TECHNICAL DATA SHEET

JC 9465

Mineral / Sodium Oxychloride — a reactive-oxygen-species (ROS) oxidant & broad-spectrum disinfectant that delivers ozone-class oxidation without the hazards of dissolving a gas in water.

2.8–2.9	6.60	<1 mg/L
OXIDATION POTENTIAL (VOLTS)	LOG REDUCTION · SALMONELLA @ 2 PPM	DOSE PER MG/L INORGANIC

What It Is

JC 9465 is a liquid chelation of minerals with oxygen. The molecules are purposely designed to be weakly bound, so on contact with inorganics, microorganisms and organic matter they readily release oxygen atoms that aggressively oxidize target contaminants.

Its reactivity is closely matched to ozone — but without the engineering problems of dissolving a gas in water. Uniquely, mineral oxychlorides release single atoms of oxygen embedded within the molecular structure of organic material and pathogens, perpetuating the release of highly active oxygen throughout the water stream.

How It Works

Conventional sodium hypochlorite dissociates into a limited set of active ions. A proprietary catalyst in JC 9465 increases the availability of those active ions *and* generates multiple oxygen-radical complexes:

$$NaOCl \rightarrow HOCl + OCl^{-} + OH\bullet$$

$$\textbf{Catalyst + NaOCl} \rightarrow \textbf{HOCl + } OCl^{-} \textbf{ + OH• + M complexes}$$

These mineral-oxy complexes raise the oxidation-reduction potential (ORP) of the oxygen complex well above that of the oxygen molecule alone. Behaving like “biologic water,” the active ions interact with water and substrates to conserve ionic energy and deliver greater oxidation power at the point of reaction.

THE TAKEAWAY

Ozone-level oxidation energy from a stable, pourable liquid — generating hydroxyl radicals and singlet oxygen on demand for water, food, agriculture and industrial disinfection.

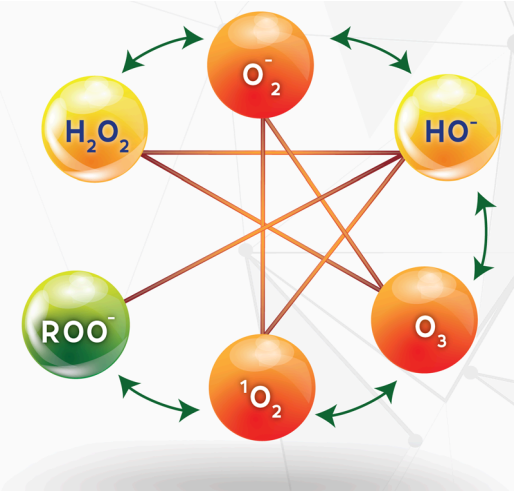
charles@jenfitch.com • www.jenfitch.com

Reactive Oxygen Species Chemistry

The decomposition of water and oxo-compounds generates several oxidation states of oxygen — superoxide (O_2^-), hydroxyl (OH•), singlet / nascent oxygen ($^1O_2$), hydroperoxyl (HO_2^-) and peroxide (O_2^{2-}). JC 9465 mimics biochemical water in the production of these oxygen species and in the conservation of their ionic energy.

Peroxide and superoxide are not, by themselves, dramatically cytotoxic — but they generate the far more devastating hydroxyl radical (OH•) through a catalyzed sequence. By supplying high-energy oxygen radicals, JC 9465 overwhelms a microbe's enzyme scavengers, peroxidizes membranes, oxidizes thiols and nucleotides, and halts protein synthesis — culminating in cell death.

Because it works through "micronutrient" minerals, spent JC 9465 residues readily break down and are consumed by nature.



Interconverting reactive oxygen species generated by JC 9465

Oxidation Potential vs. Common Oxidants

Using ORP (oxidation-reduction potential) as a practical control tool, JC 9465 achieves the target disinfection level with less product than conventional chemistries. The table ranks reagents by electrochemical potential — JC 9465 (Mineral Oxychloride) sits near the very top at **2.8–2.9 V**, second only to fluorine and on par with the hydroxyl radical, and far above chlorine (1.36 V) or sodium hypochlorite (0.94 V).

ORP LEVEL (MV)	CFU / 100 ML WATER
+200	300
+300	36
+400	3
+600	0 — Disinfection
+800	0 — Sterilization

ORP benchmark: mV required to reduce colony-forming units in the disinfection process.

