SILICONES FOR PROSTHETIC AND ORTHOPEDIC APPLICATIONS
As an innovative chemical company, WACKER develops intelligent solutions that satisfy customer needs and also contribute significantly to a higher quality of life worldwide.

Clearly focused on the future, we intend to continuously enhance the quality of our products and improve our services. Close, two-way customer relationships play an essential role here. In today’s digital age, electronic media are the main channel for enabling both this direct exchange and our modern brand communications.

We want to use these state-of-the-art media to present our product innovations and solutions to you in an even better, more fascinating way.

Enter the Multimedia World of WACKER with WACKER Square

Our “WACKER Square” app delivers in-depth news about products, industries and the WACKER Group to your mobile device and – with a click on “MyOrders” – directly to your home. Alongside high-quality videos, images and press releases, the app offers you comprehensive brochures for your personalized “MySquare” media collection – and for subsequent offline use or for sharing with others.

You can also use our “WACKER Square AR” app. It allows you to experience augmented-reality applications firsthand. Be amazed by previously unimaginable insights as augmented reality merges reality, visions of the future and knowledge – adding value through information.

It’s so easy:

Download the WACKER Square AR app

Open Scan Experience

DISCOVER A BROAD RANGE OF MEDICAL APPLICATIONS IN 3D

For more detailed information, use our WACKER Square AR app. With your mobile device, just scan the printed graphics marked with this sign.

Why not experience this new application right away, on this page?
Whatever challenges arise in the future, silicone rubbers from WACKER provide future-proof solutions that satisfy even the most exacting of demands.

The average age of the population is increasing steadily. As more and more people gain access to modern healthcare, statutory requirements for medical products and services are becoming stricter. As a result, the healthcare industry faces ever-increasing demands with regard to the safety and efficiency of its products and solutions. WACKER’s role in this trend is to provide future-proof, pure silicone grades tailored to the most rigorous of medical demands – demands that meet the ever-higher safety standards encountered in state-of-the-art medical technology.

As a European pioneer in the field of silicone chemistry, WACKER’s strength lies not only in its unique expertise and future-oriented research, but also in its integrated raw-material system. Combined with its innovative WACKER CLEAN OPERATIONS production standard, WACKER guarantees verified quality and purity that can be traced from the end product back to the raw-material source.

As Fascinatingly Versatile as the Human Body

The human body is a wonderful work of art and a highly complex piece of engineering. When it is necessary to provide support or artificial replacements for particular physical functions in the human body, or to promote healing, WACKER provides an impressive, customized range of silicone products and related services.

All products in the medical silicone sector have one thing in common – they come into intimate contact with the human body, where they enhance quality of life by providing support in terms of functionality and aesthetics. That is why the materials must satisfy such rigorous demands.

WACKER RTV-2 Systems Make All the Difference

When it comes to matters of human health and when certain physical functions need to be relieved or replaced, it is essential that the materials employed meet the highest quality requirements. High-purity silicones absolutely make the grade and therefore play a key part in medicine and medical technology.

The addition-cure products are formulated as two-pack systems: A and B. The platinum catalyst is separate from the curing agent. After components A and B have been mixed, the mixture cures to an elastomer at room temperature. The process can be greatly accelerated by raising the temperature to between 70 and 130 °C.

Notable characteristics of WACKER’s RTV-2 silicone rubbers are their relatively low viscosity and hence excellent pourability. Not only can the hardness of the cured rubber be varied greatly (Shore 00 to Shore A), but its consistency can range from low viscosity to spreadable. The pot lives and curing times of our ELASTOSIL® and SILPURAN® brand silicone rubber grades designed to meet specific prosthetic and orthopedic demands can be adapted, making these rubbers suitable for standard manufacturing processes. They can be applied in a number of ways, such as encapsulation, brushing and dip-coating.

WACKER has a specialty RTV-1 adhesive – SILPURAN® 4200 – for medical applications.

Safe Application Characteristics

- Biocompatibility
- Biodurability: low surface tension, thermal stability and chemical stability
- Good resistance to a large number of solvents and chemicals
- No organic plasticizers involved
- Sterilizable for single and repeated use [sterilizable with steam, ethylene oxide, electron beams and γ-rays]
- The excellent mechanical properties are highly resistant to aging, weathering, heat and radiation
- High transparency
- silicones do not support microbial growth (due to their hydrophobicity)
- Easy processing due to low viscosity and good mixing characteristics
- Addition-cure RTV-2 systems do not release any by-products on curing
- Broad hardness range
- High degree of comfort for wearer; breathability

INNOVATIVE SOLUTIONS FOR ORTHOPEDICS & PROSTHETICS

WACKER supplies room-temperature-curing (RTV) ELASTOSIL® and SILPURAN® brand silicone rubber grades designed to meet specific prosthetic and orthopedic demands.
Performance That
Silicones for Prosthetics

High Performance in its Purest Form
Silicone Rubber for Orthopedics

Prosthetics is a highly sensitive area. WACKER’s RTV-2 silicone rubber grades have an extraordinary property profile that makes them ideal for producing aesthetic and functional prostheses for fingers, hands and partial-foot designs, as well as for orthoses, epipodes and external mammary prostheses.

