CORROSION AND CORROSION CONTROL
IN
SEALANT TREATED TIRE/WHEEL ASSEMBLIES

Corrosion is an electrochemical process in which a difference in electrical potential develops between two metals or between two different parts of a single metal (in this instance, iron or aluminum). The difference in potential results in electron flow through the metal from one area to another, thus creating one area with a positive charge and another area with an equal, but negative, charge. In fact, the potential is great enough to be measurable. Together, the two areas constitute what is referred to as a" corrosion cell". Unchecked, corrosion within the cell will proceed at an accelerating rate. Wheel damage is the ultimate result.

Fortunately, the industrial water treatment industry has a long and successful history of developing materials that interfere with the chemistry that takes place inside the corrosion cell. This effectively inhibits the corrosion reactions thus minimizing further corrosion. The chemicals used are time proven and are routinely used in antifreeze, as well as closed cooling and hot water heating systems.

Multi-Seal mixes these chemicals in all our products. Additionally, we use them at levels 10 times greater than typical industrial rates. Specifically, we add chemicals to control corrosion of steel (iron), aluminum, and brass.

Furthermore Multi-Seal regularly sends random samples of our products to an outside laboratory for corrosion testing NACE (the National Association of Corrosion Engineers) suggests a generally "acceptable" level of corrosion for water based systems. We are pleased to report that Multi-Seal products test well below even the most stringent limit

Nevertheless, corrosion issues remain that need to be addressed. Although corrosion engineers recognize small differences between them, there are several corrosion types that can be grouped together under the general heading of "under deposit corrosion". These include corrosion that takes place under existing rust, in cracks in paint, under loose paint, under bacterial colonies, under materials that build up on the metal surface and so on. All of these are characterized by little or no movement of fresh, treated liquid to the corrosion cell.

Common sense says that in order for the corrosion inhibitors to protect the metal surface, it must be in contact with that surface. Additionally, sufficient liquid flow must be available in order to "wash" away the highly acidic corrosion byproduct.

When a wheel has a rough surface, whether caused by preexisting rust, chipping paint, gouges or similar causes, it can snag fibers from the sealant. Occasionally, this will allow "under deposit type corrosion". The inhibitors simply cannot get to the metal surface.

Prevention of this problem is simple. Remove the rust, sand and paint the wheel. The idea is to provide a smooth surface that the fibers will not snag on. This has the additional benefit of keeping the fibers in the bulk sealant where they can work as designed.