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Expanded Clay Aggregate (ECA®)

A Passive, Long-Life Surface Solution for Municipal Water Conservation

Reducing evaporation losses by up to 60% while protecting reservoirs, lakes, and public water infrastructure without chemicals, energy consumption, or mechanical systems.

Engineered for scalable deployment across reservoirs, treatment ponds, and biogas-linked municipal assets.

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What is Expanded Clay Aggregate?

KEY CHARACTERISTICS

- Inert and non-toxic
- Lightweight yet structurally stable
- Chemically neutral in water
- Safe for people, plants, fish, and infrastructure

NATURAL ORIGIN. ENGINEERED PERFORMANCE.

Expanded Clay Aggregate (ECA®) is produced from selected natural mining clay, fired at controlled high temperatures around 1100–1200°C. During firing, the clay expands to form lightweight, rounded granules with a sealed outer shell and a porous internal core.

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HOW Expanded Clay Aggregate (ECA®) SAVES WATER

INTERRUPTING EVAPORATION AT THE SOURCE SOLAR SHIELDING

- Reduces direct solar radiation
- Lowers surface water temperature

WIND DAMPENING

- Breaks surface airflow
- Limits wind-driven evaporation

INDICATIVE EVAPORATION REDUCTION: 30–60%

- depending on site conditions.
- What stays covered, stays conserved.

FLOATING INSULATION LAYER

- Forms a continuous, dynamic surface cover
- Restricts vapor escape

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Granule Sizes and Their Applications

DESIGNED FOR REAL-WORLD WATER BODIES STANDARD SIZE RANGES

15–30 mm
Best suited for reservoirs, lakes, large ponds, open storage basins

8–15 mm
Suitable for smaller ponds, tanks, and controlled water features

(screening recommended near hydraulic components)
Correct sizing ensures stability, safety, and longevity.

8–15 mm

15–30 mm

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CORE ENGINEERING ADVANTAGES

LOW BULK DENSITY

ECA® has **minimal load** on liners and structures, ensuring stability while supporting efficient water management systems without added weight.

HIGH CRUSHING STRENGTH

The material's **high crushing strength** resists breakdown, providing long-lasting durability and reliable performance even under significant pressure.

NEUTRAL CHEMISTRY

ECA® maintains a **neutral chemistry**, ensuring no alteration to water quality, making it safe for aquatic life and surrounding ecosystems.

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TYPICAL CHEMICAL PROPERTIES

STABLE, PREDICTABLE, ENVIRONMENTALLY SAFE

- Material type: **Fired alumino-silicate clay**
- pH (material): **6.5 – 7.5**
- Impact on water pH: **Neutral**
- Solubility in water: **Insoluble**
- Toxic leaching: **None detected**

TYPICAL OXIDE COMPOSITION

- SiO_2: **60–70%**
- Al_2O_3: **15–25%**
- Fe_2O_3: **5–8%**
- CaO + MgO + trace oxides: **<5%**

CHEMISTRY THAT STAYS IN BALANCE.

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PHYSICAL AND MECHANICAL PROPERTIES

STRENGTH WITHOUT STRUCTURAL PENALTY

- Bulk density: **200–800 kg/m³**
- Particle density: **1.0–1.3 g/cm³**
- Total porosity: **65–85%**
- Water absorption: **10–25% by weight**
- Crushing strength: **>2–6 MPa (size dependent)**
- Abrasion resistance: **High**

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TWO MATERIAL BEHAVIOURS. ONE FUNCTIONAL

ABSORPTION: WATER'S BENEFICIAL ENTRY

Expanded Clay Aggregate (ECA®) absorbs water through its internal pores, enhancing thermal buffering and improving floating stability. This process allows the aggregate to maintain a balanced water temperature while contributing to a more stable aquatic environment, promoting healthier water bodies.

ADSORPTION: NUTRIENT INTERACTION

ECA® also features adsorption capabilities, where dissolved substances adhere to the surface and pore walls. This interaction enables crucial nutrient cycling, particularly with ammonia, fostering biological activity. As a result, ECA® supports the overall health and quality of water systems.

