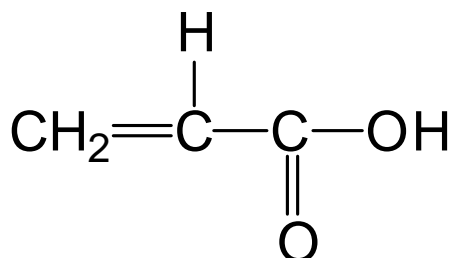


# ACRYLIC ACID (AA)

Cas number : 79-10-7

EINECS number : 201-177-9

## CHEMICAL FORMULA



Molecular weight : 72

## OTHER NAME

2-Propenoic acid

## SPECIFICATIONS

	SPECIFICATION	METHOD
Appearance (at > 13°C)	Clear liquid	Visual
Colour (APHA)	10 maximum	ASTM D1209
Purity by gas-phase chromatography	99.5 % minimum	GC
Water content	1000 ppm maximum	ASTM D1364
Dimer content (ex works)	2000 ppm maximum	HPLC
Inhibitor content (MEHQ)	180 to 220 ppm	ASTM D3125

## HANDLING AND SAFETY ADVISES

We advise you to read carefully the safety data sheet.

# 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 ..... 1.049 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 mPa.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 vaporisation	621 kJ/kg
Heat of polymerisation	1074 kJ/kg
Homopolymer glass transition temperature	106°C
Flash point	in closed cup ..... 54°C
Lower explosion limit in volume	2.4 %
Vapour 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, polymerisation and copolymerisation reactions,
- Some specific values for the copolymerisation 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 .....  $r_1 = 1.17$  .....  $r_2 = 0.75$

## PACKAGING AND STORAGE

Acrylic acid is delivered :  
- in stainless steel road tankcars, capacity 25000 to 32000 litres  
- in polyethylene drums loaded at 215 Kg.

The standard inhibition is 200 ppm Monomethyl Ether of HydroQuinone (MEHQ).

Acrylic acid should be stored in a place with a temperature range of 18 to 25°C, to prevent any crystallisation (freezing point = 13°C), and to ensure proper distribution of stabiliser. With this inhibitor, the product should 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 activate the stabiliser.

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

Acrylic acid, being corrosive, must be stored in glass, stainless steel or polyethylene containers.

**If crystallisation occurs, warm the product slowly, while agitating it, and taking care to avoid any localised overheating, not exceeding 25°C. A too high temperature could cause exothermic polymerisation.**

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 superabsorbent agents
- detergent auxiliaries
- organic synthesis
- copolymer emulsion 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 lattices.

ACRYLIC MONOMERS BU/009871/V/7/07.16

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