Spotlight on beautiful waterborne Alkyds

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The renaissance of Alkyds - Entering waterborne Alkyds

1. Waterborne Alkyds – the sustainable option
2. Best in wood protection
3. Even better with Perstorp’s Voxtar™
Drivers

- Top quality products
- Sustainability and low VOC
- Support and Security of supply
- Customer in focus
- Partner

Buildings blocks

Support and Security of supply

Customer in focus

Partner
The Alkyd journey

1940’s
The alkyd journey started

1960’s
Focus on work-environment

1980-90’s
Launch of waterborne solutions for outdoor

2005
Focus on atmosphere damaging products

2010
• Focus on total systems
• Improved technologies

Focus now:
• VOC
• Carbon footprint
• Renewable based

Shift in focus over the years resulted in a decline in Alkyd use
No VOC

- Solventborne
- High solids
- Waterborne
- Powder Coating
- UV Curing
Waterborne or solventborne Alkyds

**Solventborne Coatings**
- Solvent, Di-acid
- Pigments & fillers
- Resin

**Waterborne Coatings**
- Water
- Di-acid
- Pigments & fillers

**Ingredients**
- Talloil fatty acid
- Voxtar™
- Resin

**Additives**
- Carbonates
- Water
- Fossil
- Renewable
Waterborne Coatings

**Alkyds**
- Additives: Pigments & fillers
- Fossil (Di-acid)
- Renewable
- Water

**Hybrides**
- Additives: Pigments & fillers
- Fossil
- Renewable
- Water

**Acryls**
- Additives: Pigments & fillers
- Fossil
- Renewable
- Water
CO$_2$ impact

CO$_2$ impact – Acrylics vs. Alkyds

Alkyds, up to 50% lower CO$_2$ impact

Source: DSM
Market trends and drivers

- VOC, Sustainability
- Waterborne alkyds for deco coatings
- Renewable raw material
- Renaissance for Alkyds
- Increase in wood construction

High performance & environmental friendliness
The renaissance of Alkyds
- Entering waterborne Alkyds

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Beautiful waterborne Alkyds

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Renewable raw material

Low carbon footprint

Outstanding wood protection

Low VOC
<table>
<thead>
<tr>
<th>Solventborne</th>
<th>Waterborne</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general high VOC</td>
<td>Low or no VOC</td>
</tr>
<tr>
<td>Cobalt (listed as carcinogenic)</td>
<td>Iron complex replacing Cobalt</td>
</tr>
<tr>
<td>MEKO (carcinogenic)</td>
<td>No MEKO</td>
</tr>
</tbody>
</table>

**Even better with waterborne**

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Beautiful alkyds

Oxidative process once paint is applied

The only additive needed is air!

1. The sustainable option
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3. Even better with Voxtar
Best in wood protection

› Penetrates the wood for longer lasting protection
› Outstanding metal protection
› Acrylics forms a film on top of the wooden surface
Even better with Voxtar™

Voxtar™
Pure advantage

1. The sustainable option
2. Best in wood protection
3. Even better with Voxtar
Our green Penta – VOXTAR™

› Voxtar™ - Our range of renewable Penta products
› Up to 100 % renewable raw material*
› Up to 80 % lower carbon footprint**

Same trusted efficiency, security and high performance you expect from PENTA

* Based on a mass balance system ** Cradle to grave, compared to European average
Waterborne Alkyds
Our three developed technologies

Externally stabilized alkyd emulsion
Internal stabilized water thinnable
PUD alkyd technology