

Figure 12 is a photograph of the surfaces of 420 stainless steel after a seven-month corrosion test in deionized water. Grade 420 stainless steel is vulnerable to corrosion. Uninhibited flexible graphite was placed against the stainless steel sample on the left and the inhibited GRAFOIL flexible graphite Grade GTJ was placed against the stainless steel sample on the right. There was minimal visible pitting when Grade GTJ was used; the maximum pit depth was 0.00071 (0.018 m). When the uninhibited flexible graphite was used, there was extensive pitting with a maximum pit depth of 0.00531 (0.13 mm).
Figure 12 Photograph Showing How Inhibited GRAFOIL Grade GTJ Reduces Pitting Corrosion



Some stainless steels are less vulnerable to pitting corrosion than others. The accepted ranking for some of the more common alloys is 17-4-PH, 316L, 316, 304, 347, and the most vulnerable 410. A stagnant, conductive fluid can have a marked effect on galvanic corrosion. If the alloy is vulnerable and conditions are conducive, then under the proper conditions pitting corrosion can take place in the presence of any material: asbestos, Teflon, even rubber. Cold, wet, stagnant films with good access to oxygen are most conducive to corrosion. A condition where the system components are stored wet will increase the potential for galvanic corrosion.