

## COMPARISON OF VSG WITH HYDRO-QUÉBEC SPECIFICATION PAEM 89501

### SPECIFICATION FOR THE GREASE USED IN THE AUTOMATIC GREASING SYSTEMS OF HYDRAULIC TURBINES

TEST	SPECIFICATION	VSG
<b>Grade NLGI</b>	0 or 1*	1
<b>Soap Type</b>	Calcium complex or microgel	Calcium sulphonate complex
<b>Amount of Soap, % mass</b>	5-10	~10
<b>Worked Pen</b> at 25°C, ASTM D-217	340-380*	325
<b>Dropping Point</b> (°C), ASTM D-566	140 min	260
<b>Base Oil Viscosity</b> (cSt) 40°C 100°C	Grade ISO 150 150-200 11-16,5	150 176 15,3
<b>Apparent Viscosity</b> (poises), ASTM D-1092 at 20 seconds <sup>-1</sup> 0°C 25°C	2 000 max. 200 min	400 -
<b>Pumpability</b> , Lincoln test pressure after 30 seconds, (kPa max)	1 250 at 25°C 2 800 at 0°C 7 000 at -18°C	140 at 25°C 760 at 0°C 1 625 at -18°C
Timken OK Load, (kg), ASTM D-2509	20	25
<b>Plastic Plate Abrasion</b> , ASTM D- 1404. Number of scratches	25 max.	Not tested, but VSG has no hard particles
<b>Corrosion Protection</b> , ASTM D-1743	1 or better	1,1,1
<b>Water Washout</b> (at 79°C, % mass), ASTM D-1264	6% max	6

\* Grade 1 is acceptable if it meets the pumpability criteria at 0°C.

The grease will be used in automatic greasing systems in which pressures vary from 7,000 to 20,000 kPa at temperatures varying from -1°C to 28°C. Special attention will be given to the tendency to separate which can cause blockage of lines.