Elastomers come into play, as they give orthopedic products the product of choice for truss pads, orthotic devices, liners and other services. WACKER silicone rubbers are the product of choice for truss pads, orthotic devices, liners and other orthopedic products.

Orthopedic products must be able to damp a considerable amount of shock or vibration, and to apply gentle, comfortable compression. This is where ELASTOSIL® P and SILPURAN® silicone elastomers come into play, as they give manufacturers of orthopedic devices a comprehensive portfolio of products and services.

ELASTOSIL® – Production Process Used by the Prosthetics Sector

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A mammary prosthesis mold consists of a thin shell (e.g., PUR) filled with ELASTOSIL® silicone gel. The use of thermoplastic shell material makes it possible to shape prostheses individually.</td>
<td>• The shell is filled with ELASTOSIL® gel. The shape of the prosthesis is set using a negative mold.</td>
<td>• ELASTOSIL® gel begins curing at room temperature. The process can be accelerated by heat input (approx. 70 °C to 130 °C). The prosthesis is then demolded and packaged.</td>
</tr>
</tbody>
</table>

ELASTOSIL® RTV-2 Silicone Rubber Grades for the Prosthetic Industry

<table>
<thead>
<tr>
<th>Product name</th>
<th>Mixing ratio</th>
<th>Viscosity A</th>
<th>Viscosity B</th>
<th>Final hardness Shore A</th>
<th>Final hardness Shore B</th>
<th>Tensile strength ISO 868</th>
<th>Tensile strength ASTM 2240</th>
<th>Elongation at break ISO 868</th>
<th>Elongation at break ASTM D 624 B</th>
<th>Tear resistance ASTM D 624 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELASTOSIL® P 7870</td>
<td>1:1</td>
<td>1,900</td>
<td>1,290</td>
<td>&lt; 15</td>
<td>12</td>
<td>1.9</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
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<tr>
<td>ELASTOSIL® P 7867</td>
<td>1:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 20</td>
<td>9</td>
<td>3.7</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® P 7871</td>
<td>1:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 35</td>
<td>14</td>
<td>2.6</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® P 7868</td>
<td>1:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 50</td>
<td>19</td>
<td>2.2</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® P 7869</td>
<td>1:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 65</td>
<td>25</td>
<td>1.8</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® P 7870</td>
<td>2:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 80</td>
<td>30</td>
<td>1.4</td>
<td>580</td>
<td>13</td>
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</tr>
<tr>
<td>ELASTOSIL® P 7871</td>
<td>2:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 90</td>
<td>35</td>
<td>1.0</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® P 7872</td>
<td>2:1</td>
<td>1,500</td>
<td>1,260</td>
<td>&lt; 100</td>
<td>40</td>
<td>0.6</td>
<td>580</td>
<td>13</td>
<td>3</td>
<td></td>
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</tbody>
</table>

These figures are intended as a guide and should not be used in preparing specifications.

ELASTOSIL® RTV-2 Silicone Gels for External Mammary Prosthetics

<table>
<thead>
<tr>
<th>Product name</th>
<th>Mixing ratio</th>
<th>Viscosity A</th>
<th>Viscosity B</th>
<th>Pot life at 23 °C</th>
<th>Gel time at 70 °C</th>
<th>Penetration, hollow cone</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELASTOSIL® P 7616-160</td>
<td>1:1</td>
<td>350</td>
<td>1,400</td>
<td>&gt; 6</td>
<td>22</td>
<td>160</td>
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<tr>
<td>ELASTOSIL® P 7616-195</td>
<td>1:1</td>
<td>350</td>
<td>1,200</td>
<td>&gt; 6</td>
<td>12</td>
<td>195</td>
</tr>
<tr>
<td>ELASTOSIL® P 7618</td>
<td>1:1</td>
<td>50</td>
<td>300</td>
<td>&gt; 6</td>
<td>15</td>
<td>220</td>
</tr>
<tr>
<td>ELASTOSIL® P 7619</td>
<td>2:1</td>
<td>100</td>
<td>1,250</td>
<td>&gt; 6</td>
<td>22</td>
<td>220</td>
</tr>
<tr>
<td>ELASTOSIL® P 7630</td>
<td>1:1</td>
<td>8,000</td>
<td>8,000</td>
<td>0.5</td>
<td>3</td>
<td>220 (density 0.62 g/cm³)</td>
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<tr>
<td>ELASTOSIL® P 7636</td>
<td>1:1</td>
<td>8,000</td>
<td>8,000</td>
<td>4</td>
<td>10</td>
<td>258 (density 0.76 g/cm³)</td>
</tr>
</tbody>
</table>

These figures are intended as a guide and should not be used in preparing specifications.

