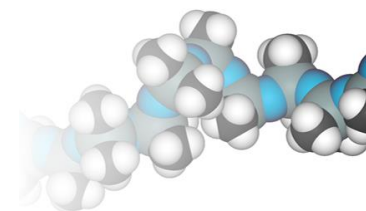
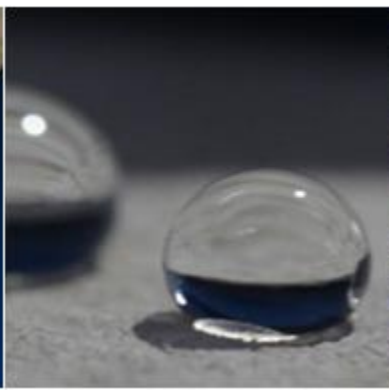


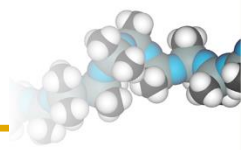
# HEALTH & SANITIZATION

2020



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# ABOUT ELKAY CHEMICALS

For 30 years, Elkay Chemicals Pvt. Ltd. has been manufacturing world class silicone based products. Elkay Chemicals is an economical, technology driven manufacturer.

ISO 9001-2015 (ICS) certified  
REACH registered  
State approved FDA facility

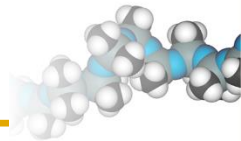
ELKAY has exported to 29  
countries for over 22 years



## The ELKAY Chemicals Advantage

- Long-standing relationships
- Flexible multi-purpose manufacturing facility
- Co-develop products with customers
- Confidentiality on sensitive projects
- Low cost, high quality products
- Excellent R&D facility and application lab

