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## Technical Information

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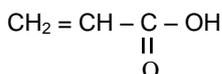
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Supersedes edition dated November 2008

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# Acrylic acid glacial

Unsaturated mono-carboxylic acid, for manufacturing polymers and for use as a feedstock for syntheses



$\text{C}_3\text{H}_4\text{O}_2$

CAS No.: 79-10-7  
EINECS No.: 201-177-9

Molar mass: 72.1

### Product specification

Assay (Gas chromatography)	min. 99.5%
Water content (ASTM E 203)	max. 0.1%
Diacrylic acid content on despatch (gas chromatography)	max. 2000 ppm
Color on dispatch (APHA, ASTM D 1209)	max. 20
Standard stabilization (ASTM D 3125)	200 ± 20 ppm MEHQ

The aforementioned data shall constitute the agreed contractual quality of the product at the time of passing of risk. The data are controlled at regular intervals as part of our quality assurance program. Neither these data nor the properties of product specimens shall imply any legally binding guarantee of certain properties or of fitness for a specific purpose.  
No liability of ours can be derived there from.

### Other properties

Appearance	Clear, colorless
Physical form	Liquid at > 13 <sup>0</sup> C
Odor	Pungent
Density at 25 <sup>0</sup> C	1.046 g/cm <sup>3</sup>
Refractive index n <sub>d</sub> at 20 <sup>0</sup> C	1.418 – 1.422
Boiling point	141 <sup>0</sup> C
Freezing point	approx. 13 <sup>0</sup> C
Viscosity at 20 <sup>0</sup> C	1.3 mPa.S
Specific heat of liquid at 20 <sup>0</sup> C	2.05 kJ/kg <sup>0</sup> C
Heat of evaporation at boiling point	634 kJ/kg
Heat of polymerization	1079 kJ/kg
Heat of combustion at 25 <sup>0</sup> C	19 085 kJ/kg
Vapor pressure at 20 <sup>0</sup> C	3.8 mbar
at 40 <sup>0</sup> C	13.5 mbar
Temperature rating for electrical equipment	T 2 (300 – 450 <sup>0</sup> C)

### Labeling according to local Directives

see MSDS



## Applications

Acrylic acid is an unsaturated carboxylic acid. It reacts as a vinyl compound and as a carboxylic acid. It readily undergoes polymerization and addition reactions. It can be used as a carboxylic acid to produce acrylic esters, acrylamide, N-substituted acrylamides and acrylyl chloride by common methods.

Copolymers can be produced with acrylic and methacrylic esters, acrylonitrile, maleic acid esters, vinyl acetate, vinyl chloride, vinylidene chloride, styrene, butadiene and ethylene.

Homopolymers of acrylic acid and copolymers, which contain a preponderance of acrylic acid have a glassy consistency and are frequently soluble in water. They can be used in the form of their free acids and ammonium and alkali salts in many different applications, such as thickeners, dispersing agents, flocculants, protective colloids for stabilizing emulsions and polymer dispersions, wetting agents, coatings and textile finishes.

Acrylic acid readily undergoes addition reactions with a wide variety of organic and inorganic compounds. This makes it a very useful feedstock for the production of many low molecular compounds. For instance, acrylic acid can be used to produce derivatives of propionic acid with water, alcohols, amines, halogens and chlorinated hydrocarbons. It can also be used with other substance to produce unsaturated fatty acids, heterocyclic compounds and Diels-Alder addition products.

## Processing

Acrylic acid polymerizes very readily. It is generally stabilized with 200ppm of hydroquinone monomethyl ether (MEHQ). It is only ever supplied in its stabilized form, because it can polymerize with explosive violence if it is not stabilized. It is not usually necessary to remove the stabilizer because its action can be compensated for by adding an excess of initiator.

## Safety

A Material Safety Data Sheet, has been compiled for acrylic acid glacial that contains up-to-date information on all questions relevant to safety

## Storage & Handling

In order to prevent polymerization, glacial acrylic acid must always be stored under air, and never under inert gases. The presence of oxygen is required for the stabilizer to function effectively. Glacial acrylic acid must be stored between 15 and 25°C. Under these conditions, a storage stability of one year can be expected. However diacrylic acid is formed during storage, which cannot be prevented by any chemical additives. Diacrylic acid may affect the performance of acrylic acid in some applications. In order to minimize the likelihood of over storage, the storing procedure should strictly follow the "first-in-first-out" principle. For extended storage periods over 4 weeks it is advisable to replenish the dissolved oxygen content.

To prevent freezing, the temperature of acrylic acid should never drop below 15°C. Improper thawing can result in violent polymerization. Do not attempt to thaw frozen or partially frozen acrylic acid unless you have received prior approval from your supplier.

For more detailed information, please consult also the brochure "SAFE HANDLING AND STORAGE OF ACRYLIC ACID" of EBAM.



**Note**

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and regulation are observed.

