Raw Umbers
Natural Iron Oxides

Umbers are naturally occurring Iron Oxides that are highly valued for their transparency and neutral chromaticity. In their natural “crude or raw” form, their chemistry is similar to Yellow Iron Oxide. Like Yellow Iron Oxides, Raw Umbers have limited heat stability at temperatures greater than 350°F/175°C. At higher temperatures, Umbers convert to a Red Iron Oxide, Fe₂O₃ chemical form just like a Yellow Iron Oxide. This heating conversion is normally referred to as burning, hence the term Burnt Umber.

Our Good, Better, Best material grading system is unique. While the relative differences may be minor, matching material characteristics as close as possible will ensure both excellent performance and maximum value. In some cases, using a better grade of material may be a more cost effective alternative because less is required to obtain the color you need. Once we understand your performance and cost goals, we can recommend the right product and provide a sample for your evaluation.

Product Range
Raw Umbers are considered the “neutral toners” in a color pallet. They can soften a brighter color without deteriorating the chromaticity of the brighter pigment.

General Pigment Properties

<table>
<thead>
<tr>
<th>Raw Umber</th>
<th>Crystal Structure</th>
<th>Chemical Composition</th>
<th>CAS#</th>
<th>Color Index#</th>
<th>Light Fastness</th>
<th>Chemical Resistance</th>
<th>Heat Stability (°C/°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Umber</td>
<td>Goethite</td>
<td>FeO-OH</td>
<td>12713-03-0</td>
<td>Brown 7</td>
<td>Permanent</td>
<td>Excellent</td>
<td>175°/350°</td>
</tr>
</tbody>
</table>

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Choosing the Right Material

Hoover Color offers 9 standard Raw Umbers. They vary in color-shade, dispersibility and resulting viscosity. While most commonly used in architectural tinting systems, Raw Umbers are used in transparent wood stains and cement based applications such as stucco.

<table>
<thead>
<tr>
<th>Product Range</th>
<th>Hegman</th>
<th>Relative Color Strength</th>
<th>325 Mesh</th>
<th>pH</th>
<th>Relative Viscosity</th>
<th>Relative Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>4.5</td>
<td>100%</td>
<td>0.05%</td>
<td>8.5</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Better</td>
<td>5.0</td>
<td>110%</td>
<td>0.05%</td>
<td>8.0</td>
<td>100%</td>
<td>110%</td>
</tr>
<tr>
<td>BEST</td>
<td>6.0</td>
<td>120%</td>
<td>0.02%</td>
<td>8.0</td>
<td>110%</td>
<td>115%</td>
</tr>
</tbody>
</table>

Color by Application

As with any Iron Oxide Pigment, Raw Umbers can be used in a wide variety of coating, stain and cement applications.

- **TiO₂/418RU**
  - Paint Tint
- **408RU**
  - Wood Stain
- **402RU**
  - Stucco

Examples of tinting with Raw Umbers to soften brighter colors.

- **TiO₂/Yellow 14**
- **TiO₂/Blue 15:1**
- **TiO₂/Violet 23**

- **TiO₂/Yellow 14/418RU**
  - Softening AAOT Yellow Tint
- **TiO₂/Blue 15:1/418RU**
  - Phthalo Blue Tint
- **TiO₂/Violet 23/418RU**
  - Carbasol Violet Tint

Hoover Color pigments have been the industry standard since 1923. Whether you have a material or cost issue – or both - we can help. For engineered pigments with exceptional performance, quality and value, give us a call or email us today to get the conversation started. We will help you determine the right product for your specific application, and provide a sample for your evaluation.