Applying Clips with 3M™ Structural Bonding Tapes

Application Guidelines for 3M™ Structural Bonding Tapes **July 2008**

Supersedes Application Guidelines dated August 2007

General Description	The following guideline outlines the proper storage and handling of clips taped with 3M™ Structural Bonding Tape (SBT). Clips taped with 3M SBT must be stored in a controlled environment to maintain optimal adhesion. Surfaces of the tape and body component must be clean. Good wet-out of the clip to the body component is necessary to achieve good adhesion and performance of the clip.
Storage and Shelf Life	The shelf life of 3M SBT is dependent on temperature and humidity over time. Shelf life will decrease with higher temperatures and/or higher humidity. When the tape is stored outside of these guidelines, the tape gradually reacts and the performance of the tape is decreased. If used in elevated temperatures or humid environments, such as a paint shop, a refrigerator (23°C [73.4°F]) is recommend for storage of the taped clips. Return un-used taped clips to the refrigerator every day. Pay attention to humidity in storage. When the tape is exposed to a high humidity condition (above 50% RH), the tape will absorb moisture, causing the tape to expand in thickness and/or detach from the paint during paint bake. Do not use clips that have exceeded their expiration date. 3M highly recommends using the “first in, first out” stock rotation method to help prevent quality problems due to expired material. During line shut-downs, clips that will expire should be disposed of and all remaining clips stored in a refrigerator. Uncured clips should not be left on vehicles. *Recommended Shelf Life* 1 month at 23°C (73.4°F) and RH 50% from receipt of material 3 months at 5°C (41°F) from receipt of material Shelf life will decrease with higher temperatures

Cleaning Method	Cleaning is not required when applying the clip to sealer. However, if the clip is being directly applied to the auto body, the application surface must be free of contaminants such as oil, dust, etc. The best practice is to clean the substrate using a 50/50 mixture of isopropyl alcohol and water with a clean, non-abrasive cloth. The cleaning should remove all contaminants and leave no residue. Clean the surface of the automotive body component no more than 20 minutes prior to tape lamination, and allow the cleaning solution to dry. A dry surface is indicated by a loss of sheen. For relatively uncontaminated surfaces, a Scotch-Brite™ High Performance Cloth may be used instead of a solvent-based cleaner. Contact a 3M application engineer for guidance. * Note: These cleaner solutions contain greater than 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, extinguish all ignition sources, including pilot lights and follow the manufacturer's precautions and directions for use.
Clip Application	KEEP THE SURFACE OF THE TAPE AND BODY COMPONENT CLEAN. Remove the clip from the liner, taking care not to touch the tape surface or application surface. If you touch the adhesive, oil or dust may transfer to the adhesive surface and may reduce adhesion.
Clip Positioning	Apply the taped clips in the correct position using location features or fixtures. If taped clips are applied in an incorrect position, remove clips and tape, wipe away tape that remains on the surface of the body panel with isopropyl alcohol and apply a new taped clip. Use of isopropyl alcohol should not be used if using wet sealer.
Clip Pressurization	Pressurization of the taped clips to the body component is necessary for proper adhesion. The amount and duration of pressure must be reviewed on a case-by-case basis. The determining factor is wet out or adhesive contact area. Wet out of tape to the component surface, especially along the edges and under the engagement tabs, is required to ensure proper adhesion strength. A good starting point for pressurization is 1Kg/cm2 applied for 2 seconds.
Sealer Compatibility	When the tape is applied on some forms of sealers, plasticizer migration may cause a decrease in adhesion strength. The decrease in performance level is dependent on the sealer (type of plasticizer, amount of sealer, etc.). 3M recommends evaluating this effect on a case-by-case basis due to the wide differences in sealers. Contact a 3M application engineer for assistance.
Cure Conditions	3M™ Structural Bonding Tapes are designed to cure during automotive paint cycles. Tapes will cure by being exposed to adequate temperature for a minimum period of time. The following cure cycle is recommended. Minimum: 30 minutes at 130°C (266°F) material temperature. Cure cycles below this temperature are not adequate to provide full strength curing of tapes. Maximum: 90 minutes at 190°C (374°F). Note: the maximum temperature and time may be lower depending on the clip material. Contact a 3M application engineer to review other cure cycles.

Troubleshooting

The following information may be used to diagnosis potential causes of SBT bonded clip failure:

INADEQUATE CLIP ADHESION:

- Δ Check material expiration date.
- Δ Verify that clips were properly stored prior to application.
- Δ Verify that uncured clips were not left on a vehicle during a line shut-down.
- Δ Verify that the cure conditions were within the recommend guidelines above.
- Δ Verify that the tape is being properly wet out on the application surface. Contact a 3M application engineer for assistance if needed.
- Δ Check for surface contaminants on vehicle or adhesive.
- Δ Check to ensure that the sealer was not already cured before the clips were applied.

IMPROPER CLIP POSITIONING:

- Δ Verify that the application tool and/or location devices are being used properly.
- Δ Verify that the sealer application thickness is correct. Sealer applied too thickly can cause the clip to move during the cure cycle.

3M

Automotive Division

3M Center, Building 223-1S-02
St. Paul, MN 55144-1000
www.3M.com/autosolutions

75-3470-8840-5
Printed in U.S.A.

ISO/TS 16949:2002
File No. A3904