When compliance meets performance

DOWSIL™ 8024 Food Contact Release Emulsion
This is Dow

2019 Net Sales: $43B
Employees: ~36,500
Manufacturing Sites: 109 sites
Global Reach: 31 countries

Note: All data as of December 31, 2019

Dow Consumer Solutions

2019 Net Sales: $5.4B
Employees: ~7,000
Manufacturing Sites: 21 sites
Global Reach: 12 countries

Innovation & manufacturing footprint across North America, Latin America, Europe and Asia

Largest global silicones player¹ with 75+ years of industry leadership

Note: All data as of December 31, 2019

¹Largest global silicones player, based on annual sales
DOW DESIGNS SERVICES TO MEET THE EVOLVING NEEDS OF CUSTOMERS, so interactions are simple, intuitive and effective.

• Customer-focused Dow.com features an expanded e-commerce platform enabling easy product selection, sampling and purchase of select products
• The annual Customer Experience (CX) survey captures feedback from direct customers and distributors to help identify areas for improvement

DOW SHARES OUR CUSTOMERS’ PASSION FOR INNOVATION with an openness and agility that makes working with our people a pleasure.

• Customers collaboratively innovate with us at our new Inspiration Studio in Seneffe, Belgium, where Dow’s materials science technologies are on display all in one place

DOW EARNs OUR CUSTOMERS’ TRUST with consistent quality and supply while partnering to improve their business and the planet.

• Regional Customer Care Centers get to the root of customer problems and provide real-time analytics to improve CX
• Partnering with customers on new recycling technologies and resource conservation as part of advancing a circular economy

DELIVERING A WINNING CUSTOMER EXPERIENCE
PROVEN, RELIABLE, SAFE AND EFFECTIVE SOLUTIONS FOR INDUSTRIAL AND CHEMICAL PROCESSING

- Foam control agents
- Coating resins & binders
- Coating & ink additives
- Surface & material modifiers
- Processing aids
- Mold release agents
- Surfactants
- Formulation intermediates
- Silanes

- Pulp Processing
- PU Additives
- Coatings

- Food & Beverages
- Plastic Additives
- Textile Treatment

- Agrochemicals
- Automotive Care
- Leather Finishing

Optimized manufacturing process
Enhanced product properties
Improved sustainability performance
CONTENT

• Market trends
• Silicones in food release applications
• New DOWSIL™ 8024 Food Contact Release Emulsion
• Other Dow food contact silicone emulsions
## Food processing industry

### Growth drivers
- Consumer healthier choices
- Consumer protection regulations
- Urbanization
- Socioeconomic development

### Trends & developments
- Safe
- Natural appeal
- Wellness

### Competitiveness
- Flexible responding to market trends
- Continuously strive for productivity improvements
FUNCTION AND FORMS OF RELEASE AGENTS

- To keep a continuous inert parting film between a mold and a molded object to allow easy removal of the object from the mold.
- To improve mar and scratch resistance, as well as appearance, of the finished product.
- Dow silicone release agents provide release for: Plastics, Rubber, Metals ...
Poll: What release agents are you familiar with?

a) Vegetable oil
b) Organic waxes
c) Silicones
d) Lecithin
e) Other
# Meet Your Productivity Goals with Silicones

<table>
<thead>
<tr>
<th></th>
<th>Silicones</th>
<th>Non-silicones</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low use levels</strong></td>
<td>Efficient release with only 1%-5% actives level</td>
<td>Higher use levels</td>
</tr>
<tr>
<td></td>
<td>Reduced release agent cost, better process control, lower reject rates</td>
<td>More material needed, which can increase cost and process variations</td>
</tr>
<tr>
<td><strong>Safe / non-reactive</strong></td>
<td>Non reactive to finished products</td>
<td>Odor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some organic release agents affect odor due to higher use levels</td>
</tr>
<tr>
<td><strong>Heat stable</strong></td>
<td>Ideal for high-temperature applications. Superior oxidation resistance,</td>
<td>Inferior heat stability</td>
</tr>
<tr>
<td></td>
<td>prevents buildup</td>
<td>Organics may degrade at high temperatures, which may cause film sticking</td>
</tr>
<tr>
<td><strong>Low volatility</strong></td>
<td>No excessive film or smoke</td>
<td>More volatility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some organic release agents volatilize at higher temperature producing smoke</td>
</tr>
<tr>
<td><strong>Other benefits</strong></td>
<td>Other benefits: less residue and dry hand feel</td>
<td>Others: oil trace</td>
</tr>
</tbody>
</table>
}
Typical release applications
NEW DOWSIL™ 8024 FOOD CONTACT RELEASE EMULSION

- Useful as release agent for direct and indirect food contact
- High release efficiency
- Heat resistance
- Odorless
- Non-staining
- Non-corrosive
- Lubrication retain on surface

Compliance with major food contact regulations and certifications

- **China: GB 9685**: (Plastic: PET; Coating; Adhesive; Paper)
- **USA: FDA**: 21 CFR 176.170, 21 CFR 176.180, 21 CFR 181.28
- **Germany**: BfR XV, BfR XXXVI, BfR XXXVI/2
- **EU**: Plastics Regulation 10/2011
- **NSF M1, 3H**
DOWSIL™ 8024 FOOD CONTACT RELEASE EMULSION – KEY PROPERTIES

