Muriatic Acid

Burner grade muriatic or hydrochloric acid is produced by PPG Canada, Inc. at its Beauharnois, Quebec, plant. The hydrogen chloride gas is produced by burning chlorine and hydrogen followed by absorbing in water to yield muriatic acid.

Hydrogen and chlorine are supplied to the burner from PPG's membrane cell chlor alkali plant. Demineralized water is used to absorb the hydrogen chloride to produce the muriatic acid.

General Applications

As one of the common mineral acids, muriatic has a host of uses. The following account for most of the end uses of muriatic acid:

Chemical and pharmaceutical manufacturers react muriatic acid to form chlorides and hydrochlorides or use it for pH control of both process and effluent streams and acid cleaning process equipment.

The food industry uses food grade muriatic acid to process a wide range of products, with a major use being production of high fructose corn syrup.

Metals producers use muriatic acid for pickling steel to remove mill scale (surface oxides). Most steel is also cleaned or "fluxed" in acid before galvanizing, tinning or other coating operations.

Petroleum producers use muriatic acid to acidize oil wells. The acid increases production by attacking calcium and magnesium carbonate oil-bearing rock formations and making them more permeable to oil and gas flow into the well casing.

Government Specification

PPG Canada's muriatic acid meets the chemical and physical requirements of ASTME-1146 (1997) and Food Chemicals Codex 4th Edition.

Product Grades

PPG Canada produces a variety of muriatic acid concentrations with both technical and food processing grades.

Typical Properties

Chemical Names	Hydrochloric acid; muriatic acid
Chemical Formula	HCl, aqueous
Description	Muriatic acid is a clear, colorless to slightly yellow liquid and has a pungent, irritating odor. It is a strong, highly corrosive acid. Hydrogen chloride gas is completely miscible with water. When boiling all aqueous solutions approach a constant boiling mixture that contains 20.24% HCl and boils at 110°C (230°F). This mixture has a specific gravity (15.6°C/15.6°C) of 1.1016, approximately equivalent to 13.4° Baume. The vapor pressures of all aqueous solutions approach that of the constant boiling mixture. Concentrations above 20.24% HCl are hygroscopic.

The following data apply to the PPG products at 15.6°C (60°F):

	20°Baumé	***23°Baumé***
Freezing Point, °C	-42.0	-27.5
°F	-44.5	-17.5
Specific Gravity, 15.6°C/15.6°C(60°F)	1.160	1.189
Density: 15.6°C, kilograms/liter	1.15	1.18
60°F pounds/U.S. gallon	9.66	9.90

Although nonflammable, muriatic acid reacts with most metals to release hydrogen which, when mixed with air within certain limits, can be ignited and cause a fire or explosion.

Specifications

	20°Baumé	***23°Baumé***
Hydrogen Chloride, %	31.45-32.93	37.1-38.0
Degrees Baume at 15.6°C(60°F)	20.0-20.8	23.0-23.4
Color (APHA)	15 maximum	15 maximum
Free Chlorine, ppm	3 maximum	3 maximum
Fluoride, ppm	2 maximum	2 maximum
Bromide, ppm	50 maximum	50 maximum
Iron, ppm	0.5 maximum	0.5 maximum
Lead, ppm	0.2 maximum	0.2 maximum
Arsenic, ppm	0.1 maximum	0.1 maximum
Calcium, ppm	2 maximum	2 maximum
Sulfate, ppm	10 maximum	10 maximum
Organics, ppm	1 maximum	1 maximum
Nonvolatile Residue, ppm	15 maximum	15 maximum

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Health Hazards

Muriatic acid and hydrogen chloride vapor are highly corrosive. If a small quantity of acid reaches the eye and is not flushed out immediately, it can result in damage that may reduce vision permanently. In contact with the skin, muriatic acid causes severe burns unless washed off right away. Swallowing muriatic acid causes severe burns of the mucous membranes of the mouth, esophagus and stomach and may be fatal.

Inhalation can cause irritation to the upper respiratory tract. The maximum allowable concentration of hydrogen chloride vapors is 5 ppm for an 8-hour day. A concentration of 50 ppm cannot be tolerated for more than one hour. Concentrations of 1500 to 2000 ppm are lethal in a few minutes. For additional information, refer to the Material Safety Data Sheet (MSDS), available upon request.

In Case of Emergency

In case of an emergency, call the PPG Industries Emergency Response Center at: 412-434-4515. In Canada, call PPG Canada's Beauharnois, Quebec, facility at 450-429-3552.

Handling and Storage

Besides reacting vigorously with many organic and inorganic materials, muriatic acid attacks most metals and salts. The reaction with metals may be dangerous because hydrogen is generated and introduces a fire and explosion hazard.

The dilution of concentrated muriatic acid produces heat. When diluting, a*lways add the acid to water-never add water to acid*. Add the acid slowly with agitation to prevent local “hot spots.” Neutralizing the acid with alkali also generates heat.

Packaging and Shipping

Muriatic acid is available from the Beauharnois plant by tank truck and by tank car.

Customer Service

Samples are available on request in 500 ml or 1 liter sizes. For more information regarding PPG Canada’s muriatic acid, contact our customer service department by calling **800-CHEM-PPG (800-243-6774).**

In Canada, contact PPG Canada Inc., P.O. Box 2010, Beauharnois, Quebec J6N 3C3 Canada, **450-429-4641.**

PPG's technical and product safety staff is available to provide additional information on technical issues, applications, handling and storage, and health and safety concerns.

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2333-B Revised 05/05