

Your guide to pet food, treats and animal feed



Create high-performing pet food products **with**
ingredient solutions from **Ingredion**

Starches | Grain-free starches | Gums
Prebiotic fibers | Flours | Plant-based proteins

PET FOOD, TREATS AND ANIMAL FEED

Non-GMO starches, flours and gums for canned, semi-moist and extruded dry pet food/treats; non-GMO prebiotic fiber for pets and livestock

| APPLICATION | KEY FUNCTIONALITY | RECOMMENDATION | USE LEVEL | BASE | LABEL | GRAIN-FREE GLUTEN-FREE | ADDITIONAL FEATURES |
|-----------------------------|---|-------------------------|-----------|------|----------------------|------------------------|---|
| Canned pet foods/ gravies | Fill viscosity for suspension of particulates | NATIONAL 150 | 2-5% | WC | Food starch modified | | High initial viscosity with high breakdown, very little to no residual viscosity after retorting |
| | | NATIONAL 1545 | 2-5% | WC | Food starch modified | | High initial viscosity with high breakdown, moderate residual viscosity after retorting |
| | | HEMOCRAFT® CREATE 390 | 3-5% | T | Tapioca Flour | ✓ | High upfront viscosity at precooking to suspend particulates |
| | | PENPURE® 10 | 2-5% | P | Potato starch | ✓ | High initial viscosity with high breakdown, very little to no residual viscosity after retorting |
| | | PENPURE® 50 | 2-5% | T | Tapioca starch | ✓ | High initial viscosity with high breakdown, very little to no residual viscosity after retorting |
| | | PENPURE® 60 | 2-5% | P | Potato extract | ✓ | High initial viscosity with high breakdown, very little to no residual viscosity after retorting |
| | | PENPURE® 80 | 1-3% | WP | Potato Starch | ✓ | Provides upfront viscosity at pre-cooking for suspending particulates |
| End (final) gravy viscosity | | NOVATION PRIMA® 300/600 | 3-4% | WC | Corn starch | | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | NOVATION® 8300/8600 | 3-4% | WR | Rice starch | | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | NOVATION® 3300/3600 | 3-5% | T | Tapioca starch | ✓ | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | HEMOCRAFT® Create 835 | 3-5% | R | Rice flour | | High upfront viscosity and high viscosity in the finished product, high/low temperature freeze/thaw stability |
| | | HEMOCRAFT® Create 335 | 3-5% | T | Tapioca flour | ✓ | High upfront viscosity and high viscosity in the finished product, high/low temperature freeze/thaw stability |
| | | PURITY® W | 2-4% | WC | Food starch modified | | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | PENBIND® 1015 | 3-5% | P | Food starch modified | ✓ | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | NATIONAL FRIGEX | 3-5% | T | Food starch modified | ✓ | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |

C: Corn, HC: High amylose corn, R: Rice, S: Sago, T: Tapioca, OT: Organic tapioca, WC: Waxy corn, WP: Waxy potato, WR: Waxy rice, P: Potato, R: Rice, SCFOS: Short Chain Fructooligosaccharides



PET FOOD, TREATS AND ANIMAL FEED

Non-GMO starches, flours and gums for canned, semi-moist and extruded dry pet food/treats; non-GMO prebiotic fiber for pets and livestock

