

<b>TENNESSEE VALLEY AUTHORITY</b> <b>Standard Procurement Specification</b> <b>TVA-UW-3</b> <b>Revision 18.009 5-8-92</b> <b>UNDERWATER GREASE FOR HYDRO PLANT WICKET GATES</b>		
Test	Limit	VSG Grade 1
<b>NLGI Grade</b>	1	1
<b>Penetration, ASTM D-217 @ 77°F ∇1°</b>	310-340	325
<b>Base Oil Viscosity @ 210°F (SUS)</b>	75-85	80
<b>Filler Type*</b>	Lithium soap or lithium complex	State of the art Calcium sulphonate
<b>Additives</b>	Sulphur/ Phosphorous	No EP additives required. Meets 55lb Timken so easily EP.
<b>Dropping Point, ASTM D-566-81</b>	355°F minimum	500°F
<b>Grease Worker Test, ASTM D-217-78</b> (% increase in penetration)	5% maximum	2.5% after 100,000 strokes
<b>Roller Test, ASTM D-1831-78</b> (% change in penetration after 2 hours?)	22% maximum	8%
<b>Bleeding and evaporation, Federal Test Method 791a-321.2, 50 hours @ 100° C</b> Bleeding loss (%) Evaporation loss (%)	18.5% maximum 0.6 % maximum	2.5-3% <0.3%
<b>Wheel Bearing Test, ASTM D-1263-80</b> Bearing Condition	Good A, minimum	Good, A
<b>Rust Preventing Test, ASTM D 1743-81</b> 48 hours @ 125°F, 100% humidity	No Rust	No Rust

\* Grease Afiller@ is not performance related but was possibly intended to prevent compatibility problems. The thickener in VSG is generally compatible with these thickeners. TVA specification likely based on Shell Alvania EP1.