# INDUSTRY SEGMENTS SERVED



**De-foaming**



**Textile Finishing**



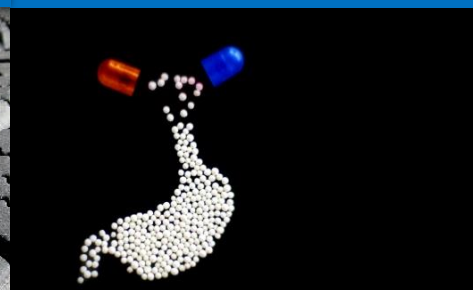
**Agriculture**



**Construction**



**Rubber & Tire**



**Pharmaceuticals**



**Petrochemicals**

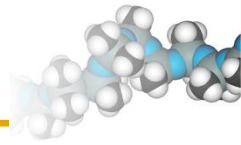


**Personal Care**

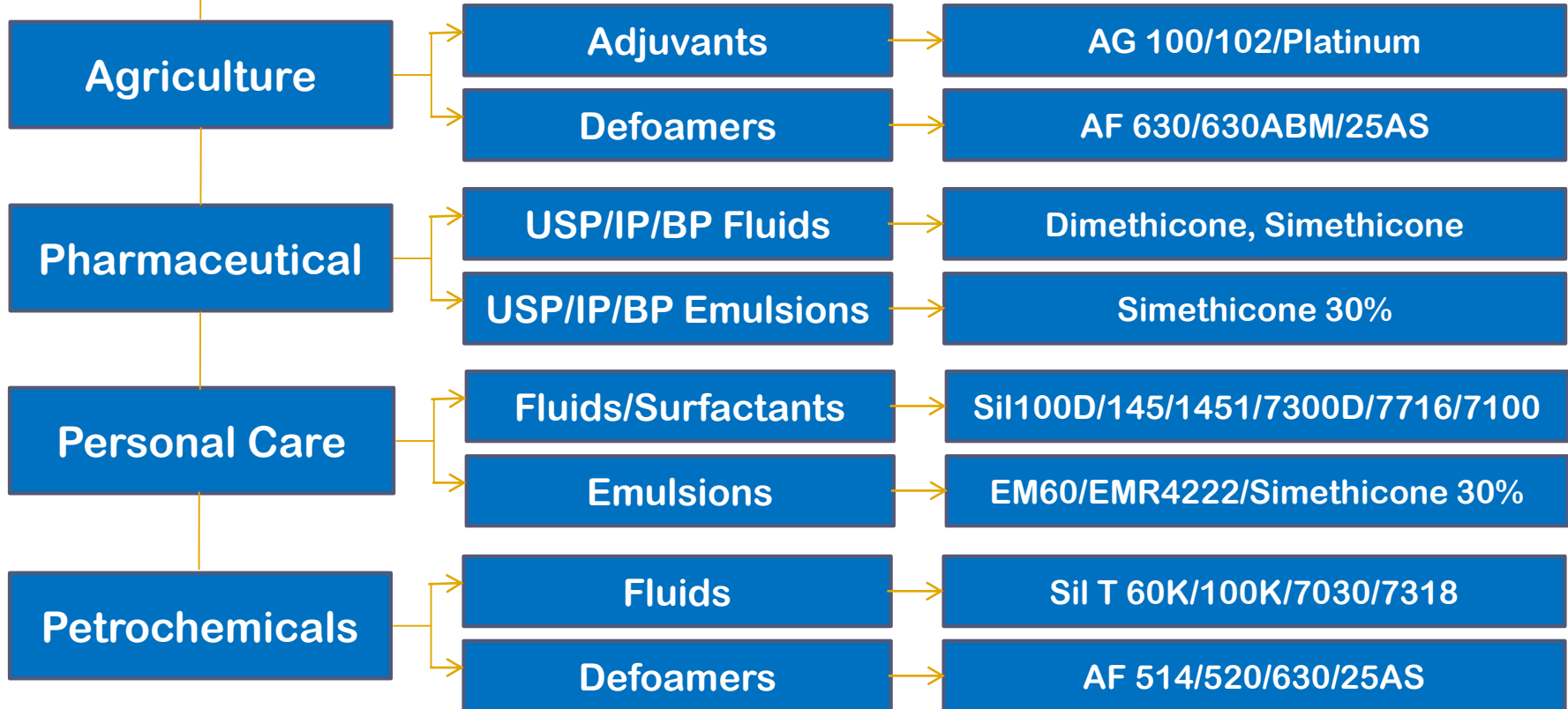


**Health/Sanitization**

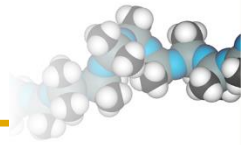
# PRODUCT RANGE



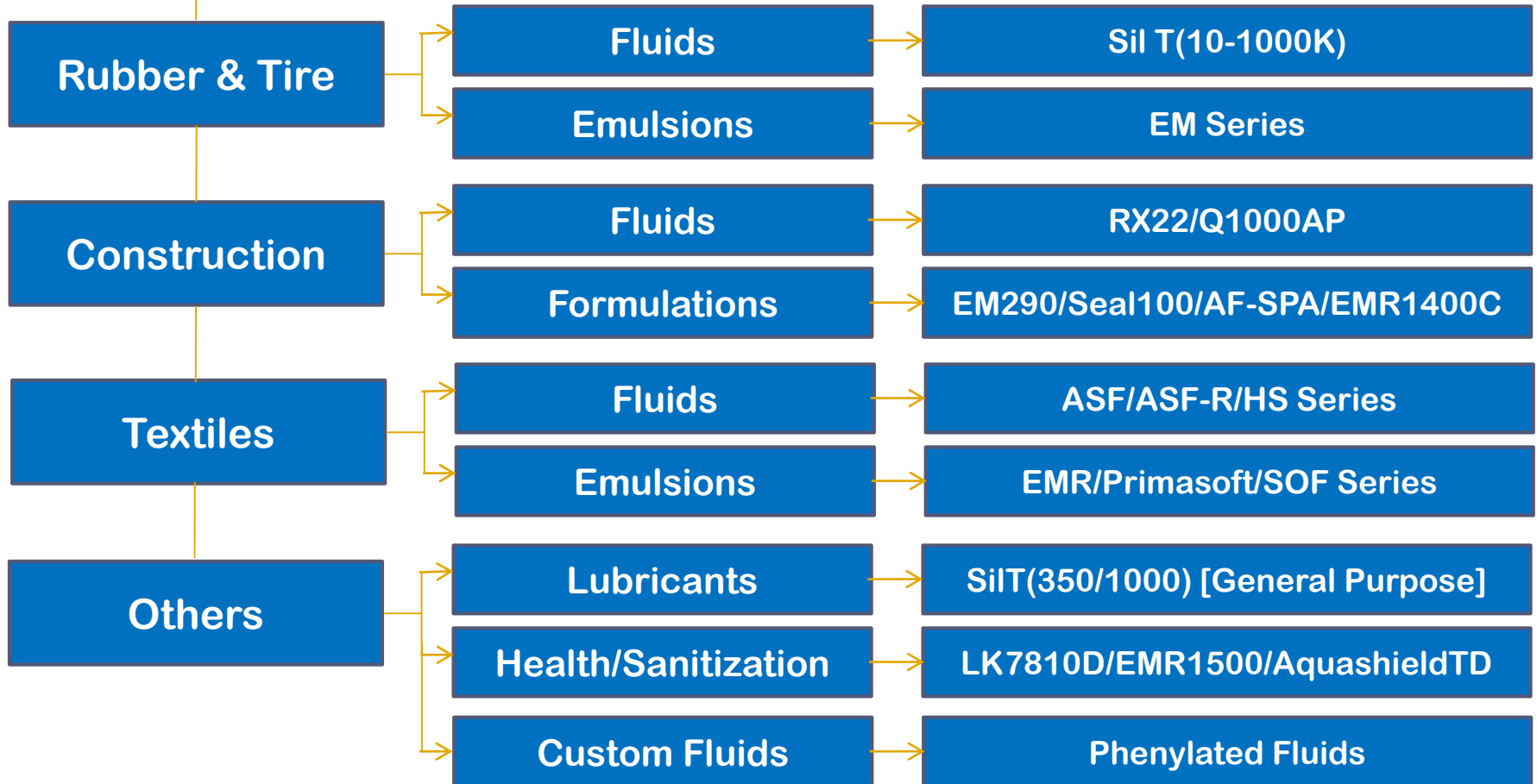
## Product Segments



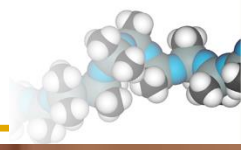
# PRODUCT RANGE

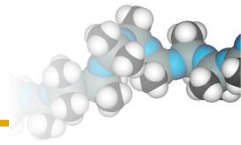


## Product Segments



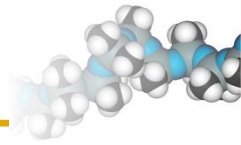
# HEALTH & SANITIZATION ELKAY





## Solutions for problems that India and the world are facing

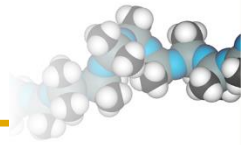
- Over burdened hospitals are using tents and paper to create facilities.
  - LK-AquashieldTD - Water protection for tents, clothing, masks, cardboard, PPE
- High quality constant use hand sanitizer is a must for the entire population.
  - LK-7300D - An alcohol sanitizer emollient
  - LK-7810D - An alcohol sanitizer foaming emollient
- Surfaces must be constantly sanitized – long term sanitization is a requirement hours, days or even years after application.
  - LK-EMR1500 - Water based anti-microbial aminosilicone polymer
  - LK-QSilSafe - Water based anti-microbial quat-silicone silane
  - LK-Q Series - Non-water based embedded anti-microbial approach



## Reasons for criticality in tent/fabric/cardboard protection

- As health care systems become overloaded, the requirements to create tent ICUs, shelters and protection increases. These must be water proof to avoid additional health issues from dampness, protect expensive ICU equipment and prevent contaminated rain water from entering. Common and cheap fabrics like nylon, polyester that are tear-resistant to be used which can allow for quick construction of such structures if they are highly water resistant.
- Cardboard bedding is cheap and quick to fabricate and has a growing market. For longevity and wash ability, it should have a water resistant durable coating. Silicones coatings do not no flake off like wax, offer detergent and stain resistance and can be sterilized.
- Cotton masks and other PPE can benefit from water protection to give them better wash ability, durability and odor prevention.





