

# Tool-X<sup>®</sup>

Tech Data Sheet 118  
Acme Swiss Screw  
Oil-based MWF

**What is Tool-X?** A new line of metalworking fluids that contain a new additive - trillions of carbon-based nano-onions in solution. These nano-onions improve the lubrication along the cutting edge, preventing build-ups and improving heat transfer. The result is longer-lasting tools that cut truer, with more precision, with less force required, than with conventional metal working fluids.

**Customer:** A division of a leading fastener company specializing in cold forming and thread rolling steel fasteners.

**Application:** Cold forming a precision part in steel on an Acme Swiss Screw machine and rolling a shaft.

**Problem:** Insufficient tool life.

**Evaluation Process:** Die life on the Acme was known and standardized at 110,000 parts. After adding Tool-X to the NSF gear oil as an additive, die life increased to an average of 159,000 parts, evaluated over a three-week period.

Tool life for thread rolling increased from an average of 6,000 parts to 10,000 parts.

Speeds were subsequently increased.

**Results:** The Tool-X nanofluid additive enhanced tool life by 44% when cold forming, and by 45% for rolling at existing speeds and feeds.

**Outcome:** Customer changed to using Tool-X MWF for its cold forming operations.

**Tool-X improves machining processes.** The role of metalworking fluids is to permit tools to change the shape of materials as efficiently and effectively as possible. To achieve this objective, metalworking fluids must counteract common failure modes by reducing heat, adhesion, pressure and wear while providing lubricity under the extreme temperatures and pressures associated with metalworking. Tool-X nanofluid technology enables our metalworking fluids to attain new levels of performance.

**Tool-X Benefits:** With Tool-X, surface finish is improved (lower Ra, fewer and smaller distortions). Feeds and speeds can be increased, often by 25% or more. Tool life is extended. Problems caused by excess heat (white film layers, long chip sizes, metallurgical damage) can be avoided. Reworks, tool sharpenings, and deburring steps can be reduced or eliminated.

**With Tool-X, it's all about the numbers.** Tool-X metalworking fluids cost more than conventional fluids, roughly twice as much. But the savings that are possible, through extended tool life, increased productivity, and parts with better surface finish and better dimensional accuracy, can provide users with substantially greater returns on investment. Let us demonstrate how Tool-X can improve productivity and reduce expenses in your facility.

See [www.tool-x.net](http://www.tool-x.net) for more information.

Tool Life Data	
Cold Forming	Parts per Tool
Before Tool-X	110,000
After Tool-X	159,000
Change (%)	45%
Rolling	
Before Tool-X	6,000
After Tool-X	10,000
Change (%)	67%