

## TEC STAR nanoadditives for Greases

- *Experimental Data-Sheet* -

### Weld Load and Wear determination tests



**TEC Star** developed a new nanostructured additive for greases to increase weld and wear rate performances. Low concentration allows to totally upgrade the behaviour of traditional lubricants.

### Standard Test Results

**Weld Load** (WL) measures were performed with a four-ball apparatus, according to the directives of the international standard ASTM D 2596.

The Weld Load is reported in kilograms and it represents the lowest applied load in kilograms force at which the rotating ball seizes and then welds to the three stationary balls. Typical values of the applied load (kgf) are: 80, 100, 126, 160, 200, 250, 315, 400, 500, 620, 800, while the rotating speed is about 1770 rpm.

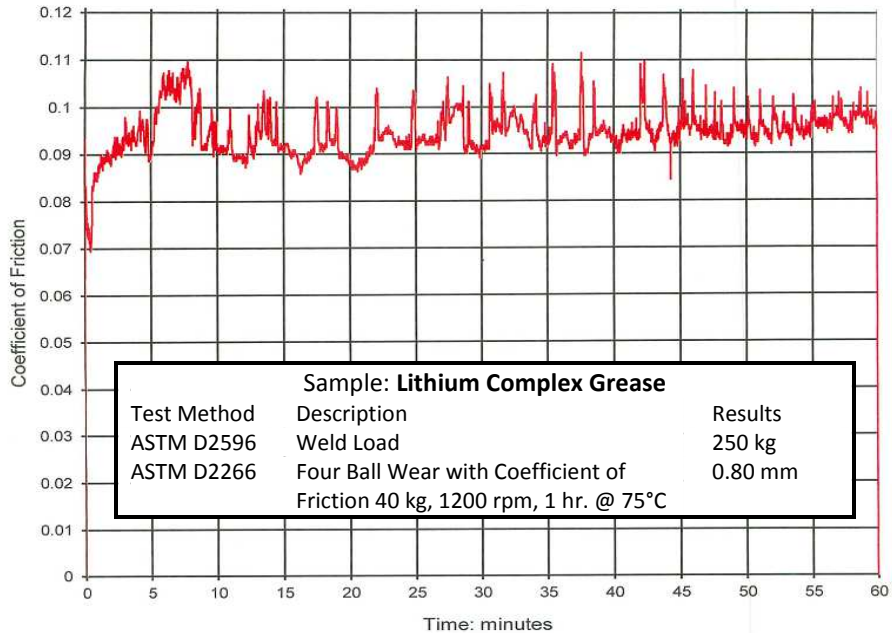
The four-ball **Wear Rate** (WR) test (ASTM D2266) is similar in principle to ASTM D2596, but the machine is much more sensitive and the applied load is limited to 40 kg. At the lighter loading, seizure or welding does not occur and the material removed from the balls is the result of wear.

The test is run for 60 min at 1,200 rpm with a load of 40 kg. The grease sample is held at 75°C. At the end of the test sizes of the wear scars on the three stationary balls are measured.

