EXBERRY®
Micronized Powders

Per Pihlsgard, PhD, GNT USA Inc.
Clean Label Conference March 26-28, 2018
3 Main Color Categories

Artificial
- FD&C dyes
- Market share decreasing
- Key players now offering other solutions to maintain business

Formulated
- Carmine, Annatto, beta-carotene
- Processing similar to artificial
- Non-global acceptance

Coloring Foods
- Exclusively from edible fruits & vegetables
- Worldwide acceptance
- Control of entire supply chain guarantees competitiveness
Processing of EXBERRY®

- Produced from **edible** fruits, vegetables and other plants
- Processed **without** selective extraction of the pigments
- Processed with **water, no organic solvents used**
- No **added** artificial emulsifiers, preservatives, etc
- Food ingredients that **can be eaten** in their own right
## Ingredient Declarations

### Legal Classification

<table>
<thead>
<tr>
<th>Country</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>21CFR73.250</td>
<td>Fruit juice color</td>
</tr>
<tr>
<td></td>
<td>21CFR73.260</td>
<td>Vegetable juice color</td>
</tr>
<tr>
<td></td>
<td>21CFR73.530</td>
<td>Spirulina extract</td>
</tr>
<tr>
<td></td>
<td>21CFR73.600</td>
<td>Turmeric</td>
</tr>
</tbody>
</table>

### Labelling

<table>
<thead>
<tr>
<th>Country</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>“Fruit and Vegetable Juice (color)”</td>
</tr>
<tr>
<td></td>
<td>“Spirulina Extract”</td>
</tr>
<tr>
<td></td>
<td>“Turmeric (color)”</td>
</tr>
<tr>
<td>Canada</td>
<td>Colouring Foodstuffs (ingredient)</td>
</tr>
<tr>
<td></td>
<td>Cherry concentrate, Carrot concentrate</td>
</tr>
<tr>
<td>EU</td>
<td>Colouring Foodstuffs (ingredient)</td>
</tr>
<tr>
<td></td>
<td>Cherry concentrate, Carrot concentrate</td>
</tr>
<tr>
<td>Brazil</td>
<td>Coloring Foodstuffs (ingredient)</td>
</tr>
<tr>
<td></td>
<td>Concentrates (cherry, carrot)</td>
</tr>
<tr>
<td></td>
<td>Carrot and Cherry concentrate for color</td>
</tr>
</tbody>
</table>
EXBERRY® Micronized Powders

**Features**
- Reduced Particle Size

**Benefits**
- The micronized powders adhere to the other particles which creates a homogenous color distribution
  - Reduced separation effects
  - Homogenous color effect (individual particles not visible)
  - Higher perceived color in the powder
  - Improved mixing stability for powder blends

<table>
<thead>
<tr>
<th></th>
<th>$D_{50}$</th>
<th>$D_{97}$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Powders</strong></td>
<td>30µm - 50µm</td>
<td>100µm - 190µm</td>
</tr>
<tr>
<td><strong>MN Powders</strong></td>
<td>10µm - 15µm</td>
<td>20µm - 30µm</td>
</tr>
</tbody>
</table>
A Wide Array of Color Shades are Available

In addition, the powders can be blended to achieve unique hues
Instant Beverages
Standard Powders
Micronized Powders

Micronized powders help to keep the color portion evenly distributed and consistent.
Micronized Powders Help Deliver Color Evenly

Micronized powders help avoid separation during transit and storage.

Dry Application
Color is evenly distributed and will not separate further in processing and packaging.

Liquid Application
Rapid dissolution of dispersed color particles.
Uniformly Distributed Color

No Introduction of Oils or Fats
Even Distribution of Color in the Tablets

Standard Powder
- Less colorful
- More uneven color

Micronized Powder
- More vivid color
- Color is very even
Ideal for Situations Where Even Coating is Necessary

A spice blend with micronized powders provides an even coating.
EXBERRY® Micronized Powders Have Many Advantages

- Exhibit even distribution when mixed in powders with different particle sizes
- Adhere to the larger particles (sugars etc.) which leads to homogeneous color distribution and less separation
- Great for chocolate or compound coating
- Good solubility in water when mixed into a powdered beverage base
- Great for delivering color to tablets
- Easily incorporated into spice blends
- Very useful for pre-mixes or products that need to withstand transportation or extended storage where separation otherwise may occur
Contact Us
We Look Forward to Hearing From You!

Ashley Pruett
Technical Applications Specialist
GNT USA, Inc.
660 White Plains Road | Tarrytown, NY 10591
apruett@gntusa.com
+1 914 366 2881
www.gnt-group.com

Per Pihlsgard, PhD
Technical Development Manager
GNT USA, Inc.
660 White Plains Road | Tarrytown, NY 10591
ppihlsgard@gntusa.com
+1 914 524 6745
www.gnt-group.com

Visit our website to learn more!
http://gnt-group.com/us-us