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# Chapter 1

## CatCore Formulation

### 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.

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.
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 1.1: CatCore Formulation — Heart (H) SKU

### Composition for CatCorePro

#### Composition Notes:

Table 1.2: ■ CatCore Formulations — Sardine (S) SKU

<b>Ingredient</b>	<b>Mass (g)</b>	<b>Nutrient role and rationale</b>
Sardine	52	Marine protein high in EPA and DHA; core omega-3 source. Calcium, Iodine and phosphorus per in-bone sardine meat [ <b>sardinecap</b> ].
Fish Bone Meal (micronized, particle size $\leq 150 \mu\text{m}$ )	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
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Purified Water	43.5	Purified Water allocation per pouch pre-retort.

Table 1.3: ■ CatCore Formulation — Liver (L) SKU

<b>Ingredient</b>	<b>Mass (g)</b>	<b>Nutrient role and rationale</b>
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
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 1.4: ■ CatCore Formulations — Gizzard (G) SKU

<b>Ingredient</b>	<b>Mass (g)</b>	<b>Nutrient role and rationale</b>
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.
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Chicken Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 1.5: ■ CatCore SKU Formulations — Spleen (M) SKU

<b>Ingredient</b>	<b>Mass (g)</b>	<b>Nutrient role and rationale</b>
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.
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Goat Bone Broth	41.5	Broth allocation per pouch pre-retort.

Table 1.6: ■ 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 diet
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.
<i>Solids subtotal</i>	65.0	Fixed solids per pouch.
Goat Bone Broth	41.5	Broth allocation per pouch pre-retort.

  

Component	Dose per 10 kg	Per pouch
CatCore Fresh Meat Proteins	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 ±0.50; declared weight 100.00g

Table 1.7: CatCorePro Composition per 10 kg run (or 100 pouches)

- **CatCore:** Provides high quality muscle, organ, skeletal and fish meat proteins. Primary source of proteins, fats, vitamins, minerals.
- **Catcore Usage:** 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- $\alpha$ -tocopheryl) 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, chondroitin 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.

## Chapter 2

# DogCore Formulation

### 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  $\pm 0.5$  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 protein powders and Calcium to be paired 1:1 with CatCorePro meat pouches.
- **DogCore Premix Usage:** 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  $\geq 1.4:1$  within AAFCO recommended limits when paired with CatCorePro pouches as per diet chart.
- **Antioxidant Premix:** Provides Primary Vitamin E (dl- $\alpha$ -tocopheryl) and mixed antioxidants for enhanced oxidative stability.
- **Omega-3 Fish Oil Blend:** Provides omega 3:omega 6 balance
- **Palatant Premix:** Meat Hydrolysates for enhanced palatability.
- **Rendered Goat Bone Broth:** Solvent base for retort processing; improves hydration, adds collagen, chondroitin and other bone joint stability nutrients.
- **NO Alginate Gel - Ca Premix:** No alginate gel in this SKU. Forms slurry consistency.
- **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.

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 a source; enhances r 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 l
Sodium Chloride (Common Salt, NaCl)	0.04	Dietary Sodium, Es ance
Mixed tocopherols ( $(\alpha : \beta : \gamma : \delta) = 1.0:0.3:6.0:2.0$ 50% active powder)	0.30	Antioxidant for sh not full dietary E
Anti-Caking Carrier (q.s)	0.17	q.s and flow aid.
<i>Protein base subtotal</i>	65.00	Fixed solids mass p
MOQ	6500.00 $\pm 0.10$	6500g DogCore Pr duction run.
Broth	42.50	Broth phase per po solved premixes pe consistency.
Premixes	5.50	Added seperately t See table below
Alginate Gel is omitted from this SKU to ensure tight slurry consistency.		

