

## CLIP, Chemical Laboratory Information Profile

"Only when you know the hazards, can you take the necessary precautionary measures."

## Water



CAS No.: 7732-18-5

Synonyms: aitch-two-oh, dihydrogen oxide, diprotium oxide

## Physical Properties

Colorless, odorless, tasteless liquid; immiscible with nonpolar liquids; dissolves many ionic, polar, and slightly polar compounds.  
 Vapor pressure at 20 °C: 17.5 Torr  
 Melting point: 0 °C  
 Boiling point: 100 °C

## Exposure Limits

OSHA PEL: NE  
 ACGIH TLV: NE

## Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
0	0	0	0	No	No	A very large number of compounds, many of which it reacts with violently and/or exothermically, yielding toxic and/or flammable products in some instances. See below.*

0: None (or very low); 1: Slight; 2: Moderate; 3: High; 4: Severe.

## \*Reaction with:

The specific enumeration of the substances with which water is incompatible is too lengthy to be listed in this CLIP. Examples of such elements and compounds include group I, group II, and other metals, including some finely divided metals (e.g., Al); hydrogen, a flammable gas, is produced. Many hydrides, carbides, and phosphides; hydrogen is produced. Some metal halides (e.g.,  $\text{AlCl}_3$ ); nonmetal halides (e.g.,  $\text{BBr}_3$ ). Some cyanides and sulfides, with regeneration of the toxic, and flammable, acids (e.g.,  $\text{HCN}$ ,  $\text{H}_2\text{S}$ ). Group I hydroxides (as these solids dissolve). Group II and other metal oxides and some nonmetal oxides (e.g.,  $\text{P}_4\text{O}_{10}$ —also known as  $\text{P}_2\text{O}_5$ ). Acid anhydrides (e.g., acetic anhydride, sulfur trioxide). Acyl halides (e.g., acetyl chloride). Alkyl aluminum derivatives (e.g., diethylaluminumchloride). See Bretherick's *Handbook of Reactive Chemical Hazards* for details and for other incompatibilities.

Cited as known to be or reasonably anticipated to be carcinogenic in NTP-9? No Identified as a reproductive toxin in Frazier and Hage, *Reproductive Hazards of the Workplace*? No

## Storage Requirements

Store in sealed containers above 0 °C and away from incompatible elements and compounds such as those identified above.

## Additional Remarks

Liquid water is subject to superheating, as when it is heated without being disturbed to a temperature above its boiling point in a microwave oven. If, under such circumstance, the water (still a liquid at a temperature greater than 100 °C) is then mechanically or otherwise disturbed, a portion will instantaneously change into steam with harmful consequences. Unlike almost all other liquids, which contract as they solidify, water expands as it becomes ice and can burst its container.

## Notes

## ReadMe

This Chemical Laboratory Information Profile is *not* a Material Safety Data Sheet. It is a brief summary for teachers and their students that describes some of the hazards of this chemical as it is typically used in laboratories. On the basis of your knowledge of these hazards and before using or handling this chemical, *you need to select the precautions and first-aid procedures to be followed*. For that information as well as for other useful information, refer to references in the scientific literature that pertain to this chemical. (Available Material Safety Data Sheets purporting to be for water are likely to be parodies—supposedly humorous—instead of a discussion of the hazards presented by a common substance and the related precautions and first aid procedures to be taken in its use and handling in the laboratory or industrial process.)

## Reproductive Toxins

Some substances that in fact are reproductive toxins are not yet recognized as such. For the best readily available and up-to-date information, refer to "DART/ETIC". See the TOXNET home page at [www.sis.nlm.nih.gov](http://www.sis.nlm.nih.gov) and click on "Toxicology search". *Note that some of the data in DART/ETIC have not been peer-reviewed*. See also Linda M. Frazier and Marvin L. Hage, *Reproductive Hazards of the Workplace*; Wiley, 1998; and T. H. Shepard, *Catalog of Teratogenic Agents*, 9th ed.; Johns Hopkins University Press, 1998.

## Abbreviations

ACGIH TLV—American Conference of Governmental Industrial Hygienists—Threshold Limit Value. C—Ceiling. CAS—Chemical Abstracts Service.  $\text{mg}/\text{m}^3$ —milligrams per cubic meter. NA—Not applicable. NE—Not established. NI—No information. NTP-9—National Toxicology Program, Ninth Annual Report on Carcinogens. OSHA PEL—Occupational Safety and Health Administration—Permissible Exposure Limit. ppm—parts per million. STEL/C—Short-term exposure limit and ceiling.

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