

TECHNICAL DATA SHEET

Prexonics® SILVER INK C1

Product description

Particle-free silver ink for conductive coating or conductive trace applications.

Key benefits

Excellent processability. Pure liquid and particle-free material for slot die, spin coating or inkjet applications.

As part of the Prexonics® System Solution, the ink is optimized for best processing in the Prexonics® Equipment.

Main ingredients

| Item | Before sintering (liquid) | After sintering (solid) |
|------------------------|------------------------------|----------------------------|
| Silver | 20 ± 5 wt. % | Pure silver |
| Vehicle (solvent base) | 80 ± 5 wt. % | - |



Typical properties of the ink material

| Item | Specification | | | Condition | Method |
|------------------------|------------------------------|--------|------|-----------------|------------------------------------|
| | LSL | Target | USL | | |
| Appearance | Clear and transparent liquid | | | at 23 ± 3°C | Visual |
| Viscosity (mPa.s) | 12.0 | 13.0 | 14.0 | at 25°C, 30 rpm | Brookfield DV3T, reading @ 2 min |
| Surface tension (mN/m) | 27.0 | 28.0 | 29.0 | at 23 ± 3°C | Bubble tensiometer, reading @ 15 s |
| Density (g/cm³) | 1.05 | 1.10 | 1.15 | at 23 ± 3°C | Pycnometer |

Physical properties of the sintered coating material

| Item | Representative value | Condition | Method |
|------------------------------|-------------------------|------------------------|--|
| Appearance | Silver color | at 23 ± 3°C | Visual |
| Weight loss | 80 ± 5 wt. % | RT to 250°C, 5 K/min | Thermogravimetry |
| Volume resistivity (Ω.cm) | 2.75 x 10 ⁻⁶ | 500 nm coating at 25°C | 4-point probe (sintering: 200°C, 30 min) |
| Thermal conductivity (W/m.K) | 248 | 500 nm coating at 25°C | Calculated (sintering: 200°C, 30 min) |
| Thermal expansion (ppm/K) | 19.7 | - | Literature value for bulk Ag |

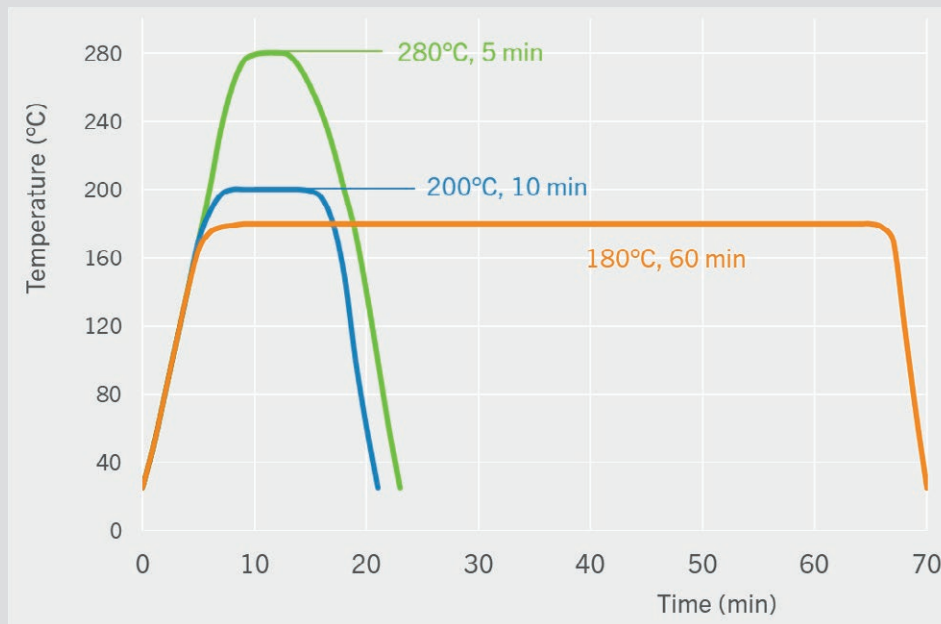
Substrate types: glass, PI, FR4, EMC, copper, etc.

Thermal sintering conditions

Recommended thickness of wet layer: 15 - 25 μm
Recommended oven conditions: 180 - 280°C in air
Recommended sintering time: 5 - 60 min at peak temperature

The electrical conductivity of the coating increases with increasing sintering temperatures and times.
No cleaning step is required after sintering.

Typical temperature profiles:



Wet thickness: 25 μm
Oven sintering: 200°C, 10 min
No. of layers: 5
Sheet resistance: 11 - 15 $\text{m}\Omega/\square$

Wet thickness: 25 μm
Sintering: 180°C, 60 min
No. of layers: 5
Sheet resistance: 20 - 30 $\text{m}\Omega/\square$

Shelf life, work life and storage

Storage: Keep originally packed in a refrigerator at $6 \pm 4^\circ\text{C}$
Shelf life: 6 months from manufacturing date (originally packed, in refrigerator at $6 \pm 4^\circ\text{C}$).
The ink can be naturally thawed to room temperature before use. Heating is not allowed.
Remaining, unused ink in original container can be placed back to the refrigerator.
Work life: Min. 28 days in closed ink supply system at temperature $< 40^\circ\text{C}$.

Further handling and ink cleaning guidelines are available upon request.

Safety and Health

Wear protective gloves and goggles. Refer to the material safety datasheet for more details on safety guidelines.



For more information,
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