Bakelite's Resistance to Oil*

Why this experiment was conducted: I like to keep my collector pieces well-oiled, as I may not handle them for an extended period of time. However, I became concerned that contact with the lubricant used on the pistol might have a detrimental effect on the Bakelite grips. While I exercise great care in not getting excessive oil on the grips, contact with oil is inevitable on the inside of the grips where they touch the frame.

Purpose: The purpose of this experiment is to see how resistant the Bakelite grips of the p.38 pistol are to various common lubricants.

The test subject: For this experiment I used a cracked Spreewerke grip, marked 1W/MD/41. As seen in the photograph below, the crack runs almost the entire length of the grip (most likely due to someone applying excessive torque to the grip screw) and makes it essentially worthless. I cut the grip into five pieces. The small piece (the top of the grip) serves as the control piece – to be compared with the others at the end of the experiment. The other four pieces will be subjected to various lubricants.

Figure 1 - Spreewerke right grip

Figure 2 - Separated in to five sections for testing

Lubricants: The lubricants used in the experiment are:

- Armor Holdings, Inc. - Break Free CLP (Cleaner, Lubricant, Protectant) bulk liquid
  (Product number CLP-5, one pint with sprayer tested)
- Armor Holdings, Inc. - Break Free CLP (Cleaner, Lubricant, Protectant) aerosol
  (Product number CLP-2, four ounce aerosol tested)
- WD-40 Company - WD-40 (aerosol)
  (Product number 10008, eight ounce aerosol tested)
- Remington Arms Company, Inc. – Remington Rem-Oil (aerosol)
  (Product number 26610 – four ounce aerosol tested)

Why only these lubricants? I heard/believe that xxx is better! There are many quality firearms lubricants on the market; I chose these because they are the ones that I prefer to use. In the future I may test others.

How the experiment was conducted: Each section of the grip, less the control piece, was subjected to a lubricant and then placed in a new, chemical-resistant plastic container and sealed. The containers (and control piece) are being stored undisturbed in an area where the ambient temperature is approximately 65 degrees Fahrenheit.

Section zero, the small top piece, was set aside as a reference piece.

Section one was immersed in lubricant one – bulk CLP. This should be the ultimate test of Bakelite's resistance to oil.

Figure 3 - Section two undergoing testing

Sections two through four were sprayed liberally with oil, and placed exterior (ribbed) side up in the appropriate plastic container on three cotton pads. Section two was sprayed with CLP, section three with WD-40, and section four with Rem-Oil.

The pieces were treated with oil and placed in storage on January 5, 2006. The intent is to examine the pieces in one year, on or about January 5, 2007. At this point they will be removed from storage, cleaned, and compared to the control piece for signs of deterioration, and a determination will be made as to whether or not to continue the experiment.

Figure 4 - Test pieces ready for storage

Background/technical: Bakelite, or phenol formaldehyde, is a thermo-setting polymer usually mixed with 50% to 70% filler. Fillers vary depending upon the application - wood or wood flour for non to lightly stressed parts, mica for electrical resistance, asbestos for heat resistance, etc. Wood filled Bakelite is resistant to heat up to 300 degrees Fahrenheit (430 degrees intermittent), has good gloss and strength, but is rather brittle. Overall chemical resistance is fair, however resistance to vegetable, animal, and mineral oils is excellent, resistance to alcohols is good to excellent, and resistance to hydrocarbons is good to excellent (source: The CRC Handbook of Mechanical Engineering, August 2004).

Conclusion: The real conclusion will be reached at the end of the experiment in early 2007. Another report will be prepared with the results.

As a long-time user of CLP, WD-40, and Rem-Oil, I am conducting this experiment primarily for my own purposes. It may have been conducted before, or someone may decide to undertake a more comprehensive form of it. However, I am sharing this information in the hopes it will be of some use to other P.38 collectors, and as a contribution to the P.38 Forum (http://www.p38forum.com).

Any questions or comments are invited; please post them to the P.38 forum.

* There are many formulations and uses for Bakelite – this test concerns Bakelite manufactured by the Julius Posselt Company and used for the grips of the World War II German P.38 pistol designed by Carl Walther Waffenfabrik and manufactured by Spreewerke from 1941 to 1945. Leo Hendrick Baekeland patented Bakelite, the first synthetic plastic, on December 7, 1909 (United States patent number 942699). The current registrant for Bakelite is Union Carbide Company, New York, New York. The current owner and applicant is Borden Chemical Investments, Inc., Newark Delaware (source: United States Patent & Trademark Office, January 2006).