



SOAK METAL CLEANING

Select Surfactant Based on Desired Performance Characteristics and Cloud Point

Feature	Product Recommendations	Benefits
Hard Surface Wetting <ul style="list-style-type: none"> Rapid penetration to surface Effective with minimum contact time 	TERGITOL™ 15-S-7 TERGITOL 15-S-9 TERGITOL TMN-6 (90%) TERGITOL MinFoam 1X TRITON™ BG-10 TRITON GR-PG70	<ul style="list-style-type: none"> Superior wetting on hard surfaces (stainless steel, aluminum) Reduces surface tension to low values, effectively improving wetting including oily or greasy surfaces Rapid diffusion to surface as measured by dynamic surface tension
Oily Soil Detergency <ul style="list-style-type: none"> Good emulsification for oily soil Wetting to penetrate soil 	TERGITOL 15-S-3 TERGITOL 15-S-5 TERGITOL 15-S-7 TERGITOL 15-S-9 TERGITOL TMN-3 TERGITOL TMN-6 (90%) TRITON QS-15	<ul style="list-style-type: none"> Provide better cleaning performance relative surfactants Low mole / high mole blends provide excellent detergency with good emulsification
Acid Cleaning <ul style="list-style-type: none"> Also called pickling, activation, or bright dipping Standard for aluminum beer and beverage can cleaning Effective for removing rust and scale Oxide removal 	TERGITOL 15-S-7 TERGITOL 15-S-9 TERGITOL TMN-6 (90%) DOWFAX™ 2A1 DOWFAX 3B2 DOWFAX C6L	<ul style="list-style-type: none"> Very effective on aluminum Will not discolor cleaning solution
Alkaline Cleaning <ul style="list-style-type: none"> Dominant aqueous cleaner type Alkaline builders improve the formulation detergency Builders depress the solubility (cloud point) for many surfactants Low cost Effective on heavy soils and lubricants Effective on most metals 	TERGITOL 15-S-7 TERGITOL 15-S-9 TERGITOL TMN-6 (90%) TRITON X-100 TRITON BG-10 DOWFAX 2A1 DOWFAX 3B2 DOWFAX C6L	<ul style="list-style-type: none"> Maintains surfactant behavior in alkaline solutions Does not degrade / discolor May require hydrotrope to increase formulation cloud point Builders depress the solubility (cloud point) for many surfactants
Effective with High Soil Load	TRITON™ QS-15	<ul style="list-style-type: none"> Provides excellent detergency at high temperatures, even with high soil loads

Semi-Aqueous Cleaners

- Multi-step process: immerse in solvent, emulsion, then rinse
- VOC and waste water concerns
- Surfactant used to aid in rinseability and solvent emulsification

TERGITOL™ 15-S-3
TERGITOL 15-S-5
TERGITOL 15-S-7
TERGITOL TMN-3
TERGITOL TMN-6 (90%)

- Lower mole products are miscible with solvents
- Lower HLBs improve oily soil removal

Hydrotropes for Built Systems

TRITON H-55
TRITON H-66
TRITON QS-44

- Improves solubility of nonionic surfactants in systems with high builder levels (NaOH, KOH, TKPP, silicates, carbonates etc.)

Sample Formulation: Acidic Metal Cleaner

Ingredients

	WT%
Phosphoric Acid (85%)	47
Triton X-100	2
Dipropylene glycol monomethyl ether	16
Water	35

Preparation: Slowly add the phosphoric acid to the water. Add the remaining components in the order listed and mix until clear. If cold water is used, dilute Triton X-100 with 3 parts warm water before mixing

Use Instruction: Dilute 1 part of the cleaner with 20 parts of water.

Sample Formulation: Alkaline Metal Cleaner

Ingredients

	WT%
Triton QS-44	0.7 – 1.3
Sodium Hydroxide, NaOH	5
Potassium Hydroxide, KOH	17
Water	76.7 – 77.3

Preparation Add KOH and NaOH to water. Mix until dissolved. Then add Triton QS-44 Surfactant. Mix until clear.

Use Instructions Dilute 12 – 16 fluid ounces with 1 gallon water.

Properties: pH = 14; Cloud point >100°C

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