Growlrr Foods

Pilot Binder

Revision H.3.1.1

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Formulations and Standard Operating Procedure for Pilot Run

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Abstract

Growlrr Foods pioneers the future of pet nutrition with biologically appropriate, human-grade balanced and complete meals built on evolutionary science and rigorous safety systems. Our structured rotation model delivers balance, variety, and long-term vitality while preserving the simplicity pet parents need, while every formulation is regulatory compliant with AAFCO and FEDIAF standards. Our interlocking products are designed with a systems approach, formulated from first principles, engineered with modularity, anchored by compliance discipline, validated by clinical nutritionists, tested in accredited labs, and finally approved by the only ones that matter: cats and dogs themselves.

Preface

This binder describes the Growlrr pilot formulations, standard operating procedures for building the product, bill of materials,incomming and outgoing QC, regulatory framework, nutritonal audits for formulation and appendices. Values are design assumptions for pilot runs and are intended to be validated by finished-product assays. Standards and raw-ingredient data are cited in the bibliography. All SKUs meet baseline nutrient standards for labeling.

The present pilot study has been designed as a **60 kg retort validation run** with **6 distinct recipes 10 kg each**, retort stabilised and packed into standardized **100 g pouches**. We deliberately use **pouches rather than cans** at this stage, since pouch retort facilities are cost-accessible, and they provide sufficient resolution to measure our primary objectives. The learnings from pouches are fully translatable to cans for subsequent scale-up.

Objectives of the Pilot Run

1. **Nutrient assays:** Verify macro- and micro-nutrient retention post-retort against AAFCO/FEDIAF floors and ceilings.
2. **Shelf-life testing:** Establish accelerated shelf life values with rancidity, oxidation, and microbial profiles.
3. **Structural integrity:** Assess gel matrix stability, phase separation, and form factor.
4. **Palatability:** Track voluntary intake, preference, and tolerance in animals across SKUs.
5. **Ingredient validation:** Confirm that each SKU's ingredient design performs as expected under thermal processing.
6. **Process validation:** Confirm reproducibility of SOP steps (solid prep, blanch, liquid assembly, premix dosing, sealing, retort profile).
7. **Sub-optimisation testing:** Fine-tune gel matrix, chelators, palatants, tocopherol distribution, and retort curve.
8. **Credibility:** Generate assay-backed evidence that Growlrr's rotation logic, premix dosing, and paired-SKU genome strategy are regulator-ready and consumer-safe.

This pilot is therefore not only a technical validation but also a credibility-building exercise. It demonstrates the safety, stability, and innovation of Growlrr's formulations under real-world processing conditions, bridging design assumptions to empirical data.

Executive Summary

Growlrr Foods is a pet nutrition start-up pioneering a new standard in companion animal feeding: human-grade, biologically aligned, rotation-based meals delivered in retort pouches. By applying evolutionary nutrition science, rigorous formulation, and food-safety systems from human FMCG, Growlrr delivers meals that are simultaneously safe, compliant, and innovative.

The model is revolutionary in three ways. First, it positions whole-protein organ blends and fish as the nutritional core, respecting the biology of obligate carnivores. Second, it introduces a structured **rotation system** across multiple SKUs, ensuring balanced micronutrient intake, reduced dietary monotony, and better long-term health outcomes. Third, it uses **human-grade sourcing and processing**: retort sterilisation for ambient safety, alginate-stabilised broth for texture and nutrient stability, and premix formulations designed to meet regulatory nutrient floors without dangerous excesses.

Growlrr is innovative yet safe. Innovative because it proves pet food can be designed as a system, not just a flavour choice, and shows that transparency and whole-food integrity can scale commercially. Safe because every formulation is locked by SOPs, nutrient budgets, and conservative safety margins, ensuring compliance with FEDIAF/AAFCO standards while respecting vitamin A limits, retort stability, and trace mineral balance.

What makes Growlrr unique is this fusion of **science, care, and operational discipline**. It doesn't just promise "better food" — it gives pet parents confidence that every meal is worthy of the bond they share with their animals. The rotation system turns feeding into a rhythm of health and variety, ensuring pets thrive while their owners feel assured they are doing right by them.

Growlrr Foods is more than a brand; it is the **future of companion animal nutrition** — human-grade, scientifically precise, and emotionally resonant. It addresses today's frustrations while setting tomorrow's standard, with defensibility built on proprietary feeding methodology, robust formulation IP, and a transparent brand promise that redefines trust in the category.

Chapter 1

Why Growlrr Exists

1.1 The Problem with "Complete & Balanced"

Humans and wild predators — including the ancestors of our household cats and dogs — thrive on dietary variety. In nature, no two meals are identical; there is a cadence to days, seasons, and life stages across every species' lifetime.

Now imagine this: as a human, you are required to eat finely milled corn and soy sprayed with emulsified fat, fortified with a pharmacist's list of minerals, vitamins, and amino acids — every day, three meals a day, for the rest of your life, because it is labelled *"Complete & Balanced."*

Sure, you would survive. But would you *thrive*? Would you feel alive, or simply *fed*?

Or imagine being served a boiled gruel of discarded bird carcasses — bones intact — topped with pharmaceutical additives and labeled *"Atlantic Salmon Extracts"* despite containing only traces. Would you find joy in that? Would you reach your full potential, or merely avoid starvation while accumulating hidden deficiencies, obesity, kidney disease, and chronic inflammation?

This is precisely what the modern pet food industry offers our companions: survival dressed up in shiny packaging and backed by targeted advertising. What cannot be packed into the bag is sold separately through an exploding supplements market — proof that the base diet is fundamentally inadequate.

The Inconvenient Truth

"Complete & Balanced" sounds authoritative. But the uncomfortable truth is this: *complete by what standards, and balanced by whose measure?[***ref64***]*

For over half a century, companion animal nutrition has been dictated not by independent science, but by industry lobbies — chief among them the **Pet Food Institute**[**ref71**], the trade arm of multinational kibble conglomerates. These same corporations, implicated in climate change, water pollution, and global ecological destruction, sit alongside regulators to shape definitions that protect profit margins through cheap fillers and mass-produced chemicals.

Meanwhile, in Europe and North America, nutritional guidelines were drafted by committees dominated by these same conglomerates. The standards trace their lineage not to predator biology, but to **livestock feed protocols** — guidelines written for cattle, poultry, and animals destined for slaughter[**ref70**], not for companions meant to thrive across decades of life.

The bar was set at mere survival, not vitality[**ref59**]. Chronic diseases — kidney failure, obesity, diabetes, cancer — were never part of the compliance equation[**ref41**]. What should have been shaped by good faith science was instead skewed by supply-chain logistics and profit maximization.

The result: a half-century of lobbying, subsidies, and papered-over standards[**ref71**] — an agro-industrial legacy borrowed wholesale from slaughterhouse feed.

1.2 Our Approach

The Growlrr system is built to reflect biology while meeting the discipline of modern science. We did not set out to make another "flavor range" of pet food; we built a nutritional architecture.

At its core, the system is **organ-forward and bone-broth based.** Organs, yolks, and muscle meats are balanced with natural hydration and collagen-rich broth to deliver the nutrients of real prey in their most bioavailable form. This avoids the filler-heavy, starch-padded formulas that dominate conventional products.

Our SKUs are **species-segregated** — poultry, mammal, and fish are kept hermetically separate, never cross-contaminated. This mirrors natural feeding lanes, reduces the risk of allergen overexposure, and preserves the diversity of amino acids across species. The SKUs are not random flavors: they are color-coded units designed to fit together like a puzzle. Each pouch is compliant on its own, but when paired daily and rotated weekly, they complete the whole-prey model, ensuring both safety and resilience.

We use **precision premixes** — CatPro, DogPro, and Pluto calcium — only where reinforcement is essential. Heat-labile nutrients, trace minerals, or regulatory minima are addressed surgically. Supplementation is never a crutch; it is a guardrail. This keeps the food clean, while still guaranteeing compliance.

Sourcing is **human-grade, antibiotic-free, and traceable.** Poultry comes from spent layers raised without antibiotics, fish are chosen for low heavy-metal risk, and every lot is matched against supplier COAs. This sourcing integrity, combined with minimal-step SOPs and post-retort validation, ensures both nutritional adequacy and consumer trust.

Beyond ingredient quality, Growlrr's operational framework prioritizes traceability and reproducibility. Every supplier delivers Certificate of Analysis documentation matched against our specifications for moisture, protein content, heavy metal limits, and microbiological safety. Our standard operating procedures lock in precise sequences—from blanching times for organ meats to retort temperature curves—ensuring that nutritional integrity survives thermal processing. This discipline transforms artisanal quality into scalable manufacturing without sacrificing the whole-food principles that define our approach.

But the real revolution is not only in the pouch — it is in how the food is used. The **Growlrr Web App** generates a customized **rotation diet chart** for every animal, taking into account breed, age, growth stage, activity level, and any veterinary advisories. Owners are guided meal by meal, week by week, with no guesswork. A built-in **Vet Chat feature** allows owners to consult nutritionists, track progress, and adjust feeding as needed, ensuring pets receive age- and size-appropriate nutrition throughout their lives.

The Growlrr system also addresses a fundamental oversight in conventional pet nutrition: the assumption that one formula can serve all life stages and activity levels. Our web application generates individualized feeding plans that account for breed-specific metabolic rates, growth phases in puppies and kittens, reproductive demands, and senior nutritional needs. This personalization, combined with veterinary oversight through our consultation platform, ensures that rotation diversity translates into real-world health outcomes rather than merely checking regulatory boxes.

In short, Growlrr delivers **safety in every pouch, resilience in rotation, and precision in practice** — a system designed not as marketing, but as engineering for biology and care.

1.3 Our Values

At Growlrr, we believe the values we hold true will ultimately determine the health and joy of millions of companion animals who depend on us to feed them right. These are our values. They are not flexible. We do not compromise.

Our Core Principles

- **Safety First.** Every pouch must be nutritious and safe on its own and resilient in rotation.
- **Biology Above Convenience.** Cats and dogs are descendants of predators, not livestock. Their diets must reflect physiology, not the economics of grain or extrusion.
- **Whole Food Integrity.** Organ meats, bone broth, yolks, and hydration form the foundation. Premixes are used sparingly — to reinforce, never to replace.
- **Rotation as Principle.** Variety is structural, not decorative. Rotation prevents monotony, reduces allergen risks, and builds resilience.
- **Transparency Always.** Color-coded SKUs, app-guided diet charts, full traceability. Nothing hidden, from source to shelf.
- **Quality Without Compromise.** Human-grade inputs, antibiotic-free poultry, traceable fish, documented SOPs. Trust is built into process, not added in marketing.
- **Compliance is Baseline.** We meet AAFCO/FEDIAF benchmarks for every pouch. However, since our pouches are strictly species segregated, we use our Growlrr model comprising of color-coded daily SKU pairing and full weekly rotational diet chart customized freely on our website. This way the diversity of nutrition is met from mammal, bird and fish species making it truly "Balanced and Complete."
- **Engineering Meets Veterinary Science.** Designed with a systems approach, formulated from first principles, engineered with modularity, anchored by compliance discipline, validated by clinical nutritionists, tested in accredited labs, and finally approved by the only ones that matter: cats and dogs themselves.

These values transform every design aspect of Growlrr into an act of trust-building. When we share complete ingredient lists down to the microgram, when we publish our pairing logic and rotation methodology, when we explain why food is nutrition and feeding is love not just a chore. We're inviting pet parents into a partnership where knowledge replaces blind faith, where understanding breeds confidence, and where every meal becomes a deliberate choice rather than a default compromise. This transparency doesn't just differentiate Growlrr in the market; it redefines what the market can become. Our values aren't principles we uphold—they're the revolution we're living.

Time to Redefine

Variety is the essence of life. Balanced variety *is* life.. If "Complete & Balanced" is repeated like gospel, yet defined by standards written for slaughter animals and lobbied for profit by Global Conglomerates complicit in ecocide, then it fails our pets and betrays our values. Our animal companions are not livestock. They are descendants of apex predators — mini lions and tigers and wolves who share our homes, our lives, and our love[**ref1**]. It is time to redefine the standards for those we care for most and for those who depend on us to do the right thing. It is time to **Growl**.

Chapter 2

Introduction to CatCore

Introduction to CatCore

Welcome to the Growlrr universe: a unique, modular, rotational feeding system built on species-appropriate, whole natural ingredients. Each recipe is organ-forward, balanced with muscle and supportive tissues, and carefully fortified to safely meet AAFCO/FEDIAF compliance. There are no grains, no fillers, no gimmicks — only biologically aligned formulations rooted in whole-prey logic, adapted for everyday feeding convenience across all life stages.

The Six CatCore SKUs

Growlrr's feline system is expressed in six locked SKUs, each a distinct organ-forward recipe. They are paired into bonded "base pairs" using a light–dark color code system, ensuring owners always feed one light + one dark pouch per day. This makes compliance foolproof at the consumer level.

To make this simple for owners, every SKU is **color-coded and named** by its anchor ingredient:

- Chicken Heart (Light Blue)
- Sardine (Dark Blue)
- Chicken Liver (Light Red)
- Chicken Gizzard (Dark Red)
- Goat Kidney (Light Brown)
- Goat Spleen (Dark Brown)

The Growlrr app translates this into daily diet charts — easy to follow at a glance, backed by clinical rigor.

Example: Meet Bella the Cat (4.0 kg, indoor, adult)

Bella thrives on rotation. Her **weekly chart** is shown in Table 2.1.

Each pouch delivers full compliance; the rotation ensures diversity of proteins, amino acids, and micronutrients, with no monotony.

Each pair balances nutrients in a complementary way: heart and sardine pair balance taurine and phosphorus loads over the day; liver and gizzard pair smoothens out vitamin A and taurine peaks; kidney and spleen are both non-poultry hypoallergenic pairs with mineral rich high quality protines. Individual SKU is designed to meet Ca:P ratio of 1.1 or greater. This "nutritional genome" framework encodes safety into packaging, without owners needing spreadsheets or nutritional degrees.

Why Rotation?

Why do we design this way, instead of offering one fixed "complete" SKU or a rack of multiple, non-interlocking flavors as most brands do? Because animals do not thrive on monotony, nor on randomized variety. Rotation allows for[**ref3**, **ref12**, **web6**, **web75**]:

- Natural smoothing of nutrient peaks and valleys across days.
- Exposure to different organ and muscle profiles, reducing allergen risk[**web27**, **web32**, **web76**, **web77**, **web83**] and avoiding chronic overload of any single nutrient.
- Built-in behavioral enrichment — meals taste different, but within a consistent logic that keeps nutrition safe.
- A regulator-ready compliance story: daily safety, weekly completeness, minimal SKU proliferation.

Growlrr's system is not "flavors." It is a structured code, a genome of nutrition, where pairs interlock like base-pairs in DNA. The result: biological precision with consumer simplicity. Pet owners can generate their free customized diet chart[**ref10**] from our website (`www.growlrr.com/diet/`), schedule online chat or call with a pet nutritionist or vet, interact with our trained AI to learn more about each ingredient in our pouch, source, traceability and quality.

Table 2.1: Bella's Weekly Rotation Chart (4 kg cat, indoor adult)

Day	Morning (AM)	Evening (PM)
Mon	Heart	Sardine
Tue	Liver	Gizzard
Wed	Kidney	Spleen
Thu	Heart	Sardine
Fri	Liver	Gizzard
Sat	Kidney	Spleen
Sun	Liver	Gizzard

Chapter 3

Introduction to DogCore

From Cats to Dogs — The DogCore Extension

Growlrr's system begins with cats — obligate carnivores, finely tuned to high-protein, organ-forward diets. From this foundation, we extend the same genome logic to dogs, but adapted for their physiology. Dogs are facultative omnivores[**ref2**]: they can synthesize certain essential nutrients, they tolerate carbohydrates well, and they thrive across a wider range of macronutrient profiles.

The Golden Mean (DogCore + DogPro)

Instead of proliferating dozens of dog SKUs across breed sizes, Growlrr encodes a single core dog pouch with high quality and highly digestible protiens — **DogCore SKU7**, color-coded golden orange, designed as the "Golden Mean." It was engineered to meet the nutritional needs of a Golden Retriever — the prototypical mid-sized dog — and then scales seamlessly up or down for other breeds.

Why this design?

- **Dense protein base:** DogCore combines soy protein isolate, whey protein concentrate, egg yolk powder, egg white powder and functional lecithin. This leverages both animal and plant proteins, aligned to canine physiology.
- **Omnivore flexibility:** Dogs can derive energy safely from carbohydrate staples. Instead of retorting and shipping grain-heavy fillers, we empower owners to add fresh, digestible staples — cooked rice and probiotic curd/yogurt — from their own kitchens.
- **Balanced micros:** DogPro premix delivers a robust, conservative baseline of vitamins (A, D, E, B-complex) and trace minerals (Ca, Fe, Zn, Cu, Mn, Se, I), ensuring every lane clears AAFCO/FEDIAF floors without drifting into excess.

