



Natural Colors in Pet Food: Solutions for Stability, Performance & Cost Efficiency

1st July 2026



Agenda

- 1 | Oterra: how we can help you
- 2 | Addressing pet food trends with natural colors
- 3 | Natural colors as export enabler and caramel replacer
- 4 | Technical excellence and stability of natural colors





oterra™

We believe
nature got it *right*
the first time

We make natural food and beverages easy

Leaning into our strengths



A global footprint

With a large global presence, our technologically advanced agricultural and manufacturing footprint offers complete backwards integration for many pigments, which gives supply consistency alongside competitive pricing and superior quality



Pioneering innovation

Innovating at the forefront of biotech, irrigation, fertilization and yield excellence, our broad natural colors portfolio comes with pioneering techniques to master application, shade, cost in use, stability, and dietary requirements



Unmatched expertise

Expert agronomists and scientists coupled with regional application excellence centers and our in-house team of regulatory experts we provide best in-class local, regional, and global know-how



A sustainable partner

Oterra is founded on the principle that 'nature got it right' and on top of our membership UN Global Compact we continue to advance and substantiate our sustainability with ambitious, SBTi-aligned targets to reduce our GHG emissions

A growing, innovative business with global coverage

April 2021

Oterra is born

A Swedish private equity firm, EQT acquires the Chr. Hansen* natural colors business founded in 1874 and Oterra™ becomes a standalone color company.

Oterra™

December 2021

Acquired Diana Food

A European natural color business with expertise in organic beet and orange carrot.

Acquired FIS

A leading American producer of colors and natural antioxidants.

July 2021

Acquired Secna

A Spanish/Italian business with expertise in organic caramelized sugar and anthocyanins.

Joint Venture Erkon

A Turkish business specializing in black carrots.

October 2022

Acquired Akay

An Indian business specializing in natural colors and nutraceutical ingredients.

December 2023

Partnership Ecoflora Cares

A pioneering leader in biodiversity-based tech solutions, bio-inputs, and services for the food industry and others.

January 2024

Partnership VAXA

An Icelandic biotech start-up using 100% clean energy to power its revolutionary approach to ingredient production.

November 2025

Partnership Seprify

A patented cellulose-based technology, offering customers a clean-label and renewable alternative to titanium dioxide

*)

CHR HANSEN

Improving food & health

Chr. Hansen A/S, a bioscience company that pioneered natural colors was **founded in Denmark in 1874.**

