

TOP GUN

THE FACTS ON SILICONE LEADS

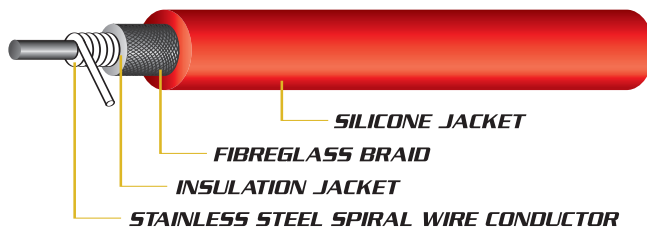
Many people are confused by the numerous terms used to describe the materials used in the construction of ignition wires. The following is written to throw some light on the facts, and clear away some of the misconceptions that exist.

Ignition wires are located in a very hostile environment. Heat, Oil and High Voltage are the main causes of ignition wires failure. Some years ago all ignition wires were made of rubber compounds that provided effective insulation, but were found to have a very limited temperature rating. Ignition wires are more susceptible to heat damage than other rubber parts because they must remain very flexible while in location. Because rubber is a heat cured material, it "goes hard" when heat is applied. All rubber parts found under the bonnet tend to go hard and brittle over time. However, because most rubber parts remain fairly static in their operation flexibility is not of major concern, they are often made of inferior materials with a lower temperature rating than silicone.

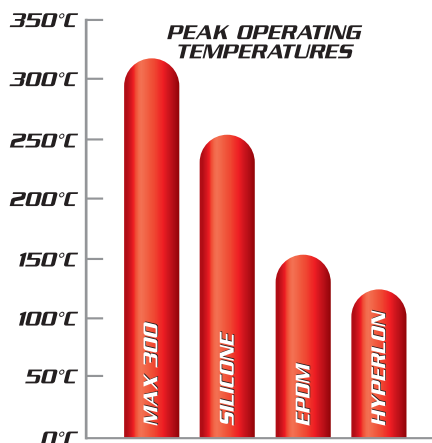
This tendency to go brittle cannot be tolerated in an ignition wire. A brittle ignition wire is one that cracks, and consequently leaks voltage causing miss-firing, lack of power and excess fuel consumption. With the development of silicone rubber, an effective material was found that could withstand the harsh conditions found under the bonnet. Unfortunately "Silicone" is not a cheap material to manufacture, which has led many manufacturers and assemblers of ignition wires to compromise quality to cut costs.

To ensure electrical integrity, all good quality ignition wires utilise two layers of insulation. "Double insulated" is a common word now found on home appliances, and the same principle of two layers of insulation being most effective also holds true for ignition wires. On ignition wires the inner layer is primarily designed for electrical insulation, whereas the outer layer is designed for oil and chemical resistance as well as electrical insulation. However, both layers must be able to withstand the under bonnet temperature extremes. This two layer construction allows room for some manipulation of the compounds used in the construction of the inner layer of insulation.

A lot of ignition wire imported into Australia bears the name "SILICONE", which factually describes the nature of the material used in the outer layer of insulation. This outer layer is normally about 1-1.5mm thick. Unfortunately this term does not adequately describe the nature of the material found in the inner layer of insulation. This inner layer is normally about 3mm thick. Materials such as EPDM, HYPERLON and EVA are often used in this inner "hidden" layer, because they are much cheaper materials to produce. Unfortunately, each



HEAT RATING COMPARISON



of these materials has a temperature rating approximately 100°C less than Silicone. Although they appear the same product on the outside, there is a major difference in the operating temperature between the two constructions.

For these reasons all (5mm, 7mm, 8mm, 8.8mm & 10mm) Top Gun ignition wires are made only in two layer silicone rubber construction, with a fiberglass braid between the layers for longitudinal strength. This construction means that the ignition wire has a normal operating temperature of 250°C Plus. This allows the ignition wire to remain flexible, without splitting or cracking internally even after many years of service.

TOP GUN also offer a PREMIUM grade silicone product, called MAX300. MAX300 ignition wires are made from premium-grade, temperature enhanced silicone. A patented formulation is applied over the outer jacket that chemically grafts to the jacket material. The grafted surface enhances the abrasion and heat resistance of the outer jacket, providing maximum heat (315°C) and abrasion/tear protection (see graph).