = 0.96 ± 0.02
IR Emittance	$\varepsilon_{N,IR}$ = 0.88 ± 0.04 ε_C = 0.89
Outgassing	in compliance with ESA standard: ECSS-Q-70-02A
Standard thickness	50 µm to 60 µm dry 1 mist coat + 1 to 2 crossed coats
Theoretical Consumption	145 g/m² of product @ 55 µm 1.4 g dry / m² per dry µm
Surface preparation	On composites: Cross sandpapering, dust removal by compressed air, cleaning by rubbing with Forane 141b (or equivalent) then with acetone. On light alloys: Cross sandpapering, dust removal by compressed air, cleaning by immersion or rubbing with Forane 141b (or equivalent) then with acetone. *(For further information, please contact us)* **Any sticking on the paint being absolutely prohibited, the sticking areas must be masked before any paint application.**

Definition

Black thermal control paint for satellites presenting good thermo-optical properties.

Aspect: mat black
AFNOR NFT 36005 classification: Family I Class 6a.

Purpose: developed by CNES, PU1 coating may find applications in the following fields: space industries, Vacuum technologies……

Satellite references: SPOT 2 - SPOT 4 - TELECOM 2 – PRONAOS – HELIOS – SCARAB – TURSKAT – INTELSAT VII – DEMETER – SYRACUSE 3B –THEOS - GALAXY 17 – ARABSAT 4 – PICARD – SPIRALE – AEOLUS – ALADIN – ROCSAT 2 - SKYNET 5 - CHINASAT-AMOS 3 – GOSAT – CIEL 2.

Properties

Test carried out	CNES qualification report
Moisture test Thermal cycling under vacuum Outgassing Surface potential ATOX	88/CT/DRT/TVE/TH n°411
Spectral measurements @ cryogenic temperature	NT-100/CT/AE/MTE/TH
Thermal cycling after accelerated curing	NT-99-016/DTS/AE/MTE/TH

Application parameters

PU1 paint's two components must be mixed thoroughly before use. Dilute the hardener first, with part of PU1 thinner and then mix it with the base. Finally add up PU1 thinner to get the right viscosity.

For information only:

Spray gun: KREMLIN J3, Nozzle 12, AM head
Output: 2.5 to 3 turns, semi oval jet
Pressure: 2 to 3 bars
Vector gas: Compressed air

In order to know which primer to use on your substrate (*PS, PHOSMAP 11 primers, etc.*) please contact us.

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Coating characteristics (2/2)

Base / hardener weight ratio	75 / 25
Thinner	20 % to 30 % of PU1 thinner
Filtration	80 µm nylon filter
Viscosity	40s to 55s AFNOR Cup 2.5 33s to 53s ISO Cup 3
Induction time	15 min to 20 min @ 20°C
Pot life	2 h @ 20°C
Applying conditions	18°C ≤ T° ≤ 25°C 30 % < RH < 80 %
Covering time	Let dry between coats until you get a mat aspect
Drying conditions	18°C ≤ T° ≤ 25°C 30 % < RH < 80 % **8 days drying before any control test (adhesion, thickness, etc.)** **4 weeks drying before any ageing test.**

Packaging

1Kg (0.75 Kg base + 0.25 Kg hardener)

Storage

6 months in original unopened packaging between 5°C and 25°C and away from humidity.

Safety data

Precautions : General precautions in use for the application of polyurethane paints containing solvents. Flammable product. Never handle near a flame. Store in a fresh and ventilated area.

Labelling : This preparation was classified in compliance with the directives in effect.

Transport : Please refer to our latest safety datasheet.

Non-contractual technical data: for your information only.
For further information, please contact us.

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