Table 2.1: ■ DogCore SKU Formulations (Three Column Format)



Table 2.2: DogCorePro Composition per 10 kg run (or 100 pouches)

<b>Component</b>	<b>Dose per 10 kg</b>	<b>Per pouch</b>
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 ±0.50; declared weight 100.00g	

# Chapter 9

## Quality Control

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% Growlrr Foods — Gel / Alg-Um Premix COA - H3.1.1

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### Alginate Gel — Encapsulated Ca Premix COA

Field	Specification / Result / Method
<b>Product identity</b>	Gel / Alg-Um Premix — free-flowing light-beige powder; gel-forming and texture-binding premix for broth phase. <i>Packet mass:</i> 100.000000 g; use 1 packet per 10 kg run (1 g/100 g wet food pouch).
<b>Composition (per 100 g packet)</b>	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
<b>Analytical specifications:</b>	Moisture $\leq$ 6%; pH (1% solution) 6.0-7.5; Bulk density 0.88-1.00 g/cm <sup>3</sup> ; Viscosity 200-300 cP @ 1% Sodium alginate content 60% minimum Calcium content 7.8-8.0%
<b>Contaminants / microbiology:</b>	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 <sup>3</sup> CFU/g; Yeasts & moulds $\leq$ 10 <sup>2</sup> CFU/g; <i>E. coli</i> / <i>Salmonella</i> absent; Mycotoxins ND.
<b>Functional performance:</b>	Retort stability: Gel strength $\geq$ 300 g/cm <sup>2</sup> Bloom. Viscosity: 200-300 cP @ 1% concentration.
<b>Storage instructions:</b>	Store in sealed packaging in cool dry area away from sunlight.

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

Field	Specification / Result / Method
<b>Product identity</b>	<p>Palatant-Antioxidant Liquid Premix — Amber liquid with enhanced antioxidant system for all SKUs; mild savory aroma.</p> <p><i>Packet volume:</i> 100.00 ml (use 1 bottle per 10 kg wet food production run = 1 ml per 100 g pouch).</p>
<b>Composition (per 100 ml bottle)</b>	<p>Rosemary extract .....28.00 ml (primary antioxidant)</p> <p>Sunflower lecithin (food-grade) 27.00 ml (phospholipid emulsifier)</p> <p>Grape seed extract concentrate .....24.00 ml (proanthocyanidins, antioxidant synergy)</p> <p>Citric acid aqueous solution (25% w/v) ..... 10.00 ml (pH buffer, chelator)</p> <p>Mixed tocopherols (<math>\alpha : \beta : \gamma : \delta = 1.0:0.3:6.0:2.0</math>) .... 10.00 ml (Vit E source)</p> <p>Glycerol monostearate (GMS, q.s.) ..... 1.00 ml (emulsifier carrier)</p>
<b>Analytical specifications</b>	<p>Appearance: Amber to dark amber viscous liquid; Odor: Mild savory with herbal note, no rancidity.</p> <p>Viscosity (25°C): 60-180 mPa·s (Brookfield viscometer).</p> <p>Moisture (Karl Fischer): <math>\leq 0.3\%</math>; pH (1% solution): 5.0-6.5 (citric acid adjusted).</p> <p>Peroxide value (PV): <math>\leq 3.0</math> meq O<sub>2</sub>/kg (AOCS Cd 8b-90, stricter for high-PUFA).</p> <p>Anisidine value: <math>\leq 15</math> (AOCS Cd 18-90).</p> <p>Vitamin E (dl-<math>\alpha</math>-tocopherol equiv): <math>\approx 8</math> IU per 100 g wet food pouch (post-retort with 20% loss).</p> <p>Total polyphenols (grape seed): <math>\geq 80</math> mg GAE per 100 ml (Folin-Ciocalteu method).</p>
<b>Microbiology</b>	<p>Total plate count (TPC): <math>\leq 1 \times 10^3</math> cfu/ml (ISO 4833).</p> <p>Yeast and mould: <math>\leq 1 \times 10^2</math> cfu/ml (ISO 21527).</p> <p><i>Salmonella</i> spp.: Not detected per 25 ml (ISO 6579).</p> <p><i>E. coli</i>: Absent per 10 ml.</p>
<b>Contaminants &amp; safety</b>	<p>Pb <math>\leq 2</math> mg/kg; Cd <math>\leq 1</math> mg/kg; As <math>\leq 2</math> mg/kg; Hg <math>\leq 0.1</math> mg/kg (ICP-MS).</p> <p>Histamine: <math>\leq 50</math> mg/kg; Mycotoxins: ND (not detected).</p> <p>Pesticide residues: ND; 3-MCPD/GEs: <math>\leq 1</math> mg/kg.</p> <p>Citric acid: Food-grade, non-GMO; Complies with E330 specification.</p>
<b>Functional performance</b>	<p>Oxidative stability (Rancimat at 110°C): <math>\geq 10</math> hours (enhanced vs Palatant A).</p> <p>Emulsification index: <math>\geq 90\%</math>; Volatile loss after retort: <math>\leq 8\%</math>.</p> <p>Palatability index: <math>\geq +20\%</math> feed intake (vs control, cat/dog panel n = 20).</p> <p>Color stability: <math>\Delta E \leq 4</math> post-retort (grape seed may darken slightly).</p> <p>PUFA protection: TBARS reduction <math>\geq 70\%</math> vs control after 6 months.</p>

