

Acrylic Acid

Description

Acrylic acid is a clear, colorless liquid and is very useful in the production of various polymers as a chemical intermediate. It has the chemical reaction of carboxylic acids and the polymerizability of double bonds similar to those of acrylic esters and vinyl monomers.

Properties	Unit	Acrylic Acid	Method
Specification			
Purity	wt %	Min 99.5	Gas chromato.
Color	APHA	Max 10	ASTM D1209
Water Content	wt %	≤0.05	ASTM D1364
Inhibitor	wt ppm	180~220	ASTM D3125
ACR	wt ppm	Max 2.0	Gas chromato.
FF	wt ppm	Max 2.0	UV spectrometer
Specific Gravity	20/4°C	1.047~1.051	ASTM D1298
Typical Properties			
Boiling Point	°C	141	
Freezing Point	°C	14	
Refractive Index	nD	1.418	25°C
Heat Capacity	cal/g°C	0.463	20°C
Heat of Polymerization	cal/g	258.9	
Heat of Neutralization	cal/g	193.44	
Flash Point	°C	54	DIN 51 755
Solubility in Aqueous	wt %	Complete	25°C
Solubility aq. in subs	wt %	Complete	25°C
Homopolymer Tg	°C	106	

Summary

Synonym :

2-Propenoic acid

Acroleic acid

Vinyl formic acid

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CAS No : 79-10-7

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EINECS No : 201-177-9

Chemical Formula



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Note

Acrylic acid is used in the production of :

- Mono and multi-functional acrylic esters and its derivatives

- Super absorbent polymers, dispersants, thickeners, flocculants
- Emulsion polymers or dispersions for paints, varnishes, inks, leather, textiles, non-woven fabrics floor polishing, paper coatings, adhesives
- Synthetic rubbers and latexes

A group of double bond is participated in addition, cyclization, polymerization and copolymerization reactions.

It is highly reactive and produces a polymer by polymerization. Some copolymer reactivity ratios r_1 , r_2 of Acrylic acid(M1) with various monomers (M2) was calculated from the Alfred & Price equation.

Styrene : $r_1 = 0.24$ $r_2 = 0.25$

Methyl methacrylate : $r_1 = 1.17$ $r_2 = 0.75$

Precaution

The standard inhibitor level is stabilized with 200 ppm Monomethyl Ether of Hydroquinone(MEHQ). When storing it in a tank, store it at a temperature no more than 25°C, to prevent freezing the temperature of acrylic acid should never drop below 15°C. If crystallization occurs, warm with water below 40°C, while agitating it, to avoid a local heating as the polymerization inhibitor is unevenly distributed when frozen. Acrylic acid forms acrylic acid dimer (acryloyloxypropionic acid) during storage. The rate of formation of acrylic acid dimer content will be increased at higher temperature or higher water content. For more information, please refer a material safety data sheet.

Package

Acrylic acid is delivered:

- 20~21.5MT with ISO tank
- 200kg with polyethylene drum

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