## Silicone in tent/fabric/cardboard protection

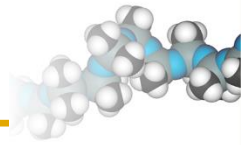
- Silicones are UV and weather resistant.
- Silicone resins/polymers can be cross-linked on any fabric surface to form a film like bonding layer on fabrics like Nylon/cotton/polyester and give significant water resistance.
- Silicone applications can be made using easy spray-on or roll-on formulations with moisture curing in 1 to 12 hours, having excellent adhesion and maintain the flexibility and breathability of the original fabric.
- They allow wash-ability and prevent stains in the case of cardboard.
- Elkay offers a ready made formulation AquaShieldTD that can be packaged as-is or further formulated in aerosol spray cans or standard cans.

## Product claims intended are:

- **Add water repellency to tents/clothing/fabric/furniture/cardboard**
- **Fabric dries faster, prevents water ingress, prevents mold/mildew**
- **Won't inhibit breathable properties of fabric**

One can treat approximately 100 sq. ft. of fabric with 1000 mL of spray.

# HEALTH: LK-AquaShieldTD



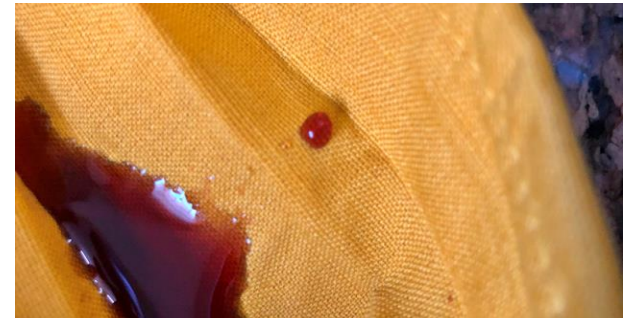
LK- AquaShieldTD is liquid coating solution that can create ultra-hydrophobic surfaces on virtually any material. It can be padded/exhausted on fabrics (low VOC solvent based), or simply sprayed on and allowed to set. This quick dry system can give complete durable water repellency to cotton, polyesters, blends, denims and tent fabrics. This is a ready to use solution with a low odor and safe carrier. No nanoparticles, no tin or toxic metals, no heavy odors – just dryness.

In the current market with health and sanitization being of the utmost importance, there is a significant need for creating quick water repellent and resistant surfaces.

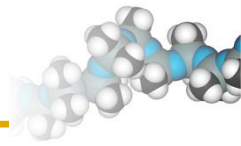
Hospitals require quick partitioning of rooms, the creation of extra spaces and the creation of quarantine wards. These can all be done with simple easily available cheap fabrics if the fabric can protect equipment and people from water ingress (rain, washing, body fluids). Furthermore, the fabric becomes more dirt resistant and repels stains.

Simple personal protective equipment like cotton masks, non-woven masks and cloth can also be made water resistant allowing for easier re-use, stain and odor prevention, almost instant drying and wearer comfort.

Use: The spray can be used as is or can be further solvent diluted. Do not add water. Use gloves and goggles when applying and stay far away from any open flames or sparks. Spray as evenly as possible and ensure complete wetting of the treated surface. For thicker fabrics (150gsm+) like umbrellas, spray on both sides. The product properties should ensure wetting, but in the rare case this is not happening, and the liquid is beading up – please contact your ELKAY representative. Ideally let the initial 1st coat dry for 30 minutes before applying a 2nd coat. Let the surface dry for at least 4 hours minimum and 24 hours ideally before use. It can also be aerosolized. This does not resist high pressure water jets or prolonged submersion in water bodies, however such use does not destroy the coating and it may be used again normally upon drying.



# HEALTH: HAND SANITIZER

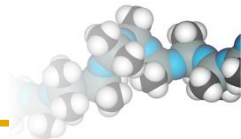


## Reasons for criticality in hand sanitizer

- Hand sanitizer that is alcohol based has a problem that the astringency of the alcohol dries out the skin on the hands and causes it to crack over time
- Studies have shown that the ingress of microbes and virus into cracked skin is extremely high and thus compromises the user.
- Foam dispensing of sanitizer is extremely useful allowing more controlled placement of the sanitizer (prevents squirting and spilling), reduces drying rate (giving higher possible germ killing) and reduces wastage. 60+% alcohol solutions are very difficult to foam, even with foam dispensers.



Emollients such as PEG-10 Dimethicone (alcohol foaming & emollient), PEG-12 Dimethicone (non-alcohol foaming, alcohol emollient) are cosmetically approved emollients and foaming agents used in quality hand sanitizers that have shown proven performance.



