



3M Science.
Applied to Life.™

**Supporting your
design and build
from the inside out.**

Industrial Adhesive and Tapes Division

Rail Interiors



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Rail Interiors

Rail carriages transport masses of people quickly, safely and comfortably. 3M technologies are there—sealing the windows, attaching interior panels and carpets, helping construct next generation composites, and keeping passengers comfortable and secure while they ride to their destinations. At 3M we understand your key challenges, this guide provides solutions to support you with:



Time saving and increasing productivity

With extremely tight deadlines and budgets, saving time and increasing productivity is key. 3M's adhesive and tape technologies help keep you on track. Our vast range of products deliver in demanding environments, whilst supporting quick turnaround in maintenance and overhaul of interiors. The need for welding, mechanical fasteners or rivets can be reduced speeding up the overall assembly process.



Lightweighting and multi material bonding

When it comes to lightweighting every gram counts. 3M solutions make it easier for you to reach your weight reduction goals without sacrificing performance. Supporting you in bonding tricky materials, where welding sometimes isn't possible, 3M adhesive and tape solutions can bond a wide variety of materials i.e. composites, plastics and metals.



Improved aesthetics

3M adhesive and tape solutions remove the need for unsightly mechanical fixings providing an overall better finish. Traditional mechanical fixings can create stress points, and expose areas for moisture and corrosion potentially increasing overhaul time.



Specification

A selection of 3M adhesive and tapes solutions have been tested to support with the EN45545 specifications. Our technical experts can support from design to delivery offering advice and testing on applications.

Assembly

Floor cover bonding and seam sealing

Once the carriage has been assembled floor covering can be bonded with either adhesives or tapes. The flooring can then be sealed with an adhesive sealant to prevent water intrusion.

Find out more on 3M solutions ►





Your challenges

- ▶ Do you have any issues with your current assembly process?
- ▶ Do you need to be able to speed up your assembly process?
- ▶ Do your customers value smooth flooring and improved aesthetics?
- ▶ Do you have an issues with continuous floor covering replacement?
- ▶ Do you have issues with the flooring cover lifting and wearing easily?
- ▶ Do you have issues with exposure to moisture?
- ▶ Do you have issues with corrosion on the flooring?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ Structural Adhesives (7260FC, DP110, 7240FR)
- ▶ 3M™ Laminating Adhesives (300MP)
- ▶ 3M™ Sprayable Adhesives



Why 3M solutions solve your challenges

- ▶ 3M bonding solutions can help speed up the assembly process, which can lower the overall manufacturing costs due to a reduction in process time
- ▶ 3M can provide both tape and adhesive solutions for most bonding needs. We are able to combine our technologies for hard to bond combinations, enabling design flexibility
- ▶ 3M bonding solutions help improve the lifecycle of the flooring and prevent corrosion and moisture resistance, reducing maintenance and overhaul hours
- ▶ Removing unsightly mechanical fixings, which helps to improve the carriage floor aesthetics

Assembly

Floor panel bonding

Train carriage floors can be stressed by constant vibration, twisting and bouncing. Train subfloors need to be able to maintain their long-term viability. Panels can be materials such as aluminium, steel or composites. These are attached to the interior frame of the carriage.

Tape and adhesive solutions can provide performance advantages over traditional attachment methods.

Find out more on 3M solutions ►





Your challenges

- ▶ Do you have any issues with your current assembly process?
- ▶ Do you need to be able to speed up your assembly process?
- ▶ Do you have issues with moisture getting behind panels?
- ▶ Do you have issues with being able to provide a smooth appearance on the carriage floor?
- ▶ Do you have issues with sound dampening and vibration on the floor panels?
- ▶ Do you spend time re-working panels?
- ▶ Do you have to wait a long time until the carriage floor can be walked on for further processes in the carriage?
- ▶ Do you have issues mechanically fixing panels to the frame?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ VHB™ Tapes
- ▶ 3M™ Structural Adhesives (DP490, 7240FR)
- ▶ 3M™ Adhesive Sealants (760, 560)
- ▶ 3M™ Laminating adhesives



Why 3M solutions solve your challenges

- ▶ 3M bonding solutions can help speed up the assembly process. 3M VHB Tapes provide an instant bond
- ▶ 3M can provide both tape and adhesive solutions. These solutions are able to provide a water seal preventing moisture getting behind panels
- ▶ 3M Structural adhesives and 3M VHB Tapes remove the need for mechanical fixings providing a smooth appearance
- ▶ 3M VHB Tapes are sound dampening and can absorb impact and vibration in applications
- ▶ 3M Structural Adhesives provide a durable bond. The acrylic portfolio can also supply a quick bond like 3M VHB Tapes allowing walkability on the floor quicker

Assembly

Small fixture attachment

Small fixtures for train interiors are attached internally to the carriage with fasteners, rivets, tapes or adhesives. For example small internal signage.

Tape and adhesive solutions can provide performance advantages over traditional methods.

