

Industrial and Institutional Cleaning

Formulary 2010

- » *Tomadol[®] Ethoxylated Alcohols*
- » *Tomamine[®] Ether Amines & Derivatives*



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The information contained herein is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto.

Alkaline Glycol Ether Cleaner

Formula S-100

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|--------------|---|
| Soft water | 66.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 1.0 | Add sodium gluconate and mix well. |
| Sodium gluconate | 1.0 | Add sodium silicate and mix well. |
| 42°Sodium silicate 3.22/1 | 10.0 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 10.0 | Add ethylene glycol butyl ether and mix well. |
| Ethylene glycol butyl ether | 5.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 5.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 2.0 | |
| pH | >13 | |
| Specific gravity, 20/20 °C | 1.17 | |
| APPLICATIONS | USE DILUTION | |
| Hard surface cleaner. Grill cleaner. Engine degreaser. | 12:1 to 30:1 | |

Anionic/Nonionic Heavy Duty Cleaner

Formula I-104

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|--------------|---|
| Soft water | 80.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix well to dissolve. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100%) | 0.5 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 5.0 | Add tetrapotassium pyrophosphate and mix well. |
| Tetrapotassium pyrophosphate | 3.0 | Add potassium silicate and mix well. |
| Potassium silicate | 3.0 | Add dodecylbenzene sulfonic acid and mix well. |
| Dodecylbenzene sulfonic acid, sodium salt (60%) | 3.5 | Add Tomadol 91-8 or Tomadol 900 surfactant and mix well. |
| Tomadol 91-8 or Tomadol 900 surfactant | 2.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 3.0 | |
| pH | 13.9 | |
| Specific gravity 20/20 °C | 1.06 | |
| APPLICATIONS | USE DILUTION | |
| Hard surface cleaner. | 10:1 to 30:1 | |

Anionic/Nonionic Concentrate

Formula C-200

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|-----------------|---|
| Water | 78.9 | Add Tomadol 23-6.5 surfactant to water and mix well. |
| Tomadol 23-6.5 surfactant | 4.8 | Add linear dodecylbenzene sulfonate (60%) and mix until dissolved. |
| C ₁₂ LAS (60%)* | 3.3 | Add sodium carbonate and mix until dissolved. |
| Sodium carbonate | 4 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% basis)** | 6 | Add Tomamine Alkali Surfactant and mix until homogeneous. |
| Tomamine Alkali Surfactant | 3 | Add dye and fragrance as desired. |
| *Calsoft® L-60 Slurry, Pilot Chemical Company, or equivalent product. | | |
| **Can be replaced with sodium citrate. When using sodium citrate, increase Tomamine Alkali Surfactant to 5% for good temperature stability. | | |
| Viscosity @ 73 °F, cps | 23 | |
| pH | 11.3 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | USE DILUTION | |
| Hard surface cleaner. | 2 ounces/gallon | |

d-Limonene Hard Surface Cleaner and Degreaser

Formula S-111

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|--------------|--|
| d-Limonene | 7.0 | Add d-limonene to Tomamine E-14-5 surfactant and mix well. |
| Tomamine E-14-5 surfactant | 3.0 | Add Tomamine AO-14-2 surfactant and mix well. |
| Tomamine AO-14-2 surfactant | 2.0 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 2.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 3.0 | Add and mix water slowly until homogeneous. |
| Soft water | 77.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 5.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 1.0 | |
| pH | 10.6 | |
| Specific gravity, 20/20 °C | 1.01 | |
| APPLICATIONS | USE DILUTION | |
| Hard surface cleaning. | 10:1 to 50:1 | |

General Purpose Concentrate—Phosphate

Formula C-201

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|--|---|
| Water | 77.5 | Add Tomadol 91-6 and Tomadol 91-2.5 surfactants to water and mix well. |
| Tomadol 91-6 surfactant | 2.0 | Add phosphate ester and mix well until homogeneous. |
| Tomadol 91-2.5 surfactant | 2.0 | Add sodium metasilicate, pentahydrate and trisodium phosphate, mixing well until dissolved. |
| Sodium metasilicate, pentahydrate | 8.3 | Add dye and fragrance as desired. |
| Trisodium phosphate, anhydrous | 3.2 | |
| Phosphate ester* | 7.0 | |
| *Triton™ H-66, The Dow Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 8 | |
| pH | 13.2 | |
| Phase coalescence temperature, °F | 150 | |
| APPLICATIONS | USE DILUTIONS | |
| Hard surface cleaner. | Heavy-duty use: 10:1 Regular-duty use: 16:1 Light-duty use: 32:1 | |

General Purpose Concentrate—Non-Phosphate

Formula C-202

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---------------------------------------|--|---|
| Water | 78.3 | Add Tomadol 91-6 and Tomadol 91-2.5 surfactant to water and mix well. |
| Tomadol 91-6 surfactant | 2.8 | Add sodium metasilicate, pentahydrate and mix vigorously until dissolved. |
| Tomadol 91-2.5 surfactant | 1.2 | Add tetrasodium iminodisuccinate and mix vigorously until dissolved. |
| Sodium metasilicate, pentahydrate | 11.1 | Add Tomamine Alkali Surfactant and mix well until homogeneous. |
| Baypure® CX 100* | 1.6 | Add dye and fragrance as desired. |
| Tomamine Alkali Surfactant | 5.0 | |
| *Baypure CX 100, LANXESS Corporation. | | |
| Viscosity @ 73 °F, cps | 8 | |
| pH | 13.2 | |
| Phase coalescence temperature, °F | 135 | |
| APPLICATIONS | USE DILUTIONS: | |
| Hard surface cleaners. | Heavy-duty use: 10:1 Regular-duty use: 16:1 Light-duty use: 32:1 | |

Non-Phosphate Premium Concentrate—Hard Water

Formula C-203

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Water | 57.8 | Add Tomadol 91-6 surfactant to water and mix well. |
| Tomadol 91-6 surfactant | 7.0 | Add sodium metasilicate, pentahydrate and mix well. |
| Sodium metasilicate, pentahydrate | 14.6 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% basis) | 12.6 | Add dicarboxylic organic acid and mix well until homogeneous. |
| Dicarboxylic organic acid* | 8.0 | Add dye and fragrance as desired. |
| *Westvaco Diacid®1550, MeadWestvaco Corporation, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 13 | |
| pH | 13.3 | |
| Phase coalescence temperature, °F | 158 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner designed for hard water. | | Heavy-duty use: 32:1 Regular-duty use: 64:1 |

Non-Phosphate Premium Concentrate—Lower pH

Formula C-204

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Water | 79.3 | Add Tomadol 1-5 surfactant to water and mix well. |
| Tomadol 1-5 surfactant | 4.0 | Add sodium xylene sulfonate and mix well until homogeneous. |
| Ethylene glycol monobutyl ether | 5.0 | Add ethylene glycol monobutyl ether and mix well. |
| Sodium lauryl ether sulfate (3EO) (60%)* | 1.7 | Add sodium lauryl ether sulfate (3EO), ethylenediamine tetraacetic acid, tetrasodium salt and sodium sesquicarbonate, and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% basis) | 3.5 | |
| Sodium sesquicarbonate | 1.5 | Add dye and fragrance as desired. |
| Sodium xylene sulfonate (40%) | 5.0 | |
| *Calfoam® ES-603, Pilot Chemical Company or equivalent product. | | |
| pH | 10.3 | |
| Phase coalescence temperature, °F | 160 | |
| APPLICATIONS | | |
| Hard surface cleaner. | | |

Sodium Metasilicate Glycol Ether Cleaner

Formula S-102

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Soft Water | 83.0 | Add sodium metasilicate, pentahydrate to water and mix well. |
| Sodium metasilicate, pentahydrate | 5.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 2.0 | |
| Ethylene glycol butyl ether | 5.0 | Add ethylene glycol butyl ether and mix well. |
| Tomadol 91-8 surfactant | 3.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomamine Alkali Surfactant | 2.0 | Add Tomamine Alkali Surfactant and mix well until homogeneous. |
| pH | 12.5 | |
| Specific gravity 20/20 °C | 1.04 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 10:1 to 30:1 |

Solvent-Free Alkaline Cleaner

Formula I-108

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Soft water | 79.0 | Add tetrapotassium pyrophosphate to water and mix well. |
| Tetrapotassium pyrophosphate | 3.0 | Add potassium silicate and mix well. |
| Potassium silicate | 3.0 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 10.0 | Add Tomadol 91-8 or Tomadol 900 surfactant and mix well. |
| Tomadol 91-8 or Tomadol 900 surfactant | 2.0 | Add Tomamine Alkali Surfactant and mix well until homogeneous. |
| Tomamine Alkali Surfactant | 3.0 | |
| pH | 14 | |
| Specific gravity 20/20 °F | 1.08 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 10:1 to 30:1 |

Solvent-Free Hard Surface Concentrate

Formula C-300

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 73.0 | Add trisodium phosphate to water and mix until dissolved. |
| Trisodium phosphate | 2.0 | Add sodium metasilicate pentahydrate and mix until dissolved. |
| Sodium metasilicate pentahydrate | 7.0 | Slowly add sodium hydroxide and mix well. |
| Sodium hydroxide (50%) | 3.0 | Add Tomadol 900 surfactant and mix until dissolved. |
| Tomadol 900 surfactant | 10.0 | Add phosphate ester and mix well. |
| Phosphate ester* | 5.0 | |
| *Triton H-66, The Dow Chemical Company, or equivalent product. | | |
| APPLICATIONS | | |
| Hard surface cleaner. | | |

Degreaser for Hard Water Formula D-200

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 59.7 | Add Tomadol 91-6 and Tomadol 91-2.5 surfactant to water, and mix until dissolved. |
| Tomadol 91-6 surfactant* | 5.0 | |
| Tomadol 91-2.5 surfactant* | 5.0 | Add Tomamine Amphoteric 400 surfactant and mix until dissolved. |
| Tomamine Amphoteric 400 surfactant | 7.5 | Add sodium metasilicate, pentahydrate and ethylenediamine tetraacetic acid, tetrasodium salt and mix well until homogeneous. Add dye and fragrance as desired. |
| Sodium metasilicate, pentahydrate | 12.0 | |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% basis) | 10.8 | |

*The combination of Tomadol 91-6 and Tomadol 91-2.5 surfactants can be replaced with Tomadol 1-5 surfactant.

| | |
|-----------------------------------|------|
| pH | 13.4 |
| Phase coalescence temperature, °F | >140 |

| APPLICATIONS | USE DILUTION |
|--------------------------------------|--|
| Hard surface cleaning in hard water. | Heavy-duty use: 32:1 Regular-duty use: 64:1 |

Degreaser Concentrate for High Pressure Spray Formula D-201

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 81.5 | Add Tomadol 1-5 surfactant to water and mix well. |
| Tomadol 1-5 surfactant | 6.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 6.5 | Add sodium metasilicate, pentahydrate and mix until dissolved. |
| Sodium metasilicate, pentahydrate | 3.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix with vigorous stirring until homogeneous. Add dye and fragrance as desired. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% basis) | 3.0 | |

| | |
|-----------------------------------|------|
| pH | 12.9 |
| Phase coalescence temperature, °F | 140 |

| APPLICATIONS | USE DILUTION |
|-------------------------------------|--|
| High-pressure spray system cleaner. | Heavy-duty use: 32:1 Regular-duty use: 64:1 |

General Purpose Degreaser Formula D-202

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-----------------------------------|------|---|
| Water | 69.2 | Add Tomadol 91-6 and Tomadol 91-2.5 surfactants to water and mix until dissolved. |
| Tomadol 91-6 surfactant | 3.0 | |
| Tomadol 91-2.5 surfactant | 3.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 7.5 | Add sodium metasilicate, pentahydrate and mix well. Add tetrasodium iminodisuccinate and mix well. |
| Sodium metasilicate, pentahydrate | 12.5 | |
| Baypure CX 100* | 4.8 | |

*Baypure CX 100, LANXESS Corporation.

| | |
|-----------------------------------|------|
| Viscosity @ 73 °F, cps | 13 |
| pH | 13.2 |
| Phase coalescence temperature, °F | 165 |

| APPLICATIONS | USE DILUTION |
|--|--|
| General purpose degreaser for heavy oil. | Heavy-duty use: 10:1 Regular-duty use: 32:1 Light-duty use: 64:1 |

Heavy-Duty Degreaser

Formula NP-101

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Soft water | 81.5 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 2.0 | Add sodium nitrilo-triacetate (40%) and mix well. |
| Sodium nitrilo-triacetate (40%) | 1.0 | Add sodium hydroxide (50%) and mix well. |
| Sodium hydroxide (50%) | 9.5 | Add Tomamine AO-14-2 surfactant and mix well. |
| Tomamine AO-14-2 surfactant | 1.5 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 1.5 | Add Tomadol 91-8 surfactant and mix well until homogeneous. |
| Tomadol 91-8 surfactant | 3.0 | |
| pH | >13 | |
| Specific gravity 20/20 °C | 1.07 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 5:1 to 30:1 |
| NOTE: For extremely hard water, add 1%–2% ethylenediamine tetraacetic acid, tetrasodium salt (40%) | | |

Low-VOC Concentrated Degreaser

Formula D-300

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|---|
| Water | 79.5 | Add sodium metasilicate pentahydrate and sodium tripolyphosphate and mix until dissolved. |
| Sodium metasilicate pentahydrate | 8.0 | Add Tomadyne 106 surfactant and mix well. |
| Sodium tripolyphosphate | 6.0 | Slowly add sodium hydroxide and mix well. |
| Tomadyne™ 106 surfactant | 6.0 | |
| Sodium hydroxide (50%) | 0.5 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface degreaser. | | As-is for heavy applications 10:1 to 64:1 for typical hard surface cleaning |

Low-VOC Easy Rinse Degreaser Concentrate

Formula D-301

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 88.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 3.0 | Add sodium tripolyphosphate and mix until dissolved. |
| Sodium tripolyphosphate | 1.0 | Add Tomadyne 106 surfactant and mix well. |
| Tomadyne 106 surfactant | 6.0 | Add Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-455 surfactant | 2.0 | |
| APPLICATIONS | | |
| Hard surface degreaser. | | |

Non-Phosphate Degreaser

Formula D-302

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 85.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 5.0 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 4.0 | Add Tomadol 901 surfactant and mix until dissolved. |
| Tomadol 901 surfactant | 6.0 | |
| APPLICATIONS | | |
| Hard surface degreaser. | | |

