

Non-metallic prevailing torque elements

The earliest non-metallic locking elements were small pellets and strips which were embedded in the threads. They have excellent vibrational resistance but require machining and additional labor to insert the plastic pieces. There is still use of these types in areas of complex configurations and small thread sizes and in the aerospace and aircraft industries.

The nylon collar nut is a popular locking fastener type also. The collar is retained at the top surface by swaging over the top edge of the nut. It shows consistency in torque, vibrational resistance, and the 360° collar acts like a bushing while reducing installation tool chatter. The multipart construction is an unacceptable economic negative in some applications. The increased height and mass also limited the areas in which this type is successfully used. The fact that this nut is generally only available in soft steel means that no high strength attachments may be joined as the harder material can not be swaged after heat treatment and the plastic would melt if swaged before. This same problem limits the corrosion coatings, which may be used. Swaged after and the platings may crack, swage before and the chemicals may leach out and stain and/or the collar may melt during baking.

The next generation of non-metallic element fasteners were manufactured with the element fused permanently to the threads. This produced parts with all the advantages of the implanted elements but without the cost. The NYLOK® patch is available in either partial or full circumferential varieties, depending upon the amount of torque required and other considerations such as the need for a sealing function as well.

The NYLOK® patch acts as a wedge by forcing the threads of the fastener against the mating threads at the side opposite of the patch area. The nylon patch, because of its elastic "memory" properties, tries to regain its original shape, further increasing the frictional resistance to loosening. Nylok Fastener Corporation's special control of the bonding process prevents the patch from loosening and being removed during the installation operation. Internally threaded fasteners may be manufactured with a full circumferential patch. This part type acts exactly like the collar insert parts but without the cost penalty.



Nytemp® patch

Non-metallic element parts are much less sensitive to metal thread variations which leads, in turn, to much better torque control. Reusability is outstanding (some MIL and industry specifications require 15+ reuses). Non-metallic locking elements are limited to applications not exceeding 250°F (121°C). Applications that involve temperatures of up to 450°F (232°C) should be specified with orange NYTEMP® patch, Nylok's unique high temperature resistant material.