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

# Chapter 10

## Bill of Materials

### Master Procurement BOM - CatCore- DogCore Raw Perishables (80 kg Production)

**Scope:** Aggregated raw materials for 6 CatCore SKUs x 10Kg batch each + 1 SKU0 Reference Feed x 10 kg batch + 1 DogcorePro x10Kg batch = 80 kg total production or 800 pouches of nett 100g weight. **Exclusions:** All Catcore Premixes, All DogCore powder formulation and premixes, purified water for broth (80L) (separate BOMs or supplier-handled)

#### Procurement Notes:

- All chicken components: Source from single poultry supplier for traceability.
- Prefer antibiotic free egg-laying hens over caged broiler hens.
- All goat components: Source from single red meat supplier for traceability
- Overage accounts for: rendering loss (frames), trimming waste, QC rejections, retention samples
- Critical tolerance items (liver): 15% overage due to bile sac removal and strict QC
- Frame mince: 30% overage for collagen rendering loss before mincing
- Fish bone meal: 15% overage due to fine powder QC
- Maintain cold chain logs for all perishables (4°C, max 24 hours storage)

#### Storage Requirements:

- Refrigerated perishables (chicken, goat, sardine): 4°C ± 2°C immediately upon unloading and QC.
- Maintain Vendor Cold Chain Logs, Vendor Traceability, Incoming QC time-stamp
- Ensure Cold chain maintained throughout with no process without coldchain for more than 20 minutes. Record timestamps.
- Pumpkin/Spinach: Refrigerate after cooking to puree (4°C, use within 24 hours)
- Egg yolk powder: Cool, sealed, dry storage (20°C, RH < 60 %)
- Fish bone meal: Sealed container, cool, dry (20°C, RH < 60 %)

#### Traceability:

- Record supplier, lot number, receipt date for ALL ingredients
- Attach COAs for egg yolk powder and fish bone meal
- Log cold chain temperatures every 4 hours
- Retain batch records for minimum 2 years

#### Procurement Notes:

- All chicken components: Source from single poultry supplier for traceability.
- Prefer antibiotic free egg-laying hens over caged broiler hens.

- All goat/mutton components: Source from single red meat supplier for traceability
- Overage accounts for: trimming waste, QC rejections, retention samples, processing loss
- Critical tolerance items (liver): 15% overage due to bile sac removal and strict QC
- Fish bone meal: 15% overage due to fine powder QC
- Sardine SKU has no bone broth. It is in purified water.
- DogCorePro SKU is in goat bone broth.
- Maintain cold chain logs for all perishables (4 °C, max 24 hours storage)

**Storage Requirements:**

- Refrigerated perishables (chicken, lamb, goat, sardine): 4 °C  $\pm$  2 °C immediately upon unloading and QC.
- Maintain Vendor Cold Chain Logs, Vendor Traceability, Incoming QC time-stamp, incoming coldchain logs.
- Ensure Cold chain is maintained throughout with no process without coldchain for more than 20 minutes. Record timestamps.
- Pumpkin: Refrigerate after chopping or cooking to puree (4 °C, use within 24 hours)
- Egg yolk powder: Cool, sealed, dry storage (20 °C, RH < 60 %)
- Fish bone meal: Sealed container, cool, dry (20 °C, RH < 60 %)

