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ProductInformation

Hydrochloric acid

Product Number **H 1758**
Store at Room Temperature

Product Description

Molecular Formula: HCl
Molecular Weight: 36.46
CAS Number: 7647-01-0
Synonym: muriatic acid[1]

Based on an approximate density of 1.2 g/ml and a percentage range of 36.5 - 38.0%, concentrated HCl is in the range 11.6-12.0 M (or N, for this monoprotic acid).

This product is designated as Molecular Biology grade and is suitable for molecular biology applications.

This product is a clear colorless liquid which is a solution of hydrogen chloride gas dissolved in water.

Hydrochloric acid is a strong inorganic acid that is utilized widely in research and in large scale applications. Its large scale applications include the refinement of ore for the production of tin and tantalum, the cleaning of metal products, and the hydrolysis of starch and proteins in the manufacture of food products.[1] HCl is also frequently used in chemical synthesis, as in the preparation of polyhydroxylated amino acid derivatives, 3,4-disubstituted piperidines, norcarbovir analogs, and (α-hydroxyalkyl)phosphorus amphiphiles.[2,3,4,5]

HCl is used to hydrolyze samples for chromatographic analysis, such as in matairesinol in flax seed, glycopeptides, κ-carrageenan derived oligosaccharides, and syn- and anti-1,3-diols.[6,7,8,9] Several reports have described protein analysis for amino acid composition using HCl for peptide and protein hydrolysis.[10,11,12,13]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This is an aqueous solution that can be diluted to any concentration in water, but since the dilution is exothermic, this product should be added carefully to the water.

Storage/Stability

The product is stable at room temperature if kept sealed and away from bases and metals. Solubility of HCl gas decreases somewhat with increased temperature. The solution may develop a yellowish color with time due to traces of iron, chlorine, or organic matter.

References

1. The Merck Index, 12th ed., Entry# 4821.
2. Flogel, O., et al., A stereoselective and short total synthesis of the polyhydroxylated gamma-amino acid (-)-detoxinine, based on stereoselective preparation of dihydropyrrole derivatives from lithiated alkoxyallenes. Chemistry, **9(6)**, 1405-1415 (2003).
3. Williams, J. T., et al., Synthesis of 3,4-disubstituted piperidines by carbonyl ene and Prins cyclizations: a switch in diastereoselectivity between Lewis and Bronsted acid catalysts. Org. Lett., **4(21)**, 3727-3730 (2002).
4. Gourdel-Martin, M. E., and Huet, F., Synthesis of norcarbovir analogues, the first examples of cyclobutene nucleosides unsubstituted at the vinylic position. J. Org. Chem., **62(7)**, 2166-2172 (1997).
5. Albouy, D., et al., New (α-Hydroxyalkyl)phosphorus Amphiphiles: Synthesis and dissociation constants. J. Org. Chem., **63(21)**, 7223-7230 (1998).
6. Mirgorodskaya, E., et al., Partial vapor-phase hydrolysis of peptide bonds: A method for mass spectrometric determination of O-glycosylated sites in glycopeptides. Anal. Biochem., **269(1)**, 54-65 (1999).

7. Kraushofer, T., and Sontag, G., Determination of matairesinol in flax seed by HPLC with coulometric electrode array detection. J. Chromatogr. B Analyt. Technol. Biomed. Life Sci., **777(1-2)**, 61-66 (2002).
8. Yu, G., et al., Structural studies on κ-carrageenan derived oligosaccharides. Carbohydr Res., **337(5)**, 433-440 (2002).
9. Bode, S. E., et al., Diastereomer-differentiating hydrolysis of 1,3-diol-acetonides: a simplified procedure for the separation of syn- and anti-1,3-diols. Org. Lett., **4(4)**, 619-621 (2002).
10. Weiss, M., et al., Effect of the hydrolysis method on the determination of the amino acid composition of proteins. J. Chromatogr. A, **795(2)**, 263-275 (1998).
11. Darragh, A. J., et al., Correction for amino acid loss during acid hydrolysis of a purified protein. Anal. Biochem., **236(2)**, 199-207 (1996).
12. Juranville, J. F., et al., Glycerol affects the quantification of aspartate and glutamate in acid-hydrolyzed proteins. Amino Acids, **15(3)**, 253-262 (1998).
13. Davidson, I., Hydrolysis of samples for amino acid analysis. Methods Mol. Biol., **211**, 111-122 (2003).

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