



Technical Bulletin

Shelf Life Statements on Select Converter Markets Products

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April 2019

The shelf life note placed on the 3M technical datasheets for 3M pressure sensitive adhesive (psa) products, including the following products produced by 3M's Industrial Adhesives and Tapes Division for 3M Converter Markets customers:

- 3M™ Adhesive Transfer Tapes (single and double lined versions)
- 3M™ Differential Double Coated Tapes
- 3M™ Double Coated Tapes (single and double lined versions)
- 3M™ Membrane Switch Spacers

This policy is specifically related to the adhesive tape in the roll form as produced by 3M. The intent of this shelf life note pertains to roll stability. In this form, 3M takes into consideration variables such as unwind, liner release, and edge ooze. These are areas that may affect converting operations but do not reflect changes to material properties of the adhesive tape.

Therefore, the shelf life note is intended for the storage of the unconverted 3M product. For example, 3M does not provide a shelf life recommendation for the final application such as a nameplate or overlay once it is converted. Thus, the decision for when to apply the final adhesive laminated part is left to the discretion of the converter and/or the end user.

3M's adhesive tapes have been designed for bonding to many different surfaces and have a long history of use in the following markets; aerospace, medical, industrial equipment, automotive, appliance, light industrial, graphics, print and print finishing, web processing and electronics.

Please note this technical bulletin is being provided to offer additional clarity on the long-standing intent of our shelf life policy.

Shelf Life

In short, double sided pressure sensitive adhesives have a shelf life to help ensure usability and adhesive performance. Over time, some adhesives can become dry, brittle and lose their original performance properties. Although this occurs over time, it is helpful to have a date at which point the adhesive should no longer be used. In other cases, rolls of double sided adhesive tapes can deform, ooze, pick and otherwise be very difficult to apply, despite retaining good performance relative to their stated performance levels. In this case, a shelf life is helpful for providing a guideline for the date after which the product is unlikely to be easy to use.

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In both cases, it is important to note that a product's shelf life does not offer commentary relative to its application life, or durability for a specific application based on its use and exposure conditions. Generally, once a double sided pressure sensitive adhesive tape is unwound and successfully attached to one or more surfaces, its stability greatly increases, being anchored in place and less susceptible to usability and performance issues. Shelf life is then determined by the inherent properties of the adhesive chemistry in use, environmental conditions, such as temperature and humidity during storage, and liner selected for the product.

In short, shelf life is about the usability of a product and not the durability.

Impact of Liner on Shelf Life:

Liner selection can directly impact a double sided tape's usability and performance. Basic paper liners, such as Super Calendered Kraft (SCK) and Densified Kraft (DK), are often very susceptible to moisture, which absorbs easily into the paper and causes the paper to expand and buckle. Such liner expansion can cause issues for usability of the double sided tape and shorten its usable life.

Liner thickness can also have a direct impact on usability. When comparing liner thickness, thinner caliper liners often exhibit a greater tendency to deform than thicker liners which can limit their usability over time. Thicker liners tend to provide easier release over time, extending their usability. They also often provide lower levels of liner tear and improved dimensional stability, improving usability over time. Thicker liners can also provide more separation between adhesive layers, reducing the tendency of layers to bond together caused when adhesive flows out the edge of a roll (known as edge ooze).

Impact of Storage and Handling on Shelf Life

Proper storage and handling can lead to fewer usability issues and maximize usability over the recommended shelf life. Proper storage and handling recommendations include:

- Storage conditions of 60°F - 80°F (15°C - 26°C) and relative humidity (RH) levels between 40% and 60%
- Avoid impacts to the edges of a roll when unloading from protective packaging
- Storing unused rolls in the corrugated boxes they were shipped in and then storing in a vertical position with the end plugs and plastic wrap in place

The risk of not following these recommendations is any or all of the usability issues as mentioned above and an increase in severity with time duration and exposure variance to the recommended conditions.

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Closing In summary, shelf life is the ability to put the product into use. Always check the product date page for technical information regarding shelf life and use.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

ISO 9001

3M

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