

TOMADOL® Ethoxylated Alcohols and NONIDET™ Alkoxyated Surfactants

DESCRIPTION

Evonik produces a wide variety of nonionic surfactants. The Tomadol ethoxylates include both synthetic and plant-derived alcohols, and vary in both hydrophobe and ethylene oxide chain lengths, to yield a wide range of physical and surfactant properties. The Tomadol ethoxylates are excellent wetting agents, emulsifiers and detergents. Tomadol ethoxylates are moderate foamers. The Nonidet surfactants are nonionic surfactants that incorporate both ethylene oxide and propylene oxide to provide lower foam and good detergency.

| | EO Groups (Avg.) | Molecular weight | EO Content, %w | Melting range, °C | Color (APHA) | Sp. Gravity @ 25°C | Viscosity, cSt @ 100°F | Hydroxyl No., mg KOH/g | Surface Tension (0.1 wt %) | Flash pt. °C | Cloud pt. °C | Pour pt. °C | HLB |
|--|------------------|------------------|----------------|-------------------|--------------|--------------------|------------------------|------------------------|----------------------------|--------------|-------------------|-------------|------|
| TOMADOL ETHOXYLATED ALCOHOL SURFACTANTS | | | | | | | | | | | | | |
| <i>Made from linear synthetic alcohols, a complete range of excellent wetting agents, emulsifiers and detergents provide ease of handling and formulation.</i> | | | | | | | | | | | | | |
| Tomadol 91-2.5 | 2.7 | 281 | 42.3 | -25 to -17 | 5-10 | 0.925 | 12 | 200 | 24 | 124 | (b) | -13 | 8.5 |
| Tomadol 91-6 | 6 | 425 | 62.1 | -5 to 15 | 5-10 | 0.984 | 23 | 132 | 29 | 143 | 52 | 6 | 12.4 |
| Tomadol 91-8 | 8.3 | 524 | 69.7 | 7 to 24 | 5-10 | 1.008 | 39 | 107 | 30 | 159 | 80 | 15 | 13.9 |
| Tomadol 1-3 | 3 | 305 | 43.3 | -15 to 4 | 5-10 | 0.936 | 10 | 184 | 25 | 142 | (b) | -7 | 8.7 |
| Tomadol 1-5 | 5 | 392 | 56.1 | -4 to 17 | 5-10 | 0.966 | 21 | 143 | 25 | 148 | (b) | 6 | 11.2 |
| Tomadol 1-7 | 7 | 479 | 64.3 | 4 to 20 | 5-10 | 0.996 | 28 | 117 | 28 | 165 | 58 | 13 | 12.9 |
| Tomadol 1-73B | 5.6 | 418 | 59 | 4 to 20 | 5-10 | 0.987 | 48 | 134 | 26 | 147 | 36 | 13 | 11.8 |
| Tomadol 1-9 | 9 | 569 | 69.6 | 15 to 28 | 5-10 | 1.011 | 31 | 99 | 31 | 176 | 74 | 18 | 13.9 |
| Tomadol 23-1 | 1 | 238 | 18.5 | 2 to 11 | 5-10 | 0.873 | 13 | 236 | (a) | 143 | (b) | 5 | 3.7 |
| Tomadol 23-3 | 2.9 | 322 | 39.6 | -4 to 6 | 5-10 | 0.922 | 14 | 174 | 25 | 152 | (b) | 1 | 7.9 |
| Tomadol 23-5 | 5 | 413 | 53.3 | -3 to 23 | 5-10 | 0.965 | 23 | 136 | 26 | 157 | (b) | 7 | 10.7 |
| Tomadol 23-6.5 | 6.6 | 484 | 60 | 11 to 25 | 5-10 | 0.984 | 29 | 116 | 28 | 168 | 43 | 15 | 12 |
| Tomadol 25-3 | 2.8 | 330 | 37.3 | 2 to 11 | 5-10 | 0.921 | 19 | 170 | 26 | 157 | (b) | 3 | 7.5 |
| Tomadol 25-7 | 7.3 | 524 | 61.3 | 2 to 26 | 5-10 | 0.965 | 34 | 107 | 30 | 186 | 50 | 19 | 12.3 |
| Tomadol 25-9 | 8.9 | 597 | 65.6 | 14 to 30 | 5-10 | 0.982 | 41 | 94 | 30 | 188 | 74 | 21 | 13.1 |
| Tomadol 25-12 | 11.9 | 729 | 71.8 | 20 to 34 | 5-10 | 0.999 | 53 | 77 | 34 | 223 | 78 ^(c) | 27 | 14.4 |
| Tomadol 45-7 | 7 | 529 | 58.2 | 9 to 31 | 5-10 | 0.959 | 35 | 106 | 29 | 185 | 45 | 19 | 11.6 |
| Tomadol 45-13 | 12.9 | 790 | 71.8 | 25 to 37 | 5-10 | 1.003 | 59 | 71 | 34 | 249 | 80 ^(d) | 30 | 14.4 |

