

DuPont™ Zonyl® 9464 Paper Fluoro-Protectant

Technical Information

Description

Zonyl® 9464 paper fluoro-protectant is an aqueous dispersion of a cationic fluoropolymer. It imparts excellent oil and grease repellency to paper and paperboard, without changing the feel or the appearance. It will also provide water repellency. Zonyl® 9464 can be applied internally or on the surface of the paper or board.

Applications

Zonyl® 9464 provides oil and grease repellency for a variety of paper and paperboard products, including liner board, folding cartons, bags, flexible packaging, support cards for candy/bakery products, and duplicator/reproduction paper.

Food Packaging Status

Zonyl® 9464 paper fluoridizer is acceptable for use under FDA regulations 21 CFR 176.170 (Food Contact Notifications #206, #311, and #338) as an oil- or grease-resistant treatment for paper and paperboard. Food Contact Notification #311 includes the specific use of this product for the treatment of paper and paperboard for use in single service use microwave heat-susceptor packaging intended to contact all food types with a use level that does not exceed 0.18 wt% of fluorine* based on the weight of the paper (0.33 wt% of the product based on the weight of the paper). For other paper and paperboard applications, the product can contact all food types under conditions of use B through H [21 CFR 176.170 (C)] with a use level not to exceed 0.37 wt% fluorine* based on the weight of the paper (0.69 wt% of the product based on the weight of the paper).

Food contact notifications can be viewed on the FDA web site, <http://www.cfsan.fda.gov/~dms/opa-fcn.html>.

Conditions of Use B through H of 21 CFR 176.170 are shown below:

- B—Boiling Water Sterilized
- C—Hot Filled or Pasteurized above 66°C (150°F)
- D—Hot Filled or Pasteurized below 66°C (150°F)
- E—Room Temperature Filled and Stored (no thermal treatment in the container)
- F—Refrigerated Storage (no thermal treatment in the container)
- G—Frozen Storage (no thermal treatment in the container)
- H—Frozen or Refrigerated Storage: Ready prepared foods intended to be reheated in the container at time of use:
 1. Aqueous or oil-in-water emulsion of high or low fat.
 2. Aqueous, high or low free oil or fat.

Zonyl® 9464 is permitted for use under BfR (formerly known as BgVV) Recommendation XXXVI as an oil- and grease-resistant treatment for food-contact paper and paperboard at levels up to 2.5 wt% Zonyl® 9464 as received (0.48 wt% Zonyl® 9464 active ingredient) based on the weight of finished paper or paperboard.

Typical Properties of Zonyl® 9464 Paper Fluoro-Protectant

Appearance	Amber liquid
Composition Solids, %	19
Density at 25°C (77°F), g/mL	1.09
pH	4–5
Solubility in Water	Miscible in all proportions
Storage Stability	Store between 4–40°C (39–104°F); perishable if frozen

* Federal regulations specify total fluorine content. Broke, secondary fiber containing fluorochemical and small amounts of fluorine in pulp and water can contribute to total fluorine content.



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Applying Zonyl® 9464 Paper Fluoro-Protectant

Equipment

Zonyl® 9464 can be applied either internally at the wet end or as a surface treatment. Surface treatment is preferred, as this type of application offers wide versatility in location and equipment. It is usually less expensive, and the application is more easily controlled than internal treatment. Surface treatment can be done on the machine at the size press, coating station, or the calender-stack waterbox. Size press application is usually the most efficient method for applying Zonyl® 9464.

Factors Affecting Repellency

The dosage of Zonyl® 9464 required to give a specific degree of repellency depends upon several factors:

- Type of oil, grease, or solvent
- Time and conditions for determining holdout
- Nature of the fiber finish
- Presence of other chemicals on the sheet
- Papermaking variables, such as stock freeness, paper or board density, and degree of calendering
- Targeted performance

Treatment Level

General guidelines for using Zonyl® 9464 are:

- Internal—0.5–1.8% of Zonyl® 9464 as received, based on the weight of dry pulp

- Surface application—0.5–1.8% of Zonyl® 9464 as received, based on the weight of the treated paper

The actual concentration required will depend on the factors described above.

Personal Safety, First Aid, Storage, and Handling

Do not apply Zonyl® 9464 using aerosol application or by atomization. Inhalation of spray or mist may cause nasal, throat, or lung irritation. Inhalation of large amounts of respirable particles may be toxic to the lungs. Symptoms may be modest initially, followed in hours by severe shortness of breath requiring prompt medical attention.

See the Material Safety Data Sheet (MSDS) for product-specific information.

Technical Assistance

For help in evaluating this product in your application, please call DuPont Technical Service at (800) 255-4596.

Ordering Information—Product, Literature, or Samples

To order samples or literature, please call (800) 255-4596. For commercial quantities, please call (800) 441-9504. For locations outside the United States, contact the local DuPont representative in your country.

U.S. Sales and Services

For placing orders or requesting additional product information, please use our convenient 24-hour, toll-free telephone number. If you prefer, you can write to us.

By Phone

Toll free in continental U.S.
(800) 441-7515

By Mail

DuPont Chemical Solutions Enterprise
Customer Service Center
Barley Mill Plaza, Bldg. 23
Wilmington, DE 19898

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