Creating Bonding Solutions For Transportation Industries And Beyond!

One Company... Many Solutions

ITW Plexus has global locations and is represented by a global distribution network in North America, Latin America, Europe, Australia, Asia and The Far East.
ITW Plexus adhesives are consistently used by major transport manufacturers in the bus, rail and truck industries. As transportation infrastructure continues to grow and evolve, manufacturers are required to provide increasingly competitive modes of transport.

At ITW Plexus, our innovative range of structural adhesive products provide improved performance and productivity. Our advanced adhesive solutions have proven to be an integral part of our partner's business success in improving their design and manufacturing processes. In addition to providing increased design freedom, working with ITW Plexus provides excellent technical support and outstanding customer service expected from a leading global company.

ITW Plexus has developed a range of advanced structural adhesives and complimentary systems that improve manufacturing and assembly techniques. We believe a large part of our continued success is due to the importance we place on building strong and lasting relationships with our customers and recognizing the need to fully understand all aspects of their bonding requirements. The end result is a philosophy to develop innovative products and solutions tailored to our customers' requirements.

Our wide range of structural adhesive products are suitable for bonding a vast majority of thermoplastics, metals and composite materials to produce durable bonds, which require minimal or no surface preparation.

Our commitment to quality is delivered in every adhesive we manufacture, providing our customers with confidence in the reliability of our product.

To improve cost effectiveness, the transportation industry needs proven solutions, which can maintain and exceed existing standards. A focus on these advanced technological solutions provide the necessary edge in the transportation industry.

To aid design and production on customers own substrates

Custom programs to establish actual environmental and in-service performance

Invaluable technical and sales support, with additional guidance in product selection, application methods and equipment support

Access to the global distribution network via strategic partners, our customers have the ability to obtain ITW Plexus quality products and services around the world.

The ITW Plexus team understands the challenges posed by the modern production environment and are always available to demonstrate the wide range of bonding products for your applications.
Methacrylate Structural Adhesives

ITW Plexus recommends the following adhesive ranges for use on transportation applications:

300 Series
The 300 range includes both 1:1 and 10:1 general purpose adhesives, providing high shear strengths up to 3,500 psi (24.1 MPa). This range of adhesives is ideal for bonding most plastics, glass-reinforced plastics (GRP), metals, phenolics, nylon and gelcoats, with little or no surface preparation. They also bond to selected rubber products.

The 300 range offers excellent impact resistance, high adhesion and good environmental durability. Also available in white, providing an aesthetic finish to the component.

400 Series
A multi purpose range of 10:1 adhesives with excellent elongation, chemical and impact resistance properties. A range of open and working times are available to suit specific applications. Commonly used for bonding large components, which require a longer working and fixture time.

The 400 range offers high shear strengths and flexibility, resulting in exceptionally tough and durable bonds when fully cured. These adhesives typically require little or no surface preparation.

800 Series
The 800 ‘Metal Bonder’ series has provided industry professionals with a range of fast curing, structural adhesives. The range can be used to bond a variety of ferrous and non-ferrous metals including aluminum, stainless steel and carbon steel.

The Metal Bonder range of adhesives not only offers excellent adhesion, they are also strong yet flexible. The 800 series of metal bonders allows users to move away from traditional methods such as mechanical fastenings, riveting, and welding as the adhesives can bond to most metals, without the need for primers or extensive surface preparation.

When selecting an adhesive for an application, it is important to consider how the adhesive’s characteristics will integrate into new or existing assembly production processes. Ask ITW Plexus about other solutions that may not be noted.

Urethane/Hybrid Technology Adhesives

With a specific focus on Commercial Vehicles, ITW Plexus H-Series adhesives are often commonly used in interior or exterior applications in trucks, buses, trains, specialty vehicles (agricultural, construction, military and armor), automotive, and OEM.

ITW Plexus H-Series
• Excellent adhesion to many materials
• Permanently flexible
• Quick curing
• UV and water resistant
• May be overpainted
• Low-VOC
• Rebondable

ITW Plexus H-200
State-of-the-art hybrid polymer. It is a one-component adhesive with high modulus and very high initial tack (green strength) that allows immediate bonding in vertical position for various sized parts.