Why Not Ship Carbohydrates?

We believe hauling vast quantities of rice or curd through retort packaging, warehousing, and delivery is unnecessary — every pet-owning household already has access to these staples. By leaving energy carriers to the home, Growlrr minimizes shipping weight, maximizes freshness, and keeps costs fair. Instead, our pouches carry the critical load: proteins and micronutrients, precisely balanced to regulatory standards.

Scaling Across Breeds and Sizes

With CatCore, every 100 g pouch was standardized to ≈100 kcal. DogCore follows the same unit logic. Scaling across breeds becomes a matter of meals/day and rice+curd quantities:

This modularity means a single DogCore SKU, paired with CatCore and scaled via pantry staples, can safely feed a 4 kg cat or a 40 kg bulldog — without exploding SKU counts or compromising nutrient safety.

Example: Ringo the Golden Retriever (28 kg, active adult)

Meet Ringo, a healthy and happy Growlrr who follows his diet chart and enjoys his 3 meals per day . Ringo follows his breed appropriate **DogCore lane** (see overleaf), paired with fresh pantry staples available at home. Each meal = 1 Catcore pouch + 1 DogCore pouch + Fresh Curd rice (250g) + 20g boiled vegetable. See Table 3.1.

Table 3.1: Ringo's Daily Dog Bowl (per sitting)

Day	AM	PM
Mon	Chicken Heart + DogCore + Curd Rice	Sardine + DogCore + Curd Rice
Tue	Chicken Liver + DogCore + Curd Rice	Chicken Gizzard + DogCore + Curd Rice
Wed	Goat Kidney + DogCore + Curd Rice	Goat Spleen + DogCore + Curd Rice

Color Key: CatCore + DogCore + Home staples (curd + rice)

Feeding Rules

Growlrr's modular CatCore + DogCore pairing supplies the full amino acid and micronutrient spectrum. Non-poultry days de-sensitises immune system and reduces allergens Curd rice + veg delivers easily accessible fresh and digestible carbohydrate, calcium, and probiotics. Use fresh or refridgerated 4%-fat whole-milk curd and plain cooked rice. Avoid lentils, spice, salt or butter. Feed as per diet chart with daily pairings and weekly rotation. Ensure constant access to clean water. Consult our Vet on growlrr.com for any prior lactose/dairy allergy or other intolerances.

Growlrr Dog Feeding Lanes — Canonical Advisory

Each pouch (100 g) supplies about 120 kcal. Curd + rice mix (150 g rice + 100 g curd $\approx$ 300 kcal) forms the fresh staple. Feeding pattern scales by body weight and activity.

In short: With 6 CatCore SKUs and 1 DogCore SKU, Growlrr encodes a complete nutritional system, scaling safely across species, breeds, sizes, and life stages — delivering physiology-first nutrition with pantry-level practicality.

Table 3.2: Growlrr Dog Feeding Lanes by Breed Size

Lane	Breeds	Wt (kg)	kcal /day	Meals	Feeding Advisory per meal
1 — Toy/Mini	Chihuahua, Pomeranian, Toy Poodle	2–5	250–350	2	½ CatCore + ½ DogCore + 120 g curd-rice + 10 g veg per meal
2 — Small	Beagle, Cocker Spaniel, French Bull-dog	6–10	400–550	2	1 CatCore + 1 DogCore + 150 g curd-rice + 15 g veg per meal
3 — Medium	Indie, Border Collie, Shiba Inu	11–20	600–900	2	1 CatCore + 1 DogCore + 200 g curd-rice + 20 g veg per meal
4 — Large	Labrador, Golden, Boxer	21–35	1000–1500	3	1 CatCore + 1 DogCore + 200 g curd-rice + 20 g veg per meal
5 — X-Large	Rottweiler, GSD, Husky	36–50	1600–2000	3	1 CatCore + 1 DogCore + 300 g curd-rice + 25 g veg per meal
6 — Giant	Great Dane, Mastiff, St Bernard	50+	2200–2800	3	1 CatCore + 1 DogCore + 350 g curd-rice + 30 g veg per meal

With easily available kitchen staples like fresh rice,oats, curd, yogurt and vegetables, Growlrr is able to scale from 4.0 Kg cat diet to 40 Kg Rotweiller with just 7 variants and customised diet charts. This is possible because unlike other brands Growlrr does not package and ship carbohydrates and vegetables which are availabe for cheap in every kitchen. Instead we focus on nutrient rich protiens and organs and precise vitamin and mineral balance and a diet chart that is customised for every animal's dietary needs.

Approved Vegetable Add-ins for Dogs

Boiled vegetable option per meal	Portion (g)	Home Measure	Notes
Carrot	20	¼ medium carrot, cubed	Beta-carotene
Green peas	20	2 tbsp, mashed	Mild protein + fiber
Zucchini	20	¼ cup slices	Low-oxalate filler
Spinach / Kale purée	20	1 heaped tbsp	Iron + antioxidants —Max once per week
Green beans	20	3–4 beans, choped fine	Safe fiber
Sweet potato	20	1 tbsp mash	Slow carbs
Pumpkin	20	2 tbsp mash	Gut motility
Banana (fruit)	15	2–3 slices	Occasional dessert/treat — Max once per week

Feeding Notes

Pick any one vegetable per meal. Use rotation across meals to avoid monotony. All vegetables are boiled or lightly steamed, unseasoned, and unsalted. Avoid onions, garlic, broccoli, cauliflower, or starchy fillers. Keep total vegetable content near 20g/meal or as noted.

Growlrr Dairy & Carbohydrate Advisory — EU / US (Oats + Greek yogurt option)

This adaptation is the Growlrr equivalent of the Indian *curd + rice* staple, tailored for EU / US kitchens where rolled oats and plain cultured Greek yogurt are more common. The objective is identical: provide readily accessible, digestible carbohydrates and live probiotic cultures in addition to Growlrr's protein and nutrient dense packs.

Handling, Safety & Freshness

- Use only **pasteurised** Greek Yogurt labelled with live cultures for probiotic benefit. Avoid sweetened, flavoured, or fruit-added products.
- Store cultured dairy at $\leq$ 4 °C (40 °F). Discard if discolored, odour becomes sour, or if abnormal whey separation occurs (large pools of discoloured liquid).
- Boil oats and vegetables together where possible to retain nutrients.
- If using Greek yogurt that is highly s
- Always introduce dairy gradually if new. Watch for signs of lactose intolerance. Consult our vet at www.growlrr.com if needed.

Table 3.3: EU/US Dairy & Carbohydrate Options

Component	**Qty per meal**	**Guidance and Notes**
Rolled oats	150 g (or ½ cup)	Cook rolled oats until soft; mix with yogurt while warm
Unsweetened Greek yogurt (live cultures)	100 g	Preferred EU/US substitute for full curd. Must be **unsweetened, plain, full-fat**, and labelled *"live active cultures"* (or equivalent). Greek yogurt is often strained; if texture is extremely thick, add 20–30 ml unsalted buttermilk or water to reach spoonable consistency for mixing.
Cultured buttermilk / kefir (backup)	100 ml	Cultured buttermilk or kefir (plain, unsweetened, pasteurised milk origin) are acceptable alternates. Kefir is probiotic-rich but may have stronger flavour; introduce gradually.
Ricotta / cottage cheese (pasteurised)	100 g	Acceptable non-probiotic fallback for short-term when live-culture yogurt is not available. Use plain **pasteurised** ricotta or low-salt cottage cheese. These supply calcium and proteins but no probiotics.
Plant-based "yogurts" (soy, almond, oat)	—	Do **not** use routinely unless under veterinary guidance. They lack animal-based amino acids and deliver different mineral profiles; their use may require compensatory formulation adjustments.
Fat correction	—	If using low-fat yogurt, add ½ teaspoon unsalted butter or ghee per $\sim$250 g mix to restore energy density for active dogs. This helps match the caloric role of whole-milk curd.

Chapter 4

Formulation Specifications

Canonical Specification — Growlrr CatCore v5

CatCore SKUs 1-6

- All CatCore SKUs follow the canonical format per 100g wet food pouch:
- 65 g wet solids
- 3.0 mg premix packets added to broth as per SOP
- 2.5mg omega-3 fish oil PV<=5 meq/Kg is added to broth phase for omega3:omega6 balance in all SKUs except sardines.
- 1.0mg meat hydrolysant palatant is added to broth phase for umami and flavor.
- 41.5 g $\pm$0.5 g broth fill
- Sealed to achieve 112.5 g nominal pre-retort weight. Pre-Fill QC Check.
- Declared 100 g post-retort with $\approx 10\%$ moisture loss. Post Retort QC Check to 100.5g.

Table 4.1: CatCore Formulation — Heart (H) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Chicken Heart	24.0	High taurine and heme iron source for cardiac health and taste; taurine partner for Sardine in PM.
Chicken Muscle Cuts	16.0	High-quality amino acid source forming the protein base.
Chicken Frame Mince	15.0	Provides bone-derived minerals; improves Ca:P ratio; source of condroitin for joint stability
Egg yolk powder	4.0	Choline and fat-soluble vitamins; improves emulsion stability and mouthfeel.
Pumpkin puree	4.0	Fibre; enhances stool quality and regularity.
Chicken Liver	2.0	Provides vitamin A; limited to prevent excess while complimenting premix micronutrient completeness.
Solids subtotal	*65.0*	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Composition for CatCorePro

Composition Notes:

- **CatCore:** Provides high quality muscle, organ, skeletal and fish meat protiens. Primary source of protiens, fats, vitamins, minerals.

Table 4.2: ■ CatCore Formulations — Sardine (S) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Sardine	52	Marine protein high in EPA and DHA; core omega-3 source. Calcium, Iodine and phosphorus per in-bone sardine meat [**sardinecap**].
Fish Bone Meal (micronized, particle size $\leq$ 150 μm)	9.00	Pet Food Grade; Natural calcium and phosphorus source to balance Ca:P ratio.
Pumpkin Puree	4.0	Fibre; enhances stool quality and regularity
Solids subtotal	*65.0*	Fixed solids per pouch.
Purified Water	43.5	Purified Water allocation per pouch pre-retort.

Table 4.3: ■ CatCore Formulation — Liver (L) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Chicken Muscle Cuts	28.0	High-quality amino acid source forming the protein base.
Chicken Frame Mince	15.0	Provides bone-derived minerals improving Ca:P ratio; natural chondroitin and glucosamine
Chicken Heart	10.0	Taurine and palatability enhancer balancing liver micronutrient load.
Chicken Liver	4.0	Primary vitamin A and iron contributor; controlled for safety.
Chicken Egg yolk powder	4.0	Choline and lipid source; supports emulsification.
Pumpkin puree	4.0	Fibre; enhances stool quality and regularity
Solids subtotal	*65.0*	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 4.4: ■ CatCore Formulations — Gizzard (G) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Gizzard	24.0	Structural organ supplying connective tissue and natural taurine; defines chew texture.
Chicken Muscle Cuts	16.0	High-quality amino acid source forming the protein base.
Chicken Frame Mince	15.0	Provides bone-derived minerals improving Ca:P ratio;natural chondroitin and glucosamine
Chicken Heart	10.0	Taurine and palatability balance; complements high-connective gizzard meat.
Solids subtotal	*65.0*	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 4.5: ■ CatCore SKU Formulations — Spleen (M) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Goat Spleen	29.0	Rich in heme-iron and taurine; moderates phosphorus while enhancing natural palatability.
Goat Frame and Trotters Mince	20.0	Adds collagen,natural chondroitin and glucosamine, rich marrow minerals and natural ca:p balance
Goat muscle cuts	10.0	High-quality amino acid source forming the skeletal protein base.
Pumpkin puree	4.0	Fibre and beta-carotene; enhances stool quality and regularity.
Goat Liver	2.0	Trace vitamin A and B complex inclusion for completeness.
Solids subtotal	*65.0*	Fixed solids per pouch.
Goat Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 4.6: ■ CatCore SKU Formulations — Kidney (K) SKU

Ingredient	Mass (g)	Nutrient role and rationale
Goat Kidney	29.0	Rich in B vitamins, essential minerals; Pairs with Lamb Spleen for a poultry-free hypoallergenic day
Goat Frame and Trotters Mince	20.0	Adds collagen,natural chondroitin and glucosamine, rich marrow and natural ca:p balance
Goat Heart	14.0	Adds taurine and flavour, balancing mineral density of kidney.
Goat Liver	2.0	Minor vitamin A and iron contribution.
Solids subtotal	*65.0*	Fixed solids per pouch.
Goat Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 4.7: CatCorePro Composition per 10 kg run (or 100 pouches)

Component	Dose per 10 kg	Per pouch
CatCore Fresh Meat Protiens	6500g	65g
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
CatPro Premix	100 g	1.0 g
Mixed tocopherol liquid premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Alginate gel - Ca Premix	100g	1.0g
Rendered Bone Broth	4150g	41.5g
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

- **Catcore Useage:** 6.5 Kg Fresh meat blends per 10 kg production run of CatCore or 65.0 g per 100 g wet food pouch.
- **CatPro Premix:** Complements CatCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together CatCore and CatPro meets AAFCO requirements for complete and balanced nutrition when paired per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.1:1 within AAFCO recommended limits when paired as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Alginate Gel - Ca Premix:** Alginate gel forms cross-link chain with Calcium under retort heat. Source of 80mg dietary calcium per 100g wet food. Maintains Ca:P ratio.
- **Omega-3 Fish Oil Blend:** Provides functional Omega-3:Omega-6 fatty acids balance.
- **Palatant Premix:** Meat Hydrolysants for palatability.

- **Rendered Bone Broth:** Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.
- **Low Sodium:** Sodium Alginate Gel provides ≈ 65 mg Na per 100g wet food. Palatant Premix provides additional 47.0mg Na to meet electrolyte balance requirements (≈ 0.15% Na w/w) as per AAFCO.

Chapter 5

DogCore Specifications

Canonical Specification — Growlrr DogCore v5 (YELLOW Sticker)

DogCore SKU7 — Premix Formulation; MOQ 6500g per 10Kg production run

- All DogCore SKUs follow the canonical format per 100 g wet food pouch:
- 65 g dry solid powders
- 5.5 mg premix packets added to broth as per SOP. No Alginate Gel in this SOP.
- 42.0 g ±0.5 g broth fill. Slurry consistency.
- Sealed to achieve 112.5 g nominal pre-retort weight. Pre-Fill QC Check.
- Declared 100 g post-retort with $\approx 10\%$ moisture loss. Post-Retort QC Check to 100.5 g.

Composition for DogCorePro

Composition for DogCorePro

Composition Notes:

- **DogCore Premix:** Provides high quality protien powders and Calcium to be paired 1:1 with CatCorePro meat pouches.
- **DogCore Premix Useage:** 6.5 Kg per 10 kg production run of DogCore or 65.0 g per 100 g wet food pouch.
- **DogPro Premix:** Complements DogCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together DogCore and DogPro meets AAFCO requirements for complete and balanced nutrition when paired with CatCore and CatPro as per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.4:1 within AAFCO recommended limits when paired with CatCorePro pouches as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Omega-3 Fish Oil Blend:** Provides omega 3:omega 6 balance
- **Palatant Premix:** Meat Hydrolyasants for enhanced palatability.
- **Rendered Goat Bone Broth:** Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.
- **NO Alginate Gel - Ca Premix:** No alginate gel in this SKU. Forms slurry consistancy.
- **Low Sodium:** DogCore provides $\approx$ 14.0 mg Na per 100g wet food. Palatant Premix provides additional 47.0mg Na to meet electrolyte balance requirements ($\approx$ 0.061% Na w/w) as per AAFCO when paired with CatCorePro pouches as per diet chart.

Table 5.1: DogCore SKU Formulations (Three Column Format)

Ingredient	**Mass (g)**	**Nutrient role and r**
Whey protein concentrate	30.0	Highly digestible c essential amino ac adds solubility.
Egg white powder	22.0	Lean, functional pr structure; natural completeness.
Soy protein isolate	4.0	High-protein, high ancing amino acid ture and consisten
Egg yolk powder	4.0	Natural choline source; enhances tion.
Lechitin	2.5	Phospholipid emul persion and oxidati mogeneity in slurry
Non-encapsulated Calcium Lactate (20 % Ca)	2.0	Dietary calcium at friendly; Essential
Sodium Chloride (Common Salt, NaCl)	0.035	Dietary Sodium, Es ance
Mixed tocopherols (($\alpha : \beta : \gamma : \delta$) =1.0:0.3:6.0:2.0 50% active powder)	0.300000	Antioxidant for sh not full dietary E
Anti-Caking Carrier (q.s)	0.165	q.s and flow aid.
Protein base subtotal	*65.00*	Fixed solids mass p
MOQ	*6500.00 $\pm$0.10*	6500g DogCore Pr duction run.
Broth	42.5	Broth phase per po solved premixes pe consistency.
Premixes	5.5g	Added seperately t See table below
Alginate Gel is omitted from this SKU to ensure tight slurry consistency.		

