



The Chemical Company
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ATBC - Nature-Flexx 509 Overview

The Chemical Company (TCC) offers NatureFlexx 509 plasticizer or Acetyl Tri-n-Butyl Citrate (ATBC), a tributyl ester, as an innocuous plasticizer of PVC, cellulose resin and synthetic rubber. The chemical compound is used to fulfill plastic industry needs for non-toxic plasticizers that provide flexibility in soft toys for children, medical products such as blood bags, food packaging materials, and cosmetics.

The liquid chemical is a colorless organic compound belonging to the carboxylic acid family. It exists in all plants, particularly lemons and limes as well as in many animal tissues and fluids.

The Chemical Company (TCC) ships NatureFlexx 509 plasticizer in drums, totes, and bulk containers.

Plasticizer Overview

Plasticizers are polymer additives that serve to increase a polymer's flexibility, elongation and ease of processing. In other words, they make the polymer more workable. In technical terms, the addition of a plasticizer generally causes a reduction in the cohesive intermolecular forces along polymer chains. The chains can then move more freely relative to one another, hence reducing the stiffness of the polymer.

The use of plasticizers began in the mid 1860s when castor oil was added to Cellulose Nitrate. The most commonly measured physical effects include melt viscosity, elasticity modulus, and the glass transition temperature. Other types of plasticizers have been used through the years, but in the late 1930s, phthalates were introduced because they were believed to be less toxic. The two most common plasticizers used today are di-2-ethylhexyl phthalate (DEHP) and di-isononyl phthalate (DINP). Both of which are generally used in the manufacture of Polyvinyl Chloride (PVC) related products.

The Phthalate Plasticizer Market

In 1999, the global volume of plasticizers was approximately 10 billion lbs., or about \$5 billion, The market has had an average yearly growth rate of 2-3 percent.

Of these plasticizers, standard phthalate esters comprise over 85 percent of the tonnage produced every year. Phthalates command the market due to their low cost, ease of use and availability. Other common plasticizers include adipates, polymeric and trimellitates.

Over 90 percent of plasticizer volume goes into flexible PVC applications. Plasticized PVC polymer is found in a wide variety of products including food packaging, construction materials, toys, and medical devices. Yet PVC in its unplasticized form is a hard, brittle polymer used in PVC pipe for the construction industry.