

# ECOCOOL ULTRALIFE A+

## Case study



### Technology that pays back

ECOCOOL ULTRALIFE A+ is a high performance, semi-synthetic, water soluble cutting fluid series developed with your requirements in mind, created to meet the challenge of balancing lubricity, cooling and corrosion protection whilst under tough operating conditions. Helping you to achieve new heights in uptime, productivity and cost savings. The new ECOCOOL ULTRALIFE A+ has been designed to offer a longer service life, lower maintenance requirements and reduced disposal costs. TTT results show the new formulation can both extend tool life and improve surface finish in comparison to alternative products available on the market.

### Easy to use multi-metal formulation

ECOCOOL ULTRALIFE A+ is easy to both mix and monitor and is suitable for use with a wide array of materials including Cast Iron, Stainless Steel (Including Duplex and Super Duplex steels), Titanium and its alloys, yellow metals as well as common Aluminum alloys. Providing inventory optimization opportunities - from milling, turning and boring to drilling, tapping and grinding; ECOCOOL ULTRALIFE A+ can meet the cross functional demand of your industry processes.

### FAD Free Additive Technology


Health and environmental related concerns are at the forefront of everything we do here at FUCHS. Our research and development team work tirelessly to ensure our coolants meet the high industry standards as well as prioritizing personal and environmental safety; which is why our new ECOCOOL ULTRALIFE A+ is free from FAD biocides, boron, sodium nitrate, phenols, triazene, PTBBA and chlorinated additives.



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## Cutting fluid efficiency case study

### Advantages of good lubrication

Lubrication is the life blood of industrial machinery and is one of the key elements in keeping machinery operating at optimal performance. Good lubrication boasts numerous benefits including significantly reducing the amount of wear to machinery and tooling during operation, maintaining optimal operating temperatures, minimizing corrosion as well as assisting in keeping contaminants at bay - **all of which reduce machinery downtime.**

Our research and development team are continually working to enhance product performance and ensure lubrication technology that pays back. One of the many analysis tools they use is the Tapping-Torque-Test, see how we use it and what it shows us below.

#### Challenges

- Harsh operating conditions
- Machinery Downtime
- Component wear
- Machining Quality
- Efficiency

#### Solution

##### ECOCOOL ULTRALIFE A+

- Increased machinery uptime
- Improved efficiency
- Extended component service life
- Reduced maintenance costs
- Better product finish

#### Results

- Superior coolant performance
- 31% energy input reduction observed during tapping
- 76% energy input reduction observed during tap removal

### Measuring Efficiency - Tapping-Torque-Test (TTT)

#### What is TTT?

TTT is a sensitive instrument used to measure the torque required to tap a pre-drilled hole.

#### How does it work?

The test can be run using either a forming or cutting tap and the plate (which is pre-drilled) can be made from a variety of metals or alloys dependent on the desired variables used in the test. The coolant is placed on the tool and in the hole to be tapped.

The tap is lowered, and the machine forms the thread at a specified speed and depth. This generates a torque profile; the test is repeated several times and an average is produced from which a graph is generated plotting torque against the depth of the tap.



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### Why do we use it?

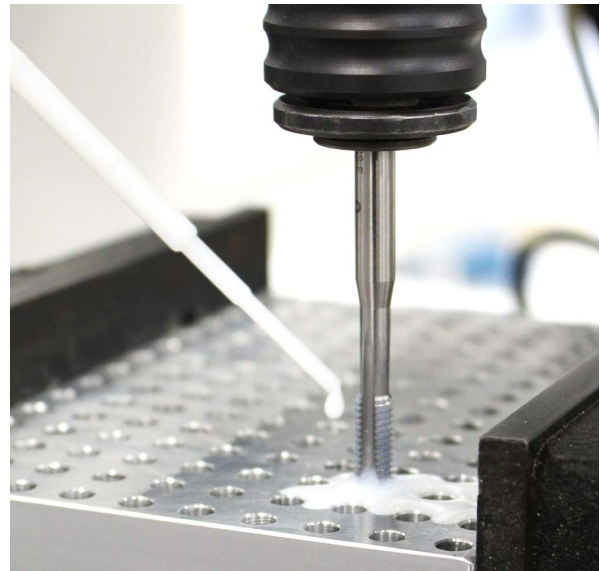
The TTT is an analysis tool we use to determine lubrication efficiency in terms of:

- Energy input when performing the tapping operation
- The lifetime of the tapping tool
- Quality of the internal tap

