BID LIST NO. 0300

SPECIFICATION FOR DETERGENT, GENERAL PURPOSE, LIQUID, HEAVY-DUTY

PROPERTY NO. 219738

General Requirements

This product is intended to be diluted for cleaning heavily soiled large areas such as walls and floors. The manufacturer's recommended dilution shall be no more than 2 ounces per gallon water for such applications. The product shall remain a homogenous liquid for up to one year without agitation.

Specific Requirements

Total solids @ 105^{o}C..... 20% minimum

Surfactants ..... 5.0% minimum

Total phosphate builders (as P_2O_5) ..... 5.0% minimum

pH (1% solution in distilled water) ..... 9.5 - 10.5

Solubility ..... 1 gram of product to completely soluble in distilled water

Packaging Requirement

It shall be packaged in a 210-liter (55-gallon) drum.

Sample Requirement

A 0.473-liter (one-pint) sample and Material Safety Data Sheet are required.

Qualified Products

The following products have been tested and are satisfactory.

East Chem Corp. Clean 'N' Fresh
Proctor and Gamble Clean Quick
National Chemical Laboratories General Purpose #462
Alfa-Kleen Heavy Duty Industrial Cleaner

Test Methods

Total solids determination. Accurately weigh a 3-± 0.2 gram sample into a tared weighing dish. The sample is placed in an oven at 105° to 110°C and evaporated to constant weight.

$$\text{Total solids, percent} = \frac{\text{residue weight X 100}}{\text{sample weight}}$$

Surfactants. Take 10-gram sample (accurately weighed) and dry overnight at 50°C and extract with at least three 50-mL portions of acetone. Evaporate the extract to constant weight at 50°C. Calculate the percent activity of synthetic detergent as follows:

$$\text{Activity, percent} = \frac{\text{residue weight X 100}}{\text{sample weight}}$$

Total phosphate builders. Weigh out a 10-g sample to the nearest milligram and place it in a porcelain or silica-evaporating dish. Ignite gently over a low gas burner until most of the combustible matter is burned off; then transfer to a muffle furnace operated at not over 550°C for 10 to 15 minutes. It is not necessary for the ignited residue to be free from carbon. Cool and add cautiously 10 mL concentrated HCl. Evaporate to dryness, take up with 50 to 60 mL distilled water, 10 mL concentrated HCl, and transfer to a 400 mL beaker. The solution in the 400 mL beaker should have a volume of approximately 100 mL and contain an excess of at least 10 mL concentrated HCl; cover with a watch glass and boil for a minimum of 30 minutes, and up to 60 minutes in the presence of phosphates of the glassy type. Cool to room temperature, dilute to 200 mL, and using a standard pH meter, adjust the pH to 4.3, using 50 percent NaOH solution at first, and then 0.5 or 0.1 N NaOH. Cool again, if necessary to maintain temperature below 30°C. Now titrate carefully to the 8.8 pH upper end point, recording the titration between end points as T.

$$\text{Percent total } P_2O_5 = \frac{\text{T X N X 7.098}}{\text{Sample Weight}}$$

Where:

N = the normality of the standard NaOH
T = the titration (mL) between pH 4.3 and 8.8

Date of Last Revision: February 22, 1995.