

# NNL 690 PROVIDES YOU WITH A TOTAL PREVENTATIVE MAINTENANCE PROGRAM

Typical Properties of NNL 690		
Property	Method	Result
Appearance		Clear, light amber liquid
Color	ASTM D1500	L 2.5
Viscosity @ 40°C (104°F) @ 100°C (212°F)	ASTM D445	69 cSt 9 cSt
Viscosity Index	ASTM D2270	105
Specific Gravity	ASTM D941	1.00 (H2O =1)
Density @ 68°F (20°C)	ASTM D941	1.00 g/mL
Pour Point	ASTM D97	-6°F (-21°C)
Flash Point	ASTM D92	383°F (195°C)
Acid Number	ASTM D664	0.4 mg KOH/g
Zinc and Lead Content		nil
Colloidal Suspension (Solid particles, PTFE, graphite, MoS2)		none

Special Notations on NNL 690	
Viscosity:	A 5% application of NNL 690 in typical SAE 30 to SAE 50 weight oil results in little or no change in viscosity or viscosity index of the oil.
Pour Point:	NNL 690 is formulated to have a negligible effect on the pour point of typical engine oils.
Alkaline Reserve:	Power Up NNL 690 is blended with an acid scavenger to neutralize blow-by gases and acidic oil degradation products. The addition of 3% NNL 690 will increase the base number of engine oils by about 0.5 mg KOH/g.
Application:	NNL 690 is intended for use in engine crankcases at 3% of the oil volume, each time the oil is changed. It can also be used in automatic transmissions at an application rate of 1%, power shift transmissions at 3% and in circulating systems at 3% to 5%, depending upon operating conditions. NNL 690 is compatible with all mineral oils and polyalphaolefin and diester based synthetic oils. NNL 690 is not recommended for use with water based fluids, phosphate esters or polyglycol fluids.

Test Data on NNL 690		
Property	Method	Result
Copper Strip Corrosion (266°F (130°C) x 2 Hours)	ASTM D130	1b
Rust Preventing Characteristics (100% NNL 690)	ASTM D665	
- Distilled Water		Pass
- Synthetic sea water		Pass
Elastomer Compatibility (3% in 10W-30 oil)	ASTM D4289 (Modified)	
• Nitrile		Pass
• Neoprene		Pass
• Fluorocarbon		Pass
Contact Gamma Wear @ 150 lb. load 10W-30 oil with NNL 690		592 teeth 77 teeth



"I have been using Power Up products for over 10 years. I use NNL 690 in my engines, Hydra Maxx in my hydraulics, NNL 690G in my gear boxes, Gen 49D in my diesel fuel, and grease every bearing and every thing that turns with Thixogrease. One of my tractors, a John Deere 4640 recently had a cracked head bolt that allowed water and antifreeze to get into my engine but because of NNL 690, the John Deere mechanics were completely amazed at how good of shape the internals of the engine were in and how clean the engine was internally. I was expecting a total loss of the engine and the John Deere mechanics told me that we just needed to replace the head bolts and the engine would then be suitable for use again. I would not hesitate to recommend the use of Power Up lubricants to anyone that is looking to save money and extend their equipment life."

*Maurice Trites Jr., Maurice Trites Jr. Farms - Gillette, Arkansas*

## Product Application:

NNL 690 is intended for use in internal combustion engine crankcases at 3% of the oil volume, each time the oil is changed. It is also suitable for use in automatic transmissions at an application rate of 1%, in power shift transmissions at 3%, and in circulating systems at 3% or 5%, depending on the severity of service. NNL 690 is compatible with mineral based and synthetic oils based on polyalphaolefins and diesters. At recommended application rates, engine oil viscosity ratings and typical engine seal materials remain unchanged.

INTRODUCING...THIXOGREASE, A REVOLUTIONARY NEW GENERATION OF MULTI-PURPOSE GREASE

# ThixOgrease

**THIXOGREASE**, the new generation, multi purpose grease from Power Up, provides superior protection in the boundary lubrication regime. **THIXOGREASE** is ideal for applications where high loads, extreme pressure or high temperature cause serious metal to metal contact and wear. Superior water wash resistance and rust corrosion inhibition allow **THIXOGREASE** to excel in areas where conventional greases fail. **THIXOGREASE** is made of a unique base which offers minimal oil separation or hardening and demonstrates excellent compatibility with many traditional soap oil greases.

