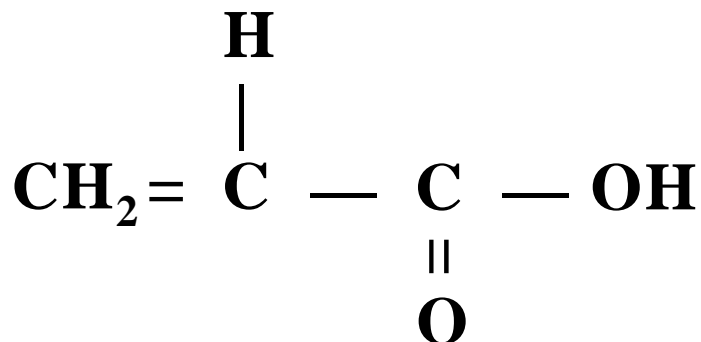


Acrylic Acid (AA)

CAS # : 79-10-7

EINECS # : 201-177-9

CHEMICAL FORMULA



Molecular weight: 72

OTHER NAMES

2-Propenoic acid

SPECIFICATIONS

<u>Characteristic</u>	<u>Test Method</u>	<u>Limit</u>
Purity	GC	99.5 % (min)
Appearance	Visual	C.F.S.M.
Color	ASTM D1209	10 PT-CO (max)
Inhibitor Concentration	ASTM D3125	180 – 220 ppm MEHQ
Water Content	ASTM D1364	1000 ppm (max)

Acrylic Acid

MAIN PHYSICAL CHARACTERISTICS

Molecular weight	.....	72
Boiling point, at 1013 mbar	.....	141.3°C
Freezing point	.....	13 °C
Physical Form	at > 13°C liquid at < 13°C .....solid	
Specific gravity	at 20°C .....1.04 9 at 25°C .....1.043	
Refractive index, n _D	at 20°C .....1.422 at 25°C .....1.418	
Viscosity	at 20°C .....1.22 m Pa.s at 25°C .....1.15 mPa.s	
Solubility	water in AA at 20°C infinite AA in water at 20°C infinite	
Specific heat in liquid state	.....	2.09 kJ/kg°C
Latent heat of vaporization	.....	621 kJ/kg
Heat of polymerization	.....	1074 kJ/kg
Homopolymer glass transition temperature	.....	106°C
Flash point	in closed cup	.....54°C
Lower explosion limit in volume	.....	2.4 %
Vapor pressure	at 20°C .....4 mbar at 30°C .....8 mbar at 50°C .....24 mbar	
Auto-ignition temperature	.....	429°C

CHEMICAL PROPERTIES

- Properties of the acid function: ability to form salts, anhydrides, acid chlorides, esters, etc.
- Properties of the double bond: addition, cyclization, polymerization and copolymerization reactions.
- Some specific values for the copolymerization reactivity ratios r_1 , r_2 of acrylic acid (M_1) with various monomers (M_2) have been calculated using the Alfrey & Price formula:

Styrene	.....	$r_1 = 0.24$	$r_2 = 0.25$
Methyl methacrylate	...	$r_1 = 1.17$	$r_2 = 0.75$

HANDLING AND SAFETY

Carefully read the material safety data sheet.

PACKAGING AND STORAGE

Acrylic acid is delivered:

- in stainless steel railcars, capacity 90 tons
- in 45,000 pound stainless steel tank trucks
- in 450 pound polyethylene drums

The standard inhibitor level is 200 ppm Monomethyl Ether of Hydroquinone (MEHQ). Acrylic acid should be stored at a temperature range of 18 to 25 °C, to prevent any crystallization (freezing point = 13 °C), and to ensure proper distribution of the inhibitor. It is recommended that the product be stored indoors at a temperature of no more than 25 °C and away from light.

It must also be stored under air atmosphere, as the presence of oxygen is essential to maintain the inhibitor effectiveness.

Under these storage conditions, the product is commercially guaranteed for one month after delivery.

Acrylic acid is highly corrosive, and must be stored in glass, stainless steel or polyethylene containers.

If crystallization occurs, warm the product slowly, while agitating it, to avoid any localized overheating, not exceeding 25°C. Too high a temperature could cause exothermic polymerization.

Finally, acrylic acid should not be stored for excessive periods, because of the irreversible formation of dimers (approximately 100 ppm daily at room temperature).

USES

Acrylic acid polymers and copolymers cover a very wide range of applications, such as:

- hydrosoluble agents for dispersing agents, thickeners, flocculating and super absorbent agents
- detergent auxiliaries
- organic synthesis
- copolymer emulsions for paints, varnishes and inks
- dispersions for leather, textiles, non-woven fabrics, glues and adhesives
- cleaning and waxing products
- plastics and synthetic resins
- synthetic rubbers and latexes

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See SDS for Health & Safety Considerations
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