



SHELL VSI® CIRCULATING OIL

Hydraulic and lubricating oil for rust protection in vapor spaces

Product Description

Shell developed VSI (Vapor Space Inhibiting) Circulating Oil with an anti-rust compound which is oil soluble and volatile. This corrosion inhibitor fills the vapor space above the oil level to form a rust preventive barrier on exposed metal surfaces and helps combat vapor space rusting. Moisture in enclosed air spaces over circulating oils is very likely to cause rusting when it condenses on the cool walls of gear cases or reservoirs. Further, this condensed moisture is constantly replenished as the system "breathes" through vents and other openings.

Applications

- hydraulic, turbine, and general lubricating applications
- enclosed lubricating oil systems where rusting is likely to occur
- anti-friction bearings and gears, reservoirs, system housings, piping and similar system components
- machine tools that may be idle for weekends or longer

Features/Benefits

- excellent demulsibility
- excellent corrosion protection

The Principle of Vapor Space Rusting Inhibition

VSI Circulating Oil protects the surfaces of lubricating systems from rusting by releasing into the air space over the oil a volatile corrosion inhibitor which forms a protective film on the surfaces to be protected. The rate of release of the inhibitor and the length of time that an effective concentration is maintained depend on the bulk oil temperature and the degree of ventilation of the system. The balance between temperature and ventilation will determine the rate at which the inhibitor becomes depleted, and therefore the effective anti-rust life or the oil change period.

The properties of VSI Circulating Oil permit run-in of new equipment and rust protection with the same oil by leaving all or a portion of the oil in the machine during shipment. It is not recommended as a protective for surfaces exposed to weather or where the internal surfaces are so well ventilated that inhibitor vapors are prevented from accumulating to an effective concentration.

It is an easy matter to drain VSI oil from systems and to install the operating lubricant after shipping. In many cases VSI Circulating Oil itself may be left in as the operating lubricant.

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Recommended Practices for Using VSI Circulating Oil

- High temperature will accelerate inhibitor release while low temperature will retard it. An initial temperature of 80° to 100°F will assist in early distribution of the VSI agent. In operating systems recommended bulk oil temperatures are 80° to 150°F. Temperatures over 200°F should be avoided because of the excessive rust inhibiting vapor loss.
- A tightly closed system is best, and no attempt should be made to protect a completely open system. Most oil circulating systems and reservoirs afford a relatively closed system to keep the oil free of contamination. Any reduction in system ventilation will help improve the corrosion inhibiting action.
- The equipment should be clean before installing VSI Circulating Oil. Contamination may promote rusting.
- Freshly cleaned surfaces should be immediately coated with VSI Circulating Oil, if possible, to afford protection until rust inhibiting vapors can form.
- VSI Circulating Oil is designed primarily for protection of ferrous metals. It is non-corrosive to most non-ferrous metals including brass, copper, bronze, zinc, babbitt, aluminum and magnesium. However, contact with lead and lead alloys should be avoided unless the alloys have been tested for suitability under actual operating conditions.
- For maximum effectiveness, the longest distance from the oil to the surfaces requiring protection should be kept reasonably short. Experience indicates that with 80°F oil the distance should be no more than about six feet. Where temperatures are lower, the maximum distance should be less, and at temperatures over 80°F it may be somewhat greater.
- Because of the significant effect that temperature and ventilation have on depleting the rust-inhibiting additive, and because of differences in make-up rates, it is difficult to predict oil service life. However, experience has indicated that while the oil change interval is shorter than that for premium quality turbine oils, it is sufficiently long to fit in with plant preventive maintenance schedules.

Typical Properties of Shell VSI Circulating Oil

	Test Method	ISO Viscosity Grade
Product Code		6524900055
Property		
Gravity, °API @ 60°F	D 1298	31
Flash Point, COC, °F	D 92	395
Viscosity:		
@ 40°C, cSt	D 445	31.1
@ 100°C, cSt	D 445	5.2
Viscosity Index	D 2270	100
Pour Point, °F	D97	-10
Copper Corrosion	D 130	1b
Acid Number, mg KOH/g	D 974	0.45
Rust Test, Synthetic Sea Water	D 665B	No Rust

Handling & Safety Information

For information on the safe handling and use of this product, refer to its Material Safety Data Sheet <http://www.equivashellmsds.com> If you are a Shell Distributor, please call **1+800-468-6457** for all of your service needs. All other customers, please call **1+800-840-5737** for all of your service needs. Information is also available on the World Wide Web: <http://www.shell-lubricants.com/>.