Table 5.2: DogCorePro Composition per 10 kg run (or 100 pouches)

Component	**Dose per 10 kg**	**Per pouch**
DogCore Premix	6500g	65g
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
DogPro Premix	100 g	1.0 g
Mixed tocopherol liquid Premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Rendered Bone Broth	4200g	42.0g
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

Chapter 6

Premix Formulations

CatPro v5 Premix (100 g packet per 10Kg Retort Run) RED Sticker

All weights are expressed in grams (g) per 100 g premix formulation. Carrier (q.s.) to reach 100 g

Table 6.1: Catpro Premix Composition (per 100 g premix)

Component	Quantity (g)	Function / Notes
Choline chloride (60% assay)	32.00000	Primary methyl donor and carrier base
Taurine	15.00000	Essential amino sulphonate for cats; heat-labile overage included
Magnesium gluconate (USP grade)	10.00000	Primary chelator; provides stable Mg source
L-Carnitine (as L-carnitine tartrate)	9.000000	Supports fat metabolism, essential with cooked meat and oil fishes
Inulin (chicory root powder, FOS)	8.000000	Prebiotic fibre; improves gut flora stability and stool quality
Betaine (Trimethylglycine)	6.000000	Hepatic methyl donor and osmolyte; supports liver fat metabolism and hydration balance
Potassium Citrate (Tripotassium citrate, food grade)	5.000000	Secondary chelator; critical for cat urinary health reducing struvite crystal risk
DL-Methionine (USP grade)	3.500000	Urinary health support; maintains healthy urine pH; Sulfur for protein metabolism
Ascorbic acid (fine powder)	2.000000	Antioxidant cofactor for metal complex stability
Vitamin K_2 (Menaquinone–7, 1% assay)	1.700000	Provides $\approx$17 µg MK-7 per pouch; aids calcium utilization and bone health
L-Cysteine (USP grade)	1.500000	Complements DL–methionine to balance sulfur amino acids and strengthen coat/keratin
Zinc bisglycinate chelate (25% Zn)	1.100000	Chelated zinc to meet AAFCO limits
Calcium pantothenate (Vitamin B_5)	0.800000	Coenzyme—A precursor; supports fatty–acid metabolism and adrenal function
Iron proteinate (20% Fe)	0.750000	Chelated iron to meet target

Component	Quantity (g)	Function / Notes
Selenium yeast (0.20% Se)	0.550000	(delivers target $\approx$ 11 µg selenium per 100g wet food pouch)
Niacin (B_3)	0.250000	Metabolic cofactor
Copper proteinate (10% Cu)	0.300000	Trace mineral meets requirements
Thiamine (B_1)	0.190000	Hightly heat-labile B vitamin; ample overage applied
Manganese proteinate (10% Mn)	0.150000	Trace mineral meets requirements
Riboflavin (B_2)	0.050000	Energy cofactor
Pyridoxine (B_6)	0.050000	Amino-acid metabolism cofactor
Vitamin D_3 (cholecalciferol, 100000 IU g^{-1})	0.035000	(provides approximately 35 IU per 100 g wet food pouch)
Vitamin A (retinyl palmitate, 320000 IU g^{-1})	0.015000	(provides approximately 50 IU per 100 g wet food pouch)
Potassium iodate (KIO_3)	0.010000	$\approx$ 60 μg Iodine per 100g wet food pouch. Sardine SKU provides additional $\approx$ 20 μg [**sardinecap**]
Biotin (Vitamin B7), Pharma Grade D-Biotin	0.008000	Skin/coat support; very low inclusion, provides 80μg biotin per 100g wet food pouch
Mixed tocopherols (($\alpha : \beta : \gamma : \delta$) =1.0:0.3:6.0:2.0 50% active powder)	1.000000	Antioxidant for premix shelf-life stability (not primary source of dietary vitamin E)
Anti-caking carrier (q.s)	1.042000	q.s to 100.000000 g per premix packet
Total	**100.000000**	Use one 100 packet per 10 kg run. MOQ 10 Packets.

Composition for CatCorePro

Composition Notes:

- **CatCore:** Provides high quality muscle, organ, skeletal and fish meat protiens. Primary source of protiens, fats, vitamins, minerals.
- **Catcore Useage:** 6.5 Kg Fresh meat blends per 10 kg production run of CatCore or 65.0 g per 100 g wet food pouch.
- **CatPro Premix:** Complements CatCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together CatCore and CatPro meets AAFCO requirements for complete and balanced nutrition when paired per diet chart.

Table 6.2: CatCorePro Composition per 10 kg run (or 100 pouches)

Component	**Dose per 10 kg**	**Per pouch**
CatCore Fresh Meat Protiens	6500g	65.0g
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
CatPro Premix	100 g	1.0 g
Mixed tocopherol liquid premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Alginate gel - Ca Premix	100g	1.0g
Rendered Bone Broth	4150g	41.5g
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.1:1 within AAFCO recommended limits when paired as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Alginate Gel - Ca Premix:** Alginate gel forms cross-link chain with Calcium under retort heat. Source of 80mg dietary calcium per 100g wet food. Maintains Ca:P ratio.
- **Omega-3 Fish Oil Blend:** Provides functional Omega-3:Omega-6 fatty acids balance.
- **Palatant Premix:** Meat Hydrolysants for palatability.
-
- Rendered Bone Broth: Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.

DogPro v5 Premix (100 g packet per 10 kg retort run)

All weights are expressed in grams (g) per 100 g premix formulation. Carrier (q.s.) to reach 100 g.

Table 6.3: DogPro v5 Premix Composition (per 100 g premix)

Component	Quantity (g)	Function / Notes
Choline chloride (60% assay)	20.000000	Primary methyl donor and carrier base
Taurine (≥ 99%)	10.000000	Essential sulphonic amino acid; margin for breed/diet variability
Inulin (chicory root powder, FOS)	12.000000	Prebiotic fibre; gut flora stability and stool quality
Magnesium gluconate (USP grade)	10.000000	Secondary chelator; provides Mg and buffering capacity
L-Carnitine (as L-carnitine tartrate)	7.5000000	Supports fat metabolism; useful with added fish oil
Glucosamine HCl	6.000000	Joint-support amino-sugar; heat-stable through retort
Betaine (Trimethylglycine)	6.000000	Hepatic methyl donor and osmolyte; supports liver function
Potassium citrate (tripotassium citrate)	5.000000	Urinary pH control and citrate chelation
Collagen peptides (hydrolysed bovine)	5.000000	Provides glycine/proline for connective tissue; improves mouthfeel
Methylsulfonylmethane (MSM)	4.000000	Sulfur donor; complements glucosamine for joint health
Zinc bisglycinate chelate (25% Zn)	3.000000	Chelated zinc to meet AAFCO requirements
Iron proteinate (20% Fe)	2.000000	Chelated iron to meet AAFCO Fe targets
DL-Methionine (USP grade)	3.500000	Sulfur amino acid and urinary acidifier support
Vitamin K_2 (Menaquinone–7, 1% assay)	1.700000	≈17 µg MK-7 per pouch; aids Ca utilisation
L–Cysteine (USP grade)	0.500000	Complements methionine for sulfur balance
Selenium yeast (0.20% Se)	0.550000	Delivers ≈11 µg Se per pouch
Copper proteinate (10% Cu)	0.300000	Trace mineral meets AAFCO limits
Niacin (B_3)	0.250000	Metabolic cofactor
Thiamine (B_1)	0.190000	Heat-labile B vitamin; overage included
Manganese proteinate (10% Mn)	0.150000	Trace mineral floor
Vitamin D_3 (cholecalciferol, 100,000 IU g^{-1})	0.115000	Provides ≈115 IU per pouch

Component	Quantity (g)	Function / Notes
Vitamin E (DL–α–tocopheryl acetate, 400 IU g^{-1})	0.065000	Antioxidant; retort overage included
Riboflavin (B_2)	0.050000	Energy cofactor
Pyridoxine (B_6)	0.050000	Amino-acid metabolism cofactor
Vitamin A (retinyl palmitate, 320,000 IU g^{-1})	0.040000	Provides ≈100 IU per pouch; overage for retort loss
Potassium iodate (KIO_3)	0.015000	≈90 µg I per pouch
Biotin (Vitamin B7), Pharma-grade D-Biotin	0.008000	Skin/coat support (≈80 µg per pouch)
Mixed tocopherols (($\alpha:\beta:\gamma:\delta$) =1.0:0.3:6.0:2.0 50% active powder)	1.000000	Antioxidant for shelf-life stability support, not full dietary E
Anti-caking carrier (q.s.)	1.000000	Flow aid; adjusted to bring total premix to 100.000000 g
Total	**100.000000 $\pm$0.1**	One 100 g DogPro premix packet per 10 kg run. MOQ 10 Packets.

Composition for DogCorePro

Table 6.4: DogCorePro Composition per 10 kg run (or 100 pouches)

Component	Dose per 10 kg	Per pouch
DogCore Premix	6500g	65g
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
DogPro Premix	100 g	1.0 g
Mixed tocopherol liquid Premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Rendered Bone Broth	4200g	42.0g
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

Composition for DogCorePro

Composition Notes:

- **DogCore Premix:** Provides high quality protien powders and Calcium to be paired 1:1 with CatCorePro meat pouches.
- **DogCore Premix Useage:** 6.5 Kg per 10 kg production run of DogCore or 65.0 g per 100 g wet food pouch.

- **DogPro Premix:** Complements DogCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together DogCore and DogPro meets AAFCO requirements for complete and balanced nutrition when paired with CatCore and CatPro as per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.4:1 within AAFCO recommended limits when paired with CatCorePro pouches as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Omega-3 Fish Oil Blend:** Provides omega 3:omega 6 balance
- **Palatant Premix:** Meat Hydrolyasants for enhanced palatability.
-
- Rendered Goat Bone Broth: Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.
- **NO Alginate Gel - Ca Premix:** No alginate gel in this SKU. Forms slurry consistancy.
- **Low Sodium:** DogCore provides $\approx$ 14.0 mg Na per 100g wet food. Palatant Premix provides additional 47.0mg Na to meet electrolyte balance requirements ($\approx$ 0.061% Na w/w) as per AAFCO when paired with CatCorePro pouches as per diet chart.

Gel / Alginate-Encapsulated Calcium Premix (100 g packet)

Table 6.5: Gel / Alginate-Calcium Premix Composition (per 100 g premix)

Component	Quantity (g)	Remarks
Sodium alginate	60.000000	High-viscosity grade (200–300 cP @ 1%)
Encapsulated Ca-lactate catalyst	39.5000000	High melting heat triggered polymeric microgranular enc
Anti-caking carrier (carrier q.s)	0.5000000	q.s carrier
Total	**100.000000 g**	**Use 1 packet per 10 kg run (1 g / pouch); MOQ Premix 1**

Encapsulated Calcium Lactate — Vendor Specification

- **Active:** Calcium lactate (encapsulated) — *elemental Ca 20 % w/w nominal*.
- **Physical form:** free-flowing microgranules; target particle-size D50 $\leq$ 300 µm; no fragments $>$1 mm.
- **Coating:** food-grade high-melting lipid or heat-triggered polymeric coat; no low-melt coatings that release at $\leq$45 °C.
- **Release profile (validated):**
  - $\leq$10% release (w/w active) after 30 min at 45 °C in aqueous broth under standard agitation.
  - $\geq$80% release (w/w active) after full retort cycle (e.g. 121 °C, process-specific hold time) — vendor to provide thermal-release validation that matches our retort cycle.
- **Solubility / behavior:** core salt (calcium lactate) is water-soluble when unencapsulated; encapsulate must remain intact in mix/fill conditions and release under retort thermal/pressure profile.
- **Taste / organoleptic:** coated granules produce *no detectable* metallic/alkaline off-flavour at the intended inclusion (acceptance by sensory panel required).
- **Stability:** shelf-stable at ambient (≤30 °C) for $\geq$12 months; no migration or leaching of core under storage (vendor stability data required).
- **Heat/Retort compatibility:** coating must not soften and bleed during pre-retort hold or during processing prior to fill; vendor to certify retort survivability and release curve.
- **Microbiological:** total plate count and yeast/mould within vendor spec; free of pathogens; supply certificate of analysis (CoA) with each lot.
- **Labeling:** declare as "Calcium (as encapsulated calcium lactate premix)"; provide elemental Ca per g premix on CoA.
- **QC tests (supplier deliverables):**
  1. Particle-size distribution (laser/D50) report.
  2. Thermal-release study (45 °C hold and retort equivalent) with
  3. Elemental Ca assay (ICP) confirming 20% ±2%.
  4. Sensory release check post-retort (3 replicate pouches).

Antioxidant Liquid Premix for ALL SKUs- 100ml per 10kg Production Run

Note: This Anti-oxidant blend premix supplies 100ml oraganic extracts, mixed tocopherols and lecithin per 10Kg of wet food production.

Palatant Premix for All SKUs- 100ml per 10kg Production Run

Note: This Palatant Premix supplies shelf stable palatant meat hydrolysate and sodium for electrolyte balance for all SKUs at 100ml per 10Kg production or 1ml per 100g wet food pouch.

Table 6.6: Palatant Premix Composition (per 100 ml premix)

Component	**Quantity (ml)**	**Remarks**
Rosemary Extract	28.000000	Primary antioxidant
Sunflower lecithin (food-grade)	27.000000	Phospholipid emulsifier supporting
Grape Seed Extract Concentrates	24.000000	proanthocyanidins with antioxidant
Citric acid aq.soultion	10.000000 (25% w/v)	Supports anti-oxidation; pH buffer
Mixed tocopherols (($\alpha : \beta : \gamma : \delta$) =1.0:0.3:6.0:2.0)	10.000000	Secondary antioxidant;Provides pri
Glycerol monostearate GMS (q.s)	1.00000	Carrier (q.s) providing robust emuls
Total	**100.000000 g**	**Use 1 packet per 10 kg run (1 g/po**

Table 6.7: Palatant Premix Composition (per 100 ml premix)

Component	**Quantity (ml)**	**Remarks**
Hydrolyzed meat protein (non-poultry)	87.5000	Enzymatic hydrolysate palatant, ≥ 45 % (dry basis)
Sodium Chloride (NaCl; Common Salt)	12.00	Electrolyte Balance As per AAFCO requirements
Rosemary Extract	0.1000000	Shelf stable antioxidant
Potassium Sorbate	0.1000000	Shelf stable preservative
Glycerol monostearate	0.100000	Emulsifier
Carrier (q.s)	0.20	Total: 100.00ml sealed amber bottle
Total	**100.000000 g**	**Use 100ml per 10 kg run (1 g/pouch); MOQ Premi**

Chapter 7

Quality Control — Incoming Raw Materials Handling and COA

Incoming Raw Material QC & Storage SOP

1. Scope

Applies to all animal-derived and perishable inputs for Growlrr CatCore and DogCore lines: hearts, gizzards, livers, kidneys, spleens, frame mince, muscle meats, sardine, fish bone meal, egg yolk powder, chicken and goat frames, trotters, neck, back frame and bones for broth, red pumpkin and ancillary dry materials.

2. Receiving Procedure

- Check **delivery temperature** on arrival. Frozen: $\leq$ -18°C; Chilled: 0-4°C; Dried powders: ambient $\leq$ 25°C, RH $\leq$ 65%.
- Inspect **packaging**: intact, labelled with supplier, lot #, weight, COA reference.
- Record receipt: time, supplier, lot #, temperature, and QC initials.

3. Organ & Meat Blocks (heart, gizzard, liver, lamb, kidney, spleen, lean muscle cuts)

Parameter	Accept	Reject / Action
Temp on arrival	$\leq$ 4°C (chilled) or $\leq$ -18°C (frozen)	$>$ 5°C or thawed edges
Appearance	Bright natural colour	Grey/green discolouration, sticky film
Odour	Clean, fresh	Sour, rancid, putrid
Texture	Firm, resilient	Mushy, slimy
Foreign matter	None	Visible contamination
COA (micro)	TVC $\leq 10^5$ CFU/g; *E. coli* $<$ 10 CFU/g; *Salmonella* Absent/25 g	Fail = Reject

Storage: Chilled lots 0-2°C (use within 48 h). Frozen lots -18°C (use within 3 months). Thaw under refrigeration only.

4. Fish (sardine)

Parameter	Accept	Reject / Action
Temp	$\leq$ -18°C (frozen)	$>$ -12°C
Appearance	Bright eyes, metallic skin, firm flesh	Dull eyes, brown gills, soft texture
Odour	Clean sea smell	Ammoniac, rancid
Hg (COA)	$\leq$ 0.05 ppm	$>$ 0.05 ppm Hg $\Rightarrow$ Reject lot
Peroxide PV (COA)	$\leq$ 5.0 meq/kg	$>$ 5.0 meq/kg or missing COA and cold-chain logs $\Rightarrow$ Reject lot if older than 1 week

Storage: -18°C; thaw at $\leq$ 4°C and drain before use.

