



26844 ADAMS AVE. ♦ MURRIETA, CA 92562 ♦ USA

Phone 972-775-6130

♦ Fax 951-461-9658

[www.techlinecoatings.com](http://www.techlinecoatings.com)

**RSI**<sup>™</sup>

## **Ring Seal Improver an Advanced Lubricating material**

A critical feature of such a lubricant is the ability to provide lubrication to the interface between the ring and the Cylinder Wall and the Ring grooves in the Piston(s) during startup after initial assembly or after an engine has sat for a significant period of time.

Such lubrication is designed to initially provide a controlled wear between the ring edge/face and the cylinder wall, creating a tight "seal" at the interface. This seal reduces contamination of the oil due to blow by of hydrocarbon residue created during combustion, maintains maximum pressure in the combustion chamber during the power stroke and reduces the potential for lubricating oil to be drawn into the combustion chamber during the intake stroke.

Lubrication is also needed between the top and bottom portions of the ring where it rides in the ring grooves of the piston. The ring is subject to loading in multiple directions during piston travel and lubrication is critical to the free movement of the ring, which allows the ring to maintain contact and seal with the cylinder wall.

The "seal" of an engine is normally determined by the percentage of leak down that is experienced when the combustion chamber is filled with pressurized air and the rate the measured pressure drops determines the level of seal. This seal can be damaged if insufficient lubrication is present during the initial rotations of the crank and piston assembly. While the cylinder wall and piston are normally lubricated with oil during assembly such fluid runs off while the engine sits prior to its initial firing, after the motor is assembled. This same condition occurs when an engine has sat for an extended period of time. At start up, the initial rotations of the pistons, with minimal to no lubrication, causes excessive wear and can even lead to the

ring “grabbing” in the ring grooves due to the load experienced. Such conditions lead to poor ring seal and a resultant loss of power and degraded engine life.

The problem is that during the initial rotation of the crank and piston assembly the only lubrication that reaches the critical area is from “splash” lubrication, as there is no pressurized delivery of oil to these areas. Consequently multiple rotations occur before the rings and associated surfaces see any lubrication at all, let alone sufficient to provide what is needed for the “best” ring seal to occur. Oil additives will only begin to function after the piston(s) have gone through a significant number of rotations and damage can occur before the oil, with the additive, can impact the rings.

RSI™ is applied directly to the outer edge of the piston, directly above the top ring after assembly, though it could be applied directly to each ring and ring groove during assembly. The assembly is then rotated once or twice, mechanically or manually with no ignition occurring, to spread the Lubricant package over the critical areas. During engine assembly air can be used to force the Lubrication package down to the top ring. In an assembled engine the Lubrication can be squirted into the combustion chamber via a small tube inserted through the spark plug hole and then an air fitting used to force air into the chamber forcing the Lubrication package down to the top ring. Then the Crank Assembly can be rotated a few times to spread the Lubrication package on the cylinder wall and onto the other ring assemblies on the piston(s).

The Lubricant package is of such consistency that it cannot drip or run off the part prior to the engine being fired and in addition contains special lubrication additives that bond to the rings and related surfaces at pressures/loads and temperatures where wear or sticking would be encountered. This protection is designed to last until full oil lubrication is achieved at which point the RSI simply disperses into the oil.

RSI™ contains special lubrication additives that during independent testing have demonstrated the ability to improve Ring Seal even when the initial firing of the engine was done with no RSI™ applied. A simple treatment of the rings with RSI and the engine being rotated and then fired as per instructions, immediately showed an improvement that was comparable to the other good chambers.