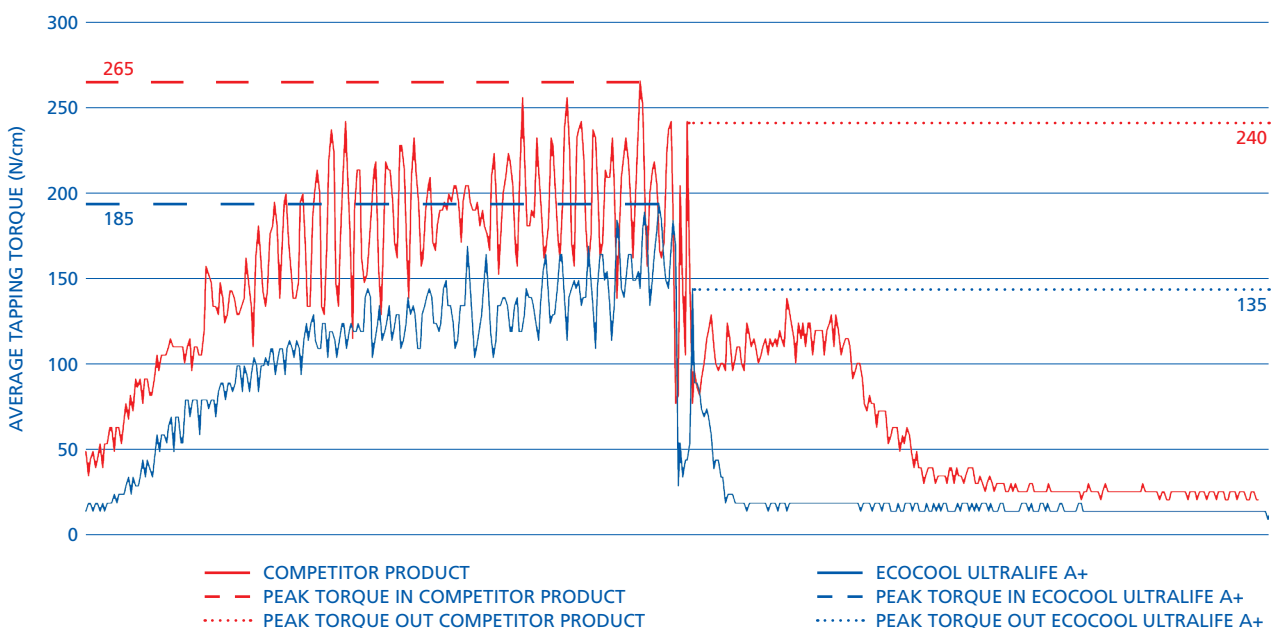
All these factors are measurable and replicable allowing us to visualise the impact a coolant has during forming and machining.

This test offers a reliable insight into the performance of a metal cutting fluid's media and allows us to draw important conclusions on how the fluid will perform in an industrial setting.

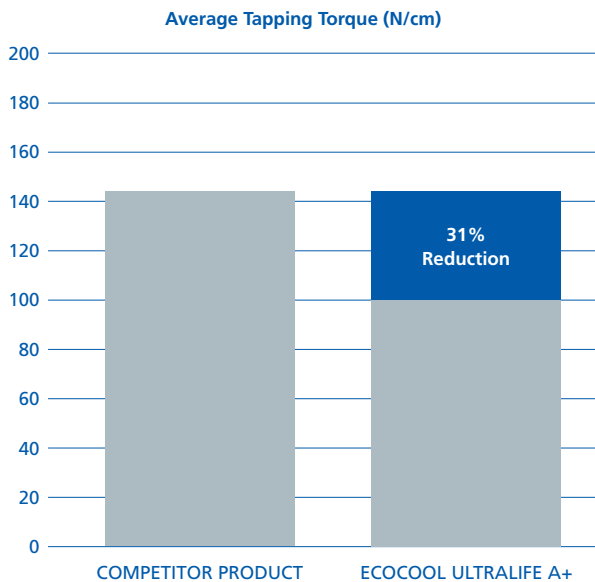
This enables us to both establish performance level during new product development and compare with market available fluids.



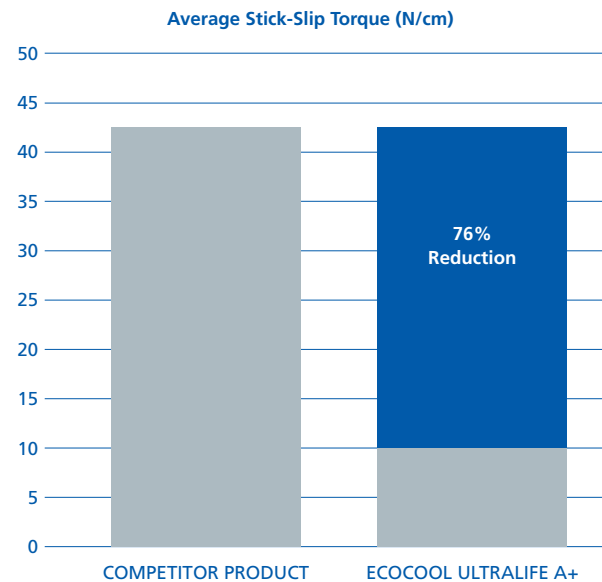
## TTT test using 5% emulsions of ECOCOOL ULTRALIFE A+ and the Competitor Product



The line graph above shows the torque observed as the taps were threaded using ECOCOOL ULTRALIFE A+ (in blue) and a Competitor Product equivalent (in red). The first half of the graph shows the torque required to thread the tapping plate, the second half shows the torque required to remove the tool from the tapping plate.



A significant torque reduction was observed using ECOCOOL ULTRALIFE A+ in comparison to the Competitor Product equivalent, an average 31% decrease in energy input was required in order to achieve the same tap with ECOCOOL ULTRALIFE A+. This may reduce tool wear and therefore extend the life of tooling.



The average amount of torque required to remove the High Speed Steel tap from the 6082 Aluminum tapping block was significantly lower when using ECOCOOL ULTRALIFE A+. A 76% reduction of energy input was observed in comparison to the Competitor Product. The increased torque required to remove the tool suggests several performance issues with the Competitor Product; the most obvious including swarf in the newly formed thread; indicating the coolants inability to clear away debris as well as stick-slip welding due to the coolants inability to dissipate heat.

### ***What our customers say***

*When using ECOCOOL ULTRALIFE A+ customers have reported improved tool life, improved cleanliness, and excellent equipment sump life. All of which contribute towards improved process efficiency and reduced overall operating costs.*