5. Egg Yolk Powder

Parameter	Accept	Reject
Moisture	$\leq$ 4%	$>$ 5%
Colour	Deep yellow to orange	Pale / brown
Odour	Clean, eggy	Rancid / musty
Micro	TPC $\leq 10^3$ CFU/g; *Salmonella* Absent	Fail = Reject

Storage: airtight sealed vacuum packs, $\leq$ 15°C, RH $\leq$ 60%, away from light. Shelf life 12 months unopened.

6. Trotter; neck, frame and bones (for mince and broth)

Parameter	Accept	Reject
Temp	$\leq$ -18°C	Thawed / $>$ -12°C
Cleanliness	No feathers, hide, claws, hooves, dirt, tissue residue	Visible contamination
Odour	Neutral	Rancid / decomposing
Source	Food-grade, antibiotic-free poultry	Unverified source

Storage: frozen -18°C; feed directly into broth kettle.

7. Dried Additives & Powders

Inspect packaging and COA (valid $\leq$ 6 months). Moisture $\leq$ 6%; caking = Reject. Store at 20-25°C, RH $\leq$ 60%, sealed.

8. Temperature & Storage Map

Material	Storage	Range	Max Hold Time
Frozen meats / fish / bones	Freezer	-18°C $\pm$ 2°C	3 mo
Chilled organs	Chiller	0-2°C	48 h
Egg yolk powder	Dry store	$\leq$ 15°C	12 mo
Dry premixes / hydrolysates	Dry store	15°C	12 mo
Tocopherol-lecithin liquid	Refrigerated	4-8°C	6 mo
Packaging materials	Clean room	$\leq$ 25°C	12 mo

9. Actions

- **Accept:** meets all criteria $\Rightarrow$ Label “QC Approved”.
- **Hold:** minor deviation; quarantine pending investigation.
- **Reject:** fails safety/COA $\Rightarrow$ return or destroy per SOP.
- Record all decisions in **Incoming Material Log (Form QC-Fresh-01)**.

Incoming Premix QC & Dispensing SOP

Scope: Covers all Growlrr premixes

1. Receipt & Identification

1. Verify seals and labels on arrival.
2. Cross-check supplier COA with Growlrr specification & file it in Build Binder.
3. Assign internal Lot ID: `PREMIX-TYPE/YYYYMMDD/SEQ`.
4. Create Forms QC-Premix-01, QC-Premix-02, QC-Premix-03 for Incoming Materials log, Test method and Acceptance log, Non-compliance/Damage or Reject log.
5. Record incoming premix packs in Form QC-Premix-01; store verified packets $\leq$25°C, RH $<$ 60%.
6. Rejected lots should be recorded in Form QC-Premix-03 with supervisor sign-off and samples preserved for inspection.

Premix Type	Packaging	MOQ
Solid Premix:		
CatPro V5 Premix	100g sealed pouches	1.5Kg
DogCore V5 Premix	100g sealed pouches	1.5Kg
DogPro V5 Premix	100g sealed pouches	1.5Kg
Alginate Gel - Encapsulated Calcium Premi	100g sealed pouches	1.5Kg
Liquid Premix:		
Palatant V5 Premix	100ml sealed amber bottles	1.5L
Blended Antioxidant V5 Premix	100ml sealed amber bottles	1.5L
Shelf Stable Blended Omega-3 Fish Oil	250ml sealed amber bottles	1.5L

2. Subdivision & Labeling

1. Portion solids into 100 g and liquids into 100 mL packs.
2. Label each pack with name, Lot ID, date, net quantity, operator initials.
3. Mark —”For Internal Use Only — add entire pack per 10 kg run.—”
4. Retain one sealed control pack per lot for 24 months.

3. Verification Tests

Test	Method	Acceptance
Weight	Electronic balance	$\pm$ 0.5 g from target
Moisture (solid)	Moisture meter	Within spec
Visual	Free-flowing, no lumps	Pass
Label	Correct name, lot, date	Pass
Incoming COA	Supplier COA with traceability on file	Pass

Record log in Form QC-Premix-02 and save copy for Floor use sign-off during production

4. Storage

Solids: $\leq$ 25°C, dry; Liquids: amber HDPE, avoid sunlight. FIFO by Lot ID. Maintain all entry/ exit logs.

6. Documentation

Maintain:

- Binder with all Supplier documents, COA, receipts, Forms QC-Premix-01, QC-Premix-02 and QC-Premix-03
- Scan and digitize the binder at the time of completion of production and upload to cloud server.

Chapter 8

Quality Control — Incomming Premix Handling and COA

COA and Incoming QC - CatPro v5 (100 g packet) with RED Sticker

All weights are expressed in grams (g) per 100 g premix formulation. Carrier (q.s.) to reach 100 g

Table 8.1: Catpro Premix Composition COA and Incoming QC (per 100 g premix)

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Identification and Batch					
Product name or code	—	CatPro v5 (100 g packet)	—	Visual label check	
Color Coded RED Sticker	—	Red	—	Visual	
Lot or Batch number	—	Supplier lot number present	—	Visual	
Manufacture date	—	Present	—	Visual	
Expiry or Best before	—	Present	—	Visual	
Physical and Packaging					
Net packet mass	g	100.00 +/- 0.20	—	Analytical balance (tare)	
Appearance	—	Free flowing, no caking, no oil separation	—	Visual inspection	
Odour	—	Characteristic, not rancid or off odour	—	Sensory	
Color	—	Off white to pale beige	—	Visual	
Particle size (D90)	um	<= 250	—	Sieve or laser diffraction	
Bulk density	g mL^{-1}	0.40 to 0.65	—	Volumetric fill test	
Moisture (loss on drying)	% w/w	<= 4.0	—	AOAC 925.10 (LOD)	
Composition (assay) - key actives per 100 g packet					

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Component	**Quantity (g)**	**Assay/Grade**	**Tolerance ± (g)**	**CAS Number**	**Supplier Specification**
Choline chloride	32.000	60% assay	0.500	67-48-1	USP/FCC grade; free-flowing powder
Taurine	15.000	≥98.5% purity	0.200	107-35-7	USP grade; pharmaceutical quality
Magnesium gluconate	10.000	USP grade	0.100	3632-91-5	Dihydrate form; food grade
L-Carnitine tartrate	9.000	≥98% L-carnitine	0.100	36687-82-8	2:1 L-carnitine:tartrate ratio
Inulin (chicory root)	8.000	FOS ≥90%	0.100	9005-80-5	Prebiotic fiber; food grade
Betaine (TMG)	6.000	≥98% purity	0.100	107-43-7	Anhydrous; food grade
Potassium citrate	5.000	Tripotassium citrate food grade	0.050	866-84-2	Monohydrate; USP/FCC
DL-Methionine	3.500	USP grade ≥98.5%	0.050	59-51-8	Free amino acid form
Ascorbic acid	2.000	≥99% purity	0.050	50-81-7	Fine powder; USP grade
Vitamin K_2 (MK-7)	1.700	1.0% menaquinone-7 assay	0.050	2124-57-4	Spray-dried on carrier; ≥1.0% MK-7
L-Cysteine	1.500	USP grade ≥98%	0.050	52-90-4	Free base or HCl form
Zinc bisglycinate chelate	1.100	25% elemental Zn	0.050	14281-83-5	Chelated form; GRAS
Calcium pantothenate	0.800	≥98% B_5	0.050	137-08-6	D-form; USP grade
Iron proteinate	0.750	20% elemental Fe	0.050	9007-73-2	Chelated organic form
Selenium yeast	0.550	0.20% elemental Se	0.050	Various	Organic selenium; food grade
Copper proteinate	0.300	10% elemental Cu	0.030	9007-73-2	Chelated organic form
Niacin (B_3)	0.250	≥99% purity	0.020	59-67-6	Nicotinic acid or niacinamide
Thiamine HCl (B_1)	0.190	≥99% purity	0.020	67-03-8	Hydrochloride form; USP

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Manganese proteinate	0.150	10% elemental Mn	0.020	9007-73-2	Chelated organic form
Riboflavin (B_2)	0.050	$\geq$98% purity	0.010	83-88-5	USP grade; fine powder
Pyridoxine HCl (B_6)	0.050	$\geq$98% purity	0.010	58-56-0	Hydrochloride form; USP
Vitamin D_3	0.035	100000 IU/g cholecalciferol	0.005	67-97-0	Spray-dried; stabilized
Vitamin A palmitate	0.015	320000 IU/g retinyl palmitate	0.005	79-81-2	Spray-dried; stabilized
Potassium iodate	0.010	$\geq$99.5% KIO_3	0.002	7758-05-6	Food grade; iodine source
D-Biotin (B_7)	0.008	$\geq$98% purity	0.002	58-85-5	Pharmaceutical grade; pure crystalline
Mixed tocopherols (50% active)	1.000		0.050	((α : β : γ : δ) =1.0:0.3:6.0:2.0)	GRAS stabilizer
Microbiology					
Total aerobic plate count (TPC)	cfu g^{-1}	<= 1e4	—	ISO 4833 Plate count	
Yeast and mould	cfu g^{-1}	<= 1e3	—	ISO 21527 Plate count	
Salmonella spp.	per 25 g	Not detected	—	ISO 6579 Enrichment	
Enterobacteriaceae	cfu g^{-1}	<= 1e3	—	ISO 21528	
Contaminants and Safety					
Heavy metals (Pb)	mg kg^{-1}	<= 0.5	7439-92-1	ICP MS	
Heavy metals (Cd)	mg kg^{-1}	<= 0.2	7440-43-9	ICP MS	
Aflatoxin (total)	ug kg^{-1}	<= 10	Various	LC MS MS	
Melamine	mg kg^{-1}	Not detected or Below LOQ	108-78-1	LC MS MS	
Physical and Stability					
Bulk water activity (a_w)	—	<= 0.60	—	Aqualab or Rotronic	
Peroxide value (if oil included)	meq O_2 kg^{-1}	<= 5.0	—	AOCS Cd 8b 90	NA for dry premix
Packaging and Storage					

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Packet seal integrity	—	No leaks, hermetic seal	—	Vacuum or visual	
Pouch labelling	—	Lot, Mfg date, Expiry, COA	—	Visual	
Storage conditions	—	Store dry, 10 to 20 C, RH < 60%	—	Visual or log	
Acceptance					
Sample size for incoming QC	—	1 packet per 10 boxes or ISO sampling plan	—	QA plan	
Release decision	—	Accept or Reject or Hold	—	QA manager signature	
Sign off					
Checked by (incoming QC)	Name or Sign	Date	—	Comments	
Approved by (QA Manager)	Name or Sign	Date	—	Comments	

Composition for CatCorePro

Table 8.2: CatCorePro Composition per 10 kg run (or 100 pouches)

Component	Dose per 10 kg	Per pouch
CatCore Fresh Meat Protiens	6500g	65g
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
CatPro Premix	100 g	1.0 g
Mixed tocopherol liquid premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Alginate gel - Ca Premix	100g	1.0g
Rendered Bone Broth	4150g	41.5g
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

Composition Notes:

- **CatCore:** Provides high quality muscle, organ, skeletal and fish meat protiens. Primary source of protiens, fats, vitamins, minerals.
- **Catcore Useage:** 6.5 Kg Fresh meat blends per 10 kg production run of CatCore or 65.0 g per 100 g wet food pouch.
- **CatPro Premix:** Complements CatCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together CatCore and CatPro meets AAFCO requirements for complete and balanced nutrition when paired per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.1:1 within AAFCO recommended limits when paired as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Alginate Gel - Ca Premix:** Alginate gel forms cross-link chain with Calcium under retort heat. Source of 80mg dietary calcium per 100g wet food. Maintains Ca:P ratio.
- **Omega-3 Fish Oil Blend:** Provides functional Omega-3:Omega-6 fatty acids balance.
- **Palatant Premix:** Meat Hydrolysants for palatability.
- **Rendered Bone Broth:** Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.
- **Low Sodium:** Sodium Alginate Gel provides $\approx$ 65 mg Na per 100g wet food. Palatant Premix provides additional 47.0mg Na to meet electrolyte balance requirements ($\approx$ 0.15% Na w/w) as per AAFCO.

COA and Incoming QC - DogCore Protein Base (6500 g solids per Sealed Packet) with YELLOW Sticker

All weights are expressed in grams (g)

Table 8.3: DogCore Protein Base COA and Incoming QC (per 100 g wet food pouch)

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Identification and Batch					
Product name or code	—	DogCore Protein Base (6500 g)	—	Visual label check	
Color Coded YELLOW Sticker	—	Yellow	—	Visual	
Lot or Batch number	—	Supplier lot present	—	Visual	
Manufacture date	—	Present	—	Visual	
Expiry or Best before	—	Present	—	Visual	
Physical and Packaging					
Net solids mass per pouch	g	6500.00 ± 0.50	—	Analytical balance	
Appearance	—	Fine powder blend, free-flowing	—	Visual inspection	
Odour	—	Characteristic protein, no rancidity	—	Sensory	
Color	—	Off-white to cream	—	Visual	
Particle size (D90)	μm	≤ 300	—	Sieve or laser diffraction	
Bulk density	g mL^{-1}	0.35 to 0.60	—	Volumetric fill test	
Moisture (LOD)	% w/w	≤ 5.0	—	AOAC 925.10 (LOD)	
Composition per 6500g (assay)					
Component	**Quantity (g)**	**Assay/Grade**	**Tolerance $\pm$ (g)**	**CAS Number**	**Supplier Specification**
Whey protein concentrate	3000.000	$\geq$80% protein (WPC80)	0.500	92129-90-3	Food grade; instantized; low lactose
Egg white powder	2200.000	$\geq$80% protein	0.500	8001-57-6	Spray-dried; food grade; pasteurized
Soy protein isolate	400.000	$\geq$90% protein	0.200	9010-10-0	Non-GMO preferred; food grade

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Egg yolk powder	400.000	Food grade	0.200	8001-57-6	Spray-dried; high choline content
Lecithin	250.000	$\geq$95% phospholipids	0.200	8002-43-5	Soy or sunflower; food grade emulsifier
Calcium lactate (non-encapsulated)	200.000	20% elemental Ca	0.100	814-80-2	Food grade; provides $\approx$400mg Ca per pouch
Sodium Chloride (NaCl)	3.5	$\geq$99.5% food grade	0.005	7647-14-5	Common salt; dietary sodium; electrolyte balance
Mixed tocopherols (50% active)	30.00		0.050	((α : β : γ : δ) =1.0:0.3:6.0:2.0)	GRAS stabilizer
Anti-caking carrier (q.s.)	16.5	Food grade	0.100	Various	Silicon dioxide , Maltodextrin; GRAS; flow aid; q.s. to 100.000g
Protein Quality Parameters					
Total crude protein (Nx6.25)	% w/w	$\geq$ 65.0	—	Kjeldahl or Combustion	On dry basis
Fat content	% w/w	8.0 to 12.0	—	Soxhlet or NMR	
Ash content	% w/w	$\leq$ 8.0	—	AOAC 942.05	
Calcium (total)	mg / 100 g	400 $\pm$ 50	—	ICP OES	Primary from Ca-lactate
Phosphorus (total)	mg / 100 g	400 to 600	—	ICP OES	From protein sources
Functional Properties					
Solubility in water	%	$\geq$ 90	—	Centrifuge method	At pH 6.8, 20°C
Emulsification capacity	—	Good	—	Visual/functional test	Stable emulsion formation
Gel strength (post-retort)	—	Moderate	—	Texture analyzer	Slurry consistency target
Microbiology					
Total aerobic plate count (TPC)	cfu g^{-1}	$\leq 5 \times 10^4$	—	ISO 4833 Plate count	
Yeast and mould	cfu g^{-1}	$\leq 1 \times 10^3$	—	ISO 21527 Plate count	
Salmonella spp.	per 25 g	Not detected	—	ISO 6579 Enrichment	
Enterobacteriaceae	cfu g^{-1}	$\leq 1 \times 10^3$	—	ISO 21528	
E. coli	cfu g^{-1}	$\leq$ 10	—	ISO 16649	
Contaminants and Safety					