| APPLICATION | KEY FUNCTIONALITY | RECOMMENDATION | USE LEVEL | BASE | LABEL | GRAIN-FREE GLUTEN-FREE | ADDITIONAL FEATURES |
|--|--|--|-------------|--------------------------|--|------------------------|--|
| Canned pet foods/ gravies | "Single system" (fill and end viscosity) | NOVATION PRIMA® 300/600 | 3-4% | WC | Corn starch | | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | NOVATION® 8300/8600 | 3-4% | WR | Rice starch | | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | NOVATION® 3300/3600 | 3-5% | T | Tapioca starch | ✓ | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | HEMOCRAFT® Create 365 | 3-5% | T | Tapioca flour | ✓ | High upfront viscosity and high viscosity in the finished product, high/low temperature freeze/thaw stability |
| | | PENBIND® 1000 | 3-5% | P | Food starch modified | ✓ | Maintains viscosity during filling and retorting, improves visual appearance (sheen and clarity), stable throughout extended shelf life |
| | | FIRM-TEX® | 2-5% | WC | Food starch modified | | High initial viscosity with moderate to low breakdown, moderate to high residual viscosity/short texture after retorting, extremely stable throughout extended shelf life |
| | | GuarNT® USA 8/22 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Thicken, suspension and moisture retention |
| | | GuarNT® USA Flavor Free 5000 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Thicken, suspension and moisture retention, flavorless, odorless |
| | | Pre-Hydrated® GuarNT® USA 8/22 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Thicken, suspension and moisture retention, fast hydration |
| | | TIC Pretested® Locust Bean Gum POR/A2 Powder | 0.15-0.75% | Locust Bean Gum | Locust bean gum | ✓ | Thicken and moisture retention |
| | | Ticaloid® 8090 S | 0.5-4.0% | P, Guar Gum, Xanthan Gum | Potato Starch Modified, Guar Gum, Xanthan Gum | ✓ | Thicken, suspension and moisture retention |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | ✓ | Thickening, gelling, fat binding, and product firmness |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content |
| VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content | | |
| Canned pet foods/ formed meat pieces | Provide firmness and structure/ prevent separation | VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content, for organic products |
| | | NOVATION® 3300 | 1-3% | T | Tapioca starch | ✓ | Cook-up, high viscosity tapioca starch, provides firmness and structure, prevents water and fat separation before and during cooking |
| | | NOVATION® 1600 | 1-3% | P | Potato starch | ✓ | Cook-up, high viscosity potato starch, provides firmness and structure, prevents water and fat separation before and during cooking |
| | | PENBIND® 1000 | 1-3% | P | Food starch modified | ✓ | Cook-up, high viscosity potato starch, provides firmness and structure, prevents water and fat separation before and during cooking |
| | | PENBIND® 1700 | 1-3% | WC | Food starch modified | | High initial viscosity with moderate to low breakdown, moderate to high residual viscosity/short texture after retorting, extremely stable throughout extended shelf life |
| | | HEMOCRAFT® Create 330 | 1-3% | T | Tapioca flour | ✓ | Moderate upfront viscosity and high viscosity, slight gelling texture in the finished product |
| | | NOVATION® 9330 | 1-3% | OT | Organic tapioca starch | ✓ | Recommended for high temperature and shear food processing able to withstand the rigors of food processing and preparation without breaking down and losing viscosity and textural integrity |
| | | THERMFLO® HV | 1-3% | WC | Waxy maize starch | | Modified food starch with exceptional tolerance when heat and shear is required. Suited for many food systems including retorted foods canned foods |
| | | FIRM-TEX® | 1-3% | WC | Food starch modified | | Provides firmness and structure, excellent water and fat binding |
| | | VERSAFIBE™ PF | 1-2% | P | Potato fiber | ✓ | Provides firmness and structure, excellent water and fat binding, replacing gums and modified starch |

PET FOOD, TREATS AND ANIMAL FEED

Non-GMO starches, flours and gums for canned, semi-moist and extruded dry pet food/treats; non-GMO prebiotic fiber for pets and livestock