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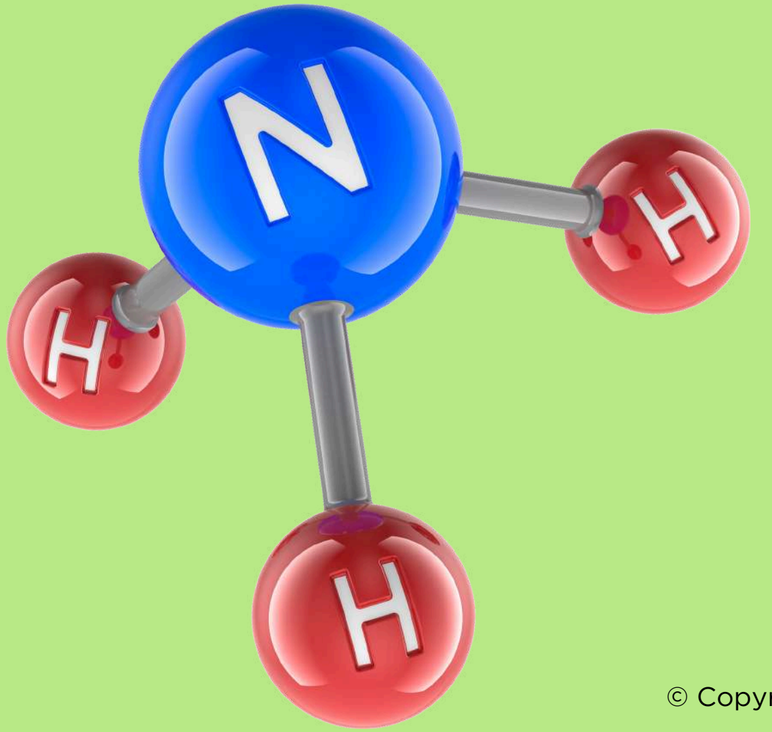
AMMONIA INTERACTION AND WATER QUALITY



SUPPORTING HEALTHIER WATER SYSTEMS

- High specific surface area: **300–600 m^2/m^3**
- Adsorbs ammonium ions (NH_4^+)
- Facilitates biological nitrification processes

INDICATIVE AMMONIA REDUCTION: 20–50%,

depending on system design and biofilm development.

CLEANER WATER BEGINS AT THE SURFACE.

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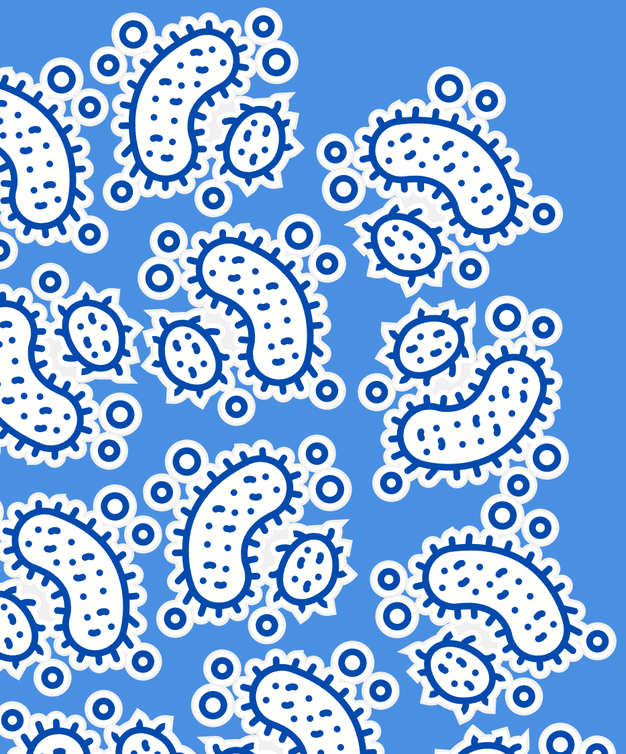
THE INVISIBLE BENEFITS OF BIOFILM



THE INVISIBLE LAYER THAT WORKS CONTINUOUSLY

The porous and textured surface of Expanded Clay Aggregate (ECA®) provides an ideal substrate for beneficial microbial biofilms.