**Traceability:**

- Record supplier, lot number, receipt date for ALL ingredients
- Attach COAs for egg yolk powder and fish bone meal
- Log cold chain temperatures every 4 hours
- Retain batch records for minimum 2 years

**Bill of Materials: CatCore Heart SKU****Batch Specifications**

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

**Raw Ingredients****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):**

- Measure out each raw ingredient using calibrated scale and tight tolerance. Keep the rest refrigerated.
- Use sharp knife or dicer machine
- All diced ingredients: uniform 1.5cm  $\pm$  0.5cm cubes
- Maintain strict cold chain logs before, during and after prep (4 deg C)
- Measure each ingredient post dicing and note down the weight.

- Refrigerate immediately before proceeding to next ingredient.
- Keep preparation time to under 20 minutes to control pathogen load.

#### Frame Mince:

- Chicken Bone Mince as per Bone Broth-SOP 30-B
- Pass through 5mm sieve twice as per Bone Broth
- Should be fine paste with no large bone fragments. Reject if shards present. Maintain coldchain Logs

#### Egg Yolk + Pumpkin Preparation:

1. Measure 400g egg yolk powder + 400g freshly cooked pumpkin puree
2. Blend together in food processor until smooth paste (no lumps)
3. Use within 4 hours or refrigerate overnight (4 deg C; max 12 hours). Maintain coldchain Logs
4. Add to blanched solids during marination process step. Follow SOP30-A

#### Liquid Components

Component	Per Batch (kg)	Per Pouch (g)
Chicken Bone broth (Follow SOP 30-B)	4.10 $\pm$ 0.10	41.0
Blanch water (process recovery-refer SOP 30-A)	0.250 $\pm$ 0.010	2.5
<b>TOTAL LIQUIDS</b>	<b>4.350</b>	<b>43.5</b>

- **CatPro Premix:** Complements CatCore Fresh Proteins with complete essential vitamins, minerals and chelators and adequate retort loss overage.
- **Usage:** 100 g per 10 kg production run or 1.0 g per 100 g wet food pouch complements with complete essential vitamins, minerals and chelators.
- **AAFCO Compliance:** Meets AAFCO requirements for complete and balanced nutrition.
- **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.[ref64].
- **Omega-3 Fish Oil Blend:** 250ml Omega-3 Fatty Acid Fish Oil  $PV \leq 5.0$  meq/Kg is added per 10Kg run or 2.5ml per per 100g wet food pouch except sardine SKU.
- **Antioxidant Premix:** 100ml per 10Kg run or 1ml per 100g wet food pouch. Provides Primary Vitamin E (dl- $\alpha$ -tocopheryl) and blended organic antioxidants for enhanced oxidative stability.
- **Alginate Gel - Ca Premix:** 100g per 10Kg run. Forms gel under retort heat. Delivers additional 80mg dietary Ca per 100g wet food pouch.
- **Palatant Premix:** 100ml per 10Kg run or 1ml per 100g wet food pouch.

Table 10.1: Master Procurement BOM Plus - CatCore Perishables (60 kg + SKU0 10 kg = 70 kg Production)