| APPLICATION | KEY FUNCTIONALITY | RECOMMENDATION | USE LEVEL | BASE | LABEL | GRAIN-FREE GLUTEN-FREE | ADDITIONAL FEATURES |
|-------------------|--------------------------------|--|------------|------------------------------|---|------------------------|---|
| Canned loaf types | Gelling/ water and fat binding | ELASTIGEL® 1000J | 1-3% | S | Food starch modified | ✓ | Provides structure and gel, low hot viscosity, sets in the can to form loaf upon cooling |
| | | PENPURE® 50 | 1-3% | T | Tapioca starch | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENBIND® 1015 | 1-3% | P | Food starch modified | ✓ | Gelatinize during canning to produce firm, sliceable textures for "pate" style pet foods |
| | | PENBIND® 1700 | 1-3% | WC | Food starch modified | | Gelatinize during canning to produce firm, sliceable textures for "pate" style pet foods |
| | | PENPURE® 10 | 1-3% | P | Potato starch | ✓ | Extremely high viscosity, water holding capacity and binding abilities |
| | | HEMOCRAFT® Create 330 | 1-3% | T | Tapioca flour | ✓ | Provides structure and gel, low hot viscosity, set in the can to form loaf upon cooling |
| | | HEMOCRAFT® Create 360 | 1-3% | T | Tapioca flour | ✓ | Provides structure and gel, low hot viscosity, set in the can to form loaf upon cooling |
| | | THERMFLO® HV | 1-3% | WC | Waxy maize starch | | Modified food starch with exceptional tolerance when heat and shear is required. Suited for many food systems including retorted foods canned foods |
| | | NOVATION® 9330 | 1-3% | OT | Organic tapioca starch | ✓ | Recommended for high temperature and shear food processing. Able to withstand the rigors of food processing and preparation without breaking down and losing viscosity and textural integrity |
| | | ADVANTA-GEL® S | 1-3% | S | Food starch modified | ✓ | Provides structure and gel, instant starch with low cold (mixing) viscosity and low hot viscosity, sets in the can to form loaf upon cooling |
| | | VERSAFIBRE™ PF | 1-2% | P | Potato fiber | ✓ | Provides firmness and structure, excellent water and fat binding, replacing gums and modified starch |
| | | Ticaxan® Xanthan NGMO | 0.05-0.35% | Xanthan Gum | Xanthan gum | ✓ | Thicken, suspension and moisture retention |
| | | Ticaloid® 825 Powder | 0.1-2.75% | Carrageenan | Carrageenan | ✓ | Thicken, gelling and moisture retention |
| | | Action Gum 8200 Powder | 0.1-0.8% | Guar Gum, Xanthan Gum | Guar gum, Xanthan gum | ✓ | Thicken, gelling and moisture retention |
| | | Ticaloid® 620 | 0.1-0.75% | Locust Bean Gum, Xanthan Gum | Locust bean gum, Xanthan gum | ✓ | Thicken, gelling and moisture retention |
| | | Ticaloid® 8090 S | 1.5-4.0% | P, Guar Gum, Xanthan Gum | Potato Starch Modified, Guar Gum, Xanthan Gum | ✓ | Thicken, gelling and moisture retention |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | ✓ | Thickening, gelling, fat binding, and product firmness |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content |
| | | VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content |
| | | VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | ✓ | Thickening, gelling, fat binding, and boosting protein content, for organic products |

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Non-GMO starches, flours and gums for canned, semi-moist and extruded dry pet food/treats; non-GMO prebiotic fiber for pets and livestock

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|--|---------------------------|--|-------------|------|-------------------------|---|--|---|
| Semi-moist pet foods | Binding/ extrusion aid | ULTRA-TEX® 4 | 5-15% | WC | Food starch modified | | Instant moderate viscosity thickener, improves machinability, retains moisture | |
| | | NOVATION® 4300 | 5-15% | WC | Corn starch | | Instant moderate viscosity clean label thickener, improves machinability, retains moisture | |
| | | NOVATION® 6600 | 5-15% | P | Potato starch | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENBIND® 1000 | 5-15% | P | Food starch modified | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENBIND® 1700 | 5-15% | C | Food starch modified | | | Instant moderate viscosity thickener, improves machinability, retains moisture |
| | | HEMOCRAFT® Express 390 | 5-15% | T | Tapioca flour | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | NATIONAL FRIGEX | 5-15% | T | Food starch modified | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENCLING® 320 | 5-15% | P | Food starch modified | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 10 | 5-15% | P | Potato starch | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 30 | 5-15% | R | Rice starch | | | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 37 | 5-15% | WR | Waxy rice starch | | | Instant moderate viscosity thickener, improves machinability, retains moisture |
| | | PENPURE® 50 | 5-15% | T | Tapioca Starch | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 60 | 5 - 15% | P | Potato extract | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 65 | 2 - 7% | P | Potato extract | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® 66 | 5-15% | C | Corn starch | | | Instant moderate viscosity thickener, improves machinability, retains moisture |
| | | PENPURE® 80 | 5-15% | WP | Potato starch | | ✓ | Improves machinability, good binding properties, retains moisture |
| | | PENPURE® UM | 5-15% | P | Potato pregel starch | | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties, retains moisture |
| | | PENPURE® WR | 5-15% | WR | Waxy rice pregel starch | | | Instant moderate viscosity thickener, improves machinability, retains moisture |
| | | TEXTAID® A | 1-3% | C | Food starch modified | | | Instant moderate-high viscosity thickener, improves machinability, good binding properties, retains moisture, good binding properties |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | | ✓ | Water and fat binding, structure building for shape and texture |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | | ✓ | Water and fat binding, soft structure, and protein enrichment |
| VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | | ✓ | Water and fat binding, soft structure, and protein enrichment | | |
| VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | | ✓ | Water and fat binding, soft structure, and protein enrichment, for organic products | | |

