Technical Data Sheet

Effective: 02/03/2020 Supersedes: 23/01/2017

Automotive Aftermarket Division

3M™ Impact Resistant Structural Adhesive - 07333

1) Part Numbers

3M™ Impact Resistant Structural Adhesive – PN 07333
200 ml Duo-Pak Syringe Format

2) Description and end uses

3M™ Impact Resistant Structural Adhesive is a two-part epoxy adhesive which provides an extended work time, but can be rapidly cured with heat. 3M™ Impact Resistant Structural Adhesive has excellent adhesion to a wide variety of properly prepared metal substrates, is intended for “true” structural bonding applications when specified by Automotive OEM’s, and is recommended for all weld-bonded and rivet-bonded joints.

Key features:

- Designed for Professional Aftermarket Collision Repair use
- Optimised Shear, Peel, and Impact Performance
- Corrosion Inhibiting Formula
- Colour Changing Chemistry
- Room Temperature Curing / Accelerate with Heat

This product is intended to augment, or in cases specifically identified by the OEM, replace welds/rivets used in the attachment of body panels, reinforcements, frame members, floor pans, etc., where strength is required to increase vehicle durability or stiffness. This product is NOT intended to be used for structural procedures that are “bond-only” unless specifically recommended by the vehicle manufacturer. As this product is anticipated to be used in “true” structural bonding applications, its selection in the repair process is to be strictly guided by the vehicle’s original manufacturer.

3) Physical Properties and Product Performance

NOTE: The following technical information and data, while representative of current performance, should not be used for specification release or CAE purposes.

Container	200ml Duo-Pak Syringe	
Base	Epoxy	Amine
Density (approx.)	1,14 g/ccm	1,19 g/ccm
Colour	Off-White	Silver
Solids	100%	100%
Consistency	Viscous Liquid	Viscous Liquid
Mix Ratio by Volume	200	100
Mixed Viscosity	150,000 – 200,000 centipoise	
Elastic Modulus (ASTM D638)	2.1 GPa	
Elongation (ASTM D638)	2% - 3%	
Ultimate Tensile Strength (ASTM D638)	35 MPa	

Product Performance
The values shown below are for ambient air temperature and substrate temperature at 70°F/21°C.

- Work Time: 60 minutes
- Fixture Time: 8 hours
- Cure Time: 24 hours

Tensile Shear Strength (ISO 4587)

Environment	**Description**	**3M™ IRSA**
Room Temperature Cure	24 hours at 23°C	20.8 MPa
Cold Exposure (C)	RT Cure / 24 hours at -40°C (Tested Cold)	25.6 MPa
Hot Exposure (H)	RT Cure / 14 days at 80°C (Tested Hot)	10.5 MPa
Hot Exposure (RT)	RT Cure / 14 days at 80°C (Tested after 24h RT)	20.8 MPa
Humidity Exposure	RT Cure / 240 hours at 38°C & 95% RH (Tested after 24h RT)	20.3 MPa
Neutral Salt Spray	RT Cure / 480 hours NSS exposure (Tested after 24h RT)	18.1 MPa
Corrosion Cycle	RT Cure / Cyclic Corrosion Exposure (Tested after 24h RT)	20.3 MPa
Water Soak (W)	RT Cure / 168 hours water storage at 55°C (Tested Wet)	19.0 MPa
Water Soak (D)	RT Cure / 168 hours water storage at 55°C (Tested after 24h RT)	19.1 MPa

T-Peel Strength (ASTM D1876)

Environment	Description	3M™ IRSA
Room Temperature Cure	24 hours at 23°C	9.0 N/mm
Corrosion Cycle	RT Cure / Cyclic Corrosion Exposure (Tested after 24h RT)	7.7 N/mm

Tensile Shear Strength (ISO 11343)

Environment	Description	3M™ IRSA
Room Temperature Cure	24 hours at 23°C	20.8 MPa
Cold Exposure (C)	RT Cure / 4 hours at -20°C (Tested Cold)	6.1 J
Hot Exposure (H)	RT Cure / 4 hours at 80°C (Tested Hot)	6.5 J

Accelerated Heat Cure
NOTE: The cure time may be accelerated by applying heat (maximum 175°F/80°C for 30 minutes), if applied within 2 hours of adhesive application

Representative Accelerated Heat Cure Schedule: Tensile Shear Strength (% of Max):

Cure Time at Temperature	Cure Temperature				
	10°C	23°C	40°C	60°C	80°C
15 min				0%	95%
30 min				75%	100%
1 hour			5%	100%	
2 hour			80%		
4 hour		0%	100%		
8 hour		65%			
16 hour	25%	90%			
1 day	60%	95%			
2 day	75%	98%			
7 day	90%	100%			

4) Directions for Use

SURFACE PREPARATION
1. Wash surface with soap and water to remove water soluble contaminants. Follow the soap and water wash with an appropriate VOC compliant product for removal of surface contaminants.

