



Rubberized Railroad Ties

Composite rail ties from 100% recycled tires and plastics

THE OPPORTUNITY

The U.S. rail network rests on roughly **700 million wooden ties**. About **20 million** must be replaced every year, at a cost of more than **\$1.5 billion annually**. Wooden ties leave critical transportation corridors exposed to flooding, heat and freeze, creating a national security risk, an operational vulnerability and a maintenance cost that never ends. GTG's composite rubberized ties are engineered to outlast, outperform and out-value wood.

WHY WOOD FAILS MODERN RAIL

- **Short lifespan, high cost.** Wooden ties rot and deteriorate within about 15 years, and ownership runs about \$10 per tie per year, adding up to millions on a single 100-mile corridor.
- **Toxic to people and water.** Ties are treated with creosote and chromated copper arsenate, chemicals that leach into soil and contaminate water in sensitive ecosystems.
- **End-of-life liability.** Treated wood is not recyclable. Discarded ties are often burned, releasing carcinogens and drawing tightening regulatory scrutiny.

THE SOLUTION: COMPOSITE RUBBERIZED TIES

GTG's ties are made from a thermoplastic elastomer (TPE) compound: recycled waste plastics and shredded scrap-tire rubber, bound with proprietary additives for cohesion and resistance. They go in **100% recycled and come out 100% recyclable**, and they are produced at volume and staged for rail infrastructure projects today.

Component	Share	Source / purpose
Recycled waste plastics	60–70%	Waste plastics diverted from landfill
Shredded rubber (scrap tires)	25–35%	Scrap tires diverted from landfill and stockpiles
Proprietary additives	5–15%	Cohesion and weather resistance

LIFECYCLE ECONOMICS

Measure	Wooden tie	Composite tie
Service life	~15 years	50 years, guaranteed
Cost of ownership	~\$10 per tie per year	\$5 per tie per year, maximum
Chemical treatment	Creosote / CCA	None
End of life	Not recyclable; often burned	100% recyclable

Illustrative: at about 3,200 ties per mile, a 100-mile corridor costs roughly \$3.2M a year to own in wood versus \$1.6M or less in composite, a saving of at least \$1.6M every year.

KEY BENEFITS

- **Half the cost of ownership** over more than three times the service life of wood.
- **Resilient infrastructure** that keeps corridors open through flooding, heat and freeze.
- **Cleaner right-of-way** with no leaching chemicals and no end-of-life burning.
- **Circular economy** that turns scrap tires and waste plastic into permanent infrastructure.

PERFORMANCE

- **Climate immunity.** Impervious to moisture, rot and thermal expansion. Ties do not absorb water or rot under flooding, with no sun kinks in extreme heat and no cracking in deep freeze, from desert to tundra.
- **Safety and stability.** Superior lateral resistance and gauge retention lock track geometry in place, supporting higher speeds and heavier axle loads.
- **Reduced maintenance, continuous transit.** Sustained track stability means fewer track possessions, fewer replacement cycles and far fewer service interruptions.
- **Toxicity-free and non-combustible.** No creosote or arsenic treatment, with low electrical conductivity and non-combustible construction.

THE IMPACT AT SCALE

Every 1,000 km of new track built with composite ties delivers:

Composite ties produced	CO ₂ e emissions avoided	Trees saved	Recycled plastic diverted	Scrap tires repurposed
2 million	240,000 t	5 million	150 million kg	6 million+

TARGET APPLICATIONS

Class I and short-line freight rail • Commuter, transit and light rail • Flood-prone and extreme-climate corridors • Bridges, crossings and environmentally sensitive areas • Port, industrial and yard trackage • Defense and strategic rail infrastructure

WHY GTG

GTG brings the materials engineering, production capability and project management to take composite ties from recycled feedstock to installed track, supporting railroads from specification and trial sections through full corridor replacement programs.

Next step: Share your corridor length, annual tie replacement volume, axle loads and climate conditions for a lifecycle cost comparison.

CONTACT

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