



California
NATURAL COLOR



CLEAN LABEL
CONFERENCE

Crystal Colors

Clean Label Conference
March 26 - 27, 2019



Cal Color's Crystal Colors

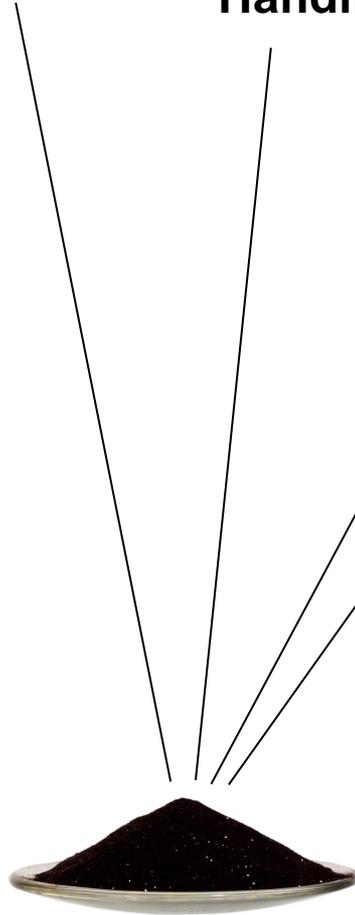


Why Are Our Crystal Colors Unique?

Fast Solubility



**Crystal
Form**



**Less Dust In
Handling**

**Carrier Free
Zero Calorie as used**



**Up to 5 Year
Shelf Life**

**Superior Color
Stability**

**Kosher
Halal
SO₂ Free
Non-BE (Non-GMO)
Organic Compliant**

Unique Crystal Form

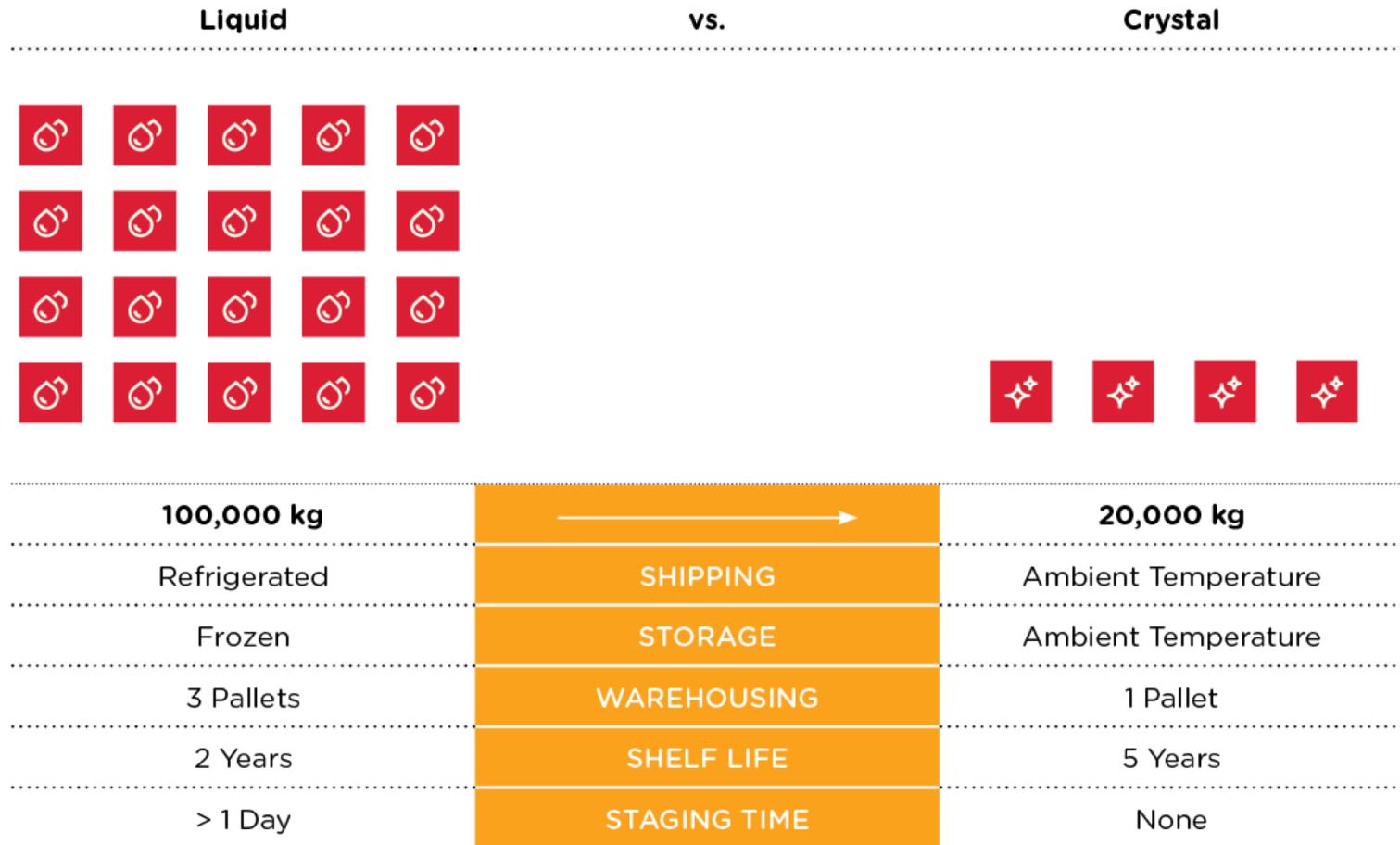
- Easily and completely soluble
- Less dusty compared to spray dried colors
- Carrier free (virtually zero calories at typical dosage levels)