Ready-to-Use Degreaser

Formula D-303

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 91.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 2.0 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 2.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 2.0 | Add Tomadyne 100 surfactant and mix well. |
| Tomadyne 100 surfactant | 3.0 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface degreaser. | | As-is |

Solvent-Free Degreaser Concentrate

Formula D-304

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 67.5 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 12.0 | Add citric acid and mix well. |
| Citric acid | 2.5 | Add Tomamine AO-14-2 and Tomadol 901 surfactants and mix well. |
| Tomamine AO-14-2 surfactant | 6.5 | Add sodium xylene sulfonate (40%) and mix well. |
| Tomadol 901 surfactant | 7.5 | |
| Sodium xylene sulfonate (40%) | 4.0 | |
| APPLICATIONS | | |
| Hard surface degreaser. | | |

Thickened Water Rinsable Degreaser

Formula S-105

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Mineral spirits | 75.0 | Add Tomamine Q-14-2 surfactant to mineral spirits and mix well. |
| Tomamine Q-14-2 surfactant | 2.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 6.0 | Add Tomamine E-17-2 surfactant and mix well. |
| Tomamine E-17-2 surfactant | 7.0 | Add and mix soft water slowly until homogeneous. |
| Soft water | 10.0 | |
| Specific gravity, 20/20 °C | 0.83 | |
| pH | 8.6 | |
| APPLICATIONS | | |
| Viscous cleaner for better cling. Hard surface cleaner for heavy greases. Paint and varnish stripper. | | |

| d-Limonene Cleaner | | Formula S-204 |
|---|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| d-Limonene | 50.0 | Add sodium lauryl ether sulfate to d-limonene and mix well. |
| Sodium lauryl ether sulfate (60%)* | 24.0 | Add Tomadol 25-3 and Tomadol 25-7 surfactants and mix until dissolved. |
| Tomadol 25-3 surfactant | 10.0 | Add fatty acid diethanolamide and mix well until homogeneous. |
| Tomadol 25-7 surfactant | 6.0 | |
| Fatty acid diethanolamide** | 10.0 | |
| *Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| **Calamide® C, Pilot Chemical Company, or equivalent product. | | |
| Viscosity @ 73° F, cps | 15 | |
| Phase coalescence temperature, °F | >165 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | Heavy-duty use: 16:1 Regular-duty use: 32:1 Light-duty use: 64:1 |

| Blooming d-Limonene Microemulsion | | Formula S-300 |
|--|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Tomamine E-14-5 surfactant | 15.7 | Blend Tomamine E-14-5 and Tomamine E-17-5 surfactants with Tomamine Alkali Surfactant. |
| Tomamine E-17-5 surfactant | 7.9 | |
| Tomamine Alkali Surfactant | 2.3 | Add d-limonene and mix well until homogeneous. |
| d-Limonene | 30 | Slowly add water while agitating until homogeneous. |
| Water | 44.1 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 6:1 to 32:1 |

| Clear Diluting d-Limonene Microemulsion | | Formula S-301 |
|--|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Tomamine E-14-5 surfactant | 24.0 | Blend Tomamine E-14-5 and Tomamine E-17-5 surfactants and Tomamine Alkali Surfactant and mix well until homogeneous. |
| Tomamine E-17-5 surfactant | 12.1 | |
| Tomamine Alkali Surfactant | 3.6 | Add d-limonene and mix well until homogeneous. |
| d-Limonene | 30.0 | Slowly add water while agitating. |
| Water | 30.3 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 8:1 to 48:1 |

Dipentene Microemulsions

Formula S-120

| COMPONENT | A | B | C | MIXING INSTRUCTIONS |
|----------------------------------|------|------|------|--|
| | WT % | WT % | WT % | |
| Dipentene 122 | 5.0 | 10.0 | 20.0 | Add Tomamine E-14-5 surfactant to dipentene 122 and mix until dissolved. |
| Tomamine E-14-5 surfactant | 6.4 | 8.8 | 14.4 | |
| Tomamine E-14-2 surfactant | 0.8 | 1.1 | 1.8 | Add Tomamine E-14-2 surfactant and Tomamine Alkali Surfactant, and mix well. |
| Tomamine Alkali Surfactant | 0.8 | 1.1 | 1.8 | |
| Water | 87.0 | 79.0 | 62.0 | Add and mix water slowly until homogeneous. |
| Low temperature cloud point, °C | 11 | 11 | 19 | |
| High temperature cloud point, °C | 38 | 50 | 41 | |
| Emulsifier/dipentene ratio | 1.6 | 1.1 | 0.9 | |

APPLICATIONS

Solvent cleaner.

NOTE: Formulations should stay clear in the range between the cloud point temperatures given. Outside of that temperature range, they will haze and may separate. They will become clear and homogeneous again when returned to the temperature range of clarity.

Graffiti Remover

Formula S-104

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|---|
| Soft water | 28.0 | Add potassium hydroxide to water and mix well. |
| Potassium hydroxide (45%) | 50.0 | |
| Sodium gluconate | 2.0 | Add sodium gluconate and mix well. |
| Tomamine Alkali Surfactant | 10.0 | Add Tomamine Alkali Surfactant and mix well. |
| Isopropanol, acetone or methanol | 5.0 | Add isopropanol or alternate solvent and mix well. |
| Dipropylene glycol methyl ether | 5.0 | Add dipropylene glycol methyl ether and mix well until homogeneous. |
| pH | >13 | |
| Specific gravity 20/20 °C | 1.22 | |

APPLICATIONS

Effective on most paints and inks.

USE DILUTION

10:1 to 20:1

Kerosene Emulsion Cleaner

Formula S-112

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------|------|--|
| Kerosene | 35.0 | Add Tomamine E-14-2 surfactant to kerosene and mix well. |
| Tomamine E-14-2 surfactant | 14.0 | |
| Tomamine Q-14-2 surfactant | 3.0 | Add Tomamine Q-14-2 surfactant and mix well. |
| Tomadol 91-8 surfactant | 3.0 | Add Tomadol 91-8 surfactant and mix well. |
| Soft water | 45.0 | Add water very slowly and mix well. |
| Specific gravity 20/20 °C | 0.92 | |
| pH | 9.3 | |

APPLICATIONS

Hard surface degreaser.

Pine Oil Cleaner—Premium

Formula S-200

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Pine oil | 20.0 | Add Tomadol 91-8 or Tomadol 900 surfactant to pine oil and mix until dissolved. Add linear alkylbenzene sulfonic acid and mix well. Add isopropyl alcohol and mix well. Add triethanolamine and mix well. Slowly add water and mix well until homogeneous. Add dye and fragrance as desired. |
| Tomadol 91-8 or Tomadol 900 surfactant | 4.7 | |
| C ₁₂ LAS (60%)* | 8.0 | |
| Isopropyl alcohol | 11.0 | |
| Triethanolamine | 4.7 | |
| Water | 51.6 | |

*Calsoft L-60 Slurry, Pilot Chemical Company, or equivalent product.

| | |
|-----------------------------------|------|
| Viscosity @ 73 °F, cps | 16 |
| pH | 10.7 |
| Phase coalescence temperature, °F | >158 |

APPLICATIONS

Hard surface cleaner.

NOTE: Cloudy on mixing with water.

Pine Oil Cleaner—Standard

Formula S-201

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Pine oil | 10.0 | Add Tomadol 91-8 or Tomadol 900 surfactant to pine oil and mix until dissolved. Add linear alkylbenzene sulfonic acid and mix well. Add isopropyl alcohol and mix well. Add triethanolamine and mix well. Slowly add water and mix well until homogeneous. Add dye and fragrance as desired. |
| Tomadol 91-8 or Tomadol 900 surfactant | 4.7 | |
| C ₁₂ LAS (60%)* | 8.0 | |
| Isopropyl alcohol | 8.0 | |
| Triethanolamine | 2.0 | |
| Water | 67.3 | |

*Calsoft L-60 Slurry, Pilot Chemical Company, or equivalent product.

| | |
|-----------------------------------|------|
| Viscosity @ 73 °F, cps | 15 |
| pH | 10.3 |
| Phase coalescence temperature, °F | >158 |

APPLICATIONS

Hard surface cleaner.

NOTE: Cloudy on mixing with water.

Solvent Degreaser, Flush-Off Type—Premium

Formula S-202

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-----------------------------------|------|---|
| Tomadol 91-8 surfactant | 10.0 | Blend together Tomadol 91-8, Tomadol 91-2.5 and Tomadol 25-3 surfactants. Add SHELLSOL OMS or mineral spirits and mix well until homogeneous. Add water and mix vigorously until homogeneous. |
| Tomadol 91-2.5 surfactant | 5.0 | |
| Tomadol 25-3 surfactant | 5.0 | |
| SHELLSOL™ OMS* or mineral spirits | 79.0 | |
| Water | 1.0 | |

*SHELLSOL OMS, Shell Chemical Company, or equivalent product.

| | |
|-----------------------------------|------|
| Viscosity @ 73 °F, cps | 6 |
| Phase coalescence temperature, °F | >176 |

APPLICATIONS

Hard surface degreaser.

| Solvent Degreaser, Flush-Off Type—Standard | | Formula S-203 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Tomadol 91-6 surfactant | 15.0 | Blend together Tomadol 91-6 and Tomadol 91-2.5 surfactants. |
| Tomadol 91-2.5 surfactant | 5.0 | Add SHELLSOL OMS or mineral spirits and mix well. |
| SHELLSOL OMS* or mineral spirits | 60.0 | Add ethylene glycol monobutyl ether and mix well until homogeneous. |
| Ethylene glycol monobutyl ether | 18.0 | Add water and mix vigorously until homogeneous. |
| Water | 2.0 | |
| *SHELLSOL OMS, Shell Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 8 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | | |
| Hard surface degreaser. | | |

All-Purpose Spray-and-Wipe Formula R-200

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 87.5 | Add sodium tripolyphosphate and sodium metasilicate, pentahydrate to water and mix until dissolved. |
| Sodium tripolyphosphate | 2.0 | |
| Sodium metasilicate, pentahydrate | 2.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt | 0.5 | Add Tomadol 91-8 or Tomadol 900 surfactant and Tomamine Alkali Surfactant, and mix well until homogeneous. |
| Tomadol 91-6 or Tomadol 900 surfactant | 3.0 | |
| Tomamine Alkali Surfactant | 2.0 | |
| Ethylene glycol monobutyl ether | 3.0 | Add ethylene glycol monobutyl ether and mix well. |
| | | Add dye and fragrance as desired. |
| Viscosity @ 73 °F, cps | 5 | |
| pH | 13 | |
| Phase coalescence temperature, °F | 142 | |

APPLICATIONS

Spray-and-wipe hard surface cleaner.

Biodegradable and Solvent-Free Hard Surface Cleaner Formula R-300

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------|-------|--|
| Water | 92.50 | Add sodium citrate to water and mix until dissolved. |
| Sodium citrate | 2.25 | Add sodium carbonate and mix until dissolved. |
| Sodium carbonate | 3.25 | Add Tomadol 900 surfactant and mix well. |
| Tomadol 900 surfactant | 2.00 | |
| pH | 12.0 | |

APPLICATIONS

Hard surface cleaner.

USE DILUTION

As-is

Biodegradable and Solvent-Free Multi-Surface Spray-and-Wipe Formula R-301

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------|------|--|
| Water | 98.0 | Add sodium citrate to water and mix until dissolved. |
| Sodium citrate | 0.5 | Add sodium carbonate and mix until dissolved. |
| Sodium carbonate | 0.7 | Add Tomadol 900 surfactant and mix well. |
| Tomadol 900 surfactant | 0.8 | |
| pH | 11.5 | |

APPLICATIONS

Hard surface cleaner.

USE DILUTION

As-is

Light-Duty Neutral Cleaner Formula I-110

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-----------------------------|------|--|
| Water | 95.0 | Add Tomamine AO-14-2 surfactant to water and mix well. |
| Tomamine AO-14-2 surfactant | 1.0 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 1.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 3.0 | |
| Specific gravity 20/20 °F | 1.0 | |
| pH | 7.6 | |

APPLICATIONS

Wall, floor and tile wash. Good on light hydrocarbon and food soils.

USE DILUTION

As-is to 10:1

Leather, Vinyl and Plastic Cleaner **Formula R-201**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 80.5 | Add Tomadol 91-6 or Tomadol 900 surfactant to water and mix until dissolved. |
| Tomadol 91-6 or Tomadol 900 surfactant | 10.0 | |
| Ethylene glycol monobutyl ether | 6.0 | Add ethylene glycol monobutyl ether and mix well. |
| Amyl acetate | 1.0 | Add amyl acetate and isopropyl alcohol, mix well until homogeneous. |
| Isopropyl alcohol | 2.5 | |
| Viscosity @ 73 °F, cps | 8 | |
| pH | 5.2 | |
| Phase coalescence temperature, °F | 119 | |

APPLICATIONS

Leather, vinyl and plastic cleaner.

Ready-to-Use Hard Surface Cleaner **Formula R-302**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 97.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 0.5 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 1.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 0.5 | Add Tomadyne 100 surfactant and mix well. |
| Tomadyne 100 surfactant | 1.0 | |

APPLICATIONS **USE DILUTION**

Hard surface cleaner. As-is

Ready-to-Use Multi-Surface Cleaner **Formula R-303**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 92.4 | Add Baypure CX 100 to water and mix well. |
| Baypure CX 100* | 3.0 | Add glycolic acid and mix well. |
| Glycolic acid | 0.6 | Add Tomadol 901 surfactant and mix well. |
| Tomadol 901 surfactant | 1.0 | Add dipropylene glycol n-butyl ether and mix well. |
| Dipropylene glycol n-butyl ether | 3.0 | |

*Baypure CX 100, LANXESS Corporation.

APPLICATIONS

Hard surface cleaner.

