

PeroxiCal™

CALCIUM PEROXIDE

Alkaline Controlled-Release Oxygen Technology
for Superior Odor & Corrosion Control



Steady, sustained oxygen release for up to 1 year.



High available oxygen content delivers powerful performance.



BUILT-IN ALKALINITY
pH up to 13

Elevated pH optimizes sulfide binding and enhances performance.



TOTAL REPLACEMENT FOR HYDROGEN PEROXIDE

- ✓ Safer. More Stable.
- ✓ More Effective.
- ✓ Lower Total Cost.

No handling limitations or instability of liquid hydrogen peroxide.

HOW PEROXICAL™ WORKS

PeroxiCal releases hydrogen peroxide slowly and consistently in alkaline conditions. The released oxygen oxidizes hydrogen sulfide (H₂S), eliminating odor and protecting infrastructure from corrosion.

RELEASE
HYDROGEN PEROXIDE



1 Controlled-release of H₂O₂ in alkaline conditions

OXIDIZE
HYDROGEN SULFIDE



2 Oxidation of H₂S by released oxygen

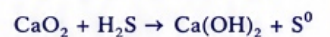
RESULT
ODOR ELIMINATION & CORROSION PROTECTION



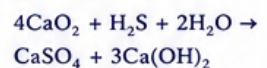
3 Conversion to harmless sulfur or sulfate compounds

CHEMICAL REACTION

Standard Reaction
(yielding elemental sulfur):



Full Oxidation
(yielding sulfates):



Reactions are pH dependent. pH > 9.2 favors sulfate formation and faster results.

WORKS SYNERGISTICALLY WITH CALCIUM NITRATE



A POWERFUL ONE-TWO PUNCH AGAINST HYDROGEN SULFIDE



CURATIVE (Calcium Peroxide):

Delivers immediate "shock" to oxidize existing H₂S and inhibit sulfate-reducing bacteria (SRB).



PREVENTATIVE (Calcium Nitrate):

Provides an alternative electron acceptor, encouraging nitrate-reducing, sulfide-oxidizing bacteria (NR-SOB) to outcompete SRB and prevent new H₂S formation.



EFFICIENCY:

This combination allows for intermittent dosing, reducing chemical costs by up to 85% compared to continuous nitrate-only treatments.

AUGMENTS CALCIUM NITRATE

- ✓ Enhances H₂S control performance and system reliability
- ✓ Extends service life of infrastructure
- ✓ Improves efficacy of nitrate programs
- ✓ Allows for lower dosages and reduced costs
- ✓ Ideal for lift stations, force mains, collection systems & headworks

PeroxiCal AUGMENTS calcium nitrate programs for maximum performance!

WORKS IN WATER & SOIL REMEDIATION



WASTEWATER TREATMENT



COLLECTION SYSTEMS



INDUSTRIAL APPLICATIONS



SOIL REMEDIATION



LANDFILL LEACHATE



ODOR & H₂S CONTROL

IDEAL FOR



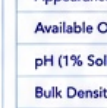
WASTEWATER TREATMENT



COLLECTION SYSTEMS



INDUSTRIAL APPLICATIONS



LIFT STATIONS & FORCE MAINS

TYPICAL PROPERTIES

Appearance	Fine off-white powder
Available Oxygen	17 – 18%
pH (1% Solution)	12.5 – 13.0
Bulk Density	55 – 65 lb/ft ³
Solubility (77°F)	46 g/100 mL
Shelf Life	Up to 1 Year

PACKAGING OPTIONS

POWDER



Pallet of 9 x 100 lb Fiber Drums

SLURRY



275-Gallon Totes

CALL FOR PRICING



Consistent Quality
Reliable Performance



Lower Cost
Per Application



Environmentally
Responsible

SAFER. SMARTER. MORE COST-EFFECTIVE.

PERFORMANCE THAT LASTS.

OCPE
ODOR CONTROL PRODUCTS & EQUIPMENT

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PeroxiCal™

— CALCIUM PEROXIDE —

THE SMARTER WAY TO CONTROL H₂S CALCIUM PEROXIDE + CALCIUM NITRATE

PROVEN TO REDUCE CHEMICAL COSTS BY UP TO 85%*

Immediate Sulfide Destruction. Long-Term Biological Control.
Superior Corrosion Protection.



ELIMINATE ODORS
Instantly destroys H₂S
on contact with powerful
oxidizing action.

PREVENT CORROSION
Raises pH and locks
sulfides in solution to
protect your infrastructure.

LOWER COSTS
Intermittent dosing
strategies reduce chemical
costs by up to 85%.

