

## **TRAMFLOC, INC.**

*Water & Wastewater Treatment Equipment & Chemicals for Industry, Municipality & Mines*

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### **POLYMER APPLICATION SUGGESTIONS and TESTING PROCEDURES**

Tramfloc® Polymers offer many benefits for the plant and process manager and owner. We can achieve lower dosage levels which will produce lower flocculation costs. A faster settling rate can be developed which will increase system throughput. We can help produce a denser underflow which will capture more TSS and thereby yield higher sludge cakes solids content and lower turbidity supernatant. This will allow for a higher product quality where the clarification process is critical to manufacturing a low or no solids' product.

The performance and efficiency of Tramfloc Flocculants are strongly influenced by the selection and application techniques of the chosen product. We recommend specific procedures to evaluate and select Tramfloc polymers tested in your laboratory. This section explains how to prepare and apply solutions of Tramfloc polymers to help ensure accuracy of results and conclusions, ease of testing and cost effectiveness of the Tramfloc Flocculant applied in your liquid/solids separation process. The solubility rate varies with each type and grade of Tramfloc polymer based on its individual ionic charge, characteristic and molecular weight. In general, the higher the weight, the longer it will take to make a reliable testing solution.

Emulsion and granular grades of polymer require adequate and effective wetting in order to be of maximum value in the process application. The initial wetting of the polymer with water should be done in a high-shear condition environment of ephemeral duration. In-line static mixers, elaborate make down units and adding polymers to the vortex created by an agitator in a mixing tank are suitable methods.

If testing solution grade polymers such as the Tramfloc 550, 700 and 800 series products described elsewhere on the Tramfloc, Inc. web site, dilution serves only to reduce viscosity so that the solution will mix completely with the process stream to be treated. Merely good agitation will make a workable solution due to the high miscibility of Tramfloc solution polymers.

When producing stock solutions of polymers, they should be prepared at the maximum practical solution strength as dictated by their final solution viscosity which will be about 0.25%. Care should be taken to determine the minimum and maximum solution strength. In general, better performance is obtained from lower strength stock solutions of polymer. In dewatering applications, however, dilute solutions may be undesirable.

Stock solution tanks are normally fitted with a low speed impeller on the agitator shaft. The impeller should be large enough to turn over the viscous polymer solution. For very large stock solution tanks, an agitator with dual impellers should be used. The polymer concentration in the stock tank should always be known. It is a general rule of thumb that the more dilute a stock solution is, the shorter it's shelf life. Stock solutions should not be stored more than one day. Laboratory testing should be conducted if the dilution water supply is extremely hard or contains metal cations.

Once the stock solution has been prepared, it can be damaged by high shear conditions. Therefore, superfluous points of high shear should be eliminated and low shear gear or

progressive cavity pumps are helpful. The optimum addition point or points for a stock solution should be determined during in-plant trials. The solution addition point is frequently the position at which the process or waste stream is fed into a clarifier or thickener feedwell. The addition of polymer solution in this point of high turbulence usually produces optimum results. Laboratory testing may help indicate whether or not multiple stock solution feed points should be considered. Efficient mixing should follow each separate addition point. When treating concentrated process or waste streams, as typical of filters or centrifuges, a mild mixing stage is usually required. This means that specially designed low speed mixing chambers should be used when conditioning the stream with polymer solution. Polymer solutions fed to centrifuges are normally injected inside the machine or into the feed line.