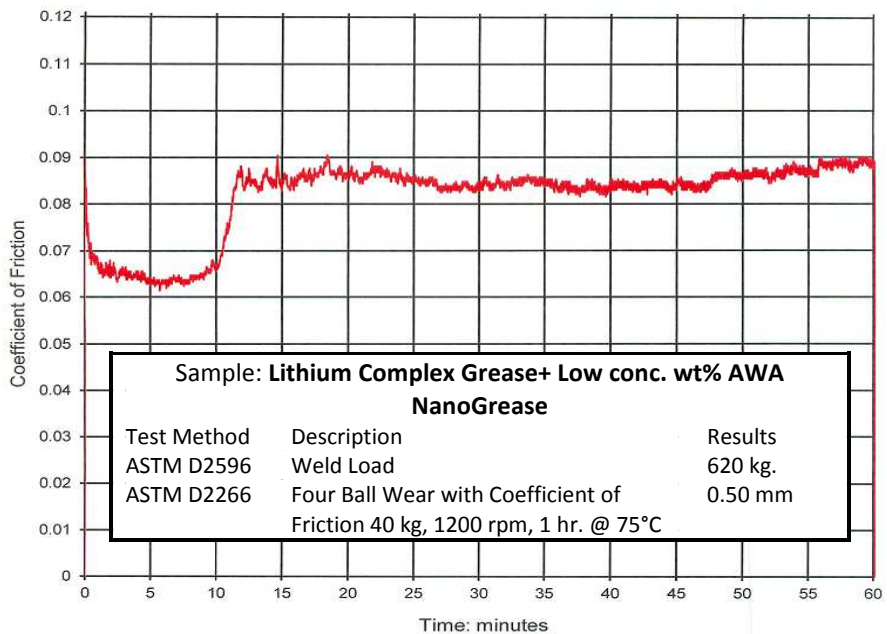
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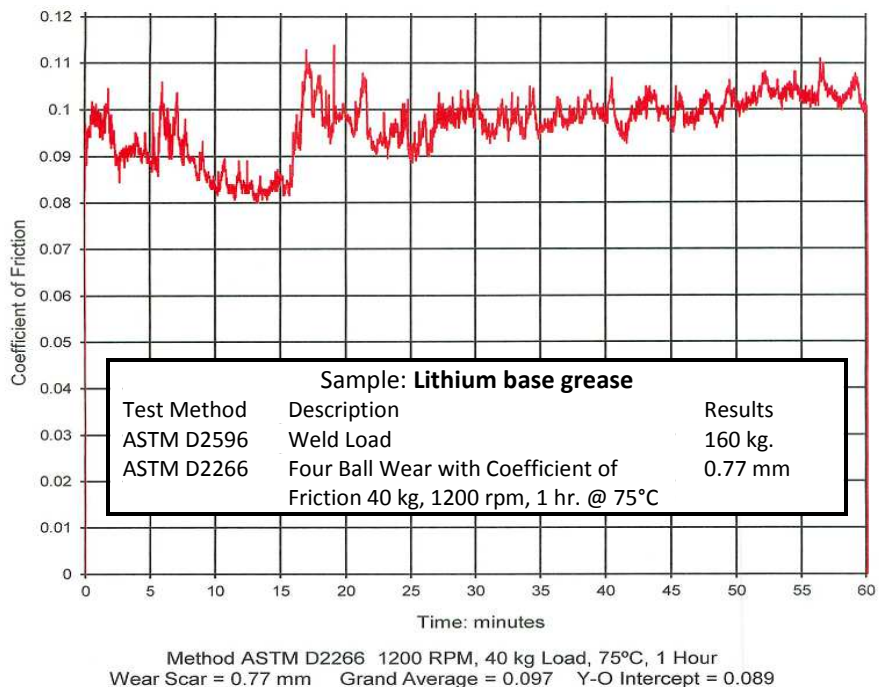
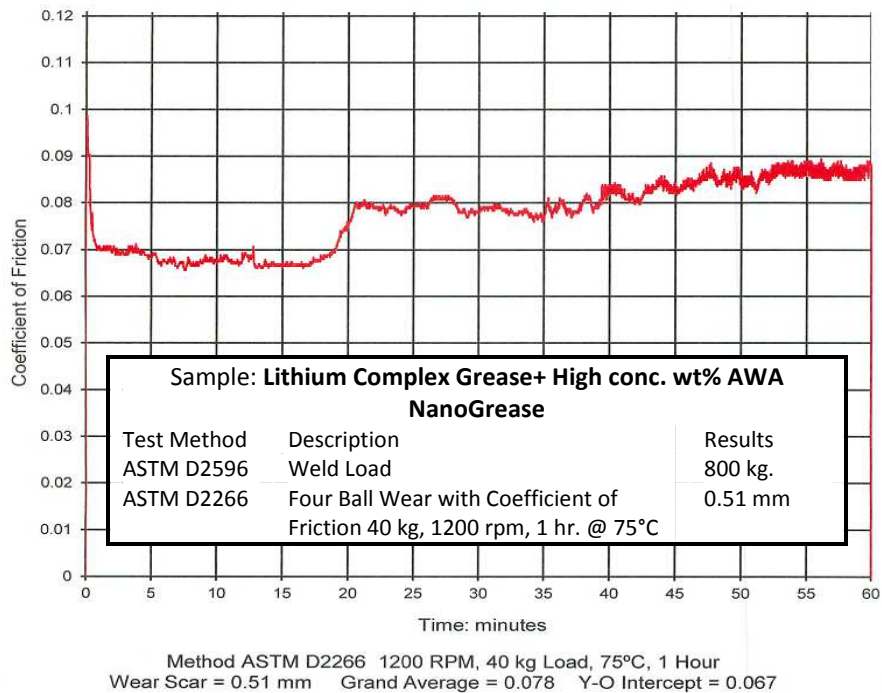
In the following, results in terms of WL, WR and Coefficient of friction are reported for 2 kind of Lithium greases, with different wt% of Tec Star additive:

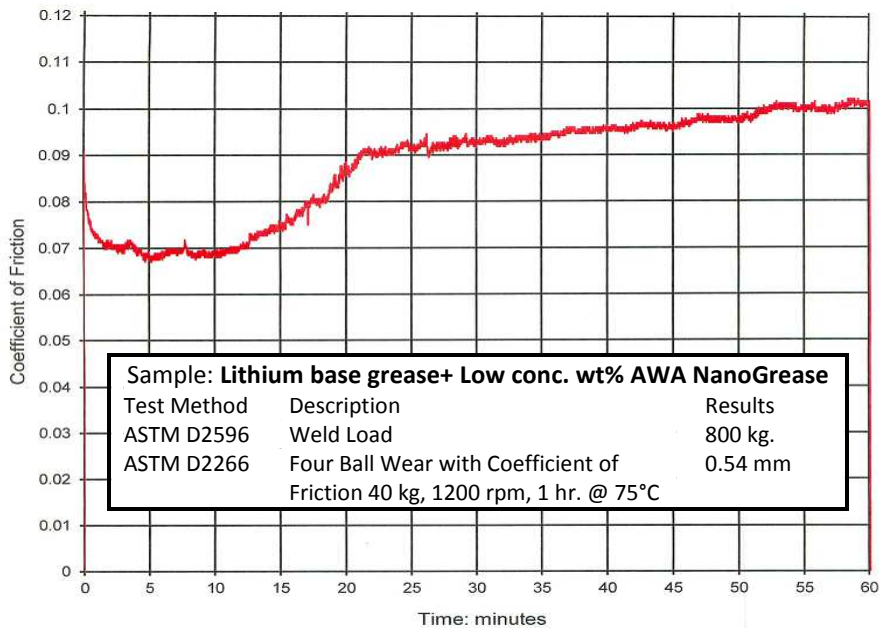


Method ASTM D2266 1200 RPM, 40 kg Load, 75°C, 1 Hour  
Wear Scar = 0.80 mm Grand Average = 0.094 Y-O Intercept = 0.092

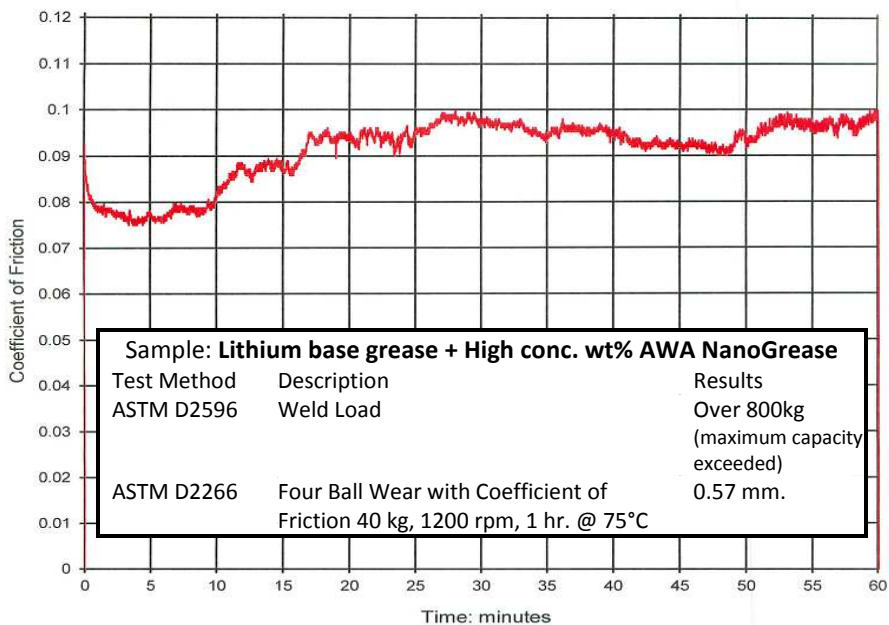


Method ASTM D2266 1200 RPM, 40 kg Load, 75°C, 1 Hour  
Wear Scar = 0.50 mm Grand Average = 0.082 Y-O Intercept = 0.072





Method ASTM D2266 1200 RPM, 40 kg Load, 75°C, 1 Hour  
 Wear Scar = 0.54 mm Grand Average = 0.088 Y-O Intercept = 0.070



Method ASTM D2266 1200 RPM, 40 kg Load, 75°C, 1 Hour  
 Wear Scar = 0.57 mm Grand Average = 0.091 Y-O Intercept = 0.082