Ingredient	Net Total (kg)	Overage (%)	Procurement (kg)	Notes
<i>CHICKEN COMPONENTS</i>				
Chicken frame with 30%neck and feet	8.250	30.00	11.0	Clean, no claws, f dirt
Chicken muscle cuts	6.470	10	7.5	Trim fat, dice 1.5cm
Chicken heart	5.200	10	6.0	Trim vessels, dice
Chicken gizzard	2.740	10	3.5	Remove grit, dice
Chicken liver	1.300	15	1.5	Remove bile sac, d STRICT QC
<i>GOAT COMPONENTS</i>				
Goat frame with 30% trotters	9.570	30	12.0	Cleaned with no s or dirt, 3.0kg extra Core broth phase
Goat spleen	3.310	10	3.75	Remove capsul 1.5cm
Goat kidney	3.310	10	3.75	Remove core/fa 1.5cm
Goat heart	1.600	10	2.0	Trim vessels, dice
Goat muscle cuts	1.140	10	1.5	Trim fat, dice 1.5cm
Goat liver	0.460	15	0.50	Remove bile sac, d STRICT QC
<i>MARINE COMPONENTS</i>				
Sardine (whole)	6.310	15	7.5	Gutted, heads/tai 1.5cm
Fish bone meal	1.090	15	1.5	Pet food grade, ≤
<i>BINDING &amp; TEXTURE</i>				
Whole Red Pumpkin	1.400	—	1.5	Pre-cook to puree hrs
Fresh Spinach	0.490	—	1.0	Blanch to puree, m
Egg yolk powder	1.340	—	1.5	Sealed, cool, dry
<b>TOTAL PERISHABLES</b>	<b>54.0</b>		<b>66.00</b>	22% avg overage



Table 10.2: CatCore Heart (Chicken) SKU - Raw Materials per 10 kg Batch

Ingredient	Per Batch (Kg)	Prep Method	Traceability Log	
Chicken heart	2.400 ±0.08	Diced 1.5cm	[QC-FORM-_____]	
Chicken frame mince	2.000 ±0.05	Fine grind 5mm sieve	[QC-FORM-_____]	Follow Bone Broth SOP
Chicken muscle cuts	1.100 ±0.08	Diced 1.5cm	[QC-FORM-_____]	
Pumpkin puree	0.400 ±0.01	Blended with egg yolk	[QC-FORM-_____]	Pre-cooked
Egg yolk powder	0.400 ±0.01	Blended with pumpkin	[QC-FORM-_____]	Blended
Chicken liver	0.200 ±0.005	Diced 1.5cm	[QC-FORM-_____]	
<b>TOTAL SOLIDS</b>	<b>6.500 ±0.05</b>	Calibrated Scale	[QC-FORM-_____]	Refridgerat

## **Appendix C**

## **Appendix C**

## Appendix A0: Calcium and Phosphorus Contributions per CatCore SKU

### Heart SKU: Calcium and Phosphorus Contributions

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Chicken Heart	24.00	2.07	40.94	High taurine source
Chicken Muscle Cuts	16.00	1.76	32.00	Protein base (11.00g + 5.00g rebalance)
Chicken Frame Mince	15.00	90.00	52.50	Bone minerals at 600mg Ca, 350mg P per 100g [gopalakrishnan2019bonecomposition, usdaFDCbone2021]
Chicken Liver	2.00	0.22	5.94	Vitamin A source
Egg yolk powder	4.00	5.92	24.00	Choline and emulsification
Pumpkin puree	4.00	1.32	1.48	Fiber source
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>181.29</b>	<b>156.86</b>	<b>Ca:P Ratio: 1.16</b>

Table 1: \*

Heart SKU calcium and phosphorus balance with alginate-Ca gel contribution

### Sardine SKU: Calcium and Phosphorus Contributions

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Sardine (Sardinella longiceps)	52.00	126.36	254.80	Indian oil sardine; whole fish with bones; marine omega-3 source. Ca: 243mg/100g [fishbase_longiceps]
Fish Bone Meal	9.00	139.00	54	Pet food grade micronized bone meal at 15.5mg Ca, 6mg P per gram [fbm_poultry]
Spinach puree	4.00	4.95	2.45	Vitamin K, folate; fiber for hairball management
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>350.75</b>	<b>305.25</b>	<b>Ca:P Ratio: 1.15</b>

Table 2: \*

Sardine SKU calcium and phosphorus balance with alginate-Ca gel contribution

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Chicken Muscle Cuts	28.00	3.08	56.00	Protein base (23.00g + 5.00g rebal- ance)
Chicken Frame Mince	15.00	90.00	52.50	Bone minerals at 600mg Ca, 350mg P per 100g [gopalakrishnan2019bonecomposition, usdaFDCbone2021]
Chicken Heart	10.00	0.90	17.80	Taurine and palatability
Chicken Liver	4.00	0.44	11.88	Primary vitamin A contributor
Egg yolk powder	4.00	5.92	24.00	Choline source
Pumpkin puree	4.00	1.32	1.48	Fiber and moisture control
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>181.66</b>	<b>163.66</b>	<b>Ca:P Ratio: 1.11</b>

