# Components for antimicrobial formulations

Solvents, surfactants, chelants and polymers can play an important role in creating effective antimicrobial formulations. The removal of soils from surfaces is often the first step in this process.

- Surfactants will lower the surface tension and assist in the wetting and spreading of the active.
- Solvents aid in the dispersion and dissolution of soils which helps apply the disinfectant to the surface.
- Chelants help to control divalent cations to help remove tough stains like soap scum and hard water and keep surfactants more soluble, improving performance.
- Polymers act as dispersants and inhibit scale and soil redeposition, which enables cleaning without residue.

## Dow products can be used in accordance with:

### EPA 40 CFR 180.940

Active and Inert Ingredients for Use in Antimicrobial Formulations (Food-contact surface sanitizing solutions)

a. The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-contact surfaces in public eating places, dairy processing equipment, and food-processing equipment and utensils.

b. The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Dairy processing equipment, and food-processing equipment and utensils.

c. The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-processing equipment and utensils.

### 40 CFR 180.950

Tolerance exemptions for minimal risk active and inert ingredients.

### 40 CFR 180.960

Polymers; exemptions from the requirement of a tolerance.

For surfaces that may come in contact with food, a potable water, rinse is required.

Food use inert ingredients are also permitted for nonfood use applications where there is no food contact.
Please visit https://www.epa.gov/pesticide-registration/inertingredients-overview-and-guidance for further details.

## Solvents

| Solvent | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| Butyl CELLOSOLVE™ Solvent | Ethylene glycol monobutyl ether | 111-76-2 | 180.940c | None |
| CARBITOL™ Solvent* | Diethylene glycol ethyl ether | 111-90-0 | 180.940c | None |
| PuraGuard™ Propylene Glycol USP/EP | Propylene glycol | 57-55-6 | 40 CFR 180.940(a) | None |
| Propionic acid | Oxo acid | 79-09-4 | 180.940a | When ready for use, the end-use concentration is not to exceed 100 ppm |
| | | | 180.940b,c | When ready for use, the end-use concentration is not to exceed 297 ppm |
| Propylene Glycol Industrial Grade | Propylene glycol | 57-55-6 | 40 CFR 180.940(a) | None |

## Surfactants

| Surfactant | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| ECOSURF™ EH-3, EH-6, EH-9, EH-9 (90%), EH-14 (90%) Surfactant** | 2-Ethyl hexanol EO-PO nonionic surfactant | 64366-70-7 | 180.940a | None |
| ECOSURF™ SA-4, SA-7, SA-9, SA-15 Surfactant** | Seed oil surfactant | 68937-66-6, 69227-22-1 | 180.940a | None |
| Polyglycol EP-436 | EO-PO nonionic low foam surfactant | 9003-11-6 | 180.940a, 180.960 | None |
| TERGITOL™ 15-S-3,15-S-5, 15-S-7, 15-S-9, 15-S-12,15-S-12 (90%), 15-S-15, 15-S-20, 15-S-20 (80%), 15-S-30, 15-S-40, 15-S-40 (70%) Surfactant | Secondary alcohol ethoxylate surfactant | 84133-50-6 | 180.940a | None |
| TERGITOL™ 23-6.5 Surfactant | Primary alcohol ethoxylates | 66455-14-9 | 40 CFR 180.940 | None |
| TERGITOL™ 25-7 Surfactant | Primary alcohol ethoxylates | 68131-39-5 | 40 CFR 180.940 | None |
| TERGITOL™ 26-7 Surfactant | Primary alcohol ethoxylates | 68551-12-2 | 40 CFR 180.940 | None |
| TERGITOL™ 91-6 Surfactant | Primary alcohol ethoxylates | 68439-46-3 | 40 CFR 180.940 | None |
| TERGITOL™ L-61, L-62, L-64, L-81, L-101, HB-5100 Surfactant | EO-PO nonionic low foam surfactant | 9003-11-6 | 180.940a 180.960 | None |
| TERGITOL™ MinFoam 1X and MinFoam 2X Surfactant | EO-PO nonionic low foam surfactant | 68439-51-0 | 180.940a | None |
| TERGITOL™ NP-9, NP-9.5, N-10, NP-11, NP-12, NP-13 Surfactant | Nonylphenol ethoxylates | 127087-87-0 | 180.940a | None |
| TERGITOL™ TMN-3, TMN-6 (90%), TMN-10 (90%), TMN-100X (90%) Surfactant | Branched secondary alcohol ethoxylates | 60828-78-6 | 180.940a | None |
| TERGITOL™ XD, XH, XJ Surfactant | EO-PO nonionic low foam surfactant | 9038-95-3 | 180.940a | None |
| TERGITOL™ XDLW Surfactant | Mixed surfactant | 9038-95-3, 84133-50-6 | 180.940a | None |
| TRITON™ (CG-50, BG-10, CG-110) Surfactant | Alkyl polyglucosides (APG) | 68515-73-1 | 180.940a | None |
| TRITON™ DF-16 Surfactant | EO-PO nonionic low foam surfactant | 68603-25-8 | 180.940a | None |
| TRITON™ GR-5M Surfactant | Sulfosuccinate | 577-11-7, 67-63-0 | 180.940c | None |
| TRITON™ HW-1000 Surfactant | Secondary alcohol ethoxylate | 60828-78-6 | 180.940a | None |

