

## CASE STUDY

### PROTECTING BOLTS AND NUTS FROM HIGH-TEMPERATURE BINDING



#### PROBLEM

High temperature seizing of bolts and nuts due to oxidation adds cost to routine maintenance or adjustments of equipment due to extended turn around times, loss in productivity, as well as hardware replacement costs. The seizing results from the build up of oxidation products in the threads between the nut and the bolt.

#### TESTING

RG-2400 AK was applied to threaded stud/nut assemblies and subjected to heat at 1000°F continuously for seven days. The 3.5 inch long assemblies consisted of Grade B7 Alloy Steel fully threaded 5/8-11" coarse thread studs and Grade 2H high strength heavy-duty hex nuts. Test samples were prepared by applying the RG-2400 AK to the threaded stud, running a nut on each end of the stud, followed by re-application of the RG-2400 AK to the end threads where the nuts had passed. Uncoated control assemblies were also tested for comparison. Samples were removed each day for evaluation.

#### DISCUSSION

The RG-2400 AK material turned to ash within an hour; however, the stud and nut substrate was protected by the surface layer as indicated by the lack of red/black oxide beneath the ash after seven days. The torque required to break loose the nuts was significantly reduced throughout the exposure period.

#### CONCLUSION

RG-2400 AK provides not only oxidation resistance but also lubrication to enhance frequent servicing of mechanical assemblies, which are exposed to high temperature conditions.

