

PCBE

Low outgassing white silicone conductive paint

Technical data sheet: RS 100
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➤ Coating characteristics (1/2)

Polymer matrix	➤ Silicone
Pigment	➤ Base: Metallic Topcoat: Encapsulated zinc oxide
Solvent	➤ Aromatic & aliphatic
Density	➤ Base: 1.34 ± 0.05 Topcoat: 1.41 ± 0.05
Solids content	➤ Base: 71 % ± 2 % Topcoat: 70 % ± 2 %
V.O.C.	➤ Base: 482 g / L Topcoat: 654 g / L
Solar absorptance	➤ $\alpha_{2\pi s} = 0.27 \pm 0.04 f(\text{thickness})$
IR emittance	➤ $\epsilon_{N,IR} = 0.88 \pm 0.03 @ 20^\circ C (293^\circ K)$ $\epsilon_C = 0.77 \pm 0.03 @ -183^\circ C (90^\circ K)$
Outgassing	➤ in compliance with ESA standard : ECSS-Q-70-02A
Surface Electrical resistance	➤ $R_s \leq 1k\Omega/\square$
Standard thickness	➤ Base: 40 µm to 80 µm dry, 1 mist coat + 1 to 2 crossed coats Topcoat: 50 µm to 90 µm dry, 3 to 5 crossed coats
Theoretical Consumption	➤ Base: 70 to 130 dry g/m ² i.e. 1.65 g dry / m ² per dry µm Topcoat: 90 to 170 dry g/m ² i.e. 1.87 g dry / m ² per dry µm

➤ Definition

Thermal control conductive paint for satellites providing good electrical & thermo-optical properties, very good resistance to particles (electrons, protons) and solar UV irradiations, as well as a good flexibility.

Aspect: **mat white**

AFNOR NFT 36005 classification: Family I Class 10c.

Purpose: Developed by CNES, PCBE paint may find applications in the following fields: Space Industries, Vacuum Technologies....

References: Satellites IASI, AEOLUS, SPIRALE, GOCE, PICARD...

➤ Properties

Test carried out	CNES qualification report
. Thermal cycling under vacuum	
. Resistance to UV & particle irradiations	➤ DTS/AE/MTE/TH/00-140
. Outgassing	➤ DTS/AE/MTE/TH/03-094
. Solar absorptance / thickness	
. Emissivity tests @ cryogenic temperatures	➤ DTS/AE/MTE/TH-NT-01-004
. Resistance to ATOX	
. Electrical properties	➤ DTS/AE/MTE/TH/02-124

➤ Application parameters

The application of PSX primer is prerequisite.*
Both PCBE Base & Topcoat are delivered in 2 components that must be mixed perfectly before use. For each product, mix the base first, under mechanical mixing, at medium speed then add the corresponding hardener.
Add PCBE thinner to get the right viscosity.

For information only:

	Base	Topcoat
Spray gun:	KREMLIN J4, Nozzle 12, AM head, gravity alimentation	KREMLIN J4, Nozzle 12, AM head, gravity alimentation
Output:	4.5 turns, oval jet	4 turns, oval jet
Pressure:	2.5 bars	2 bars
Vector gas:	Compressed air	Compressed air

*to know which primer(s) to use according to your substrate (*PSX primer, PS primer, PHOSMAP 11...*), please contact us.



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➤ Coating characteristics (2/2)

Surface preparation	<ul style="list-style-type: none"> ➤ On composites: crossed sandpapering, dust removal with compressed air, cleaning by rubbing with Forane 141b or equivalent, then acetone. ➤ On light alloys: crossed sandpapering, dust removal with compressed air, cleaning by immersion or rubbing with Forane 141b or equivalent, then with acetone, (For further information, please contact us). <p>Any sticking on the paint being absolutely prohibited, the sticking areas must be masked before any paint application.</p>
Base/hardener weight ratio	<ul style="list-style-type: none"> ➤ Base: 90 / 10 ➤ Topcoat: 86 / 14
Thinner	<ul style="list-style-type: none"> ➤ Base: about 15 % of PCBE thinner ➤ Topcoat: about 60 % of PCBE thinner
Filtration	<ul style="list-style-type: none"> ➤ Base: N/A ➤ Topcoat: 80 µm nylon filter
Viscosity	<ul style="list-style-type: none"> ➤ Base: 18s to 25s AFNOR cup 4 ➤ Topcoat: 30s to 35s AFNOR cup 2.5 @ 20°C
Pot life	<ul style="list-style-type: none"> ➤ Base or Topcoat: 2h @ 20°C
Applying conditions	<ul style="list-style-type: none"> ➤ 18°C ≤ T° ≤ 25°C ➤ 40% ≤ RH ≤ 60%
Covering time	<ul style="list-style-type: none"> ➤ Base: 1h to 5h ➤ Topcoat: let dry between coats until you get a mat finish
Drying conditions	<ul style="list-style-type: none"> ➤ T° about 20°C ➤ RH about 50% <p>8 days drying before any control test (adhesion, thickness, etc.)</p> <p>4 weeks drying before any ageing test.</p>

➤ Packaging

Base: 1Kg = 2 x 0.5Kg (450g base + 50g hardener)
 Topcoat: 1Kg (860g base + 140g hardener)

➤ Storage

Up to 6 months in original unopened packaging at 20°C +/- 5°C, away from humidity and without altering the properties.

➤ Safety data

Precautions ➤ General precautions in use for the application of 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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