## Chelants

| Chelant | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| VERSENE™ 100 Chelating Agent* | EDTA | 64-02-8 | 180.940a | None |
| VERSENE™ 100LN Chelating Agent* | EDTA | 64-02-8 | 180.940a | None |

## Polymers

| Polymer | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| ACUSOL™ 445N, 445ND Polymers | Acrylic polymer | 68479-09-4 | 40 CFR 180.960 | None |
| ACUSOL™ 588G Polymer | Acrylic acid/ Sulfonate copolymer | Proprietary | 40 CFR 180.960 | None |

*Commodity inert

## Polymers cont.

| Polymer | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| CELLOSIZE™ Hydroxyethyl Cellulose QP-100 MH Europe | Cellulosic | 9004-62-0 | 40 CFR 180.950 | None |
| CELLOSIZE™ Hydroxyethyl Cellulose QP-15000-H Europe* | Cellulosic | 9004-62-0 | 40 CFR 180.950 | None |
| CELLOSIZE™ Hydroxyethyl Cellulose QP-52000-H Europe* | Cellulosic | 9004-62-0 | 40 CFR 180.950 | None |

## Polyglycols

| Polyglycols | Structure/Type | CAS# | EPA status | Limitation |
|---|---|---|---|---|
| Polyglycol P-1000E | Polypropylene glycol | 25322-69-4 | 40 CFR 180.960 | None |
| Polyglycol P-1000TB | Polypropylene glycol | 25322-69-4 | 40 CFR 180.960 | None |
| Polyglycol P-2000*, P-3000*, P-4000* | Polypropylene glycol | 25322-69-4 | 40 CFR 180.960 | None |

## Silicones

| Silicones | Structure/Type | EPA status | Limitation |
|---|---|---|---|
| XIAMETER™ PMX-200 Silicone Fluid 100 cSt | Silicone fluid | 40CFR 180.960 | None |
| XIAMETER™ PMX-200 Silicone Fluid 350 cSt Food Grade | Silicone fluid | 40CFR 180.960 | None |

# Nonfood applications

Dow surfactants, solvents, chelants, and polymers can be used in antimicrobial formulations where there is no food contact. Applications may include bathroom cleaners, hard surface cleaners, cleaning wipes, etc. Please visit https://www.epa.gov/pesticide-registration/inert-ingredients-overview-and-guidance for further details.

