**STEPOSOL® MET-10U**

*Surfactant Solution to Solvent Replacement™*

**Chemical Name:** N,N-dimethyl 9-decenamide

**CAS Registry No.:** 1356964-77-6

**Features:** STEPOSOL MET-10U is a unique unsaturated di-substituted amide derived from renewable sourcing from a biobased feedstock manufactured using Nobel Prize-winning metathesis technology. Among other properties, STEPOSOL MET-10U exhibits rapid, soil-penetrating kinetics, excellent solvency, heat and hydrolytic stability, and a low VOC content.

**Applications:** STEPOSOL MET-10U is effective in cleaning and removing soils in a variety of formulations. Example applications include:
- All-Purpose Cleaner
- Oven Cleaner
- Metal Cleaner
- Graffiti Remover
- Heavy Duty Degreaser
- Grill Cleaner
- Paper Chemicals
- Permanent Ink Remover
- Adhesive Remover
- Rig Wash
- Coating Remover
- Paint Stripper

**Typical Appearance at 25°C:** Clear liquid

**Properties:**
- Molecular Weight (g/mol): 197
- Amide, %: >97
- Moisture, %: <0.5
- Viscosity at 25°C, cps: 4
- pH, 5% in 1:1 IPA/H₂O: 8.0
- Density at 25°C, g/ml (lbs/U.S. gal): 0.892 (7.4)
- Color, Gardner: 1 max
- Color, APHA: 20
- Cloud Point, °C (°F): -13 (8.6)
- Pour Point, °C (°F): -14.0 (6.8)
- Freeze Point, °C (°F): -16.0 (3.2)
- Melting Point, °C (°F): -9.5 (12.5)
- Boiling Point, °C (°F): 297 (566)
- Flash Point, PMCC °C (°F): 134 (273)
- Autoignition Temperature, °C (°F): 240 (464)
- Vapor Pressure at 20°C, mm Hg: 0.0025
- Relative Evaporation Rate (ASTM 3539; Butyl Acetate = 1): <0.01
- Dielectric Constant at 25°C: 16.09
- Refractive Index at 20°C: 1.46
- Surface Tension (as is), dynes/cm: 31.5
- Critical Micelle Concentration, %: 0.05
- Draves Wetting Time, 0.1% in DI Water, seconds: 4
- Kauri-Butanol Value: >1000
- RVOC, U.S. EPA, %: 0

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Typical Properties

Solubility
STEPOSOL MET-10U in Water (25°C,% wt) ................................................................. 0.2
Water in STEPOSOL MET-10U (25°C,% wt) ................................................................. 19
Methanol ................................................................................................................... Soluble
Kerosene ................................................................................................................... Soluble
Xylene ....................................................................................................................... Soluble

Hansen Solubility Parameters .................................................................................. D: 16.58, P: 9.58, H: 8.45

The Hansen solubility parameters are a key characteristic of solvency power used to predict if one material will dissolve another one to form a solution. As shown in the graph below, STEPOSOL MET-10U has a large Hansen space, overlapping the four solvent groups. This means that STEPOSOL MET-10U will dissolve a wide range of soils.

Hansen Solubility Solvents Map

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Other data

DOT Classification ........................................................................................................ Non-regulated

Environmental Effects

This product is readily biodegradable.

Health Effects

STEPOSOL MET-10U was found to be slightly toxic orally (LD$_{50}$ = 550 mg/kg). Undiluted product may cause severe eye and skin irritation.

Storage & Handling

Bulk Storage Information: 316 and 304 stainless steel tanks are recommended. Temperatures up to 54°C (130°F) can be maintained for long periods of time without degradation of the product.

Normal safety precautions (i.e. gloves and safety goggles) should be employed when handling STEPOSOL MET-10U. Contact with eyes and prolonged contact with skin should be avoided. Wash thoroughly after handling material. Consult the MSDS for additional information on properties and handling.

Clearances

All components of STEPOSOL MET-10U are listed in the following countries; the registration number for the active ingredient is included in parentheses: United States (1356964-77-6). It is the responsibility of the end user to review the chemical control regulations for each country.

Per the California Air Resources Board’s (CARB) Consumer Product Rule, OTC Model Rule and Federal VOC Standards, STEPOSOL MET-10U is exempt from VOC limit requirements because it is a LVP-VOC (low vapor pressure VOC). All regulations define an LVP-VOC as a compound or mixture which meets one of the following criteria: 1) The compound has a vapor pressure of less than 0.1 mm Hg at 20°C; 2) the compound has more than 12 carbon atoms, or a mixture comprised solely of compounds with more than 12 carbon atoms, and the vapor pressure is unknown or 3) the compound has a boiling point greater than 216°C.

A Material Safety Data Sheet is available upon request.

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