DESCRIPTION

POLYPRO 4931 polymer is a cationic emulsion polyacrylamide that is used as a flocculant or coagulant aid in a wide variety of industrial, pulp and paper and municipal wastewater treatment applications. This product has been successfully applied in liquid/solids separation systems such as clarification, flotation, thickening and dewatering. In gravity clarifiers and thickeners, POLYPRO 4931 polymer quickly forms large flocs that exhibit rapid settling and dense sludge blankets with clear supernatant and low suspended solids in the effluent water. In flotation systems, POLYPRO 4931 polymer yields strong flocs that can withstand intense hydraulic shear in order to produce compact sludge skimmings and effluent water low in suspended solids. In thickening and dewatering applications, POLYPRO 4931 polymer yields large and strong flocs that exhibit rapid separation of free water and produces sludge cakes with high solids content. POLYPRO 4931 polymer is approved by the National Sanitation Foundation (NSF) for use in potable water clarification at dosages up to 1.0 mg/L.

STORAGE & HANDLING

Suggested in-plant storage is 6 months in unopened containers and rotation of stock is highly recommended. Emulsion polymers should be treated like oil-based paint and must be mixed before use. Bulk tanks should be mixed by recirculating the contents bottom to top. The guidelines are to turn the bulk tank over once per day, but the recirculation pump should not be on more than 1/3 of the time (one hour on, two hours off to cool). Bulk tanks can also be fitted with an agitator type mixer that reaches within 18” of the bottom of the tank. Drums and tote bins should be mixed for several hours before first use. Optimum storage temperature is between 50-86˚F (10-30˚C). The viscosity of the neat emulsion as shipped will normally be 1000-1500 cps, but it will get much thicker (up to 5000 cps) in cold weather. Do not allow this product to freeze since there may be some loss of performance. Should freezing occur, allow the product to thaw thoroughly in a heated area and mix very well before attempting to use it. The viscosity of the diluted polymer will normally be between 800 and 1200 cps at the recommended concentration of 0.5% product.

PREPARATION AND FEEDING

POLYPRO 4931 polymer is a single component emulsion that must be pre-diluted in water before use. In most cases, this product cannot be fed into the application neat. The manual method for dilution is to slowly pour the neat polymer into the vortex of a stirred tank at ratios of 0.25-1.0% (0.5% is optimum). Make sure the mixer is large enough and has enough torque to stir the entire tank at speeds between 250-400 rpm. If the dilute polymer solution does not appear to be stirring due to high viscosity, try a lower concentration of polymer, but in no case should the concentration be reduced to below 0.25% or poor dissolution may result. If mixing is still inadequate, add larger impellers (or more impellers) to the mixing shaft and increase the horsepower of the mixer, if necessary. Do not increase the mixing speed beyond 400 rpm or shearing of the polymer could occur. Best practice is to mix the polymer solution at 400 rpm for 10-20 minutes, shut the mixer off and allow the polymer to age for an additional 10-20 minutes. If the solution has too much undissolved emulsion, try adding the material to the vortex more slowly.

There are also a number of commercially available automatic feed systems that provide in-line mechanical mixing. The best units of this type feature initial high energy mixing (>1000 rpm) for a short time (<15 sec) to achieve good dispersion of the product into water. This is then followed by lower energy mixing (<400 rpm) for a longer time (10-20 min) and aging for an additional 10-20 minutes to achieve complete polymer dissolution. Best practice is to use these in-line dilution systems followed by a mixing/aging tank fitted with high/low level probes to refill the tank. The optimum concentration in the mixing/aging tank is 0.5% and in no case should be initial concentration of the polymer be less than 0.25% for best results.

In both the manual and automatic systems, the size of the mixing/aging tank should be such that the dilute POLYPRO 4931 polymer is consumed within 12 hours. Many applications require a concentration much lower than 0.5% polymer. In that case, it is best to add secondary dilution water through a tee and a static mixer on the way to the application.
FEEDPOINTS
The selection of feed points is a critical element in maximizing the performance of flocculants in liquid/solids separation systems. Flocculants like POLYPRO 4931 polymer work by creating molecular bridges between microscopic particles thereby bringing them together into larger floes. These polymer bridges are formed by relatively slow mixing and can be broken apart by excessive mixing. In general, flocculants should be added at a point in the system closer to where the actual separation is taking place to avoid shearing effects. Your Carus Corporation representative will survey the system to determine proper feed points for all chemicals being used.

MATERIALS OF CONSTRUCTION
Cross-linked polyethylene, fiberglass, stainless steel or epoxy lined steel are the preferred materials of construction for bulk tanks. Avoid natural rubber and Buna-N gaskets as these may swell when placed into contact with neat polymer. Unlined mild steel, black iron, galvanized steel, copper or brass is not recommended in any part of the feed system. Stainless steel, Viton® or Teflon® are the best choices for pump heads. For feed lines, use PVC, stainless steel or reinforced Tygon® tubing.

PACKAGING
This product is available in a variety of packaging sizes. Your Carus Corporation representative will recommend the appropriate packaging for the application.

IMPORTANT INFORMATION
Typical Properties: Refer to the Safety Data Sheet (SDS).

Regulatory Information: Refer to the SDS or contact your sales representative for any additional regulatory and environmental information.

Safety: An SDS is maintained for all Polymer products. Use the health and safety information contained in the SDS to develop appropriate product handling procedures to protect your employees and customers.