



Crotonaldehyde

KEY FEATURES:

- Readily soluble in the usual organic solvents
- Highly reactive intermediate





Crotonaldehyde

PRODUCT DESCRIPTION

Crotonaldehyde, which is obtained by aldol condensation from acetaldehyde, is an almost colorless to pale yellow, highly flammable liquid with a lachrymatory effect and a pungent odor. It has poor solubility in water but is readily soluble in the usual organic solvents such as alcohols, ether and boiling point fractions of petroleum. In the presence of air, i.e., oxygen, **crotonaldehyde** tends first to form a peroxide and then to oxidize to form crotonic acid, whereas in the presence of mineral acids (traces) it tends to polymerize and, in the presence of alkalis on heating, it also tends to condense or resinify.

Crotonaldehyde combines with water at normal pressure to form an azeotrope containing about 25% water, boiling at 84°C. Because of its aldehyde function and the conjugated olefinic double bond within the aldehyde, **crotonaldehyde** can enter into numerous reactions and is, therefore, an important starting product for chemical synthesis. **Crotonaldehyde** acts as an effective solvent for numerous vegetable and mineral oils, fats, waxes, natural and synthetic resins as well as elementary sulphur.

APPLICATIONS

One of the main applications is as a precursor of fine chemicals. Sorbic acid, a food preservative, and trimethylhydroquinone, a precursor to the Vitamin E, are prepared from **crotonaldehyde**.

Crotonaldehyde is used for the manufacture of crotonic acid and is employed as a comonomer and a flow-promoting agent for alkyd resins. Crotyl alcohol, n-butanal and n-butanol are obtained by reduction of **crotonaldehyde**. With alcohols **crotonaldehyde** forms alkoxy butyraldehyde; for instance, with methanol it forms 3-methoxy butanal and, after hydrogenation, 3-methoxy butanol. Like Butoxyl® (3-methoxy-n-butylacetate), it is suitable for the use as a solvent. Crotonylidene ureas, which are used as slow-release fertilizers, are obtained as a result of the reaction of **crotonaldehyde** with urea. Other derivatives include crotonic acid and 3-methoxy butanol. **Crotonaldehyde** is also used in the production of thiophenes, quinaldines, pyridines, intermediates, dyes and pesticides.

TYPICAL PROPERTIES

	Unit	
Molar mass	g/mol	70.09
Boiling point at 1013 hPa	°C	102.2
Melting point	°C	-76
Refractive index n_D at 20°C (DIN 51 423, Part 2)		1.436 – 1.438
Density at 20°C (DIN 51 757)	g/cm ³	0.85
Water absorption at 20°C	% (w/w)	Approx. 9
Vapor pressure at 25°C	hPa	40
Solubility in water at 20°C	g/l	181