Our global footprint

447M

Euro revenue 24/25

1240+

Employees worldwide across 40+ nations

2200+

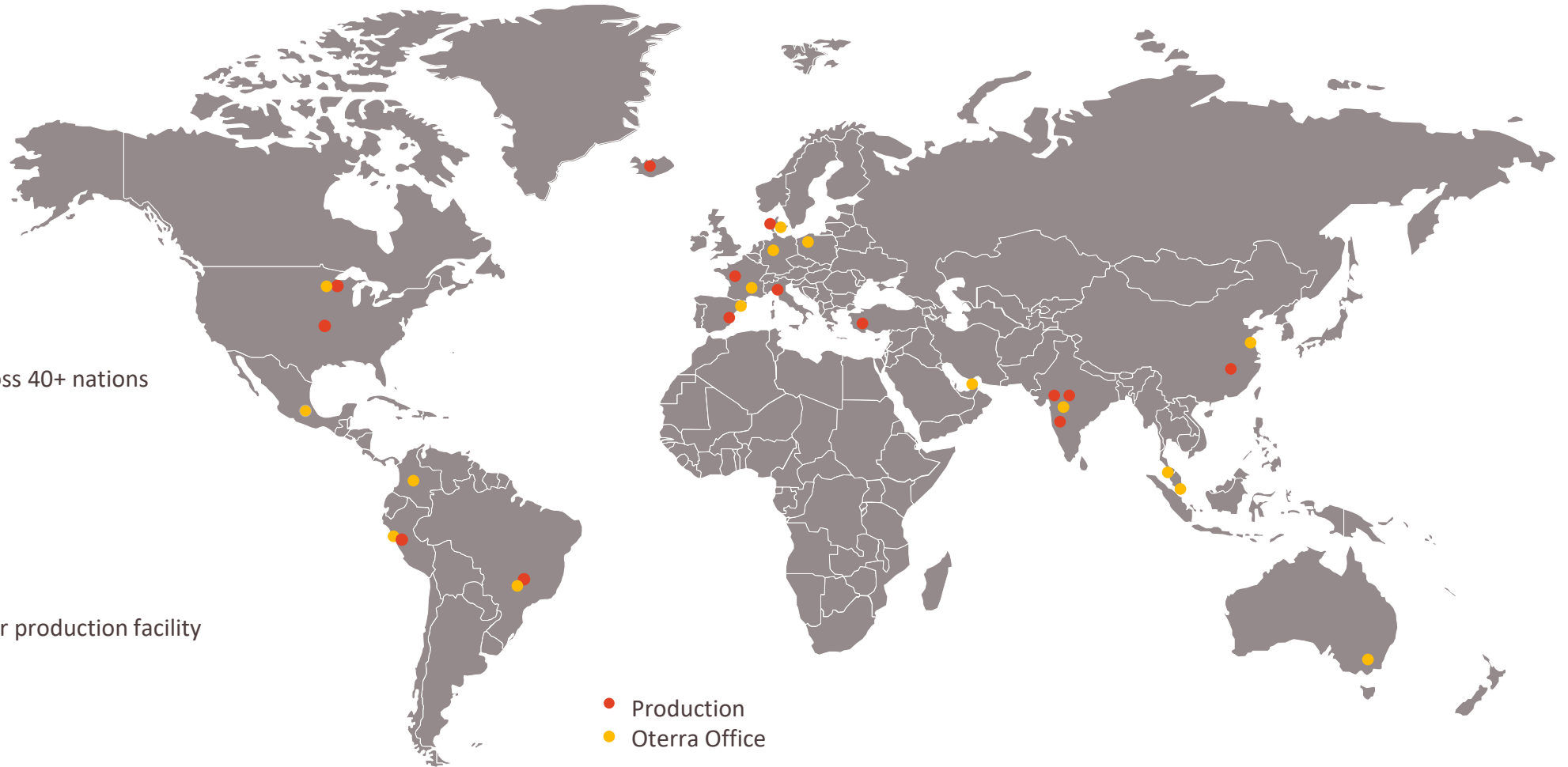
Customers large and small

40+

Locations with office, lab or production facility

110+

Countries actively served

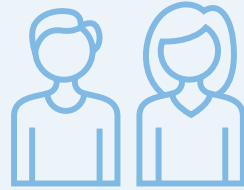


Natural colors for evolving
pet food trends

oterra™

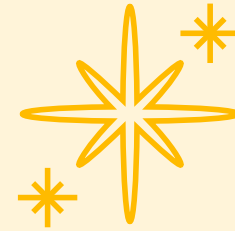


Key drivers shaping pet food trends



1.

Humanization



2.

Premiumization



3.

Personalised Nutrition



4.

Sustainability

Key drivers shaping pet food trends



Humanization: Pet food is increasingly expected to reflect the health, lifestyle, and emotional priorities that pet owners apply to their own diets.

- ❖ Pet owners increasingly seek products that support their pet's **health**, reflect their **personal values**, and strengthen the **emotional** bond they share.
- ❖ This is driving demand for **natural ingredients**, exciting experiences, and novel offerings that mirror trends long established in human food.



Personalised Nutrition: Solutions tailored to life stage, breed, and specific health needs are driving stronger customer loyalty and repeat purchases.

- ❖ **Personalized** meal plans and subscription-first models strengthen customer loyalty and encourage repeat purchases.
- ❖ **Tailored** offerings and **limited-time** innovations create a more engaging and individualized pet-care experience.
- ❖ **Color** serves as a key differentiator, helping **communicate functionality** while fostering **emotional** connections and **SoMe** appeal.



Premiumization: Demand is shifting toward elevated pet food products with superior quality, transparency, and ethical credentials.

- ❖ Growth is shifting toward **higher-quality, fresh** and **minimally processed** products with ingredient credentials pet parents can easily trust and understand.
- ❖ **Recognizable, natural ingredients** support premium price points while reinforcing brand quality and authenticity.
- ❖ **Natural-looking colors** and visual cues reinforce perceptions of quality, freshness, and premium value.



Sustainability: Upcycled ingredients, eco-friendly packaging, and transparent sourcing are becoming key purchase drivers and brand differentiators.

- ❖ **Alternative protein** sources, including cultivated and insect-based ingredients, are emerging as credible solutions for more sustainable nutrition.
- ❖ **Upcycled** ingredients are gaining traction as brands look to reduce **food waste** while delivering nutritional value.
- ❖ **Transparent sourcing** and **sustainable packaging** help build consumer trust and strengthen brand differentiation.



