VESTOWAX®
Designed Polymers for the adhesive and sealants industry

VESTOWAX®

EVONIK
POWER TO CREATE
Welcome from the Adhesive Experts of Evonik

Discover our product portfolio designed for the Adhesives & Sealants Industry. Based on our different polymer backbone systems, we develop individual solutions according to your needs.

**YOUR BENEFITS – OUR VALUES**

Focus on customer orientation
We are a solution provider. Our mission is to create tailor-made solutions to ensure that every one of your projects is a success. That is why we are considered to be the first choice when it comes to solving your challenging tasks. Thanks to our global presence we can respond promptly and make your individual wishes come true.

Perfectly targeted expertise
With our team of adhesive experts and our dedicated sales force, you can be assured that we offer a wealth of expertise. We do not only provide you with capabilities spanning from research and development through to logistics, but we can also offer you valuable market knowledge and in-depth technical expertise. That is why our know-how is spot-on, every time.

Absolute reliability
Any good business partnership is based on reliability. There is nothing more valuable than knowing that your business partner will be there for you. We take this to heart and offer you excellent product quality, security of supply and our continuous drive to make your challenges our own – this way we help you overcome any obstacle along the way.

Profiting from future orientation
Improving performance and efficiency can only be accomplished if you constantly stay ahead. That is why we identify future trends as early as possible, collaborating with you to develop innovative solutions. Our foresight is valued by customers and partners alike, because they know that we always keep an eye on the future to guarantee long lasting success.

**YOUR MARKETS – OUR FOCUS**

We offer custom-made Adhesive & Sealant solutions for a broad spectrum of industries. If you don’t find your line of business here, just talk to us. Our team will gladly help you accomplish your project.

- Automotive
- Construction
- Packaging
- Electronics
- Processing Aides
- Product Assembly

**YOUR SOLUTIONS – OUR BRANDS**

- **DYNACOLL®**
  Polyester-Polyols, Copolyster, Polyacrylates

- **VESTOPLAST®**
  Amorphous Poly-Alpha-Olefins

- **VESTOWAX®**
  Fischer-Tropsch-Waxes

- **POLYVEST®**
  Liquid Polybutadienes

- **DEGAN®**
  Methacrylate Binders for Heat Seal Lacquers

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**Our Product Range**

- **DYNACOLL®**
- **VESTOPLAST®**
- **VESTOWAX®**
  With our VESTOWAX® product range, we offer synthetic waxes produced by the Fischer-Tropsch-Process. They act as your valuable additive for hot melt adhesives, plastic additives and a multitude of other applications.

- **POLYVEST®**
- **DEGAN®**
The definition of the term “wax” is based less on the chemical composition of a substance than on its physical properties:

- kneadable at 20 °C, with a consistency ranging from solid to brittle-hard
- coarsely to finely crystalline, translucent to opaque
- melting above 40 °C without decomposition
- already of relatively low viscosity at just above the melting point
- highly temperature-dependent consistency and solubility
- can be polished under gentle pressure

This property profile covers a multitude of materials from completely different sources. Waxes with plant and animal origin had been used for decades already, before industrial processes allowed the production of partially or fully synthetic materials with special properties, entering new fields of application.

Evonik offers two product lines of synthetic waxes produced by Fischer-Tropsch-Process. The latest generation GTL (gas to liquid) technology yields Fischer-Tropsch hard paraffins of linear molecular structure and highest purity, possessing low viscosity in the melt and having molecular weights of between 500 and 1,000 g/mol.
GTL SARAWAX

Within a long-term partnership with Shell MDS (Malaysia), who is driving the production site at Bintulu, Evonik acts as distributor and technical service provider for the high melting non-modified Sarawax grades in Europe, the Middle East, North Africa, India and South America. GTL Sarawax SX 105 is the approved high-value standard additive for important applications especially in the hot melts and plastics industry (e.g. packaging hot melts, rigid PVC lubrication). High purity, low viscosity and narrow molecular weight distribution on very constant level allows an effective and reliable process control and tangibly increases the quality of final goods. The unique combination of physical properties of the new GTL Sarawax SX 80 accommodates the tendency towards lower processing temperatures. A significantly lower melting point going along with high hardness and crystallinity allows for quick and safe processes within extended temperature ranges.

VESTOWAX®

In addition, the range of VESTOWAX® products includes modified FT-hard paraffins and chemically functionalized FT waxes, supplied globally. The group of physically modified hard paraffins encompasses coarse powder and pellet grades with different molecular weight distribution as well as micronized powder of different particle shape, thus being suited as processing aid and value additive for a huge number of processes and applications. Besides the variation of physical condition, further refining by chemical modification extends the VESTOWAX® product range with FT hard waxes. Different levels of chemical functionality are obtained by oxidation, making the C-grades fully or partially compatible to e.g. polar plastics or water based systems.

Analytical Methods

• Drop Point
  Determination according to DGF M-III 3.
  Also in accordance with DIN 51 801 or ASTM D 566.

• Penetration Number
  Determination according to DGF M-III 9b.
  Also in accordance with DIN 51 579 or ASTM D 1321.

• Acid Number
  Determination according to DGF M-IV 2.
  Also in accordance with DIN 53 402 or ASTM D 1386.

• Saponification Number
  Determination according to DGF M-IV 2.
  Also in accordance with DIN 53 401 or ASTM D 1387.

• Molecular Mass
  Determination by HT-GPC.