ITW Plexus H-100 and H-75
Semi-structural one-component modified polyurethane adhesive using the hybrid technology. Adhesive with respectively high and medium modulus. Good initial tack (green strength). Suitable for fixing side, front, rear and ceiling panels in trains, buses and vans. Sealing of door frames, windows (motor home, horse trailer, etc.) and trailer’s bows.

Other ITW Plexus Solutions
• Acrylic Sealant
• Contact Adhesives
• Metal Assembly Sealant
• Polyurethane Sealant/Adhesive
• Self-Leveling Seam Sealer
Worldwide, carbon emission standards are an increasing challenge to truck manufacturers. ITW Plexus adhesives can assist in reducing the overall weight of the vehicle and subsequently assist in decreasing emissions.

ITW Plexus works in conjunction with design and engineering teams to continually devise and implement new structural adhesive solutions and methods. ITW Plexus can be involved in the process from the original design stage to ensure a seamless transition to a bonded solution.

ITW Plexus adhesive solutions have a proven bonding performance, coupled with cost efficiency in the manufacturing process. Our systems can be applied to a wide range of truck bonding applications to help ensure durability and reliability with minimal disruption.

Our methyl methacrylate structural adhesives are a superior and practical alternative to traditional truck assembly methods and are approved by many Class 4-8 Truck Manufacturers worldwide. The solutions are ideal for the most troublesome truck assemblies, such as exterior trailer cappings, bumper assemblies, door extensions, interior cabins and exterior sun visors.

Product benefits include:
- UV stable versions
- Excellent bond retention
- Resistance to common chemicals such as fuel, screen wash etc.
- Reduced VOC emissions
- High strength and durability
- Easy to use

Bonding with structural adhesives:
- ITW Plexus adhesives have the ability to bond dissimilar metals and materials while offering more design options and substrate choices
- Improved aesthetics and aerodynamic efficiency
- A wide range of open and fixture times available to suit all applications
- ITW Plexus adhesive bondlines are designed to withstand climatic stresses under different environmental conditions
- ITW Plexus adhesives are primarily used in structural bonding, meaning there is little to no need for mechanical fasteners
- ITW Plexus adhesives can be recycled without the need to cut out the joint and are regrind compatible
- Assist to reduce in the final weight of assembly which will improve fuel efficiency and help to reduce emissions
- Eliminate the need to drill or pierce substrates for mechanical fastening, thus minimizes leaking and corrosion
This illustration highlights where ITW Plexus adhesives are used to bond many different substrates with little or no surface preparation.

**Trailer Load Lockers**
Metal rails bonded to trailer side walls to improve durability by evenly distributing load.

**Trailer Capping**
Aluminum to composite bond to improve aesthetics.

**Cabin Hood Reinforcements**
Composite grid section bonded to composite shell to provide structural integrity.

**Sun Visor**
Acrylic sheet bonded to mounting brackets offering excellent UV resistance, while improving production speed.

**Trailer Roof**
Composite grid section bonded to composite shell to provide structural integrity.

**Door Extension**
Composite to metal bond improves process speed.

**Bumper End Caps**
Composite bonded to metal aiding durability and process speed.

**Front Fog Lights**
Structurally bonded surrounds.

**Cabin and Dashboard**
Brackets and stiffeners bonded in to aid installation.

**Front Grill**
Bond provides vibration housing and improved aesthetics.

**Headlight Surround**
Structurally bonded to provide secure lamp housing.

**Brackets**
Structurally bonded throughout the vehicle to facilitate ease of installation.

**Roof Spoiler**
Strong and durable bond of the composite wind deflector.
Manufacturers of double-deckers, single-deckers and mini-buses are required to withstand a large number of daily commuters, ensuring they retain their durability and reliability over the typical 10-15 year life span.

