

EnduraPlug™

The Tie Plugging Compound with Gauge Holding Power

EnduraPlug Tie Plugging Compound is a 2 part, 1:1 mix by volume based, expanding polyurethane rigid product. This product is supplied in liquid form as two separate components and is dispensed from a pressurized dispensing system, mixed as it is dispensed. It is formulated for both hand applicators and on-track equipment.

EnduraPlug Technical Data

Product Use

This product is intended for the filling of spike holes in wood and composite railroad ties, allowing for respiking without damage to the tie. The product expands to also fill cracks and voids in the tie. Wooden and composite railroad crossties can be respiked or re-lagged without damaging the surrounding wood, in accordance with AREMA chapter 30 requirements.

2 Part 1:1 Mix by Volume

Methylene Di-phenyl di-isocyanate, MDI

Polyether polyol

Typical Properties Appearance / Density

Isocyanate (red side) (Part A), brown liquid / 10 lbs / Gal

Polyol (blue side) (Part B), clear liquid / 9.8 lbs / Gal

Physical Properties (cured product)

Toxicological Effects: Non-hazardous to living organisms

Ecological Effects: Non-hazardous to the environment

Hardness: 60D

Specific Gravity: 0.48-0.72; Density: 30 - 45lbs/ft³

Application

This product is dispensed in liquid form. When filling holes approximately 2/3 full, product will expand in the hole and into voids. This product is heavier than water and if being dispensed into spike holes containing water it will displace water. It does not absorb water.

Product Cure Time and Expansion

Cure time is temperature dependent, typically reacting in 60 seconds with full cure in approximately 5 minutes.

Typical expansion is approximately 40% - 60%.

Product Packaging

200ml, 600ml and 1500ml cartridges

5 Gallon Pails

250 gallon plastic Intermediate Bulk Containers (IBC's)

See Page 3 for details.



EnduraPlug Features & Benefits

Holds Gauge/Pull Pressure - extraction strength of 650 psi outperforms pull pressure of specified new wood ties.

Hardness / Density - matches new tie density, safer for respiking, avoids potential damage to tie, unlike products with higher hardness rating.

Expansion - expands in spike hole to fill cracks and voids.

Cost-Effectiveness - expansion quality means less product needed, saving up to 40 - 60% compared to other products!

Water Displacement - displaces, and will not absorb, water.

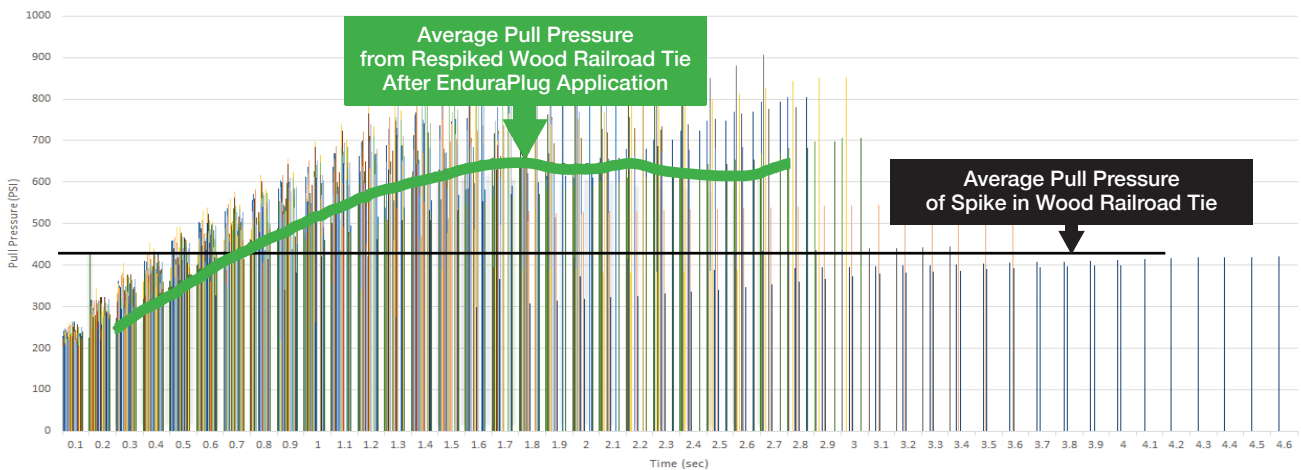
Fast Cure Time - reacts in 60 seconds with full cure in approximately 5 minutes.