Soy-Based All-Purpose Cleaner **Formula R-304**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------|------|---|
| Water | 96.0 | Add sodium citrate to water and mix well. |
| Sodium citrate | 0.5 | Add Tomadol 900 surfactant and mix well. |
| Tomadol 900 surfactant | 3.0 | Add SoyGold 1000 and mix well. |
| SoyGold® 1000* | 0.5 | |

*SoyGold 1000 is a trademark of Ag Environmental Products, LLC

APPLICATIONS **USE DILUTION**

Hard surface cleaner. As-is

| Dairy Farm Acid Cleaner | | Formula F-200 |
|-----------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 36.7 | Add Tomadol 25-3 and Tomadol 25-12 surfactants to water and mix until dissolved. |
| Tomadol 25-3 surfactant | 1.0 | |
| Tomadol 25-12 surfactant | 2.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 3.0 | Add phosphoric acid (85%) and and mix well until homogeneous. |
| Phosphoric acid (85%) | 57.3 | |
| pH | 1.0 | |
| Phase coalescence temperature, °F | >165 | |
| APPLICATIONS | | USE DILUTION |
| Dairy equipment cleaner. | | 0.25–2.00 ounces/gallon |

| Dairy Alkaline Cleaner | | Formula F-300 |
|--|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 73.5 | Add tetrapotassium pyrophosphate to water and mix until dissolved. |
| Tetrapotassium pyrophosphate | 7.0 | Add Kasil 6 potassium silicate and mix until dissolved. |
| Kasil® 6 potassium silicate* | 3.0 | Add sodium hydroxide and mix well. |
| Sodium hydroxide (50%) | 3.5 | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 3.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 5.0 | Add Tomadol 23-6.5 surfactant and mix well. |
| Tomadol 23-6.5 surfactant | 5.0 | |
| *Kasil 6 potassium silicate, PQ Corporation. | | |
| APPLICATIONS | | |
| Dairy equipment cleaner. | | |

| Foaming Acidic Dairy Cleaner | | Formula F-301 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 39.0 | Add monosodium phosphate to water and mix well. |
| Monosodium phosphate | 14.0 | Slowly add phosphoric acid, mix well and cool. |
| Phosphoric acid (85%) | 42.0 | Add Tomamine Amphoteric SC surfactant or Tomamine Alkali Surfactant and mix well. |
| Tomamine Amphoteric SC surfactant or Tomamine Alkali Surfactant | 5.0 | |
| APPLICATIONS | | |
| Dairy equipment cleaner. | | |

Bottle Wash **Formula F-201**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--------------------------|------|--|
| Water | 70.5 | Add Tomadol 25-12 surfactant to water and mix until dissolved. |
| Tomadol 25-12 surfactant | 1.0 | Add sodium gluconate and mix well. |
| Sodium gluconate | 2.0 | Add sodium hydroxide (50%) and mix well. |
| Sodium hydroxide (50%) | 18.0 | Add phosphate ester* and mix well. |
| Phosphate ester* | 8.0 | Add phosphonic acid** and mix well until homogeneous. |
| Phosphonic acid** | 0.5 | Add dye and fragrance as desired. |

*Triton H-66, The Dow Chemical Company, or equivalent product.

**Dequest® 2010, Thermphos International BV, or equivalent product.

| | | |
|-----------------------------------|------|--|
| pH | 12.9 | |
| Phase coalescence temperature, °F | >165 | |

APPLICATIONS

Food and beverage bottle wash.

General Food Industry Cleaner **Formula F-202**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-----------------------------------|------|---|
| Water | 78.8 | Add Tomadol 23-6.5 surfactant to water and mix until dissolved. |
| Tomadol 23-6.5 surfactant | 5.0 | Add linear sodium alkylbenzene sulfonate, sodium metasilicate, pentahydrate and tetrapotassium pyrophosphate and mix until dissolved. |
| C ₁₂ LAS (60%)* | 5.0 | Add Tomamine Alkali Surfactant and mix well. |
| Sodium metasilicate, pentahydrate | 3.0 | Add ethylene glycol monobutyl ether and mix well until homogeneous. |
| Tetrapotassium pyrophosphate | 2.0 | Add dye and fragrance as desired. |
| Tomamine Alkali Surfactant | 1.2 | |
| Ethylene glycol monobutyl ether | 5.0 | |

*Calsoft L-60 Slurry, Pilot Chemical Company, or equivalent product.

| | | |
|-----------------------------------|------|--|
| Viscosity @ 73 °F, cps | 4 | |
| pH | 13.1 | |
| Phase coalescence temperature, °F | >165 | |

APPLICATIONS

Hard surface cleaner.

USE DILUTION

1–2 ounces/gallon

Food Service Degreasers **Formula S-116**

| COMPONENT | A | | B | | MIXING INSTRUCTIONS |
|--|------|------|------|------|--|
| | WT % | WT % | WT % | WT % | |
| Water | 71.5 | 66.5 | | | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 6.0 | 6.0 | | | Add sodium orthosilicate and mix well. |
| Sodium orthosilicate | 5.0 | 5.0 | | | Add Dowanol PM and Dowanol DPM or diethylene glycol butyl ether and mix well. |
| Dowanol™ PM* | 6.0 | – | | | Add Tomadol 25-3 and Tomadol 25-7 surfactant and mix until dissolved. |
| Dowanol DPM* | 4.0 | – | | | Add Tomamine Alkali Surfactant and mix well until homogeneous. |
| Diethylene glycol butyl ether | – | 10.0 | | | |
| Tomadol 25-3 surfactant | 1.0 | 1.0 | | | |
| Tomadol 25-7 surfactant | 3.0 | 3.0 | | | |
| Tomamine Alkali Surfactant | 3.5 | 8.5 | | | |

*The Dow Chemical Company, or equivalent product.

| | | | | |
|----|-----|-----|--|--|
| pH | >13 | >13 | | |
|----|-----|-----|--|--|

APPLICATIONS

Food service hard surface cleaner and degreasers.

USE DILUTION

2 ounces/gallon

High-Foaming Smokehouse Cleaner

Formula I-116

| COMPONENT | A WT % | B WT % | MIXING INSTRUCTIONS |
|--|-----------|-----------|---|
| Soft water | 60.7 | 60.4 | Add sodium hydroxide to water and mix well. |
| Sodium hydroxide (50%) | 30.0 | 30.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 3.0 | 3.0 | Add Tomamine Amphoteric N or Tomamine Amphoteric SC surfactant and mix until dissolved. |
| Tomamine Amphoteric N surfactant | – | 5.6 | Add Tomadol 91-8 surfactant and mix until dissolved. |
| Tomamine Amphoteric SC surfactant | 5.3 | – | |
| Tomadol 91-8 surfactant | 1.0 | 1.0 | |
| pH | 14.0 | 14.0 | |
| Specific gravity 20/20 °F | 1.17 | 1.17 | |
| APPLICATIONS | | | USE DILUTION |
| Food plant cleaning. Good emulsification and foam. | | | 5:1 to 10:1 |

Oven Cleaner—Premium

Formula F-302

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|-------|---|
| Water | 70.17 | Add VAN GEL ES to water and mix well. |
| VAN GEL® ES* | 1.11 | Add VANZAN xanthan gum and mix well. |
| VANZAN® xanthan gum** | 0.22 | Add Acusol 820 and mix well. |
| Acusol™ 820*** | 1.00 | Add tetrapotassium pyrophosphate and mix well. |
| Tetrapotassium pyrophosphate | 1.50 | Add sodium metasilicate anhydrous and mix well. |
| Sodium metasilicate anhydrous | 4.00 | Add sodium gluconate and mix well. |
| Sodium gluconate | 0.50 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 20.00 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 0.50 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 0.50 | Add Tomamine AO-14-2 surfactant and mix well. |
| Tomamine AO-14-2 surfactant | 0.50 | |
| *Use VAN GEL ES, R.T. Vanderbilt Company, Inc., or equivalent product. | | |
| **Use VANZAN xanthan gum, R.T. Vanderbilt Company, Inc., or equivalent product. | | |
| ***Acusol 820, Rohm and Haas, or equivalent product. | | |
| APPLICATIONS | | |
| Oven cleaner. | | |

Oven Cleaner—Standard

Formula F-303

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------|------|--|
| Water | 74.0 | Slowly add sodium hydroxide, mix and cool. |
| Sodium hydroxide (50%) | 24.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 1.0 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 1.0 | |
| APPLICATIONS | | |
| Oven cleaner. | | |

Meat Processing Cleaner

Formula F-304

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------------|------|--|
| Water | 60.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 5.0 | Slowly add sodium hydroxide, mix well and cool. |
| Sodium hydroxide (50%) | 25.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 3.0 | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 5.0 | Add Tomamine Q-17-2 surfactant and mix well. |
| Tomamine Q-17-2 surfactant | 2.0 | |

APPLICATIONS

Removal of meat tissue and protein soils from equipment and surfaces.

Solvent-Free Food Industry Degreaser

Formula F-305

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 68.0 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 7.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (100% Basis) | 6.0 | |
| Tomadol 900 surfactant | 7.0 | Add Tomadol 900 and Tomadol 600 surfactants and mix well. |
| Tomadol 600 surfactant | 3.0 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 9.0 | |

APPLICATIONS

Hard surface degreaser.

USE DILUTION

Heavy-duty use: As-is to 4:1
 Regular-duty and floors: 20:1
 Light-duty use: 64:1

High Pressure Wash

Formula LF-111

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|------|------|---|
| | WT % | WT % | |
| Water | 82.4 | 83.5 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix until dissolved. Add sodium metasilicate, pentahydrate and mix until dissolved. Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. Add Tomamine Amphoteric 400 surfactant and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 6.0 | 6.0 | |
| Sodium metasilicate, pentahydrate | 4.0 | 4.0 | |
| Tomamine AO-405 surfactant | 6.0 | – | |
| Tomamine AO-455 surfactant | – | 6.0 | |
| Tomamine Amphoteric 400 surfactant | 1.6 | 0.5 | |
| Specific gravity, 20/20 °F | 1.04 | 1.04 | |
| pH | 12.8 | 12.8 | |
| APPLICATIONS | | | USE DILUTION |
| Tunnel and spray wash systems. | | | 10 ounces/gallon |

Low-Foam Concentrate

Formula LF-115

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|---|------|------|---|
| | WT % | WT % | |
| Water | 55.5 | 54.0 | Add potassium hydroxide to water and mix well. Add tetrapotassium pyrophosphate and mix well. Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. Add Tomamine Amphoteric 400 surfactant and mix well until homogeneous. |
| Potassium hydroxide (45%) | 20.0 | 20.0 | |
| Tetrapotassium pyrophosphate | 15.0 | 15.0 | |
| Tomamine AO-405 surfactant | 5.0 | – | |
| Tomamine AO-455 surfactant | – | 5.0 | |
| Tomamine Amphoteric 400 surfactant | 4.5 | 6.0 | |
| pH | 14.0 | 14.0 | |
| Specific gravity 20/20 °F | 1.23 | 1.24 | |
| APPLICATIONS | | | USE DILUTION |
| Pressure washing and foam-sensitive applications. | | | 1–10 ounces/gallon |

Low-Foam Spray Cleaner

Formula LF-107

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|------|------|---|
| | WT % | WT % | |
| Water | 79.5 | 79.6 | Add potassium hydroxide to water and mix well. Add sodium gluconate and mix well. Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. Add Tomamine Amphoteric 400 surfactant and mix well until homogeneous. |
| Potassium hydroxide (45%) | 12.0 | 12.0 | |
| Sodium gluconate | 5.0 | 5.0 | |
| Tomamine AO-405 surfactant | 2.0 | – | |
| Tomamine AO-455 surfactant | – | 2.0 | |
| Tomamine Amphoteric 400 surfactant | 1.5 | 1.4 | |
| pH | 14 | 14 | |
| Specific gravity 20/20 °F | 1.07 | 1.08 | |
| APPLICATIONS | | | |
| Spray and other foam-sensitive applications. | | | |

| Acid-Based Metal Cleaner | | Formula I-101 |
|---|-------------------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 61.0 | Add phosphoric acid to water, allow to cool. |
| Phosphoric acid (85%) | 35.0 | Add glycolic acid, allow to cool. |
| Glycolic acid | 1.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 3.0 | |
| pH | 0.9 | |
| Specific gravity @ 20 °C | 1.19 | |
| APPLICATIONS | USE DILUTION | |
| Metal cleaner. | 1–2 ounces/gallon | |
| NOTE: Rinse well after wash. Neutralize if necessary. | | |

| Alkaline Metal Cleaner—Premium Concentrate | | Formula M-200 |
|--|-------------------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 67.0 | Add Tomadol 91-6 or Tomadol 900 surfactant to water and mix well. |
| Tomadol 91-6 or Tomadol 900 surfactant | 10.0 | Add sodium metasilicate, pentahydrate, trisodium phosphate, anhydrous, sodium hydroxide, ethylenediamine tetraacetic acid, tetrasodium salt and phosphate ester. |
| Sodium metasilicate, pentahydrate | 7.0 | Continue with vigorous mixing until homogeneous. |
| Trisodium phosphate, anhydrous | 2.0 | |
| Sodium hydroxide (50%) | 3.0 | |
| Ethylenediamine tetraacetic acid, tetrasodium salt | 6.0 | |
| Phosphate ester* | 5.0 | |
| *Triton H-66, The Dow Chemical Company, or equivalent product. | | |
| pH | 12.7 | |
| Viscosity @ 73 °F, cps | 28 | |
| Phase coalescence temperature, °F | 99 | |
| APPLICATIONS | USE DILUTION | |
| Metal cleaner. | 1–2 ounces/gallon | |

| Alkaline Metal Cleaner—Standard Concentrate | | Formula M-201 |
|--|-------------------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 67.9 | Add Tomadol 91-6 or Tomadol 900 surfactant to water and mix well. |
| Tomadol 91-6 or Tomadol 900 Surfactant | 7.5 | Add sodium metasilicate, pentahydrate, ethylenediamine tetraacetic acid, tetrasodium salt and phosphate ester. |
| Sodium metasilicate, pentahydrate | 15.6 | Continue with vigorous mixing until homogeneous. |
| Ethylenediamine tetraacetic acid, tetrasodium salt | 1.0 | |
| Phosphate ester* | 8.0 | |
| *Triton H-66, The Dow Chemical Company, or equivalent product. | | |
| pH | 13.2 | |
| Viscosity @ 73 °F, cps | 12 | |
| Phase coalescence temperature, °F | 135 | |
| APPLICATIONS | USE DILUTION | |
| Metal cleaner. | 1–2 ounces/gallon | |

Heavy Oil Metal Cleaner

Formula M-202

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 69.0 | Mix in two parts first then combine together. |
| Sodium metasilicate, pentahydrate | 7.0 | Part 1: Blend water, sodium metasilicate, pentahydrate and ethylenediamine tetraacetic acid, tetrasodium salt. |
| Ethylenediamine tetraacetic acid, tetrasodium salt | 6.0 | |
| Tomadol 91-6 surfactant | 3.0 | Part 2: Blend Tomadol 91-6, Tomadol 91-2.5 and Tomamine Amphoteric 400. |
| Tomadol 91-2.5 surfactant | 7.0 | |
| Tomamine Amphoteric 400 surfactant | 8.0 | |
| pH | 13.5 | |
| Viscosity @ 73 °F, cps | 77 | |
| Phase coalescence temperature, °F | >165 | |

APPLICATIONS

Metal cleaner.

