



Low Outgassing Tape

6670

Technical Data

November, 2005

Product Description Low tack, polyester backed product with exceptional chemical purity and clean removability from most substrates. The adhesive is a unique chemistry that is neither rubber, silicone, nor acrylate based. The release liner is a premium release, low silicone film liner. The adhesion and chemical performance characteristics of 3M™ Low Outgassing Tape 6670 combine to make this a desirable construction for temporary holding, sealing, masking, and protective applications for sensitive materials and processes for which high chemical purity is a valued attribute.

| Construction | Backing | Adhesive | Liner | Color | Standard Roll Length |
|--------------|-------------------|---------------------|------------------------|-------------|----------------------|
| | 1.5 mil polyester | Hydrocarbon polymer | Low silicone polyester | Transparent | Custom sizes |

Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

| | | Test Method |
|---|--------------------------------------|------------------------|
| Adhesion to Steel: | 2.6 oz./in. width (2.8 N/100mm) | ASTM D-3330 (90° Peel) |
| Mechanical Performance: | | ASTM D-3659 |
| Tensile Strength (MD) | 46.1 lbs./in. width (807.7 N/100mm) | |
| Tensile Strength (TD) | 68.1 lbs./in. width (1193.1 N/100mm) | |
| Elongation @ Break (MD) | 192% | |
| Elongation @ Break (TD) | 110% | |
| Tensile Force @ 10% (MD) | 24.2 lbs./in. width (424.0 N/100mm) | |
| Tensile Force @ 10% (TD) | 54.4 lbs./in. width (953.1 N/100mm) | |
| Caliper: | | ASTM D-3652 |
| Backing | 1.5 mil (0.038 mm) | |
| Adhesive | 0.2 mil (0.005 mm) | |
| Total | 1.7 mil (0.043 mm) | |
| Temperature Use Range: | Up to 248°F (120°C) | |
| Extractable Anions by Ion Chromatography ¹ | | IDEMA Method M13-99 |
| Fluoride | < 10 ng/cm ² | |
| Chloride | < 10 ng/cm ² | |
| Nitrite | < 10 ng/cm ² | |
| Bromide | < 10 ng/cm ² | |
| Nitrate | < 10 ng/cm ² | |
| Phosphate | < 10 ng/cm ² | |
| Sulfate | < 10 ng/cm ² | |
| Outgassing by Headspace Analysis ² | | Niosh Method 3800 |
| Hydrocarbons | < 50 ng/cm ² | |
| Organic Acids | < 20 ng/cm ² | |
| Acrylates | < 20 ng/cm ² | |
| Siloxanes | < 10 ng/cm ² | |

¹Extractable Anions = IDEMA Method M13-99 with 24 hr extraction at room temperature.

²Outgassing = Modified Niosh method 3800 @ 85°C.

3M™ Low Outgassing Tape 6670

Typical Physical Properties and Performance Characteristics (continued) **Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

| Substrate | Initial adhesion ³ | Adhesion after aging ³ [30 min @ 120°C] | Test Method |
|--|-------------------------------|---|---|
| | | | Adhesion after aging ³ [30 min @ 150°C] |
| Adhesion to a variety of substrates ¹ : | | | ASTM D-3330 (180° Peel) |
| Stainless steel | 1.1 oz./in. (1.2 N/100mm) | 8.6 oz./in. (9.4 N/100mm) | – |
| Silicone oxide blanket wafer | 1.0 oz./in. (1.1 N/100mm) | 9.1 oz./in. (10.0 N/100mm) | 16.1 oz./in. (17.6 N/100mm) |
| Silicon nitride blanket wafer | 1.1 oz./in. (1.2 N/100mm) | 4.8 oz./in. (5.3 N/100mm) | – |
| Patterned wafer with polyimide passivation layer | 1.0 oz./in. (1.1 N/100mm) | – | 10.2 oz./in. (11.2 N/100mm) |
| 10k Å copper coated blanket wafer | 1.0 oz./in. (1.1 N/100mm) | 6.5 oz./in. (7.1 N/100mm) | – |
| Copper Olin 194 alloy | 1.0 oz./in. (1.1 N/100mm) | 16.1 oz./in. (17.6 N/100mm) | – |
| Nickel-palladium alloy | 2.0 oz./in. (2.2 N/100mm) | 13.2 oz./in. (14.5 N/100mm) | – |
| Aluminum-titanium carbide ceramic | 1.4 oz./in. (1.5 N/100mm) | 6.1 oz./in. (6.7 N/100mm) | – |
| Aluminum | 0.8 oz./in. (0.9 N/100mm) | 2.0 oz./in. (2.2 N/100mm) | 6.7 oz./in. (7.3 N/100mm) |
| Glass | 1.1 oz./in. (1.2 N/100mm) | – | 4.7 oz./in. (5.1 N/100mm) |

¹Note: Where adhesion value is reported, tape could be removed cleanly from substrate under specified aging conditions.

²Initial adhesion is a measure of adhesion, where the tape is applied to the target substrate and dwelled at room temperature for 15 min.

³Aged adhesion is a measure of ultimate adhesion, where the tape is applied to the target substrate and aged for 30 min. at (a) 120°C and (b) 150°C, prior to testing.