Source: Innova, [Instagram](#)

There's a natural solution for every application



Turmeric



Annatto



Cochineal



Red Beet

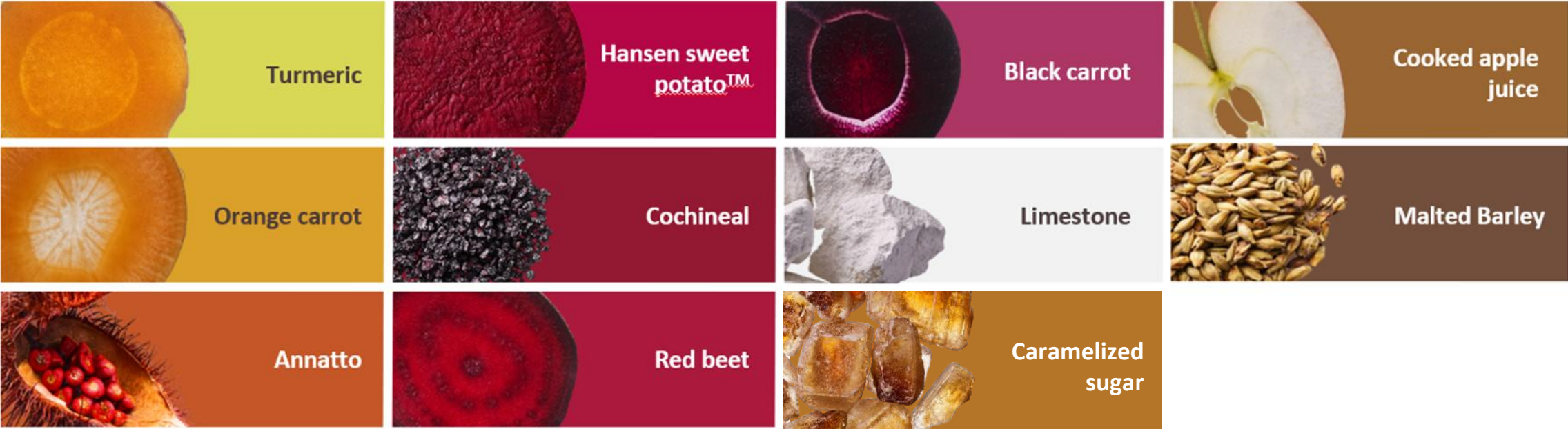


Cooked apple concentrate



Black carrot

Our range of colors come from natural sources



Our products span the range of naturality



Coloring foods/ clean label colors

Feed materials, vegetable juice and concentrates

Minimally processed, human grade, all originated from nature

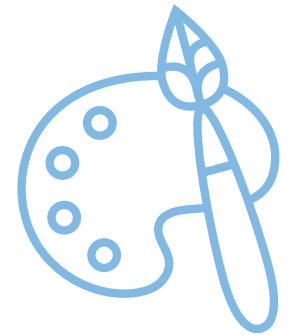
FruitMax® Products

Naturally sourced colors

Sensory feed additives

Fullest, brightest rainbow of safe, human grade colors, all originated from nature

ColorFruit®, Vegex® and CapColors® products



A whole rainbow of possibilities

Coloring foods / clean label (Feed materials)



Color additives / sensory feed additives



Export enablement and caramel replacement

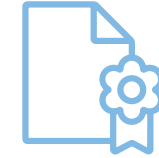


The Oterra pet range



Regulatory Compliance & Certifications

- Dedicated range with full regulatory assessment for cats and dogs.
- Colors have not been assessed for small mammals, reptiles, birds, or agriculture.
- Solutions fulfilling AFFCO and FEDIAF natural requirement