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|------------------------------------|----------------------------------|--|-----------------------|-------|--|------------------------|--|
| Dry pet food and treats (extruded) | Provides structure/modifies chew | HYLON® VII, HYLON V | 5-10% | HC | Corn starch | | Provides structure and strength, reduces breakage, increases chew time |
| | | CRISP FILM® | 5-10% | HC | Food starch modified | | Provides structure and strength, reduces breakage, increases chew time |
| | | PENPURE® 10 | 5-15% | P | Potato starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 30 | 5-15% | R | Rice starch | | Provides structure, increases chew time, retains moisture |
| | | PENPURE® 37 | 5-15% | WR | Waxy rice starch | | Soft structure, improves stability, retains moisture |
| | | PENPURE® 50 | 5-15% | T | Tapioca starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture |
| | | PENPURE® 60 | 5-15% | P | Potato extract | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture |
| | | PENPURE® 65 | 2-7% | P | Potato extract | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high instant viscosity |
| | | PENPURE® 66 | 5-30% | C | Corn starch | | Provides structure and strength, reduces breakage, increases chew time, retains moisture |
| | | PENPURE® 80 | 5-15% | WP | Potato starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture |
| | | PENPURE® UM | 2-7% | P | Potato pregel starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | PENPURE® WR | 2-7% | WR | Waxy rice pregel starch | | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | HEMOCRAFT® Express 390 | 5-10% | T | Tapioca flour | ✓ | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | HEMOCRAFT® Create 835 | 5-10% | R | Rice flour | | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | HEMOCRAFT® Create GF 10 | 5-10% or more | R & T | Rice flour, tapioca flour | | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | HEMOCRAFT® Create GF 20 | 5-10% or more | T & R | Tapioca flour, rice flour | | Provides structure and strength, reduces breakage, increases chew time, retains moisture, high viscosity |
| | | PENCLING® 320 | 5-15% | P | Food starch modified | ✓ | Instant moderate-high viscosity clean label thickener, improves machinability, good binding properties |
| | | PENBIND® 800 | 5-15% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage, increases chew time |
| | | PENBIND® 1180 | 5-15% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage, flexible/pliable texture, water binding |
| | | ELASTIGEL 1000J | 5-10% | S | Food starch modified | ✓ | Provides structure and strength, reduces breakage, increases chew time |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | ✓ | Binding and structure building for consistent texture and shape |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | ✓ | Protein enrichment, and binding agent for consistent and uniform structure and shape |
| | | VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | ✓ | Protein enrichment, and binding agent for consistent and uniform structure and shape |
| VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | ✓ | Protein enrichment, and binding agent for consistent and uniform structure and shape, for organic products | | |
| Dry gravy mixes | Thickener/texturizer | NOVATION® 5600 | 2-3% in final product | WC | Corn starch | | Easily dispersible, no heating required/cold water thickening |
| | | ULTRA-SPERSE® 2000 | 2-3% in final product | WC | Food starch modified | | Easily dispersible, no heating required/cold water thickening |
| | | ULTRA-SPERSE® 3 | 2-3% in final product | T | Food starch modified | ✓ | Easily dispersible, no heating required/cold water thickening, based on tapioca starch |

