The surface finish of a material acts as its business card. Leather, plastic, textile, metal, glass, wood or stone – whatever the material, the finish is a crucial factor in how the quality is perceived. If a surface is to have lasting good looks, it needs effective protection and care. The silicones which WACKER produces specifically for household-care products make invaluable formulating and handling additives. They come in a comprehensive range of viscosities spanning a whole host of applications.

The outcome is ready-to-use, tailored household-care products that make buffing easier, boost shine and depth of shade, and provide lasting protection against damage. No matter which of our standard silicone fluids, organo-modified silicone fluids, silicone resins, silicone waxes or O/W emulsions you use, you can be sure they will give your high-end household-care products precisely the right property profile that today's consumers want. What purpose do silicones serve in household-care products? And where can they be used? You'll find the answers here – and if you have any questions, please contact us. Your direct link to us: info.silicones@wacker.com.

1. SILICONE PRODUCTS FOR FORMULATING HOUSEHOLD-CARE PRODUCTS

1.1 WACKER® AK Silicone Fluids
Standard grades in the WACKER® AK Silicone Fluids line come in a wide range of viscosities. Those used to formulate household-care products vary from 10 mm² s⁻¹ to 200,000 mm² s⁻¹. WACKER® AK Silicone Fluids improve the polishability, boost shine and depth of shade, and are characterized by good water repellency. Such a wide range of properties enables WACKER® AK Silicone Fluids to be employed in almost all automotive and household-care products.

The following empirical values can help you choose the right viscosity for formulating polishes:

- Within the WACKER® AK Silicone Fluid line, the lower-viscosity grades (100 to 1,000 mm² s⁻¹) are notable for their spreading power and lubricity. Grades in the upper viscosity range (1,000 to 60,000 mm² s⁻¹), by contrast, impart superior shine and color saturation.

- A mixture of 3 to 5 parts low-viscosity silicone fluid and 1 part high-viscosity silicone fluid has been found to produce the best polishability and shine.
1.2 Amino Polydimethylsiloxanes
WACKER supplies reactive and unreactive amino silicone fluids with varying contents of organic aminoalkyl groups.

- The reactive grades crosslink in the presence of atmospheric humidity to yield an insoluble polymer film that offers good detergent resistance and protection.

- The unreactive grades are characterized by excellent active-ingredient stability and a very long shelf life. Even when used frequently, these products do not cause any build-up in the material.

Like the standard grades in the WACKER® AK Silicone Fluid line, amino silicone fluids improve polishability while enhancing color saturation and conferring improved, longer-lasting water repellency. For this reason, amino silicone fluids are chiefly used to formulate household-care products.

The following guidelines can help you choose the amino silicone fluid that best meets your requirements for water repellency and polishability.

- Water repellency within the product line increases in the order of WACKER® L 653 to L 656 to L655.

- Polishability within the line increases in the order of WACKER® L 655 to L 656 to L653.

1.3 Silicone Resins
The unreactive silicone resins WACKER® TPR, WACKER® MQ 803 TF and WACKER® 1035 form protective films when combined with standard grades in the WACKER® AK Silicone Fluid line. These films are water repellent and much more durable than films formed entirely by standard silicone fluids or amino silicone fluids, and their hardness can be varied. These outstanding properties render silicone resins the products of choice for formulating superior surface-care products.

1.4 Silicone Waxes
When it comes to long-lasting water repellency, standard silicone fluids, amino silicone fluids and silicone resins can’t beat silicone waxes. Which is why WACKER silicone waxes are mainly employed in the formulation of premium-grade polishes and impregnating agents.

1.5 Silicone Emulsions
Manufacturers of household-care products who have no emulsification facilities of their own can use O/W emulsions that WACKER prepares from its major silicone active ingredients.

- Grades E 10, E 1044 and E 3155 are emulsions based on silicone fluids.

- Emulsion E 22 is based on a very high-viscosity silicone fluid.

- E 1656 is a nonionic emulsion based on an amino silicone fluid.

- Emulsions E 36 and E 37 are based on silicone resins.

- E 32 is a nonionically stabilized silicone wax emulsion.

- Emulsion NE 4720
All silicone emulsions from WACKER can be used in the same applications as the respective silicone active ingredient. Our emulsions are readily diluted with water, which is preferably fully deionized. We do recommend, though, that diluted emulsions be used up quickly. It is also generally advisable to homogenize the emulsions prior to use.

1.6 Pigment Pastes
ELASTOSIL® FL Pigment Pastes from WACKER are ready-to-use compounds of pigments and reactive silicone polymers, and are ideal for dyeing shoe polishes. The pigment pastes are simply stirred into the oil phase of the polish. The amount to be added varies from 0.5% to 4%, with the exact figure depending on the desired color intensity.

2. APPLICATIONS

2.1 Shoe & Leather Polishes
Shoe and leather polishes mostly contain various waxes, silicone fluids, and sometimes pigments. For smooth leathers, combining low-viscosity and high-viscosity silicone fluids makes for both a glossy shine and easy buffing. The corresponding silicone fluid emulsions produce the same results. Formulations used in shoe wipes are normally based on mixtures of high-viscosity silicone fluids.

2.2 Fluorine-Free Textile/Leather Impregnation
Solvent-based formulations for dispensing into aerosol spray cans are made from combinations of silicone waxes and silicone resins. HC 303 is suitable for water-based pump-spray formulations (but pay attention to the particle size: see TDS). The silicone active ingredients permeate deep into the material structure and coat its fibers to provide excellent water repellency. Functional textiles completely retain their breathability.

2.3 Metal/Glass-Ceramics Polishes
Metal polishes are generally liquid or paste products formulated as O/W or W/O emulsions. Silicones make polishing easier, provide a lustrous shine and form a highly protective film on the metal’s surface. Glass-ceramics polishes are similar in composition, but contain specialty silicone active ingredients as well. These form a highly protective film on stovetops from which burned-on or very sugary spills are readily removed.

2.4 Furniture Polishes
Furniture polishes are mostly liquid O/W emulsions whose active ingredients are essentially silicone fluids and waxes. If the protective film is to have a high gloss and color saturation, amino silicone fluids are ideal here. However, for longer-lasting protection, silicone resins or waxes are preferred.

2.5 Floor Polishes
Floor polishes are generally liquid O/W emulsions or solvent-based formulations; the main active ingredients are silicones, waxes and polymers. They form a protective film of polish on the floors that meets a wide range of demands: good protection against dirt pick-up; a non-slip, hardwearing surface, ease of use, i.e. polishability, and a perfect finish.

2.6 Wood/Stone Impregnation
When applied from a water-based or solvent-based formulation, specialty silicone active ingredients penetrate deep into the material, creating a highly water-repellent protective film. The stone or wood retains all of its natural beauty and is easier to clean. Microemulsion HC 303 is the product of choice for all water-based systems.
3. WACKER SILICONES – THE BETTER ALTERNATIVE

No matter what the material is or where it is used, silicone active ingredients from WACKER always yield perfectly formulated household-care products of superior quality. Our surface-care products are comprehensively tested and are designed for outstanding compatibility in your formulations.

On request, we will gladly develop new product formulations tailored to your specifications, along with ready-to-use polishes. We will also perform statutory tests in accordance with your guide formulations.

Should you have any questions, our experts will be happy to answer them. Your direct link to us: info.silicones@wacker.com.