• Density at 23 °C
  Determination according to DIN 53 479.

• Viscosity
  Determination according to DIN 53 007/1.

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VESTOWAX® Product Range

<table>
<thead>
<tr>
<th>Property</th>
<th>Supply Form</th>
<th>Drop Point [°C]</th>
<th>Penetration Number [mm 10-1]</th>
<th>Acid Number [mg KOH/g]</th>
<th>Saponification Number [mg KOH/g]</th>
<th>Molecular Mass [g/mol]</th>
<th>Density at 23 °C [g/cm³]</th>
<th>Viscosity [mPa s]</th>
<th>Color</th>
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</thead>
<tbody>
<tr>
<td>GTL Sarawax *)</td>
<td>Prills</td>
<td>91 – 96 F.P.</td>
<td>3 – 6</td>
<td>approx. 600</td>
<td>approx. 0.81</td>
<td>&lt; 10 (at 120 °C)</td>
<td>white</td>
<td></td>
<td></td>
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<tr>
<td>GTL Sarawax SX 105</td>
<td>Prills</td>
<td>114 – 120</td>
<td>1</td>
<td>approx. 1000</td>
<td>approx. 0.91</td>
<td>&lt; 20 (at 130 °C)</td>
<td>white</td>
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<tr>
<td>VESTOWAX® Hard paraffins</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EH 100</td>
<td>Pellets</td>
<td>102 – 110</td>
<td>2 – 5</td>
<td>approx. 600</td>
<td>approx. 0.92</td>
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<tr>
<td>SH 105</td>
<td>Pellets</td>
<td>108 – 114</td>
<td>1</td>
<td>approx. 750</td>
<td>approx. 0.96</td>
<td>&lt; 20 (at 120 °C)</td>
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<tr>
<td>H 2050 MG</td>
<td>Powder</td>
<td>114 – 120</td>
<td>1</td>
<td>approx. 1000</td>
<td>approx. 0.96</td>
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<td>SH 112</td>
<td>Microfine Powder</td>
<td>114 – 120</td>
<td>1</td>
<td>approx. 1000</td>
<td>approx. 0.94</td>
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<tr>
<td>VESTOWAX® Oxidates</td>
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<td></td>
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<tr>
<td>C 20</td>
<td>Flakes</td>
<td>100 – 105</td>
<td>1 – 3</td>
<td>approx. 0.96</td>
<td>approx. 0.96</td>
<td>&lt; 20 (at 120 °C)</td>
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<tr>
<td>C 40</td>
<td>Silver Polis</td>
<td>101 – 104</td>
<td>2 – 4</td>
<td>approx. 0.96</td>
<td>approx. 0.96</td>
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<tr>
<td>C 60</td>
<td>Silver Polis</td>
<td>100 – 105</td>
<td>3 – 5</td>
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<td>approx. 0.96</td>
<td>&lt; 20 (at 120 °C)</td>
<td>white</td>
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</tbody>
</table>

*) Available from Evonik in Europe, Middle East, North Africa, India, South America
**) Congealing Point
Discover VESTOWAX®
as your value additive for a broad field of applications

VESTOWAX® as highly effective additive for your hot melt formulation is the perfect tool to:

**VESTOWAX® as PVC Lubricant**
Solve the challenges in your PVC processing by using VESTOWAX® as a lubricant. Optimize your production process with regard to cost efficiency by decreasing energy consumption due to a reduced kneading resistance and minimize the risk of early polymer decomposition during extrusion. Additionally add an extra touch of surface smoothness and gloss to your final product as VESTOWAX® achieves a significant reduction of friction between the polymer melt and the surface of the machinery.

**VESTOWAX® in Printing Inks and Coatings**
Use VESTOWAX® to influence some major properties of Printing Inks and Paints such as rub resistance, scratch resistance, surface slip and water repellency and thus improve the appearance and the quality of your final product. Enjoy the benefits of a fast, clean and smooth production process by adding VESTOWAX® to your powder coating blend.

**Applications**

**GTL Formulations**

<table>
<thead>
<tr>
<th>GTL Formulae</th>
<th>VESTOWAX® Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 80</td>
<td>SX 80</td>
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<tr>
<td>SX 105</td>
<td>SX 105EH</td>
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<tr>
<td>100SH</td>
<td>105H</td>
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<td>2050</td>
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<tr>
<td>112C</td>
<td>20C</td>
</tr>
<tr>
<td>40C</td>
<td>60</td>
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</tbody>
</table>

**Plastics/Processing**

- Crystallinity improver
- Viscosity reducer
- Melting point improver
- Surface stickiness reducer
- Lubricants for PVC
- Nucleating agent for expandable polystyrene
- Dispersing aid for pigments and Mica
- Processing aid for rubber
- Internal/external release agent for interpenetrating plastics
- Mould release agent for fibre-reinforced systems
- Mould release agent for solventborne systems
- Printing ink
- Flex resistance improver
- Slip improver and anti-blocking agent
- Paste
- Baking/casting agent
- Molding agent
- Processing aid for powder coatings
- Gelatin function
- Sealing aid based on carboxylate
- Sealing agent
- Copolymer
- Lipstick hardener
- Oil binder for pastes
- Dispersing aid for solar nanocomposites
- Dry bright medium
- Sychro-nore systems
- Wax Compounds & Candle Additives
- Dispersing aid for dyes
- Hardening

**VESTOWAX® Product Range**
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