The primary benefit of **THIXOGREASE** is to reduce the friction caused by asperity (metal to metal) contact in the boundary lubrication regime. It is designed for grease filled applications where high temperature, extreme pressure, water and corrosion are common conditions.

## Additional Benefits of THIXOGREASE:

- **Thixogrease reduces ultrasonic wear noise which relates directly to lower component wear.**
- **The high dropping point (570°F) and temperature pumpability of Thixogrease allow for a wide operating temperature range of 0°F to 480°F (-18°C to 250°C).**
- **Thixogrease is formulated with rust and corrosion inhibitors to withstand contamination and protect critical components.**
- **Exceptional water wash resistance allows Thixogrease to work in marine, pulp and paper, and similar applications.**
- **Thixogrease has outstanding shear stability, minimizing relubrication requirements.**
- **Thixogrease is ideal for use in centralized lubricating systems due to its excellent pumpability.**

This new product from Power Up Lubricants is formulated entirely of a Thixotropic complex and unlike conventional grease, offers virtually no chance of oil separation or hardening.

## **SUPERIOR PERFORMANCE IN MAXIMUM TEMPERATURE RANGE APPLICATIONS**



**THIXOGREASE** will not melt down into fluid at temperatures approaching 570°F (300°C), outperforming most soap-based greases by 20%. It maintains its soft, smooth and greasy texture even when cooled and will not harden. It remains highly effective at 0°F (-18°C) and withstands low temperature torque tests to -40°F (-40°C).

## **POWER UP** MULTI-PURPOSE GREASE



## **REDUCED EQUIPMENT WEAR**

Comparison tests of pressure performance and wear protection show **THIXOGREASE** to have unsurpassed EP lubricating properties, withstanding over 5 times greater pressure and up to a 45% reduction in scoring of metal surface, maximizing life expectancy of bearings. A microscopic layer of **THIXOGREASE** has proven effective in heavy unit loading up to **200,000 PSI**, which means exceptional protection.

**THIXOGREASE** has the unique ability to maintain its integrity and effectiveness even in the presence of contaminating soap-based greases. Results from ASTM's Salt Spray test showed water resistance of up to 20 times greater than conventional greases.

"Using our old grease, we were having an abundance of kingpin and u-joint failures. Since switching to Thixogrease we now grease our trucks every 25,000 miles and have virtually eliminated kingpin and u-joint replacement."

