Sodium hypochlorite

Product Application Guide

Sodium hypochlorite is clear, slightly yellowish solution with a distinct odor. Sodium hypochlorite is produced by reacting chlorine with a solution of sodium hydroxide.

Our sodium hypochlorite is compliant with the European standard for drinking water treatment EN 901:2013, type 1.

Product Identification

CAS No.
7681-52-9

EINECS/ELINCS No.
231-668-3

REACH No.
01-2119488154-34

Formula
NaOCl

UN Code
1791

Available product supply forms

- Sodium hypochlorite 150 g/l
- Sodium hypochlorite 170 g/l

Delivery Unit

Sodium hypochlorite is dispatched in bulk by road trailers.

The actual Full Truck Load (FTL) is geospecific and can therefore differ due to local regulations and legislation.

Typical Specification

Sodium hypochlorite	g/l	150 - 170
Sodium hydroxide	g/kg	4-8
Sodium carbonate	g/kg	max 7.5
Sodium chlorate	g/kg	max 3
Iron	mg/kg	max 0.5

Application possibilities

Drinking and process water

Many countries use sodium hypochlorite to disinfect their drinking water. A second reason for the use of sodium hypochlorite is the that surface water contains many microorganisms, some of which are pathogenic, so the water must be disinfected before it can be used as drinking water.

Cooling water

Cooling water is often treated with sodium hypochlorite to prevent bio-fouling. Bacteria such as legionnella pneumophalia are present and required the cooling water used in 'open' cooling towers to be disinfected. Seawater and inland water contain mussels, which can cause serious damage if they are pumped into a cooling installation.

Swimming pools

As each swimmer deposits millions of micro-organism disinfection of swimming pools is needed. Sodium hypochlorite is an efficient and cost-effective disinfectant. To keep away unwanted ear infection, stomach problems, diarrhea and even worse viral infection.

Household and industrial cleaning

Sodium hypochlorite use for cleaning and disinfection is commonplace in households but also in the food, beverage and diary industries.

Chemical Industry

Sodium hypochlorite is used in the chemical industry as an oxidising agent.
It is used to destruct cyanide in waste water and in the rubber processing for the production of accelerators.

Starch modification

One of the most effective ways to modify starch is oxidation with sodium hypochlorite which adds a large number of carbonyl and carboxyl groups to the starch molecule. It changes the chemical and physical properties of starch, creating a wide range of new products.

Dispatch and storage

Unloading

Unloading takes place by air pressure (compressor) or with a pump.

Materials for Tanks and Containers

Fibreglass-reinforced polyester with an interior lining polyvinyl chloride (PVC) are recommended as synthetic construction materials (PVC-FRP) for storage tanks. The tanks must be inspected and checked at regular intervals.

High-density polyethylene (HDPE) tanks may also be used. However, HDPE is known to be sensitive to stress cracking when in contact with highly concentrated sodium hypochlorite as a result, care should be taken to avoid stress within tank's material.

Storage Conditions

Sodium hypochlorite is highly corrosive. To prevent damage to installations, contact with metal pipes, valves, meters, etc. must be strictly avoided. Sodium hypochlorite should not be stored at higher temperatures as this increase the rate of decomposition. Product should not come in contact with acids because of the formation of chlorine gas.

Safety and Handling

- Sodium hypochlorite is a strong base and oxidizing agent.
- Please note that sodium hypochlorite can cause damage to the eyes, the skin and gastrointestinal tract.
- Sodium hypochlorite reacts with hydrochloric acid forming toxic chlorine gas.
- The storage tanks, pipes and couplings must be made of the right material and have the correct dimensions; appropriated safety equipment must be available.
- During unloading the operator and driver should at least wear chemical-resistant overalls, gloves, boots/shoes and closed goggles.

This information is to our best knowledge. For additional safety data and/or PPE usage, we refer to our material safety data sheets (MSDS).