NOTE: Dye may be added if desired.

Low-Foam Metal Cleaner

Formula LF-114

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|------------------------------------|------|------|--|
| | WT % | WT % | |
| Water | 66.2 | 65.3 | Dissolve tetrapotassium pyrophosphate to the water and mix well. |
| Tetrapotassium pyrophosphate | 6.0 | 6.0 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 12.0 | 12.0 | Add potassium silicate and mix well. |
| Potassium silicate | 12.0 | 12.0 | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-405 surfactant | 2.0 | – | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 2.0 | |
| Tomamine Amphoteric 400 surfactant | 1.8 | 2.7 | |
| pH | 13.7 | 13.7 | |
| Specific gravity 20/20 °F | 1.15 | 1.15 | |

APPLICATIONS

Metal cleaning where foam buildup is not desired.

USE DILUTION

1–2 ounces/gallon

Low-Foam Easy Rinse Metal Cleaner

Formula M-300

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 93.5 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt | 1.0 | Add Tomamine AO-405 surfactant and mix well. |
| Tomamine AO-405 surfactant | 2.0 | |
| Tomamine Amphoteric 400 surfactant | 2.0 | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine E-14-5 surfactant | 1.5 | Add Tomamine E-14-5 surfactant and mix well. |

APPLICATIONS

Metal cleaner.

| Flash-Foaming Metal Cleaner | | Formula M-301 |
|--|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 74.0 | Slowly add sodium hydroxide to water, mix well and cool. |
| Sodium hydroxide (50%) | 10.0 | Add sodium silicate 3.22/1 and mix until dissolved. |
| Sodium silicate 3.22/1 | 5.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 5.0 | |
| Tomamine AO-455 surfactant | 4.5 | Add Tomamine AO-455, Tomamine Q-14-2PG and Tomamine Amphoteric 400 surfactants and mix well until homogeneous. |
| Tomamine Q-14-2PG surfactant | 0.5 | |
| Tomamine Amphoteric 400 surfactant | 1.0 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaner. | | 20:1 |

| Low-Residue Metal Cleaner | | Formula M-302 |
|-----------------------------------|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 91.0 | Add sodium tripolyphosphate to water and mix well. |
| Sodium tripolyphosphate | 0.5 | Add Tomadol 901 surfactant and mix well. |
| Tomadol 901 surfactant | 5.0 | Add Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-455 surfactant | 1.5 | Add Tomamine Amphoteric SC surfactant and mix well. |
| Tomamine Amphoteric SC surfactant | 2.0 | |
| APPLICATIONS | | |
| Metal cleaner. | | |

| Metal Parts Degreaser | | Formula M-303 |
|-----------------------------------|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 69.0 | Add sodium metasilicate and mix until dissolved. |
| Sodium metasilicate | 3.0 | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 4.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 10.0 | Add Tomamine Amphoteric SC surfactant and mix well. |
| Tomamine Amphoteric SC surfactant | 9.0 | Add Tomadyne 102 surfactant and mix well. |
| Tomadyne 102 surfactant | 5.0 | |
| APPLICATIONS | | |
| Metal cleaner. | | |

| Spray Cleaner for De-Oiling | | Formula M-203 |
|---|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 56.5 | Mix in two parts first then combine together. |
| Sodium silicate*, (37.5%) | 12.0 | Part 1: Blend water, sodium silicate, tetrapotassium pyrophosphate, and potassium hydroxide. |
| Tetrapotassium pyrophosphate | 13.0 | |
| Potassium hydroxide (45%) | 12.0 | Part 2: Tomadol 1-5 and Tomamine Alkali Surfactant. |
| Tomadol 1-5 surfactant | 2.0 | |
| Tomamine Alkali Surfactant | 4.5 | |
| *Starso® Silicate 1:1.8, PQ Corporation, or equivalent. | | |
| pH | 13.7 | |
| Viscosity, 73 °F, cps | 3 | |
| Phase coalescence temperature, °F | >165 | |
| APPLICATIONS | | USE DILUTIONS |
| Metal cleaning. | | Heavy-duty use: 4 ounces/gallon Regular-duty use: 2 ounces/gallon Light-duty use: 1 ounce/gallon |

Acid Aluminum Brightener—Premium

Formula A-102, A-103

| COMPONENT | A-102 | A-103 | MIXING INSTRUCTIONS |
|--|-------|-------|---|
| | WT % | WT % | |
| Water | 64.0 | 70.0 | Tomamine Acid Foamer surfactant is a semisolid at room temperature. Heating may be necessary. |
| Tomamine Acid Foamer surfactant | 3.0 | 3.0 | |
| Sulfuric acid (95%) | 20.0 | 10.0 | Add Tomamine Acid Foamer surfactant to water and stir until dissolved. This may take several minutes and it may be necessary to leave standing overnight to ensure that it has been completely dissolved. |
| Ammonium bifluoride | 13.0 | – | |
| Hydrofluoric acid (70%) | – | 17.0 | Add sulfuric acid, mix well, then cool. |
| | | | Add ammonium bifluoride or hydrofluoric acid and mix well. |
| pH | 3.5 | 3.5 | |
| APPLICATIONS | | | USE DILUTION |
| Truckwash, vertical aluminum surface cleaning. | | | 10:1 to 30:1 |
| NOTES: Preparation and use of a stock solution of 20% glycol ether/80% Tomamine Acid Foamer surfactant will aid in solubilization and homogeneity. | | | |

Acid Aluminum Brightener—Standard

Formula M-204

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 78.0 | Dissolve acids in water, mix well and allow to cool. |
| Tomadol 91-8 surfactant | 4.5 | |
| Phosphoric acid (85%) | 4.5 | Add ethylene glycol monobutyl ether and Tomadol 91-8 surfactant. Stir until clear solution is obtained. |
| Citric acid | 5.5 | |
| Ethylene glycol monobutyl ether | 5.5 | |
| Phosphonic acid* | 2.0 | |
| *Dequest 2010, Thermphos International BV, or equivalent product. | | |
| pH | 1.7 | |
| Viscosity @ 73 °F, cps | 5 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | | |
| Aluminum cleaner and brightener. | | |

Non-Acid Aluminum Brightener

Formula I-113

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|------|------|--|
| | WT % | WT % | |
| Water | 58.0 | 58.0 | Dissolve ethylenediamine tetraacetic acid, tetrasodium salt or NTA in water. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | – | 10.0 | |
| NTA (40%) sodium nitrilo-triacetate | 10.0 | – | Add potassium hydroxide to mixture, dissolve and allow to cool. |
| Potassium hydroxide (45%) | 4.0 | 4.0 | Add sodium hydroxide to mixture, dissolve and allow to cool. |
| Sodium hydroxide (50%) | 20.0 | 20.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 2.0 | 2.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 6.0 | 6.0 | |
| pH | 13.8 | 13.8 | |
| Specific gravity 20/20 °F | 1.19 | 1.19 | |
| APPLICATIONS | | | USE DILUTION |
| Truckwash, parts wash. | | | 5:1 to 20:1 |
| NOTE: Rinse well immediately after wash. | | | |

Solvent-Based Aluminum Brightener

Formula S-113

| | A | B | C | |
|--|-------------|-------------|-------------|---|
| COMPONENT | WT % | WT % | WT % | MIXING INSTRUCTIONS |
| Water | 83.0 | 80.5 | 82.5 | Slowly add liquid acids to water and mix well. |
| Phosphoric acid (85%) | 3.0 | – | – | Dissolve citric acid and mix well. |
| Hydroxyacetic acid (70%) | – | 10.0 | 5.0 | Add ethylene glycol butyl ether and mix well, until clear |
| Citric acid, anhydrous | 4.0 | – | 3.5 | Add Tomadol 91-8 surfactant and mix well, until clear. |
| Ethylene glycol butyl ether | 5.0 | 5.0 | 5.0 | Add Tomamine Q-17-2 surfactant and mix well, until clear. |
| Tomadol 91-8 surfactant | 3.0 | 2.5 | 2.0 | |
| Tomamine Q-17-2 surfactant | 2.0 | 2.0 | 2.0 | |
| pH | 1.3 | 1.6 | 1.7 | |
| Specific gravity, 20/20 °C | 1.03 | 1.02 | 1.02 | |
| APPLICATIONS | | | | USE DILUTION |
| Spray cleaner for trucks and equipment. Soak tank for equipment and parts. | | | | 5:1 to 10:1 |

Alkaline Aluminum Cleaner—Premium

Formula I-102

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|-------------|--|
| Water | 48.0 | Add sodium gluconate and ethylenediamine tetraacetic acid, tetrasodium salt to water and mix well. |
| Sodium gluconate | 2.0 | Add potassium hydroxide and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (39%) | 2.0 | Add sodium silicate and mix well. |
| Potassium hydroxide (45%) | 20.0 | Add Tomadol 900 surfactant and mix well. |
| 42° Sodium silicate 3.22/1 | 20.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomadol 900 surfactant | 3.0 | |
| Tomamine Alkali Surfactant | 5.0 | |
| pH | 13.5 | |
| Specific gravity, 20/20 °C | 1.18 | |
| APPLICATIONS | | USE DILUTION |
| Parts soak. | | 10:1 to 30:1 |

Alkaline Aluminum Cleaner—Standard

Formula M-205

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|-------------|--|
| Water | 77.7 | Add Tomadol 91-6 or Tomadol 900 surfactant to water and mix well. |
| Tomadol 91-6 or Tomadol 900 surfactant | 3.0 | Add linear dodecylbenzene sulfonate, sodium metasilicate, pentahydrate, and tetrapotassium pyrophosphate and vigorously mix until homogeneous. |
| C ₁₂ LAS (60%)* | 3.3 | Add phosphate ester and mix well. |
| Sodium metasilicate, pentahydrate | 7.0 | |
| Tetrapotassium pyrophosphate | 2.0 | |
| Phosphate ester** | 7.0 | |
| *Calsoft L-60 Slurry, Pilot Chemical Company, or equivalent product. | | |
| **Triton H-66, The Dow Chemical Company, or equivalent. | | |
| Viscosity @ 73 °F, cps | 8 | |
| pH | 13.3 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | | |
| Aluminum cleaner. | | |

Liquid Drain Opener

Formula I-106

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------|--------------|--|
| Water | 49.0 | Add sodium hydroxide to water, mix and cool. |
| Sodium hydroxide (50%) | 50.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 1.0 | |
| pH | 14 | |
| APPLICATIONS | USE DILUTION | |
| Removes organic drain clogs. | As-is | |

Industrial Floor Stripper

Formula I-107

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|--------------|---|
| Soft water | 84.25 | Add sodium metasilicate, pentahydrate to water and mix until dissolved. |
| Sodium metasilicate, pentahydrate | 5.00 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 2.00 | |
| Tomamine Alkali Surfactant | 1.25 | Add Tomamine Alkali Surfactant and mix well. |
| Tomadol 91-8 surfactant | 2.00 | Add Tomadol 91-8 surfactant and mix well. |
| Monethanolamine | 5.00 | Add monethanolamine and mix well. |
| Tomamine Q-17-2 surfactant | 0.50 | Add Tomamine Q-17-2 surfactant and mix well. |
| pH | 13.4 | |
| Specific gravity 20/20 °F | 1.04 | |
| APPLICATIONS | USE DILUTION | |
| Floor stripper and cleaner. | 5:1 to 10:1 | |

Paint Stripper

Formula S-108

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|--|--|
| Soft water | 66.5 | Add ethylene glycol butyl ether to water and mix well. |
| Ethylene glycol butyl ether | 10.0 | Add lauryl ether sulfate, sodium salt and mix until dissolved. |
| Lauryl ether sulfate, sodium salt (60%) | 3.0 | Add sodium hydroxide and mix well. |
| Sodium hydroxide (50%) | 15.0 | Add Tomamine Alkali Surfactant and mix well until homogeneous. |
| Tomamine Alkali Surfactant | 5.5 | |
| pH | >13 | |
| Specific gravity 20/20 °C | 1.08 | |
| APPLICATIONS | USE INSTRUCTIONS | |
| Paint remover for wood and metal surfaces. | Paint on with brush and remove with putty knife or steel wool. | |

Thickened Alkaline Cleaners

Formula I-121

| | A | B | C | |
|--|-------------|-------------|-------------|---|
| COMPONENT | WT % | WT % | WT % | MIXING INSTRUCTIONS |
| Water | 91 | 86 | 81 | Add sodium hydroxide (50%) to water and mix well. |
| Sodium hydroxide (50%) | 5 | 10 | 15 | Add Tomamine AO-728 surfactant and mix until dissolved. |
| Tomamine AO-728 surfactant | 3 | 3 | 3 | Add oleic acid and mix well. |
| Oleic acid | 0.5 | 0.5 | 0.5 | Add Tomamine Amphoteric N surfactant and mix well. |
| Tomamine Amphoteric N surfactant | 0.5 | 0.5 | 0.5 | |
| Typical viscosity @ 20 °C, cps (RVT #3, 100 rpm) | 270 | 310 | 337 | |
| Typical viscosity @ 20 °C, cps (RVT #3, 10 rpm) | 1410 | 1900 | 2160 | |
| Typical viscosity @ 20 °C, cps (RVT #3, 1 rpm) | 5900 | 8900 | 9400 | |
| Specific gravity 20/20 °C | 1.03 | 1.05 | 1.08 | |
| APPLICATIONS | | | | USE DILUTION |
| Spray applications to trucks and equipment. Soak tank application for equipment and parts. | | | | 5:1 to 10:1 |