Modern and stylish exteriors have been designed to provide passengers with accessibility and comfort. ITW Plexus works closely with manufacturers to provide reliable fixtures for all challenging applications, including assemblies such as front and rear end caps, internal moldings and dashboards and instrument panels.

Our structural adhesive products offer high strength with minimal to no surface preparation, therefore streamlining the production process. The unique characteristics of our adhesive systems allow bus manufacturers to replace welding structures, reduce distortion and post weld dressing, and improve fatigue performance.

Working with ITW Plexus builds customer confidence in the strength and reliability of our adhesives. In addition, ITW Plexus has contributed to the development and manufacture of low carbon buses, as bonding with glass-reinforced plastics (GRP) has allowed manufacturers to reduce weight and improve fuel efficiency.

Product benefits include:

- High structural strength
- High impact resistance
- Reduced VOC emissions
- Excellent fatigue resistance
- Easy to use

Bonding with ITW Plexus adhesives

- By eliminating the need for rivets, individual stress points are significantly reduced and the load is evenly distributed
- Provides improved aesthetics of the finished vehicle
- Efficient processing and quick cure, aiding production speed
- Wide range of open and fixture times available to suit all applications
- ITW Plexus adhesive bondlines are designed to withstand climatic stresses under different environmental conditions
- Lower component costs, due to the ability of adhesives to bond to a wide variety of substrates
- ITW Plexus adhesives have the ability to bond dissimilar metals and materials offering more design freedom
- Eliminate the need to drill or pierce substrates for mechanical fastening and fixing, thus minimizes leaking and corrosion

ITW Plexus in the Bus and Coach Industry

ITW Plexus adhesive applied to bus side panel.

Reinforcements bonded to cabin interior.

Locker door frame bonded to the skin with adhesive application.

ITW Plexus adhesive applied to the bus floor.
This illustration demonstrates where ITW Plexus adhesives can be applied. The bonding solutions are easy to use and fast fixture times meet production and process requirements.

**Brackets**
Structurally bonded throughout the vehicle to facilitate ease of installation.

**Washroom Assembly**
Bonded panels provide high performance water tight joints.

**Locker Doors**
Aluminum skin bonded to the frame, providing cost effective manufacturing and component strength.

**Buses**

- Roof to Edge Frame
  Bonds and seals metal to metal saving time and labor providing a durable watertight joint.
- Interior Panels
  Stiffeners and mounting brackets structurally bonded to provide strength and ease of installation.
- Roof Stringers
  Top hat stiffeners bonded into the roof to aid strength and tightness of the assembly.
- Side Panel (Exterior Skin)
  Metal to metal bond designed to increase production speed and improve aesthetics.
- Rear and Front End Cap
  Mounting brackets bonded to the mold for ease of installation.
- Wheel Arches
  Aluminum skin bonded to the frame, providing cost effective manufacturing and component strength.
- Engine Cover
  Aluminum skin bonded to the frame, providing cost effective manufacturing and component strength.
- Bumper
  Mounting brackets structurally bonded to allow quick assembly.
- Stairwell Mold
  Stiffeners and mounting brackets structurally bonded to provide strength and ease of installation.
- Door Rubber Seal
  Rubber to metal bond provides weather resistance.
- Rub Rail
  Plastic to metal bond for durability.
- Floor Panels
  Structurally bonded panels provide high levels of resistance to heavy foot traffic.
- Dashboard
  Brackets and stiffeners bonded in to aid installation.
Durability is essential when dealing with large numbers of daily commuters and travelers. At the forefront of innovative design, trains and carriages need to offer reliability, safety and optimal operational performance.

ITW Plexus adhesives help manufacturers to assemble sub-components quickly and efficiently and apply modular assembly methods to production. Our bonded assemblies provide lower weight solutions than traditional mechanical fasteners.

ITW Plexus adhesives have the ability to bond different types of plastics, metals and composites, helping to lower component costs, which is invaluable to the rail industry. ITW Plexus adhesives are used frequently during design and assembly to ensure these components remain intact and resistant to environmental stresses. Our quality adhesives offer distinct advantages when dealing with complex components and large surface areas.

