GETREN®
Release and sliding agents
for the rubber industry
EVONIK NUTRITION & CARE
We are a global player with a presence in local markets; proven, reliable product quality and supply security – on time and on target.
Our headquarters is in Germany and we have technical centers in North America, Europe and Asia.

INTERFACE & PERFORMANCE
Thanks to our broad chemical platforms including siloxanes and organics, we are experts for interfacial phenomena, both at the surface and within the matrix.
We have specialized test facilities and laboratories.
You can count on our specialists for process knowledge, physico-chemical expertise, scientific studies and regulatory knowledge.

FACE TO FACE PERFORMANCE
We develop high performance solutions based on consultation with our customers.
Long-term relationships built on trust is the basis of our work.

Come and see us. Please address one of our colleagues to discuss your needs for an optimized rubber production process.
Mechanical rubber goods are used worldwide in a large number of applications. They are distinguished by high durability, flexibility and moldability. In order to allow an optimal exploitation of the rubber properties, process auxiliaries that facilitate the production and processing of the rubber goods are required.

Evonik offers a wide range of process additives, varying from sliding polymers for window profiles to release agents for different kinds of rubber hoses or molded rubber parts. Thanks to our many years of experience, global presence and innovative strength, we offer value to industrial customers based on global face-to-face collaboration. We provide solutions that enhance your performance and help you optimize your production processes.

<table>
<thead>
<tr>
<th>Function</th>
<th>Release agent</th>
<th>Sliding agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Shaped hoses</td>
<td>Long hoses</td>
</tr>
<tr>
<td>Product name</td>
<td>GETREN® R</td>
<td>GETREN® L</td>
</tr>
<tr>
<td>Chemical base</td>
<td>OMS*, fatty acid ethoxylates, polyethers</td>
<td>OMS* or polyethers</td>
</tr>
</tbody>
</table>

*OMS: organomodified siloxane
Additives for optimized rubber production processes

Today, the majority of rubber hoses is being used in the automotive industry, e.g. for braking systems, turbocharged air intake or fuel and oil transfer. Shaped hoses are part of every modern vehicle. The ever increasing requirements of these markets also implicate high challenges for process additives like Evonik’s release agents. Besides the technical performance – an excellent release effect, good solubility and temperature stability – customers also care for quality related and environmental topics, such as the absence of silicone oils and high biodegradability which simplifies the waste water treatment.

AUTOMOTIVE INDUSTRY

Many different kinds of chemistry provide characteristics that are important to producers of mechanical rubber goods. Starting with simple silicone oils and polyether emulsions up to more complex and even tailor made organomodified siloxanes – Evonik’s global technical strength offers solutions that help our customers optimize their individual processes in terms of quality and speed.

TAILOR MADE SOLUTIONS

When assembling window systems, reducing friction between rubber seals and window frames is a crucial factor, as it requires time and physical effort. Sliding agents facilitate this process so that window fitters can focus on their core competence – building beautiful facades and conservatories.

WINDOW SYSTEMS

Mechanical rubber goods are used worldwide in a large number of applications. They are distinguished by high durability, flexibility and moldability. For an optimal exploitation of the rubber properties, process auxiliaries that facilitate the production and processing of the rubber goods are required.
THE GETREN® R SERIES
RELEASE AGENTS FOR AUTOMOTIVE RUBBER HOSES

The production of shaped rubber hoses requires high performing release agents that provide excellent sliding properties, yet with no negative impact on the physical properties of the rubber.

Evonik offers release agents meeting highest modern production standards. They help to reduce static and sliding friction without damaging the inner surface of the hoses in the extrusion process of green tubes and their vulcanization in the second production step.

Using the right release agents allows a continuous and efficient production, which is of utmost importance to hose manufacturers. Besides meeting the physicochemical needs of the production processes, our release agents do not cause corrosion on the mandrels, are not based on silicone oil and do not emit any odor.

All of our products in our current portfolio do not contain any hazardous substances and are thus listing-free. Furthermore, we have a wide range of biodegradable products with excellent biological and chemical oxygen demand (BOD&COD) which help to lower waste water treatment costs.

Beyond traditional release agents for standard polymers, we have developed products suitable for silicone and fluoro carbon rubber.

We also have several commercial solutions for special application fields such as Epichlorohydrin Rubber (ECO) and Chloroprene Rubber (CR).

Based on our unique and innovative technology we also provide specialty release agents that ensure safe processing of high temperature acrylic rubber mixtures. If required, we can gladly develop tailor-made solutions for your individual rubber type.

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### Rubber Hoses Release Agents | Product overview GETREN® R-Series (all products label-free)

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>WATER</th>
<th>AIR</th>
<th>OTHERS</th>
<th>VISCOSITY (mPas)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EPDM</td>
<td>NBR</td>
<td>CR</td>
<td>Extrusion</td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td></td>
<td>ECO/CM</td>
<td></td>
</tr>
<tr>
<td>R 4200</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4230*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4520</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 5030</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Biodegradable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R 4280</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4550**</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4560+</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>R 4580</td>
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<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4600</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>R 4700</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

- Main Use
- Secondary Use
- Next generation R 4220
- Ideal for rust prevention
- Next generation R 4500
- Ideal for rust prevention
GETREN® R series – main benefits

- Excellent release effect
- Does not contain silicone oil
- Easy washability
- Temperature stability
- Excellent biodegradability, i.e. potential cost savings in waste water treatment
GETREN® L

RELEASE AGENTS FOR LONG HOSE PRODUCTION

Our GETREN® L 6000 is being used in the continuous extrusion of rubber on mandrels, with hose lengths between 2 and 400 m. It is water based, thus requires a certain drying time before extrusion, in order to form a uniform, closed release film. The drying time can be reduced by IR lamps or hot air ventilation, otherwise the coated mandrels need to rest for at least 24 hours. GETREN® L is compatible with all conventional types of rubber and does not impose any special waste water treatment. It is also compatible with all common mandrels materials. Furthermore, it can be easily washed off.

