Reactivity and Transformationaa

Properties, Uses, and Safety

Crotonaldehyde is an organic compound that isclassified as an aldehyde. Its chemical formula is C4H6O and it is also known as2-butenal. Crotonaldehyde is a colorless liquid with a disagreeable odor. It isirritating to the skin, eyes and respiratory tract upon contact or inhalation.

Chemical Properties

Crotonaldehyde is highly reactive due to the presence of both an aldehyde

functional group and a conjugated double bond. Thealdehyde group makes it

electrophilic and susceptible to nucleophilic addition. The conjugated double

bond of Crotonaldehyde

gives it reactivity for addition reactions as well.Crotonaldehyde readilypolymerizes if stored for a long period of time.It also undergoes hydration to form the corresponding alcohol, crotylalcohol. Oxidation of crotonaldehyde

yields crotonic acid. Due to its reactive nature, crotonaldehyde is typically

stabilized during storage and transportation byadding inhibitors.

Natural Occurrence

Crotonaldehyde occurs naturally in a variety ofplants. It is found in cinnamon

bark oil, passion fruit juice, green tea and galangalessential oil. During the

fermentation of starchy foods like bread, smallamounts of crotonaldehyde may

be produced as an intermediate product.Crotonaldehyde is alsopresent in

tobacco smoke and vehicle exhaust emissions. Thedaily intake of crotonaldehyde

from natural dietary sources is estimated to be low, around 0.3 micrograms per

day.

Uses

One of the main industrial uses of crotonaldehyde is in themanufacture of

crotonic acid, which is further used to make crotyl resins. These are thermosetting resins with water resistance that find applications as