

# Tool-X<sup>®</sup>

Tech Data Sheet 110  
Tapping  
Water-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 Tier One automotive parts manufacturer of steel tie rods.

**Application:** Tapping 1038 hardened steel with a 14mm x 1.5 mm tap using a water-based coolant to manufacture steel tie rods.

**Problem:** Insufficient tool life.

**Evaluation Process:** Tap life was set at 325 parts per tap prior to test. Machine was drained and flushed, and Tool-X SS-500 MWF was added at 12% concentration. Tap life was slowly increased from 325 parts to 400, then 475, and finally 585 parts, and taps and parts were inspected (primary criteria = proper thread engagement).

**Results:** The Tool-X MWF enhanced tool life by over 80%. Threads were reported sharper and shinier, with proper engagement.

**Outcome:** Customer changed to using the Tool-X SS-500 water-based MWF for various difficult 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, as much as 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 substantial 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.

Tapping Data		
	Parts per Tool	Tool Cost per Part
Before Tool-X	325	\$0.28
After Tool-X	585	\$0.16
Change (%)	80%	-44%

