Nufarm Polymerization Inhibitors for Butadiene Production

Butadiene is extracted and purified from a crude C4 stream using several different technologies. The basic principle of them all is to use a solvent to extract 1,3-butadiene from the other stream components, the solvent and butadiene are then separated by distillation and finally polymer grade butadiene is purified in a final distillation step.

There are two types of polymer that can form in a butadiene distillation unit

- Polybutadiene rubber

  This is formed by carbon-carbon radical reaction and is characterised by soft polymer. The process can be inhibited with stable free radical inhibitors and Nufarm have been providing these compounds to butadiene producers for 25 years. It is normal to achieve 5 year run-lengths between mandatory shutdowns using these products. Nufarm can provide a custom product for your plant and advice is available from our Technical Service Team.

  Products Available

  - Inhibitor AHM B238 (in commercial use since 2000)
  - Inhibitor AHM B247 (in commercial use since 2004)
  - Inhibitor AHM B239 (in commercial use since 2006)

- Popcorn polymer

  This is formed when oxygen ingress occurs and is characterised by white or yellow globular polymer that grows from the inside out and can damage equipment through uncontrolled growth. It is extremely hazardous for the plant. Excellent engineering and operator controls are required to prevent oxygen ingress because there are no polymerization inhibitors capable of completely stopping popcorn polymer growth once it has seeded. The characteristic of the popcorn polymer of growing in the vapour phase and containing internal radical sites means that conventional inhibitors are ineffective and adding volatile inhibitors runs a serious risk of product contamination. The Nufarm Technical Service Team can advise on industry best practice to prevent popcorn polymer.