SPECIALITIES FOR TECHNICAL APPLICATIONS

Rofacer®
State-of-the-Art Technology Designed for High-Standard Products

Ester, Ether, Sugar Derivatives and Other Specialities

By 1931, Deutsche Hydrierwerke (DHW) in Rodleben/Germany patented and initiated the world's first production of fatty alcohols based on the evolving technology of catalytic, high pressure hydrogenation. Today this important development in chemical processing still influences our lives. Industries such as food & nutrition, detergents and toiletries, cosmetics and pharmaceuticals as well as other industrial processes rely on these oleochemistry branch achievements.

The experiences of DHW in hydrogenation technology for manufacturing fatty and sugar alcohols were the fundamentals for the ensuing „cascade“ of chemical modifications leading to the development of esters, ethers, sugar derivatives and other chemical specialties. Applications of all these products are as diverse as the products themselves being used as emulsifiers, surface active agents, chemical modifiers, consistency promoters, moisturizers, emollients, lubricants or chemical intermediates.

In 1991, DHW was incorporated into the worldwide network of research and production facilities of our oleochemicals Group. With the creation of Ecogreen Oleochemicals in 2003, DHW reinforced its position as a global producer and supplier of unsaturated fatty alcohols, primary fatty amines, sorbitols and other sugar alcohols as well as of a new range of specialty fatty esters and ethers. By 1999, a state-of-the-art technology was installed for the production of fatty esters and other chemical specialties derived from vegetable raw materials.

Longtime R&D experience combined with additional synergies from global oleochemistry allows DHW to present itself as a strong and reliable partner for industrial cooperation. DHW in Rodleben offers tailor-made oleochemical derivatives, which are used in the production of nutritional products, cosmetic and pharmaceutical goods as well as additives for industrial purposes.

Progress from Nature

Over the years, as worldwide awareness for environmental issues have grown, gentle processing technologies and the use of renewable resources have become increasingly important. Our technological expertise making use of natural ingredients for the production of chemical substances qualifies DHW at Rodleben to fulfill its obligations in meeting the requirements for a sustainable, ecologically-sound world.

The concept of a chemical production site based on human needs and environmental awareness is already reality within our company today.
A Solution for Your Application

Rofacer

For General Technical Applications

**Functions**
- Corrosion inhibitor, consistency regulator, cleaning aid, emulsifier, solvent, waterproofing agent

**Application**
- Colour paste, printing ink, anticorrosion oil, leather chemicals

For Polymer Processing

**Functions**
- Plasticizer, anti-static agent, costabilizer, emulsifier, lubricant

**Application**
- PVC, PA, PC, PS, PE, PP additives
- Emulsion polymerization

For Lubricants

**Functions**
- Lubricant additive, fuel additive, crystallisation inhibitor

**Application**
- Watermiscible cooling lubricant, forming oil, rolling oil, aluminium processing, diesel fuel

Our ester product line includes different classes such as wax, glycerol, sorbitan and specialty esters. All are produced starting from 100% renewable, vegetable-derived sources such as palm oil, palmkernels oil, coconut oil, rapeseed oil...

Through their different functions and effects, our esters can be used in a broad variety of different industrial applications. Some of them act as nonionic surfactants enabling the formulation of water-in-oil (W/O) or oil-in-water (O/W) emulsions in cosmetic and pharmaceutical goods and others provide outstanding sensory or stabilizing properties for many products in the nutritional sector. Through their addition, various industrial manufacturing processes such as polymer processing or oil recovery can be simplified considerably.

<table>
<thead>
<tr>
<th>Wax Esters</th>
<th>Product Name Chemical Name Form</th>
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<tbody>
<tr>
<td>Rofacer DO</td>
<td>Decyl Oleate Liquid</td>
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<tr>
<td>Rofacer OLO</td>
<td>Oleyl Oleate Liquid</td>
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<tr>
<td>Rofacer ST</td>
<td>Stearyl Stearate Pastilles</td>
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<tr>
<th>Sorbitan Esters</th>
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<tbody>
<tr>
<td>Rofacer SML</td>
<td>Sorbitan Monolaurate Liquid</td>
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<tr>
<td>Rofacer SMO</td>
<td>Sorbitan Monooleate Liquid</td>
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<tr>
<td>Rofacer SMS</td>
<td>Sorbitan Monostearate Pastilles</td>
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<tr>
<td>Rofacer STS</td>
<td>Sorbitan Tristearate Pastilles</td>
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<th>Special Esters</th>
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<tr>
<td>Rofacer 148</td>
<td>Ethylhexyl Laurate Liquid</td>
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<tr>
<td>Rofacer 188</td>
<td>Ethylhexyl Stearate Liquid</td>
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<th>Special Blends</th>
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<tr>
<td>Rofacer NS</td>
<td>Cetearyl Alcohol, Ceteareth-80, Glyceryl Stearate Pastilles</td>
</tr>
<tr>
<td>Rofacer W/O Emulgator</td>
<td>Glyceryl Oleate, Sorbitan Oleate Liquid</td>
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Examples of Applications

The wax esters Rofacer DO, Rofacer OLO and Rofacer ST are mainly used as solvents in printing inks and as lubricating agents in metalworking fluids.

Rofacer OLO has a specific application as waterproofing agent for leather.

Rofacer GMO and Rofacer GTO are components of plasticizer blends for heatshrinkable polyester films.

The Sorbitanesters Rofacer SML, Rofacer SMO, Rofacer SMS and Rofacer STS are used as emulsifiers during polymerisation processes, in the polymer additives industry, in printing ink formulations or in emulsion explosives.

Rofacer OE, Rofacer 148 and Rofacer 188 are non-aqueous solvents in cleaning formulations for the printing industry.

Sorbitol as a sugar diol is a building block for polycondensates, polyurethanes and polyamides. Special polyesters based on Sorbon are main components of new acoustic materials.

State-of-the-Art Production Technology

Esterification

Automatic Packaging Line

State-of-the-Art Service

Your requirements define our guidelines for Customer Service

• Innovative product modification
• Technical support for specific customer application segments
• Flexible and efficient logistics

Give us a call
A Strong Global Partner in Oleochemicals

Our strength is experience in the manufacture of products based on renewable raw materials together with our direct access to natural resources. Our core business is based on the production of saturated and unsaturated natural fatty alcohols from palm-kernel or coconut oil. Polyols, fatty amines and speciality chemicals broaden our current product portfolio and by day we add new products to our range. Throughout the world our people develop products, technological solutions, performance optimizations and new application formulas. With our initiatives, we want you to benefit from the global strength of our dynamic group.

We look forward to working with you!