Rubber Long Hose Release Agents | GETREN® L Table

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>EPDM</th>
<th>NBR</th>
<th>CR</th>
<th>ECO/CNM</th>
<th>FKM</th>
<th>CHEMICAL BASE (Active Content)</th>
<th>EFFLUX TIME (DIN EN ISO 2431)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L 6000</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>Polyether (35%)</td>
<td>15–35 s</td>
</tr>
</tbody>
</table>

- **Main Use**
- **Secondary Use**
- Suitable for all mandrels (plastic, metal and rubber-like)

**GETREN® L – main benefits**
- Excellent release effect
- Water based
- Easy washability
- No swelling of the rubber
- Does not contain solvents (i.e. no emission of volatile organic compounds and no negative impact on waste water
THE GETREN® M SERIES

RELEASE AGENTS FOR MOLDED RUBBER PARTS, ELASTOMERS AND SELECT POLYMERS

Our GETREN® M products are designed for compression and for the production of injection molded rubber parts, drive belts and conveyor belts. Being temperature stable up to 200°C, they allow easy demolding and reduce soiling of the mold surface, which guarantees the dimensional accuracy of the molded parts and significantly prolongs the service life of molds between cleaning intervals. We offer both silicone oil based and silicone oil free formulations that are compatible with all conventional types of rubber. They can be used for the release of specific elastomer and plastic (e.g. latex) injection molding systems in which surface quality is paramount.

Rubber Molding Release Agents | GETREN® M-Series Table

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>MATERIALS</th>
<th>CHEMICAL BASE (Active Content)</th>
<th>EFFLUX TIME (DIN EN ISO 2431)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 2000</td>
<td></td>
<td>Polyether (30–40%)</td>
<td>15 – 35 s</td>
</tr>
<tr>
<td>M 2200</td>
<td></td>
<td>Silicone oil (38–40%)</td>
<td>30 – 60 s</td>
</tr>
<tr>
<td>M 2235</td>
<td></td>
<td>Methyl silicone oil (32–34%)</td>
<td>31 – 39 s</td>
</tr>
<tr>
<td>M 2300</td>
<td></td>
<td>Silicone oil (37–40%)</td>
<td>35 – 60 s</td>
</tr>
<tr>
<td>M 2500</td>
<td></td>
<td>OMS* (35–41%)</td>
<td>35 – 55 s</td>
</tr>
<tr>
<td>M 2600</td>
<td></td>
<td>OMS* (40%)</td>
<td>27 – 35 s</td>
</tr>
</tbody>
</table>

ITO Main Use | ITO Secondary Use | *OMS (Organo-Modified Silicone), i.e. silicone oil free

GETREN® M series – main benefits

• Excellent release effect
• Temperature stability up to 200°C
• Does not contain solvents
• Formation of a uniform film on the mold
• No negative impact on the surface of the mold

CV-­joint boot
THE GETREN® P SERIES

SLIDING AGENTS FOR WINDOW RUBBER SEALS

Whenever different surfaces come into contact, friction occurs. The assembly of rubber profiles into flat paneled window frames clearly shows this effect: The rubber and the frame rub against one another and it requires a lot of power to assure precise positioning of the window components. Using a sliding agent that forms a lubricating film on the profile considerably facilitates this process, as friction is being reduced.

Sliding agents made by Evonik, the GETREN® P series, are based on silicone oil emulsions or organo modified siloxanes (= OMS). They can be applied by either dipping or spraying after vulcanization, offer excellent sliding properties and are suitable for the use on Plexiglas® or polycarbonate plates without causing stress cracks.

While silicone oil emulsions are the traditional solution, sliding polymers based on OMS are a more advanced generation of sliding agents offering a significant benefit: Converse to silicone oils that never dry out completely, OMS based products form a dry film on the profiles. OMS must not be mistaken with silicone oils which are polydimethylsiloxanes (PDMS).

Evonik works also closely with external and renowned third party institutes for field testing and further product developments.

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### Product overview GETREN® P series

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>RUBBER TYPE</th>
<th>COMMENT</th>
<th>CHEMICAL BASE (ACTIVE CONTENT)</th>
<th>EFFLUX TIME (DIN EN ISO 2431)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 3000</td>
<td>All types of rubber</td>
<td>Compatible with PLEXIGLAS®</td>
<td>Silicone oil (35%)</td>
<td>20–40 s</td>
</tr>
<tr>
<td>P 3300</td>
<td>All types of rubber</td>
<td>Compatible with PLEXIGLAS®</td>
<td>OMS (100%)</td>
<td>20–40 s</td>
</tr>
</tbody>
</table>

With regard to the use in combination with self-cleaning glasses, please note that we do not conduct any own tests concerning our products’ compatibility. This remains to be checked with the relevant glass manufacturer. We do not assume and therefore hereby exclude any warranty or liability in this regard, even if the relevant glass manufacturer has approved our products for this application.
GETREN® P series – main benefits

- Excellent sliding properties and reduction of friction
- Compatibility with PLEXIGLAS®
- Various chemical bases for different customer needs
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