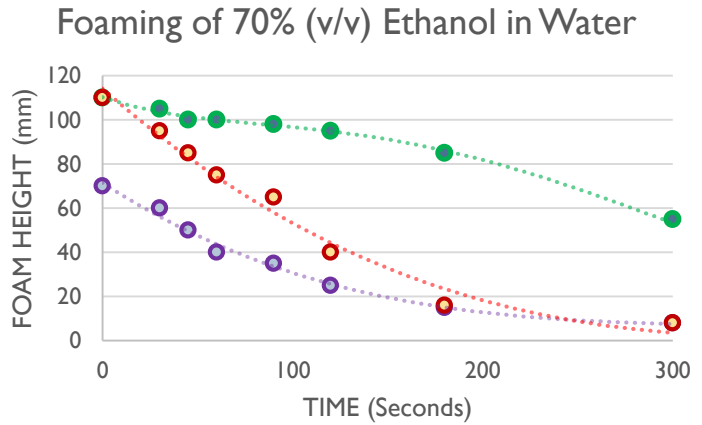
# HEALTH: HAND SANITIZER

## Silicone in hand sanitizers

- Silicones have excellent emolliency properties in cosmetics
- Silicones have very low surface tension so they spread very easily
- Silicone surfactants are the only class of materials that can foam alcohol (in the correct dispenser) for the duration of application (10-90 seconds)
- Silicones products in cosmetics are well known for pleasant, non-greasy feels in skin and hair care products. Non-staining, non-toxic, approved for use in hand sanitizer
- PEG-Silicones are well known as safe and excellent humectants
- PEG-Silicones are usable in both alcoholic and non-alcoholic hand sanitizers

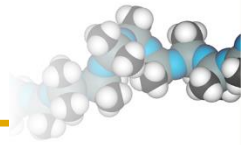


- LK-7810D (PEG-10 Dimethicone)
- Standard PEG-10 Dimethicone
- LK-7300D (PEG-12 Dimethicone)



# HEALTH: HAND SANITIZER

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## LK-7300D (INCI:PEG12-Dimethicone)

For foaming non-alcohol sanitizer with emolliency at 0.2-2.0%. For emolliency in alcohol sanitizers.

### PRODUCT FEATURES

Retains moisture, humectant  
Excellent stable foamer for water based sanitizers based on quaternary amines and similar additives  
Alcohol compatible (and emollient)  
Prevents chapping, dryness  
Wetting agent  
Soft, silky non-greasy feel

## LK-7810D (INCI:PEG10-Dimethicone)

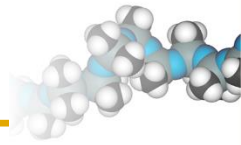
For foaming alcohol sanitizer with emolliency at 0.5-3.0%

### PRODUCT FEATURES

Retains moisture, humectant  
Excellent stable foamer for alcohol based sanitizers in the correct dispenser  
Alcohol compatible (and emollient)  
Prevents chapping, dryness  
Wetting agent  
Soft, silky non-greasy feel

# HEALTH: SURFACE SANITIZERS

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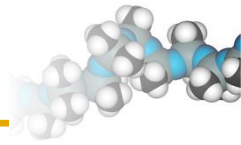
## Reasons for criticality in surface sanitizers

- Most common sanitization methods today are instant i.e. within 5-30 seconds of application, their efficacy of sanitization drops to zero.
- A vision exists for longer term (hours to years) sanitization for hospitals, offices, homes, vehicles and clothing.

## ELKAY Developments Underway:

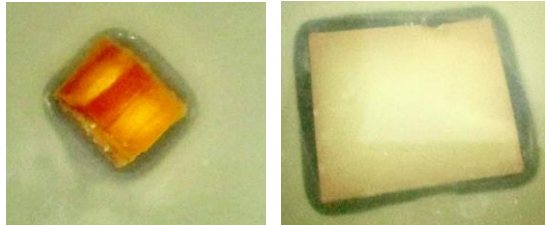
- Water based silane (for clothing and hard surfaces) and polymeric sanitizers (silicone amine quat type) that form durable films on all surfaces with in built sanitizing behavior. (Possible anti-viral, anti-bacterial and anti-fungal)
- Solvent based silicone resins that quickly form durable coatings that can fix other known anti-viral compounds on the surface and maintain them there.