ELASTOSIL® RTV-2 Silicone Gels for Anti-Decubitus Applications

<table>
<thead>
<tr>
<th>Product name</th>
<th>Mixing ratio</th>
<th>Viscosity A</th>
<th>Viscosity B</th>
<th>Pot life at 23 °C</th>
<th>Penetration, hollow cone</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELASTOSIL® P 26028 VP</td>
<td>1:1</td>
<td>100</td>
<td>2,000</td>
<td>9</td>
<td>150</td>
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These figures are intended as a guide and should not be used in preparing specifications.

SILPURAN® RTV-1 Silicone Rubber for Secure Adhesion in Medical Applications

<table>
<thead>
<tr>
<th>Product name</th>
<th>Viscosity</th>
<th>Final hardness Shore A</th>
<th>Tensile strength ISO 868</th>
<th>Elongation at break ISO 868</th>
<th>Tear resistance ASTM D 624 B</th>
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</thead>
<tbody>
<tr>
<td>SILPURAN® 4200</td>
<td>200,000</td>
<td>35</td>
<td>5.5</td>
<td>300</td>
<td>10</td>
</tr>
</tbody>
</table>

These figures are intended as a guide and should not be used in preparing specifications.

SILPURAN® RTV-2 Silicone Rubber Grades for the Orthopedic Industry

<table>
<thead>
<tr>
<th>Product name</th>
<th>Blending ratio</th>
<th>Viscosity A</th>
<th>Viscosity B</th>
<th>Final hardness Shore A</th>
<th>Tensile strength ISO 868</th>
<th>Elongation at break ISO 868</th>
<th>Tear resistance ASTM D 624 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILPURAN® 2400/25</td>
<td>1:1</td>
<td>3,300</td>
<td>2,000</td>
<td>&lt; 35</td>
<td>25</td>
<td>1.3</td>
<td>700</td>
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<tr>
<td>SILPURAN® 2420</td>
<td>1:1</td>
<td>2,500</td>
<td>3,500</td>
<td>12</td>
<td>60</td>
<td>4.0</td>
<td>650</td>
</tr>
</tbody>
</table>

These figures are intended as a guide and should not be used in preparing specifications.
WACKER silicones meet the modern orthopedic industry’s most exacting demands. The primary characteristics of these products are outstanding functionality, permanent stability and ease of processing, along with a broad scope of applications.

The SILPURAN® product line, moreover, is certified to specific test standards and complies with the WACKER CLEAN OPERATIONS production standard, thus guaranteeing verified purity that can be traced from the end product back to the raw-material source.

SILPURAN® – Much More Than Just a Product

- The SILPURAN® product line is certified as per selected ISO 10993 and USP Class VI tests
- Production complies with the WACKER CLEAN OPERATIONS standard
- SILPURAN® silicone rubber grades are dispensed or packaged in Class 8 cleanrooms to prevent contamination by coarse particles
- Visual inspection and 50-μm filters ensure that SILPURAN® products reach our customers in an absolutely pure and clean state

Individual Solutions and Technical Support

ELASTOSIL® and SILPURAN® give you the best service available, ensuring your success. Always at the ready, our teams of experts help you to optimally adapt the virtually unlimited scope and innovative strength of WACKER’s silicone rubber grades to your needs. The resulting customized product solutions will help secure lasting prosperity for your business.
WACKER is one of the world’s leading and most research-intensive chemical companies, with total sales of €4.92 billion. Products range from silicones, binders and polymer additives for diverse industrial sectors to bioengineered pharmaceutical actives and hyperpure silicon for semiconductor and solar applications. As a technology leader focusing on sustainability, WACKER promotes products and ideas that offer a high value-added potential to ensure that current and future generations enjoy a better quality of life based on energy efficiency and protection of the climate and environment.

Spanning the globe with 4 business divisions, we offer our customers highly-specialized products and comprehensive service via 23 production sites, 21 technical competence centers, 13 WACKER ACADEMY training centers and 50 sales offices in Europe, North and South America, Asia – including a presence in China. With a workforce of some 13,800, we see ourselves as a reliable innovation partner that develops trailblazing solutions for, and in collaboration with, our customers. We also help them boost their own success. Our technical centers employ local specialists who assist customers worldwide in the development of products tailored to regional demands, supporting them during every stage of their complex production processes, if required.

WACKER e-solutions are online services provided via our customer portal and as integrated process solutions. Our customers and business partners thus benefit from comprehensive information and reliable service to enable projects and orders to be handled fast, reliably and highly efficiently.

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All figures are based on fiscal 2017.
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