CHLOR*RID® and HoldTight® Are Very Different

There is a very distinct difference between a salt remover, such as CHLOR*RID, and inhibitors, such as HoldTight 102. Each requires specific chemistry with a specific pH to perform a defined function. HoldTight 102 is an inhibitor, commonly used to deter flash rusting of a steel surface. To perform that function it is a alkaline amine (high pH) chemistry. CHLOR*RID, a salt remover, is slightly acidic (low pH) and to break the bond of a salt ion to a steel surface requires a low pH environment.

High pH inhibitor products cannot remove salts to the low levels often required because it is chemically impossible. In simple terms, to adequately remove salts a low pH, or slightly acidic condition, is necessary to release the salt ion from a metal surface. This was brought forth by Dr. Simon K. Boocock, "SSPC Research and Performance Testing of Abrasive and Salt Retrieval Techniques", JPCL (March1994) states *"an acidic extraction fluid is preferred, especially at low ranges of chloride ion surface contamination."* (Other references available upon request) HoldTight as an amine based product is alkaline, both as supplied and as applied. It is the opposite of a salt remover. Inhibitors based on a high pH amine work by causing the formation of a boundary layer of hydroxide, which blankets the steel surface shutting off oxygen and moisture to stop flash rust. That same boundary layer can mask salts from detection as the salts are on the steel surface and beneath the hydroxide layer. ISO Standard 8502-2, states in the Scope "*Also the amine inhibitors can form a hydroxide boundary layer (not water soluble) over the substrate and prevent the water from contacting the underlying salt for its removal."* This hydroxide boundary layer is extremely thin and typically does not interfere with coating adhesion. (Other references are available upon request)

In the presence of atmospheric moisture and humidity this boundary layer deteriorates quickly, which is why most inhibitor manufacturers state their product will stop flash rust for 24 to 48 hours. If the high pH amine product actually removed all the salts then why would a steel surface flash rust after that 24 to 48 hour period? Dr. Gerald Soltz, in his research report Executive Summary to the US Navy, NSRP 0329, June 1991 states – *" properly cleaned steel will not rust, even in 100% humidity, for thousands of hours."*

If any salt is removed when using high pH amine products it is being accomplished by the mere water washing, aided by a wetting agent, during the application process and removal is minimal at best. HoldTight is advertised as a salt remover, but there is no chemical reaction that occurs in the use of such products that will break the attachment of the salt ion to the metal substrate and these are the salts that are not easily removed. The formation of such a boundary layer defeats the purpose of salt removal by masking it instead.

CHLOR*RID is a low pH product that, when diluted in the recommended ratio, results in a wash solution that remains slightly acidic. The pH of the concentrate is approximately 3.2 and, when diluted in the average municipal water, results in a wash solution with a pH of about 6.5. As stated in chemistry text books and commonly known by chemists, it requires an acidic environment to break the bond of a salt ion to the metal. *Note: See reference above regarding Dr. Simon Boocock's research for the SSPC.* There are other ingredients

in the formulation which perform very specific functions to release salts from the surface and to assist in combining the salts into the wash water so they may be carried off in the spent wash water. CHLOR*RID has been in use in the industrial coating industry since 1992 and it has never failed to perform when used as directed.

HoldTight instructs the user to use good quality wash water (low in chloride) or it will not stop flash rust. If the wash water is high in chloride they suggest using DI water. Because a different chemistry is used in CHLOR*RID, the user is not restricted by water quality nor advised to use DI water.

HoldTight warns the user not to use their product in UHP water pumps as it can damage the equipment. In contrast, many customers have been using CHLOR*RID in UHP water-jetting equipment for years and it has never damaged a pump or seal or hose or any other system component.

In very simple terms, to adequately remove salts an acidic product is required. To inhibit flash rust an alkaline product is used. Neither of the two can operate effectively in a cross functional fashion because it is chemically impossible to do so.

Our firm does manufacture a high pH amine product, Hold*Blast™, which is chemically formulated to deter flash rust and "hold the blast". This product is based on different chemistry than HoldTight and does not demand that good quality wash water be used. Many UHP contractors have used this product through their UHP equipment with no damage to their pumps or seals or hoses or any other component of their system. This product also works well to deter flash rust when used in wet abrasive blasting and/or slurry blasting solutions.