



DuPont *i*Technologies

Printed Circuit Materials

# Storage Conditions for Riston® & VACREL®

## Technical Bulletin TB-0168

Riston® photopolymer film and VACREL® photopolymer film solder masks are complex photosensitive systems designed to polymerize and harden when exposed to ultraviolet radiation. These products are carefully formulated to provide aging stability; however, like all photosensitive materials, they exhibit some sensitivity to heat and humidity. Therefore, storage conditions are important in maintaining the stability of these films. First-in, first-out inventory control is recommended.

The films should be stored in the unopened original package under the conditions show in Table 1.

**Table 1. Film Storage Conditions**

Temperature:	5° to 21°C (40° to 70°F)
Relative Humidity:	30% to 70%

If stored within these ranges, Riston® films typically have a shelf life of 6 to 12 months and VACREL® films up to 24 months. The Expiration Date. (“use by date”) is stated on the box. The most common deterioration of Riston® films is edge fusion, a process that starts with gradual changes from the day of finishing (slitting). Loss of photospeed with time is more common with Vacrel® films and it begins with the date of coating. The reason some Riston® films have a 12 month shelf life while others have only 6 months is related to a variety of reasons, including viscosity of

the resist , its thickness, roll length, and web tension under which it was wound.

Speciality films may have shorter shelf life; contact your DuPont Electronics representative for information. Extended storage times outside of these conditions, particularly at higher temperature and humidity, can hasten aging of the resist. Adverse effects on performance may include reduced adhesion, slower photospeed, incomplete development, edge fusion, and telescoping.

Photopolymer films should not automatically be discarded if storage conditions have deviated from these recommendations. Material which has been stored outside of these conditions should be examined for physical changes and a practical test conducted before committing the film to production. If temperature and/or humidity exceeded the recommended storage conditions, inspect for evidence of edge fusion, telescoping, or color change. If resist was exposed to lower than recommended temperatures, inspect for turbidity in the film and test photospeed. There is the remote possibility that certain resist components may have formed a separate phase (e.g. crystallized out).

Riston® and VACREL® films should be equilibrated to the process area environment before using them. The recommended conditions are given in Table 2.

**Table 2: Recommended Process Area Conditions**

Temperature:	21° ± 3°C (70° ± 5°F)
Relative Humidity:	50 ± 10%



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