

SB043

Head Gaskets and Sealing Compounds

One of the most common causes of head gasket failures (composite and MLS) is the application of sealing compounds to the gaskets at the point of cylinder head installation. The more common of the compounds used include Hylomar® or similar, Kopr Kote® or similar, RTV silicon sealants (silastic), silver frost spray paint and clear spray enamel. Most, if not all, gasket manufacturers will not warrant failed head gaskets that have had sealing compounds applied to them. The exception to this is some copper head gaskets, head gasket saver shims or where it is specified explicitly by the manufacturer.

Hylomar® is a non-setting and non-hardening jointing compound recommended for cylinder head shims, inlet manifolds and other similar style gaskets that are not pre-coated by the manufacturer. Like any sealant, it acts as a lubricant and therefore reduces surface friction. It is specifically not to be used on single torque head gaskets. Kopr Kote® and similar products are low-friction anti-seize lubricants manufactured from a combination of micro-size copper flakes and graphite, dispersed in a water-resistant grease and are fortified with anti-oxidants. They are a thread anti-seize and have no legitimate application in sealing gaskets. RTV silicone sealants (silastic) must not be used on head gaskets, other than where some manufactures require very small amounts of special formulations on the timing gear housing to cylinder block joint line. Silver frost spray paint and clear spray enamel also have no application on typical head gaskets.

Victor Reinz gaskets advises that, 'the use of additional sealing compounds will destroy composite head gaskets through tearing or breaking of its composite material. In particular, this is true for the area around the Viton® element because, as the engine warms up and cools down, the additional compound prevents the element expanding into the spaces provided. The results are tearing of the material and/or breakage of the Viton® element. MLS cylinder-head gaskets are designed individually to suit specific engines. Beads, stoppers, elastomer coatings, and partially vulcanized or molded-on elements are adapted precisely down to the µm. Sealing compounds may or may not cure and harden, but they will change the coating thickness which results in leaks. What's more, they can flow into oil and coolant channels, where they cause clogging. Sealing compounds applied in the combustion chamber area will burn out and impair the bead's function, resulting in head gasket failure.'

Fel-Pro gaskets advises that, 'most cylinder head gaskets are coated with Teflon®, Viton® or silicone-based materials to improve the 'cold seal' properties of the engine, so the engine doesn't leak fluids before the engine is first started. They caution that chemical sealers can react adversely with these coating materials, preventing the gasket from cold sealing properly. This chemical reaction can also cause the gasket to deteriorate and fail. Chemical sealers - including adhesives, shellac, tacky sealers and RTV silicone - should never be applied to soft faced, coated head gaskets. However, embossed steel shim and the new multi-layered shim steel 'rubber coated embossed' (RCE) head gaskets, may require a sealer in certain locations when specified. Fel-Pro also affirms that RTV silicone sealants (silastic) must not be used on head gaskets.'

In summary, sealing compounds must NEVER be used on head gaskets unless specified by the manufacturer or warranty will be automatically voided.