

شرکت آتیه پردازان شریف

**Atieh Pardazan Sharif (APZ Co.)**

[www.APZSharif.com](http://www.APZSharif.com)



Atieh Pardazan Sharif

# SODIUM HYPOCHLORITE - STABILITY

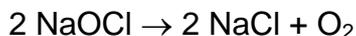
PCH-1400-0007

Sodium hypochlorite solutions have limited storage stability. Decomposition will occur due to the following two reactions:

Transformation into chlorate:



Release of oxygen:



In a good quality sodium hypochlorite solution, the chlorate decomposition pathway accounts for about 90 % of the total decomposition.

Increasing temperature, hypochlorite concentration and ionic strength (salt content) will increase the reaction rate of both reactions to about the same extent. UV-light (sunlight) also catalyzes both decomposition reactions.

The decomposition of sodium hypochlorite is minimized in the range of pH 12 to 13 (between 0.025 and 0.35 % excess sodium hydroxide). Below pH 11, the rate of formation of chlorate will increase dramatically. In the pH range of 13 to 13,5, there is only a minor increase in the decomposition rate.

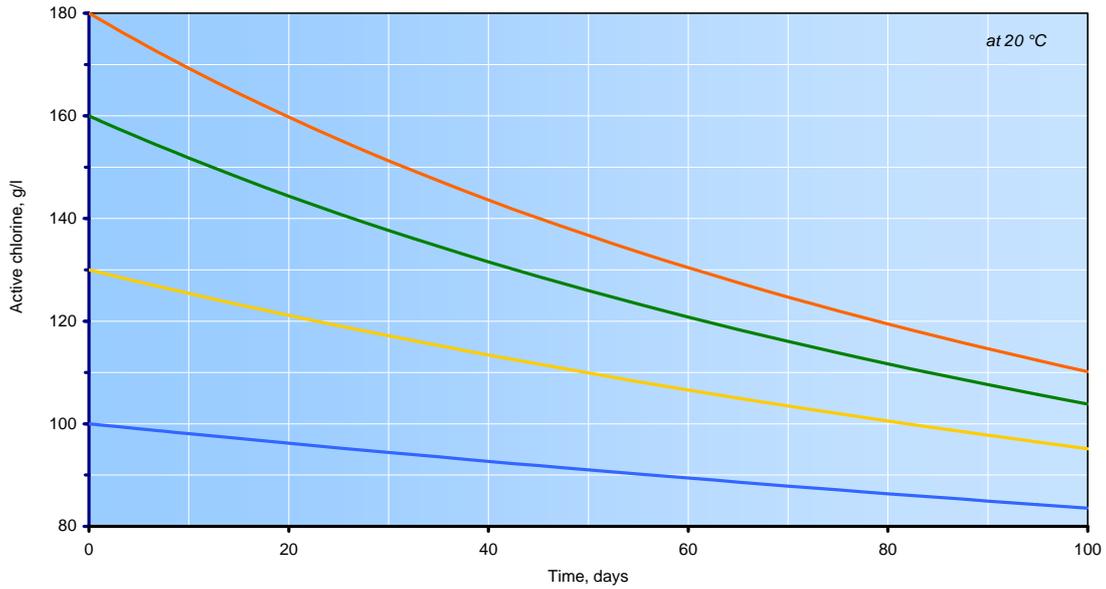
The oxygen decomposition pathway is catalyzed by some transition metal ions ( $\text{Ni}^{2+}$ ,  $\text{Cu}^{2+}$  and  $\text{Co}^{2+}$ ). The maximum concentration that will not significantly increase the overall decomposition rate of sodium hypochlorite is ~0,1 mg/l Ni and ~1 mg/l Cu.  $\text{Fe}^{3+}$  is not considered to be an effective catalyst and  $\text{Mn}^{2+}$  is only effective in presence of other catalysts.

**Table 1:** Influence of temperature on the initial loss of active chlorine (typical values for 160 g active chlorine/l).

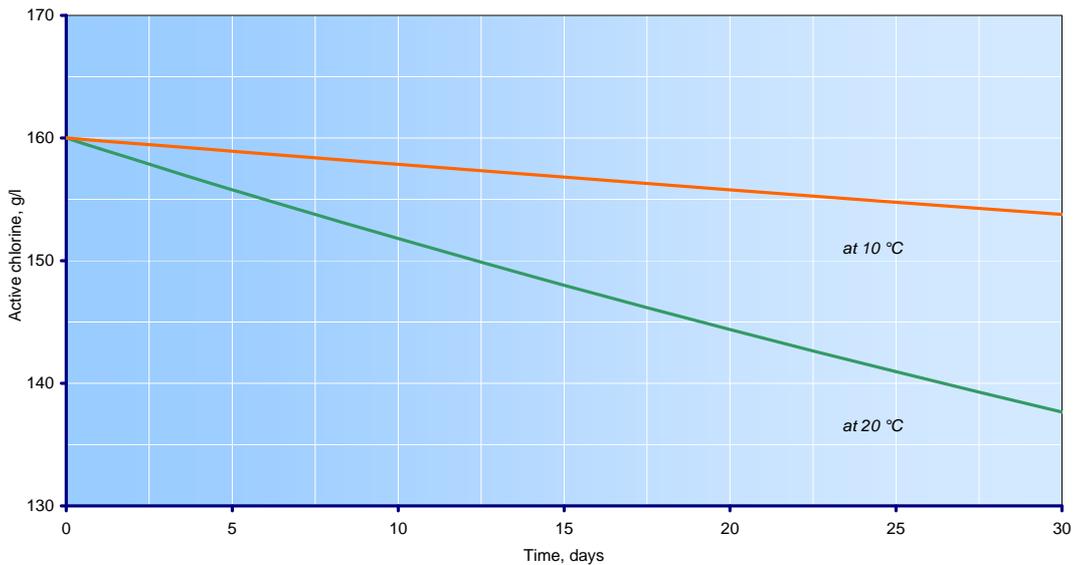
Temperature, °C	Loss, g/(l·24 h)
10	0,2
20	0,8
25	1,6
30	3,0

# SODIUM HYPOCHLORITE - STABILITY

**Figure 1: Sodium Hypochlorite**  
Loss of active chlorine as function of storage time and initial concentration



**Figure 2: Sodium Hypochlorite**  
Loss of active chlorine as function of storage time and temperature



To our present knowledge, the information contained herein is accurate as of the date of this document. However, we do not make any warranty, express or implied, or accept any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use, the manner of use in compliance with relevant legislations and whether any patents are infringed. We reserve our right to make additions, deletions, or modifications to the information at any time without prior notification.