

## Technical Data Sheet (TDS)

### - Feed Grade Calcium Formate (544-17-2)

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#### 1. Product Overview

- **Product Name:** Calcium Formate (Feed Grade)
- **CAS Number:** 544-17-2
- **Molecular Formula:**  $C_2H_2CaO_4$  | **Molecular Weight:** 130.10 g/mol
- **Chemical Classification:** Organic calcium salt, feed grade acidifier & mineral supplement
- **Core Characteristics:** High purity ( $\geq 98.0\%$ ), white crystalline powder, slightly hygroscopic, water-soluble, stable under feed processing conditions. Serves as an **organic calcium supplement** (high bioavailability) and **feed acidifier** (lowers stomach pH), also acts as a mild mold inhibitor. Compliant with GB/EU/FDA feed safety standards, non-toxic at recommended levels for all livestock, poultry and aquaculture animals.
- **Core Application:** Exclusive feed additive for swine, poultry, ruminants and aquatic animals. Supplements dietary calcium, improves feed digestibility and nutrient absorption, reduces intestinal pathogenic bacteria, prevents calcium deficiency diseases, promotes bone development and growth performance; ideal for young animals and high-yield livestock/poultry.

#### 2. Technical Specifications (Feed Grade, Compliant with GB 13078.1-2017)

Item	Standard Requirement	Test Method
Appearance	White crystalline powder, free-flowing, odorless	Visual & Olfactory Inspection
Calcium Formate Assay	$\geq 98.0\%$	Titrimetric Method
Calcium Content (as Ca)	30.0-31.5%	Atomic Absorption Spectrometry (AAS)
Moisture Content	$\leq 0.5\%$	Karl Fischer Titration
pH Value (5% aqueous, 25°C)	6.5-8.0	Digital pH Meter
Residue on Ignition	$\leq 0.1\%$	Gravimetric Method (600±50°C)
Chloride (as $Cl^-$ )	$\leq 0.05\%$	Volumetric Method ( $AgNO_3$ )
Sulfate (as $SO_4^{2-}$ )	$\leq 0.05\%$	Turbidimetric Method
Heavy Metals (as Pb)	$\leq 5$ ppm	Atomic Absorption Spectrometry (AAS)
Arsenic (As)	$\leq 2$ ppm	Atomic Fluorescence Spectrometry (AFS)
Cadmium (Cd)	$\leq 1$ ppm	AAS
Mercury (Hg)	$\leq 0.1$ ppm	Cold Vapor Atomic Absorption
Total Bacterial Count	$\leq 100$ CFU/g	Plate Count Method
E. coli	Negative	Microbiological Detection
Salmonella	Negative in 25g	GB 13078.1 Method
Bulk Density	0.90-1.10 g/cm <sup>3</sup>	Volumetric Method
Water Solubility	$\geq 16$ g/100 mL (25°C)	Visual/Volumetric Method

#### 3. Product Advantages (Feed Grade Focus)

1. **High Bioavailability Calcium:** Organic calcium form, absorbed faster and more completely by animal intestines than inorganic calcium (e.g., calcium carbonate); suitable for young animals with immature digestive systems, prevents rickets and osteomalacia.
2. **Dual Function (Calcium + Acidifier):** Lowers animal gastric pH without increasing feed acidity, activates digestive enzymes (pepsin), improves feed protein/carbohydrate digestibility and nutrient absorption rate.

3. **Intestinal Health Improvement:** Inhibits the growth of pathogenic bacteria (*E. coli*, *Salmonella*) in the intestines, promotes the reproduction of beneficial bacteria (*Lactobacillus*), reduces diarrhea rate (especially for weaned piglets).

#### 4. Application & Dosage Guide (Feed Formulation)

##### 4.1 Target Species & Core Benefits

- **Swine:** Reduces weaning piglet diarrhea, improves calcium absorption and bone development; boosts sow milk calcium content, enhances litter vitality; increases finisher weight gain and feed conversion rate (FCR).
- **Poultry:** Promotes chick bone development and reduces leg diseases; improves eggshell quality (thickness/hardness) and hatchability in layers; increases broiler growth rate and carcass quality.
- **Ruminants:** Supplements calcium for calves/sheep (promotes rumen development); improves dairy cow milk production and milk calcium content; prevents milk fever in high-yield dairy cows.

##### 4.2 Recommended Inclusion Levels (g/ton of total compound feed)

Species	Growth/Production Stage	Recommended Dosage
Swine	Weaned Piglets (0-30 kg)	800-1500
Swine	Growers/Finishers (30-120 kg)	500-800
Swine	Sows (Gestation/Lactation)	1000-1800
Poultry	Chicks/Ducklings (0-21 days)	600-1000
Poultry	Layers (Egg production)	800-1200
Poultry	Broilers (Finisher)	500-800
Ruminants	Calves/Young Sheep	700-1200
Ruminants	Dairy Cows (Lactation)	1000-2000
Aquaculture	Fish/Shrimp (All stages)	600-1000
<i>Note: Adjust dosage based on animal species, production stage, feed calcium level and health status. Higher dosage is recommended for young animals, high-yield livestock and animals with calcium deficiency.</i>		

#### 5. Handling & Formulation Guidelines

1. **Premixing is Recommended:** Premix calcium formate with an inert carrier (corn starch, wheat middlings) at a ratio of 1:10 to 1:20 to create a premix; ensures uniform distribution in the main feed batch (avoids local concentration).
2. **Dry Handling:** The product is slightly hygroscopic; use dry equipment/tools for weighing/mixing. Avoid contact with excessive water during feed production to prevent caking.
3. **Processing Timing:** Can be added at any stage of feed production (mixing/pelleting); stable under high-temperature pelleting, no need for post-cooling addition.

#### 6. Packaging, Storage & Shelf Life

- **Small Packaging:** 1 kg/5 kg moisture-proof aluminum foil bags (for small feed mills/premix manufacturers)
- **Standard Packaging:** 25 kg moisture-proof PP woven bags with double PE inner liners (industrial use, anti-hygroscopic)

#### 7. Quality Assurance & Control

1. **Production Standards:** Produced in a GMP-compliant facility with ISO 9001 (Quality Management) and ISO 14001 (Environmental Management) certifications. Adopt closed synthesis and drying process to ensure high purity and low moisture; raw materials meet feed grade standards.
2. **Batch Testing:** Every batch undergoes rigorous testing for purity, calcium content, moisture, heavy metals, microbiology and physical-chemical properties. A detailed English COA is provided with each shipment, including solubility and activity test data.