



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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DIELECTRIC COMPOSITION

4604-A, 4605

RoHS Compliant *

Dielectric Compositions for Aluminium

ESL 4604-A and 4605 dielectric pastes are designed to be used together to insulate type 3003 or 3103 aluminium. These materials should be used to provide the best voltage breakdown properties and insulation resistance. The total dielectric fired thickness must exceed 65 micrometers. Offsetting the 4604-A from the 4605 on all sides is suggested.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste	
Viscosity: (Brookfield RVT, 10 rpm, ABZ spindle, 25.5 ± 0.5 °C)	4604-A	80 ± 50 Pa.s
	4605	150 ± 25 Pa.s
Colour:	4604-A	Light tan
	4605	Light green
Shelf Life (20 - 25 °C):	6 months	

PROCESSING

Screen Mesh, Emulsion:	145 - 165, 0 - 5µm	
Levelling Time (at 20 °C):	5 - 10 min	
Drying Time (at 125 °C):	10 - 15 min	
Firing Temperature Range:	580 °C	
	Time at peak:	10 min
Total Firing Cycle:	50 - 60 minutes	
Substrate for Calibration:	3 mm thick, type 3003 or 3103 aluminium	
Thinner:	ESL 401	
Compatible Materials:	ESL 9912-K, 903-A, 2312-A3 (599-E fired at 450 °C)	

ESL Europe 4604-A, 4605 1004-A

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

(All layers fired separately at 580 °C: two layers of 4605, one layer of 4604-A and one layer of 9912-K conductor).

Total Fired Thickness: 65 - 85 μm

Insulation Resistance:
(at 100 VDC, 25 °C) $\geq 10^{10} \Omega$

Breakdown Voltage:
(25 °C in air) $\geq 1500 \text{ VDC} / 65 \mu\text{m}$

ESL Europe 4604-A, 4605 1004-A

*None of the six substances referred to in the RoHS Directive (2002/95/EC) are used in the formulation of this product.

CAUTION: Proper industrial safety precautions should be exercised in using these products. Use with adequate ventilation. Avoid prolonged contact with skin or inhalation of any vapours emitted during use or heating of these compositions. The use of safety eye goggles, gloves or hand protection creams is recommended. Wash hands or skin thoroughly with soap and water after using these products. Do not eat or smoke in areas where these materials are used. Refer to appropriate MSDS sheet.

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