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|------------------------------|--|-------------------------------------|---|-------|------------------------|---------------------------|--|
| Extruded fish pellets | Provides expansion and structure controls expansion and aids in oil retention | NOVATION® 2700 | 5-15% | WC | Corn starch | | Cook-up, moderate to high viscosity |
| | | HEMOCRAFT® Express 390 | 5-10% | T | Tapioca flour | ✓ | Moderate to high viscosity |
| | | PURITY® W | 5-15% | WC | Food starch modified | | Cook-up, moderate viscosity |
| | | FIRM-TEX® | 5-15% | WC | Food starch modified | | Cook-up, high viscosity |
| | | NOVATION® 4600 | 5-15% | WC | Corn starch | | Instant, moderate viscosity |
| | | ULTRA-TEX® 4 | 5-15% | WC | Food starch modified | | Instant, moderate viscosity |
| | | ULTRA-TEX® 2000 | 5-15% | WC | Food starch modified | | Cook-up, high viscosity |
| Dog and cat food | Prebiotic and digestive support for increased production of short chain fatty acids in large intestine | FORTIFEED® P95(Powder)/ L95(Liquid) | Dogs: 0.5-1.5% of formula Cats: 0.5-1% of formula | scFOS | Fructooligosaccharides | ✓ | Scientifically shown to support digestive, immune and reduced fecal odor claims* |
| Equine | Promotes growth | FORTIFEED® P95(Powder)/ L95(Liquid) | High stress (racing): 20-30g/ day Senior and brood mares: 12-15g/ day Foals: 8-10g/ day | scFOS | Fructooligosaccharides | ✓ | Scientifically shown to support digestive and immune health,* can help support hoof care |
| Aquaculture - fish/shrimp | Promotes growth | FORTIFEED® P95(Powder)/ L95(Liquid) | 0.02-0.05% depending on application | scFOS | Fructooligosaccharides | ✓ | Helps control nitrogen waste, enhances resistance to pathogens such as Vibrio, lessens black spots, increases immune response by optimizing gut microflora, improves shrimp performance and increases production levels |
| Broilers, layers and turkeys | Promotes growth | FORTIFEED® P95(Powder)/ L95(Liquid) | Chicks: 0.06-0.15% Broilers: 0.05-0.8% Layers: 0.05-0.8% Turkey: 0.4-2% | scFOS | Fructooligosaccharides | ✓ | Improves microflora balance by selectively stimulating beneficial bacteria and excluding pathogens like salmonella, improved cecal Short Chain Fatty Acids (SCFA) in turkeys, reduction in the quantity of dirty eggs due to fewer cecal droppings, reduction in salmonella contamination risk due to microflora modification |
| Cattle | Promotes growth | FORTIFEED® P95(Powder)/ L95(Liquid) | 5-7g/ day in calves or cattle | scFOS | Fructooligosaccharides | ✓ | Supports digestive well-being by altering intestinal conditions, such as pH, fatty acids, microbial content and activity, supports positive impact on feed efficiency, increases growth performance and average daily weight gain (ADG), increases volatile fatty acid production, increases microbial activity, helps balance microbiota by reducing pathogens and increasing beneficial bacteria |
| Swine | Promotes growth | FORTIFEED® P95(Powder)/ L95(Liquid) | Piglet: 0.15-0.25% Weaned Pigs: 0.18-0.28% Sows: 2g/ day | scFOS | Fructooligosaccharides | ✓ | Increases growth performance and average daily weight gain (ADG), supports intestinal lining, increases beneficial bacteria counts (intestinal bacteria changes, increased bacterial fermentation) |