Spray Dried Color

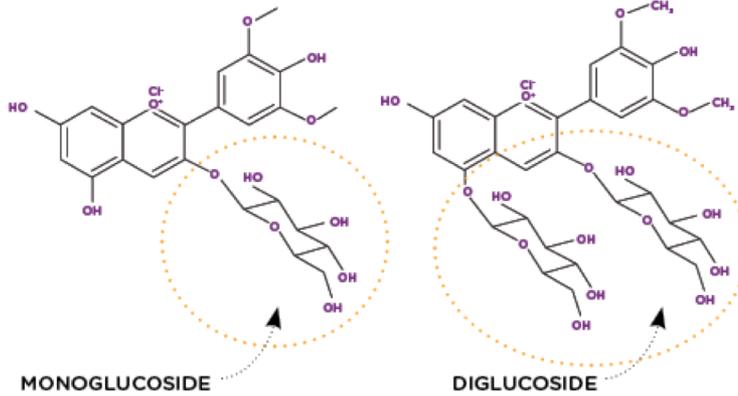
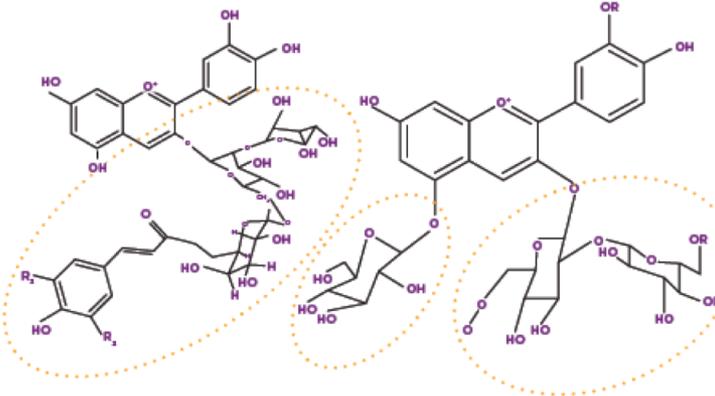