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Heavy metals (Pb)	mg kg^{-1}	$\leq$ 0.5	7439-92-1	ICP MS	
Heavy metals (Cd)	mg kg^{-1}	$\leq$ 0.2	7440-43-9	ICP MS	
Aflatoxin (total)	μg kg^{-1}	$\leq$ 10	Various	LC-MS/MS	
Melamine	mg kg^{-1}	Not detected or Below LOQ	108-78-1	LC-MS/MS	
Allergen Declaration					
Milk (whey)	—	Present (declared allergen)	—	Label declaration	
Egg	—	Present (declared allergen)	—	Label declaration	
Soy	—	Present (declared allergen)	—	Label declaration	
Physical and Stability					
Bulk water activity (a_w)	—	$\leq$ 0.65	—	Aqualab or Rotronic	
Peroxide value	meq O_2 kg^{-1}	$\leq$ 5.0	—	AOCS Cd 8b-90	For lipid content
Packaging and Storage					
Primary packaging	—	Food-grade sealed pouches	—	Visual	Per 6500g pre-weighed
Secondary packaging	—	Corrugated box with desiccant	—	Visual	
Storage conditions	—	Store dry, 10–20°C, RH < 60%	—	Visual or log	
Acceptance					
Sample size for incoming QC	—	1 pouch per 10 boxes	—	QA plan	
Release decision	—	Accept or Reject or Hold	—	QA manager signature	
Sign off					
Checked by (incoming QC)	Name/Sign	Date	—	Comments	
Approved by (QA Manager)	Name/Sign	Date	—	Comments	

Table 8.4: DogCorePro Composition (per 10 kg run = 100 wet food pouches)

Component	Dose per 10 kg	Per pouch
DogCore Premix (Current spec)	6500g	65g
DogPro Premix	100 g	1.0 g
Mixed tocopherol liquid Premix	100 ml	1.0 ml
Palatant Liquid Premix	100ml	1.0ml
Omega-3 Fish Oil PV<=5.0meq/Kg	250ml	2.50ml
Rendered Bone Broth	4200ml	42.0ml
Nett Weight per pouch	112.5g pre-retort	101.5g $\pm$0.50; declared weight 100.00g

Composition for DogCorePro

Composition Notes:

- **DogCore Premix:** Provides high quality protien powders and Calcium to be paired 1:1 with CatCorePro meat pouches.
- **DogCore Premix Useage:** 6.5 Kg per 10 kg production run of DogCore or 65.0 g per 100 g wet food pouch.
- **DogPro Premix:** Complements DogCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **AAFCO Compliance:** Together DogCore and DogPro meets AAFCO requirements for complete and balanced nutrition when paired with CatCore and CatPro as per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking. Ca:P >=1.4:1 within AAFCO recommended limits when paired with CatCorePro pouches as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Omega-3 Fish Oil Blend:** Provides omega 3:omega 6 balance
- **Palatant Premix:** Meat Hydrolyasants for enhanced palatability.
-
- Rendered Bone Broth: Solvent base for retort processing; improves hydration, adds collagen, chondoitin and other bone joint stability nutrients.
- **NO Alginate Gel - Ca Premix:** No alginate gel in this SKU. Forms slurry consistancy.
- **Low Sodium:** DogCore provides $\approx$ 14.0 mg Na per 100g wet food. Palatant Premix provides additional 47.0mg Na to meet electrolyte balance requirements ($\approx$ 0.061% Na w/w) as per AAFCO when paired with CatCorePro pouches as per diet chart.

COA and Incoming QC - DogPro v5 (100 g premix packet) with ORANGE Sticker

All weights are expressed in grams (g) per 100 g premix formulation. Carrier (q.s.) to reach 100 g

Table 8.5: DogPro v5 Premix Composition COA and Incoming QC (per 100 g premix)

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Identification and Batch					
Product name or code	—	DogPro v5 (100 g packet)	—	Visual label check	
Color Coded ORANGE Sticker	—	Orange	—	Visual	
Lot or Batch number	—	Supplier lot present	—	Visual	
Manufacture date	—	Present	—	Visual	
Expiry or Best before	—	Present	—	Visual	
Physical and Packaging					
Net packet mass	g	100.00 ± 0.20	—	Analytical balance (tare)	
Appearance	—	Free flowing, no caking	—	Visual inspection	
Odour	—	Characteristic, not rancid	—	Sensory	
Color	—	Off white to pale beige	—	Visual	
Particle size (D90)	μm	≤ 250	—	Sieve or laser diffraction	
Bulk density	g mL^{-1}	0.40 to 0.65	—	Volumetric fill test	
Moisture (LOD)	% w/w	≤ 4.0	—	AOAC 925.10 (LOD)	

Composition (assay) - key actives per 100 g premix packet

Component	Quantity (g)	Assay/Grade	Tolerance $\pm$ (g)	CAS Number	Supplier Specification
Choline chloride	20.000	60% assay	0.200	67-48-1	USP/FCC grade; free-flowing powder
Taurine	10.000	$\geq$99% purity	0.200	107-35-7	USP grade; pharmaceutical quality
Inulin (chicory root)	12.000	FOS $\geq$90%	0.200	9005-80-5	Prebiotic fiber; food grade
Magnesium gluconate	10.000	USP grade	0.100	3632-91-5	Dihydrate form; food grade
L-Carnitine tartrate	7.500	$\geq$98% L-carnitine	0.100	36687-82-8	2:1 L-carnitine:tartrate ratio
Glucosamine HCl	6.000	$\geq$98% purity	0.100	66-84-2	Joint support; USP/food grade

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Betaine (TMG)	6.000	≥98% purity	0.100	107-43-7	Anhydrous; food grade
Potassium citrate	5.000	Tripotassium citrate food grade	0.100	866-84-2	Monohydrate; USP/FCC
Collagen peptides	5.000	Hydrolysed bovine	0.100	9064-67-9	Low molecular weight; food grade
MSM (Methylsulfonylmethane)	4.000	≥99% purity	0.100	67-71-0	Sulfur donor; food grade
DL-Methionine	3.500	USP grade ≥98.5%	0.050	59-51-8	Free amino acid form
Zinc bisglycinate chelate	3.00	25% elemental Zn	0.0500	14281-83-5	Chelated form; GRAS
Iron proteinate	2.00	20% elemental Fe	0.050	9007-73-2	Chelated organic form
Vitamin K_2 (MK-7)	1.700	1.0% menaquinone-7 assay	0.050	2124-57-4	Spray-dried; ≥1.0% MK-7
Selenium yeast	0.550	0.20% elemental Se	0.050	Various	Organic selenium; food grade
L-Cysteine	0.500	USP grade ≥98%	0.050	52-90-4	Free base or HCl form
Niacin (B_3)	0.250	≥99% purity	0.020	59-67-6	Nicotinic acid or niacinamide
Copper proteinate	0.200	10% elemental Cu	0.020	9007-73-2	Chelated organic form
Thiamine HCl (B_1)	0.190	≥99% purity	0.020	67-03-8	Hydrochloride form; USP
Manganese proteinate	0.150	10% elemental Mn	0.020	9007-73-2	Chelated organic form
Vitamin D_3	0.115	100000 IU/g cholecalciferol	0.005	67-97-0	Spray-dried; stabilized
Vitamin E (dl-α-tocopheryl acetate)	0.065	400 IU/g	0.005	7695-91-2	Antioxidant; retort overage
Riboflavin (B_2)	0.050	≥98% purity	0.010	83-88-5	USP grade; fine powder
Pyridoxine HCl (B_6)	0.050	≥98% purity	0.010	58-56-0	Hydrochloride form; USP

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Vitamin A palmitate	0.040	320000 IU/g retinyl palmitate	0.004	79-81-2	Spray-dried; stabilized
Potassium iodate	0.015	$\geq$99.5% KIO_3	0.002	7758-05-6	Food grade; iodine source
D-Biotin (B_7)	0.008	$\geq$98% purity	0.002	58-85-5	Pharmaceutical grade; crystalline
Mixed tocopherols (50% active powder)	1.000	0.050	((α : β : γ : δ) =1.0:0.3:6.0:2.0)	GRAS stabilizer	
Anti-caking carrier (q.s.)	1.000	Food grade	0.100	Various	Silicon dioxid, Maltodextrin; q.s. to 100.000g
Microbiology					
Total aerobic plate count (TPC)	cfu g^{-1}	$\leq 1 \times 10^4$	—	ISO 4833 Plate count	
Yeast and mould	cfu g^{-1}	$\leq 1 \times 10^3$	—	ISO 21527 Plate count	
Salmonella spp.	per 25 g	Not detected	—	ISO 6579 Enrichment	
Enterobacteriaceae	cfu g^{-1}	$\leq 1 \times 10^3$	—	ISO 21528	
Contaminants and Safety					
Heavy metals (Pb)	mg kg^{-1}	$\leq$ 0.5	7439-92-1	ICP MS	
Heavy metals (Cd)	mg kg^{-1}	$\leq$ 0.2	7440-43-9	ICP MS	
Aflatoxin (total)	μg kg^{-1}	$\leq$ 10	Various	LC-MS/MS	
Melamine	mg kg^{-1}	Not detected or Below LOQ	108-78-1	LC-MS/MS	
Physical and Stability					
Bulk water activity (a_w)	—	$\leq$ 0.60	—	Aqualab or Rotronic	
Peroxide value (if oil)	meq O_2 kg^{-1}	$\leq$ 5.0	—	AOCS Cd 8b-90	NA for dry premix
Packaging and Storage					
Packet seal integrity	—	No leaks, hermetic seal	—	Vacuum or visual	
Pouch labelling	—	Lot, Mfg date, Expiry, COA	—	Visual	
Storage conditions	—	Store dry, 10–20°C, RH < 60%	—	Visual or log	

Parameter	Unit	Spec	CAS No.	Method / Instrument	Result / Comments
Acceptance					
Sample size for incoming QC	—	1 packet per 10 boxes	—	QA plan	
Release decision	—	Accept or Reject or Hold	—	QA manager signature	
Sign off					
Checked by (incoming QC)	Name/Sign	Date	—	Comments	
Approved by (QA Manager)	Name/Sign	Date	—	Comments	

Premix Composition Notes:

- **DogPro Premix:** Complements DogCore Protein-Ca Premix with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **Useage:** 100 g DogPro Premix per 10 kg production run of DogCore or 1.0 g per 100 g wet food pouch.
- **AAFCO Compliance:** Together DogCore and DogPro meets AAFCO requirements for complete and balanced nutrition when paired with CatCore and CatPro as per diet chart.
- **Design Overages:** Enhanced taurine formulation for cardiac health support. Vitamin A is balanced carefully with daily 4.0g fresh liver from 2 CatCore pouches to avoid stacking.
- **Antioxidant Premix:** 100ml per 10Kg run or 1ml per 100g wet food pouch. Provides Primary Vitamin E (dl-αtocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Omega-3 Fish Oil Blend:** Omega-3 Fatty Acid Fish Oil PV<=5.0meq/Kg is added at 250ml per 10Kg run or 2.5ml per per 100g wet food pouch except sardine SKU.
- **Palatant Premix:** 100ml per 10Kg run or 1ml per 100g wet food pouch.
- **NO Alginate Gel - Ca Premix:** No alginate gel in this SKU. Forms slurry consistancy.

Alginate Gel — Encapsulated Ca Premix COA

Field	Specification / Result / Method
Product identity	Gel / Alg-Um Premix — free-flowing light-beige powder; gel-forming and texture-binding premix for broth phase. *Packet mass:* 100.000000 g (use 1 packet per 10 kg run = 1 g/pouch).
Composition (per 100 g packet)	Sodium alginate . . . 60.000000 g (viscosity 200—300 cP @ 1%) Encapsulated Ca-lactate catalyst . . 39.500000 g (20% available Ca) Anti-caking (carrier q.s) . . . . . 0.500000 g
Analytical specifications	Moisture $\leq$ 6%; pH (1% solution) 6.0–7.5; Bulk density 0.45—0.55 g/mL. Gel strength 300—400 g/cm^2 (Bloom); Viscosity 200—300 cP (1% solution); Film clarity $\geq$ 85%.
Contaminants & microbiology	Pb $\leq$ 2 mg/kg; Cd $\leq$ 1 mg/kg; As $\leq$ 2 mg/kg; Hg $\leq$ 0.1 mg/kg (ICP-MS). TPC $\leq$ $10^3 CFU/g; Yeasts\&moulds \leq 10^2$ CFU/g; *E. coli* / *Salmonella* absent; Mycotoxins ND.
Functional performance	Retort stability: no separation after 121 °C $\times$ 20 min; Gel strength retention $\geq$ 90%. pH shift post-retort ΔpH $\leq$ 0.3; Color stability ΔE $\leq$ 3.
Origin & compliance	Alginate: non-GMO *Laminaria digitata* extract; Fish hydrolysate: food-grade marine by-products (PV < 5). Conforms to EU 2015/786 and AAFCO 73.350; Non-GMO; BSE/TSE-free.
COA traceability / checksum	Supplier ID . . . . . ALGUM-<supplier-id> Lot / Batch . . . . . <lot-no> Assay date . . . . . YYYY-MM-DD COA Hash (SHA-256) <sha256:algum|lot|gelstrength|viscosity|moisture> Valid until . . . . . YYYY-MM-DD.
Usage & dosing	Use 1 packet (100 g) per 10 kg run $\rightarrow$ 1 g per pouch; add during liquid pre-blend for gel formation.
Storage & shelf-life	Store sealed, dry (< 25 °C, RH < 60%); Shelf life = 12 months; reject if viscosity < 180 cP.
Remarks / QA notes	Verify gel strength on receipt; confirm Ca encapsulation integrity; record COA hash before use.

COA — Antioxidant Liquid Premix for all SKUs (100 ml)

Field	Specification / Result / Method
Product identity	Palatant-Antioxidant Liquid Premix — Amber liquid with enhanced antioxidant system for all SKUs; mild savory aroma. *Packet volume:* 100.000000 ml (use 1 bottle per 10 kg wet food production run = 1 ml per 100 g pouch).
Composition (per 100 ml bottle)	Rosemary extract ..... 28.000000 ml (primary antioxidant) Sunflower lecithin (food-grade) .... 27.000000 ml (phospholipid emulsifier) Grape seed extract concentrate ..... 24.000000 ml (proanthocyanidins, antioxidant synergy) Citric acid aqueous solution (25% w/v) 10.000000 ml (pH buffer, chelator) Mixed tocopherols ($\alpha:\beta:\gamma:\delta$ = 1.0:0.3:6.0:2.0) .. 10.000000 ml (Vit E source) Glycerol monostearate (GMS, q.s.) ..... 1.000000 ml (emulsifier carrier)
Analytical specifications	Appearance: Amber to dark amber viscous liquid; Odor: Mild savory with herbal note, no rancidity. Viscosity (25 deg C): 60-180 mPa·s (Brookfield viscometer). Moisture (Karl Fischer): $\leq$ 0.3%; pH (1% solution): 5.0-6.5 (citric acid adjusted). Peroxide value (PV): $\leq$ 3.0 meq O_2/kg (AOCS Cd 8b-90, stricter for high-PUFA). Anisidine value: $\leq$ 15 (AOCS Cd 18-90). Vitamin E (dl-α-tocopherol equiv): $\approx$ 8 IU per 100 g wet food pouch (post-retort with 20% loss). Total polyphenols (grape seed): $\geq$ 80 mg GAE per 100 ml (Folin-Ciocalteu method).
Microbiology	Total plate count (TPC): $\leq 1 \times 10^3$ cfu/ml (ISO 4833). Yeast and mould: $\leq 1 \times 10^2$ cfu/ml (ISO 21527). *Salmonella* spp.: Not detected per 25 ml (ISO 6579). *E. coli*: Absent per 10 ml.
Contaminants & safety	Pb $\leq$ 2 mg/kg; Cd $\leq$ 1 mg/kg; As $\leq$ 2 mg/kg; Hg $\leq$ 0.1 mg/kg (ICP-MS). Histamine: $\leq$ 50 mg/kg; Mycotoxins: ND (not detected). Pesticide residues: ND; 3-MCPD/GEs: $\leq$ 1 mg/kg. Citric acid: Food-grade, non-GMO; Complies with E330 specification.
Functional performance	Oxidative stability (Rancimat at 110 deg C): $\geq$ 10 hours (enhanced vs Palatant A). Emulsification index: $\geq$ 90%; Volatile loss after retort: $\leq$ 8%. Palatability index: $\geq$ +20% feed intake (vs control, cat/dog panel n = 20). Color stability: ΔE $\leq$ 4 post-retort (grape seed may darken slightly). PUFA protection: TBARS reduction $\geq$ 70% vs control after 6-month storage.
Origin & compliance	Rosemary extract: Food-grade, non-GMO (EU approved E392).

Note: 100 ml provides organic extracts, mixed tocopherols, lecithin, antioxidants and dietary Vit E for both CatCore and DogCore lines.