SYSTEM BENEFITS

- Conversion of ammonia to less harmful compounds
- Reduction in organic load
- Improved water clarity
- Suppression of excessive algae growth

BIOLOGY AT WORK, WITHOUT CHEMICAL INTERVENTION.

SAFETY AND CONTROL MEASURES

SIMPLE CONTROLS. LONG-TERM RELIABILITY

- Mesh or perforated screens at inlets and outlets
- Pebble traps or collection chambers before pumps
- Optional geotextile layer below granules
- Periodic inspection as part of routine maintenance

GOOD DETAILING PRESERVES PERFORMANCE.

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TESTING, SAMPLES & DOCUMENTATION

CONFIDENCE COMES FROM VERIFICATION
AVAILABLE UPON REQUEST

Physical material samples

Laboratory test reports covering:

- Density
- Water absorption
- Crushing strength
- pH neutrality

COMPLIANCE SUPPORT

- Environmental safety declarations
- Non-toxic material confirmation

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DESIGN CONSIDERATIONS

TRANSPARENCY THAT ENGINEERS APPRECIATE

Not intended as a standalone chemical treatment system

Performance influenced by:

- Surface coverage ratio
- Wind exposure
- Water depth
- Maintenance practices

DESIGNED PERFORMANCE COMES FROM INFORMED DEPLOYMENT.

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WHY EXPANDED CLAY AGGREGATE (ECA®)?

BECAUSE PASSIVE SOLUTIONS SCALE BEST

- No energy consumption
- No moving parts
- No chemical dosing
- Minimal maintenance
- Long service life

A ONE-TIME INSTALLATION THAT KEEPS WORKING.

