Instructions for applying Zirconium Phosphate:

In pretreatment, there are four factors that need to be considered: Time, Temperature, Concentration, and Impingement (Spraying pressure). As any one of these four changes, it will impact the other factors.

As you change the material or configuration of the parts you want to pretreat you may find that you need to change one of the factors listed above to get the results you want.

Types of pretreatment processes for the small shop:

1. Spray Bottle or Pump Up Sprayer:
   Mix the chemical with water at a 3-5% ratio. Use warm water during cold weather. Be sure and liberally apply the solution. This product works best when allowed to continuously flush the parts. You may need to use a brush or rag to agitate the surface of the part to loosen smut or oil (Remember, you have no real impingement force from the sprays to loosen the soils on the part).

   You should end up with a "Water Break Free" surface which will look smooth and wet. If you don't see this, re-treat the part as above.

   You may need to clean the part first with a mild alkaline cleaner to help clean off stubborn soils. Be sure and rinse off the alkaline cleaner before trying to apply the phosphate conversion coating.

   During cold weather these chemicals do not work as fast or as well as in warm weather. Place the parts to be pretreated inside in a warmer environment and give them time to warm up prior to pretreatment. Use warm water in your sprayer to help the cleaning and coating.

2. Dip (Immersion):
   Mix the chemical with water in the tank at 3-5%. Let the parts soak for approximately 5 minutes. Remove the parts from the tank, and be sure you see a water break free surface. If not, put the parts back in the tank and run them for another 3-5 minutes. Remove and check for a water break free

surface, then rinse off with a water hose or transfer to a rinse tank for 1 -5 minutes. This process will be much slower in cold weather.

An immersion heater can be used to heat the water prior to the start of cleaning. The water in the tank should be agitated with compressed air or with an electric driven stirrer large enough to keep the water moving at a fast pace.

3. Steam Cleaner or Hot water washer:
   The chemical should be run at a concentration of 1-2% at a temperature of 85 to 140 degF. Wash the parts off starting from the top down and wash the parts long enough to get a water break free surface. These products are designed to be a “dry-in-place” product and it is not always necessary to rinse the parts with water after the wash cycle. Animal fats (Stearates) as found on wire goods and some stamped parts may require temperatures above 120 degF.

   On really dirty parts, a mild alkaline cleaner may need to be used prior to phosphating.

The pretreated steel parts should have a blue/gold/gray/purple color to them when compared to the untreated parts.

PRODUCT DATA

HOUGHTO-PREP ZP4

CLEANER COATER FOR WAND APPLICATIONS

HOUGHTO-PREP ZP4 is a completely biodegradable cleaner and self-limiting coater using spray to waste wand applications for ferrous, aluminum, and other non-ferrous components in preparation for paint and other organic coatings. **HOUGHTO-PREP ZP4** cleans and coats faster for short dwell times. The **HOUGHTO-PREP ZP4** displaces surface soils/oils and using an efficient proprietary zirconium phosphate chemistry, producing an amorphous coating that promotes paint adhesion and salt spray resistance.

HOUGHTO-PREP ZP4 is used at 2 to 5% by volume at the nozzle at 85 to 110º F. The high cleaning efficiency of the product ensures effective cleaning of even heavily soiled components. The coating is formed during cleaning giving a single step process. The coating gives equivalent to superior salt spray corrosion protection and excellent adhesion to subsequently applied topcoats as compared to iron phosphates.

TYPICAL PHYSICAL PROPERTIES

Color	Clear yellowish liquid
pH (2%)	4.0
Temperature	85 to 100°F
Freeze/Thaw Stability	OK

WATER QUALITY

Cleaner performance can be affected by extremes of water quality. Hard water (in excess of 300 ppm $CaCO^3$) and high levels of sulphates and chlorides can reduce the stability of emulsions and reduce corrosion protection. Your Houghton Representative can advise on local water quality.

RECOMMENDATIONS FOR USE

Concentration	2.0 to 4.0%
Temperature Range	85 to 100°F
Concentration Control	Titration drop test kit

Light to Medium soils

1. Houghto-Prep ZP4.
2. Rinse.

Medium to Heavy Soils

1. Houghto-Clean 8140 at 2.0%.
2. Rinse.
3. Houghto-Prep ZP4.
4. Rinse.

Your Houghton representative can advise as many operations are different.

SOLUTION CONTROL

Houghto-Prep ZP4 can be controlled by using a simple acid-base titration as follows:

1. Place a 25 ml sample into a clean beaker.
2. Add 3 to 5 drops phenolphthalein indicator.
3. Titrate with 0.1N NaOH from clear to pink.
4. mls required X 1.0 = % by volume.

STORAGE/HANDLING/DISPOSABILITY

No health or safety hazards exist when **HOUGHTO-PREP ZP4** is stored, used and disposed of in accordance with instructions given on the Material Safety Data Sheet for this product.

WARRANTY

The information given here is considered to be correct and is offered for your consideration, investigation and verification. No warranties are expressed or implied since the use of our products is beyond our control. Statements concerning the use of Houghton products are not to be construed as recommending the infringement of any patent.

EXPORT STATEMENT

This commodity and its technology are subject to the export control laws and regulations of the United States Government. Buyer agrees that it shall not make any disposition, by way of export, diversion, transshipment, re-export or otherwise, except as expressly permitted under United States law.

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