

3M™ Heat Debondable Double Coated Tape 941XXHD Series Process Guide

Product Description

3M™ Heat Debondable Double Coated Tape 941XXHD series combines a conformable closed cell foam with a layer of normal strong pressure sensitive adhesive on one side, and a layer of special heat debondable pressure sensitive adhesive on the other side. Adhesives on both sides can provide high initial adhesion to a variety of substrates. When heated to 80°C for about 10mins, the adhesion of the debondable side will drop to a very low level while that of the normal side still maintains at a high level, enabling the joint to be easily detached from the debondable side without damage to bonded substrates. 941XXHD series are also designed as shock absorbers, due to its excellent compression performance, and can be used for a precision electronic part bonding. Meanwhile, the design of dummy proof is helpful to avoid misuse in application.

Typical Applications: bonding of various electronic components (e.g., OLED display, touch screen panel, back glass, etc.)

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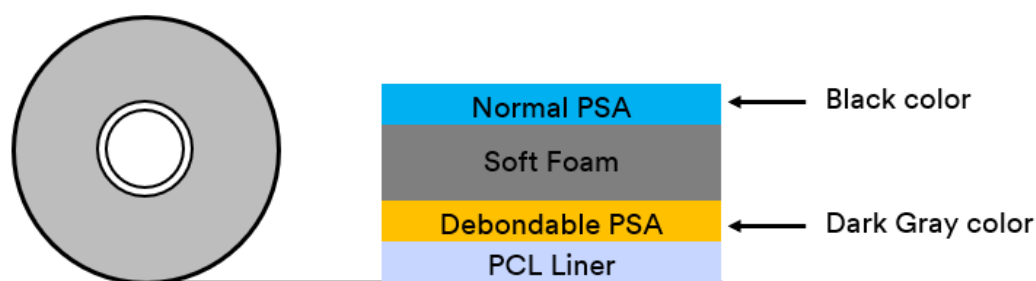


Figure.1 construction of 941XXHD tape roll

1. Bonding procedure

The Heat Debondable Tape 941XXHD has differential skin PSAs on two sides of the foam core, please properly design the construction of the die-cut part (which sides with the easy liner) refer to the application process. Debondable PSA side aim to bond the substrate (substrate A in figure.2) willing to be first debonded from.

1.1 Surface Preparation Prior to Bonding

A clean bonding surface is essential for maximum performance. For metals, glass, or plastic bonding, cleaning the surface is recommended to remove oils, mold release agents, and solid contaminants prior to bonding. For preparing other substrates for bonding contact your 3M application or technical service engineer.

1.2 Pre-Bonding (Pre-Tacking) Recommendations

To pre-bond or pre-tack the adhesive to the first substrate, remove easy liner (if present) and place/align the tape on the first substrate with the tight release liner out. Adhesion is formed by applying pressure using a press, roller, clamping or similar equipment at 25°C with ~15 psi (0.10 MPa) pressure. For rolling, a 20 N (2.0 kg) weighted roller at a speed of 300 mm/min is recommended.

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1.3 Bond closure recommendations

Pressure will depend on joint design and part tolerance between the two bonding substrates. Recommended starting pressure is 30 psi (0.2 MPa) for about 10 seconds. For rigid-to-rigid lamination or rough surface bonding, we strongly recommend that, upon bond closure, apply 45~75 psi (0.3~0.5 MPa) pressure for about 10 seconds. Increasing the pressure or the clamping time may help to achieve optimal bonding strength faster.

Normally the bonding will reach full strength after 72hrs dwell at RT. For performance test like reliability or impact, recommend to wait more than 24hrs RT dwell. Talk to your tech service representative for assistance with custom profiles.

2. Debonding procedure

2.1 Pre-heat the bonding part

Heat the bonding part to 70~85°C and keep for 5~10 minutes, to make sure the heat debondable PSA layer reach setting temperature. The PE foam core is not good conductor of heat, suggest to heat from the substrate which bonded with debondable PSA side, it can make the heat debondable PSA layer reach desired temperature more quickly. Suggest to heat with oven or heating platform, it can make the bonding line heat up evenly.

2.2 Debond

Fix the substrate B (refer to Figure.2), and slowly lift/pull up the substrate A (refer to Figure.2) from the edge or corner with suction cup or spatula pry, the joint will be cleaved from the edge of the interface between the substrate A and the debondable PSA surface, until totally separate the substrate A & B.

The higher heating temperature or longer heating time, the easier to debond and lower debonding force. It will cause higher debonding force, and may lead to foam split or residue left on surface of substrate A, if lift/pull up the substrate B instead of substrate A, or pull from the center instead of the edge/corner of the substrate. Lift/pull up slowly, especial at the beginning stage, otherwise it may lead to foam split.

Due to the normal side PSA of 941XXHD is not too tacky, it may take longer dwell time to build up enough strength, suggest to debond until the normal side PSA attached on substrate and dwell more than 24hrs at RT. For more information, please consult with 3M technical service representatives.

3. Clean surfaces for reuse

3.1 Remove residue

If operate properly, normally the joint will cleanly debond from the substrate A, and most of the tape will left on the surface of substrate B. The tape can be stretching remove manually or with electrical winder. Sometime it may left some skin adhesive on the surface of substrate B, it can be stick off with strong single coated tape like 3M™ 2525 or 898. For more information, please consult with 3M technical service representatives.

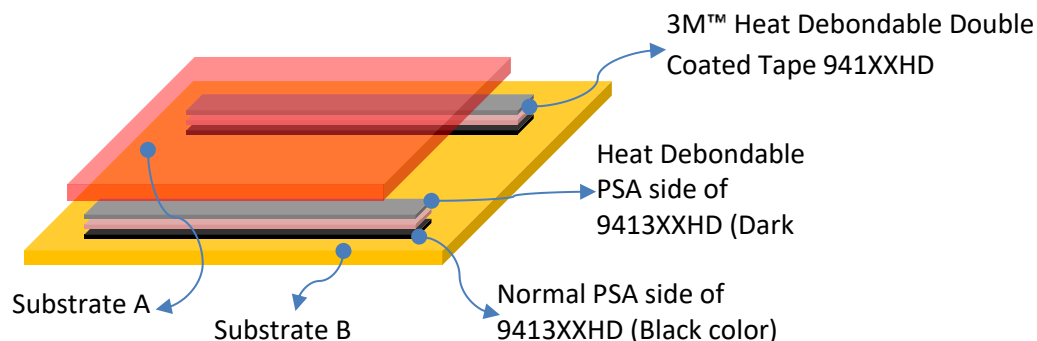


Figure.2 Application illustration

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Storage and Shelf Life

The shelf life of 3M™ Heat Debondable Double Coated Tape 941XXXHS is 12 months from date of manufacture when stored in the original packaging and materials and stored at 21°C (70°F) and 50% relative humidity.

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Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your 3M representative.

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