# WATER BASED SURFACE SANITIZERS



## Silicone :

- Amino chemicals are known anti-microbials, and polymeric amino materials are less common. Silicone amino polymers are well known and have been used in close human contact applications for over 3 decades (textile finishing)
- Amino silicone polymers and silanes can be tailored to be film forming, water soluble/dispersible and can form anti-bacterial and anti-fungal films
- Being water based systems, they can be used in all contact applications safely like floor cleaners (water dilutable), basic home cleaners/polishes and easy to use spray on systems
  - Elkay is working on producing film forming alkoxy silane quaternary ammonium compounds which have already been proven for clothing applications, but tailored for all surfaces. LK-QSilSafe will be ready to sample in August 2020.
  - Elkay has launched product LK-EMR1500 which is a

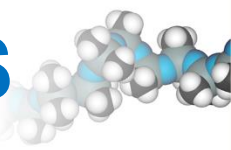


- Polymeric amino-silicone solution in water (no surfactants)
- Safe ingredients, same as those used in cosmetics
- Strong anti-bacterial\* and anti-fungal\* behavior (anti-viral\* to be tested)
- Can be used as a vehicle to deliver natural disinfectants such as camphor
- Durability up to 12 months depending on the surface (more testing underway)

No bacterial growth adjacent to wood and paper surfaces coated with EMR1500C (dark areas adjacent to surfaces)

\*3<sup>rd</sup> party testing underway

# SOLVENT BASED SURFACE SANITIZERS



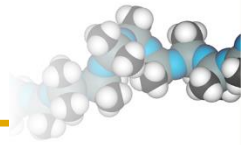
## Elkay resin solutions available for sampling include

- **LK-Q3000M (methyl silicone resin)**
  - Very low viscosity
  - Quick moisture cure
  - Excellent on wood (natural or particle board), painted surfaces, tiles, paper
  - Excellent compatibility with quat anti-microbials, metal nano-particles and others
- **LK-1000PHMX (methyl phenyl silicone resin in xylene)**
  - Excellent compatibility with other non-silicone resins as co-binders
  - Quick moisture cure
  - Excellent on wood (natural), metal, glass, plastics, tiles
  - Excellent compatibility with quat anti-microbials and others
- **LK-Q1001M (methyl phenyl silicone resin)**
  - Quick moisture cure
  - Excellent on wood (natural or particle board), painted surfaces, tiles, paper, glass
  - Excellent compatibility with quat anti-microbials and others
  - Can be made available for food-contact applications if required
- **LK-Q3000MA (methyl amino silicone resin in non-VOC silicone cyclics)**
  - Quick moisture cure, can be cured on even wet surfaces.
  - Excellent on wood (natural or particle board), cement, paper
  - Itself has some anti-microbial character, excellent compatibility with quat anti-microbials
  - Diluted sprays on still-wet seepage in cement wall panels have shown 80% reduction in water absorption (by dipping) and complete water resistance (by spraying). Can be used to control mold/mildew health hazards in buildings currently suffering from seepage.



# HEALTH: SURFACE SANITIZERS

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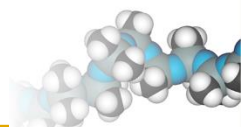
## Silicone in surface sanitizers

- Silicones are amongst the most common surface polishes since they spread very easily and can be made to be both film forming and non-film forming. Many polishes are silicone based.
- Film forming Silicones can be made to quickly form soft films (silicone polymers) and hard films (silicone resins) and very hard films (silica/silicone resins)
- Many commercial anti-microbial compounds (chloroxylenol, benzalkonium chloride, camphor) can also be fixed into silicone resins while they cure to possibly give excellent durable anti-microbial character, thus giving surfaces with longer lasting anti-microbial character.\*
- Silicone resins are excellent methods to deliver these coatings since they can be formulated without solvent, are low VOC, low viscosity so easy to formulate, moisture curing and form excellent UV resistant, hard and durable films.

## Product claims intended for surface sanitizers are:

- Anti-microbial behavior\* for 1 hour to 5 years after application
- Easy to use spray on systems
- Reduce the need to constant sterilization of common surfaces like floors, chairs, tables, doors, knobs, switches, etc.

\*3<sup>rd</sup> party testing is required to confirm this.



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