



# Castorine Tena-Film Grease Superplex EP-2

**SUPERPLEX EP-2** is a new type of lubricating grease from a complex sulfonate system. It is characterized by exceptional mechanical stability, very high load carrying ability, excellent resistance to water, oxidation and corrosion, and outstanding performance in high temperature applications.

It is heavier than water and this unique high-density feature allows **Superplex EP-2** to stay in place in applications such as swivel joints on the ocean floor. Ordinary grease will float to the surface in a short period of time in such applications.

The mechanical stability and ability to stay put in wet conditions make it ideally suited for construction, mining, steel mill roller bearings, agricultural equipment and other demanding applications. It can take high and low temperature extremes, wet conditions, heavy loads, and shock and vibration.

A variety of laboratory performance tests have been performed to evaluate all aspects of the grease and compare it to the other high quality complex greases (Table1).

## PERFORMANCE OF TENA-FILM SUPERPLEX EP-2

Mechanical Stability – The mechanical stability of **Superplex EP-2** is outstanding. Tests in the ASTM grease worker show no change in consistency after 100,000 strokes or any sign of breakdown in the Shell Roll. The Shell Roll (D-1832) test was modified 6 hours at room temperature to 100 hours at 150° F., to increase the severity and again, no significant softening was observed.

Load Carrying Ability – **Superplex EP-2** has excellent Extreme Pressure properties. Timken values of 65 lbs. OK load, Load Wear Index of 65 kg and a weld point of 500 kg are typical, while 4 Ball Wear performance is equally outstanding. (See Table 1).

Thermal Stability – High temperature performance of **Superplex EP-2** is excellent in all areas tested.

- (a) Dropping Point – It does not become fluid until temperatures approaching 600° F. and after cooling to room temperature, it returns to its original grease structure, unlike Lithium Complex, Poly Urea and Clay greases.
- (b) Wheel Bearing Leakage (D-1263) – In this test, modified at 325° F., **Superplex EP-2** shows no leakage, hardening or other signs of failure.
- (c) Lubrication Life (D-3336) – **Superplex EP-2** out performs other premium greases by a considerable margin (Table 1). A more severe version @ 325° F., shows even more impressive results (600 hours).

4. **Oxidation Stability – Bomb Oxidation Stability (D-942) – PSI drop of 2 after 500 hours and 9 after 1,000, reflect the excellent resistance of Superplex EP-2 to oxidation. The excellent oxidation stability shows up in the test for lubrication life reported in the Thermal Stability section.**

In a modification of the GM-9075-D test, where panels coated with grease were exposed in an oven @ 300° F. for one week, other premium greases showed coking and turned into hard crusty substances, whereas **Superplex EP-2** retained its soft, unctuous texture.

5. **Resistance to Water -**
  - (a) **Work Stability with Water** – In a variation of the ASTM Work Stability test, **Superplex EP-2** was mixed with 50% water and after working 100,000 strokes, remained virtually unchanged in consistency, unlike other premium greases which tend to slump or breakdown.
  - (b) **Water Resistance** – In this test, **Superplex EP-2** shows excellent adhesion, ability to hold large amounts of water and no sign of breakdown.
  - (c) **Water Washout (D-1264)** – **Superplex EP-2** compares favorably to other premium greases (Table 1).
  
6. **Corrosion Resistance** – Rust test Rating (D-1743) – **Superplex EP-2** easily passes this test. In a more severe version of this test, modified with synthetic seawater, it still gives a 1,1,1 rating.
  
7. **Low Temperature Performance** – **Superplex EP-2** has been tested for low temperature performance with very good results.
  - (a) **U.S. Steel Mobility Test** – This is a measure of pumpability and **Superplex EP-2** shows good pumpability at 0° F. (U.S. Steel Mobility @ 0° F. 0.12).
  - (b) **Low Temperature Torque** – (D-1478) – Based on performance at –40° F., **Superplex EP-2** has a starting torque of less than 10,000 gram-centimeters and can be used at –40° F.

**TABLE 1**

## Comparative Properties of CASTORINE TENA-FILM SUPERPLEX EP-2 with Competitive High Quality Multi-Purpose Greases

<b>PREMIUM GREASES TYPICAL VALUES</b>	<b>Li Complex</b>	<b>A1 Complex</b>	<b>Poly Urea</b>	<b>Superplex EP-2</b>
NLGI GRADE	2	2	2	2
Pen. @ 25° (77° F) (D217), mm/10				
Worked, 10,000X, change from 60X	+15	+15	+15	-1
Worked, 1000,000X, change from 60X	+30	+94	+60	+2
Dropping Point, (D566), ° F	570	550	463	570+
° C	299	288	239	300+
Oil Separation (D1742) 24 hrs. @ 25° C (77° F)	3.1	1.2	0.8	0.17
Water Wash Out (D1264) @ 79° C (175° F)	3.9	7.6	0	2.75
Bomb Oxidation Stability (D942) psi drop @ 500 h	8	5	53	2.0
Rust Test Rating (D1743)	1,1,1	3,3,3	1,1,1	1,1,1
4 Ball Wear Test (D2266) mm/scar, 40 kg, 1200 rpm, 75° C, 1 h	0.40	0.77	0.35	0.4
4 Ball EP Test (D2596)				
LWI, kg	40	40	80	65
Weld Pt., kg	250	315	500	500
Timken OK Load (D2509, lb)	40	40	70	65
Lubrication Life (D3336) @ 149° C (300° F), No. 204 bearing 10,000 rpm, h to failure	580	97	420	800
Wheel Bearing Leakage grams (D1263) Modified @ 163° C (325° F)	1.5	1.8	0	0.4