Industry Certification Standards

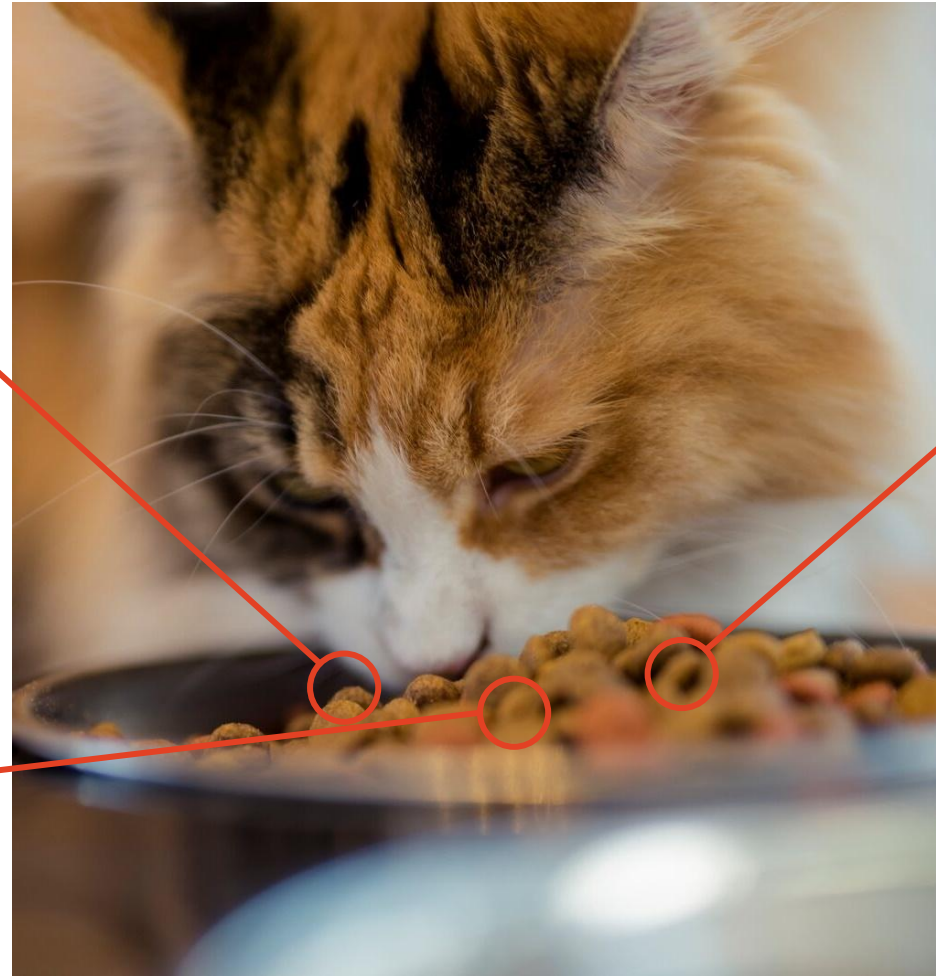
- FSSC2200; ISO 22000 certification
- Wisconsin State Feed License
- European feed license in Canossa, DK, Cosse

Current solutions for brown shades



FD&C Colors

- Red 40
- Yellow 5
- Yellow 6
- Blue 1...



Caramels

- Class I
- Class II
- Class III
- Class IV

Synthetic Iron Oxides

Source: Innova new products database – launches 12M to March '24

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Why replace Caramel?



Removal of
additive
labeling



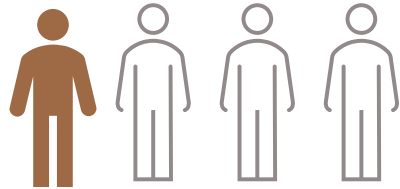
Negative
perceptions of
caramel



EU Petfood Ban
on caramel colors
(E150)



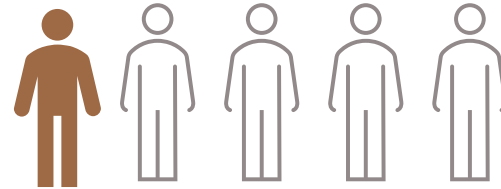
Pet parents are increasingly looking for cleaner label products



almost

1 in 4

Cat and Dog owners look for products with no artificial colour or flavour claims



almost

1 in 5

Cat and Dog owners seek products with low/no/reduced sugar claims

18%

Cat and Dog owners say clean label/natural/ 'real ingredient' claims drive their purchasing decisions

Source. Innova pet ownership survey 2023

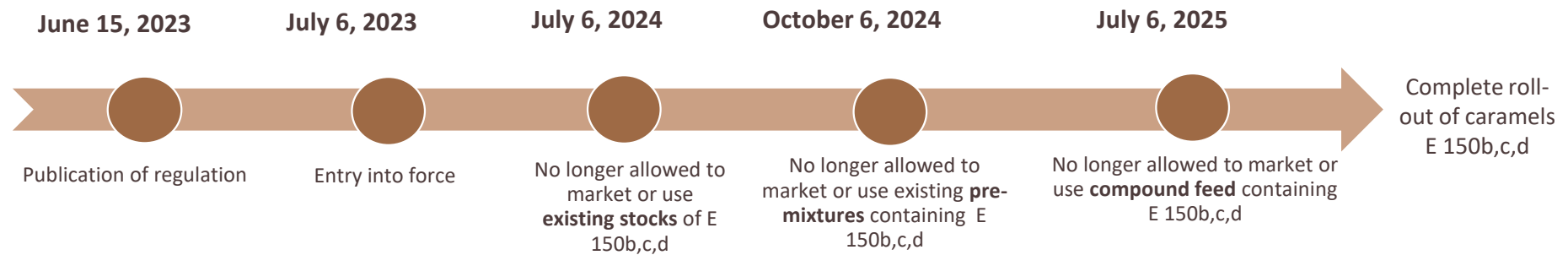
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Regulatory outlook from Europe – feed color additives - Caramels

