



FUMED METAL OXIDES

CAB-O-SIL[®]
ULTRABOND[™] 4740

**Treated Fumed Silica
for Bonding Paste
Applications**

CABOT 



CAB-O-SIL® ULTRABOND™ 4740

TREATED FUMED SILICA FOR BONDING PASTE APPLICATIONS

Sustainable, alternative energy generation is increasingly used to meet global demand for energy. In regions with strong and steady winds, wind turbine energy is an unlimited, environmentally-friendly solution.

The blades used in wind turbine generators are complex structures manufactured from high performance materials. A critical challenge in maximizing the potential of wind energy is the length of a windmill blade. Bonding paste is a key element in the assembly of the components contributing to the structural integrity and longevity of the blade and a strong bonding paste can help extend the life of a blade and ultimately enable the manufacturing of even longer blades.

As a result of collaboration between Cabot's bonding paste applications development team and blade producers, CAB-O-SIL ULTRABOND 4740, a high performance fumed silica, is specifically developed to improve sag resistance and viscosity in bonding pastes. CAB-O-SIL ULTRABOND 4740 goes beyond rheology modifications to provide excellent product performance in bonding paste formulations.

Bonding paste in wind turbine blades

Bonding Paste is used to join main parts of a wind turbine blade. These bond lines are structural in nature and any gaps could result in structural failure. CAB-O-SIL ULTRABOND 4740 helps improve the bonding paste's sag resistance and therefore improving the integrity of the bond line.



Applications

1. Spar caps and shear webs
2. Upper and lower shell

INDUSTRY BENCHMARK FOR PERFORMANCE, EASE OF USE AND MANUFACTURING EFFICIENCY

CAB-O-SIL® ULTRABOND™ 4740 offers higher sag resistance than any competitive solution in the market. Its inclusion in bonding paste formulations enables the producers to reduce the fumed silica loading while still maintaining the same sag resistance and reducing the bonding paste viscosity.

Compared to competitive solutions in the market, incorporating CAB-O-SIL ULTRABOND 4740 into bonding paste reduces the processing time, leading to an overall reduction in cycle time. By reducing the processing time, bonding paste producers get the benefit of reduced manufacturing costs, which allows them to produce additional bonding paste volumes with their existing assets.



Figure 1: 8% fumed silica loading in epoxy resin system

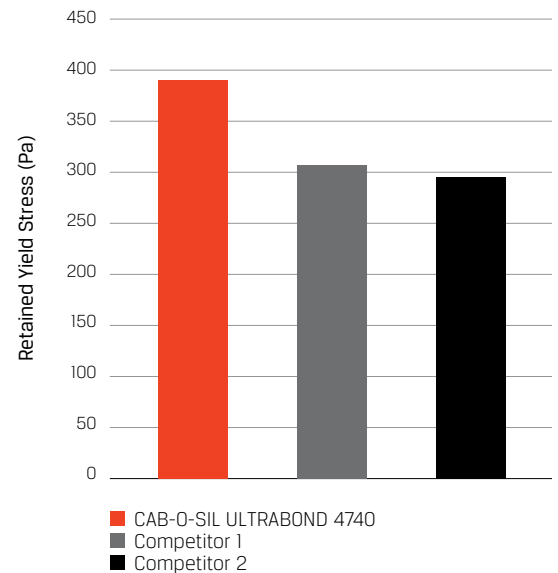
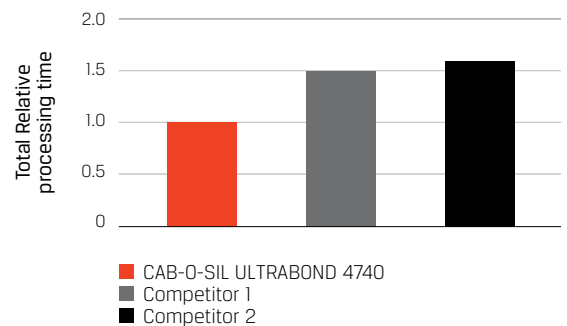


Figure 2: Improved processability in epoxy resin systems



Novel solution for bonding paste applications

CAB-O-SIL ULTRABOND 4740 product features:

DELIVERS HIGHER SAG RESISTANCE

For typical fumed silica loading of 8% in epoxy based bonding paste, CAB-O-SIL ULTRABOND 4740 delivers 25 – 30% higher initial and aged sag resistance versus competitive solution.

DELIVERS BETTER PERFORMANCE AT LOWER LOADING

For typical fumed silica loading of 8% in epoxy based bonding paste, CAB-O-SIL ULTRABOND 4740 loading could be reduced by 10 – 15% versus competitive solutions, while still maintaining the same sag resistance performance.

INCREASES MANUFACTURING EFFICIENCY

20 – 25% reduction in fumed silica processing time during bonding paste manufacturing process.

INCREASES MANUFACTURING YIELD BY 10-15%

CAB-O-SIL ULTRABOND 4740 wets-in faster and disperses better, reducing the total bonding paste manufacturing cycle time.



Cabot is committed to promoting renewable and sustainable energy sources.
To this end, we actively invest our resources in wind energy development projects.



CAB-O-SIL® ULTRABOND™ 4740
in wind energy around the world

Cabot in the world

With manufacturing sites in 20 countries and five sites solely dedicated to fumed metal oxides, Cabot focuses on developing new products, technologies and solutions for its customers.



Technical centers:

- Billerica, MA - USA
- Rheinfelden - Germany
- Shanghai - China

NORTH AMERICA

Cabot Corporation Business and Technology Center
157 Concord Road
P.O. Box 7001
Billerica, MA 01821 - USA

Technical service
Tel: 1-800-462-2313

Customer service
Tel: +678-297-1300
Fax: +678 297-1245

SOUTH AMERICA

Cabot Brasil Industria e Comercio Ltda.
Rua do Paraiso 148 - 5 andar
04103-000 Sao Paulo, SP Brazil

Tel: +55 11 2144 6400
Fax: +55 11 3253 0051

EUROPE

Cabot Specialty Chemicals Coordination Center
Interleuvenlaan 15 i
3001 Leuven
Belgium

Tel: +32 16 39 24 51
Tel: +32 16 39 24 13
Fax: +32 16 39 24 44

MIDDLE EAST & AFRICA

Cabot Dubai
P.O. Box 17894
Jebel Ali Free Zone
LOB 15, Office 424
Dubai

United Arab Emirates
Tel: +971-4-8871800
Fax: +971-4-8871801

ASIA PACIFIC

Cabot China Ltd.
558 Shuangbai Road
Shanghai 201108
China

Tel: +86 21 5175 8800
Fax: +86 21 6434 5532

JAPAN

Cabot Specialty Chemicals Inc.
Sumitomo Shiba-Daimon Bldg. 3F
2-5-5 Shiba Daimon,
Minato-ku
Tokyo 105-0012
Japan

Tel: +81 3 6820 0255
Fax: +81 3 5425 4500

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