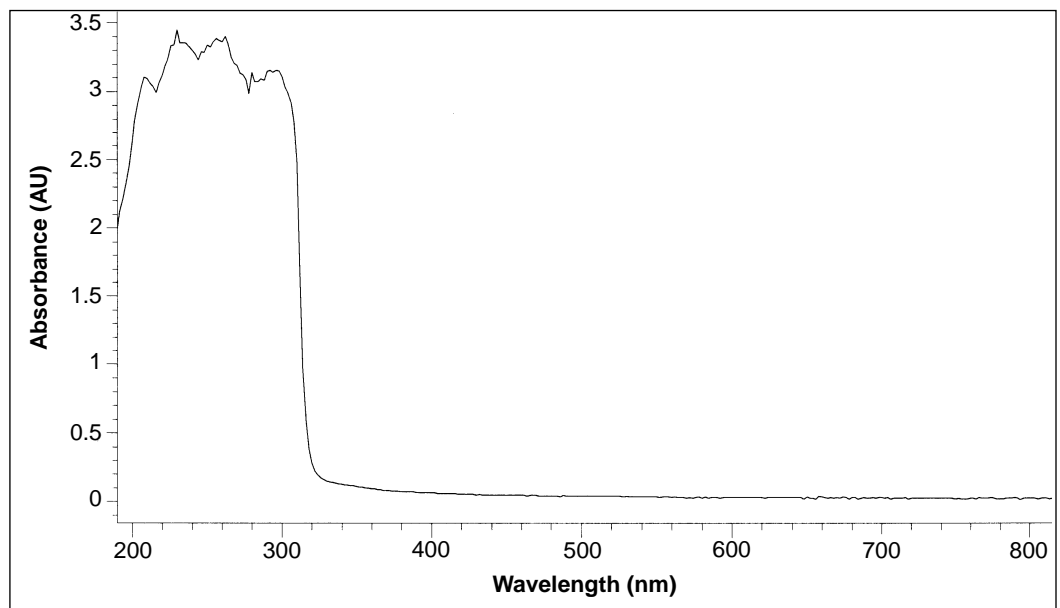
Application Ideas

- In process masking of chemically sensitive materials.
- Temporary holding of chemically sensitive parts during manufacture.
- Protection of chemically sensitive materials during manufacture or transportation.
- Masking applications that require UV transparency.
- Cleanroom applications requiring very low outgassing.

3M™ Low Outgassing Tape 6670

| Key Attributes | Features | Advantages | Benefits |
|----------------|--|--|--|
| | <ul style="list-style-type: none"> • 1.5 mil polyester | <ul style="list-style-type: none"> • Thin, high strength backing | <ul style="list-style-type: none"> • Less prone to tearing, conforms to irregular surfaces and shapes |
| | <ul style="list-style-type: none"> • 0.2 mil hydrocarbon adhesive | <ul style="list-style-type: none"> • Low diffusivity • Very low outgassing • Low extractable ionic content • Acid-free and silicone-free adhesive formulation • Non-staining adhesive • Excellent wet-out on various substrates • Clean removability from a wide variety of substrate materials | <ul style="list-style-type: none"> • Effective contamination barrier • Helps reduce risk of chemical contamination • Helps reduce risk of chemical contamination • Helps reduce risk of chemical contamination • Compatible with sensitive substrates • Offers quick, complete surface coverage and easy lamination • Eliminate cleanup of substrate during rework operations |
| | <ul style="list-style-type: none"> • 2.0 mil low-silicone release polyester liner | <ul style="list-style-type: none"> • Die-cutttable • Presents smooth adhesive surface | <ul style="list-style-type: none"> • Suitable for applications requiring different shapes and sizes of tape • No transfer of topography onto substrates |
| | <ul style="list-style-type: none"> • Transparent tape with uniform caliper variations | <ul style="list-style-type: none"> • Enhanced optical properties • UV transparent between wavelengths of 330-820 nm • Ensures planarity of smooth, flat substrate surfaces | <ul style="list-style-type: none"> • Suitable for applications requiring optical clarity • Useful for applications requiring UV transmittance • Minimal tooling adjustments for topography-sensitive applications |

UV-Visible Absorption Spectrum



3M™ Low Outgassing Tape

6670

| | |
|---------------------------------------|--|
| General Information | <ul style="list-style-type: none">• Best results obtained using firm rubdown pressure on clean, oil-free substrate materials.• Standard packaging includes plastic cores and individual plastic bags.• Shear performance decreases with increasing temperature. |
| Shelf Life | To obtain best performance, use this product within 18 months from date of manufacture and store under normal conditions of 60-80°F (16-27°C) and 40-60% R.H. in the original carton. |
| Technical Information and Data | The technical information and data, recommendations, and other statements provided are based on tests or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed. |
| Precautionary Information | Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501. |
| For Additional Information | To request additional product information or to arrange for sales assistance, call toll free 1-800-251-8634. Address correspondence to: 3M Electronics Markets Materials Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-634-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00. |
| Product Use | All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application. |
| Warranty and Limited Remedy | Unless stated otherwise in 3M's product literature, packaging inserts or product packaging for individual products, 3M warrants that each 3M product meets the applicable specifications at the time 3M ships the product. Individual products may have additional or different warranties as stated on product literature, package inserts or product packages. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's application. If the 3M product is defective within the warranty period, your exclusive remedy and 3M's and seller's sole obligation will be, at 3M's option, to replace the product or refund the purchase price. |
| Limitation of Liability | Except where prohibited by law, 3M and seller will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. |



3M Electronics

3M Center, Building 21-1W-10, 900 Bush Avenue
St. Paul, MN 55144-1000
1-800-251-8634 phone
651-778-4244 fax
www.3M.com/electronics



Recycled Paper
40% pre-consumer
10% post-consumer

Printed in U.S.A.
©3M 2005 60-5002-0097-1 (11/05)