

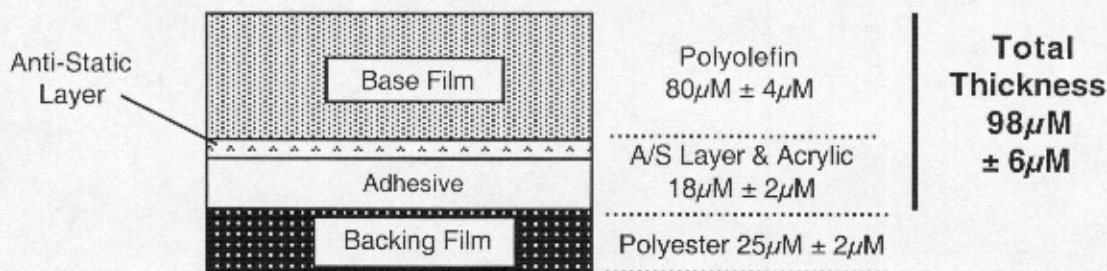
## Ultron Systems, Inc. Anti-Static Ultraviolet Film P/N: 1042R

New **Anti-Static** Ultraviolet adhesive film for direct lamination to the wafer backside. Ideal for thin/fragile wafer dicing. The base film is of Polyolefin with an Acrylic adhesive containing Photoactive component. When exposed to UV energy, the adhesive properties decrease significantly, resulting in easy removal of the film with virtually **NO stress** being applied to the wafer. With traditional films, the leading edge of the wafer is subject to high stress during the removal process (in certain cases, the leading edge can be seen to physically bend upwards); with UV film (after exposure) this does not occur.

A new Anti-Static layer eliminates negative charge "build-up", typically resulting from removal of the protective backing film from the adhesive/base film, or during wafer mounting, sawing, etc.

UV film has excellent properties for dicing applications: the very high initial adhesion ensures **no wafer/die "slippage"** during the dicing process, reducing "chipping problems", and the low adhesion after exposure ensures easy die removal. Film is supplied in 100-meter rolls with a Polyester backing liner to ensure the adhesive remains dust-free.

### Film Construction:



**Ultron Systems, Inc.**  
**Anti-Static Ultraviolet Film**  
**P/N: 1042R**

**Specifications:**

**Color**

**Clear**

**Backing Film**

**Polyester**

**Adhesion**

(@300mm/min  
speed)

UV: 200mJ/cm<sup>2</sup>

<u>Test Material</u>	<u>30min</u>	<u>1hr</u>	<u>2hr</u>	<u>4hr</u>	<u>8hr</u>	<u>12hr</u>	<u>24hr</u>
SS (Before UV)	300	330	350	400	500	540	550
SS (After UV)	25	25	26	26	26	26	28
Si (Before UV)	300	350	400	460	550	560	600
Si (After UV)	10	10	10	10	10	10	10

**Surface Resistivity  
(Adhesive)**

**9.0 x 10<sup>10</sup>Ω**

**Vertical**

**Horizontal**

**Elongation**

(@300mm/min speed)

**600%**

**700%**

**Tensile Strength**

(@300mm/min speed)

**400kgf/cm<sup>2</sup>**

**400kgf/cm<sup>2</sup>**

**Unwinding Force**

**25gmf/25mm**

\* The above specifications are tested values. They are not absolute, guaranteed results. All specifications tested under JIS-Z-0237 or JIS-K-6732.



**Ultron Systems, Inc.**  
**Adhesive Plastic Film**  
**Chemical Analysis**  
**P/N: 1042R**

**Film****Adhesive**

<b>Chemical</b>	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>
Aluminum (Al)	Not Detected	0.02 PPM	Not Detected	0.02 PPM
Barium (Ba)	Not Detected	0.5 PPM	Not Detected	0.5 PPM
Chromium (Cr)	Not Detected	0.1 PPM	Not Detected	0.1 PPM
Iron (Fe)	Not Detected	0.05 PPM	Not Detected	0.05 PPM
Zinc (Zn)	Not Detected	0.05 PPM	Not Detected	0.05 PPM
Copper (Cu)	Not Detected	0.01 PPM	Not Detected	0.01 PPM
Calcium (Ca)	Not Detected	0.1 PPM	Not Detected	0.1 PPM
Magnesium (Mg)	Not Detected	0.02 PPM	Not Detected	0.02 PPM
Potassium (K)	Not Detected	0.05 PPM	Not Detected	0.05 PPM
Sodium (Na)	Not Detected	0.05 PPM	Not Detected	0.05 PPM
Manganese (Mn)	Not Detected	0.005 PPM	Not Detected	0.005 PPM
Chlorine (Cl)	Not Detected	0.1 PPM	Not Detected	0.1 PPM
Phosphorus (P)	Not Detected	0.01 PPM	Not Detected	0.01 PPM
Silicon (Si)	Not Detected	0.2 PPM	Not Detected	0.2 PPM
Lead (Pb)	Not Detected	0.005 PPM	Not Detected	0.005 PPM