2. Remove all rust, primer, and paint from the areas to be bonded, welded, or riveted using a 3M Grade 80 Roloc™ Grinding Disc / Coarse Scotch-Brite™ File Belt or Surface conditioning disc, Only bond to clean, rust-free, bare metal

3. Test-fit all parts, including rivets or fasteners, and minimize large gaps between the flanges to ensure a uniform adhesive bond.

4. Remove the part from the vehicle.

All areas to be MIG welded should be coated with 3M™ Weld-Thru II Coating (PN50410) according to the directions on the can. Adhesive should not be applied to the areas that will be MIG welded.
Areas to be welded using Squeeze Type Resistance Spot Welding (STRSW) should be coated with 3M™ Impact Resistant Structural Adhesive (PN07333) (See Step 11). Weld-Thru coatings should not be applied to these areas.
Areas to be riveted should be coated with 3M™ Impact Resistant Structural Adhesive (PN07333) (See Step 11). Weld-Thru coatings should not be applied to these areas.

PRODUCT PREPARATION
5. Place the adhesive cartridge in the applicator gun.

6. Remove the retaining collar and plug from the end of the cartridge. Discard the plug, but save the retaining collar.

7. Before attaching a mixing nozzle, “equalise” the cartridge by dispensing just enough product to be sure that both parts A and B are present at the outlet.

8. Attach a 3M™ Mixing Nozzle to the cartridge and lock in place with the retaining collar.

9. Dispense a small amount of material through the mixing nozzle onto a disposable surface and discard.

GENERAL REPAIR PROCESS
10. Apply an adhesive bead to all bare metal surfaces of both pieces to be bonded. Using a plastic spreader or acid brush, tool out the adhesive to cover all bare metal surfaces.

11. Apply a 3mm to 6mm diameter adhesive bead to ONE part, centered on the flange (or as specified in the OEM Collision Repair Manual). Wide flanges, or flanges with small gaps, may require a larger bead. Apply a large enough bead to allow the adhesive to fill all voids and squeeze out of the flange seam, indicating that the joint is completely sealed

12. Clamp or fixture parts together with any OEM recommended mechanical fasteners.

13. Tool any adhesive “squeeze out” to seal the outside of the seam along all bonded edges.
14. Perform Squeeze Type Resistance Spot Welding in appropriate areas while the adhesive is uncured. DO NOT attempt to MIG weld through the adhesive. Set rivets or other fasteners while the adhesive is still uncured, typically within 2 hours of adhesive application.
CAUTION: The adhesive may be combustible. Keep any MIG welding a minimum of 50mms from the adhesive. As with any welding operation, keep the appropriate fire extinguisher within reach, and be alert to any smoke or flame that may be present.

Squeeze Type Resistance Spot Welding through uncured adhesive IS acceptable.

15. Spray the interior cavities and any welded seams with 3M™ Cavity Wax.

16. If the parts are bonded only, clamps may be removed after 8 hours at 23°C.
Parts should remain clamped longer if the temperature is below 23°C and/or if there is any tension on the part/bondline.

The cure time may be accelerated by applying heat (max. 80°C for 30 mins) if applied within 2 hours of adhesive application.

17. Parts that utilise rivets or STRSW can be unclamped immediately.

18. After top coats have been applied, spray the interior cavities and any welded seams with 3M™ inner cavity wax – (amber or transparent) 1 ltr 08911, 08919 - Refillable 10ltr 08921, 08929 or Aerosol 08921, 08929.

19. Allow 24 hrs at a minium of 23°C before returning the vehicle to service.

NOTE: 3M™ Impact Resistant Structural Adhesive, PN07333 will change colour from silver to purple, indicating that the curing process has begun. Excessive heat application may reverse the colour change effect from purple back to silver / grey.

CLEAN-UP
Prior to curing, PN07333 may be cleaned from most surfaces with an appropriate VOC compliant product for removal of surface contaminants.

5) Storage

When stored at the recommended conditions in original, unopened containers, this product should have a shelf life in excess of 12 months from the date of manufacture. Store at room temperature. Rotate stock on a “first-in / first-out” basis.
After use, leave the mix nozzle in place to seal the cartridge.

6) Safety

Refer to Product Label and Material Safety Data Sheet for Health and Safety Information before using this product.
Read full instructions and material safety data sheet before use.

3M™ Impact Resistant Structural Adhesive (IRSA) is designed FOR PROFESSIONAL INDUSTRIAL USE ONLY.

7) Disclaimer

All statements, technical information and recommendations are based on tests we believe to be reliable as at the date of hereof, but the accuracy or completeness thereof is not guaranteed. Please ensure before using the product that it is suitable for your intended use. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, other than for fraudulent misrepresentation, 3M expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

For Additional Health and Safety Information

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