California Natural Color
Crystal Color

Global Distribution Benefits



Anthocyanin Colors

	FRUIT ANTHOCYANINS		VEGETABLE ANTHOCYANINS		
SOURCE	Aronia, Elderberry, Hibiscus, <i>vinifera</i> Grape (Grape Skin Extract)		Rubired Grape	Black Carrot	Purple Sweet Potato
MOLECULAR STRUCTURE	 <p>MONOGLUCOSIDE</p> <p>DIGLUCOSIDE</p>				
COLOR SHADE	Red/Purple		Red/Purple	Red/Orange	Magenta
COLOR STABILITY	Less complex anthocyanin molecules are more susceptible to loss of red color and increase in brown color.		More complex anthocyanin molecules provide more color protection, which results in superior red color retention and decreased brown color formation.		

pH Stability of Anthocyanin Colors

pH 2

3

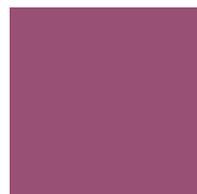
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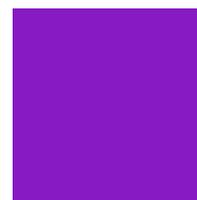
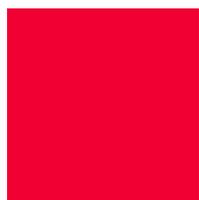
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Red Grape



