

## Technical Data Sheet

### Carbamide Peroxide 98.5%

Synonyms : Carbamide peroxide; Urea peroxide; Percarbamide; Hydrogen Peroxide, Compounded With Urea (1:1); Hydroperit; Hyperol; Ortizon; Percarbamide; Perhydrit; Perhydrol-urea; Thenardol; Urea, Compounded With Hydrogen Peroxide (1:1); Urea Hydroperoxide

Systematic (IUPAC) name -- hydrogen peroxide; urea

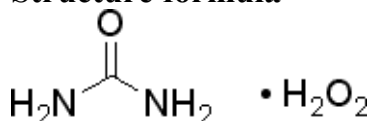
CAS number 124-43-6

Formula -- CH<sub>6</sub>N<sub>2</sub>O<sub>3</sub>

Mol. mass -- 94.07 g·mol<sup>-1</sup>

Routes -- topical (teeth or mouth)

#### Structure formula



#### Hydrogen peroxide–Urea adduct

Carbamide peroxide, also called urea peroxide, urea hydrogen peroxide, and percarbamide, is an oxidising agent, consisting of hydrogen peroxide compounded with urea. The molecular formula is CH<sub>6</sub>N<sub>2</sub>O<sub>3</sub>, or CH<sub>4</sub>N<sub>2</sub>O.H<sub>2</sub>O<sub>2</sub>. It is a white crystalline solid that releases oxygen in contact with water.

The chemical is a skin, eye and respiratory irritant. It is also corrosive and causes burns. It doesn't hurt at 10% concentration (3% hydrogen peroxide equivalent) but it might hurt at 35% (12% equivalent), causing white chemical burns on skin and gums alike.

Pure carbamide peroxide has the form of white crystals or crystal powder, is slightly soluble in water (0.05 g/mL)[1], and contains approximately 35% hydrogen peroxide.

PHYSICAL STATE -- white crystal

MELTING POINT -- 75 - 85 C (Decomposes)

SOLUBILITY IN WATER -- 80 (g/l at 20 C)

NFPA RATINGS -- Health: 3; Flammability: 1; Reactivity: 0

STABILITY -- Stable under ordinary conditions atleast for 6 month, Air & moisture sensitive.

APPLICATIONS -- Urea Hydrogen Peroxide is an unstable combination of urea and hydrogen peroxide in equal amounts. It is soluble in water, alcohol, and ethylene glycol. It decomposes at 75-85 C or by moisture. It's application is on the release hydrogen peroxide as a source of water-free hydrogen peroxide. It is used as a disinfectant, bleaching agent, catalyst in organic synthesis, blueprint

developer, modifier of starches and antistatic agent. It is used as an oxygen source for crops. It is used in formulating oral and dental care products and ear wax removers.

Other Uses : Carbamide peroxide is used to whiten teeth.

Relieve minor inflammation of gums, oral mucosal surfaces and lips including canker sores and dental irritation[4]; and to emulsify and disperse ear wax.

Carbamide peroxide is commonly encountered in cosmetic dentistry, where it is used to "bleach" teeth. The active ingredient is hydrogen peroxide, which acts to oxidise inter prismatic extrinsic staining within tooth enamel. There are several methods of applying the peroxide gel to the tooth ranging from night-guard application at home or in-surgery application. The bleaching obtained is proportional to the length of time the peroxide is applied to the tooth, and the concentration used. The concentration most commonly used for tooth whitening purposes is 15%.

A 10% solution in glycerol is used to treat ulcers and other lesions in the mouth.

A 6.5% concentration solution is used to loosen and remove earwax.

### **References**

1. Sigma-Aldrich specification sheet --

<http://www.sigmaaldrich.com/catalog/search/SpecificationSheetPage/ALDRICH/289132>

3. Toothwhitening from the UMD of New Jersey website --

<http://dentalschool.umdnj.edu/patients/dental-bytes.htm>

4. Center for Integrative Medicine: Carbamide Peroxide from the University of Maryland Medical Center website --

<http://www.umm.edu/altmed/drugs/carbamide-peroxide-021300.htm>

## Typical Certificate of Analysis & Specification

Name of Chemical: **Carbamide peroxide 98%**      COA No. OMT/CP/1010  
B No. OCP/108001      Quantity: 2.0 kg = 50 gm spl      Date: 24/09/2010  
Mfg. Date: Oct 2010,      Expiry Date Feb 2010      Active Oxidizing agent

Sr No	Test Description	Specification	Results / Claim
•	Description	White glistening crystals	White glistening crystals
•	Solubility /miscibility	Miscible in water in all proportion	Miscible in water in all proportion
•	Identification	Its Aq. solution Gives white ppt with HNO <sub>3</sub> Gives Blue color with Cromic acid- H <sub>2</sub> SO <sub>4</sub>	Test positive Test positive
•	Decolorisation power	Decolorize acidified potassium permanganate solution	Decolorize pink solution to colorless
•	Assay	Between 96.0 to 102.0%	98.7% by Oxidation titration

Note : Please wash skin with plenty of water if it comes in contact with solution.

Remarks : Based on above results product confirms to the laid down specifications

## Carbamide Peroxide

### Test Methods

CH<sub>6</sub>N<sub>2</sub>O<sub>3</sub> 94.07

CAS No. [124-43-6].

Carbamide Peroxide contains not less than 96.0 percent and not more than 102.0 percent

**Packaging & storage**— Preserve in tight, light-resistant containers, and avoid exposure to excessive heat.

#### **Identification**—

**A:** Mix 1 mL of a solution (1 in 10) of it with 1 mL of nitric acid: a white, crystalline precipitate is formed.

**B:** A solution of it (1 in 10) responds to the tests for peroxide, if mixed with chromic acid- sulphuric acid given blue color

**Assay**— Transfer about 100 mg of Carbamide Peroxide, accurately weighed, to a 500-mL iodine flask with the aid of 25 mL of water, add 5 mL of glacial acetic acid, and mix. Add 2 g of potassium iodide and 1 drop of [ammonium molybdate TS](#), insert the stopper, and allow to stand in the dark for 10 minutes. Titrate the liberated iodine with 0.1 N sodium thiosulfate VS, adding 3 mL of [starch TS](#) as the endpoint is approached. Each mL of 0.1 N sodium thiosulfate is equivalent to 4.704 mg of CH<sub>6</sub>N<sub>2</sub>O<sub>3</sub>.

#### **General Impurities in Carbamide peroxide :**

Impurities not more than 0.25% of Biurate, carbon dioxide and ammonia, [allantoin](#), and [hydantoin](#), Stabilizing Impurities Not more than 0.7 % Acetate, Citrate, Benzoate and their peroxide derivatives.

#### **Storage condition, shelf life & retest interval.**

Stability -- Stable under ordinary conditions atleast for 6 month,

**Product is very sensitive to Air & Moisture (Hygroscopic and deliquescent)**

Storage condition 20° (Variation + or - Max 5 °C)

Stability study : For stability study, Keep separate sample for testing in a airtight container and Retest after Every 15 days for first 3 months and next after every month