\* Testing Method - Atomic Absorption Spectrometry or Ion Chromatography

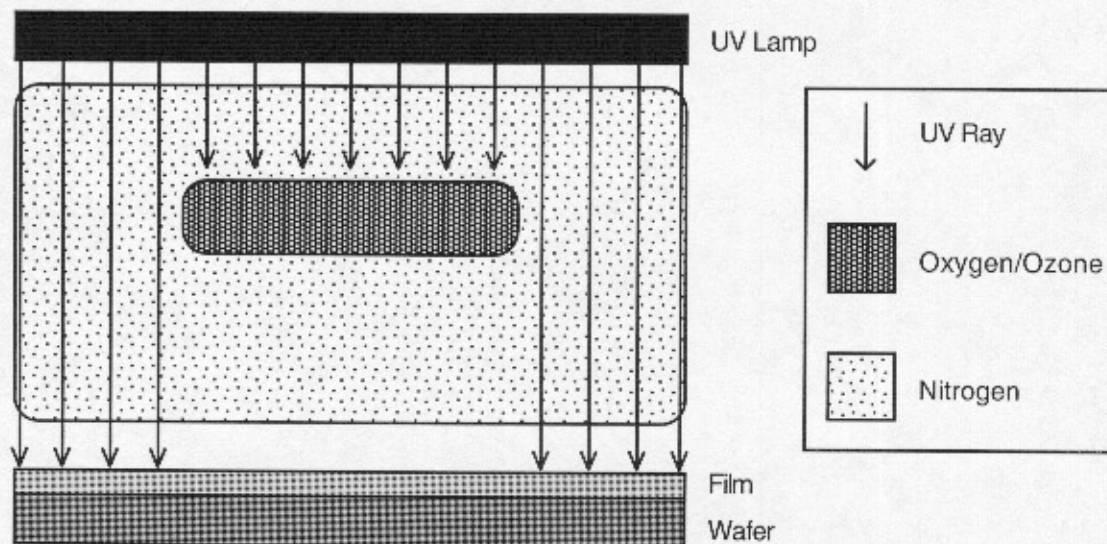
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The characteristic feature of UV film is a significant reduction of adhesion after exposure to Ultraviolet light (200 - 400 nm). In most cases, the required energy dose for correct curing of the adhesive will be 300 mJ/cm<sup>2</sup>. Typical adhesion reduction ranges between 85% and 95%.

**Film Exposure**

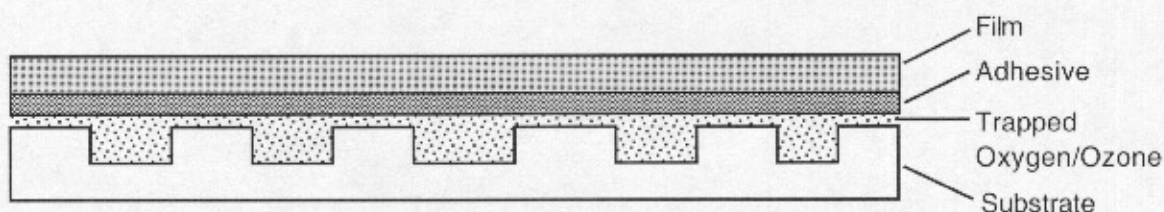
A Nitrogen purge during film exposure to UV light is highly recommended. The Nitrogen should form a blanket between the film and lamp. For testing purposes, spraying with a Nitrogen gun is acceptable. However, use of a continuous Nitrogen-purged enclosure with UV lamp is recommended.

**Purpose:** Oxygen (O<sub>2</sub>) is ionized by deep UV light, generating ozone (O<sub>3</sub>). Ozone acts as a filter to the UV light, blocking penetration to the film. The presence of oxygen/ozone may result in incomplete film exposure, which may cause areas of adhesive residue to be left on the wafer upon film removal.





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- a. *Film Application:* Any Oxygen trapped between the wafer and adhesive can create microscopic bubbles of ozone when exposed. This is especially critical if devices have high aspect ratio trenches.
- b. *Film Exposure:* Oxygen/Ozone present between the UV lamp and the wafer is ionized and prevents UV penetration to the adhesive.

**ADHESIVE PROPERTIES**

Please note the following changes to the film's adhesive properties under different conditions:

1. The adhesive strength will decrease if the film is mounted on the wafer in cooler temperature environments. It may be difficult to mount, and air bubbles and wrinkles may occur. It is recommended that the film be mounted at a temperature between 20 - 60°C, and should not exceed 75°C.
2. If a higher temperature is required to mount the film, it is advised that sample wafers should first be tested at the required temperatures.
3. If the wafer is left in an area of high temperature after the film is mounted, adhesive residue may remain on the wafer upon film removal.

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**UV EXPOSURE**

The following suggestions are recommended when exposing the UV film:

1. Expose the film from the base film side (not the adhesive side).
2. Insufficient UV light exposure (time and/or intensity) may result in die pick-up failure.
3. Do not expose only a section of the UV film in use; rather, expose the entire surface.
4. For best results, restrict UV exposure to an air-free atmosphere. UV exposure in a nitrogen atmosphere is very effective.

**STORAGE**

Ultron Systems, Inc. Anti-Static Ultraviolet Film P/N: 1042R has a guaranteed shelf life of 6 months from the shipment date, provided the following storage conditions are met:

1. Film must be stored away from direct sunlight or any other forms of UV radiation.
2. Film must be stored at ambient temperature not to exceed 25°C.
3. Film must be kept away from any sources of high temperature and/or humidity.
4. Film rolls must be stacked vertically to prevent deformation. Film should not be stacked higher than four rolls.
5. When storing film that is mounted on a wafer frame and/or wafer, keep away from any forms of UV radiation to prevent a change in the adhesive properties of the film.