

# Innovative Engineering for a Demanding World



## UltraStrength 220 Torsion Bars and Stabiliser Bars

Tinsley Bridge has developed a higher strength range of Torsion Bars and Stabiliser Bars to complement its existing Extralite high strength steel range.

The new parts incorporate innovative material technology developed to operate at higher loads, reduce weight and increase durability for defence, road and rail applications.

UltraStrength 220 has been developed for high stress designs which provide these vehicle performance benefits:

- Increased load capacity whilst maintaining durability.
- Improved off-road performance by improving ground clearance and increased relaxation resistance.
- Improved fatigue durability, in some cases more than double the life.

The higher load capability is especially important for defence vehicles required to counter IED threats.

Engineers at Tinsley Bridge have worked with the Materials and Engineering Research Institute at Sheffield Hallam University to develop an innovative new microstructure in UltraStrength 220 material grades achieved by nano technology changes in heat treatment processing.

The properties of UltraStrength 220 material has been designed to provide extreme high strength capability, combined with the high levels of ductility and toughness necessary to operate in demanding environments.

- > 2000 MPa UTS
- >1700 MPa yield strength
- Minimum 30% reduction in area
- Minimum 8% elongation
- V Charpy impact strength > 10 J

With funding support from the UK Government Technology Strategy Board, Tinsley Bridge has been able to demonstrate the performance of the new material in fatigue tests of full size suspension components. These tests have successfully achieved durability targets.



Sheffield Hallam University | Materials and Engineering Research Institute

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**Design Led Technologies**

Tinsley Bridge has been at the forefront of stabiliser bar and leaf spring technology for over 150 years and we were first to develop the parabolic leaf spring technology which is now fitted to over 80% of truck suspensions in the world. This innovative spirit still drives the company today.

We are the largest UK manufacturer of truck stabiliser bars and torsion bars to the OE commercial vehicle sector and one of the top manufacturers of vehicle suspension components in the world.

We produce a wide range of anti-roll bars and torsion bars, and have the specialist capabilities required to manufacture large diameter vehicle suspension components required for truck, rail and defence vehicle applications.



Images: General Dynamics Land Systems Force Protection Europe

- **Torsion Bars** Applications include:
- **Stabiliser Bars**
  - Warrior Infantry Fighting Vehicle
- **Anti Roll Bars**
  - Foxhound light protected patrol vehicle
  - CVR(T)
  - FV430 Bulldog Troop Carrier



Image: Trevor Sheehan/BAE Systems

**EXTRALite™**

Our innovative Extralite™ torsion bar upgrade for the Warrior & CVR(T) Defence vehicles met an Urgent Operational Requirement for the Ministry of Defence. The Extralite™ torsion bar helped achieve a significant improvement in suspension performance, and the Tinsley Bridge contribution was widely recognised by UK Government ministers, the MOD and in industry innovation awards.