17-18% AVAILABLE OXYGEN
Equivalent Oxidizing Capacity of
Approximately 25% Hydrogen Peroxide

17-18% O₂

- Controlled-release oxygen
- Safer solid-phase chemistry
- Up to 1 year residual oxygen release
- No instability associated with liquid peroxide

BUILT-IN ALKALINITY

- Converts H₂S to non-volatile HS⁻
- Keeps sulfides in solution
- Reduces concrete crown corrosion
- Enhances odor control performance

pH UP TO 13

CALCIUM PEROXIDE	VS.	CALCIUM NITRATE
⚡ Immediate oxidation of existing H ₂ S		🕒 Requires retention time for biological action
🛡️ Raises pH and suppresses corrosion		🌿 No alkalinity benefit
⚙️ Releases oxygen continuously (17-18% available O ₂)		🦠 Biological mechanism only
🧼 Disrupts SRB biofilm matrix		🚫 Leaves biofilm intact
🔄 Curative + Preventative		🚫 Preventative only
✅ Works independently or with nitrate		🚫 Typically used alone

BEST RESULTS: USE CALCIUM PEROXIDE TO AUGMENT CALCIUM NITRATE

CURATIVE + PREVENTATIVE = COMPLETE H₂S CONTROL

Calcium Peroxide rapidly oxidizes existing sulfides while Calcium Nitrate establishes long-term biological suppression.

PROVEN. PEER-REVIEWED. PERFORMANCE.

**KEY STUDY 1:
BASELINE COST-EFFECTIVENESS**
Process Safety and Environmental Protection
CaO₂ was the most effective individual chemical for odor removal and corrosion control.
Engineered admixture (CaO₂ + nitrate) saved an additional 12% on system-wide costs.

**KEY STUDY 2:
85% COST REDUCTION (CO-DOSING)**
Science of The Total Environment
Co-dosing CaO₂ with nitrate stunned SRB and eliminated "nitrate thieves" (HNRB).
Intermittent dosing strategy reduced baseline chemical costs by up to 85% vs. continuous nitrate dosing.

**KEY STUDY 3:
ODOR & CORROSION MECHANICS**
Environmental Pollution
CaO₂ drastically elevated DO and reduced sulfide (S²⁻) to 29.83% of untreated levels.
Reduced TCOD by >50% and eliminated black-odor, preventing downstream concrete corrosion.

KEY BENEFITS SUMMARY

- ✓ Physical destruction of SRB biofilm
- ✓ Eliminates "nitrate thieves" (HNRB)
- ✓ Alkalinity locks H₂S in solution as HS⁻
- ✓ Reduces odors and corrosion
- ✓ Enables intermittent dosing
- ✓ Up to 85% lower chemical costs



BUILT FOR WASTEWATER PROFESSIONALS



- ✓ Collection System Managers
- ✓ Plant Superintendents
- ✓ Municipal Engineers
- ✓ Operations Directors
- ✓ Utility Decision Makers

PeroxiCal™
— CALCIUM PEROXIDE —

17-18% Available Oxygen
(≈25% Hydrogen Peroxide)

pH Up To 13
Built-In Alkalinity

Continuous Oxygen Release
Up to 1 Year

Advanced Powder or Slurry
Flexible Application

Augments Calcium Nitrate
Maximum Performance

OCPE
ODOR CONTROL PRODUCTS & EQUIPMENT

* Compared to continuous, standalone calcium nitrate dosing in varying wastewater system conditions.

PeroxiCal™

CALCIUM PEROXIDE

THE POWER OF  **CALCIUM PEROXIDE**

CALCIUM PEROXIDE CaO_2 + **CALCIUM NITRATE** $\text{Ca}(\text{NO}_3)_2$

THE CLEAR WINNER FOR
ODOR & CORROSION CONTROL

Boosts & Augments Calcium Nitrate
for Maximum Performance

STRONGER TOGETHER.
BETTER RESULTS.



 **275-GALLON
SLURRY**



 **PALLET OF
100-LB KEGS**



CALCIUM PEROXIDE vs. **CALCIUM NITRATE**

 Fast-Acting Instant odor destruction	 Slow-Acting Requires retention time
 Dual-Action Protection Oxidizes + raises pH	 Single-Action Relies on biology
 Destroys SRB Biofilm Long-lasting impact	 Feeds Bacteria SRB can return quickly
 Enables Intermittent Dosing Save up to 85% on chemical costs	 Requires Continuous Dosing Higher long-term cost

WHY WATER & WASTEWATER PROFESSIONALS CHOOSE PEROXICAL™

- | | | | | |
|---|---|--|--|---|
|  Advanced Slurry Technology
Stable. Effective.
Easy to handle. |  Augments Calcium Nitrate Programs
Stronger synergy.
Better outcomes. |  Proven Performance
Backed by science.
Trusted in the field. |  Lower Costs. Better Results.
Up to 85% savings
with intermittent dosing. |  Made for Wastewater Professionals
Engineered for real-world challenges. |
|---|---|--|--|---|

PeroxiCal™

CALCIUM PEROXIDE

**THE
SMARTER
OXIDANT.
STRONGER
RESULTS.**

Advanced wastewater treatment with the power of calcium peroxide.