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| Pet biscuits | Provides structure/texture | PENPURE® 10 | 5-15% | P | Potato starch | ✓ | Provides structure and strength, reduces breakage, crisp texture |
| | | PENPURE® 30 | 5-15% | R | Rice starch | | Provides structure and strength, reduces breakage, crisp texture |
| | | PENPURE® 37 | 5-15% | WR | Waxy rice starch | | Provides structure and strength, reduces breakage |
| | | HEMOCRAFT® EXPRESS 390 | 5-15% | T | Tapioca flour | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | HEMOCRAFT® Create GF 10 | 5-15% | R & T | Rice flour, tapioca flour | | Replaces wheat flour, provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | HEMOCRAFT® Create GF 20 | 5-15% | T & R | Tapioca flour, rice flour | | Replaces wheat flour, provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPLUS® 885 | 5-15% | P | Food starch modified | ✓ | Dough stability |
| | | PENBIND® 800 | 10-20% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage |
| | | GuarNT® USA 8/22 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Provides structure and hardness |
| | | GuarNT® USA Flavor Free 5000 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Provides structure and hardness, flavorless, odorless |
| | | Pre-Hydrated® GuarNT® USA 8/22 | 0.1-1.0% | Guar Gum | Guar gum | ✓ | Provides structure and hardness, fast hydration |
| | | TICACEL 100 Cellulose Powder | 1-6% | Cellulose Powder | Cellulose powder | ✓ | Provides structure and hardness |
| | | Ticaxan® Xanthan NGMO | 0.05-0.35% | Xanthan Gum | Xanthan gum | ✓ | Provides structure and hardness |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | ✓ | Provides structure, product strength and ingredient binding |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | ✓ | Provides structure and protein alternative to animal by-product protein |
| | | VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | ✓ | Provides structure and protein alternative to animal by-product protein |
| VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | ✓ | Provides structure and protein alternative to animal by-product protein, for organic products | | |

C: Corn, HC: High amylose corn, R: Rice, S: Sago, T: Tapioca, OT: Organic tapioca, WC: Waxy corn, WP: Waxy potato, WR: Waxy rice, P: Potato, R: Rice, SCFOS: Short Chain Fructooligosaccharides



PET FOOD, TREATS AND ANIMAL FEED

Non-GMO starches, flours and gums for canned, semi-moist and extruded dry pet food/treats; non-GMO prebiotic fiber for pets and livestock

| APPLICATION | KEY FUNCTIONALITY | RECOMMENDATION | USE LEVEL | BASE | LABEL | GRAIN-FREE GLUTEN-FREE | ADDITIONAL FEATURES |
|-------------------------|-----------------------------|--|-----------|------|-------------------------|---------------------------|---|
| Injection molded treats | Provides texture/ chew time | PENPURE® 10 | 5-15% | P | Potato starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 30 | 5-15% | R | Rice starch | | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 37 | 5-15% | WR | Waxy rice starch | | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPLUS® 885 | 5-15% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENBIND® 800 | 10-20% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 50 | 5-15% | T | Tapioca starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 60 | 5-15% | P | Potato extract | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 65 | 2-7% | P | Potato extract | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 66 | 5-30% | C | Corn starch | | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® 80 | 5-15% | WP | Potato starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® UM | 2-7% | P | Potato pregel starch | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENPURE® WR | 2-7% | WR | Waxy rice pregel starch | | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PENCLING® 320 | 10-30% | P | Food starch modified | ✓ | Provides structure and strength, reduces breakage, increases chew time, retain moisture |
| | | PURITY® P1304 | 2-15% | Pea | Pea starch | ✓ | Builds structure, provides strength, and improves the efficiency of extrusion and injection molding |
| | | VITESSENCE® Pulse 1550 (pea protein concentrate) | 2-10% | Pea | Pea protein | ✓ | Modifies texture, reduces viscosity, lowers product density, and enhances product nutrition value |
| | | VITESSENCE® Pulse 1803 (pea protein isolate) | 2-10% | Pea | Pea protein | ✓ | Modifies texture, reduces viscosity, lowers product density, and enhances product nutrition value |
| | | VITESSENCE® Pulse 1803 (organic) | 2-10% | Pea | Pea protein | ✓ | Modifies texture, reduces viscosity, lowers product density, and enhances product nutrition value, for organic products |

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R_04/25/19_US



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