

Alusol AU 70 Success in Broaching Steel

MACHINERY MANUFACTURE (USA)

Hand Tool Manufacturing Castrol Alusol® AU 70



THE SITUATION

A hand tool manufacturer was using a chlorinated coolant to broach splines and grips into hand tools. This fluid gave very good broach bar life but had occasional corrosion issues.

The chlorinated coolant had a high usage rate, due to a large carry-off on the chips. There was also an issue with the tramp oil being emulsified and not able to be skimmed out of solution.

BEFORE

- Chlorinated coolant.
- High usage from carry-off on chips.
- Occasional corrosion issues.
- Tramp oils would emulsify into solution

AFTER

- Chlorine-free semi-synthetic coolant.
- Tool life equal to previous fluid.
- Lower fluid usage due to less carry-off with chips.
- Low potential for corrosion due to no chlorine content.
- Tramp oils easily skimmed off.

THE SOLUTION

- Alusol AU 70 broached the splines at 7 - 8% concentration.
- Low amount of carry-off with the chips.
- No corrosion issues since implementation of Alusol AU 70. The previous fluid had occasional rust, likely due to breakdown of the chlorinated paraffin.
- Broach bar life is equal to the previous chlorinated coolant. Both achieved 75,000 parts in tool life.
- Tramp oil could easily be skimmed off from the Alusol AU 70 because of its tight emulsion characteristics.
- Machine operators commented that the machine stayed cleaner than with the previous fluid.
- Biological stability was improved. No bacteria after 4 months of running compared to the previous fluid which showed bacteria as early as 2 months.

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RECOMMENDATIONS

Alusol AU 70 was used successfully to vertically broach splines and grips in hand tools. The metals included 1000, 4000 series, and A2 steels. The coolant pressure was 30 psi with a flow rate of 8 gallons per minute. Filtration was a simple chip drag and canister in front of the pump. The coolant tank had a disk type skimmer for removing tramp oil.

“The new coolant keeps my machine clean and makes working on it much easier.”
– Machine Operator

CONCLUSION

The Alusol AU 70 performed very well in a difficult broaching operation where other chlorine-free fluids have failed in the past. The cleanliness and high performance were a true advantage over other coolants used in the operation.

*Typical
vertical
broach used
to make
splines and
grips*



OTHER POTENTIAL APPLICATIONS

Alusol AU 70 is a high performance semi-synthetic coolant for ferrous and non-ferrous applications. It will perform multiple, difficult operations on many different metals making it a versatile, heavy-duty fluid.