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TECHNICAL BULLETIN

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**SUBJECT: Thermal Viscosity Stabilizer (TVS)®**

# Thermal Viscosity Stabilizer (TVS)®

Multi-grade engine oils use polymers to achieve their effects. In cold temperatures where flow and pumpability are the limiting factors, these polymers coil up and have limited interaction with the oil which limits the thickening effect. At high temperatures where film strength is most important, these polymers absorb and interact with oil, minimizing the thinning effect of heat. These polymers in effect alter the relationship between temperature and viscosity of oils.

These polymers, however, are not all created equal. The largest and least branched polymer chains provide the most cost-effective thickening, but are subject to two forces which hamper the effectiveness of these additives in high stress applications:

(1) Under shearing force at high temperatures, these polymers unravel, align and reduce their interaction with the oil in the lubricant causing the oil film to temporarily thin.

(2) Under extreme shearing force in extreme pressure conditions, these polymers can be physically broken, permanently destroying their thickening effect and reducing the effectiveness of the lubricant.

Champion's TVS® polymer technology consists of more highly branched and lower molecular weight polymers. This results in better stability against shearing forces at high temperatures and high pressures resulting in a more stable lubricant film under the most extreme operating conditions.

FORMULATED TVS® TECHNOLOGY