

Tomakleen™ G-12 Additive



Description

Tomakleen G-12 additive is designed for formulators looking for improved cleaning performance while reducing or eliminating the need for oxygenated solvents. Increasing regulations and the need for improved worker safety can make reformulating a challenge – a challenge that Tomakleen G-12 additive was designed to solve. Working with your basic surfactant, Tomakleen G-12 additive delivers both fast cleaning and reduced VOC formulations.

Applications

- Heavy-duty industrial cleaners
- All-purpose alkaline and neutral cleaners
- Vehicle care products

Advantages

- Fast cleaning driven by fast kinetics
- Not considered a VOC under CARB 310
- High degreasing efficiency with low use levels
- Readily biodegradable
- Excellent surface wetting and penetration of soils
- Low odor
- Suitable for acid as well as alkaline systems
- Non-hazardous for transport

Typical Properties

Appearance	Clear liquid with mild odor
Specific gravity (25 °C)	0.98
Viscosity (25 °C), cPs	28
Pour point, °C	-5
Boiling point, °C	334
Flash point (PMCC), °C	>126
Vapor pressure (20 °C), mm Hg	1.1
Cloud point, °C	36
Surface tension @ 0.1%, dynes/cm	27
Solubility in water and organic solvents	Miscible

Ecological Information

Readily biodegradable
Non flammable
Mild skin irritant

TABLE 1: Solvency Characteristics

Compared to common glycol ethers

Product	KB Value*	Hansen Solubility Parameters		
		δ_D	δ_P	δ_H
Tomakleen G-12 Solvent Replacement Additive	245	16.3	6.5	9.7
Ethylene glycol butyl ether (EB)	167	16.2	9.2	14.3
Tripropylene glycol methyl ether (TPM)	131	15.1	2.5	8.7
Dipropylene glycol methyl ether (DPM)	136	15.5	4.0	10.3
Diethylene glycol butyl ether (DB)	202	16.0	7.0	10.6

* The Kauri-Butanol (KB) Value was calculated based on the Hildebrand solubility parameter

FIGURE 1: Cleaning Performance with Increasing Dilutions

Tomakleen G-12 additive outperforms various solvents at one-fourth the use level at multiple dilutions.

Immersion Degreasing on tenacious Li grease/motor oil soil, 675 rpm

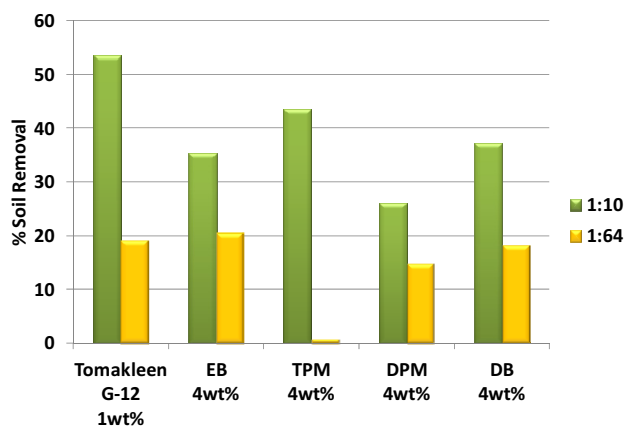


FIGURE 2: Cleaning Performance on Vinyl Floor Tiles

Tomakleen G-12 additive improves particulate soil removal in a scrub test at one-fourth the use level of common glycol ether solvents.

Modified ASTM 4488 A5, formulation diluted 1:3

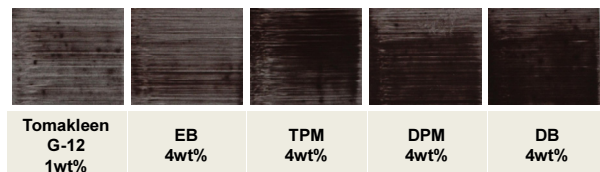
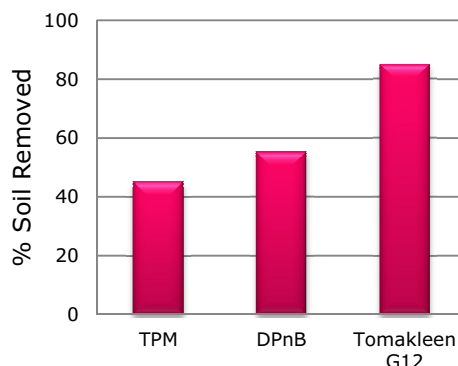


FIGURE 3: Neutral Cleaner

Tomakleen G-12 additive is extremely effective neutral cleaners, removing significantly more soil than oxygenated solvents at 1/3 the use level.

Immersion degreasing on tenacious Li grease/motor oil soil, 1:3 dilution, 10 minutes



Formulation used in Figures 1 & 2

2% Tomadol 900 surfactant (1% Tomadol 900 in Figure 2), 2.5% Sodium Citrate, 0.5% Sodium Carbonate, Solvent or Tomakleen G-12 additive, balance Water

Formulation used in Figure 3

1.5% Sodium Citrate, 1.5% Sodium Carbonate, 1.0% Tomadol 91-8, 3% of either TPM or DPnB or 1% Tomakleen G-12, balance water



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