Acid Rust Remover

Formula M-206

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|---|---|
| Water | 79.5 | Add Tomadol 91-6 or Tomadol 900 surfactant to water and mix well. |
| Tomadol 91-6 or Tomadol 900 surfactant | 2.5 | Add phosphoric acid and mix well. |
| Phosphoric acid (85%) | 14.0 | Add ethylene glycol monobutyl ether and mix well until homogeneous. |
| Ethylene glycol monobutyl ether | 4.0 | |
| Viscosity @ 73 °F, cps | 5 | |
| pH | 1.0 | |
| Phase coalescence temperature, °F | >150 | |
| APPLICATIONS | USE DILUTION | |
| Rust remover. | May be diluted or used as-is on NONFERROUS metals (e.g., aluminum, zinc) at temperatures below 165 °F in stainless steel tanks. | |

| Built Steam Cleaner | | Formula I-105 |
|-------------------------------------|-------------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 78.0 | Add sodium tripolyphosphate to water and mix well to dissolve. |
| Sodium tripolyphosphate | 10.0 | Add sodium metasilicate pentahydrate and mix well to dissolve. |
| Sodium metasilicate pentahydrate | 2.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 5.0 | Add Tomamine Alkali Surfactant and mix well until clear. |
| Tomamine Alkali Surfactant | 5.0 | |
| pH | 10.4 | |
| Specific gravity 20/20 °F | 1.1 | |
| APPLICATIONS | | USE DILUTION |
| Industrial degreasing and cleaning. | | 1 ounce/gallon |

| Heavy-Duty Steam Cleaner | | Formula I-109 |
|--|-------------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 45.0 | Add sodium metasilicate pentahydrate to water and mix well. |
| Sodium metasilicate pentahydrate | 30.0 | Add potassium hydroxide and mix well until clear. |
| Potassium hydroxide (45%) | 10.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 15.0 | |
| pH | 14 | |
| APPLICATIONS | | USE DILUTION |
| Industrial cleaning and degreasing. | | 20:1 to 50:1 |
| NOTE: Long-term storage should be in plastic containers, as the formulation will etch glass. | | |

| Non-Caustic Steam Cleaner | | Formula I-114 |
|---------------------------------------|-------------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 79.0 | Add sodium metasilicate pentahydrate to water and mix well to dissolve. |
| Sodium metasilicate pentahydrate | 1.0 | Add sodium tripolyphosphate and mix well to dissolve. |
| Sodium tripolyphosphate | 10.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 5.0 | Add Tomamine Alkali Surfactant and mix well. |
| Tomamine Alkali Surfactant | 5.0 | |
| pH | 10.4 | |
| Specific gravity 20/20 °F | 1.1 | |
| APPLICATIONS | | USE DILUTION |
| Hard surface cleaning and degreasing. | | 10:1 to 50:1 |

| Thickened Acetic Acid Cleaners | | | Formula A-113 |
|--|------|------|--|
| COMPONENT | A | B | MIXING INSTRUCTIONS |
| | WT % | WT % | |
| Water | 85.0 | 87.5 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Add glacial acetic acid to water and mix well. Add Tomamine Acid Thickener and mix well. Add Tomadol 91-2.5 surfactant and mix well. Slowly add sodium chloride, mix well and cool. |
| Glacial acetic acid | 5.0 | 5.0 | |
| Tomamine Acid Thickener surfactant | 3.0 | 3.0 | |
| Tomadol 91-2.5 surfactant | – | 0.5 | |
| Sodium chloride | 7.0 | 4.0 | |
| Typical viscosity @ 20 °C (RVT #3, 100 rpm), cps | 500 | 200 | |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 700 | 200 | |
| Specific gravity 20/20 °C | 1.35 | 1.36 | |
| APPLICATIONS | | | USE DILUTION |
| Toilet bowl cleaning. Vertical surface cleaning. | | | As-is to 50:1 |

| Thickened Formic Acid Cleaner | | | Formula A-110 |
|---|------|--|--|
| COMPONENT | WT % | | MIXING INSTRUCTIONS |
| Water | 88.4 | | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Slowly add formic acid to water and mix well. Add Tomamine Acid Thickener surfactant and mix well. Add Tomadol 91-2.5 surfactant and mix well. Slowly add sodium chloride, mix well and cool. |
| Formic acid (96%) | 5.0 | | |
| Tomamine Acid Thickener surfactant | 3.0 | | |
| Tomadol 91-2.5 surfactant | 0.6 | | |
| Sodium chloride | 3.0 | | |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 350 | | |
| Specific gravity 20/20 °C | 1.03 | | |
| APPLICATIONS | | | USE DILUTION |
| Vertical surface cleaning. | | | As-is |

| Viscous Hydrochloric/Phosphoric Acid Cleaner | | | Formula A-106 |
|--|------|--|---|
| COMPONENT | WT % | | MIXING INSTRUCTIONS |
| Water | 70.0 | | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Slowly add phosphoric acid to water, mix well and cool. Add Tomamine Acid Thickener surfactant and mix well. Slowly add hydrochloric acid, mix well and cool. |
| Phosphoric acid (75%) | 2.0 | | |
| Tomamine Acid Thickener surfactant | 3.0 | | |
| Hydrochloric acid (37%) | 25.0 | | |
| Viscosity @ 20 °C, cps | 5200 | | |
| APPLICATIONS | | | USE DILUTION |
| Toilet bowl cleaning. Vertical surface cleaning. | | | As-is to 10:1 |

Viscous Organic Acid Cleaners

Formula A-104

| COMPONENT | A | B | C | MIXING INSTRUCTIONS |
|---|-------|-------|-------|--|
| | WT % | WT % | WT % | |
| Water | 88.00 | 88.00 | 88.00 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Add citric acid to water and mix until dissolved. Add Tomamine Acid Thickener surfactant and mix well. Slowly add formic acid and mix well. Add Tomadol 91-6 or Tomadol 1-7 surfactant and mix well. Add sodium chloride and mix until dissolved. Add fragrance and mix well. |
| Citric acid, anhydrous | 2.50 | 1.25 | – | |
| Tomamine Acid Thickener surfactant | 3.00 | 3.00 | 3.00 | |
| Formic acid | – | 1.25 | 2.50 | |
| Tomadol 91-6 surfactant or Tomadol 1-7 surfactant | 0.30 | 0.30 | 0.30 | |
| Sodium chloride | 6.00 | 6.00 | 6.00 | |
| Fragrance* | 0.20 | 0.20 | 0.20 | |

*Use fragrance suitable for acidic media, and test for stability.

| | | | |
|------------------------|-----|-----|-----|
| Viscosity @ 20 °C, cps | 820 | 780 | 560 |
|------------------------|-----|-----|-----|

APPLICATIONS

Toilet bowl cleaners with good cling time.

Thickened Oxalic Acid Cleaner

Formula A-115

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|------|------|---|
| | WT % | WT % | |
| Water | 90.0 | 90.0 | Heat and mix Tomamine Acid Thickener prior to use in order to assure homogeneity. Add oxalic acid to water and mix well. Add Tomamine Acid Thickener surfactant and mix well. Add Tomadol 91-2.5 surfactant and mix well. Slowly add sodium xylene sulfonate mix well and cool. |
| Oxalic acid | 5.0 | 5.0 | |
| Tomamine Acid Thickener surfactant | 3.0 | 3.0 | |
| Tomadol 91-2.5 surfactant | – | 0.5 | |
| Sodium xylene sulfonate (40%) | 2.0 | 1.5 | |
| Typical viscosity @ 20 °C (RVT #3, 100 rpm), cps | 650 | 2000 | |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 5000 | 2750 | |
| Specific gravity 20/20 °C | 1.02 | 1.02 | |

APPLICATIONS

Toilet bowl cleaning. Metal cleaning. Vertical surface cleaning. Rust removal.

USE DILUTION

As-is to 50:1

Concentrated Phosphoric Acid Cleaners

Formula A-111

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|---|-------|-------|--|
| | WT % | WT % | |
| Soft water | 33.5 | 36.0 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Slowly add phosphoric acid to water, mix and cool. Add Tomamine Acid Thickener surfactant and mix well. Slowly add sodium chloride, mix well and cool. |
| Phosphoric acid (85%) | 50.0 | 50.0 | |
| Tomamine Acid Thickener surfactant | 7.5 | 5.0 | |
| Sodium chloride | 9.0 | 9.0 | |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 28000 | 13000 | |
| Specific gravity 20/20 °C | 1.35 | 1.36 | |

APPLICATIONS

Toilet bowl cleaning. Vertical surface cleaning.

USE DILUTION

As-is to 50:1

Viscous Phosphoric Acid Cleaner

Formula A-105

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------------|------|--|
| Water | 77.7 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. |
| Phosphoric acid (75%) | 12.7 | |
| Tomamine Acid Thickener surfactant | 4.0 | Slowly add phosphoric acid (75%) to water, mix well and cool. |
| Sodium chloride | 5.0 | Add Tomamine Acid Thickener surfactant and mix until dissolved. |
| Tomadol 91-6 surfactant | 0.5 | Add sodium chloride and mix until dissolved. |
| Fragrance* | 0.1 | Add Tomadol 91-6 surfactant and mix well until homogeneous. |
| | | Add fragrance and mix well. |

*Use fragrance suitable for acidic media, and test for stability.

| | |
|---------------------------|------|
| Viscosity @ 20 °C, cps | 6500 |
| Specific gravity 20/20 °C | 1.09 |

| APPLICATIONS | USE DILUTION |
|---|--------------|
| Good cleaning and descaling. Good cling time. | 5:1 to 10:1 |

Viscous Sulfamic Acid Cleaners

Formula A-112

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|------------------------------------|------|------|--|
| | WT % | WT % | |
| Water | 87.0 | 88.0 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. |
| Sulfamic acid | 5.0 | 5.0 | |
| Tomamine Acid Thickener surfactant | 3.0 | 3.0 | Add sulfamic acid and mix well. |
| Tomadol 91-2.5 surfactant | – | 0.5 | Add Tomamine Acid Thickener surfactant and mix well. |
| Sodium chloride | 5.0 | 3.5 | Add Tomadol 91-2.5 surfactant and mix well. |
| | | | Slowly add sodium chloride, mix well and cool. |

| | | |
|--|------|------|
| Typical viscosity @ 20 °C (RVT #3, 100 rpm), cps | 650 | 685 |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 5000 | 960 |
| Specific gravity 20/20 °C | 1.06 | 1.04 |

| APPLICATIONS | USE DILUTION |
|--|---------------|
| Toilet bowl cleaning. Vertical surface cleaning. | As-is to 50:1 |

Mixed Acid Bath Cleaner **Formula B-102**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------------|------|---|
| Water | 80.0 | Add hydroxyacetic acid to water and mix well. |
| Hydroxyacetic acid | 5.0 | Add sulfamic acid and mix well. |
| Sulfamic acid | 5.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 10.0 | |
| pH | 1 | |
| APPLICATIONS | | USE DILUTION |
| Tub and tile cleaner and descaler. | | As-is, or dilute to need |

Bath and Tile Cleaner **Formula I-300**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------|------|---|
| Water | 77.0 | Slowly add phosphoric acid to water, mix and allow to cool. |
| Phosphoric acid (85%) | 13.0 | Add Tomadol 901 surfactant and mix well. |
| Tomadol 901 surfactant | 7.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 3.0 | |
| APPLICATIONS | | |
| Tub and tile cleaner. | | |

Citric Acid Bowl Cleaner **Formula A-114**

| COMPONENT | A B | | MIXING INSTRUCTIONS |
|--|------|------|---|
| | WT % | WT % | |
| Water | 88.0 | 89.0 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Add citric acid to water and mix well. Add Tomamine Acid Thickener surfactant and mix well. Add Tomadol 91-2.5 surfactant and mix well. Slowly add sodium chloride and mix well. |
| Citric acid, anhydrous | 5.0 | 5.0 | |
| Tomamine Acid Thickener surfactant | 3.0 | 3.0 | |
| Tomadol 91-2.5 surfactant | 0.5 | 1.0 | |
| Sodium chloride | 3.5 | 2.0 | |
| Typical viscosity @ 20 °C (RVT #3, 100 rpm), cps | 690 | 400 | |
| Typical viscosity @ 20 °C (RVT #3, 10 rpm), cps | 960 | 410 | |
| Specific gravity 20/20 °C | 1.05 | 1.03 | |
| APPLICATIONS | | | USE DILUTION |
| Toilet bowl cleaning. Vertical surface cleaning. | | | As-is to 50:1 |

Hydrochloric Acid Bowl Cleaner **Formula A-109**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 72.0 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. |
| Tomamine Acid Thickener surfactant | 3.0 | |
| Hydrochloric acid (37%) | 25.0 | Add Tomamine Acid Thickener surfactant to water and mix well. Slowly add hydrochloric acid, mix well and cool. |
| Viscosity @ 20 °C, cps | 5100 | |
| pH | 1.3 | |
| APPLICATIONS | | USE DILUTION |
| Toilet bowl cleaning. Vertical surface cleaning. | | As-is to 10:1 |

Hydrochloric/Phosphoric Acid Bowl Cleaner

Formula B-101

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|--------------------------|---|
| Water | 68.00 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Slowly add phosphoric acid to water and mix well. Add Tomadol 25-12 surfactant and mix well. Add Tomamine Acid Thickener surfactant and mix well. Slowly add hydrochloric acid and mix well. |
| Phosphoric acid (75%) | 3.00 | |
| Tomadol 25-12 surfactant | 0.50 | |
| Tomamine Acid Thickener surfactant | 4.00 | |
| Hydrochloric acid (37%) | 24.50 | |
| Viscosity @ 20 °C, cps | 1750 | |
| pH | <3 | |
| APPLICATIONS | USE DILUTION | |
| Bowl cleaner. Ceramic tub and tile cleaner. | As-is, or dilute to need | |

Mixed Acid Bowl Cleaner

Formula I-301

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------|------------------------------------|---|
| Water | 86.5 | Add citric acid to water and mix well. Add phosphoric acid and mix well. Add Tomadol 901 surfactant and mix well. |
| Citric acid | 6.0 | |
| Phosphoric acid (85%) | 3.0 | |
| Tomadol 901 surfactant | 4.5 | |
| APPLICATIONS | Tub and tile cleaner and descaler. | |