Technical Data and physical properties

Physical properties

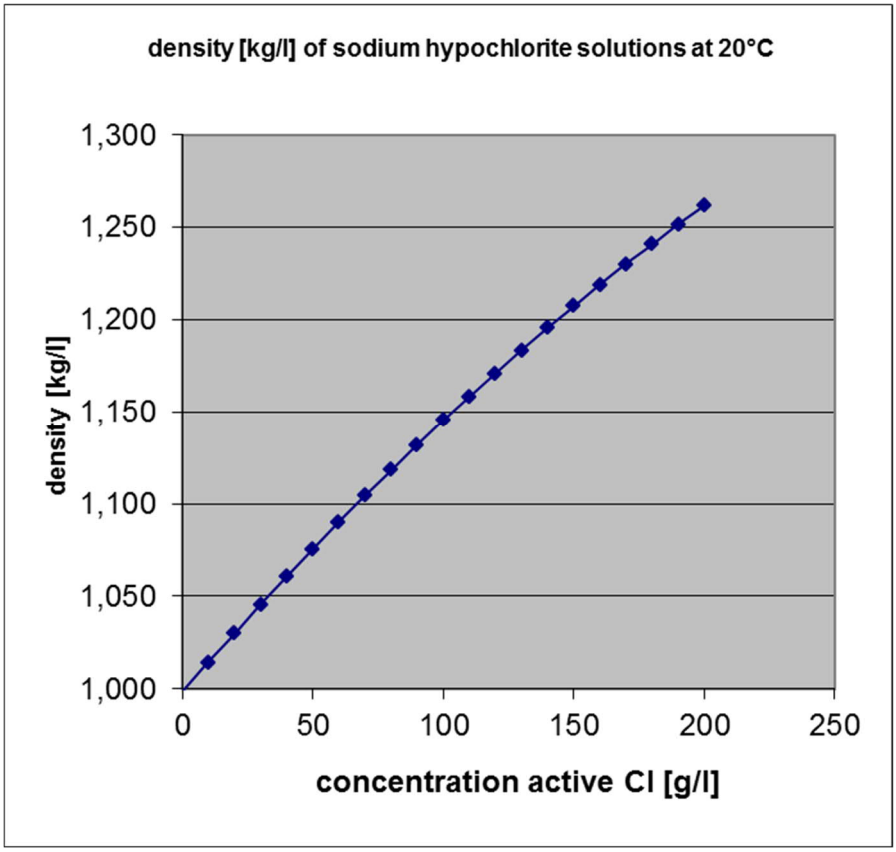
Molecular Weight	g/Mol	74.44
Density (vacuum) at 20 °C	g/cm^3, kg/L	1.207 - 1.230
pH		>12
Boiling Temperature at 1013 mbar	°C	N.A.
Freezing Temperature	°C	N.A.
Solubility in Water at 20 °C	g/kg	Soluble in all ratios
Vapor Pressure at 20 °C	kPa	2.5
Heat Capacity at 20 °C	kJ/kg·K	3.5
Static Dielectric Constant at 20 °C		
Specific Conductance (free from traces of water or ethanol) at 25 °C	$\Omega^{-1}\cdot cm^{-1}$	0.23
Dynamic Viscosity at 25 °C	mPa·s	2.6
Flash Point in air at 1013 mbar and 20 °C	°C	- (non-inflammable)
Explosion Limits in air at 1013 mbar and 20 °C	% (v/v)	- (non-explosive)