Emulsifier type: Nonionic
Diluent: Water

<table>
<thead>
<tr>
<th>CTM*</th>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0176</td>
<td>Appearance</td>
<td>milky-white liquid</td>
</tr>
<tr>
<td>0862</td>
<td>Non-volatile content</td>
<td>38-42 %w/w</td>
</tr>
<tr>
<td>0001</td>
<td>Specific Gravity</td>
<td>1.0</td>
</tr>
<tr>
<td>0007</td>
<td>pH</td>
<td>3-5</td>
</tr>
</tbody>
</table>

CTM*: Corporate Test Method, copies of CTM’s are available upon request.
**MARKET FEEDBACK**

<table>
<thead>
<tr>
<th><strong>Conveyor belt</strong></th>
<th><strong>Bakery &amp; confectionery</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to use, easy to spray</td>
<td>High temperature resistance</td>
</tr>
<tr>
<td>High release efficiency, effective at low levels</td>
<td>Low use level</td>
</tr>
<tr>
<td>Stable upon dilution</td>
<td>Non reactive &amp; odorless</td>
</tr>
<tr>
<td>Reduce static electricity in PET containers</td>
<td>No build-up</td>
</tr>
<tr>
<td>Stable upon dilution</td>
<td>No impact on nutritional profile</td>
</tr>
</tbody>
</table>
HOW TO USE DOWSIL™ 8024 FOOD CONTACT RELEASE EMULSION

Paper and plastic part release
- Dilute with water to 10-30 parts
- Spray in thin layer on film or evenly on mold

Lubricity for sheet anti-blocking
- Dilute with more water (100-200 parts max)
- Spraying in thin layer

Reformulate with organics
- Good compatibility with other food contact ingredients
## More Options of Food Contact Silicone Release Emulsion

<table>
<thead>
<tr>
<th>Property</th>
<th>DOWSIL™ 8024 Food Contact Release Emulsion</th>
<th>DOWSIL™ SH 7024 Emulsion</th>
<th>XIAMETER™ MEM-0024 Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-volatile content</td>
<td>40 %</td>
<td>40 %</td>
<td>38.5 to 42.5 %</td>
</tr>
<tr>
<td>Material description</td>
<td>Milky-white liquid</td>
<td>Milky-white liquid</td>
<td>White/off-white, smooth flowable liquid</td>
</tr>
<tr>
<td>Shelf life</td>
<td>360 days</td>
<td>360 days</td>
<td>270 days</td>
</tr>
<tr>
<td>Regional availability</td>
<td>Global</td>
<td>Japan</td>
<td>North America, Latin America, South East Asia, India</td>
</tr>
<tr>
<td>Dilution ratio suggestions</td>
<td>20 to 40 parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application method</td>
<td>Spraying, dipping, wiping, or brushing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>pH, as supplied</td>
<td>3 ~ 5</td>
<td>5.5 ~ 9.0</td>
<td>6.5 ~ 8.5</td>
</tr>
<tr>
<td>Emulsifier type</td>
<td>Nonionic</td>
<td>Nonionic</td>
<td>Nonionic</td>
</tr>
<tr>
<td>Diluent</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
</tr>
<tr>
<td>Applications</td>
<td>Proven release for paper, plastic; Sewing thread lubrication; Anti-stick for plastic sheet.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LEARN MORE / ORDER SAMPLE

www.dow.com/food

CONTACT US

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## Dow Silicone Antifoams Portfolio

### Compliant: GMO free, Kosher, Halal, FDA 21 CFR 173.340 and other

Globally available

21 CFR 173.340 Use level: 10 ppm actives allowed in food ready to be consumed. Refer to 21 CFR 173.340 for additional details and other allowed use levels.

Common uses: dairy, juices, soft drink concentrates, concentrated soups, protein supplement sport drinks, meat processing, jams, syrups, fermentations. Suitable for High and Low temperature processing.

<table>
<thead>
<tr>
<th>Product</th>
<th>Silicone actives / Form</th>
<th>Aqueous / Non-aqueous systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>XIAMETER™ AFE-1510 Antifoam Emulsion</td>
<td>10% non-ionic emulsion</td>
<td>Aqueous</td>
</tr>
<tr>
<td>XIAMETER™ AFE-1520 Antifoam Emulsion</td>
<td>20% non-ionic emulsion</td>
<td>Aqueous</td>
</tr>
<tr>
<td>XIAMETER™ AFE-1530 Antifoam Emulsion</td>
<td>30% non-ionic emulsion</td>
<td>Aqueous</td>
</tr>
<tr>
<td>XIAMETER™ ACP-1920 Powdered Antifoam</td>
<td>20% white fluffy powder</td>
<td>Aqueous</td>
</tr>
<tr>
<td>XIAMETER™ ACP-1500 Antifoam Compound</td>
<td>100% silicone compound</td>
<td>Non-aqueous</td>
</tr>
<tr>
<td>XIAMETER™ PMX-200 Fluid, 350 cs FG</td>
<td>100% silicone fluid</td>
<td>Non-aqueous</td>
</tr>
</tbody>
</table>
THANK YOU

Q&A

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