THE POWER OF PEROXICAL



SLOW-RELEASE OXYGEN & H₂O₂

Sustained oxidation for long-term performance



BIOLOGICAL INHIBITOR

Suppresses sulfate-reducing bacteria (SRB) and controls H₂S at the source



BUILDS ALKALINITY & STABILIZES pH

Neutralizes acids and creates an ideal environment for biological treatment



NUTRIENT REMOVAL

Enhances nitrification and precipitates phosphorus for cleaner effluent



IMPROVES SLUDGE & DEWATERABILITY

Breaks down sludge matrix and reduces solids volume



POWDER OR SLURRY

Available in dry powder or pumpable slurry formulations for maximum application flexibility.



PeroxiCal™

CALCIUM PEROXIDE



- ✓ **SUSTAINED SRB INHIBITION**
Provides long-term suppression of sulfate-reducing bacteria and H₂S production.
- ✓ **SLOW & STEADY PERFORMANCE**
Releases oxygen gradually for sustained oxidation and long-lasting results.
- ✓ **BUILDS ALKALINITY**
Raises pH and alkalinity, creating optimal conditions for biological treatment.
- ✓ **CORROSION PROTECTION**
Raises pH and alkalinity, helping reduce H₂S release and minimize biogenic sulfuric acid corrosion.
- ✓ **BIOFILM & SLUDGE PENETRATION**
Solid particles embed in biofilms and sludge, delivering oxidants where SRB thrive.
- ✓ **ENHANCES N & P REMOVAL**
Boosts nitrification and binds phosphorus for better effluent quality.
- ✓ **POWDER OR SLURRY FORMULATIONS**
Available as dry powder or pumpable slurry to accommodate lift stations, force mains, gravity sewers, lagoons, sludge treatment, and industrial wastewater applications.

VS

HYDROGEN PEROXIDE



- ✗ **SHORT-LIVED SRB INHIBITION**
Provides rapid, temporary inhibition; SRB populations often recover within days.
- ✗ **RAPID CONSUMPTION**
Reacted quickly by organics and reduced compounds; little residual effect.
- ✗ **LIMITED BIOFILM PENETRATION**
Liquid disperses quickly and has difficulty reaching deep biofilm layers.
- ✗ **CONSUMES ALKALINITY**
Oxidation of sulfides can consume bicarbonate alkalinity and lower pH, potentially increasing corrosion risk if not properly managed.
- ✗ **FREQUENT DOSING REQUIRED**
Continuous or repeated dosing needed for ongoing control.
- ✗ **HIGHER HANDLING & SAFETY RISK**
Corrosive liquid; requires special handling, storage, and spill containment.

ALKALINITY & CORROSION: THE CRITICAL DIFFERENCE

HYDROGEN PEROXIDE (25%-50%)

- ⬇ Oxidizes sulfide to sulfate and produces sulfuric acid (H₂SO₄). The reaction releases hydrogen ions (H⁺).
- ⬇ Consumes bicarbonate alkalinity, lowering pH and stripping the water of buffering capacity.
- ⬇ Lower pH (<6.5) increases the risk of aggressive corrosion on concrete, steel, and iron pipe.

CALCIUM PEROXIDE (POWDER OR SLURRY)

- ⬆ Hydrolyzes in water to release H₂O₂ and calcium hydroxide (Ca(OH)₂).
- ⬆ Adds hydroxide ions (OH⁻), increasing total alkalinity and raising pH.
- ⬆ Higher pH (>8) helps prevent corrosion and can promote protective calcium carbonate scaling on pipe walls.

Proper alkalinity control is essential for infrastructure protection and long-term system performance.

RESEARCH-BACKED PERFORMANCE

- ✓ Comparative studies on solid-phase oxygen show that a small dose of H₂O₂ drops sulfide levels immediately, but SRB populations recover and resume H₂S production within 4 days. (ScienceDirect - Water Research, 2018)
- ✓ A single application of formulation-stabilized calcium peroxide inhibits SRB activity and stops H₂S formation for more than 40 days. (ScienceDirect - Chemical Engineering Journal, 2015)
- ✓ Environmental remediation research shows CaO₂ alters microbial community structure—diminishing anaerobic SRB populations while encouraging nitrate-reducing and sulfide-oxidizing bacteria. (National Institute of Environmental Health Sciences - 2020)

SRB INHIBITION: FAST SUPPRESSION vs. LONG-TERM PREVENTION

HYDROGEN PEROXIDE (H₂O₂)

- ▶ Inhibits SRB through oxidative shock
- ▶ Immediate reduction of sulfides and odors
- ▶ Raises dissolved oxygen temporarily
- ▶ Effect is short-lived
- ▶ SRB populations may recover in days
- ▶ Best for shock treatment and rapid response

CALCIUM PEROXIDE (CaO₂)

- ▶ Also inhibits SRB
- ▶ Sustained oxygen release over days to weeks
- ▶ Creates alkaline conditions unfavorable to SRB
- ▶ Penetrates sludge and biofilms
- ▶ Long residual control
- ▶ Maintains sulfide suppression for weeks after application

CHOOSE PEROXICAL. BUILT FOR PERFORMANCE. DESIGNED FOR RESULTS.