Phosphoric Acid Bowl Cleaner

Formula B-100

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|--------------|---|
| Water | 77.7 | Heat and mix Tomamine Acid Thickener surfactant prior to use in order to assure homogeneity. Slowly add phosphoric acid to water and mix well. Add Tomamine Acid Thickener surfactant and mix until dissolved. Add sodium chloride and mix until dissolved. Add Tomadol 25-12 surfactant and mix well. Add fragrance and mix well. |
| Phosphoric acid (75%) | 12.7 | |
| Tomamine Acid Thickener surfactant | 4.0 | |
| Sodium chloride | 5.0 | |
| Tomadol 25-12 surfactant | 0.5 | |
| Fragrance* | 0.1 | |
| * Use fragrance suitable for acidic media, and test for stability. | | |
| Viscosity @ 20 °C, cps | 1800 | |
| pH | 1.3 | |
| APPLICATIONS | USE DILUTION | |
| Bowl cleaner. Tile cleaner. | As-is | |

Auto Dish Detergent with Anti-Scale **Formula I-302**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------|------|--|
| Water | 82.5 | Add citric acid to water and mix well. |
| Citric acid | 6.0 | Add Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-455 surfactant | 2.5 | Add isopropanol and mix well. |
| Isopropanol | 9.0 | |
| APPLICATIONS | | |
| Auto dishwash detergent. | | |

Auto Dish Rinse Aid for Poor Water Quality **Formula I-303**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Water | 60.0 | Add sodium xylene sulfonate to water and mix well. |
| Sodium xylene sulfonate (40%) | 15.0 | Add Nonidet RK-18 or Nonidet SF-3 surfactant and mix well. |
| Nonidet™ RK-18 or Nonidet SF-3 surfactant | 25.0 | |
| APPLICATIONS | | |
| Auto dishwash rinse aid. | | |

Auto Dish Rinse Aid with Tea Stain Remover **Formula I-304**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------------|------|--|
| Water | 80.0 | Add Nonidet SF-5 surfactant and mix well. |
| Nonidet SF-5 surfactant | 17.0 | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 3.0 | |
| APPLICATIONS | | |
| Auto dishwash rinse aid. | | |

Hand Dishwash—Premium **Formula D-102**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|----------------|--|
| Soft water | 61.0 | Add dodecylbenzene sulfonic acid, sodium salt to water and mix well. |
| Dodecylbenzene sulfonic acid, sodium salt (60%) | 3.0 | Add lauryl ether sulfate, sodium salt and mix well. |
| Lauryl ether sulfate, sodium salt (60%) | 29.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 2.0 | Add Tomamine Amphoteric SC surfactant and mix well. |
| Tomamine Amphoteric SC surfactant | 4.0 | Add Tomadol 91-8 surfactant and mix well. |
| Tomadol 91-8 surfactant | 1.0 | Add citric acid to adjust to pH 7.0. |
| Citric acid | q.s. | Add dye and fragrance as desired. |
| Typical viscosity @ 20 °C (RVT #3, 100 rpm), cps | 40 | |
| Specific gravity 20/20 °C | 1.02 | |
| APPLICATIONS | USE DILUTION | |
| Degreasing hand dishwash. | 1 ounce/gallon | |

| Hand Dishwash—Standard | | Formula I-200 |
|--|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 54.1 | Best results will be obtained if water temperature is 100–120 °F. |
| C ₁₂ LAS (60%)* | 26.9 | Add linear sodium alkylbenzene sulfonate to water and mix well. |
| Ethanol | 3.0 | Add preservatives as desired and mix well. |
| Tomadol 91-8 or Tomadol 900 surfactant | 4.8 | Add ethanol and mix well. |
| Sodium lauryl ether sulfate (60%)** | 8.0 | Add Tomadol 91-8 or Tomadol 900 and mix until dissolved. |
| Fatty acid diethanolamide*** | 3.2 | Add sodium lauryl ether sulfate and mix well. Add fatty acid diethanolamide and mix well. Add dye and fragrance as desired. |
| *Calsoft L-60 Slurry, Pilot Chemical Company, or equivalent product. | | |
| **Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| ***Calamide C, Pilot Chemical Company, or equivalent. | | |
| Viscosity @ 73 °F, cps | 67 | |
| pH | 8.6 | |
| Phase coalescence temperature, °F | >176 | |
| Clear point, °F | 32 | |
| APPLICATIONS | | |
| Hand dishwash. | | |

| Hand Dishwash—Economy | | Formula D-104 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Soft water | 64.0 | Add dodecylbenzene sulfonic acid, sodium salt to water and mix until dissolved. |
| Dodecylbenzene sulfonic acid, sodium salt (90%) | 16.0 | Add lauryl ether sulfate, sodium salt and mix well. |
| Lauryl ether sulfate, sodium salt (60%) | 8.0 | Add citric acid and mix well. |
| Citric acid | 1.0 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 3.0 | Add ethanol and mix well. |
| Ethanol | 5.0 | Add Tomamine AO-728 surfactant and mix well. |
| Tomamine AO-728 surfactant | 3.0 | Add dye and fragrance as desired. |
| pH | 8 | |
| APPLICATIONS | | USE DILUTION |
| High-foaming hand dishwash. | | 1 ounce/gallon |

| Pearlescent Hand Dishwash | | Formula D-103 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Soft water | 44.7 | Add dodecylbenzene sulfonic acid, sodium salt to water and mix until dissolved. |
| Dodecylbenzene sulfonic acid, sodium salt (60%) | 23.5 | Add lauryl ether sulfate, ammonia salt and mix well. |
| Lauryl ether sulfate, ammonia salt (60%) | 16.5 | Add opacifier and pearlizer and mix well. |
| Opacifier* | 0.1 | Add Tomamine AO-728 surfactant and mix well. |
| Pearlizer** | 2.2 | Add Tomamine Amphoteric N surfactant and mix well until homogeneous. |
| Tomamine AO-728 surfactant | 3.0 | Adjust viscosity as desired with ethanol. |
| Tomamine Amphoteric N surfactant | 10.0 | |
| *Lytron 295 opacifier, Morton International, or equivalent product. | | |
| **Euperlan PK-771 pearlizer, Henkel, or equivalent product. | | |
| Viscosity @ 20 °C, cps | 3200 | |
| pH | 7.9 | |
| APPLICATIONS | | USE DILUTION |
| High foaming, degreasing hand dishwash. | | 1 ounce/gallon |

Concrete and Garage Floor Cleaner

Formula I-201

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 66.8 | Add Tomadol 91-6 surfactant to water and mix until dissolved. |
| Tomadol 91-6 surfactant | 5.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 6.5 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 10.0 | Add alkyldiphenyloxide disulfonate and mix well. |
| Alkyldiphenyloxide disulfonate* | 4.4 | Add trisodium phosphate and mix well. |
| Trisodium phosphate, anhydrous | 1.3 | Add sodium metasilicate, pentahydrate and mix well. |
| Sodium metasilicate, pentahydrate | 3.0 | Add potassium hydroxide and mix well. |
| Potassium hydroxide (45%) | 3.0 | Add dye and fragrance as desired. |
| *Dowfax™ 2A-1, The Dow Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 6 | |
| pH | 13.3 | |
| Phase coalescence temperature, °F | >165 | |
| APPLICATIONS | | |
| Concrete and garage floor cleaner. | | |

Concrete and Garage Floor Cleaner—Low Foam

Formula LF-112

| COMPONENT | A | | B | | MIXING INSTRUCTIONS |
|--|------|------|--------------|------|--|
| | WT % | WT % | WT % | WT % | |
| Water | 85.5 | 85.0 | | | Add tetrapotassium pyrophosphate to water and mix until dissolved. |
| Tetrapotassium pyrophosphate | 5.5 | 5.5 | | | Add trisodium phosphate and mix until dissolved. |
| Trisodium phosphate | 1.0 | 1.0 | | | Add sodium metasilicate pentahydrate and mix until dissolved. |
| Sodium metasilicate pentahydrate | 2.5 | 2.5 | | | Add dipropylene glycol methyl ether and mix well. |
| Dipropylene glycol methyl ether* | 2.0 | 2.0 | | | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix until dissolved. |
| Tomamine AO-405 surfactant | 2.0 | – | | | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 2.0 | | | |
| Tomamine Amphoteric 400 surfactant | 1.5 | 2.0 | | | |
| *Dowanol DPM, The Dow Chemical Company, or equivalent product. | | | | | |
| pH | 12.6 | 12.6 | | | |
| Specific gravity 20/20 °F | 1.07 | 1.07 | | | |
| APPLICATIONS | | | USE DILUTION | | |
| Spot use on concrete floors for difficult stains. | | | As-is | | |

Low-Foam Floor Cleaners

Formula LF-106

| COMPONENT | A | | B | | MIXING INSTRUCTIONS |
|------------------------------------|------|------|-------------------|------|---|
| | WT % | WT % | WT % | WT % | |
| Water | 77.3 | 77.1 | | | Add sodium metasilicate to water and mix until dissolved. |
| Sodium metasilicate | 5.0 | 5.0 | | | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 14.0 | 14.0 | | | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-405 surfactant | 2.0 | – | | | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 2.0 | | | |
| Tomamine Amphoteric 400 surfactant | 1.7 | 1.9 | | | |
| pH | 13 | 13 | | | |
| Specific gravity 20/20 °F | 1.16 | 1.16 | | | |
| APPLICATIONS | | | USE DILUTION | | |
| Floor cleaners. | | | 1–4 ounces/gallon | | |

Machine Floor Scrubber

Formula LF-110

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|------|------|--|
| | WT % | WT % | |
| Water | 86.8 | 87.4 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 1.0 | 1.0 | |
| Sodium hydroxide (50%) | 2.4 | 2.4 | Slowly add sodium hydroxide, mix well and cool. |
| Sodium metasilicate pentahydrate | 4.0 | 4.0 | Add sodium metasilicate pentahydrate and mix until dissolved. |
| Tomamine AO-405 surfactant | 4.5 | – | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 4.5 | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 1.3 | 0.7 | |
| pH | 13.1 | 13.1 | |
| Specific gravity 20/20 °F | 1.04 | 1.04 | |
| APPLICATIONS | | | USE DILUTION |
| Institutional floor scrubbing. | | | 1–2 ounces/gallon |

Wax Stripper and Cleaner

Formula LF-109

| COMPONENT | A | B | MIXING INSTRUCTIONS |
|--|-------|-------|--|
| | WT % | WT % | |
| Water | 90.0 | 91.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt to water and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 3.0 | 3.0 | |
| Diethylene glycol monobutyl ether | 4.0 | 4.0 | Add diethylene glycol monobutyl ether and mix well. |
| Tomamine AO-405 surfactant | 2.0 | – | Add Tomamine AO-405 and Tomamine Amphoteric 400 surfactant or Tomamine AO-455 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 1.0 | – | |
| Tomamine AO-455 surfactant | – | 2.0 | |
| pH | 12 | 12 | |
| Specific gravity 20/20 °F | 1.015 | 1.020 | |
| APPLICATIONS | | | USE DILUTION |
| Floor wax stripper and cleaner. | | | 0.25–1 ounce/gallon |

Wax Stripper—Premium

Formula I-107

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|-------|---|
| Soft water | 84.25 | Add sodium metasilicate, pentahydrate to water and mix until dissolved. |
| Sodium metasilicate, pentahydrate | 5.00 | |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 2.00 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Tomamine Alkali Surfactant | 1.25 | Add Tomamine Alkali Surfactant and mix well. |
| Tomadol 91-8 surfactant | 2.00 | Add Tomadol 91-8 surfactant and mix well. |
| Monethanolamine | 5.00 | Add monethanolamine and mix well. |
| Tomamine Q-17-2 surfactant | 0.50 | Add Tomamine Q-17-2 surfactant and mix well. |
| pH | 13.4 | |
| Specific gravity 20/20 °F | 1.04 | |
| APPLICATIONS | | USE DILUTION |
| Floor wax stripper. | | 5:1 to 10:1 |

| Wax Stripper—Standard | | Formula I-202 |
|-----------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 75.0 | Add Tomadol 91-6 surfactant to water and mix until dissolved. |
| Tomadol 91-6 surfactant | 10.0 | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 5.0 | Add monoethanolamine and mix well. |
| Monoethanolamine | 5.0 | Add oleic acid and mix well. |
| Oleic acid | 5.0 | Add dye and fragrance as desired. |
| Viscosity @ 73 °F, cps | 142 | |
| Phase coalescence temperature, °F | 142 | |
| pH | 11.6 | |
| APPLICATIONS | | USE DILUTION |
| Floor wax stripper. | | Heavy-duty use: 4 ounces/gallon Regular-duty use: 2 ounces/gallon |

| Wax Stripper—Low Foam | | | Formula LF-113 |
|------------------------------------|------|------|---|
| COMPONENT | A | B | MIXING INSTRUCTIONS |
| | WT % | WT % | |
| Water | 71.8 | 71.9 | Slowly add potassium hydroxide to water, mix well and cool. |
| Potassium hydroxide (45%) | 5.0 | 5.0 | Add trisodium phosphate and mix until dissolved. |
| Trisodium phosphate | 2.0 | 2.0 | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 2.0 | 2.0 | Add monoethanolamine and mix well. |
| Monoethanolamine | 5.0 | 5.0 | Add isopropanol and mix well. |
| Isopropanol | 2.5 | 2.5 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 3.5 | 3.5 | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-405 surfactant | 5.0 | – | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 5.0 | |
| Tomamine Amphoteric 400 surfactant | 3.2 | 3.1 | |
| pH | 13.4 | 13.4 | |
| Specific gravity 20/20 °F | 1.05 | 1.05 | |
| APPLICATIONS | | | USE DILUTION |
| Mechanical floor wax stripping. | | | 5:1 to 50:1 |

| Acidic Glass Cleaner | | Formula I-305 |
|-----------------------------|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 97.1 | Add monoethanolamine to water and mix well. |
| Monoethanolamine | 0.7 | Add isopropanol and mix well. |
| Isopropanol | 1.4 | Add Tomamine AO-14-2 and Tomadol 901 surfactants and mix until dissolved. |
| Tomamine AO-14-2 surfactant | 0.2 | |
| Tomadol 901 surfactant | 0.3 | Add glacial acetic acid and mix well. |
| Glacial acetic acid | 0.3 | |
| APPLICATIONS | | USE DILUTION |
| Glass cleaner. | | As-is |

| Ammoniacal Glass Cleaner | | Formula I-306 |
|---------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 96.9 | Add monoethanolamine to water and mix well. |
| Monoethanolamine | 0.7 | Add isopropanol and mix well. |
| Isopropanol | 1.4 | Add Tomamine AO-14-2 and Tomadol 901 surfactants and mix well. |
| Tomamine AO-14-2 surfactant | 0.2 | Add aqua ammonia and mix well. |
| Tomadol 901 surfactant | 0.3 | |
| Aqua ammonia (29%) | 0.5 | |
| APPLICATIONS | | USE DILUTION |
| Glass cleaner. | | As-is |

| Glass Cleaner without Ammonia | | Formula I-307 |
|--------------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 97.4 | Add monoethanolamine to water and mix well. |
| Monoethanolamine | 0.7 | Add isopropanol and mix well. |
| Isopropanol | 1.4 | Add Tomamine AO-14-2 and Tomadol 901 surfactant and mix until dissolved. |
| Tomamine AO-14-2 surfactant | 0.2 | |
| Tomadol 901 surfactant | 0.3 | |
| APPLICATIONS | | USE DILUTION |
| Glass Cleaner. | | As-is |

| Window Cleaner with Water Repellency | | Formula I-308 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 97.1 | Add monoethanolamine to water and mix well. |
| Monoethanolamine | 0.7 | Add isopropanol and mix well. |
| Isopropanol | 1.4 | Add Tomamine AO-14-2 and Tomadol 901 surfactants and mix until dissolved. |
| Tomamine AO-14-2 surfactant | 0.2 | |
| Tomadol 901 surfactant | 0.3 | Add Tomadry DAB drying additive and mix well. |
| Tomadry™ DAB drying additive | 0.3 | |
| APPLICATIONS | | USE DILUTION |
| Glass cleaner. | | As-is |

