

Outstanding Stainless Steel Gundrilling Performance

MACHINERY MANUFACTURE (USA)

FIREARMS MANUFACTURING

Castrol Variocut® D 249

PROJECTED ANNUAL SAVINGS: \$25,000



THE SITUATION

A large firearms manufacturer was using chlorinated fluids throughout the facility for various operations such as drilling, broaching and rifling. Castrol's CP initiative spurred a conversation with this customer to reduce liability and exposure to chlorinated paraffins in one of their most difficult applications, gundrilling of rifle barrels.

Many tests of chlorine-free fluids had been performed in the past without success. Castrol offered the latest technology fluid for testing which was formulated with new proprietary chlorine-free chemistries.

BEFORE

- Chlorinated oil in use for 20 years
- This oil performed extremely well and was recycled practically indefinitely
- Oil was washed from parts with solvent dip tanks, which are dumped as hazardous waste.

AFTER

- Castrol's newest technology chlorine-free fluid in use, Variocut D 249
- The tool life and parts finish was unchanged.
- Operators liked the low odor, while the EHS manager did not need to report any chlorine.

THE SOLUTION

- Castrol provided documentation to the customer explaining the liability and exposure that chlorinated paraffins present in today's manufacturing environment.
- Strong relationships and trust allowed for a good dialogue and great exchange of information and documentation.
- Variocut D 249 was dropped in and tested with the same conditions as the chlorinated fluid.
- Barrels were run for a full week and looked flawless, just like with the previous oil.
- The test was evaluated on .30 caliber / 28" long rifle barrels made from 410 Stainless.
- Cost savings are projected to be \$25,000 due to 50% less expenditure on disposal.

• Chlorinated Paraffins have been a staple in the manufacture of firearms for decades

• Eliminating them is challenging but possible with the right technology

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RECOMMENDATIONS

Materials being machined include 410 stainless steel as well as 4140 and 4150 steel. Machines are 1940's vintage Pratt and Whitney twin-spindle type "B" machines.

The performance from the beginning was great. No process changes were required to convert to the new fluid. In addition, the new technology has a lighter color and lower odor, providing better operator acceptance.

"My operators really like the light color and low odor. And eliminating any environmental hazard is the right thing to do."
- Chemical Manager

CONCLUSION

Past history showed that chlorine played an integral role in maintaining tool life and part finishes in the most severe operations, especially stainless steels.

Variocut D 249 matched its performance in this operation, while showing additional environmental and aesthetic benefits.

Once the oil is run for a full year, the plant is expected to generate \$25,000 in annual savings from lower waste disposal costs.



OTHER POTENTIAL APPLICATIONS

Variocut D 249 chlorine-free cutting oil provides the highest machining performance in the most difficult operations and materials.



Chlorinated Oil Variocut D 249

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