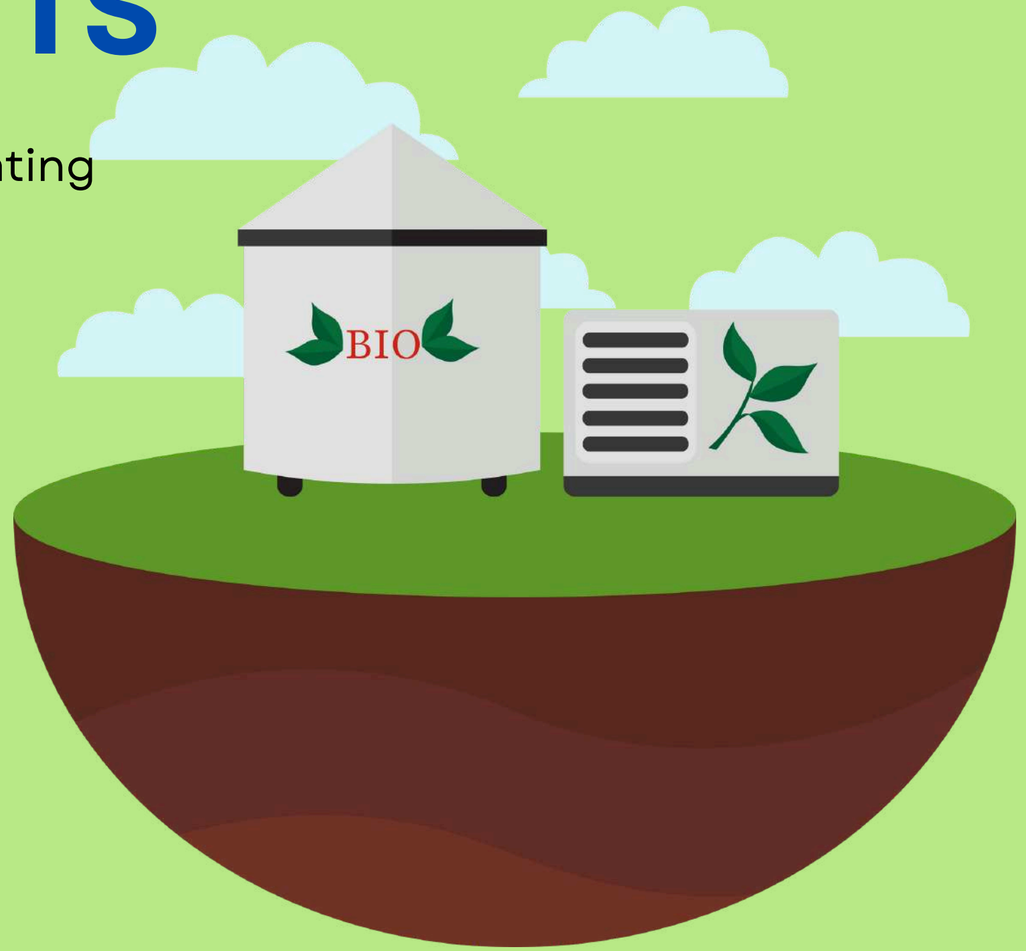
BIOGAS-SPECIFIC ADDENDUM HIGHLIGHTS

Expanded Clay Aggregate (ECA®) acts as a self-adjusting floating cover for biogas digesters and slurry tanks.

Key Benefits:

- Reduces methane and odor emissions
- Minimizes heat loss
- Prevents rainwater dilution
- Improves gas capture stability
- Requires no power or mechanical systems

Applications include agricultural biogas plants, industrial digesters, and slurry storage tanks.



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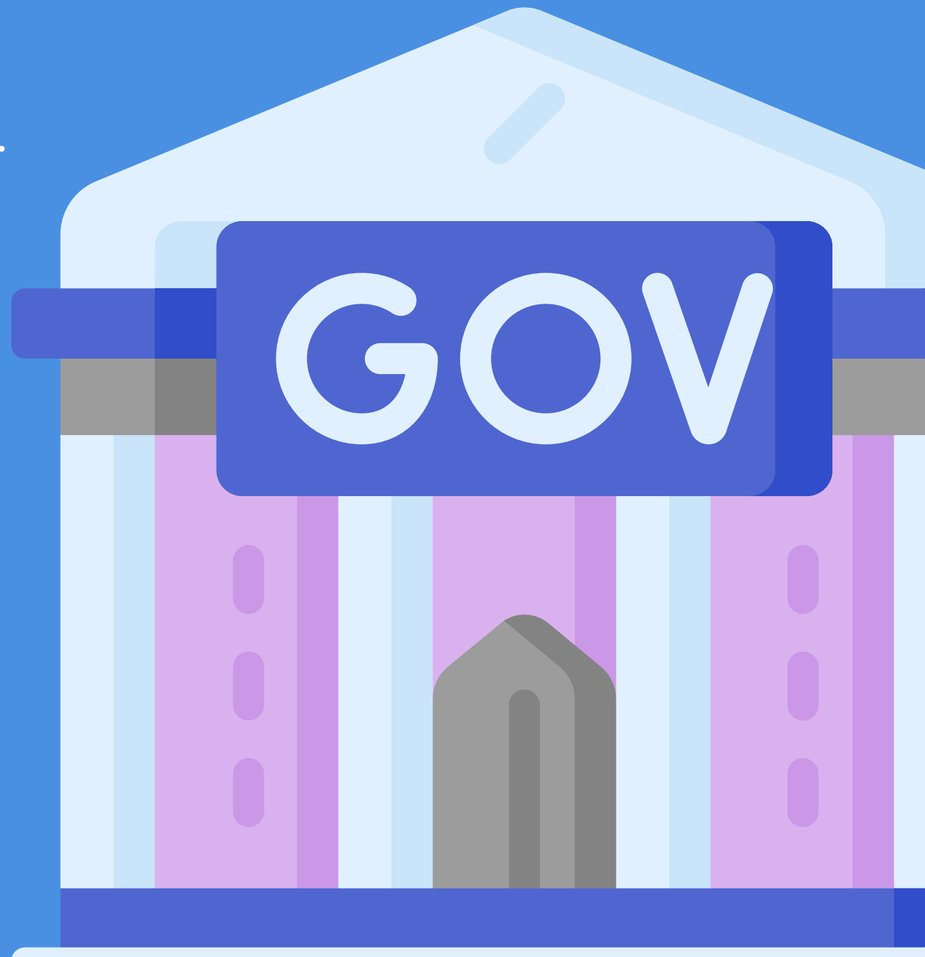
GOVERNMENTS TO NOTE

