

## Technical Data Sheet (TDS)

### 1. Product Overview

- **Product Name:** Calcium Formate
- **English Name:** Calcium Formate
- **CAS Number:** 544-17-2
- **Formula:** Ca(HCOO)<sub>2</sub>
- **Molecular Weight:** 130.11 g/mol
- **Product Characteristics:** High-purity white crystalline powder/granules, slightly hygroscopic, water-soluble, mild alkaline (5% aq. solution). Non-combustible, stable under normal storage; reacts with strong acids to release formic acid and decomposes at >300°C. FDA/EU/China approved for feed/food use; excellent concrete early strength agent, feed calcium source/acidifier with low impurity content and eco-friendly properties.

### 2. Technical Specifications

Item	Specification
Appearance	White to off-white crystalline powder/granules
Purity (Ca(HCOO) <sub>2</sub> )	≥ 98.0%
Calcium (Ca) Content	30.0–32.0%
Moisture Content	≤ 0.5%
pH Value (5% aq. solution, 25°C)	6.5–8.0
Chloride (Cl <sup>-</sup> )	≤ 0.05%
Sulfate (SO <sub>4</sub> <sup>2-</sup> )	≤ 0.05%
Heavy Metals (Pb)	≤ 5 ppm
Iron (Fe)	≤ 5 ppm
Insoluble Matter in Water	≤ 0.1%
Solubility (20°C)	≥16.0 g/100mL (water)
Density (25°C)	2.02 g/cm <sup>3</sup>
Hygroscopy	Slightly hygroscopic

### 3. Product Advantages

1. **High Efficiency:** Boosts concrete early strength (3–7 days) by 30–50% without affecting late strength; ideal for low-temperature construction.
2. **Dual-Function Feed Additive:** Serves as calcium source (bone development) and acidifier (gastrointestinal health) for livestock/poultry/aquaculture.
3. **Regulatory Approved:** FDA/EU/China certified for feed/food use; non-toxic, no harmful residues.
4. **Good Solubility:** Water-soluble for uniform mixing in concrete/feed/formulations; easy to dose and apply.
5. **Stable Performance:** Slightly hygroscopic with no caking (proper packaging); chemically stable under normal storage.
6. **Cost-Effective:** Low dosage, high efficiency; reduces production costs for construction/feed industries.
7. **Eco-Friendly:** Biodegradable formate ion; no environmental pollution; low aquatic toxicity.

### 4. Application Fields



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- **Construction:** Concrete/mortar early strength agent; precast concrete products (accelerates setting/hardening, shortens construction period).
- **Animal Feed:** Calcium source/acidifier for poultry, livestock, aquaculture (improves feed digestibility and animal growth rate).
- **Food Industry:** Preservative/calcium fortifier for baked goods, dairy, canned food (per regulatory dosage limits).
- **Leather Tanning:** Eco-friendly tanning agent (improves leather softness/toughness; reduces chromium usage).
- **Chemical Synthesis:** Intermediate for formate esters/calcium salts; catalyst for organic synthesis reactions.
- **Other:** Eco-friendly deicing agent (alternative to chloride salts); water treatment antiscaling agent.

### 5. Usage Methods

- **Concrete Early Strength Agent:** Add 0.5–2.0% (mass ratio of cement weight) to concrete mixture; mix evenly with cement/sand/aggregate before adding water.
- **Feed Additive:** Add 0.5–2.0% to animal feed; mix uniformly (adjust dosage by species/age; no additional acidifier/calcium source needed).
- **Food Preservative/Fortifier:** Add 0.01–0.1% to food products (comply with GB 1886.221-2016/FDA/EU limits).
- **Leather Tanning:** Prepare 5–10% aq. solution; immerse leather for 2–4h at 40–50°C; rinse and proceed to next tanning step.
- **Optimal Conditions:** Use at 5–40°C; avoid mixing with strong acids; store in moisture-proof packaging to prevent caking.

### 6. Packaging & Storage

- **Packaging:** 1 kg/bag (feed/food grade), 25 kg HDPE moisture-proof drums, 50 kg fiber drums, 1000 kg IBC totes (bulk industrial); anti-caking packaging available.
- **Storage:** Cool, dry, well-ventilated warehouse ( $\leq 30^{\circ}\text{C}$ ); sealed packaging; avoid direct sunlight, high humidity, strong acids (dedicated storage area).
- **Shelf Life:** 36 months (unopened); 6 months after opening (seal tightly after use).
- **Transportation:** Non-hazardous goods; avoid moisture, collision, acid contact during transport; keep sealed.

### 7. Safety & Protection

- Wear nitrile gloves, safety goggles, and dust mask for bulk powder handling; avoid dust inhalation/skin-eye contact.
- Rinse skin/eyes with plenty of water immediately if contact occurs; consult a doctor if irritation persists.
- Do not mix with strong acids (releases formic acid gas); use fume hood if acid contact is unavoidable.
- Separate feed/food grade from industrial grade (dedicated storage/handling).

### 8. Quality Assurance

- Manufactured under ISO 9001 (quality) and ISO 14001 (environmental) management systems; GMP/HACCP for feed/food grade.
- Each batch is strictly tested and accompanied by a COA (Certificate of Analysis) for compliance with industrial/regulatory standards.
- Provide customized technical solutions (dosage, formulation) for concrete/feed/food applications; on-site technical support available.