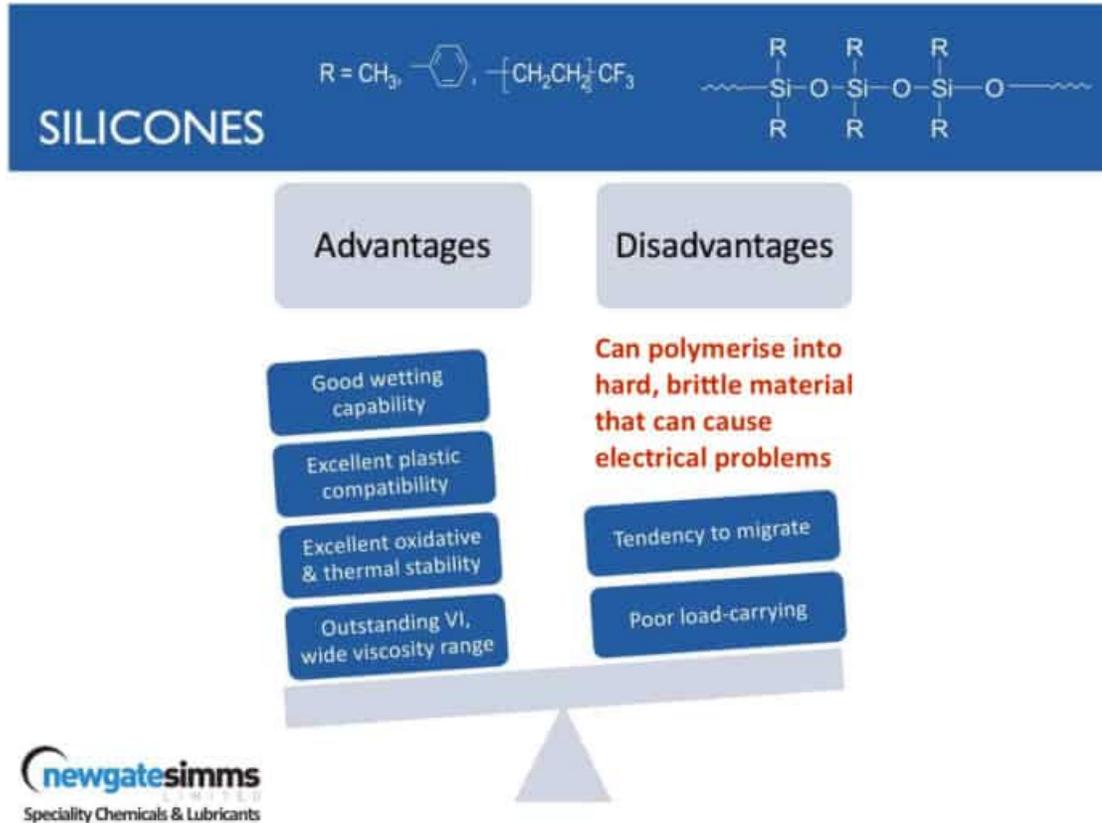


Not Recommended-Silicone grease use on electrical connectors



Silicone oils are dielectric and so is silicone grease, silicone is generally low cost and widely available. However we do not recommend using any silicone based lubricant for use on electrical connectors or contacts. Why is this? It's a fundamental disagreement in theory between ourselves and other companies that offer silicone based lubricants for electrical connectors, especially in the low cost automotive maintenance field.

Silicones have characteristics that make it an excellent choice of oil or (in the case of grease) base oil; silicones have a wide temperature range and are relatively cheap. Silicone also don't normally have any **compatibility issues** with rubbers and plastics, apart from other silicone based materials. Their ability to migrate due to their low surface energy means they cover surfaces very effectively although this migratory feature is often perceived as a negative in automotive manufacturing environments. The important issue for us is that **silicone can polymerise into hard, brittle material that can cause electrical problems**, as well as weld connectors together. Manufacturers and sellers of silicone dielectric oil and aerosol sprays might disagree with us but crucially, the major automotive manufacturers and their tier one suppliers also agree. This silicone polymerisation issue is only a factor in electrical lubrication applications, in mechanical lubrication applications the brittle material would be broken down by the mechanical movement; in electrical applications there is no movement apart from micro-motion or fretting, which is normally associated with vibrating equipment and/or thermo-cycling. The polymerisation of a silicone

lubricant is not likely to be affected by the range of movement associated with fretting behaviour.

Ready to choose an electrical connector grease? Take a look at our article about [Choosing An Electrical Connector Grease](#).

The typical HT lead application for silicone sprays. The use of silicone sprays seems to be popular on automotive High Tension (HT) leads. We often have people commenting that they regularly use silicone lubricants on HT lead terminations with no problems. So surely this proves that we are not correct when we say that silicone lubricants should not be used on electrical applications? Like most things engineering, the answer is not simplistic but there is a very important difference between the voltage passing through a HT lead/spark plug connection and the voltage passing through an airbag connector, a seat belt connector, a lighting connector or a connector such as the clock spring (old school reference!). Remember from school/college when electricity is compared to a river or waterfall so the student can better understand voltage and amperage? The amount of amps/current passing through a circuit relates to the amount of water flowing down a river or waterfall, the voltage relates to the force or push of that river flow/waterfall. In a HT lead application there is high voltage or force/push to breakthrough any polymerisation of silicone but in a more sensitive (for example) airbag, lighting or ABS connector the voltage is relatively small compared to HT leads. HT leads can have 5,000 or 10,000 Volts passing through whereas a lighting connector could have 12 Volts or 24 Volts and the more sensitive circuitry connectors in a vehicle could have millivolts passing through. In lower voltage applications/connectors, this polymerisation is a problem but probably not in high voltage connections.

Our lowest cost [dielectric connector grease](#) is based on [Polyalphaolefin \(PAO\)](#), which we find highly suitable for use in electrical connector/contact lubrication. Of course it is very important that the selection of a base oil is accompanied with an appropriate thickener, if the finished grease is to be used on electrical/electronic connectors. If this 'base oil' and 'thickener' terminology is new or confusing, you might want to consider watching our video that helps the reader understand the terms and how a grease is formulated:

So while a silicone based lubricant may appear to work in the short term, their long term performance is poor and as our goal is long term satisfaction, almost 'lube for life', we would not recommend a silicone spray, silicone oil or silicone based grease for electrical applications.

Another issue with silicones relates to specifically to silicone sprays. In automotive assembly plants, silicone sprays are not allowed. Of course if the reader is not part of an automotive manufacturing team, this information might not be of interest but the reader might be interested if there is any painting or body work restoration planned...

A couple of decades ago, automotive manufacturers experienced what is known as cratering and fisheyes appearing on painted surfaces. The culprit was found to be light molecular weight silicone sprays used in automotive assembly plants. When light molecular weight

silicone becomes airborne, it can land on unintended areas and ultimately lead to sheet metal contamination. Silicone sprays are typically transparent, making them hard to detect in the painting process, creating many headaches if trying to achieve a perfect finish in the paint shop. For this reason, silicones are frowned upon in automotive parts manufacturing or assembly sites.

Why not take a look at our article about the [`Facts & Myths of Electrical Connector Lubricants`](#)...some interesting stuff on there! Such as:



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Here is a link to a list of all our [Dielectric Connector Grease articles](#).