EU Commission published Implementing Regulation (EU) 2023/1173 of 15 June 2023

- The regulation enters force + 20 days after publication (July 06, 2023)
- Withdrawal is for all animal species
- Transitional periods as below:



A range of caramel alternatives are available



- Feed material, not additive in EU
- Very stable
- Still caramel in US
- Consumer 'sugar' perception



- Feed material, not additive in EU
- Very stable
- Not permitted as color in US
- Gluten allergen



- Range of shades available
- Customisable
- May contain additives
- Only as stable as weakest component
- Longer ingredient declaration



- Feed material, not additive in EU
- Permitted in US, widespread regulatory and consumer approval
- Very stable
- Gluten-free
- Golden brown shade

Caramel & natural brown alternatives in Wet Pet Food (meat-loaf-style)

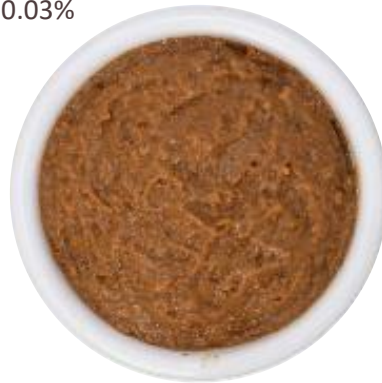
Cooked Apple Juice

- FruitMax® Pet Brown 904 WSP
- 1.0%



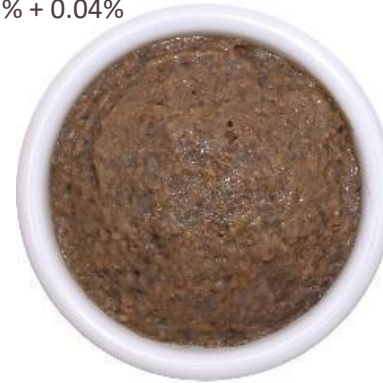
Black carrot, Annatto

- FruitMax® Pet Purple 140 WSP + ColorFruit® Pet Orange 700 OS
- 0.5% + 0.03%



Black carrot, Turmeric

- FruitMax® Pet Purple 140 WSP + Vegex® Pet Yellow 1003 WSS-P
- 0.25% + 0.04%



Malt Extract

- FruitMax® Pet Brown 902 WS-P
- 0.60%



Caramel (Class IV)

- 0.35%



Caramel (Class I), Caramelized sugar

- 0.6%



No color



*Cook time & temperature:
Pre-cook: 60°C for 10 minutes,
Sterilization: Retort at 121°C
for 60 minutes*

Caramel & natural brown alternatives in Wet Pet Food (Gravy)

Cooked Apple Juice

- FruitMax® Pet Brown 904 WSP
- 1.0%



Black carrot, Annatto

- FruitMax® Pet Purple 140 WSP + ColorFruit® Pet Orange 700 OS
- 0.2% + 0.03%



Black carrot, Turmeric

- FruitMax® Pet Purple + Vegex® Pet Yellow 1003 WSS-P
- 0.26% + 0.042%



Malt Extract

- FruitMax® Pet Brown 902 WS-P
- 0.50%



Caramel (Class IV)

- 0.35%



Caramel (Class I), Caramelized sugar

- 0.7%



No color



*Cook time & temperature:
Sterilization: Retort at 121°C
for 60 minutes*

Caramel & natural brown alternatives in baked treats

Cooked Apple Juice

- FruitMax® Pet Brown 904 WSP
- 1.0%



Black carrot, Annatto

- FruitMax® Pet Purple 140 WSP + ColorFruit® Pet Orange 700 OS
- 0.15% + 0.08%



Black carrot, Turmeric

- FruitMax® Pet Purple + Vegex® Pet Yellow 1003 WSS-P
- 0.15% + 0.03%



Malt Extract

- FruitMax® Pet Brown 902 WS-P
- 0.75%



Caramel (Class IV)

- 0.57%



Caramel (Class I), Caramelized sugar

- 1.50%



No color



Caramel & natural brown alternatives in extruded dry (coated)