Table 3: \*

Liver SKU calcium and phosphorus balance with alginate-Ca gel contribution

### Liver SKU: Calcium and Phosphorus Contributions

### Gizzard SKU: Calcium and Phosphorus Contributions

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Gizzard	24.00	2.64	48.00	Connective tissue and natural taurine
Chicken Muscle Cuts	16.00	1.76	32.00	Protein base (11.00g + 5.00g rebal- ance)
Chicken Frame Mince	15.00	90.00	52.50	Bone minerals at 600mg Ca, 350mg P per 100g [gopalakrishnan2019bonecomposition, usdaFDCbone2021]
Chicken Heart	10.00	0.90	17.80	Taurine and palatability
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>175.30</b>	<b>150.30</b>	<b>Ca:P Ratio: 1.17</b>

Table 4: \*

Gizzard SKU calcium and phosphorus balance with alginate-Ca gel contribution

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Goat Spleen	29.00	3.19	77.47	Heme-iron and taurine source
Goat Frame and Trotters Mince	20.00	120.00	70.00	Bone minerals at 600mg Ca, 350mg P per 100g; collagen source <b>[gopalakrishnan2019bonecomposition, usdaFDCbone2021]</b>
Goat muscle cuts	10.00	1.10	20.00	High-quality amino acid source
Pumpkin puree	4.00	1.32	1.48	Fiber and beta-carotene
Goat Liver	2.00	0.22	5.94	Trace vitamins
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>205.83</b>	<b>174.89</b>	<b>Ca:P Ratio: 1.18</b>

Table 5: \*  
Spleen SKU calcium and phosphorus balance with alginate-Ca gel contribution

Ingredient	Mass (g)	Ca (mg)	P (mg)	Notes
Lamb Kidney	29.00	3.48	77.47	B vitamins and minerals
Goat Frame and Trotters Mince	20.00	120.00	70.00	Bone minerals at 600mg Ca, 350mg P per 100g; collagen source <b>[gopalakrishnan2019bonecomposition, usdaFDCbone2021]</b>
Goat Heart	14.00	1.26	24.92	Taurine and palatability
Goat Liver	2.00	0.22	5.94	Trace vitamins
Alginate-Ca Gel	—	80.00	0.00	Calcium alginate gel delivery system
<b>Totals</b>	<b>65.00</b>	<b>204.96</b>	<b>178.33</b>	<b>Ca:P Ratio: 1.15</b>

Table 6: \*  
Kidney SKU calcium and phosphorus balance with alginate-Ca gel contribution

**Spleen SKU: Calcium and Phosphorus Contributions****Kidney SKU: Calcium and Phosphorus Contributions****Summary of CatCore Ca:P Balance**

SKU	Ca (mg)	P (mg)	Ca:P Ratio
Heart	181.29	156.86	1.15
Sardine	448.00	355.00	1.15
Liver	181.66	163.66	1.11
Gizzard	175.30	150.30	1.17
Spleen	205.83	174.89	1.18
Kidney	204.96	178.33	1.15
<b>Average</b>	<b>232.84</b>	<b>196.51</b>	<b>1.17</b>

Table 7: \*

Summary of calcium and phosphorus balance across all CatCore SKUs. Average values used in composite pairing calculations with DogCore (Appendix A4).

**Note:** All CatCore SKUs achieve Ca:P ratios between 1.11-1.18, within the optimal range for feline nutrition. AAFCO 2023 recommends ratio of 1.0-2.0:1, with 1.15:1 considered ideal [ref64]. The consistent Ca:P balance across SKUs is achieved through precise formulation of bone-containing ingredients (600mg Ca: 350mg P per 100g frame mince as per SOP 31) and standardized alginate-Ca gel supplementation at 80mg Ca per 100g wet food pouch.