

DuPont ALN44

LEAD FREE DIELECTRIC

Technical Data Sheet

Product Description

DuPont ALN44 is a lead free*, thick film dielectric paste and is an integral element of the system developed for use on aluminum nitride (AlN) substrates. It is designed primarily for cross-over applications. It has also been shown effective for multi-layer applications.

Product Benefits

- Compatible with Dupont ALNxx conductors
- 3-print, hermetic dielectric film.
- High resistance to E.M.F. blistering and shorting.
- Robust electrical and mechanical properties.

*Lead "free" as used herein means that this is not intentionally added to the referenced product. Trace amounts however may be present.

Processing Substrates

Properties are based on tests of the dielectric on aluminum nitride substrates. Substrates of other compositions and from various manufacturers may result in variations in performance properties.

Printing

Printing should be carried out in a clean and well-ventilated area. The combined fired thickness of the dielectric should be $40 \pm 5 \mu\text{m}$. This can generally be obtained by printing the individual layers with a 280 - 325 mesh stainless steel screen.

Drying

Allow prints to level for 5-10 minutes at room temperature. Then dry for 10-15 minutes at 150°C .

Typical Physical Properties

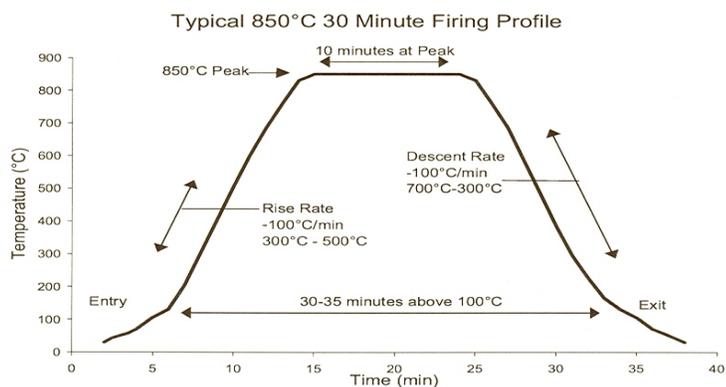
Test	Properties
Fired Thickness (μm)	40 ± 5
Dielectric Constant (@ 1MHZ)	5.5 - 7.0
Wet Dissipation Factor [%] (@ 1MHZ)	< 0.5
Insulation Resistance (ohms) (100 VDC @ recommended thickness)	$\geq 10^{12}$
Breakdown Voltage (V/35 μm)	≥ 750
Composition Properties	
Viscosity (Pa.S) (Brookfield 2XHAT, UC&SP, SC4-14/16RJ, 10rpm, $25^\circ\text{C} \pm .02^\circ\text{C}$)	225 - 300
Coverage ¹ (cm^2/g)	55 - 65
Thinner	DuPont 4553
Color	Blue
Standard measurements made after 5 min @ 10VDC ¹ Based on a fired thickness of 30 μm	

Table 1 & 2 show anticipated typical physical properties for DuPont ALN44 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Firing

Fire in well-ventilated moving conveyor furnace, in air with a 30-minute cycle, to a peak temperature of 850°C . See graph 1.

Graph 1



Storage and Shelf Life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and Handling

For Safety and Handling information pertaining to this product, read the Material Safety Data Sheet (MSDS).

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For more information on DuPont ALN44 or other DuPont Microcircuit Materials products, please contact your local representative:

Americas

DuPont Microcircuit Materials
14 T.W. Alexander Drive
Research Triangle Park, NC 27709
Tel.: 800-284-3382

Europe

Du Pont (U.K.) Limited
Coldharbour Lane
Bristol BS16 1QD
U.K.
Tel.: 44-117-931-3191

Asia

DuPont Kabushiki Kaisha
Sanno Park Tower, 11-1
Nagata-cho 2-chome
Chiyoda-ku, Tokyo 100-611
Japan
Tel.: 81-3-5521-8650

DuPont Taiwan Ltd
45, Hsing-Pont Road,
Taoyuan, Taiwan 330
Tel.: 886-3-377-3616

DuPont China Holding Co. Ltd
Bldg 11, 399 Keyuan Rd., Zhangji Hi-Tech Park,
Pudong New District, Shanghai 201203, China
Tel.: 86-21-6386-6366 ext.2202

DuPont Korea Inc.
3~5th Floor, Asia tower #726,
Yeoksam-dong, Gangnam-gu
Seoul 135-719, Korea
Tel.: 82-10-6385-5399

E. I. DuPont India Private Limited
7th Floor, Tower C, DLF Cyber Greens,
Sector-25A, DLF City, Phase-III,
Gurgaon 122 002 Haryana, India
Tel.: 91-124-4091818

Du Pont Company (Singapore) Pte Ltd
1 HarbourFront Place, #11-01
HarbourFront Tower One,
Singapore 098633
Tel.: 65-6586-3022

<http://mcm.dupont.com>

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