



## **Fairlawn Tool Productivity Improvement PICOCLEAN X-RUST Success Story January 23, 2006**

*Fairlawn Tool & Die removes rust easily and safely and thus saves time and money. **PICOCLEAN X-RUST**, the new generation pH neutral liquid cleaner, provides a rust free surface that does not interfere with subsequent operations.*

### **COMPANY HISTORY AND CAPABILITIES**

Fairlawn Tool & Die Co., Inc. in Hampstead, Maryland is a production fabrication manufacturer that provides a variety of high quality formed, machined and welded metal parts for many industries. The company began in 1954 and has steadily grown into two facilities spanning over 100,000 square feet because of its sophisticated and modern metal fabrication and production techniques. Their processes start from raw metal to finished goods, including assembly and packaging, that is fully supported by a high quality tool and die facility.

Using the latest 3D modeling, CNC, robotic technologies and process controls, Fairlawn an ISO 9001:2000 certified manufacturer provides unmatched quality and efficiencies at competitive costs with trained and experienced support personnel. Fairlawn supplies food services, vending, transportation, retail, and container industries.

### **RUST PROBLEMS**

Rust and corrosion is always a potential problem when working with cold rolled steel (CRS). Despite the best preventive efforts manufacturers such as Fairlawn occasionally experience troublesome rusty parts caused by seasonal humidity, locations near bodies of salt water, long-term indoor storage, unprotected shipping methods, condensation, and coolant residues. When rust occurs, harsh chemical treatments such as acids or high pH caustic solutions are often recommended to remove the reddish brown unsightly coating. Fairlawn rejected these options because of safety and the high expense of waste treatment. Another common method has been mechanical such as: elbow grease.

For some time, Fairlawn had been using a hand scrubbing method with an abrasive and solvent-oil corrosion inhibitor. Although the rust was removed, the process was expensive because of high labor costs, lengthy time to clean small parts, incomplete removal in recessed shapes such as threads, and the latent film on the parts that would smoke during welding.

### **THE PICOCLEAN X-RUST SOLUTION**

PICO Chemical developed PICOCLEAN X-RUST in 2004 in response to customers' requests for a product that would remove rust quickly, easily and safely. PICO believed

that a water based pH neutral concentrate was the economical answer for the metalworking industry and their chemists went to work using innovative thinking and modern chemistry to develop an entirely different approach to rust removal. Instead of trying to chemically dissolve rust as older methods had done, PICO attacked the problem by looking at the bond that rust forms with the base metal. Another important formulation consideration was that the chemical be non-toxic and easy to disposal in normal waste treatment facilities.

The concentrated liquid is typically diluted with water at 15-25% and used at ambient temperatures in a soak application. The time it takes to remove rust will vary from 30 minutes to 2 hours depending on the rust's severity and the metal alloy. Higher alloys take longer, but some customers speed up the process by heating the solution or using hot water for make-up. According to PICO's chemists, the solution has a long useable life because the chemical action is only at the rust and base metal interface. Rust actually falls off the surface and collects in the bottom of the cleaning equipment's reservoir. Because the solution is clear and light colored, the derusting action is often evident under the right light in a clear or reflective container. For best results, the container should be stainless, plastic or porcelain coated.

PICOCLEAN X-RUST's bath life is determined by the amount of surface metal derusted and the severity of the rust. As the solution ages, the rust removal process slows and the solution will change color. Adding more PICOCLEAN X-RUST concentrate, which mixes very easily, can refresh the cleaning solution.

### **FAIRLAWN TOOL PRODUCTIVITY IMPROVEMENTS**

Fairlawn has been successfully derusting CRS 1018 grade with PICOCLEAN X-RUST for almost one year. (See examples of parts before and after). Rusted parts are immersed in 20% solution at temperatures from 140-160°F in a 30 gallon utility tank from ½ to 1 hour. Fairlawn's normal service water, which is fairly hard, is used to make up the solution. There is no agitation or special racking used. Parts are placed in the solution so that all surfaces are exposed to the derusting fluid. Afterwards parts are rinsed off in cold water and air blown dry.

PICOCLEAN X-RUST passivates surfaces so that no corrosion preventive is immediately needed. Some parts go directly to welding and the welding process is easily performed with excellent bonding (low porosity) but without any fumes given off. After welding or if parts need to be stored, a corrosion inhibitor is used.

Rick Dolan, Fairlawn's Quality Assurance Manager, states: "The parts look great and the quality of the overall process has improved." Marc Singer, Production Manager, is achieving reduced costs compared to the older method because of lower labor expenses and shorter turn around times. Marc has noticed that the solution slowly changes color from yellow to green to blue before it has to be rejuvenated or dumped. Marc says that "a gallon of concentrate goes a long way, at least a lot longer than we expected. We are not only pleased with the performance, but the chemical costs are very modest when we

consider the high labor costs and time involved. On some parts that have internal threads (see example photo) we had great difficulty getting the rust manually removed from the threads. But with PICOCLEAN X-RUST, they come completely clean.”

Although Fairlawn takes every precaution to prevent rust, some factors such as supplier errors, long part storage times, seasonally high humidity and salt laden air from Chesapeake Bay are out of their control. As Rick Dolan puts it: “We now have a relatively quick and low cost method for correcting a problem instead of potentially scraping parts or taking production people’s time from their main duties.”

## **CONCLUSION**

Despite preventive measures, all manufacturers that process steel or cast iron can have rust problems that are a drain on productivity and profits. PICOCLEAN X-RUST has proven to be a cost effective method of dealing with rust without using harsh dangerous chemicals or an expensive mechanical method especially for hard to reach places that can be soaked. PICOCLEAN X-RUST also maintains the integrity of steel or cast iron surfaces so that down stream operations are not interfered with.

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Electronic photographs taken at Fairlawn Tool and **PICO** Chemical Corporation are available for use in publications and sales or advertising demonstrations. This copy has been reviewed by Fairlawn Tool & Die Co., Inc. and has been certified to be essentially correct and accurate. Questions may be directed to Rick Dolan, Quality Assurance Manager Fairlawn Tool & Die Co., Inc. (410) 374-1100.

Electronic photographs of PICOCLEAN X-RUST solutions showing the color and clarity are also available.

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**PICO Chemical Corporation** has been in business since 1976 and is an ISO 9001:2000 certified manufacturer of value-enhanced specialty chemicals and lubricants to clean, condition, lubricate and protect metalworking, metal finishing operations and their related processes. 1/23/06