*Ed Szarmack, CalArk Trucking - Little Rock, AR*



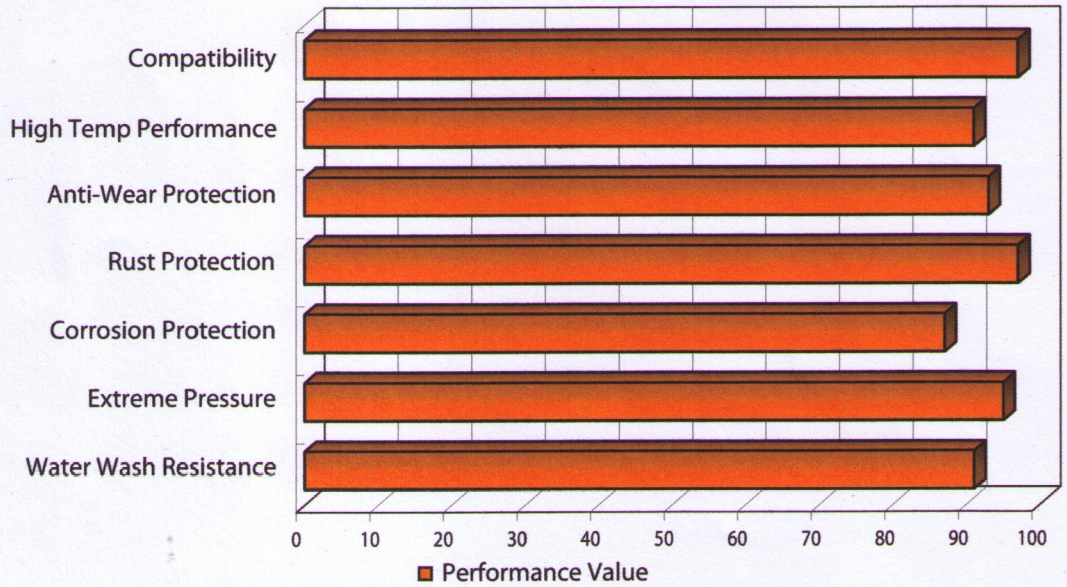
GIVE YOUR EQUIPMENT THE ADVANTAGE OF THE LATEST IN GREASE TECHNOLOGY

**SUPERIOR GREASE PERFORMANCE**

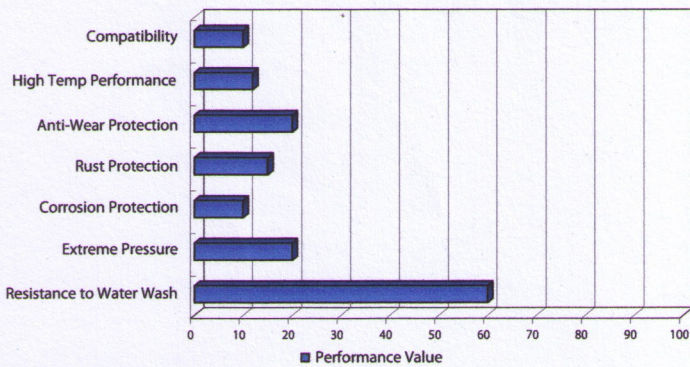
These graphs illustrate that Power Up Thixogrease (right) and its' proprietary Overbased Calcium Sulfinate formula outperforms Aluminum, Lithium, Calcium, Bentonite (clay), and Poly Urea base or complex greases (below) in all major categories of compatibility, high temp performance, anti-wear protection, rust protection, corrosion protection, extreme pressure and resistance to water wash. Power Up Thixogrease gives you the flexibility of using a complete formulated multi-purpose grease no matter what the application.

**Thixogrease**

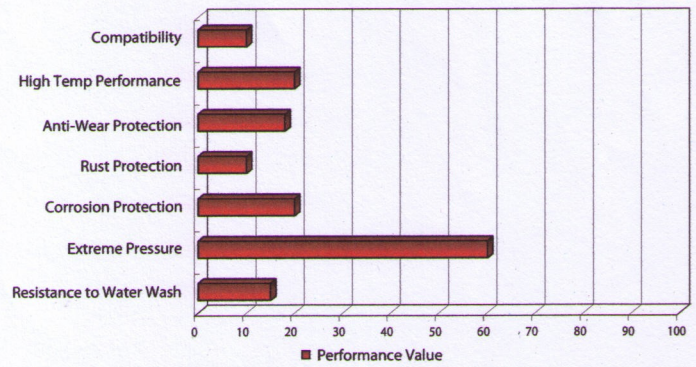
A FULLY FORMULATED MULTI-PURPOSE GREASE



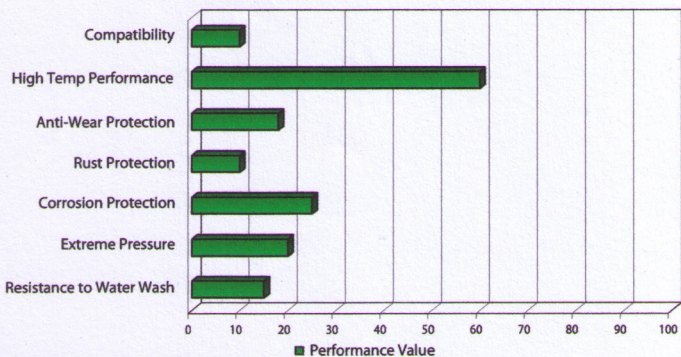
**Special Purpose Marine Grease**



**Extreme Pressure Grease**



**Extreme Temperature Grease**



**Multi-Purpose Grease**