# *Commodity inerts

EPA has developed a list of inert ingredients it has designated as commodity inert ingredients. Registrants and applicants completing the Confidential Statement of Formula (CSF) Form (EPA Form 8570-4) will no longer need to list the commodity inert ingredient suppliers. To learn more, please visit: https//www.epa.gov/pesticide-registration/commodity-inert-ingredients

## Polyglycols

| Polyglycol | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| CARBOWAX™ Methoxypolyethylene Glycol 350, 550, 750 | Polyethylene glycol | 9004-74-4 | Nonfood use |
| CARBOWAX™ Polyethylene Glycol 200*, 300*, 400*, 540 Blend*, 600*, 1000*, 1450*, 3350*, 4000*, 4000 Aqueous*, 4600*, 6000*, 8000* | Polyethylene glycol | 25322-68-3 | Nonfood use |
| Polyglycol PT 250, 700, 3000, 4800 | Polypropylene glycol | 9082-00-2 | Nonfood use |
| Polyglycol P-425*, P-600*, P-1000TB*, P-1200* | Polypropylene glycol | 25322-69-4 | Nonfood use |
| SupraCare™ 412 Polymer | Polyethylene glycol | 25322-68-3 | Nonfood use |

*Commodity inert

## Surfactants

| Surfactant | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| DOWFAX™ 2A1, 3B2, C10L, 8390 Solution Surfactant | Alkyldiphenyloxide disulfonate | 119345-04-9, 65143-89-7, 70191-76-3, 36445-71-3 | Nonfood use |
| TERGITOL™ NP-4, NP-6, NP-7, NP-8, NP-30 (70%), NP-40 (70%), NP-50 (70%) Surfactant | Nonylphenol ethoxylates | 127087-87-0 | Nonfood use |
| TRITON™ (CG-425, CG-600, CG-650) Surfactant | Alkyl polyglucosides (APG) | 68515-73-1, 110615-47-9 | Nonfood use |
| TRITON™ X-15, X-35, X-45, X-100, X-102 and X-114, X-165 (70%), X-305 (70%), X-405 (70%), X-705 (70%) Surfactant | Octylphenol ethoxylates | 9036-19-5 | Nonfood use |

## Amines/Chelants

| Chelant | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| Diisopropanolamine, LFG 85 | Isopropanolamine | 110-97-4 | Nonfood use |
| Monoethanolamine Iron and Chloride Free | Ethanolamine | CAS 141-43-5 | Nonfood use |
| VERSENE™ 220 Crystals Chelating Agent | EDTA | 13235-36-4 | Nonfood use |
| VERSENE™ K4EDTA Chelating Agent | EDTA | 5964-35-2 | Nonfood use |
| VERSENEX™ 80 Chelating Agent | DTPA | 140-01-2 | Nonfood use |

## Solvents

| Solvent | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| Butyl CELLOSOLVE™ Acetate | Glycol ether | 112-07-2 | Nonfood use |
| DOWANOL™ DPM Glycol Ether | Glycol ether | 34590-94-8 | Nonfood use |
| DOWANOL™ DPnB Glycol Ether | Glycol ether | 29911-28-2 | Nonfood use |
| DOWANOL™ DPnP Glycol Ether | Glycol ether | 29911-27-1 | Nonfood use |
| DOWANOL™ EPH Glycol Ether | Glycol ether | 122-99-6 | Nonfood use |
| DOWANOL™ Eph6 Glycol Ether | Glycol ether | 9004-78-8 | Nonfood use |
| DOWANOL™ PM Glycol Ether | Glycol ether | 107-98-2 | Nonfood use |
| DOWANOL™ PnB Glycol Ether | Glycol ether | 5131-66-8 | Nonfood use |
| DOWANOL™ PPh Glycol Ether* | Glycol ether | 770-35-4 | Nonfood use |
| DOWANOL™ TPM Glycol Ether | Glycol ether | 25498-49-1 | Nonfood use |
| DOWANOL™ TPnB Glycol Ether* | Glycol ether | 55934-93-5 | Nonfood use |
| 2-Ethyl-hexanol* | Alcohol | 104-76-7 | Nonfood use |
| 2 Ethylhexoic acid | Acid | 149-57-5 | Nonfood use |
| Hexyl CARBITOL™ Solvent | Glycol ether | 112-59-4 | Nonfood use |
| Hexyl CELLOSOLVE™ Solvent | Glycol ether | 112-25-4 | Nonfood use |
| Isobutanol* | Alcohol | 78-83-1 | Nonfood use |
| Isobutyl acetate | Acetate | 110-19-0 | Nonfood use |
| Isopropanol* | Alcohol | 67-63-0 | Nonfood use |
| Isopropyl acetate | Acetate | 108-21-4 | Nonfood use |

