

# Tough Enough to Haul a Freight Train with 3 Grams & 1 Hour of Cure.

## The Challenge:

Prove the speed, strength and durability of LOCTITE Universal Structural Bonders by pulling a 208-ton freight train.



## The Method:

A connecting rig was designed by Henkel engineers. After cleaning and sanding the plates, 3 grams of LOCTITE Universal Structural Bonder were applied to the plate, and allowed to cure for 60 minutes. The coupler was connected between the engine and the first car.

For the rest of this incredible story, watch the results at [www.loctite.co.uk/limitless](http://www.loctite.co.uk/limitless)

If LOCTITE Universal Structural Bonders can handle this, imagine how it can handle your toughest design challenges.

The possibilities are limitless.

## LEARN MORE

Contact us to learn more about LOCTITE HY 4090 and LOCTITE HY 4080 GY and Henkel's broad array of structural bonding solutions. Visit [www.loctite.co.uk/limitless](http://www.loctite.co.uk/limitless)

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\*As used herein, "Limitless" and "universal" refer to the number of applications in which LOCTITE HY 4080 GY and LOCTITE HY 4090 may be used. It is not intended to mean that LOCTITE HY 4080 GY and LOCTITE HY 4090 bond all substrates under all conditions of use, nor should such usage be implied by any statement made in this brochure. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof.

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# CAN HAUL 208 TONS.

THE TRAIN IS PRETTY STRONG TOO.

## Introducing Limitless Bonding.

How tough are the new LOCTITE  
Universal Structural Bonders?

Henkel

**LOCTITE**

# Introducing Limitless Bonding\* For Limitless Design.

## LOCTITE Universal\* Structural Bonders – so strong, versatile and durable, the possibilities are limitless.

You've been there before: the inspiration strikes for a great new design, but the limitations of the real world – materials, technologies, systems – make it a challenge to bring to life.

Powered by innovative hybrid technology, LOCTITE Universal Structural Bonders combine the **speed of instant adhesives** with the **strength and durability of structural adhesives**. The versatility of LOCTITE Universal Structural Bonders make it possible to use structural bonders in more ways – and for more applications – than ever before.

Simplified production processes. Fast fixture. Safe application.  
**Bringing the dream of the perfect design to life.**

### Expanding your Design Solutions.

With the addition of LOCTITE Universal Structural bonding adhesives, Henkel offers the broadest portfolio of structural bonding products to meet virtually any design requirement.

## LOCTITE HY 4090 Fast and Versatile Structural Bonder.



With a powerful combination of speed and strength, LOCTITE HY 4090 solves a wide range of design and assembly challenges. LOCTITE HY 4090 delivers both performance and versatility, with high strength bonding on a variety of substrates. It's the essential adhesive solution to address your design challenges.

### Your Benefits:

- Suitable for a variety of substrates, including metals, most plastics and rubbers – opening up your design possibilities
- Fast fixture times even at low temperatures (5°C) – minimizing production delays
- Good moisture, temperature (up to 150°C) and chemical resistance – the bond will endure
- Impact and vibration resistant – the bond will endure
- Low blooming – maintains aesthetic appeal on opaque materials



## LOCTITE HY 4080 GY Tough and Versatile Structural Bonder.



When your design calls for strong impact resistance, LOCTITE HY 4080 GY Structural Bonder is up to the challenge. Low odor and non-flammable, LOCTITE HY 4080 GY provides increased health and safety benefits over other traditional structural bonders. It's an ideal replacement for traditional 2-part Methyl Methacrylate Adhesives (MMA) and Acrylic structural bonding adhesives.

### Your Benefits:

- Rapid strength development (full cure <24 hours) – improve throughput
- Excellent resistance to shock loading – the bond will endure
- Excellent bond strength on many substrates and high strength on plastics – opens design possibilities
- Non-flammable, no carcinogens, non-corrosive – increased health and safety for employees
- Good elasticity, for parts subject to relative movement

| Product         | Pack | Recommended Mixing Nozzle (Item #) | Colour/ Viscosity                   | Mix Ratio | Fixture Time (GBMS) | Working Time | Lap Shear Strength <sup>1</sup> (N/mm <sup>2</sup> ) |                   |               |         | Temperature Resistance |
|-----------------|------|------------------------------------|-------------------------------------|-----------|---------------------|--------------|--|-------------------|---------------|---------|------------------------|
|                 |      |                                    |                                     |           |                     |              | Steel (Grit Blasted)                                 | Aluminum (etched) | Polycarbonate | Nitrile |                        |
| LOCTITE HY 4090 | 50g  | 1826921                            | Slightly cloudy to light yellow gel | 1:1       | 4-6 minutes         | 3-5 minutes  | 16-18  | 11-14             | 5-7           | ††      | 150°C                  |
|                 | 400g | 1573135                            |                                     |           |                     |              |  |                   |               |         |                        |

| Product            | Pack | Recommended Mixing Nozzle (Item #) | Colour/ Viscosity | Mix Ratio | Fixture Time (GBMS) | Lap Shear Strength <sup>1</sup> (N/mm <sup>2</sup> ) |                   |     |         | Impact Strength @ omm gap (J) | Peel Strength (N/m) | Elongation |
|--------------------|------|------------------------------------|-------------------|-----------|---------------------|--|-------------------|-----|---------|-------------------------------|---------------------|------------|
|                    |      |                                    |                   |           |                     | Steel (Grit Blasted)                                 | Aluminum (etched) | ABS | Nitrile |                               |                     |            |
| LOCTITE HY 4080 GY | 50g  | 1826921                            | Grey (mixed) Gel  | 1:1       | 9-11 minutes        | 25-28  | 22-25             | ††  | ††      | 17-19                         | 6-8                 | 80%        |
|                    | 400g | 1573135                            |                   |           |                     |  |                   |     |         |                               |                     |            |

<sup>1</sup>ISO 4587, After 24 hours, 22°C | ††Bond exceeded strength of substrate | Contact your Henkel Representative for a Technical Data Sheet

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