

TOROWHITE Calcium Sulfate

Effective Calcium for Supplements & Food Fortification — Summary of Advantages

TOROWHITE is a **natural food-grade calcium sulfate (E516)**, available as FOG 20 (dihydrate) and ING 04 (Anhydrite II). It reframes calcium fortification around **Effective Calcium** — elemental calcium × absorption × processing functionality — rather than the misleading “% on the label”. The result is a dual-nutrient, multifunctional calcium platform that delivers as much usable calcium as calcium carbonate, works regardless of stomach acid, protects iron status, and does the job of several ingredients at once.

Effective Calcium: do the math

Metric	Calcium carbonate	TOROWHITE (CaSO ₄)
Label: elemental calcium	40%	29%
Absorption (food matrix)	31%	43%
Net calcium delivered	12.4%	12.5%
pH-independent absorption	No — needs acid	Yes (pH 2–12)
Iron absorption	Strong inhibitor	Minimal / no blockage
Food-processing functionality	None	Multiple

Same net calcium as CaCO₃ — plus absorption you can rely on and functionality CaCO₃ cannot offer. (Sources: Martin et al. 2002; Weaver & Plawecki 1994; Sheikh et al. 1987, NEJM.)

Absorption you can rely on — for everyone

Calcium sulfate dissolves **independently of stomach acid across pH 2–12**, so it absorbs predictably where calcium carbonate fails. In a food matrix (bread) it reaches **43% absorption — matching milk and well above CaCO₃**. This makes one formulation work for a teenager skipping breakfast, a 65-year-old on antacids/PPIs, and post-bariatric patients alike, and it stays stable in acidic and carbonated beverages where CaCO₃ reacts and releases CO₂.

Iron-compatible — for the people who need calcium most

Unlike calcium carbonate and calcium citrate malate, which suppress iron uptake at the duodenal DMT-1 transporter, TOROWHITE does **not block iron absorption**. That is decisive for the groups who are most calcium- and iron-deficient at once — teenage girls, pregnant women, athletes and plant-based eaters — letting both nutrients sit in the same product.

Two nutrients in one: calcium + sulfate

Every gram delivers calcium **and sulfate**, the 4th most abundant anion in human plasma — essential for Phase II liver detoxification, steroid/hormone metabolism, joint and connective-tissue (proteoglycan) synthesis, and fetal skeletal development. Carbonate leaves the body as CO₂; citrate is already abundant from diet. TOROWHITE is a genuine dual-nutrient delivery system.

One ingredient, multiple functions

- **Replaces several line items** — a single mineral acts as calcium source, coagulant, firming agent, dough stabiliser, baking-powder and phosphate-replacement system, whitening/opacity agent and anti-caking aid.
- **Lower total formulation cost & cleaner label** — buy one ingredient instead of calcium plus a separate firming agent, stabiliser and processing aid; simpler supply chain, shorter ingredient list.
- **Two grades, one platform** — FOG 20 (dihydrate, 23% Ca) for tofu, dairy, meat and fortification; ING 04 (Anhydrite II, 29% Ca) for gum base, bakery premixes, whitening and dry-mix technologies.

Natural, and the friendliest regulatory profile

TOROWHITE is a **100% natural mineral**, carrying the highest EU safety classification: **E516 with ADI “not specified” — quantum satis, no upper use limit**, so formulations scale without a fortification ceiling. It is GRAS in the US, accepted under CODEX (INS 516), Demeter-authorized for organic, and certified FSSC 22000, Halal, Kosher, Non-GMO and allergen-free — a clean, natural-mineral story that carbonate and synthetic salts struggle to match. Against a backdrop where an estimated 5 billion people (66% of the world) have inadequate calcium intake, that combination of reliable absorption and regulatory freedom is a real advantage.

Bottom line: TOROWHITE doesn't compete on the number on the label — it competes on what the body actually absorbs and what the formulation actually needs. One natural ingredient, two essential nutrients, multiple functions, and the cleanest regulatory profile in the calcium category.

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