Product benefits include:
- High structural strength
- High impact resistance
- Reduced VOC emissions
- Excellent fatigue resistance
- Easy to use

Bonding with structural adhesives:
- Efficient processing and quick cure increases production speed
- Proven durability in service
- Wide range of open and fixture times available to suit all applications
- Reduce floor de-lamination and repairs with our water resistant floor bonding solutions
- Good sound dampening improves journey experience
- Improve productivity and reduce component costs with the ability to bond a wide variety of different substrates
- Achieve aerodynamic efficiency and improved aesthetic finishes
- Minimizes the need to drill or pierce the chassis for mechanical fastening and fixing of floor panels
- All ITW Plexus adhesives are designed to withstand operating stresses and various environmental conditions
- Using ITW Plexus adhesives eliminates the damage caused to substrates and structures as a result of drilling and welding
This illustration demonstrates the key joining areas where ITW Plexus adhesives are applied. Our adhesive solutions are suitable for bonding a wide range of substrates including metals, coated steel and plastics.

- **Floor**
  - Composite panels bonded to aluminum framework to provide strength and durability.

- **Headlight Cover**
  - Structurally bonded to improve aesthetics and durability.

- **Roof Fairing**
  - Structurally bonded to aid aerodynamic performance.

- **Draught Screen and Standback Brackets**
  - Brackets and stiffeners bonded into composite panel to aid aesthetics and ease of installation.

- **Tables**
  - Composite panels bonded together improves process speed.

- **Passenger Display**
  - Protective cover bonded into composite molding.

- **Litter Bin**
  - Composite assembly bonded for strength.

- **Windows**
  - Stiffening beams bonded to composite molding to improve structural strength.

- **Cab Molding Mounting brackets**
  - Bonded to the molding for ease of installation.

- **Floor Composite panels**
  - Bonded to provide strength and durability.
Manufacturers of Agricultural and Construction Vehicles around the world build vehicles capable of withstanding harsh working environments, yet maintain the strength and durability requirements necessary to ensure the operator is both safe and comfortable.

ITW Plexus’ broad range of products and technologies provide agriculture and construction vehicle manufacturers adhesive solutions that not only increase efficiencies in their production environment, but contribute to a stronger, more durable, longer lasting vehicle.

**ITW Plexus Adhesive Benefits**
- High Structural Strength
- High Impact Resistance
- Excellent Heat and Fatigue Resistance
- Ability to Bond Dissimilar Substrates
- Excellent Sound Dampening Properties
- Reduced VOC Emissions

**Applications**
- Cabin Bonding and Sealing
- Doors and Closures
- Trim Bonding
- Open Joint Seaming

Manufacturers of military and armor vehicles are constantly updating design platforms and developing vehicles to stay ahead of modern threats. Leading this challenge is the ability to reduce the overall weight of the vehicles while maintaining the highest level of protection and security for the occupants. From traditional armored plate steel to modern day ceramic composites, ITW Plexus adhesives are an integral component in such vehicles because of their incredible strength, high modulus of elasticity and impact resistance.

At ITW Plexus, we design adhesive systems to endure the most dynamic environments and conditions so both the manufacturers and end-users can feel confident in the vehicles they build and operate. ITW Plexus adhesives are designed to minimize the need for labor intensive and costly operations such as welding and riveting. In the end, the result is often a vehicle that is lower in weight, higher in strength, more durable in the field and more efficient and cost-effective to build.

**Military and Armor Vehicles**

**ITW Plexus Adhesive Benefits**
- Ability to bond dissimilar substrates such as steel, fiber reinforced composites, thermoplastics and ceramic
- Technical and commercial support for development and processing programs
- Excellent durability and impact resistance
- Able to withstand extreme climatic conditions and environments
- Reduced VOC emissions

**Applications**
- Armored Panel Bonding
- Roof Bonding
- Doors
- Hood Bonding
- Open Joint Seaming
Creating Bonding Solutions For Transportation Industries And Beyond!

One Company... Many Solutions

An Illinois Tool Works Company