



Instrumental Polymer Technologies, LLC

## Technical Data Sheet

### QUICKSTAR™ 94X-AC

APPEARANCE..... CLEAR LIQUID  
MOLECULAR WEIGHT RANGE..... 600 TO 1,200g/mole  
EQUIVALENT WEIGHT.....132g/equivalent  
HYDROXYL FUNCTIONALITY .....12-22  
VISCOSITY (100% SOLIDS AMBIENT). ....5-15 POISE  
DENSITY ..... 1.13 g/ml (9.40 lb/gal)  
SOLUBILITY IN WATER..... COMPLETE

#### Description

QUICKSTAR™ 94X-AC is an aliphatic polycarbonate polyol synthesized into the shape of a spherical dendrimer. Its surface is high functionality hydroxyls which make the dendrimer completely soluble in water. Because the surface hydroxyls of QUICKSTAR™ 94X-AC are anionically charged they will crosslink with the carboxylates of synthetic emulsions. The dendrimer also contains oxitane rings (4 membered cyclic ether rings). These oxitane rings are unlike oxirane rings (epoxy rings) in that they are stable in water in alkaline conditions, but react with carboxylic acids in neutral or acidic conditions. When a film is formed with the emulsion, and the volatile amines evaporate, the dendrimer first coordinates with the carboxylic acids of the emulsion via an acid base reaction. However, more slowly, within a few days, the oxetane rings also bind covalently to the emulsion to form ester linkages. Because of this it is best to test the film performance after 7 days cure.

#### Applications

QUICKSTAR™ 94X-AC is particularly useful as a more practical replacement to carbodiimides or aziridine for improving the strength, hardness, abrasion and chemical resistance of one component acrylic latex or PUD emulsions. It achieves this by adding only 6-10% relative to resin weight (usually 3-5% relative to the supplied emulsion).

Aside from improving the above stated performance properties, QUICKSTAR™ 94X-AC also improves the flow and coalescence of the emulsion when applied as a coating. Because of this, we recommend the formulator use less, or no, flow agent or coalescing agent when formulating the paint. Because QUICKSTAR™ 94X-AC is 0 VOC, it will help reduce VOCs. It will also help to replace toxic coalescing agents like NMP (n-methylpyrrolidinone).

QUICKSTAR™ 94X-AC can be added to the emulsion and stored within the emulsion before forming the paint. To do this simply add 6-10% on resin solids of QUICKSTAR™ 94X-AC to the emulsion by simply blending it in. The QUICKSTAR™ 94X-AC will easily mix into the water portion of the emulsion, so high speed dispersion is not necessary. How much QUICKSTAR™ 94X-AC to use depends on the number of carboxylic acids in the emulsion and the type of the emulsion. So it is best to perform a ladder study. But best results are generally on 6-10% on resin solids.

QUICKSTAR™ 94X-AC can also be added directly in to finished paint. However, in such cases make sure that the formulation does not contain crosslinking salts like Zirconium, Aluminum or Calcium salts, as the QUICKSTAR™ 94X-AC will simply compete with these salts for the carboxylic acids.

**ip tech, 717 Lakefield Road, Unit B, Westlake Village, CA 91361    [iptech@verizon.net](mailto:iptech@verizon.net), 314-566-7802**