Structure and Classification of Detergents

Detergent class	General structure	Examples
Alkyl glycosides	R-O- $(CH_2)_x$ -CH ₃ R-S $(CH_2)_x$ -CH ₃	$R = glucose$ $x = 8, n-nonyl-\beta-D-glucopyranoside$ $x = 7, n-octyl-\beta-D-glucopyranoside$ $x = 6, n-heptyl-\beta-D-glucopyranoside$ $x = 5, n-hexyl-\beta-D-glucopyranoside$ $R = maltose$ $x = 11, dodecyl-\beta-D-maltoside$ $x = 9, decyl-\beta-D-maltoside$ $R = glucose, x = 7, octyl-\beta-D-$ thioglucopyranoside
Bile acids	HO CH_3 O R HO CH_3 O R HO X	 x = H, R = O-Na⁺, sodium deoxycholate x = H, R = NHCH₂CH₂SO₃-Na⁺, sodium taurodeoxycholate x = H, R = NHCH₂CO₂-Na⁺, sodium glycodeoxycholate x = OH, R = O-Na⁺, sodium cholate x = OH, R = NHCH₂CH₂SO₃-Na⁺, sodium taurocholate x = OH, R = NHCH₂CO₂-Na⁺, sodium glycocholate
Glucamides	$\begin{array}{c} O & CH_3 & OH H & OH OH \\ H & H & H & H \\ CH_3(CH_2)x - C - N - CH_2 - C - C - C - OH \\ H & OH H & H \\ H & OH H & H \\ \end{array} \xrightarrow{OH} \\ OH \\ CH_3 \\ CH_3 \\ HO \\ \end{array} \xrightarrow{OH} \\ OH \\ CH_3 \\ OH \\ CH_3 \\ OH \\ CH_3 \\ OH \\ CH_3 \\ OH \\ OH \\ OH \\ H \\ OH \\ H \\ OH \\ H \\ $	x = 8, MEGA-10 x = 7, MEGA-9 x = 6, MEGA-8 x = H, Deoxy Big CHAP x = OH, Big CHAP

Detergent class General structure Examples x = 9-10, reduced TRITON[®] X-100 -O(CH₂CH₂O)_X—H x = 7-8, reduced TRITON[®] X-114 x = 9-10, TRITON[®] X-100, NP-40 O(CH₂CH₂O)_X—H x = 7-8, TRITON[®] X-114 y = 12, X = 8, GENAPOL[®] X-080 $CH_3(CH_2)_v$ -O(CH_2CH_2O)_x-H y = 12, X = 10, GENAPOL® X-100 Polyoxyethylenes, $Y = 11, x = 8, C_{12}E_8$ monodisperse $y = 11, x = 9, C_{12}E_9, THESIT^{\text{®}},$ and polydisperse LUBROL® PX y = 11, x = 10, GENAPOL[®] C-100 $Y = 11, x = 23, BRIJ^{(B)} 35$ HO(CH₂CH₂O)x-(CH(CH₃)-CH₂O)y- $(CH_2CH_2O)-_ZH$ X = 98, Y = 67, Z = 98,PLURONIC® F-127® H-(OCH₂CH₂)_w-O $R = C_{11}H_{23}CO_2$ -(laurate), TWEEN[®] 20 O-(CH₂CH₂O)_x-H $R = C_{17}H_{33}CO_2$ -(oleate), $O - (CH_2CH_2O)_v - H$ TWEEN® 80 $\int O - (OCH_2CH_2)_7 - R$ W + X + Y + Z = 20EMPIGEN BB® (n-dodecyl-N,N-CH₃ dimethylglycine) CH₃(CH₂)₁₁-N⁺-CH₂-COO $pH \ge 6$ CH3 x = 7, ZWITTERGENT[®] 3-08 x = 9, ZWITTERGENT[®] 3-10 CH₃ x = 11, ZWITTERGENT[®] 3-12 CH₃(CH₂)_X-N⁺-(CH₂)₃-Sx = 13, ZWITTERGENT[®] 3-14 CH. 0 Zwittergents x = 15, ZWITTERGENT[®] 3-16 CH₃ N SO3 x = H, CHAPSCH₂ CH3 Х Ĥ x = OH, CHAPSO HO ОН

Structure and Classification of Detergents (Continued)

Reprinted from DETERGENTS: A guide to the properties and uses in biological systems (2001 by Calbiochem-Novabiochem Corporation).