Reference: Nouryon data from own engineering software or recognised literature

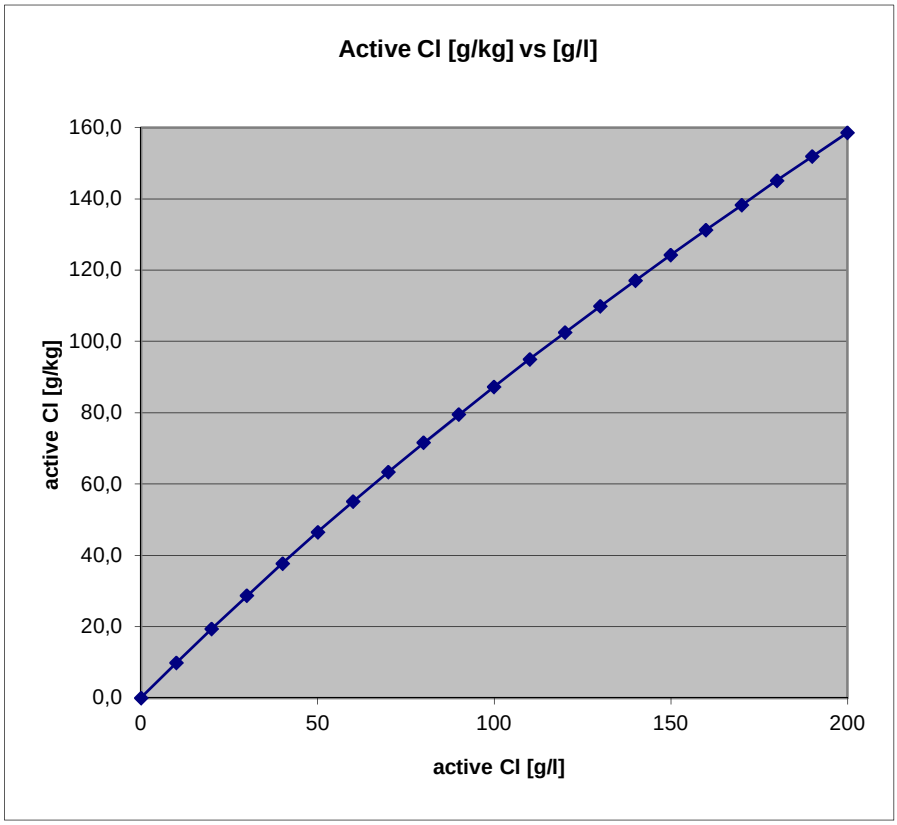
Active chlorine expressed in density and concentration

active Cl [g/l]	active Cl [g/kg]	density 20°C [kg/l]	°Baume	°chlorometrique
0	0,0	0,998	0,0	0,0
10	9,9	1,014	2,3	3,2
20	19,4	1,030	4,5	6,3
30	28,7	1,046	6,6	9,5
40	37,7	1,061	8,6	12,6
50	46,5	1,076	10,5	15,8
60	55,0	1,090	12,3	19,0
70	63,4	1,104	14,0	22,1
80	71,5	1,118	15,6	25,3
90	79,5	1,132	17,2	28,4
100	87,3	1,145	18,6	31,6
110	95,0	1,158	20,1	34,8
120	102,5	1,171	21,4	37,9
130	109,9	1,183	22,7	41,1
140	117,1	1,195	24,0	44,2
150	124,2	1,207	25,1	47,4
160	131,3	1,219	26,3	50,5
170	138,2	1,230	27,3	53,7
180	145,1	1,241	28,4	56,9
190	151,8	1,251	29,4	60,0
200	158,5	1,262	30,3	63,2

Density of sodium hypochlorite versus concentration of active chlorine



Active chlorine in g/kg and g/l



Active chlorine as function of time and temperature for 150 and 170 g/l

Active Cl concentration [g/l] as function of time and temperature, for 150g/l solutions							
	T[C]						
t[days]	0	5	10	15	20	25	30
0	150	150	150	150	150	150	150
2	150	150	150	149	149	147	143
4	150	150	149	149	147	144	137
6	150	150	149	148	146	141	131
8	150	150	149	147	144	138	125
10	150	149	149	147	143	135	119
12	150	149	148	146	141	132	114
14	150	149	148	146	140	129	109
16	150	149	148	145	139	126	104
18	150	149	148	144	137	124	99
20	150	149	147	144	136	121	95
22	149	149	147	143	135	118	91
24	149	149	147	142	133	116	87
26	149	148	146	142	132	114	83
28	149	148	146	141	131	111	79
30	149	148	146	141	130	109	75

Active Cl concentration [g/l] as function of time and temperature, for 170g/l solutions							
	T[C]						
t[days]	0	5	10	15	20	25	30
0	170	170	170	170	170	170	170
2	170	170	170	169	168	166	163
4	170	170	169	168	166	163	156
6	170	169	169	167	164	159	149
8	170	169	168	166	163	155	142
10	170	169	168	165	161	152	136
12	169	169	167	165	159	148	130
14	169	169	167	164	157	145	125
16	169	168	167	163	155	142	119
18	169	168	166	162	154	139	114
20	169	168	166	161	152	136	109
22	169	168	165	160	150	133	104
24	169	168	165	159	149	130	100
26	169	167	164	158	147	127	95
28	169	167	164	158	145	124	91
30	169	167	164	157	144	121	87

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