Black carrot

- FruitMax® Pet Purple
- 0.30%



Black carrot, Annatto

- FruitMax® Pet Purple + ColorFruit® Pet Orange
- 0.30%



Black carrot, Turmeric

- FruitMax® Pet Purple + ColorFruit® Pet Yellow
- 0.30%



Malt Extract

- FruitMax® Pet Brown 902 WS-P
- 0.60%



Caramel (Class IV)

- 0.35%



Caramel (Class I), Caramelized sugar

- 2.0%



No color



Caramel & natural brown alternatives in semi-moist chews

Cooked Apple Juice

- FruitMax® Pet Brown 904 WSP
- 1.0%



Black carrot, Annatto

- FruitMax® Pet Purple 140 WSP + ColorFruit® Pet Orange 700 OS



Black carrot, Turmeric

- FruitMax® Pet Purple 140 WSP+ Vegex® Pet Yellow 1003 WSS-P
- 0.25% + 0.048%



Malt Extract

- FruitMax® Pet Brown 902 WS-P
- 0.60%



Caramel (Class IV)

- 0.5%



Caramel (Class I), Carmalized sugar

- 1.50%



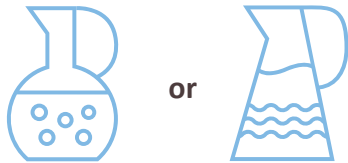
No color



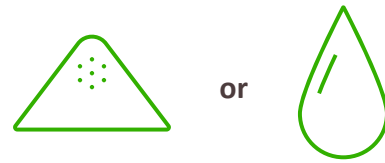
Delivering stable, high-
performing natural colors

oterra™

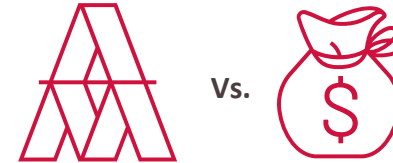
Four parameters determine what type of color you need for your application



Is oil or water-soluble color the best formulation for your product?



Is powder or liquid color the right choice for your sub-application and production set up?

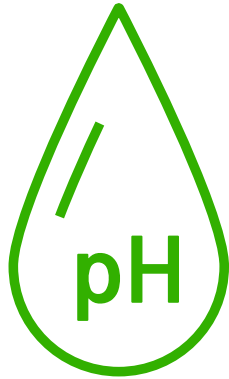


What is the best color stability versus price option?

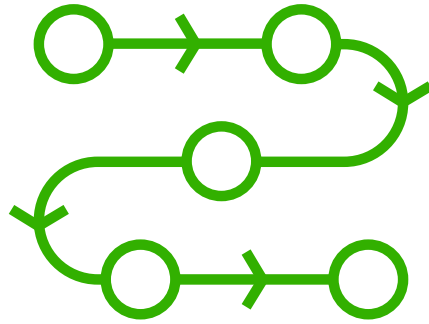


Is the color compliant with regulatory guidelines in your market?

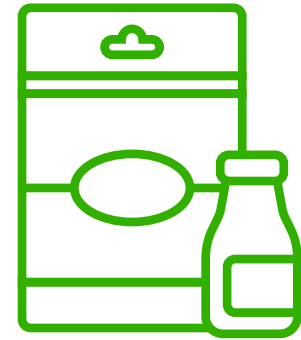
The 3 P's of working with colors from nature