(a) – aqueous solubility < 0.1 wt% (b) – aqueous solubility < 1 wt% (c) – measured in 5% NaCl solution

EO Groups (Avg.)
 Molecular weight
 EO Content, %aw
 Melting range, °C
 Color (APHA)
 Sp. Gravity @ 25°C
 Viscosity, cSt @ 100°F
 Hydroxyl No., mg KOH/g
 Surface Tension (0.1 wt %)
 Flash pt. °C
 Cloud pt. °C
 Pour pt. °C
 HLB

TOMADOL 400, 600, 900, 1200 SURFACTANTS – NPE ALTERNATIVES

High-performance, environmentally-friendly nonionic surfactants designed specifically for ease of re-formulation when replacing nonyl phenol ethoxylates.

| | | | | | | | | | | | | | |
|---------------------|----|-----|------|-----------|------|------|------|-------|----|-------|------|-----|------|
| Tomadol 400 | EO | 300 | 44.5 | -25 to -7 | 5-10 | 0.93 | 15 | 189 | 24 | 124 | (b) | -10 | 8.9 |
| Tomadol 600 | EO | 400 | 53 | -5 to 24 | 5-10 | 0.97 | 21 | 134 | 26 | 157 | (b) | 7 | 10.6 |
| Tomadol 900 | EO | 460 | 65 | 2 to 15 | 5-10 | 0.98 | 15 | 122 | 27 | 159 | 64 | 8 | 13.1 |
| Tomadol 901 | EO | 445 | 60 | 2 to 11 | 5-10 | 0.97 | 15 | 126 | 26 | 124 | 39 | 3 | 12.1 |
| Tomadol 902 | EO | 368 | 54.8 | -18 to -1 | 5-10 | 0.98 | 44.9 | 0.221 | 27 | >93.3 | 46.9 | -16 | 12.2 |
| Tomadol 910 | EO | 495 | 59 | 2 to 15 | 5-10 | 0.99 | 30 | 113 | 27 | 182 | 43 | 8 | 11.8 |
| Tomadol 1200 | EO | 590 | 68 | 15 to 28 | 5-10 | 1.00 | 35 | 95 | 30 | 145 | 80 | 19 | 13.6 |

NONIDET ALKOXYLATED SURFACTANTS

Low-foam, nonionic surfactants that provide multi-functional benefits in applications where foam control is a concern.

| | | | | | | | | | | | | | |
|----------------------|-------|----|----|-----------|-----|------|----|----|----|-----|-------|----|---|
| Nonidet RK-18 | EO,PO | -- | -- | -31 to 4 | 100 | 1.02 | 83 | -- | 34 | 232 | 17 | -8 | 6 |
| Nonidet SF-3 | EO,PO | -- | -- | -25 to 12 | 100 | 0.99 | 53 | -- | 33 | 154 | 39-48 | 4 | 9 |
| Nonidet SF-5 | EO,PO | -- | -- | -25 to 7 | 100 | 0.99 | 54 | -- | 34 | 177 | 35-40 | -1 | 8 |

(a) – aqueous solubility < 0.1 wt% (b) – aqueous solubility < 1 wt% (c) – measured in 5% NaCl solution

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