*Commodity inert

## Solvents cont.

| Solvent | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| Methyl CARBITOL™ Solvent | Glycol ether | 111-77-3 | Nonfood use |
| n-Butyl acetate | Acetate | 123-86-4 | Nonfood use |
| n-Propanol* | Alcohol | 71-23-8 | Nonfood use |
| n-Propyl acetate | Acetate | 109-60-4 | Nonfood use |
| Primary amyl acetate mixed isomers | Acetate | 628-63-7, 624-41-9 | Nonfood use |
| Triethanolamine 99% LFG 85* | Ethanolamine | 102-71-6 | Nonfood use |
| Trimethylnonanol | Alcohol | 123-17-1 | Nonfood use |
| UCAR™ Ester EEP | Alcohol ester | 763-69-9 | Nonfood use |
| Valeric acid | Acid | 109-52-4 | Nonfood use |

## Polymers

| Polymers | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| ACUSOL™ 460N Polymer | Proprietary polymer | Proprietary | Nonfood use |
| ACUSOL™ 880 Polymer | Proprietary polymer | Proprietary | Nonfood use |
| ACUSOL™ Millennium Rheology Modifier | Acrylic copolymer | Proprietary | Nonfood use |
| ACUSOL™ PRO Hard Surface Polymer | Proprietary polymer | Proprietary | Nonfood use |

## Silicones

| Silicones | Structure/Type | CAS# | Clearance |
|---|---|---|---|
| DOWSIL™ 2-5325 Silicone Surfactant | Silicone surfactant | Proprietary | Nonfood use |
| DOWSIL™ 51 Additive | Silicone additive | Proprietary | Nonfood use |
| DOWSIL™ 62 Additive | Silicone additive | Proprietary | Nonfood use |
| DOWSIL™ 103F Additive | Silicone additive | Proprietary | Nonfood use |
| DOWSIL™ AFE-3101 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| DOWSIL™ Antifoam B Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| DOWSIL™ Antifoam C Emulsion, Food Grade | Silicone antifoam | Proprietary | Nonfood use |
| DOWSIL™ GP-4314 Powdered Antifoam | Silicone antifoam | Proprietary | Nonfood use |
| DOWSIL™ SFD-12 Polymer, XIAMETER™ OHX-4010 Polymer | Silicone polymer | Proprietary | Nonfood use |
| SYLGARD™ 309 Silicone Surfactant | Silicone surfactant | Proprietary | Nonfood use |
| XIAMETER™ ACP-3472 Antifoam Compound | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ ACP-3379 Antifoam Compound | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-0200 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-0300 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-0310 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-1430 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-1510 Antifoam Emulsion, also known as DOWSIL™ Antifoam 1510-US | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ AFE-1530 Antifoam Emulsion | Silicone antifoam | Proprietary | Nonfood use |
| XIAMETER™ OFX-0309 Fluid | Silicone fluid | Proprietary | Nonfood use |
| XIAMETER™ OFX-5211 Superwetting Agent | Silicone surfactant | Proprietary | Nonfood use |

For more information, please refer to the EPA Inert site: https://www.epa.gov/pesticide-registration/inert-ingredients-overview-and-guidance

*Commodity inert

# Contact us

We're here to help. To learn more about specific products, pricing and availability, regulatory or other inquires, visit **dow.com/contactus**.

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