FKM4000: MARKING PASTES FOR AlN

The FKM4000 marking paste system is used to apply marking, labels and logos onto AlN substrates. However, the FKM4000 pastes should not be printed over electric functional films, such as conductors or resistors, as this could change their properties.

PROCESS CONDITIONS

Substrate
The paste is designed for use on AlN substrates (with lapped surfaces) from CoorsTek/ANCeram. Substrates with other surface qualities or from other manufacturers may lead to variations in the results.

Screen printing
Use a stainless steel screen with 200 mesh and a wire diameter of 40 µm, as well as 25 µm emulsion thickness (10 to 12 µm EOM) to achieve the stated film thickness.

Leveling
The printed films should be leveled for 10±2 minutes at room temperature (22 to 25 °C).

Drying
The printed films should be dried for 15 minutes at 150 °C in a drying oven with an exhaust air system or in a continuous flow dryer.

Firing
The printed films should be fired under air atmosphere in a conveyor belt furnace at a peak temperature of 650 °C and with a dwell time of two minutes. Fraunhofer IKTS recommends a total cycle time of 26 minutes.

Storage
The pastes can be stored at any temperature between 4 and 10 °C. The lower the temperature, the better long-term stability. The can must remain tightly sealed during storage. In order to prevent air humidity from condensing on the paste, the can may be opened only after the content has reached room temperature. The paste needs to be sufficiently homogenized before use, e.g. with a spatula.

Safety notice
For safe handling of the pastes, please observe the notices in the safety data sheet accompanying each delivery.
Quality requirements
An analysis certificate comes included with each delivery. The paste meets current legal requirements according to RoHS II (Directive 2011/65/EC) and REACH (Regulation (EC) No 1907/2006).

Instead of an expiration date, it states a date for retesting, which is six months after the date of delivery. During this period, IKTS warrants the values stated in the analysis certificate for unopened pastes. After the date for retesting has passed, it is the client’s responsibility to test the paste quality under the conditions stated in the data sheet.

FIRING PROFILE

![Temperature curve diagram]

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>FKM 4128</th>
<th>4889</th>
<th>4891</th>
<th>4893</th>
<th>4939</th>
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</thead>
<tbody>
<tr>
<td>Color</td>
<td></td>
<td>Blue</td>
<td>Green</td>
<td>White</td>
<td>Black</td>
<td>Dark red</td>
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<tr>
<td>Viscosity¹</td>
<td>Pa·s</td>
<td>TBD</td>
<td></td>
<td></td>
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<tr>
<td>Film surface²</td>
<td></td>
<td>Smooth, dull</td>
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<tr>
<td>Fired film thickness</td>
<td>µm</td>
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<tr>
<td>Coverage³</td>
<td>cm²/g</td>
<td>120±5</td>
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</tbody>
</table>

¹ Brookfield viscometer HB with spindle/cup combination SC4-21-13RP(Y) at n=10 rpm and 25±0.2 °C.
² Firing profile: Total cycle time 26 min, 2 min at 650 °C. Transmitted light.
³ Calculated area that can be printed with one gram paste in the recommended thickness.