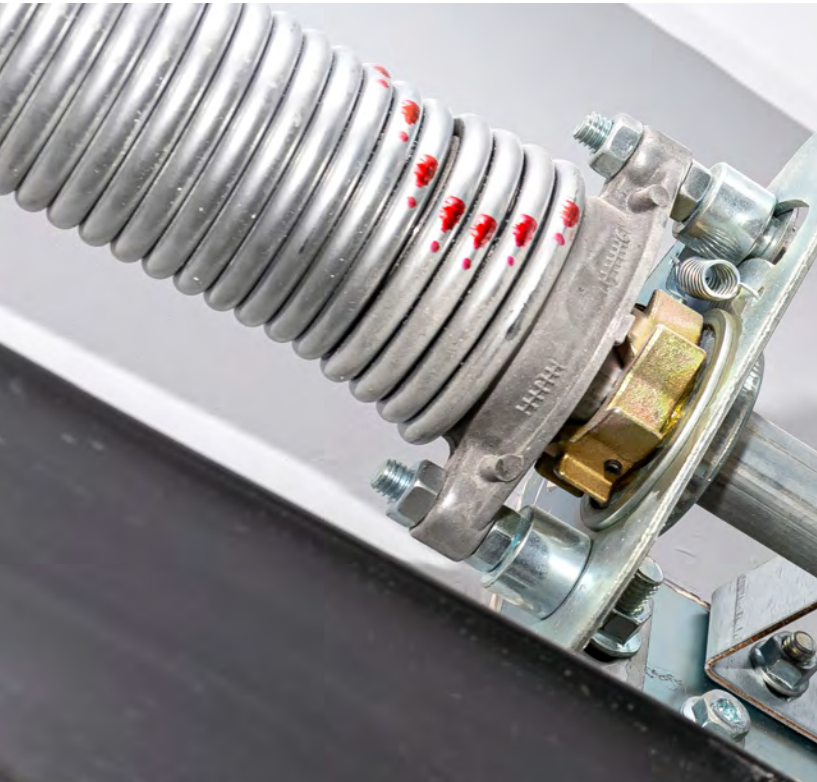


torsion pro

WIRE FOR GARAGE DOOR SPRINGS



Torsion Pro is a cold drawn wire made to substitute ASTM A229 class II for an equivalent or better performance when used for garage door springs. Though the physical and chemical attributes for Torsion Pro are shown in figures 1 and 2, the manufacturing and specifications for Torsion Pro are based on ASTM A679. The typical diameter production range is .177" to .437".

Torsion Pro is designed to sustain high stress levels for long periods of time and is intended for dynamic loadings of springs in low cycle applications (less than 100 000). Some form of protection is required for corrosive environments. Barrier coatings such as oils and paints are satisfactory for mild environments. Galvanized wire is available for more severe environments.

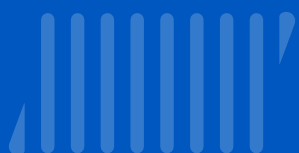
After forming, springs should be stress relieved with the objective of obtaining a uniform core temperature. Furnace residence time and temperature will vary depending on the type of process used as well as wire diameter size.

	C	Mn	P	S	Si
Composition %	0.65/0.88	0.40/0.90	0.025 max	0.025 max	0.15/0.50

Figure 1: Chemical composition

Modulus of Elasticity (E)	29 000 000 psi (200 000 MPa)
Modulus of Rigidity (G)	11 500 000 psi (79 000 MPa)
Poisson's Ratio	0.31
Density	0.284 lb/in ³
Electrical Conductivity	7% IACS

Figure 2: Physical properties



torsion pro

WIRE FOR GARAGE DOOR SPRINGS

Accelerated torsional fatigue tests for different wire diameters and spring diameters have shown that springs made from Torsion Pro wire have a superior lifecycle limit than ASTM A229 class 2 oil tempered wire. Test results have shown that overall, Torsion Pro in both bright and galvanized form performed better than a comparable ASTM A229 oil tempered wire for the same spring geometry, loading and environmental conditions.

Typical test results for the same spring made from Torsion Pro (bright and galvanized) compared to one made A229 class II wire are shown in figure 3. Where the lifecycle for the Torsion Pro spring is about 25% more than that of a spring made from ASTM A229 class II. In addition, tests under different environmental conditions, such as hot and dry, hot and humid, as well as salty and humid, show that Torsion Pro outperforms ASTM A229 class II for each case (figure 4).

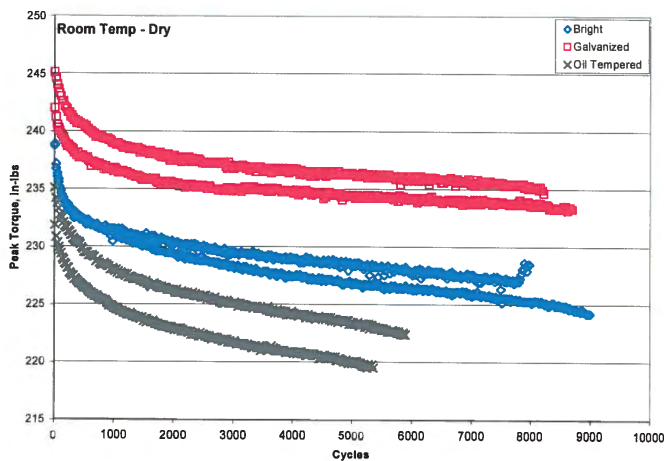


Figure 3: Lifecycle comparison between Torsion Pro and ASTM A229 class II garage door springs.

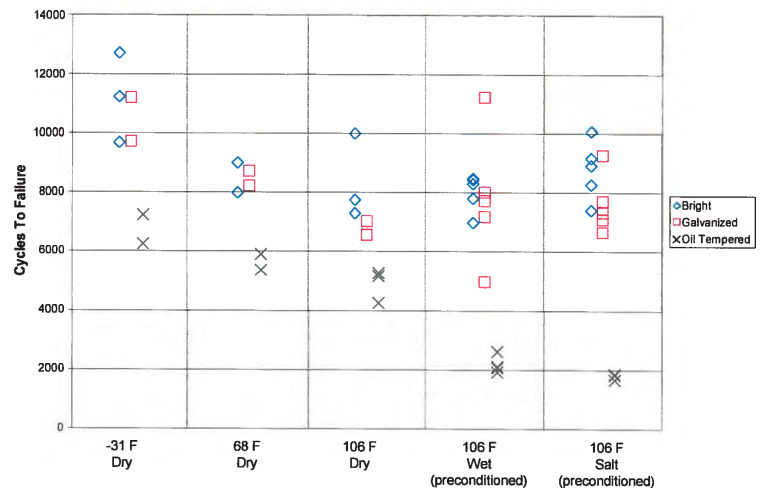
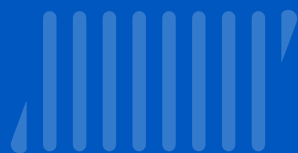


Figure 4: Lifecycle comparison between Torsion Pro and ASTM A229 class II under different environmental conditions.



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