Pull Pressure Testing Proves that EnduraPlug Exceeds Average of New Tie, Ensuring Stronger Spike Hold

The pull pressure versus time test proves our compound outperformed industry expectations and displayed a superior performance when compared to average pull pressure of a spike in a new wood crosstie.

Our compound is specifically engineered to be easily spiked by hand or by machine, while providing an extraction strength of 650PSI. This proprietary design allows for best-in-class functionality in diverse field conditions.

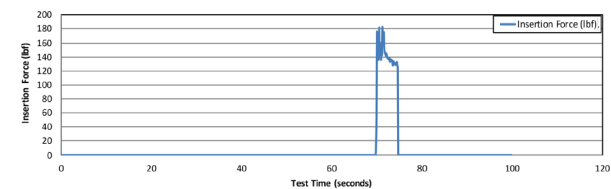
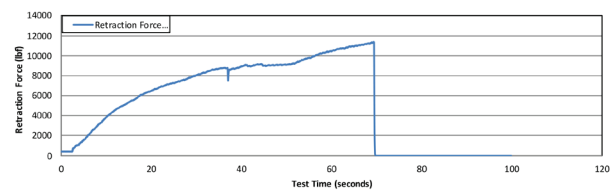
EnduraPlug Pull Pressure vs Time Performance Chart



EnduraPlug Pushing Force Performance

Spike Insertion and Extraction Report

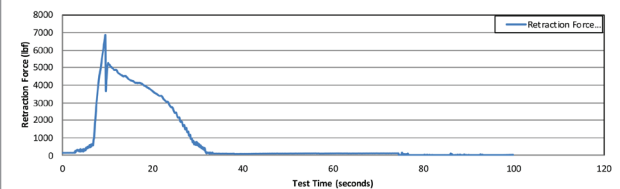
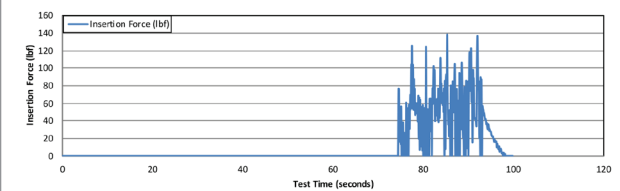
Test Operator: B Long Wet/Dry? <W or D> D
 If wet, amount: 0 mL
 Date Tested: 1/26/23 **Peak Pull Force: 11356 lbs**
 Material Tested: GE000175 Sample #1 Push Peak Push Force: 182 lbs



EnduraPlug Pulling Force Performance

Spike Insertion and Extraction Report

Test Operator: B Long Wet/Dry? <W or D> D
 If wet, amount: 0 mL
 Date Tested: 1/26/23 Peak Push Force: 138 lbs
 Material Tested: GE000175 Sample #4 Pull **Peak Pull Force: 6840 lbs**



Contact Encore Rail Systems for additional details on Series Testing and the process and equipment used in testing.

Packaged for Use with Hand Applicators and On-Track Equipment

EnduraPlug is formulated for both hand applicators and on-track equipment. Cartridges are packaged with both Part A and Part B. Pail and tote packaging for Part A and

Part B are sold separately. "A" refers to (red) isocyanate and "B" refers to (blue) polyol.

Product Packaging and Approximate Yields

Hand Applicators Cartridges

200ml: 10 - 15 spike holes

600ml: 30 - 35 spike holes

1500ml: 80 - 85 spike holes

Machine Application

5 Gallon Pails (combined A and B): 2150 spike holes

250 gallon plastic Intermediate Bulk Containers (IBC's)

IBC Totes are shipped in containers with a blanket of nitrogen gas as a protective shield from moisture.

Storage and Handling

Both parts of this product should be protected from moisture and temperature extremes. Shipping containers and dispensing equipment are color coated to prevent cross contamination. Product has a one year shelf life when stored properly.

Health and Safety

Refer to Safety Data Sheets for this product for detailed safety and health information.

www.encorers.com/service-training/



200ml, 600ml, 1500ml Cartridges and Applicators



5 Gallon Pails



250 Gallon Intermediate Bulk Containers

Choose our Equipment Leasing Options, Compounds and Unmatched Service

We offer a range of proven equipment and advanced technologies to meet your production needs and keep your gangs safe. Our equipment, available for lease, includes ride-on and walk-behind options, as well as skid mounted equipment that fits in the back of a high-rail vehicle.

When you choose Encore, you also get our staff of Field Service Representatives. They bring decades of field and equipment experience, and provide unmatched service for your crews and gangs.



Ride-on Equipment



Hand Applicators



Walk-Behind Equipment



Skid-Mounted Equipment