OXIDATION POTENTIAL OF COMMON OXIDANTS

REAGENT	FORMULA	VOLTS
Fluorine	F_2	3.06
Mineral Oxychloride	$M_xO_yCl_t$	2.8–2.9
Hydroxyl Radical	OH•	2.80
Oxygen Ion	O^-	2.42
Ozone	O_3	2.07
Hydrogen Peroxide	H_2O_2	1.78
Perhydroxyl Radical	HO_2	1.70
Chlorine Dioxide	ClO_2	1.57
Hypochlorous Acid	HOCl	1.49
Chlorine Gas	Cl_2	1.36
Oxygen (Molecule)	O_2	1.23
Hypochlorite Ion	OCl^-	0.94
Sodium Hypochlorite	NaOCl	0.94
Hydroperoxide Anion	HO_2^-	−0.88
Superoxide Radical	O_2^-	−2.40

Product Properties

PROPERTY	SPECIFICATION
Chemical class	Mineral / sodium oxychloride ($M_xO_yCl_t$)
Physical form	Liquid concentrate
Active chemistry	Chelated mineral–oxygen complexes releasing ROS
Oxidation potential	2.8–2.9 V
Comparable oxidant	Ozone-equivalent reactivity (no gas handling)
Protective residual	Mineral oxides — guard against recontamination
Sensitivities	pH & temperature, similar to biochemical water
Control method	ORP / oxidation-reduction potential dosing

Reactivity & Dosing

TARGET	JC 9465 DOSE	NOTES
Inorganics	< 1.0 mg/L per mg/L	Well below chlorine's 6 mg/L requirement
Pathogens	1.0 mg/L per 1,000–10,000 mg/L	Broad-spectrum kill
Organics	1.0–8.0 mg/L per mg/L	Oxidizes without chlorinated by-products
Residual	Mineral oxides	Active against bacterial recontamination

Efficacy — *Salmonella enterica*

SOLUTION	PPM	LOG REDUCTION
Hypochlorite	10	2.02
Hypochlorite	100	6.49
JC 9465	**2**	**6.60**

S. enterica 10708, 30-min contact, initial 2.0×10^7 CFU/mL.

Comparison of Oxidants

FUNCTION	JC 9465	OZONE	CHLORINE	H_2O_2	$KMNO_4$
Hydrogen sulfide	Excellent	Good	Good	Excellent	Good
Ferrous / manganous ion	Excellent	Good/Fair	Good/Fair	Fair	Good
Reduce Cl-organic precursors	Good	Poor	Unacceptable	Poor	Poor
Earthy / musty odors	Excellent	Good/Exc.	Unacceptable	Poor	Fair
Enhance coagulation	Excellent	Good/Exc.	Good	Fair	Fair
Residual maintenance	Excellent	Unacceptable	Good	Unacceptable	Unacceptable
Overall rating	**Excellent**	**Good/Exc.**	**Fair**	**Good**	**Fair**

Applications

Water Treatment
Potable, waste and process water — ROS-driven advanced oxidation of inorganics, microbes and organics.

Food & Post-Harvest
Produce wash, sanitizing and post-harvest treatment with rapid, residue-friendly kill.

Agriculture
Irrigation and crop-water disinfection without toxic chlorinated by-products.

Aquaculture
Pathogen control in fish and shellfish systems at low, fish-safe dose rates.

Cooling Towers
Biofilm and microbial control with a protective mineral-oxide residual.

Oil & Gas
Souring / H_2S control and biocide duty in produced and injection water.

Certifications & Compliance

EPA FIFRA Registered | USDA Organic / NOP | NSF Listed | Potable Water Approved

Because of its effectiveness, JC 9465 residues fall well below the FDA Maximum Contaminant Level (MCL).

Handling & Control

Dosing & Monitoring
- Control feed by ORP: target +600 mV for disinfection, +800 mV for sterilization.
- Dose against measured contaminant load; residual mineral oxides guard against recontamination.
- Reactivity is pH- and temperature-sensitive — verify with a bench trial for each water source.

Safety

General Precautions
- Strong oxidizer — store cool, out of direct sunlight, away from incompatible reducers.
- Wear appropriate eye and skin protection; avoid mixing with acids or other oxidizers.
- Refer to the product SDS and label for full first-aid, storage and disposal guidance.

CONTACT & ORDERING

Charles · charles@jenfitch.com | (925) 289-3559 | www.jenfitch.com

Jenfitch, Inc. · 712 Bancroft Rd #805, Walnut Creek CA 94598