

## FK9600: RuO<sub>2</sub> RESISTOR PASTE SYSTEM FOR AIN

The RuO<sub>2</sub>-based FK9600 resistor paste system, with sheet resistance values of 6 to 6,000 Ohm/Sq, is compatible with the conductor pastes FK1205, FK1916 and FK1953, as well as with the encapsulation paste FK4027. Other pastes can be used as conductor paste, but this may result in differing sheet resistance values or temperature coefficients. The pastes of the FK9600 paste system as listed in the table below can be mixed with each other as needed. We do not recommend mixing with the resistor pastes of the FK9900M series.

### PROCESS CONDITIONS

#### Substrate

The paste is designed for use on AIN 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 850 °C and with a dwell time of 10 minutes. Fraunhofer IKTS recommends a total cycle time of 60 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.

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**REACH**  
compliant



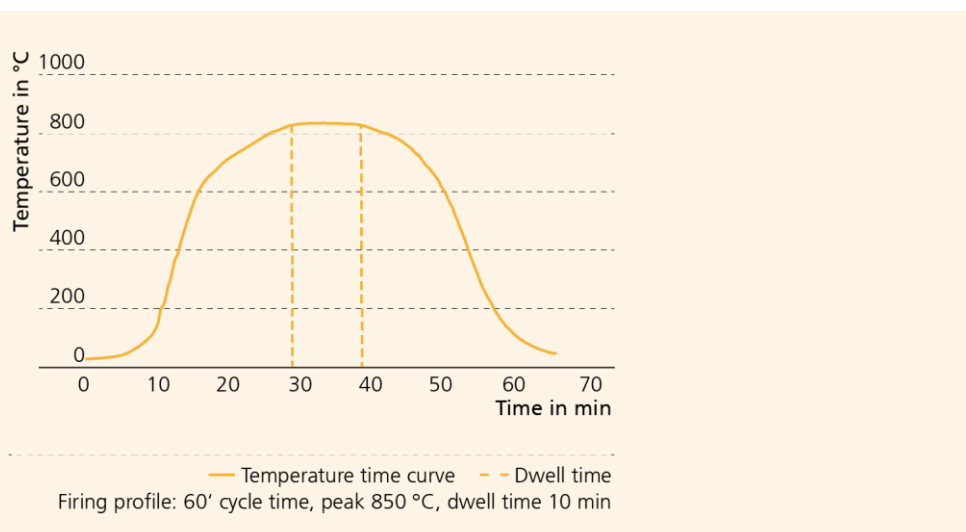
Management System  
ISO 9001:2015  
ISO 14001:2015  
[www.tuv.com](http://www.tuv.com)  
ID 1100005194

## 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



## TECHNICAL SPECIFICATIONS

Characteristics	Unit	FK						
		9606	9611	9615	9621	9631	9632	9636
Viscosity <sup>1</sup>	Pa·s	220±30	220±30	220±30	220±30	220±30	220±30	220±30
Sheet resistance <sup>2, 3</sup>	mOhm /Sq	6	10	50	100	1.000	2.000	6.000
Shipping specification	%	±10	±10	±10	±10	±10	±10	±10
Hot TCR <sup>2, 4</sup>	ppm/K	0±200	0±100	0±100	0±100	0±100	0±200	0±300
Cold TCR <sup>2, 4</sup>	ppm/K	0±200	0±100	0±100	0±100	0±100	0±300	0±200
Dried film thickness	µm	22±2	22±2	22±2	22±2	22±2	22±2	22±2
Coverage <sup>5</sup>	cm <sup>2</sup> /g	105±5	105±5	105±5	110±5	110±5	110±5	110±5

<sup>1</sup> Brookfield viscometer HB with spindle/cup combination SC4-14I-6RP(Y) at n=10 rpm and 25±0.2 °C.

<sup>2</sup> Firing profile: total cycle time 60 min, 10 min at 850 °C.

<sup>3</sup> Calculated for resistors with the geometry 2x1 mm<sup>2</sup> and a dried thickness of 22±2 µm.

<sup>4</sup> Hot temperature coefficient of resistance (TCR) between 25 °C and 150 °C, cold temperature coefficient of resistance between -55 °C and 25 °C.

<sup>5</sup> Calculated area that can be printed with one gram paste in the recommended thickness.