Omega-3 Fish Oil — Pre-stabilised, Shelf-Stable (Low PV / Low Hg)

- **Product type:** Refined and deodorised marine triglyceride oil (fish origin, e.g. sardine / anchovy / menhaden).
- **Function:** Energy enrichment and EPA/DHA source for feline wet diets; provides omega-3 balance and improved skin–coat nutrition.
- **Dosage:** 250 mL per 10 kg production run (≈2.5 mL per 100 g pouch, ≈2.3 g oil/pouch).
- **Packaging:** 250 mL amber HDPE bottles; minimum order 1.5 L (6 × 250 mL). Nitrogen-flushed and induction-sealed.
- **Composition:**
  - Total omega-3 (EPA + DHA) ≥ 30 % of fatty acids (≥ 300 mg/g oil).
  - Triglyceride form ≥ 90 %.
  - Antioxidant system: mixed tocopherols 0.05 – 0.10 %; optional rosemary extract ≤ 0.02 %.
  - No synthetic flavour, colour, or added stabilisers beyond tocopherols/rosemary.
- **Quality parameters:**
  - Peroxide value (PV) ≤ 2 meq O_2 kg^{-1}.
  - p-Anisidine value (AV) ≤ 10.
  - Totox (2 × PV + AV) ≤ 14.
  - Moisture ≤ 0.05 %.
  - Acid value ≤ 1 mg KOH g^{-1}.
  - Heavy metals: mercury < 0.05 ppm, lead < 0.1 ppm, arsenic < 0.1 ppm, cadmium < 0.05 ppm.
  - PCB + dioxin < 0.09 pg TEQ g^{-1}.
- **Physical:** Clear, light-gold liquid; density 0.92 ± 0.02 g mL^{-1} at 25 °C; no precipitate or clouding ≥ 10 °C.
- **Shelf life:** 12 months sealed at ≤ 25 °C; 18 months refrigerated (4 °C). Protect from light and air.
- **Microbiology:** Not applicable (oil matrix, sterile by refining).
- **Thermal compatibility:** Stable at 45 °C for 30 min; withstands retort in emulsion form without visible phase separation.
- **Sensory:** Neutral odour and taste; no rancid or fishy off-note; colour Lovibond ≤ 5Y, ≤ 0.5R.
- **Label declaration:** “Fish oil (pre-stabilised with natural tocopherols and rosemary).”
- **Supplier CoA must report:** PV, AV, Totox, EPA %, DHA %, acid value, moisture, heavy-metal panel, antioxidant %, and bottling date.

Palatant — Meat Hydrolysate Liquid (Thermostable, Shelf-Stable)

- **Product type:** Enzymatically hydrolysed poultry or marine protein concentrate, liquid form.
- **Function:** Palatability enhancer and omega-3 odour mask for wet feline diets.
- **Dosage:** 100 mL per 10 kg production run (≈1 mL per 100 g pouch).
- **Physical form:** Homogeneous brown liquid; viscosity 1–3 Pa·s at 25 °C; density 1.05 ± 0.05 g mL^{-1}.
- **Composition:**
  - Hydrolysed animal protein ≥ 45 % (dry basis).
  - Peptides < 3 kDa ≥ 60 % of protein fraction.
  - Sodium ≤ 2 %.
  - Moisture 45–55 %.
  - Shelf-stable antioxidant system: Rosemary extract 0.10 %.
  - Preservative: potassium sorbate 0.10 %.
  - Emulsifier:Glycerol monostearate GMS 0.1%
  - pH 5.5 – 6.5 (as supplied).
- **Thermal stability:** Withstands retort (121 °C × 30 min) without phase separation or burnt odour.
- **Shelf life:** 12 months at ≤ 25 °C; 18 months refrigerated (4 °C); store sealed, away from light and air.
- **Microbiological limits:**
  - Total plate count < 10^3 cfu g^{-1}.
  - Yeast & mould < 10^2 cfu g^{-1}.
  - Pathogens absent.
- **Additives not permitted:** no synthetic flavour, colour, or MSG.
- **Sensory:** Rich meaty aroma; no rancid or sulphidic notes.
- **Label declaration:** “Natural meat(non-poultry) hydrolysate (palatant).”
- **Supplier CoA must include:** protein %, Na %, preservative %, moisture %, pH, microbiology, retort-stability report.

Chapter 9

Standard Operating Procedures

SOP 30-A — Retort Line Floor Operations For CatCore SKUs

Batch Size: 10 kg run = 100 pouches $\times$ 100.00 g declared weight, target 100.5g $/pm$ 0.5g
Premix Dosing: Color-coded QC verification required. CatCore system uses RED stickers for Premix. Refer to SOP 30-B for DogCore SKU.
Target Calories: CatCore 100-110 kcal/100g
Total Production Time: Approximately 7-8 hours (single production day) with 2 work benches for parallel processing to optimise time, pathogen load and flavor profile.

Reference: For detailed QC tolerances, assay protocols, and audit trails, see the detailed SOP binder. This document is for line cooks and supervisors on the shop floor.

Mass Balance Summary (per 100 pouches)

Table 9.1: Mass Balance for 10 kg Production Run (100 pouches)

Component	Per Pouch (g)	Per Batch (kg)	Notes
SOLID PHASE			
Raw solids (per SKU BOM)	65.0	6.500	As specified in SKU formulation
Water absorption during blanch	+2.0	+0.200	Approximately 3% weight gain
Blanched solids (net)	67.0	6.700	Ready for marination
TOTAL LIQUID PHASE			
Bone broth (gelatinous base)	40.0	4.000	From initial 4.10 kg total, set aside 0
Blanch Water recovery	2.5	0.250	Recovered from blanching
Liquid Palatant	1.0	0.10	Addition of Liquid Palatant - Antioxi
Broth Liquid Total	43.5	4.350	Split into TWO BROTH SYSTEM
LIQUID PHASE — Broth A (Premix carrier)			
Bone broth (base)	10.0	1.000	From initial 4.10 kg total
CatPro premix	1.0	0.100	Color-coded packet
Blanch water recovery	2.5	0.250	Recovered from blanching
Broth A subtotal	12.5	1.250	For marination
LIQUID PHASE — Broth B (Gel system)			
Bone broth (base)	31.0	3.100	From initial 4.10 kg total
Alginate-Ca premix	1.0	0.100	Added just before filling
Broth B subtotal	32.0	3.200	Gel injection phase
Phase 1 Fill (Solids + Broth A)	**80.5**	**8.050**	First fill (scale tared)
Phase 2 Fill (Broth B + Gel)	**32.0**	**3.300**	Second fill (injected)
PRE-RETORT TOTAL (food only)	**112.5**	**11.250**	Target before sealing
Palatant-Antioxidant A/B (distributed in broth) — Included in broth totals			
RETORT PROCESS			
Moisture loss during retort (−10%)	−11.25	−1.125	Water evaporates
POST-RETORT FOOD WEIGHT	**101.0**	**10.100**	Actual food content
FINAL PRODUCT			
Declared food weight	100.0	10.000	Label claim
Pouch tare weight	+4.0	+0.400	Empty pouch material
Final packaged weight (QC target)	**104—105**	**10.400—10.500**	Post-retort scale reading

Line Supervisor Pre-Production Checklist

Complete this checklist before starting production. All items must be checked and signed off.

- Prepare Timesheet. Timesheet should have Start time, End time, Target Duration and Actual Duration for each step, Sign off to next step.
  Confirm premix Certificates of Analysis (COAs) are current and QC-approved
  Verify batch weights for all premixes, solids, and broth match Bill of Materials (BOM)
  Assemble pre-production items:
  - Retort pouches (100 units QC checked + 10 spares).
  - Labels and batch markers
  - Calibrated pH meters (QC sign-off required)
  - Calibrated scales (QC sign-off required)
  - Calibrated thermometers and sensors (QC sign-off required)

  Confirm color-coded premix packets match production schedule:
  - **RED sticker** = CatPro (all CatCore SKUs)
  - Verify Palatant-Antioxidant variant: A (Standard - RED STICKER) or B (Sardine SKU- BLUE STICKER)

  Prepare production log forms and batch record sheets
  Obtain all equipment calibration sign-offs from QC before production start
- Assemble all empty pouches in filling line prior to handling food materials to ensure short handling time. This ensures control of pathogen load and flavor profile.

Supervisor Sign-Off: _____ **Date:** _____

QC Sign-Off: _____ **Date:** _____

Step 1: Liquid Phase Preparation

Estimated Time: 15—20 minutes (operator active)
Personnel Required: 1 operator
Equipment Required: Heating vessel, paddle mixer, calibrated pH meter, thermometer

Day before production:

1. Render bone broth overnight (minimum 12 hours) and skim if needed. Sieve in fine mesh to remove grit.
2. Chill broth to 4 °C . Maintain Cold Chain Logs. Discard if more than 24 hours.
3. Store covered until production day

On retort day:

4. **Log Start Time in Timesheet:** _____Measure **4.10 kg bone broth** and transfer 4.00 Kg to heating vessel. Set aside 0.10Kg for evaporation loss and ops error. Slowly warm 4.00 Kg Broth to 25 °C while gently stirring (3—5 min) **pH Check #1:**
5.
   - Target: pH 6.4—6.5 (5 min)
   - Use calibrated pH meter
   - If outside range, adjust with food-grade acid/base (5 min)
   - **Obtain QC sign-off before proceeding**
7. Continue warming to 40 °C while stirring (10 min)
8. **Add 100 ml Palatant-Antioxidant premix (2 min):**

CRITICAL STEP — CANNOT BE SKIPPED
Purpose: Protects solids from oxidation during processing, provides palatability enhancement, and supplies primary Vitamin E

- **Premix A (standard antioxidant - RED STICKERs):** Use for Heart, Liver, Gizzard, Spleen, Kidney SKU
- **Premix B (enhanced antioxidant - BLUE STICKER):** Use for Sardine SKU ONLY

✓ Verify bottle label matches production schedule
✓ Check color coding on bottle
✓ **Obtain supervisor sign-off before adding**

9. Paddle mix for 2—3 minutes until fully dispersed (3 min)
10. **Total liquid: 4.20 kg** (broth + Palatant-Antioxidant)
11. Maintain steady temperature at 40 °C
12. Skim foam if present

QC Checkpoints:

- pH 6.4—6.5 (recorded in batch log)
- Temperature 40 °C $\pm$ 2 °C
- Complete dispersion of Palatant (no oil separation) **Log End Time in Timesheet: ____ Log Duration:** Target 30—35 minutes. If over this limit, halt and call supervisor. This step is essential to control pathogen load and flavor profile.

Step 1A/ Step 2: Solid Phase Preparation and Steam Blanch

SOP 30b — DogCore Retort Line Floor Operations

Batch Size: 10 kg run = 100 pouches $\times$ 100 g declared weight
Premix Dosing: Color-coded QC verification required
Target Calories: DogCore 240-300 kcal/100g
Total Production Time: Approximately 5-6 hours (single production day)

Reference: For detailed QC tolerances, assay protocols, and audit trails, see the detailed SOP binder. This document is for line cooks and supervisors on the shop floor.

Key Difference from CatCore SOP 30-A: DogCore uses a powder-based formulation with NO alginate gel system. The powder is slowly incorporated into enriched broth to create a custard-like slurry that sets during retort through egg white protein gelation.

Mass Balance Summary (per 100 pouches)

Table 9.2: Mass Balance for DogCore 10 kg Production Run (100 pouches)

Component	**Per Pouch (g)**	**Per Batch (kg)**	**Notes**
LIQUID PHASE			
Bone broth (base)	46.0	4.600	Increased from CatCore
Palatant-Antioxidant A (RED STICKER)	1.0	0.100	Standard antioxidant blend
Enriched broth subtotal	47.0	4.700	
PREMIX PHASE			
DogPro premix	1.0	0.100	ORANGE sticker
DogPro-enriched broth	48.0	4.800	
POWDER PHASE			
DogCore powder blend	65.0	6.500	YELLOW sticker, added in vortex
Total slurry (pre-fill)	**113.0**	**11.300**	Single-phase system
Target fill per pouch	**112.5**	**11.250**	Scale tared to zero
RETORT PROCESS			
Moisture loss during retort (−10%)	−11.25	−1.125	Water evaporates
POST-RETORT FOOD WEIGHT	**101-102**	**10.125**	Actual food content
FINAL PRODUCT			
Declared food weight	100.0	10.000	Label claim
Pouch tare weight	+4.5	+0.450	Empty pouch material
Final packaged weight (QC target)	**105.5 ± 0.5**	**10.550**	Post-retort scale reading

Line Supervisor Pre-Production Checklist

Complete this checklist before starting production. All items must be checked and signed off.

Confirm premix Certificates of Analysis (COAs) are current and QC-approved
Verify batch weights for all premixes, powder, and broth match Bill of Materials (BOM)
Assemble pre-production items:

- Retort pouches (110 units + spares)
- Labels and batch markers
- Calibrated pH meters (QC sign-off required)
- Calibrated scales (QC sign-off required)
- Calibrated thermometers and sensors (QC sign-off required)

Confirm color-coded premix packets match production schedule:

- **ORANGE sticker** = DogPro premix (100 g per batch)
- **YELLOW sticker** = DogCore powder blend (6.50 kg per batch)
- **RED sticker** = Palatant-Antioxidant- A (100 ml per batch)

Verify paddle mixer is capable of vortex mode for powder incorporation
Prepare production log forms and batch record sheets
Obtain all equipment calibration sign-offs from QC before production start

Supervisor Sign-Off: _____ **Date:** _____

QC Sign-Off: _____ **Date:** _____

Step 1: Liquid Phase Preparation

Start Time: ____ **End Time:** ____ **Duration:** 35-40 minutes

Estimated Time: 35-40 minutes (operator active)
Personnel Required: 1 operator
Equipment Required: Heating vessel, paddle mixer, calibrated pH meter, thermometer

Day before production:

1. Render bone broth overnight (minimum 12 hours)
2. Chill broth to 4 deg C and skim fat if needed
3. Store covered until production day

On retort day:

4. Measure **4.60 kg bone broth** and transfer to heating vessel (5 min)
   - **Note:** DogCore uses 4.60 kg broth (vs 4.10 kg in CatCore) to compensate for no blanch water recovery and no water absorption during blanching
5. Slowly warm to 25 deg C while gently stirring (10-15 min)
6. **pH Check #1:**
   - Target: pH 6.4-6.5
   - Use calibrated pH meter
   - If outside range, adjust with food-grade acid/base
   - **Obtain QC sign-off before proceeding**

7. Continue warming to 40 deg C while stirring (10 min)
8. **Add 100 ml Palatant-Antioxidant A premix (2 min):**

> **CRITICAL STEP - CANNOT BE SKIPPED**
> **Purpose:** Protects powder from oxidation during processing, provides palatability enhancement, and supplies primary Vitamin E
>
> - **DogCore uses Palatant-Antioxidant A (RED sticker) ONLY**
> - Standard antioxidant blend 100ml per 10kg Production Run or 1ml per 100g wet food pouch.
>
> ✓ Verify Antioxidant bottle label shows RED sticker
> ✓ Check expiration date
> ✓ **Obtain supervisor sign-off before adding**

9. Paddle mix for 2-3 minutes until fully dispersed (3 min)
10. **Total enriched broth: 4.70 kg**
11. Maintain steady temperature at 40 deg C
12. Skim foam if present (2 min)

QC Checkpoints:

- pH 6.4-6.5 (recorded in batch log)
- Temperature 40 deg C $\pm$ 2 deg C
- Complete dispersion of Palatant (no oil separation)
- Weight verification: 4.70 kg $\pm$ 0.05 kg

Step 2: DogPro Premix Addition

Start Time: _____ **End Time:** _____ **Duration:** 10-12 minutes

Estimated Time: 10-12 minutes (operator active)
Personnel Required: 1 operator
Equipment Required: Paddle mixer, calibrated pH meter, scale

1. Take the **ORANGE-stickered DogPro premix packet** (2 min)
   - Verify ORANGE sticker matches production schedule
   - Check packet is sealed and undamaged
   - Verify expiration date and COA approval
2. **VERIFY: Check production schedule matches ORANGE sticker for DogCore**
3. **Obtain supervisor sign-off on premix selection**
4. Weigh **100 g DogPro premix** precisely (2 min)
5. Add DogPro premix to 4.70 kg enriched broth while paddle mixing (2 min)
6. Mix steadily for 2-3 minutes until complete dispersion (3 min)
   - Ensure no clumps or settling
   - Premix should be fully dissolved
7. **DogPro-enriched broth now: 4.80 kg**
8. **pH Check #2:**
   - Target: pH 6.4-6.5
   - Adjust if needed
   - **Obtain QC sign-off**
9. Maintain at 40 deg C, covered, ready for powder addition

QC Checkpoints:

- ORANGE sticker verified and logged
- DogPro premix weight: 100 g $\pm$ 1 g for 10Kg production run.
- pH 6.4-6.5 (recorded in batch log)
- Complete dispersion (no clumps or settling)
- Total weight: 4.80 kg $\pm$ 0.05 kg

Step 3: DogCore Powder Preparation - CRITICAL STEP

Start Time: _____ **End Time:** _____ **Duration:** 10-15 minutes

Estimated Time: 10-15 minutes (operator active)
Personnel Required: 1 operator
Equipment Required: Scale, sieve (optional), storage containers

