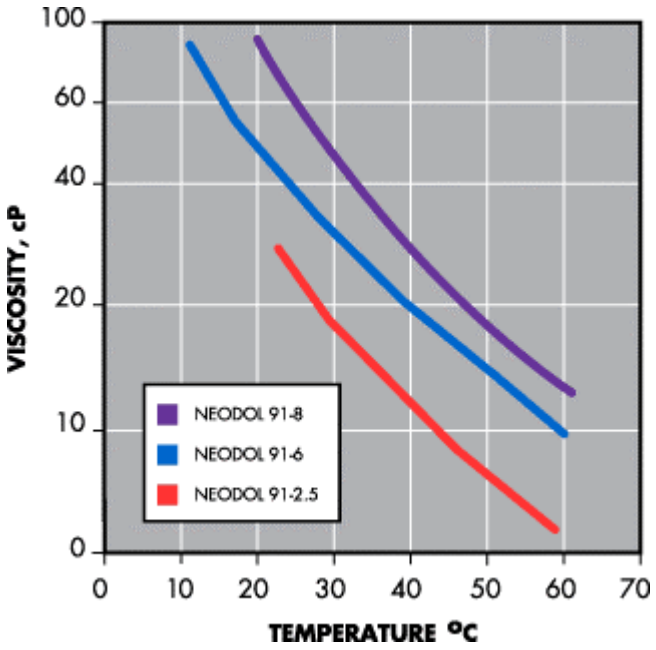
Viscosity of Shell NEODOL® ethoxylates

Viscosity of Shell NEODOL ethoxylates as a function of temperature

The viscosity of a neat non-ionic surfactant is an indication of its ease of pumping. In general, the lower the viscosity at a given temperature, the easier it is to pump. Many non-ionics require moderate heating to reduce the viscosity to a level that is readily pumpable under practical conditions. Figures 1 - 3 show the decrease in viscosity with increasing temperature for four of the Shell NEODOL ethoxylate product lines.

Figure 1: Viscosity of Shell NEODOL 91 Ethoxylates as a function of temperature



NOTE: Shell NEODOL 91-2.5 is a legacy grade, no longer produced, that is included for comparison.

Figure 2: Viscosity of Shell NEODOL 45-7 as a function of temperature

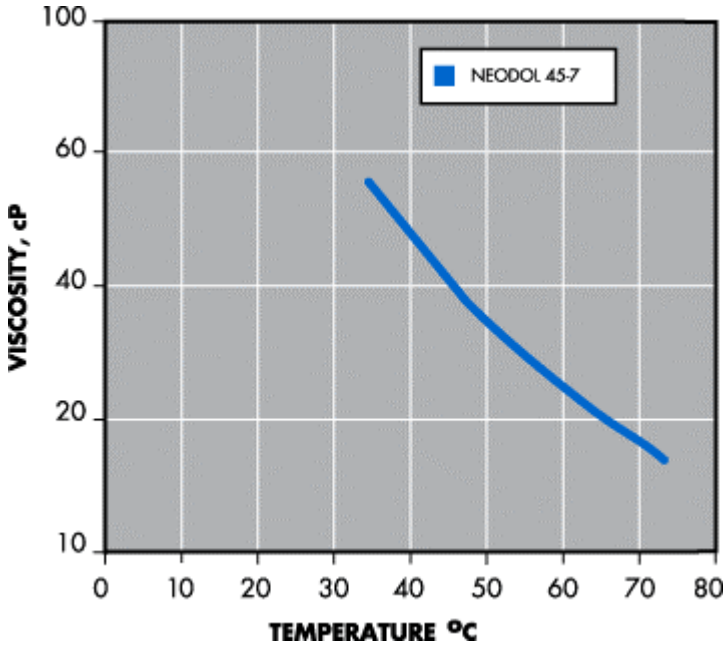
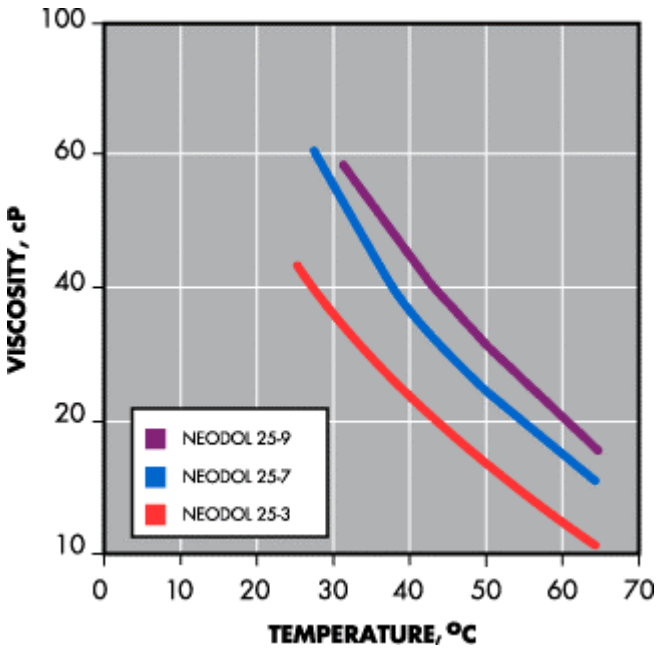


Figure 3: Viscosity of Shell NEODOL 25 Ethoxylates as a function of temperature



NOTE: Shell NEODOL 25-9 is a legacy grade, no longer produced, that is included for comparison.

Aqueous solutions of Shell NEODOL ethoxylates at room temperature

At room temperature, most non-ionic surfactants form a gel with the addition of water. The table below lists the viscosities of Shell NEODOL ethoxylates at various concentrations in water. This information indicates the ease of formulating with, and handling of, the respective non-ionic surfactant solutions. Since Shell NEODOL 91-6 does not form a gel in water at room temperature, its solutions are normally pumpable fluids at all surfactant concentrations.

Viscosity of aqueous Shell NEODOL ethoxylate solutions (in Centipoise at 22 °C)

Concentration %m/m in water	10	20	30	40	50	60	80
Shell NEODOL 91-6	3	13	63	173	187	144	80
Shell NEODOL 91-8	2	6	29	138	Gel	Gel	120
Shell NEODOL 1-9*	2	6	26	245	Gel	Gel	104
Shell NEODOL 25-7(b)			960	Gel	Gel	Gel	Gel
Shell NEODOL 25-12(b)*			71	Gel	Gel	Gel	Gel
Shell NEODOL 45-7			2530	Gel	Gel	Gel	Gel

(a) Fluid gel, by examination with polarised light

(b) Viscosity measured at 25 °C

* Shell NEODOL 1-9 and 25-12 are legacy grades, no longer produced, that are included for comparison

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