Black Carrot



Purple Sweet Potato



Very Stable

Less Stable

Stable Only in Low A_w

Application Examples



Sodas & Sports
Drinks



Juice & Teas



Smoothies



Sorbet & Yogurt



Hard Candy &
Gummies



Panned Candy

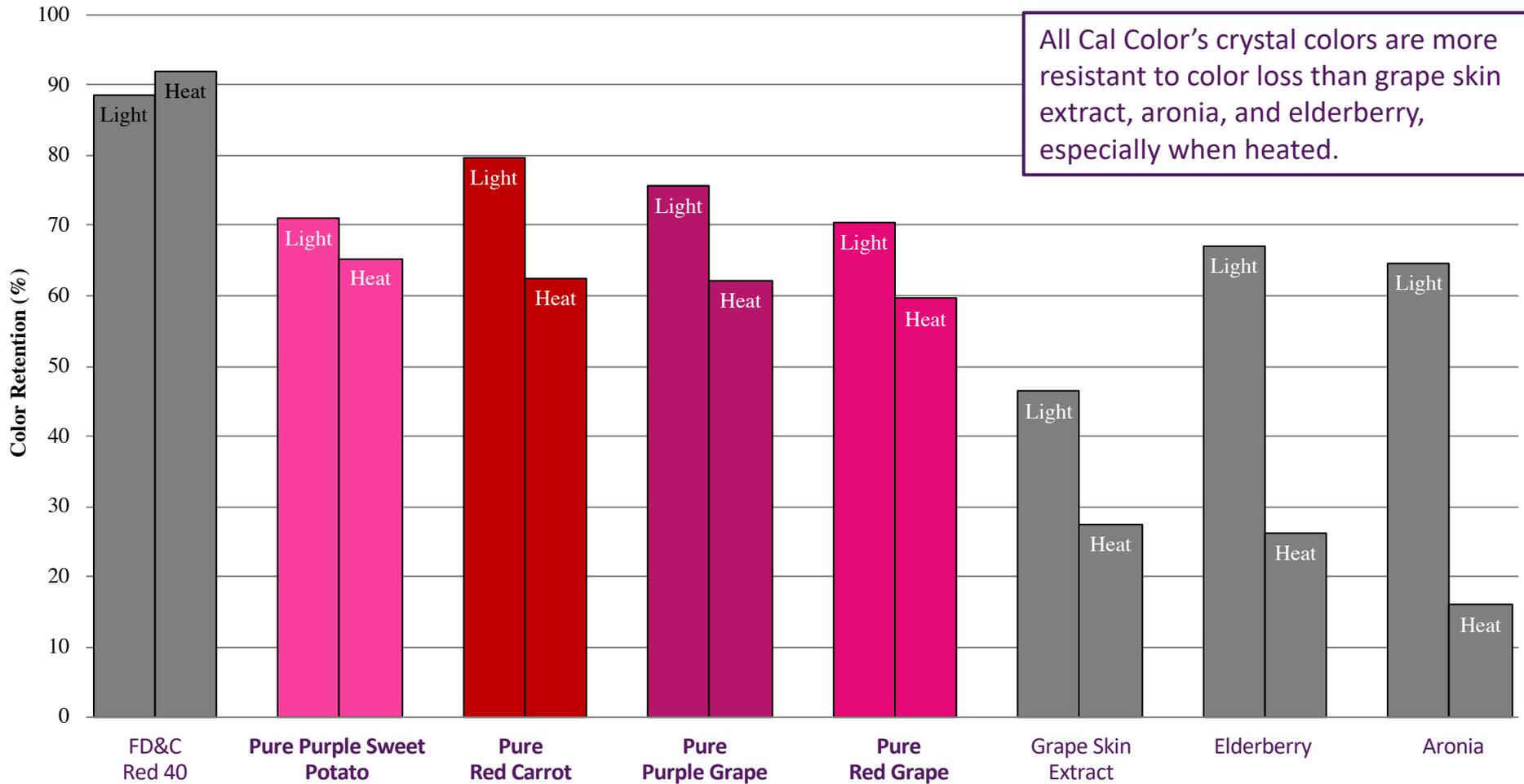


Snack & Baked



Nutraceutical

Example: Color Retention After Light & Heat Stress



Example: Color Retention After Heat Stress

**Cal Color
Pure Red
Grape**



Control



1 month



2 months



3 months

60%
Color
Retention

**Competitor
Grape Skin
Extract**



< 30%
Color
Retention

Labeling Guide

COLORS	UNITED STATES	EUROPE
PURE PURPLE GRAPE	fruit juice for color	Anthocyanins; E163
PURE RED GRAPE	fruit juice for color	Anthocyanins; E163
PURE PURPLE CARROT	vegetable juice for color	Food with colouring properties
TRUE MAGENTA	fruit & vegetable juice for color	Anthocyanins; E163
PURE PURPLE SWEET POTATO	vegetable juice for color	Anthocyanins; E163
TRUE PINK	fruit & vegetable juice for color	Anthocyanins; E163
TRUE BLUSH	vegetable juice for color	Anthocyanins; E163
REAL RED CF	vegetable juice for color & turmeric	Anthocyanins, Turmeric; E163, E100
REAL RED BG	vegetable juice for color & beta-carotene	Anthocyanins, Beta Carotene; E163, E160a (ii)
TRUE ROSE	fruit & vegetable juice for color	Anthocyanins; E163
PURE RED CARROT	vegetable juice for color	Food with colouring properties
PURE BROWN GRAPE	fruit juice for color	Anthocyanins; E163

United States Regulatory Compliance

California Natural Color's crystal colors are exempt from FDA certification and are regulated by 21 CFR 73.250 for fruit juices, 21 CFR 73.260 for vegetable juices, 21 CFR 73.600 for turmeric, and 21 CFR 73.950 for beta-carotene.

European Regulatory Compliance

California Natural Color's comply with the purity criteria for anthocyanins set forth in EU No 231/2012. California Natural Color purple carrot products comply with EC "Guidance notes on the classification of food extracts with colouring properties".

Laws and regulations may vary, in different countries, regarding approval to add specific colors to food, and you should confirm the regulatory status in your country of a color to be used for that purpose.

Thank you!

Cori Satkowski
Product Development Technologist - Lead

Creating Custom Shades

The following can help us create your custom match:

- Sample of current color
- Current dosage information
- pH of final product
- Product base with and without color

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