Carpet Antistat

Formula C-100

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Tomamine Q-ST 50 surfactant | 7.0 | Heat and mix Tomamine Q-ST 50 surfactant prior to use in order to assure homogeneity. Blend isopropanol into Tomamine Q-ST 50 surfactant until homogeneous. Slowly blend in water until homogeneous. |
| Isopropanol | 3.0 | |
| Hot water | 90.0 | |
| pH | 8.0 | |
| OTHER FORMULATION NOTES | | USE DILUTION |
| Carpet antistat. Prevents dirt pickup while reducing static charge. | | 1 gallon/1000 ft ² |

Carpet Prespotter

Formula I-309

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 74.0 | Add sodium bicarbonate to water and mix until dissolved. |
| Sodium bicarbonate | 5.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 5.0 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 10.0 | Add Tomamine 25-7 surfactant and mix well. |
| Tomamine 25-7 surfactant | 2.0 | Add Tomamine 25-3 surfactant and mix well. |
| Tomamine 25-3 surfactant | 4.0 | |
| APPLICATIONS | | |
| Carpet prespotter. | | |

Carpet Steam Cleaner

Formula I-203

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-----------------------------------|------|---|
| Water | 82.0 | Add Tomadol 25-12 surfactant to water and mix well. |
| Tomadol 25-12 surfactant | 4.0 | Add sodium metasilicate pentahydrate and mix well. |
| Sodium metasilicate pentahydrate | 8.0 | Add sodium xylene sulfonate and mix well. |
| Sodium xylene sulfonate (40%) | 6.0 | Add dye and fragrance as desired. |
| Viscosity @ 73 °F, cps | 4 | |
| pH | 11.9 | |
| Phase coalescence temperature, °F | >167 | |
| APPLICATIONS | | |
| Liquid steam carpet cleaner. | | |

| “Dry Brittle” Liquid Cleaner | | Formula I-204 |
|---|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 65.0 | Add Tomadol 25-12 surfactant to water and mix until dissolved. |
| Tomadol 25-12 surfactant | 13.0 | Add sodium lauryl ether sulfate (3EO) and mix well. |
| Sodium lauryl ether sulfate (3EO) (60%)* | 9.0 | Add tetrapotassium pyrophosphate and mix well. |
| Tetrapotassium pyrophosphate** | 7.0 | All phosphate ester and mix well. |
| Phosphate ester*** | 6.0 | Add dye and fragrance as desired. |
| *Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| **Substitute 1% sodium metasilicate for 1% of the tetrapotassium pyrophosphate if a more alkaline product is desired. | | |
| ***Triton H-66, The Dow Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 13 | |
| pH | 9.6 | |
| Phase coalescence temperature, °F | 150 | |
| APPLICATIONS | | |
| Rug and upholstery cleaner. | | |

| Low-Foam Carpet Cleaner | | | Formula LF-108 |
|--|------|--------------|--|
| COMPONENT | A | B | MIXING INSTRUCTIONS |
| | WT % | WT % | |
| Water | 81.0 | 80.5 | Add sodium carbonate to water and mix until dissolved. |
| Sodium carbonate | 5.0 | 5.0 | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 5.0 | 5.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix well. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 5.0 | 5.0 | Add Tomamine AO-405 or Tomamine AO-455 surfactant and mix well. |
| Tomamine AO-405 surfactant | 2.0 | – | Add Tomamine Amphoteric 400 surfactant and mix well. |
| Tomamine AO-455 surfactant | – | 2.0 | |
| Tomamine Amphoteric 400 surfactant | 2.0 | 2.5 | |
| pH | 11 | 11 | |
| Specific gravity 20/20 °F | 1.11 | 1.11 | |
| APPLICATIONS | | USE DILUTION | |
| Carpet extraction. Steam cleaning. | | 10:1 to 40:1 | |

| Rug and Upholstery Shampoo | | Formula I-205 |
|-----------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Water | 89.0 | Add Tomadol 25-12 surfactant to water and mix until dissolved. |
| Tomadol 25-12 surfactant | 5.0 | Add sodium tripolyphosphate and mix until dissolved. |
| Sodium tripolyphosphate | 2.0 | Add isopropyl alcohol and mix well. |
| Isopropyl alcohol | 4.0 | Add fluorescent whitening agent, dye and fragrance as desired. |
| Viscosity @ 73 °F, cps | 4 | |
| pH | 8.8 | |
| Phase coalescence temperature, °F | >167 | |
| APPLICATIONS | | USE DILUTION |
| Rug and carpet cleaner. | | For rugs and carpet: 10:1 For upholstery: 20:1 |

Wall and Tile Concentrate

Formula I-206

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|--------------|---|
| Water | 67.4 | Add sodium lauryl ether sulfate to water and mix until dissolved. |
| Sodium lauryl ether sulfate (60%)* | 6.7 | Add Tomadol 91-6 or Tomadol 900 surfactant and mix well. |
| Tomadol 91-6 or Tomadol 900 surfactant | 6.0 | Add fatty acid diethanolamide and mix well. |
| Fatty acid diethanolamide** | 2.0 | Add trisodium phosphate and mix until dissolved. |
| Trisodium phosphate, anhydrous | 2.0 | Add sodium metasilicate pentahydrate and mix until dissolved. |
| Sodium metasilicate pentahydrate | 13.9 | Add isopropyl alcohol and mix well. |
| Isopropyl alcohol | 2.0 | Add dye and fragrance as desired. |
| *Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| **Calamide C, Pilot Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 14 | |
| pH | 13.2 | |
| Phase coalescence temperature, °F | 140 | |
| APPLICATIONS | USE DILUTION | |
| Wall and tile cleaner. | As-is to 8:1 | |

Wall and Tile Spray Cleaner

Formula I-207

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 90.8 | Add sodium lauryl ether sulfate to water and mix until dissolved. |
| Sodium lauryl ether sulfate (60%)* | 0.8 | Add Tomadol 23-6.5 surfactant and mix well. |
| Tomadol 23-6.5 | 1.7 | Add fatty acid diethanolamide and mix well. |
| Fatty acid diethanolamide** | 0.5 | Add sodium metasilicate pentahydrate and mix until dissolved. |
| Sodium metasilicate pentahydrate | 1.7 | Add trisodium phosphate and mix until dissolved. |
| Trisodium phosphate, anhydrous | 1.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 3.5 | Add dye and fragrance as desired. |
| *Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| **Calamide C, Pilot Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 2 | |
| pH | 10.0 | |
| Phase coalescence temperature, °F | 165 | |
| APPLICATIONS | | |
| Wall and tile cleaner. | | |

Highly Alkaline Built Liquid—Non-Phosphate

Formula L-301

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|--|
| Water | 45.0 | Add sodium metasilicate, ethylenediamine tetraacetic acid, tetrasodium salt and potassium hydroxide to water, mix until dissolved and solution is clear. |
| Sodium metasilicate, anhydrous | 5.0 | |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 3.5 | Slowly add dodecylbenzene sulfonic acid while blending. If temperature exceeds 140 °F, allow solution to cool before proceeding. |
| Potassium hydroxide (45%) | 24.0 | |
| Dodecylbenzene sulfonic acid | 9.0 | Add Tomamine Amphoteric LH surfactant and mix well. Add Tomadol 900 surfactant and mix well. Add Tomadol 600 surfactant and mix well. |
| Tomamine Amphoteric LH surfactant | 4.5 | |
| Tomadol 900 surfactant | 6.0 | |
| Tomadol 600 surfactant | 3.0 | |

APPLICATIONS

Liquid laundry detergent.

Highly Alkaline Built Liquid—with Phosphate

Formula L-302

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------------|------|---|
| Water | 55.0 | Add tetrapotassium pyrophosphate, Kasil 6 potassium silicate and potassium hydroxide to water, mix until dissolved and solution is clear. |
| Tetrapotassium pyrophosphate | 3.0 | |
| Kasil 6 potassium silicate* | 4.0 | Slowly add dodecylbenzene sulfonic acid while blending. If temperature exceeds 140 °F, allow solution to cool before proceeding. |
| Potassium hydroxide (45%) | 18.0 | |
| Dodecylbenzene sulfonic acid | 6.0 | Add Tomamine Amphoteric 400 surfactant and mix well. Add Tomadol L124 surfactant and mix well. Add Tomadol L80 surfactant and mix well. |
| Tomamine Amphoteric 400 surfactant | 4.0 | |
| Tomadol L124 surfactant | 8.2 | |
| Tomadol L80 surfactant | 1.8 | |

*Kasil 6 potassium silicate, PQ Corporation, or equivalent product.

APPLICATIONS

Liquid laundry detergent.

Non-Caustic, Non-Phosphate Built Liquid

Formula L-303

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 70.7 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 8.0 | |
| Potassium carbonate | 8.0 | Add potassium carbonate and mix until dissolved. Add Tomamine Amphoteric LH surfactant and mix well. |
| Tomamine Amphoteric LH surfactant | 3.0 | |
| Tomadol L124 surfactant | 7.0 | Add Tomadol L124 surfactant and mix well. Add Tomadol 600 surfactant and mix well. |
| Tomadol 600 surfactant | 1.5 | |
| Tomadol L80 surfactant | 1.5 | Add Tomadol L80 surfactant and mix well. Add Acusol 445N and mix well. |
| Acusol 445N* | 0.2 | |
| Tinopal® CBS-X Fluorescent Whitening Agent** | 0.1 | Add Tinopal CBS-X Fluorescent Whitening Agent and mix well. |

*Acusol 445N, Rohm and Haas, or equivalent product.

**Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Two-Part Built Liquid for Low Temperature Institutional Laundry—Part A **Formula L-304**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--------------------------|------|--|
| Water | 72.0 | Add Tomadol 25-12 surfactant to water and mix until dissolved. |
| Tomadol 25-12 surfactant | 7.0 | Add Tomadol 25-7 surfactant and mix until dissolved. |
| Tomadol 25-7 surfactant | 9.0 | Add Tomadol 600 surfactant and mix well. |
| Tomadol 600 surfactant | 6.0 | Add glycerine and mix well. |
| Glycerine | 6.0 | |

APPLICATIONS

Low-temperature laundry detergent.

Two-Part Built Liquid for Low Temperature Industrial Laundry—Part A **Formula L-305**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-------------------------|------|--|
| Water | 80.0 | Add Tomadol L144 surfactant to water and well. |
| Tomadol L144 surfactant | 7.0 | Add Tomadol L124 surfactant and mix well. |
| Tomadol L124 surfactant | 7.0 | Add Tomadol 23-5 surfactant and mix well. |
| Tomadol 23-5 surfactant | 6.0 | |

APPLICATIONS

Low-temperature laundry detergent.

Two-Part Built Liquid for Healthcare and Hospitality Laundry—Part A **Formula L-306**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-------------------------|------|--|
| Water | 76.0 | Add Tomadol L124 surfactant to water and well. |
| Tomadol L124 surfactant | 18.0 | Add Tomadol 23-5 surfactant and mix well. |
| Tomadol 23-5 surfactant | 2.0 | Add d-limonene and mix well. |
| d-Limonene | 4.0 | |

APPLICATIONS

Laundry detergent.

Two-Part Built Liquid with Solvent Base for Industrial Laundry—Part A **Formula L-307**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|------------------------------|------|---|
| Mineral spirits | 47.0 | Add dodecylbenzene sulfonic acid to mineral spirits and mix well. |
| Dodecylbenzene sulfonic acid | 23.0 | Add Tomadol 25-7 surfactant and mix well. |
| Tomadol 25-7 surfactant | 12.0 | Add Tomadol 91-6 surfactant and mix well. |
| Tomadol 91-6 surfactant | 12.0 | Add Tomadol 91-2.5 surfactant and mix well. |
| Tomadol 91-2.5 surfactant | 6.0 | |

APPLICATIONS

Laundry detergent.

NOTE: This detergent must be used with 50% more than the typical amount of Part B caustic builder. An extended suds bath at higher temperature (e.g., 160 °F) is recommended to provide optimal reaction time and washing conditions for this formula.

Two-Part Built Liquid Builder Solutions—Part B

Formula L-200

Blending Procedure: Blend separately from the selected nonionic surfactant Part A from Formula L-304 through L-307, and deliver separately to wash water in the Part A:B ratio of 1:2

PHOSPHATE/CAUSTIC

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 43.3 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 16.8 | Add tetrapotassium pyrophosphate and mix until dissolved. |
| Tetrapotassium pyrophosphate | 9.5 | Slowly add potassium hydroxide, mix well and cool. |
| Potassium hydroxide (45%) | 30.4 | |

NON-PHOSPHATE/CAUSTIC

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|----------------------------------|------|--|
| Water | 52.5 | Add sodium metasilicate pentahydrate to water and mix until dissolved. |
| Sodium metasilicate pentahydrate | 26.4 | Slowly add potassium hydroxide, mix well and cool. |
| Potassium hydroxide (45%) | 13.5 | Add potassium carbonate and mix well |
| Potassium carbonate | 7.6 | |

APPLICATIONS

Laundry detergent.