1. Take **YELLOW-stickered DogCore powder blend** (2 min)
   - Verify YELLOW sticker matches production schedule
   - Check container is sealed and dry
   - Verify expiration date and COA approval
2. **VERIFY: Check production schedule matches YELLOW sticker for DogCore powder**
3. **Obtain supervisor sign-off on powder selection**
4. Weigh **6.50 kg DogCore powder** precisely (5-8 min)
   - Use clean, dry containers
   - Avoid moisture contamination
   - Check for clumping (if clumped, sieve before use)
5. Optional: Sieve powder through 2 mm mesh to break up any clumps (5 min if needed)
6. **Note powder characteristics on batch log:**
   - Color: Should be uniform beige/tan
   - Texture: Free-flowing, no hard clumps
   - Odor: Neutral to meaty, no off-odors
7. Set powder aside in clean, covered container
8. Keep powder at room temperature (do NOT refrigerate - moisture will cause clumping)

QC Checkpoints:

- YELLOW sticker verified and logged
- DogCore powder weight: 6.50 kg $\pm$ 0.05 kg
- Visual inspection: uniform color, free-flowing
- Odor check: neutral/meaty, no rancidity
- Moisture check: powder should be dry (no caking)

Step 4: Vortex Mixing - Powder Incorporation (CRITICAL)

Start Time: _____ **End Time:** _____ **Duration:** 25-30 minutes

Estimated Time: 25-30 minutes (operator active - CONTINUOUS ATTENTION REQUIRED)
Personnel Required: 2 operators (1 for mixing, 1 for powder addition)
Equipment Required: High-speed paddle mixer (vortex capability), large mixing vessel

CRITICAL STEP - PREVENTS PIZZA DOUGH FORMATION
Objective: Create smooth, pourable custard-like slurry (NOT thick dough)
Key Success Factors:

- Maintain vortex throughout powder addition
- Add powder SLOWLY in thin, steady stream over 15-20 minutes while mainting a steady vortex.
- NEVER dump powder in bulk
- Monitor consistency continuously

If pizza dough forms: STOP immediately, add 200-300 ml warm broth, remix slowly

1. Out of4.80Kg DogPro-enriched broth measure and transfer 4.50 kg to large mixing vessel.
2. HOLD-IN-RESERVE 0.30Kg broth mix for final adjustment to pourable consistency.
   - Use vessel with at least 15 L capacity
   - Ensure broth is at 40 deg C $\pm$ 2 deg C
3. Start paddle mixer at HIGH speed to create vortex (1 min)
   - Vortex should reach halfway down vessel
   - Adjust speed if splashing excessively
   - Maintain stable vortex throughout process
4. **Begin powder addition (20-25 min):**
   - Operator 1: Maintains mixer speed and monitors consistency
   - Operator 2: Adds powder in THIN, STEADY stream
   - Target rate: approximately 250-300 g per minute
   - Total time: 20-25 minutes for 6.50 kg powder
5. **Monitor consistency throughout:**
   - **GOOD:** Smooth, pourable slurry (like thick pancake batter)
   - **ACCEPTABLE:** Slightly thick but still pours (like heavy cream)
   - **BAD:** Clumpy, dough-like, does not pour easily
6. If consistency becomes too thick during addition:
   - PAUSE powder addition
   - Add 100-200 ml of the held-in-reserve broth
   - Mix for 1-2 minutes until smooth
   - Resume powder addition at slower rate
7. After all powder added, add all the held-in-reserve 0.30Kg broth and give it a final mix for 2-3 minutes.
   - Ensure complete dispersion
   - No dry powder pockets
   - Smooth, uniform consistency
8. **Final slurry: 11.30 kg** (4.80 kg broth + 6.50 kg powder)
9. Check temperature: Should be 35-40 deg C (mixing generates slight heat)
10. **Final consistency check:**
    - Pour test: Slurry should flow smoothly from ladle
    - Visual: No lumps, uniform color
    - Texture: Custard-like, NOT dough-like

QC Checkpoints:

- Vortex maintained throughout (operator log notes)

- Powder addition time: 20-25 minutes (not rushed)
- Final slurry weight: 11.30 kg $\pm$ 0.10 kg. All Hold-in-Reserve broth is completely utilised.
- Consistency: Pourable custard-like slurry (visual + pour test)
- Temperature: 35-40 deg C
- No lumps or dry powder pockets (visual inspection)

Common Issues & Solutions:

- **Issue:** Powder added too fast, clumping occurs
  - **Solution:** Stop addition, increase mixer speed, break up clumps, resume slowly
- **Issue:** Slurry becomes too thick (dough-like)
  - **Solution:** Add 100-200 ml warm broth reserve, mix thoroughly, check consistency
- **Issue:** Vortex lost during mixing
  - **Solution:** Increase mixer speed, reestablish vortex before resuming powder addition
- **Issue:** Powder not dispersing (floating on surface)
  - **Solution:** Increase mixer speed, add powder closer to vortex center, slow addition rate

Step 5: Pouch Filling - Single Phase

Start Time: _____ **End Time:** _____ **Duration:** 50-60 minutes

Estimated Time: 50-60 minutes (operator active)
Personnel Required: 1-2 operators (2 operators recommended for faster filling)
Equipment Required: Filling line, calibrated scale (tared), 100+ pouches, filling ladle or dosing equipment

1. Set up filling line with **100 empty pouches** (plus spares) (10 min)
2. **Tare scale to zero with empty pouch on it** (pouch weight not counted during fill)
3. **Gently stir slurry before filling** to ensure uniform consistency
   - Stir every 10-15 pouches to prevent settling
   - Do NOT over-stir (avoid incorporating air)
4. Fill each pouch with **112.5 g $\pm$ 0.5 g** of DogCore slurry (30-40 min)
   - Manual filling: approximately 30 seconds per pouch
   - With dosing equipment: approximately 15 seconds per pouch
   - **Note:** DogCore slurry is thicker than CatCore, may require wider dosing nozzle
5. **In-line QC: Weigh every 10th pouch (5 min):**
   - Record weight on production log
   - Scale shows: 112-113 g (pouch tared to zero)
   - Target: 112.5 g $\pm$ 0.5 g
   - **If any pouch deviates by $>$0.5 g, STOP LINE and report to supervisor**
6. Continue until all 100 pouches filled
7. Keep pouches upright and stable on filling rack
8. **Proceed immediately to sealing** (do not let pouches sit - powder may settle)

QC Checkpoints:

- Every 10th pouch weight recorded (112-113 g target)
- Visual inspection: no spills, pouches upright, uniform fill level

- Total pouches filled recorded (should be 100)
- No air pockets or voids visible in filled pouches

Common Issues & Solutions:

- **Issue:** Slurry settling during filling (heavier at bottom)
  - **Solution:** Gently stir every 10 pouches, increase stirring frequency
- **Issue:** Slurry too thick to dispense smoothly
  - **Solution:** Warm slurry slightly (to 45 deg C max), or use wider nozzle
- **Issue:** Air bubbles in filled pouches
  - **Solution:** Tap pouches gently after filling, or fill more slowly

Step 6: Seal and Retort

Start Time: _____ **End Time:** _____ **Duration:** 120 minutes

Estimated Time: 120 minutes total (2 hours)
Breakdown:

- Sealing: 30-35 minutes (operator active)
- Retort cycle: 75 minutes (mostly waiting)
- Documentation: 5 minutes

Personnel Required: 2 operators (1 for sealing, 1 for retort loading)
Equipment Required: Nitrogen flush system, heat sealer, retort chamber, temperature monitoring equipment

Sealing (complete within 10 minutes of final fill):

1. Use in-line **nitrogen flush** for all pouches (prevents oxidation)
   - **Important:** DogCore powder contains egg whites - oxygen exposure can cause discoloration
2. **Double-seal** each pouch (20-30 min):
   - Seal width: 5 mm $\times$ 2 parallel bands
   - Temperature: 180-190 deg C
   - Dwell time: 2.5-3 seconds
   - Approximately 15-20 seconds per pouch
3. **Inspect every seal (10 min):**
   - Reject if wrinkles, incomplete edges, or weak spots detected
   - Set rejected pouches aside for rework or discard
   - **Note:** DogCore slurry is thicker - ensure seal area is clean before sealing
4. All accepted pouches proceed to retort

Retort process (IDENTICAL TO CATCORE):

5. Load sealed pouches in retort racks (10 min):
   - Maintain headspace $<$10 mm between pouches
   - Water immersion or steam-air mode per equipment specification
6. **Retort cycle parameters:**

- Come-up time: $\leq$10 minutes
- Hold temperature: **121 deg C**
- Hold time: **45 minutes** (target $F_0 \geq 12$)
- Total cycle time: approximately 75 minutes

7. **Temperature monitoring:**
   - Record temperature trace continuously
   - Monitor heat penetration in center of chamber
   - **CRITICAL: Discard entire batch if any pouch $<$118 deg C for $>$5 minutes**
8. Cool rapidly: **Below 40 deg C within 20 minutes**
9. **Record (5 min):**
   - Time/temperature chart
   - Any deviations from standard cycle
   - Alternative validated F_0 curve if used
10. **Obtain sign-offs from Line Supervisor AND QC Manager**

QC Checkpoints:

- All seals inspected and approved
- Retort temperature chart recorded and attached
- Minimum F_0 value achieved (recorded)
- Cooling time recorded (must be $<$20 min)

DogCore-Specific Note:

- During retort, egg white proteins in DogCore powder will denature and form custard-like gel texture
- This is expected and desired behavior
- Post-retort texture should be firm but sliceable (NOT liquid)

Step 7: Post-Retort QC (within 1 hour of cooling)

Start Time: _____ **End Time:** _____ **Duration:** 60 minutes

Estimated Time: 60 minutes total
Breakdown:

- Visual inspection: 15 minutes
- Weight verification: 10 minutes
- Destructive testing: 10 minutes
- Labeling: 20 minutes
- Documentation: 5 minutes

Personnel Required: 2 operators
Equipment Required: Calibrated scale, labels, photography equipment (for destructive test)

Visual inspection:

1. Inspect every pouch for (15 min):
   - Seal integrity (no leaks, no delamination)
   - Surface damage (punctures, tears)
   - Deformation (excessive swelling, vacuum collapse)

2. Set aside any questionable pouches for detailed inspection

Weight verification:

3. Randomly select **10 pouches per batch**
4. Weigh each pouch on calibrated scale (NOT tared, measuring total packaged weight) (10 min)
5. **QC Target: 105.5 g $\pm$ 0.5 g total packaged weight**
   - This is: $\sim$101-102 g food + 4.5 g pouch
6. Record all 10 weights on QC log
7. **Pass criteria: At least 9 out of 10 within specification**
8. **If $>$1 pouch fails: Inspect additional 20 pouches or reject batch**

Destructive testing (1 pouch per batch):

9. Select one pouch from middle of batch
10. Open carefully and evaluate (10min):
    - **Custard texture:** Firm, holds shape, sliceable (NOT liquid, NOT rubbery)
    - **Protein set:** Egg whites should create cohesive custard-like structure
    - **Syneresis:** $<$5% free liquid on surface (minor weeping acceptable)
    - **Odor:** Neutral to meaty, NO sour, rancid, or off-odors
    - **Color:** Consistent tan/beige (from powder), uniform throughout
    - **Texture when sliced:** Should cut cleanly, not crumble or ooze
11. Record all observations with photos if needed
12. **Obtain QC sign-off on destructive test results**

Final steps:

13. Label all passed pouches with (20 min):
    - Batch number
    - Production date
    - Best-by date (18 months from production)
    - SKU code: DogCore (ORANGE band/label)
14. Store at **20 $\pm$ 2 deg C, RH $<$60%**
15. **Retain 5 pouches per batch** for:
    - Stability testing (shelf-life validation)
    - Regulatory samples (if required)
    - Customer complaint investigation (if needed)
16. Complete all production logs and submit to QC for filing (5 min)

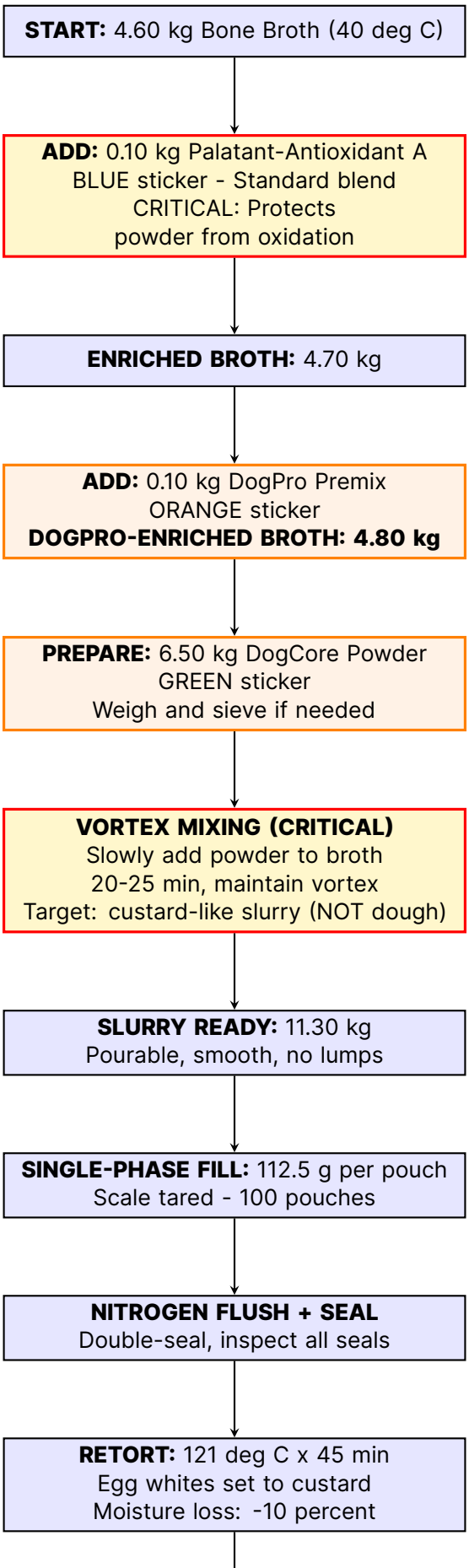
QC Checkpoints:

- Visual inspection results recorded (pass/fail for each pouch)
- Weight verification: 10 weights recorded, pass criteria met (105.5 g $\pm$ 0.5 g)
- Destructive test: photos attached, custard texture confirmed
- All parameters within spec (texture, odor, color, protein set)
- Labeling complete and verified (ORANGE band for DogCore)
- 5 retention samples properly stored and logged

DogCore-Specific Quality Criteria:

- **Expected texture:** Firm custard (similar to baked egg custard or flan)
- **Protein gelation:** Should be evident - product holds shape when inverted
- **NOT acceptable:** Liquid/runny texture (indicates protein did not set)
- **NOT acceptable:** Rubbery/tough texture (indicates over-processing or too much protein)
- **Acceptable variation:** Slight firmness differences batch-to-batch (egg white gelation varies slightly)

Production Flow Diagram - DogCore



Production Timeline Summary - DogCore

Table 9.3: Complete DogCore Production Timeline for 100-Pouch Batch

Step	Activity	Time (min)	Personnel	Can Parallel?
Pre-Production	Broth rendering	720	1	N/A (overnight)
1	Liquid phase prep	35-40	1	No
2	DogPro premix addition	10-12	1	No
3	Powder preparation	10-15	1	Yes (during Step 1-2)
4	Vortex mixing (CRITICAL)	25-30	2	No
5	Pouch filling	50-60	1-2	No
6	Seal & retort	120	2	Mostly waiting
7	Post-retort QC	60	2	No
TOTAL PRODUCTION TIME (Approximately)		**310-347 5-6 hours**	**2-3**	

Key Differences from CatCore Timeline:

- **FASTER:** No blanching (saves 35-40 min)
- **FASTER:** No gel preparation/injection (saves 30-35 min)
- **FASTER:** No marination wait (saves 30 min)
- **SLOWER:** Vortex mixing requires careful attention (25-30 min)
- **NET RESULT:** DogCore is approximately 1-1.5 hours FASTER than CatCore

Notes on Timeline Optimization:

- Step 3 (powder prep) can be done in parallel with Steps 1-2 if 2 operators available
- Step 4 (vortex mixing) is CRITICAL and cannot be rushed - quality depends on slow powder addition
- Step 6 retort cycle is mostly waiting time; operators can begin cleaning and prep for next batch
- With experienced operators and optimized workflow, total production time approaches 5 hours
- First production run may take longer (6-6.5 hours) as operators familiarize with vortex mixing technique

Critical Control Points (CCP) Summary - DogCore

Corrective Actions:

- If any CCP is outside critical limits, STOP production immediately
- Notify Line Supervisor and QC Manager
- Identify root cause before resuming
- Affected product must be segregated and evaluated for:
  - Rework (if safe and feasible - e.g., if slurry too thick, add broth and remix)
  - Downgrade (if food safety maintained but quality affected)
  - Discard (if food safety cannot be assured or texture completely wrong)
- Document all deviations and corrective actions in batch log
- Obtain QC Manager sign-off before resuming production