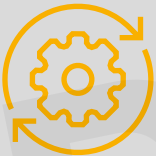
Find out more on 3M solutions ►





Your challenges

- ▶ Do you have any issues with your current assembly process?
- ▶ Do you need to be able to speed up your assembly process?
- ▶ Do you have issues with temporary attachment or mounting of small parts?
- ▶ Do you have issues with being able to change small attachment signs, without damaging interior panels?
- ▶ Do you have issues with small attachments removing too easily?
- ▶ Do you need tamper proof small attachments?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ VHB™ Tapes
- ▶ 3M™ Polyurethane Sealant
- ▶ 3M™ Laminating Adhesives
- ▶ 3M™ Structural Adhesives (DP105, DP8810NS, DP8407NS)
- ▶ 3M™ Dual Lock™ Reclosable Fastener



Why 3M solutions solve your challenges

- ▶ 3M bonding solutions can help speed up the assembly process. 3M VHB Tapes provide an instant bond
- ▶ 3M Dual Lock Reclosable fastener offers 1,000 of reattachments in a snap providing a removable solution for small attachments such as signs and display components
- ▶ 3M Structural adhesives and 3M VHB Tapes remove the need for mechanical fixings providing a smooth appearance
- ▶ 3M Structural Adhesives provide a durable bond. The epoxy portfolio can provide a flexible solution

Assembly

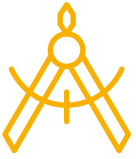
Interior panel bonding

Panels can be materials such as aluminium, steel or composites. These are attached to the interior frame of the carriage with fasteners, rivets, tapes or adhesives. This can include interior access panels.

Tape and adhesive solutions can provide performance advantages over traditional attachment methods.

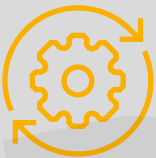
Find out more on 3M solutions ►





Your challenges

- ▶ Do you have any issues with your current assembly process?
- ▶ Do you need to be able to speed up your assembly process?
- ▶ Do you spend a significant time drilling, grinding and welding?
- ▶ Do you have issues with moisture getting behind panels?
- ▶ Do you spend time re-working interior panels?
- ▶ Do you have issues with panels being able to be removed? Does this cause damage to the panels?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ VHB™ Tapes (4941, GPH-110GF)
- ▶ 3M™ Structural Adhesives (DP6330NS, DP6310NS, DP8407NS, DP8825NS)
- ▶ 3M™ Adhesive Sealants (760)
- ▶ 3M™ Dual Lock Reclosable Fastener



Why 3M solutions solve your challenges

- ▶ 3M bonding solutions can help speed up the assembly process. 3M VHB Tapes provide a high strength, durable clean bond
- ▶ 3M can provide both tape and adhesive solutions, these solutions are able to provide a water seal preventing moisture getting behind panels
- ▶ 3M Structural adhesives and 3M VHB Tapes remove the need for mechanical fixings providing a smooth appearance, with no need for drilling riveting or welding

Assembly

Insulation attachment

Panels are finished with the attachment of thick insulation that is usually bonded onto metal or composite panels.

Find out more on how 3M solutions can speed up insulation attachment ►





Your challenges

- ▶ Do you have any issues with your current assembly process?
- ▶ Do you need to be able to speed up your assembly process?
- ▶ Do you have issues with moisture getting behind panels?
- ▶ Do you require water based adhesives?
- ▶ Do you have issues with panels being able to be removed? Does this cause damage to the panels?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ Fast Tack Water Based Adhesive 1000NF
- ▶ 3M™ Holdfast 70 Spray Adhesive
- ▶ 3M™ Sprayable Hot Melt Adhesive 6111/6111HT



Why 3M solutions solve your challenges

- ▶ 3M range of solvent and water based solutions can help speed up the assembly process. They bond quickly for immediate handling strength
- ▶ Low overspray and high coverage minimizes waste
- ▶ Stable bond provides good heat resistance for long-term endurance
- ▶ Bonds wide variety of substrates

Assembly

Buzz, squeak and rattle

Train panels, doors, floors and fixings can be stressed by constant vibration, twisting and bouncing.

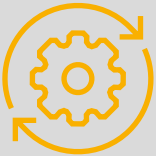
These stresses to the carriage can cause potential unwanted noise. Find out more on how 3M solutions can reduce this ►





Your challenges

- ▶ Do you have design issues caused by unwanted noise or vibration?
- ▶ Do surfaces of component parts rub against one another?
- ▶ Do you have galvanic corrosion issues?
- ▶ Do you currently use a heavy putty or butyl tape to overcome unwanted noise?
- ▶ Do you need to meet design specifications?
- ▶ Do you have any HS&E or other requirement/certification?
e.g. isocyanate free/EN45545



3M Solutions for your challenges

- ▶ 3M™ 2552 Sound Dampening Foil Tapes
- ▶ 3M™ UHMW 5425
- ▶ 3M™ UHMW 5421 (Higher Initial Tack)
- ▶ 3M™ UHMW 5423 (Thicker)
- ▶ 3M™ Scotch™ 8581 Flocking Tape
- ▶ 3M™ Laminating Adhesives 300MP



Why 3M solutions solve your challenges

- ▶ Excellent vibration damping to reduce resonant noise in panels
- ▶ Complete coverage not required – impact at as little as 10% coverage
- ▶ Lighter than butyl solutions, better low frequency absorption than fibrous/non-woven solutions
- ▶ Thin – at only 0.13mm (5.1mils) total thickness
- ▶ Adhesion to plastics – specially designed adhesive for plastics and other low surface energy materials
- ▶ Excellent balance of conformability, noise reduction, and durability
- ▶ Highly conformable
- ▶ 3M Laminating adhesive 300MP is solvent free and provides an instant bond, with high adhesion to a wide variety of materials including many plastics and foams

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