Expanded Clay Aggregate (ECA®) is a lightweight, inert fired clay material suitable for water conservation and biogas applications. When deployed as a floating surface layer, it reduces evaporation losses by 30–60% and improves environmental compliance in biogas systems by limiting methane emissions and thermal losses.

The material is non-toxic, chemically neutral, and has a service life exceeding 10–20 years.



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DECISION MAKER BRIEF

WHAT IT DOES:

Expanded Clay Aggregate (ECA®) forms a floating surface layer that reduces water and energy losses.

WHY IT MATTERS:

- Water savings up to 60%
- Improved renewable energy efficiency
- No operational power or chemical inputs

A ONE-TIME INSTALLATION THAT KEEPS WORKING.

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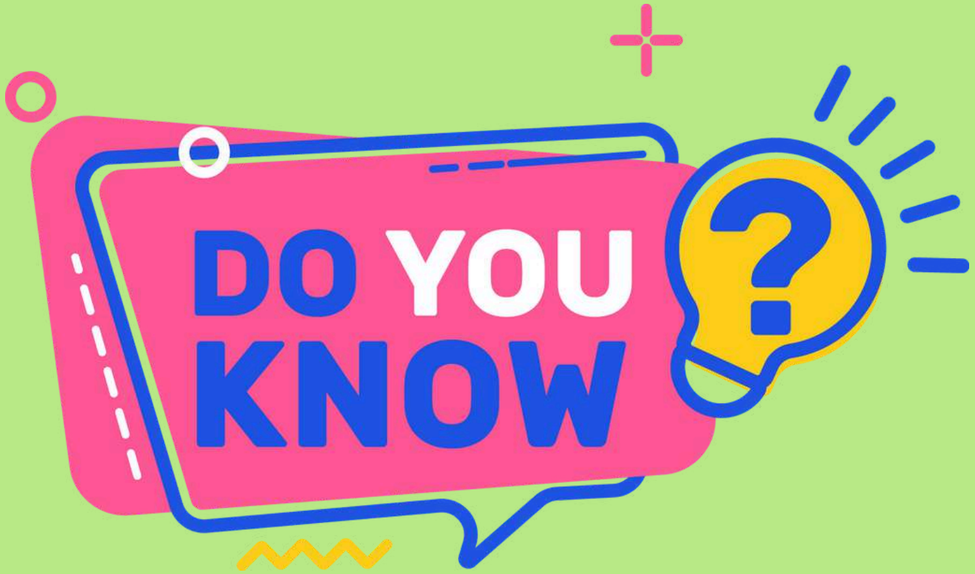
FINAL INSIGHT & CLOSURE

DID YOU KNOW?

Expanded Clay Aggregate (ECA®) also acts as a floating cover for biogas and slurry tanks.

ADDITIONAL BENEFITS IN BIOGAS APPLICATIONS

- Reduces methane and odor emissions
- Minimizes heat loss from digesters
- Limits rainwater dilution
- Improves gas capture efficiency
- Creates a natural, self-adjusting floating cover



DESIGNED PERFORMANCE COMES FROM INFORMED DEPLOYMENT.

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Thank You! Questions?

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One material. Multiple surface solutions.