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## **OPERATING INSTRUCTIONS FOR DU-LITE ALKALINE CLEANERS #29SW , #31 , #37 , #45 , E-Z Wash and SP-725.**

Removal of oil, grease, buffing compounds, rust, scale and heat discoloration from welding processes is essential for high quality finishing. To clean your parts properly before black oxide finishing, Du-Lite recommends one of our alkaline soak cleaners described below:

**#29SW CLEANER** - Good alkaline soak cleaner. Removes oils, greases, etc. on steel and ferrous alloys. This cleaner contains sodium gluconates which will remove very light scale and rust from your parts. (Gluconates can cause problems in waste water treatment systems by not allowing all metal hydroxides to settle out to their lowest numbers.) Mix the cleaner 12 oz. per gallon and operate at a temperature of 150°-160°F - cleaning time 2-15 minutes.

**#31 CLEANER** - Good heavy duty alkaline soak cleaner for steel and ferrous alloys. Can also be used as an electro cleaner. Mix the cleaner 12 oz. per gallon and operate at a temperature of 150°-160°F - cleaning time 2-15 mins.

**#37 CLEANER** - Low caustic, highly silicated soak cleaner for use on all metals except aluminum. Can also be used as an electro cleaner. Mix the cleaner 12 oz. per gallon and operate at a temperature of 150°-160°F - cleaning time 2-15 minutes.

**#45 CLEANER** - Du-Lite's best heavy duty hot alkaline soak cleaner. Removes oils, greases and contaminants from steel and ferrous alloys. Mix the cleaner 12 oz. per gallon and operate at a temperature of 150°-160°F - cleaning time 2-15 minutes.

**E-Z WASH** – Heavy duty solvent cleaner which removes grease and oil from steel parts prior to black oxide, phosphating or painting. Use at room temperature as is, cleaning time 2-5 minutes.

**SP-725 LIQUID CLEANER CONCENTRATE** - SP-725 is biodegradable and USDA / FSIS approved. For use in cleaning around food processing equipment, delivery vehicles, siding on houses, lawn furniture, decks, machinery, aircraft and heavy equipment. SP-725 is designed to be diluted and used in steam cleaning or pressure washer equipment. If your machine is equipped with automatic metering, you simply put the concentrate in the machine's cleaner reservoir and set the controls for your desired cleaning level. In non-metering equipment, SP-725 can be diluted 1:10 (1 part SP-725, 10 parts water) for optimum cleaning in most applications. This means that one 55 gallon drum of concentrate can supply up to 605 gallons of actual cleaning solution. SP-725 can also be used in the same concentrate (1:10) in a bucket or similar container and applied with a mop, rag or sponge. SP-725 has been used in industry for over 40 years. Compatible with all types of machinery, the water softeners in SP-725 can actually reduce coil scaling and clogging in your machinery thereby preventing costly repairs.

After using Du-Lite's cleaners, rinse parts in a warm water rinse heated to 150°F. Warm water does an excellent job of removing all cleaner residue and preheats parts before the black oxide tank. If this rinse is too hot, parts will dry and cleaner residue in the rinse water will cause a cloudy stain to appear on finished parts. **Cold water rinse is not recommended because it can leave white specks which will appear on your finished black oxide parts.**

**WARNING** - Some firearm frames are made of aluminum and are black anodized. All of the above cleaners contain sodium hydroxide (caustic soda) and will eat up and destroy aluminum parts and pollute the cleaning solution itself.

**ALTERNATIVE CLEANING METHODS** - Vapor degreasers and cleaning solvents are sometimes used to remove grease and oil, but these methods leave behind small traces of oil which can cause an unacceptable black oxide finish.

Glass bead blasting is an excellent method of removing rust, scale, welding discoloration and old black oxide finishes from your parts, but this process leaves the surface rough; after black oxidizing the finish will be dull. If you desire a shiny finish, polish and buff before black oxidizing. Hydrochloric acid can also be used to clean rust, scale and heat discoloration. Mix 50% room temperature water with 50% hydrochloric acid 20°Be - cleaning time 1-2½ minutes - NO LONGER - because hardened steel gun parts cleaned with an acid are susceptible to hydrogen embrittlement which weakens the steel causing loss of temper or breakage. If any of the above methods are used for cleaning, we recommend the use of one of our soak cleaners before black oxidizing to insure that all traces of oils and contaminants are removed.

**IMPORTANT! - When mixing a new solution, never start with HOT WATER (use cold or room temperature water only). When adding cleaner or any other chemical to water, add small amounts and stir constantly. Cleaner can generate heat as it is being mixed with water. If this solution becomes too hot, it can erupt violently or cause a tank boil over! Cleaner must be added slowly and mixed well to insure that it is completely dissolved into the solution.**

### **MIXING INSTRUCTIONS:**

If a new **PLAIN STEEL** tank is being used, no special preparation is required. If an old tank is being used, it must be cleaned and rinsed well to remove any possible contaminants. When mixing a new solution, first determine the number of gallons your tank holds; then you can determine the amount of cleaner required. When measuring the processing tank, use the inside dimensions. The solution should be three to six inches below the top of the tank to allow for expansion and boiling action. For square or rectangular tanks use the following formula:

**Figure in Inches:** Width x (Solution) Depth x Length ÷ 231 = Gallons

Example: For a tank measuring 6" x 9" x 40" with the solution down 3", calculate as follows: 6" x 6" x 40" = 1,440" ÷ 231 = 6.23 gallons

The cleaners are mixed at a concentration of 12 oz/gallon. Multiply the number of gallons your tank holds by 12 oz then divide your answer by 16. This will equal the cleaner in pounds required to mix the new solution. For Example: 6.23 gallons x 12 oz = 74.76 ÷ 16 oz = 4.67 or 4½ lbs.

**MIXING SOLUTIONS:** To mix the new solution, fill the cleaner tank half full with room temperature or cold water. Slowly add a small amount of cleaner to the tank while stirring constantly. The size of your tank will determine the increments of chemicals to be added at one time. Add cleaner in 1 lb increments for a small gunsmith tank requiring 4½ lbs. For large industrial tanks, requiring 75 lbs or more, cleaner should be added in 5 to 10 lb increments while mixing constantly.

After adding half of the cleaner required, turn on tank heat source. Now you can alternately add water and cleaner slowly and carefully; mixing constantly until you reach the desired operating level and cleaner concentration.

**BATH MAINTENANCE:** As the bath loses its cleaning effectiveness, periodic additions of fresh cleaner can be added to extend its useful life. When rinse water "beads up" on work after cleaning, it is an indication that the cleaner is no longer working properly. Rinse water will run off in "sheets" on parts that have been cleaned properly. As with any chemical solution, it has a limited life span and must be discarded and replaced periodically.

Solution concentration in large tanks can be maintained by using a testing hydrometer. The hydrometer must be a Baume (°Be) type for heavy liquid with a scale of 0-70°Be, calibrated at 60°F. The hydrometer is placed in the solution and allowed to float freely - note the reading on the hydrometer's scale at the surface level. This reading can be converted to oz./gal. of cleaner by referring to Du-Lite's Operating Instructions for hydrometer use.

**Testing hydrometers are available from Du-Lite.**

**IMPORTANT!** Material Safety Data Sheets for cleaners are available from Du-Lite Corporation. All personnel who may come into contact with this product should read and familiarize themselves with these sheets.

**THE PRODUCTS MENTIONED IN THESE INSTRUCTIONS ARE FOR INDUSTRIAL USE ONLY**