Acid to base



Processing

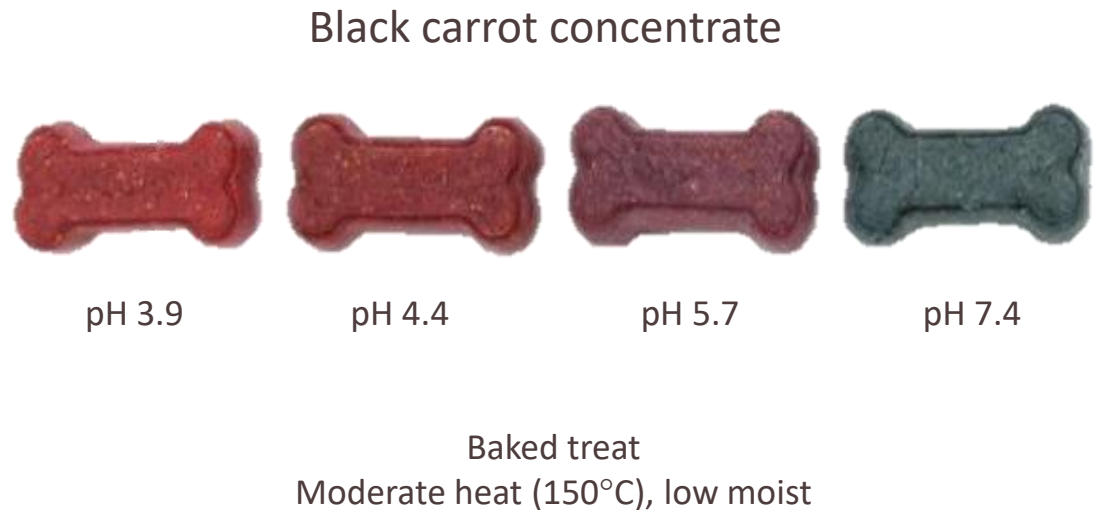


Packaging

pH can impact color functionality

pH can impact the color shade of some pigments, such as anthocyanins.

Characteristics of anthocyanins are that they are more reddish at low pH. Their shade will shift more bluish at higher pH.



Processing steps and color stability

Some natural pigments are sensitive to heat whereas others have good heat stability.

Heat sensitive colors must be added to the production process at the right time to for the best result.



Red beet

Carmine

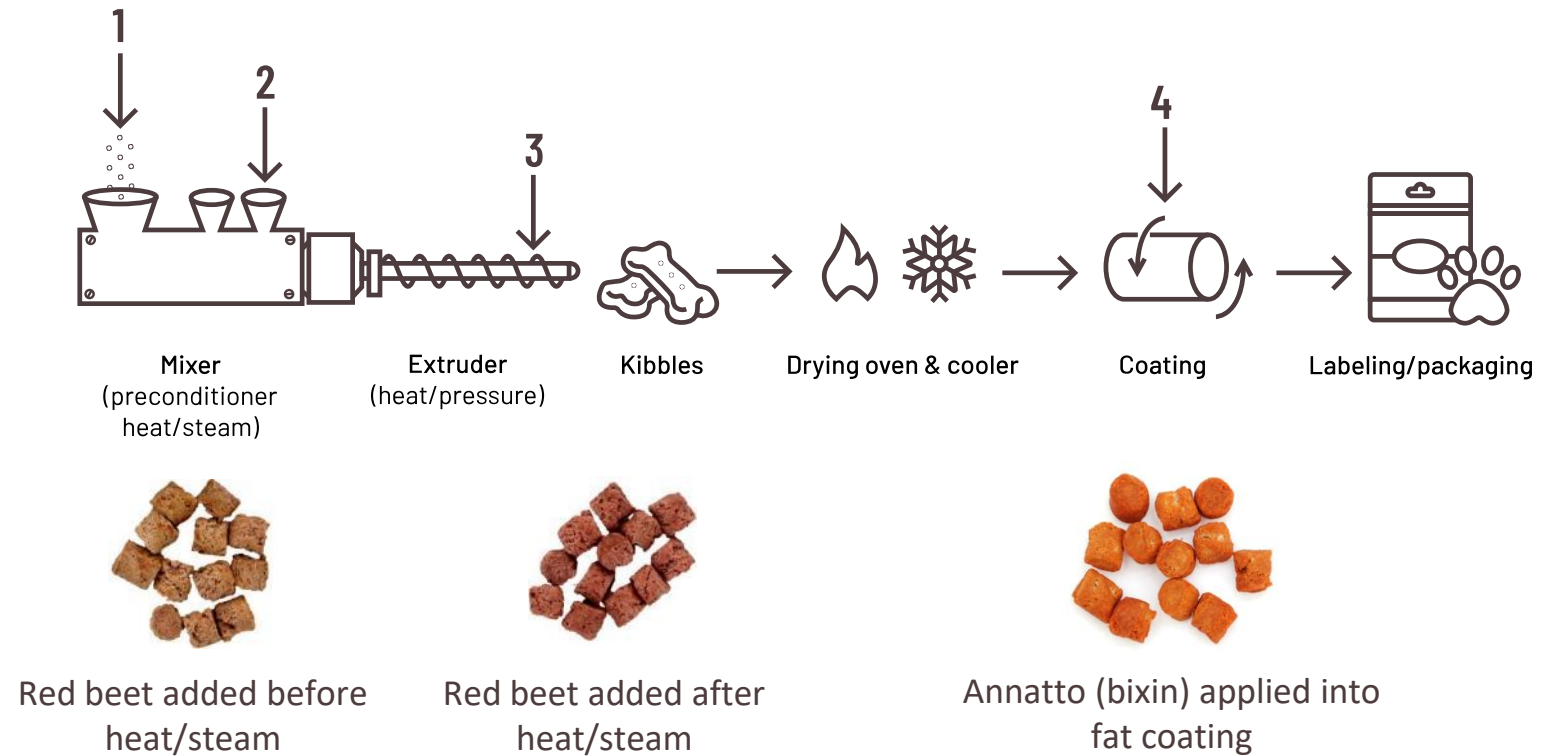
Post heat processing

Natural colors to be added at the right time

Natural colors can be introduced to the production process during one of below steps:

1. Dry blended in start of first blending step
2. Mixing (preconditioning/injection step)
3. End of extrusion barrel/extrusion stage
4. Coating process

The extrusion and packaging process



How color can be added to wet pet food

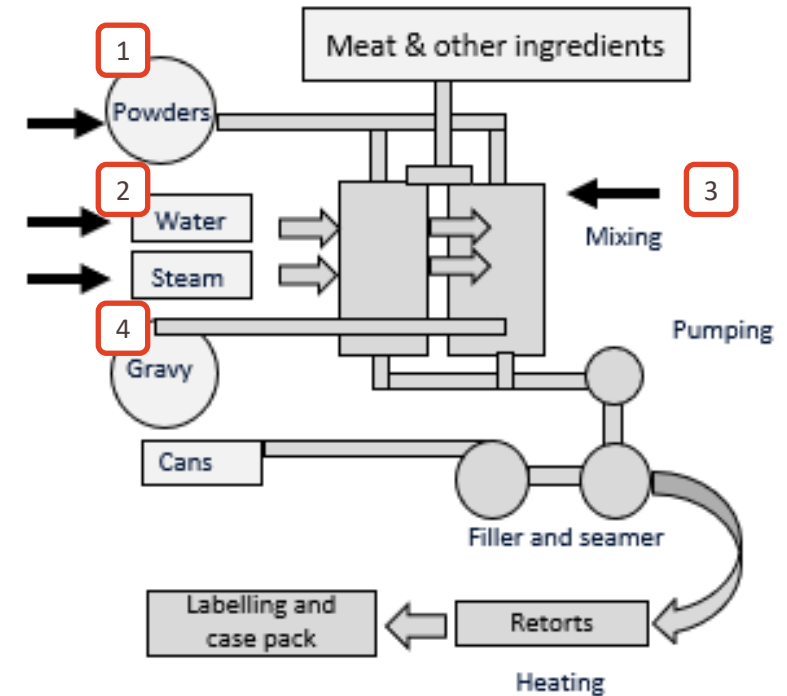
Wet pet food is made by mixing recipe ingredients together and cooking direct within a can, tray or pouch.

Colors can be added at any step before filling or what works best for the plant, e.g.:

- Pre-blended with the dry ingredients /powders
- Pre-blended and added with the water
- Added during mixing step
- Added with the gravy (if gravy step is present)

The major heat step (retorts) will always be done after color is added

- ✓ Heat stable colors are recommended



Example of wet canning process

With colors from natural sources, there's a good match for wet pet food application

Turmeric



Annatto



Orange carrot



Turmeric



Annatto



Carmine



Caramelised sugar



Malted barley



Black carrot



Carmine



Caramelised sugar



Malted barley



Packaging can influence a product's color and appearance

Some natural colors are affected by light, e.g. turmeric. Oxidative or light stability is influenced by package composition, the packaging material and storage conditions.

Consider the actual need for light stability and how long the product is likely to remain on the shelf.



Accelerated light test



Notes: Baked treat samples colored with turmeric colors exposed to strong light in hours

Additional things to take note- background shade

The ingredients in the recipe, e.g. different meat or different types of flour, fat content may impact the shade and color brightness of the final application.

Uncolored



CapColors® Pet White 900 WSS-P
1.0%



CapColors® Pet White 900 WSS-P
2.0%



Chicken



Chicken, beef



Salmon, Pork

Myoglobin
0 mg/g

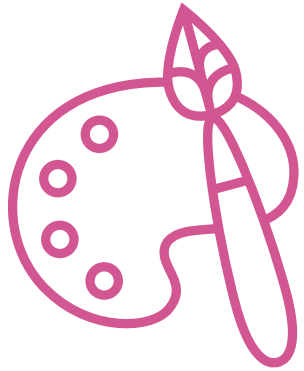
10 mg/g



Extensive data on color matching and stability studies in pet food



In conclusion



All our pigments are sourced from nature



Safe, stable and compliant



Expertise to support your color conversion process

Thank you!

Please visit Brenntag
booth for further
discussion