Light-Duty 2X Concentrated Liquid

Formula L-308

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-------------------------|------|--|
| Water | 78.0 | Add sodium citrate to water and mix until dissolved. |
| Sodium citrate | 2.0 | Add sodium gluconate and mix until dissolved. |
| Sodium gluconate | 2.0 | Add Baypure CX 100 and mix well. |
| Baypure CX 100* | 4.0 | Add triethanolamine and mix well. |
| Triethanolamine | 4.0 | Add Tomadol L124 surfactant and mix well. |
| Tomadol L124 surfactant | 4.0 | Add Tomadol 23-5 surfactant and mix well. |
| Tomadol 23-5 surfactant | 6.0 | |

*Baypure CX 100, LANXESS Corporation.

APPLICATIONS

Laundry detergent.

Light-Duty 2X Concentrated Liquid with Bleach

Formula L-309

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 77.6 | Add sodium borate to water and mix until dissolved. |
| Sodium borate | 2.0 | Add Baypure CX 100 and mix well. |
| Baypure CX 100* | 5.0 | Add triethanolamine and mix well. |
| Triethanolamine | 5.0 | Add Tomadol 25-12 surfactant and mix well. |
| Tomadol 25-12 surfactant | 3.5 | Add Tomadol 25-7 surfactant and mix well. |
| Tomadol 25-7 surfactant | 3.5 | Add Tomadol 23-5 surfactant and mix well. |
| Tomadol 23-5 surfactant | 3.0 | Add Acusol 505N and mix well. |
| Acusol 505N** | 0.2 | Add Tinopal CBS-X Fluorescent Whitening Agent and mix well. |
| Tinopal CBS-X Fluorescent Whitening Agent*** | 0.2 | |

*Baypure CX 100, LANXESS Corporation.

**Acusol 505N, Rohm and Haas.

***Tinopal is registered mark of Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Light-Duty Liquid for Low Temperature Laundry

Formula L-310

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|---|
| Water | 90.1 | Add soda ash to water and mix until dissolved. |
| Soda ash | 0.7 | Add sodium citrate and mix until dissolved. |
| Sodium citrate | 1.2 | Add sodium gluconate and mix well. |
| Sodium gluconate | 0.7 | Add triethanolamine and mix well. |
| Triethanolamine | 1.4 | Add sodium dodecylbenzene sulfonic acid and mix well. |
| Sodium dodecylbenzene sulfonic acid (40%) | 2.8 | Add Tomadol L144 surfactant and mix well. |
| Tomadol L144 surfactant | 2.0 | Add Tomadol L80 surfactant and mix well. |
| Tomadol L80 surfactant | 1.1 | |

APPLICATIONS

Laundry detergent.

Blood Stain Remover

Formula L-311

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Water | 72.0 | Add ethylenediamine tetraacetic acid, tetrasodium salt and mix until dissolved. |
| Ethylenediamine tetraacetic acid, tetrasodium salt (40%) | 4.0 | Add ammonium hydroxide and mix well. |
| Ammonium hydroxide (28%) | 8.0 | Add Tomamine Amphoteric LH surfactant and mix well. |
| Tomamine Amphoteric LH surfactant | 4.0 | Add isopropanol and mix well. |
| Isopropanol | 8.0 | Add ethylene glycol monobutyl ether and mix well. |
| Ethylene glycol monobutyl ether | 4.0 | |

APPLICATIONS

Laundry detergent.

Prespotter

Formula L-312

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|-------------------------|------|--|
| Deionized water | 84.2 | Add Tomadol 25-3 surfactant to water and mix well. |
| Tomadol 25-3 surfactant | 9.0 | Add Tomadol 25-7 surfactant and mix well. |
| Tomadol 25-7 surfactant | 1.0 | Add sodium hydroxide and mix well. |
| Sodium hydroxide (50%) | 2.9 | Add citric acid monohydrate and mix well. |
| Citric acid monohydrate | 2.4 | Add Carbopol 676 and mix well until homogeneous. |
| Carbopol® 676* | 0.5 | |

*Carbopol, Lubrizol Advanced Materials, Inc.

APPLICATIONS

Laundry detergent.

NOTE: A thickener such as Carbopol 676 must be used to stabilize the formulation, as the formula produces a product that is not homogeneous.

| Industrial Built Powder | | Formula L-313 |
|--------------------------------|------|--|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Sodium carbonate | 21.9 | Mix sodium carbonate, sodium metasilicate anhydrous, sodium hydroxide, sodium chloride, sodium tripolyphosphate and tetrapotassium pyrophosphate, and mix thoroughly. Add Tomadol 25-12, Tomadol 25-7 and Tomadol 23-5 surfactants slowly while mixing. Continue mixing until homogeneous. |
| Sodium metasilicate anhydrous | 18.0 | |
| Sodium hydroxide (Bead) | 28.0 | |
| Sodium chloride | 20.0 | |
| Sodium tripolyphosphate | 3.0 | |
| Tetrapotassium pyrophosphate | 4.0 | |
| Tomadol 25-12 surfactant | 1.8 | |
| Tomadol 25-7 surfactant | 1.8 | |
| Tomadol 23-5 surfactant | 1.5 | |
| APPLICATIONS | | |
| Laundry detergent. | | |

| Light-Duty Powder | | Formula L-314 |
|---|------|---|
| COMPONENT | WT % | MIXING INSTRUCTIONS |
| Sodium carbonate | 75.8 | Mix sodium carbonate, Versene and sodium metasilicate thoroughly. Add Tomadol 25-9, Tomadol 25-7, Tomadol 1-5 and Tomadol 23-5 surfactants slowly while mixing. Add Acusol 445ND and Tinopal CBS-X Fluorescent Whitening Agent slowly while mixing. Continue mixing until homogeneous. |
| Versene™ powder* | 4.0 | |
| Sodium metasilicate anhydrous | 6.0 | |
| Tomadol 25-9 surfactant | 1.5 | |
| Tomadol 25-7 surfactant | 7.0 | |
| Tomadol 1-5 surfactant | 1.5 | |
| Tomadol 23-5 surfactant | 3.0 | |
| Acusol 445ND** | 1.0 | |
| Tinopal CBS-X Fluorescent Whitening Agent*** | 0.2 | |
| *Versene, The Dow Chemical Company. | | |
| **Acusol 445ND, Rohm and Haas. | | |
| ***Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation. | | |
| APPLICATIONS | | |
| Laundry detergent. | | |

Light-Duty Powder with Bleach and Enzymes

Formula L-315

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Sodium carbonate | 74.3 | Mix sodium carbonate, sodium metasilicate anhydrous and sodium citrate thoroughly. Add Tomadol L124, Tomadol 600 and Tomadol L80 surfactants slowly while mixing. Add Acusol 445ND, sodium percarbonate, tetraacetylenediamine, Purafect OX Enzyme and Tinopal CBS-X Fluorescent Whitening Agent slowly while mixing. Continue mixing until homogeneous. |
| Sodium metasilicate anhydrous | 3.0 | |
| Sodium citrate | 5.0 | |
| Tomadol L124 surfactant | 4.7 | |
| Tomadol 600 surfactant | 1.0 | |
| Tomadol L80 surfactant | 1.0 | |
| Acusol 445ND* | 1.0 | |
| Sodium percarbonate | 8.0 | |
| Tetraacetylenediamine | 1.0 | |
| Purafect® OX Enzyme** | 0.8 | |
| Tinopal CBS-X Fluorescent Whitening Agent*** | 0.2 | |

*Acusol 445ND, Rohm and Haas.

**Purafect OX Enzyme. Danisco US Inc. – Genencor Division.

***Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Economy Powder for Low Temperature Laundry

Formula L-316

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Sodium carbonate | 89.9 | Mix sodium carbonate, Versene and sodium metasilicate thoroughly. Add Tomadol L144 and Tomadol L80 surfactants slowly while mixing. Add Tinopal CBS-X Fluorescent Whitening Agent slowly while mixing. Continue mixing until homogeneous. |
| Versene powder* | 2.0 | |
| Sodium metasilicate anhydrous | 3.0 | |
| Tomadol L144 surfactant | 3.0 | |
| Tomadol L80 surfactant | 2.0 | |
| Tinopal CBS-X Fluorescent Whitening Agent** | 0.1 | |

*Versene, The Dow Chemical Company.

**Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Non-Phosphate Shirt Laundry

Formula L-317

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|------|--|
| Sodium carbonate | 47.8 | Mix sodium carbonate, sodium metasilicate anhydrous, and ethylenediamine tetraacetic acid, tetrasodium salt thoroughly. |
| Sodium metasilicate anhydrous | 19.0 | |
| Ethylenediamine tetraacetic acid, tetrasodium salt, anhydrous | 12.0 | Add Tomadol 25-9, Tomadol 25-7, Tomadol 1-5 and Tomadol 23-5 surfactants slowly while mixing. |
| Tomadol 25-9 surfactant | 1.0 | |
| Tomadol 25-7 surfactant | 5.0 | Add Acusol 445ND, sodium percarbonate, tetraacetythylenediamine, Purafect OX Enzyme and Tinopal CBS-X Fluorescent Whitening Agent slowly while mixing. |
| Tomadol 1-5 surfactant | 1.0 | |
| Tomadol 23-5 surfactant | 2.0 | Continue mixing until homogeneous. |
| Acusol 445ND* | 1.5 | |
| Sodium percarbonate | 8.0 | |
| Tetraacetythylenediamine | 1.0 | |
| Purafect OX Enzyme** | 1.4 | |
| Tinopal CBS-X Fluorescent Whitening Agent*** | 0.3 | |

*Acusol 445ND, Rohm and Haas.

**Purafect OX Enzyme. Danisco US Inc. – Genencor Division.

***Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Premium Shirt Laundry

Formula L-318

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|------|---|
| Sodium carbonate | 52.1 | Mix sodium carbonate, sodium tripolyphosphate and tetrapotassium phyrophosphate thoroughly. |
| Sodium tripolyphosphate | 6.0 | |
| Tetrapotassium phyrophosphate | 8.0 | Add Tomadol 25-9, Tomadol 25-7, Tomadol 1-5 and Tomadol 23-5 surfactants slowly while mixing. |
| Tomadol 25-9 surfactant | 1.0 | |
| Tomadol 25-7 surfactant | 4.0 | Add sodium metasilicate, Acusol 445ND, sodium percarbonate, tetraacetythylenediamine, Purafect OX Enzyme and Tinopal CBS-X Fluorescent Whitening Agent slowly while mixing. |
| Tomadol 1-5 surfactant | 1.0 | |
| Tomadol 23-5 surfactant | 2.0 | Continue mixing until homogeneous. |
| Sodium metasilicate anhydrous | 15.0 | |
| Acusol 445ND* | 0.5 | |
| Sodium percarbonate | 8.0 | |
| Tetraacetythylenediamine | 1.0 | |
| Purafect OX Enzyme** | 1.2 | |
| Tinopal CBS-X Fluorescent Whitening Agent*** | 0.2 | |

*Acusol 445ND, Rohm and Haas.

**Purafect OX Enzyme. Danisco US Inc. – Genencor Division.

***Tinopal CBS-X Fluorescent Whitening Agent, Ciba Specialty Chemicals Corporation.

APPLICATIONS

Laundry detergent.

Foam Marker Concentrate—High Viscosity**Formula V-200**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|---|-------------------|--|
| Water | 22.0 | Add Tomamine Amphoteric L surfactant to water and mix well. |
| Tomamine Amphoteric L surfactant | 20.0 | Add alcohol sulfate and mix well. |
| Alcohol sulfate (30%)* | 31.5 | Add fatty acid diethanolamide and mix well. |
| Fatty acid diethanolamide** | 4.0 | Add isopropyl alcohol and mix well. |
| Isopropyl alcohol | 5.0 | Slowly add sodium lauryl ether sulfate (3EO) and mix well until homogeneous. |
| Sodium lauryl ether sulfate (3EO) (60%)** | 17.5 | |
| *Calfoam SLS-30, Pilot Chemical Company, or equivalent product. | | |
| **Calamide C, Pilot Chemical Company, or equivalent product. | | |
| ***Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 418 | |
| pH | 9.7 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | USE DILUTION | |
| Foam marker. | 1–2 ounces/gallon | |

Foam Marker Concentrate—Low Viscosity**Formula V-201**

| COMPONENT | WT % | MIXING INSTRUCTIONS |
|--|-------------------|--|
| Water | 42.5 | Add Tomamine Amphoteric L surfactant to water and mix well. |
| Tomamine Amphoteric L surfactant | 15.0 | Add fatty acid diethanolamide and mix well. |
| Fatty acid diethanolamide* | 4.0 | Add isopropyl alcohol and mix well. |
| Isopropyl alcohol | 5.0 | Slowly add sodium lauryl ether sulfate (3EO) and mix well until homogeneous. |
| Sodium lauryl ether sulfate (3EO) (60%)** | 33.5 | |
| *Calamide C, Pilot Chemical Company, or equivalent product. | | |
| **Calfoam ES-603, Pilot Chemical Company, or equivalent product. | | |
| Viscosity @ 73 °F, cps | 55 | |
| pH | 9.7 | |
| Phase coalescence temperature, °F | >176 | |
| APPLICATIONS | USE DILUTION | |
| Foam marker. | 1–2 ounces/gallon | |

For additional technical information samples, formulation guidance or pricing, contact the nearest Air Products sales contact or our Product Information Center at 800-345-3148 or 610-481-6799.

For order placement, order status, or information on product availability, call 800-352-3528.

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About Air Products

Air Products (NYSE:APD) serves customers in technology, energy, healthcare and industrial markets worldwide with a unique portfolio of products, services and solutions, providing atmospheric gases, process and specialty gases, performance materials and chemical intermediates. Founded in 1940, Air Products has built leading positions in key growth markets such as semiconductor materials, refinery hydrogen, home healthcare services, natural gas liquification, and advanced coatings and adhesives. The company is recognized for its innovative culture, operational excellence and commitment to safety and the environment. The company has annual revenues of over \$8 billion, operations in over 40 countries, and over 18,000 employees around the globe. For more information, visit www.airproducts.com.

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