

# Torque'N'Tension 15

Friction Control



## The Right Combination for Performance and Friction

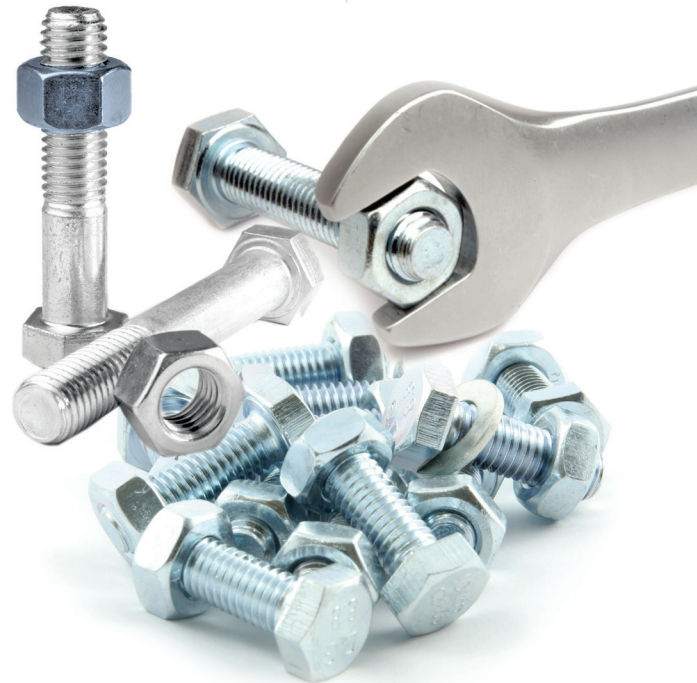
**Torque'N'Tension 15** is a sealer with integrated torque modifier for zinc and zinc alloy passivated films. It is designed to meet specifications requiring coefficient of friction properties between 0.12 – 0.18. Supplied as a ready to use liquid. It is usually applied by a one step immersion process. It can be applied over all electroplated or mechanically plated zinc & zinc alloy deposits, including zinc-nickel.

**Torque'N'Tension 15** also significantly improves the corrosion performance of the plated coating. Components treated with Torque'N'Tension 15 will retain this excellent corrosion resistance even after thermal shock treatment.

The Torque'N'Tension range continues MacDermid Enthone's commitment to developing innovative products, providing friction control and enhanced corrosion performance.

## KEY FEATURES

- Coefficient of friction between 0.12 - 0.18
- Increases corrosion protection
- Resistant to thermal shock
- Film contains a UV tracer
- Approved by the automotive industry



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The use of torque (turning or twisting force) has long been associated with methods of tightening and inspecting bolts. The object of tightening bolts is to achieve a minimum tension (straight pull), not torque, in the bolts.

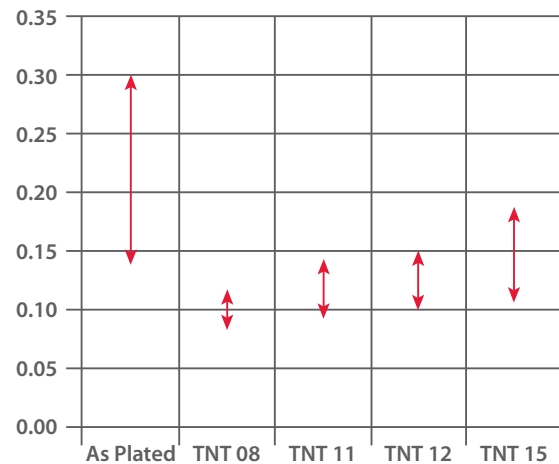
As a nut and bolt are tightened the components to be fastened are clamped together. The thread angle in the bolt converts the force applied into tension (or stretch) in the bolt shank. The amount of the tension created in the bolt is critical, because when a bolt is tensioned correctly it is working at its optimum efficiency and will resist coming undone.

Most coatings designed for threaded fasteners, particularly in automotive applications, will need to meet demanding torque-tension requirements.

The relationship between the Torque, Tension and coefficient of friction forces is an important factor in ensuring a fastener secures a joint with maximum force, whilst remaining below the fasteners designed failure point (proof load).

Due to the very unpredictable friction values of zinc based coatings, torque-tension modifiers are frequently employed, especially on fasteners. These products are usually applied as part of the finishing process to ensure consistent friction properties. Achieving the correct tension in fasteners is vital if a joint of fixing is to remain secure under load, without compromising the strength or integrity of the fastener or joint.

CoF - MacDermid Lubricants on Zinc Electroplate



**Torque:** is a measurement of force, in this case the force required to turn and tighten a fastener to secure a joint.

**Tension:** is a measure of stored energy or stretch induced in a fastener once it is tightened.

**Coefficient of Friction:** is a term used for describing the material surface conditions that determine torque-tension.



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