

## CLIP, Chemical Laboratory Information Profile

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

## Sodium Hypochlorite Solution NaOCl (for the solute)

CAS No.: 7681-52-9

(approximately 5%)

Synonyms: Bleaching solution, bleach, Clorox™ (and other trade names)

Physical Properties	Exposure Limits
Pale yellow aqueous solution of NaOCl, approximately 50 g/L. Vapor pressure at 20 °C: approx. 16 Torr Melting point: approx. -6 °C	OSHA PEL: NE ACGIH TLV: NE

## Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
2	0	2	0	No	No	Ammonia, amines, organic compounds, and other reducing agents.*

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

## \*Reactivity Hazards

This solution is a reasonably strong oxidizing agent and reacts vigorously with reducing agents. Both with ammonia and with amines the solution forms explosive, toxic chloramines. Solid NaOCl decomposes violently if heated or subjected to friction. 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

## Typical symptoms of acute exposures:

Skin irritation, eye irritation, coughing, vomiting (if ingested).

## Principal target organ(s) or system(s):

Eyes, skin, respiratory tract.

## Storage Requirements

Store with other corrosives in a cool, dry, well-ventilated location; make sure that the container cap is vented and will release the pressure from the gases evolved upon standing.

## Additional Remarks

On standing, bleaching solution slowly evolves gases such as oxygen, chlorine, and chlorine oxides (and consequently loses its "strength"). When heated, bleaching solution evolves chlorine. Moderately dilute solutions can be used to disinfect personal articles such as safety goggles. At greater dilutions the solution is used to "purify" water, thus rendering it potable.

## 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 Material Safety Data Sheets, container labels, and references in the scientific literature that pertain to this chemical.

## 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. mg/m<sup>3</sup>—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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