Troubleshooting Guide - DogCore Specific

Table 9.4: HACCP Critical Control Points for DogCore Retort Process

CCP	Hazard	Critical Limit	Monitoring
Broth pH	Bacterial growth	pH 6.4-6.5	Calibrated pH meter (Step 1 & 2)
Palatant-Antioxidant Addition	Lipid oxidation Vitamin E deficiency	100 ml per batch BLUE sticker (variant A)	Visual verification Supervisor sign-off
DogPro Premix Addition	Micronutrient deficiency	100 g per batch ORANGE sticker	Weight verification Color code check
DogCore Powder Addition	Micronutrient deficiency Moisture contamination	6.50 kg per batch GREEN sticker Dry, free-flowing	Weight verification Visual/odor check
Vortex Mixing	Pizza dough formation Uneven dispersion	Custard-like slurry Pourable consistency 20-25 min addition time	Visual check Pour test Timer
Fill Weight	Under/over filling Nutritional imbalance	112.5 +/- 0.5 g	Scale check every 10th pouch
Seal Integrity	Contamination Spoilage	No wrinkles, complete edges, 2 bands	100 percent visual inspection
Retort Temperature	Pathogen survival (C. botulinum)	121 deg C, 45 min F-value $\geq$ 12 Never $<$118 deg C	Continuous chart recorder Temperature probe
Protein Gelation	Quality defect Poor texture	Firm custard texture Not liquid, not rubbery	Destructive test (1 pouch per batch)
Cooling Time	Spore outgrowth	$<$40 deg C within 20 min	Calibrated thermometer
Final Weight	Moisture loss Quality control	105.5 +/- 0.5 g total (food + pouch)	10 random pouches per batch

Table 9.5: Common DogCore Issues and Solutions

Issue	Likely Cause	Solution
Powder clumping during storage	Moisture absorption	Store in sealed container with desiccant. Sieve before use if clumped.
Pizza dough texture during mixing	Powder added too fast, insufficient vortex	STOP. Add 200-300 ml warm broth. Remix slowly. Resume powder addition at half speed.
Slurry too thin (watery)	Too much broth, powder underweight	Check powder weight. If correct, continue - may still set during retort. Test one pouch first.
Slurry too thick (paste-like)	Powder overweight, broth underweight, powder absorbed moisture	Add 100-200 ml warm broth incrementally until pourable. Record adjustment in log.
Powder not dispersing (floating)	Vortex too weak, powder added too close to surface	Increase mixer speed. Add powder closer to vortex center. Slow addition rate.
Dry powder pockets in slurry	Incomplete mixing, powder dumped instead of streamed	Continue mixing for 5-10 min. Break up pockets manually if needed. Do NOT proceed to filling.
Slurry separating (liquid on top)	Inadequate mixing time, powder settling	Remix for 2-3 min before filling. Stir gently every 10 pouches during filling.
Post-retort texture too liquid	Insufficient protein, retort cycle incomplete	Check powder weight (should be 6.50 kg). Verify retort F-value achieved. Reject batch if liquid.
Post-retort texture too rubbery	Excessive protein, over-retorting	Check powder weight. Verify retort cycle (45 min only). Minor rubberiness acceptable.
Post-retort syneresis $>$5 percent	Insufficient protein binding, pH imbalance	Check pH (should be 6.4-6.5). Minor syneresis acceptable. If $>$10 percent, investigate powder quality.
Seal failures on DogCore pouches	Thick slurry contaminating seal area	Wipe pouch rim before sealing. Ensure slurry below fill line. Increase seal temperature by 5 deg C.
Batch weight signifi-	Measurement error,	Reweigh all components be-

Batch Record Template - DogCore

Production Date: _____ **Batch Number:** _____

SKU: DogCore **Target Quantity:** 100 pouches

Line Supervisor: _____ **QC Inspector:** _____

Step 1: Liquid Phase Preparation

Bone broth weight: _____ kg Target: 4.60 kg

pH (25 deg C): _____ Target: 6.4-6.5 QC Sign: _____

Palatant type: A (BLUE) 100 ml added Supervisor Sign: _____

Final temp (40 deg C): _____ deg C Enriched broth: _____ kg (target: 4.70)

Step 2: DogPro Premix Addition

Premix sticker: ORANGE (DogPro) Verified: Supervisor Sign: _____

Premix weight: _____ g Target: 100 g

pH (after premix): _____ Target: 6.4-6.5 QC Sign: _____

DogPro-enriched broth: _____ kg Target: 4.80 kg

Step 3: DogCore Powder Preparation

Powder sticker: GREEN (DogCore) Verified: Supervisor Sign: _____

Powder weight: _____ kg Target: 6.50 kg

Visual check: Pass Fail Color: _____

Odor check: Pass Fail Notes: _____

Sieving needed: Yes No

Step 4: Vortex Mixing

Mixing start time: _____ Vortex established: _____

Powder addition start: _____ Addition end: _____ Duration: _____ min

Target addition time: 20-25 min Actual: _____ min

Final slurry weight: _____ kg Target: 11.30 kg

Consistency check: ☐ Custard-like ☐ Too thick ☐ Too thin Pour test: ☐ Pass ☐ Fail

Temperature: _____ deg C Target: 35-40 deg C

Issues encountered: _____

Step 5: Pouch Filling (every 10th pouch)

Pouch #	10	20	30	40	50	60	70	80	90	100
Weight (g)										

Target: 112-113 g (scale tared) Operator Sign: _____

Step 6: Seal & Retort

Sealing complete: _____ Rejected pouches: _____

Retort load time: _____ Retort start: _____

Come-up time: _____ min Target: ≤10 min

Hold temp: _____ deg C Target: 121 deg C

Hold time: _____ min Target: 45 min

F-value: _____ Target: ≥12

Cooling end: _____ Temp: _____ deg C (target: <40 deg C)

Chart attached: ☐ Yes Supervisor Sign: _____ QC Sign: _____

Step 7: Post-Retort QC

Visual inspection: Pouches rejected: _____ Reason: _____

Weight verification (10 random pouches):

Pouch #										
Weight (g)										

Target: 105.5 +/- 0.5 g Pass: ≥9/10 within spec Result: ☐ Pass ☐ Fail

Destructive test (1 pouch):

Custard texture: Firm Too soft Too hard Notes: _____

Protein gelation: Pass Fail Notes: _____

Syneresis: <5%: Yes No Notes: _____

Odor: Pass Fail Notes: _____

Color: Pass Fail Notes: _____

Sliceability: Pass Fail Notes: _____

Photos attached: Yes QC Sign: _____

Final Disposition:

Pouches approved: _____ / 100

Pouches rejected: _____ / 100 Reason: _____

Retention samples: 5 pouches stored Location: _____

Batch status: APPROVED REJECTED HOLD FOR INVESTIGATION

Final Sign-Offs:

Line Supervisor: _____ Date: _____

QC Manager: _____ Date: _____

Notes

- This SOP covers DogCore powder-based production flow only
- For CatCore (alginate gel system), refer to SOP 30
- Detailed QC sampling plans (ICP assays, vitamin assays, microbiological testing): See detailed SOP binder
- Tolerance specifications and deviation handling procedures: See detailed SOP binder
- Equipment calibration schedules and maintenance logs: See equipment maintenance records
- All logs and sign-offs must be preserved per HACCP requirements for minimum 2 years
- For pre-pilot kitchen test protocols and validation studies: See separate validation documents
- Emergency contact information and escalation procedures: See safety manual

Key Differences from CatCore SOP 30:

- DogCore starts with 4.60 kg broth (vs 4.10 kg in CatCore)
- NO blanching step (powder is pre-processed)
- NO two-broth split (single unified system)
- NO alginate gel system (custard texture from egg white gelation)
- CRITICAL vortex mixing step (prevents pizza dough formation)
- Single-phase fill at 112.5 g
- Approximately 1-1.5 hours FASTER than CatCore (5-6 hours vs 7-8 hours)
- Post-retort texture is custard-like (vs gel-like in CatCore)

Revision History:

- Rev H.3.1.0 (21 October 2025): Initial DogCore powder-based SOP, forked from CatCore SOP 30, adapted for vortex mixing system and custard texture profile

Document Control:

- Document Owner: Growlrr Foods Pvt Ltd, Quality Assurance Department
- Review Frequency: Quarterly or after any significant process change
- Next Review Date: 21 January 2026
- Distribution: Line Supervisors, QC Managers, Production Operators
- Controlled Copy: This is a controlled document. Do not copy without authorization.

Broth Base pH Adjustment SOP – Pre-Heating Step (3.0 kg batch)

Scope: pH adjustment of a 3.0 kg broth aliquot after weighing and prior to heating to 60°C. Target pH: **6.4–6.5** at 25°C.

Approved reagents

- Citric acid monohydrate, food-grade – prepare **10% w/v** solution (10 g / 100 mL) – “Citric 10%“.
- Sodium citrate dihydrate, food-grade – prepare **10% w/v** solution (10 g / 100 mL) – “Sodium Citrate 10%“.
- Potassium bicarbonate, food-grade – prepare **5% w/v** solution (5 g / 100 mL) – “K-Bicarb 5%“ (alternative to sodium citrate).

Equipment & PPE

Calibrated pH meter (25°C calibration), magnetic or overhead stirrer, 10 mL and 1 mL pipettes/syringes, gloves, goggles, lab coat.

Procedure

1. **Calibrate** pH meter at pH 7.00 and pH 4.00 at 25°C. Document on Form MAT-01A.
2. Place the 3.0 kg broth in mixing vessel; equilibrate to 25°C.
3. Measure and record initial pH: $\mathbf{pH_0}$.
4. If $\mathbf{pH_0}$ is within 6.4–6.5: proceed to premix addition and sign MAT-01A.
5. If $\mathbf{pH_0 > 6.5}$: add **Citric 10%** in **1.0 mL** increments:
   - Add 1.0 mL, mix 60 s, measure pH, record.
   - Repeat until pH $\in$ [6.4,6.5].
   - Control limit: if cumulative addition > 10 mL without reaching target, stop and call Floor Chemist; document deviation.
6. If $\mathbf{pH_0 < 6.4}$: add **Sodium Citrate 10%** (or **K-Bicarb 5%**) in **1.0 mL** increments:
   - Add 1.0 mL, mix 60 s, measure pH, record.
   - Repeat until pH $\in$ [6.4,6.5].
   - Control limit: if cumulative addition > 10 mL without reaching target, stop and call Floor Chemist; document deviation.
7. Once target achieved, record final pH: $\mathbf{pH_f}$, total reagent added, time, operator initials on Form MAT-01A. Only then add Chelator Premix.

Notes

- 1 mL of a 10% solution = 0.10 g reagent; for 3.0 kg broth this is a small incremental change (0.0033% w/w), facilitating precise control.
- Do not measure pH at 60°C for QC decisions; measure at 25°C.
- If unusually large reagent volume is required, document and halt for technical review – buffer capacity may indicate upstream raw variation.

Form MAT-01A (Broth Base pH Log): Attach to batch record.
Operator: _____ **Date/Time:** _____

SOP: Bone Broth Rendering and Skeletal Mince Preparation for Catpro SKU

1. Chicken Frame Line

Objective: Produce standardized calcium- and collagen-bearing broth and skeletal mince for chicken meat SKUs.

1. **Step 1 - Input Materials:**
2. Total Time needed 10-15 min
   - Log start time in timesheet.
   - 2.5 kg cleaned chicken skeletal frames with 30% chicken neck and de-clawed feet. Use high velocity hot jet spray to clean off grit.

- 8—10 kg potable water dependinding on surface area of kettle. Target 4.10Kg rendered bone broth
- 0.2 % acetic acid (2 mL/L water)
- Log end time in timesheet

3. **Step 2- Rendering:**
4. Total Time needed 12-13 hours with 12 hours of continuous broth rendering time.
   (a) Log start time in timesheet. Ensure no more than 10 minutes have passed between end time of Step 1 and start time of Step 2 .
   (b) Charge kettle with water and acetic acid; add frames (1:4 w/v ratio) or as per SOP.
   (c) Maintain simmer at 90–95 °C for 12 h; compensate evaporation if needed.
   (d) Skim fats and solids every 2 h.
   (e) Reduce to approximately 4.50 kg$\pm$ 0.4kg finished broth.
   (f) Strain through 1 mm mesh;
   (g) Lable with date, time and batch number. Refridgerate the broth and use within 12 hours.
   (h) Retain cooked bones and soft matrix for mincing. Refridgerate if needed and use within 12 hours. Lable with date, time and batch number.
   (i) Log end time in timesheet. Maintain coldchain logs. Use within 12 hours if refridgerated or immediately if in process.
5. **Step 3 - Bone Residue Handling and Frame Mince Production:**
6. Total Time needed 30-40 min
   (a) Log start time in timesheet.
   (b) Rinse cooked bone residue with warm potable water to remove surface grit and fines.
   (c) Remove any dense cortical fragments ($>$10 mm).
   (d) Pass residue twice through 0.3 mm grinding plate; sieve twice through 0.5 mm mesh.
   (e) Collect fine mince (target yield $\approx$1.65 kg) for 10kg production run.
   (f) Store $\leq$4 °C or freeze at –18 °C until use. Lable with date, time and batch number.
   (g) Log end time in timesheet. Maintain coldchain logs. Use within 12 hours if refridgerated or immediately if in process.

2. Goat Frame Line

Objective: Produce lamb skeletal broth and mince with inherent calcium and collagen content for goat meat SKUs.

1. **Step 1 - Input Materials:**
2. Total Time needed 10-15 min
   - Log start time in timesheet.
   - 3.0 kg goat skeletal frames with 30% cleaned, skined, de-hooved goat trotters. Use high velocity hot jet spray to clean off grit.
   - 8—10 kg potable water dependinding on surface area of kettle. Target 4.10Kg rendered bone brotha
   - 0.2 % acetic acid (2 mL/L water)
   - Log end time in timesheet
3. **Step 2 - Rendering:**
4. Total Time needed 12-13 hours with 12 hours of continuous broth rendering time.
   (a) Log start time in timesheet. Ensure no more than 10 minutes have passed between end time of Step 1 and start time of Step 2 .
   (b) Charge kettle with water and acetic acid; add bones (1:4 w/v ratio) or as per SOP.
   (c) Simmer 12 h at 90–95 °C; allow slow evaporation to 4.50 kg $\pm$ 0.4kg broth.
   (d) Skim surface fats periodically; strain twice through 1 mm mesh .
   (e) Lable with date, time and batch number. Refridgerate the broth and use within 12 hours.

(f) Retain cooked bones and soft matrix for mincing. Refriderate if needed and use within 12 hours. Lable with date, time and batch number.
(g) Log end time in timesheet. Maintain coldchain logs. Use within 12 hours if refridgerated or immediately if in process.

5. **Step 3- Bone Residue Handling and Frame Mince Production:**
6. Total Time needed 30-40 min

(a) Log start time in timesheet.
(b) Rinse residue; discard sharp or metallic fragments.
(c) Double-grind through 0.3 mm plate; sieve twice through 0.5 mm mesh.
(d) Target yield $\approx$2.20 kg fine mince.
(e) Store at $\leq$4 °C or frozen (–18 °C). Lable with date, time and batch number.
(f) Log end time in timesheet. Maintain coldchain logs. Use within 12 hours if refridgerated or immediately if in process.

3. QC and Verification

- Composite samples (100 g) from each batch to undergo Ca and P assay (ICP or pooled lab test).
- Target calcium 400—800 mg/100 g; phosphorus 300–400 mg/100 g.
- Record batch lot numbers; link broth and mince to QC log.

Bill of Materials: CatCore Heart SKU

Batch Specifications

- Batch size: 10 kg (100 pouches)
- Per pouch declared weight: 100 g

Raw Ingredients

Table 9.6: CatCore Heart (Chicken) SKU - Raw Materials per 10 kg Batch

Ingredient	Per Batch (Kg)	Prep Method	Traceability Log	
Chicken heart	2.400 $\pm$0.08	Diced 1.5cm	[QC-FORM-_____]	
Chicken frame mince	2.000 $\pm$0.05	Fine grind 5mm sieve	[QC-FORM-_____]	Follow Bone Broth SOP 3
Chicken muscle cuts	1.100 $\pm$0.08	Diced 1.5cm	[QC-FORM-_____]	
Pumpkin puree	0.400 $\pm$0.01	Blended with egg yolk	[QC-FORM-_____]	Pre-cooked a
Egg yolk powder	0.400 $\pm$0.01	Blended with pumpkin	[QC-FORM-_____]	Blen
Chicken liver	0.200 $\pm$0.005	Diced 1.5cm	[QC-FORM-_____]	Re
TOTAL SOLIDS	**6.500 $\pm$0.05**	Caliburated Scale	[QC-FORM-_____]	Refridgerate

Processing Instructions

Thoroughly wash all meat products in running hot jet stream water for 5 minutes to wash off any blood, coagulants, debris and other undesirable particles. **Solid Preparation (1.5cm Standard):**