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T.C. 655
Heavy Zinc Phosphate

DESCRIPTION
T.C. 655 is a somewhat syrupy, light green liquid with a slight acrid odor. It is a clear material and miscible with water in all proportions. The specific gravity is 1.58 to 1.61 at 68°F which is about 13.3 lbs. per gallon. There are no foaming tendencies and no fire hazards. The pH of working solutions is 2.0 to 2.5 at 68°F.

PROPERTIES
T.C. 655 is designed to produce heavy, dense crystalline zinc phosphate coatings on iron and steel parts. In general, it is applicable by tank immersion operations to generate coatings in excess of 1000 mg. per square foot. The heavily coated surfaces are useful for rust prevention, as an absorbing base for corrosion-preventive oils, stains and waxes, and other supplementary finishes, including painting. The coating possesses many fine pores which can soak up lubricants that act as heavy drawing aids. This type of coating has also shown great value in creating a base for protective oils with parts, that in the past, may have been zinc or tin plated; such parts include bolts and nuts in the automotive industry, and specification fittings, nipples, tube-turns, couplings, elbows, and other threaded pipe sections that may be used in petroleum refineries and chemical plants.

CONDITIONS OF USE
Recommendations for metal treatment with T.C. 655 include a suitable precleaning stage with a compatible non-film-forming, free-rinsing material such as T.C. 247, an efficient water rinse, and then treatment with a solution of T.C. 655 zinc phosphate coating compound. The zinc phosphate is followed by a hot or cold rinse, and whatever final supplementary treatment that is required for the job.
T.C. 655 should be employed at a concentration of 3% to 5% by volume with water, in the temperature range of 150°F to 190°F, and for a soak time of 10 to 15 minutes. More time may be used as needed to acquire the desired coating weights. After an intervening rinse, the coated parts may be dipped in a chromic acid-type rinse or in the oil or wax coater. T.C. 1179 is most frequently applicable for a non-tacky surface, protective yet suitable for adhesion by decals or identifying paints and particularly water-based paints. All tanks except that for the phosphate coating solution may be of carbon steel; this is true also for the heating elements. For the T.C. 655 solution, scaling and depletion factors will be eliminated by the use of stainless steel, or stainless steel linings.

HANDLING
Handle T.C. 655 in the manner required for strong acids. Wear protective garments, including rubber gloves and approved chemical goggles.