®Genamin T 150

Surfactant for the chemical-technical industry

Composition

Tallow fatty amine ethoxylate with 15 mol EO

Product properties *)

Concentration [%]
approx. 100

Appearance at 20 °C
yellowish to brownish liquid

Gardener colour
6 - 10

pH, 1% aqueous solution (20 °C)
10 - 11

Solubility at 20 °C
1 % in water: clear
1 % in mineral oil: turbid
1 % in xylene: clear
1 % in glycol: clear

Density at 50 °C [g/cm³]
1.00 – 1.02

Viscosity at 50 °C [mPas]
approx. 50

Refractive index at 50 °C
approx. 1.460

Pour point [°C]
approx. - 5

Flash point [°C]
> 200

Alkali value [mg KOH/g]
59.7 – 61.7

Lime soap dispersing power
-

Surface tension [g/l]
-

Dip-wetting ability 100 s at 25 °C
-

Other Genamin T grades

Genamin T 020
Genamin T 120
Genamin T 200

*) These characteristics are for guidance only and should not to be taken as product specifications. The tolerances are given in the product specification sheet. For further information on product properties, toxicological, ecological and safety data, please refer to the safety data sheet.

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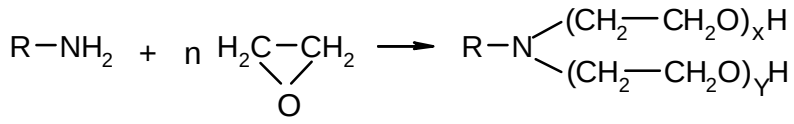
®=Rregistered trademark

Clariant GmbH
Functional Chemicals Division
D-65926 Frankfurt am Main
Germany

Fatty amine ethyloxylates

Surface-active fatty amine ethoxylates are obtained by the action of ethylene oxide on fatty amine. The reaction can be represented in summary simplified form by the following general equation:



Fatty amine Ethylene oxide Fatty amine ethoxylate

x + y = n number of molecules of ethylene oxide added

When ethylene oxide is added to the fatty amines, dihydric alcohols with terminal hydroxyl groups are produced. Under suitable conditions further reactions with these are possible. Moreover, the nitrogen can be quaternized.
Fatty amine ethoxylates are in principle basic in nature, they form salts with acids and have an alkaline reaction in aqueous solution. In view of their surface activity they must therefore be classified with the cationic compounds and, like them, they have affinity to fibres and surfaces.
Nevertheless, they often behave like nonionic surfactants towards many indicators and also in other applications, and all the more so the longer the added ethylene oxide chain is.
Their physical and chemical properties, and especially the surface-active ones, are determined largely by the ratio of the hydrophobic fatty amine radical to the hydrophilic solubilizing polyglycol chains in the molecule. The length of the polyglycol chains is indicated by the number of molecules of ethylene oxide added per molecule of fatty amine and is also known as degree of ethoxylation.
Since both the type of initial fatty amine and the amount of ethylene oxide can be chosen arbitrarily, there are two possibilities for modifying the hydrophilic/hydrophobic balance. Both have been employed in producing the Genamin product range. This consists of four groups, each of which is based on a different fatty amine and is distinguished by corresponding code letters:

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C = Coconut fatty amine
saturated C_8-C_{18} fatty amines, predominantly C_{12}-C_{14}

O = Oleylamine
predominantly unsaturated C_{18} fatty amines

S = Stearylamine
saturated C_{16}-C_{18} fatty amines

T = Tallow fatty amine
saturated and unsaturated C_{16}-C_{18} fatty amines

A multistage ethoxylation series is available for each of these amines, and the number of added molecules of ethylene oxide is expressed by an additional suffix, e.g. 080 for 8, 150 for 15 and 250 for 25 moles of ethylene oxide per molecule of fatty amine.

The last zero in all suffixes indicates that all grades contain practically 100 % active substance.
Common degrees of ethoxylation are Genamin grades with 2, 5, 8, 20 and 25 moles of ethylene oxide.
If for special purposes a narrower range is required, this can easily be achieved by formulating corresponding blends of neighbouring products. Sometimes, however, blends of more distant products produce even better effects. The procedure is to use the usual mixing rule and to employ the amine numbers as a basis for calculation. Moreover, when entire production batches are taken, any degrees of ethoxylation can be produced.
To obtain completely homogeneous blends, it is preferable to employ temperatures of 50 – 60°C. It is recommended that this temperature should be also maintained when aqueous dilutions are produced. In certain concentration ranges (usually between 70 and 40 % active substance) the occurrence of gelatinous hydrates, which are slow to dissolve in cold water, is avoided.
In suitable cases the gel state can be eliminated by adding solubilizers (alcohols, glycols, etc.). These are also appropriate if stable, non-flammable, higher dilutions are to be produced from products that form a turbid solution.
In principle the solubility in water rises with increasing degree of ethoxylation. The slightly ethoxylated products are only moderately dispersible at room temperature and therefore form turbid solutions resembling emulsions. The medium and higher-ethoxylated products dissolve to form a clear solution.
On the other hand, the solubility in water decreases with rising temperature. Therefore turbidity can occasionally occur even in inherently clear solutions, for example if the recommended working temperature of 50 – 60°C is maintained when dilutions are prepared.

This is a reversible physical phenomenon that normally impairs neither further processing nor subsequent use. The solutions become clear again as they cool. Higher-ethoxylated compounds display no turbidity in aqueous solution up to boiling point. However, with these too the temperature limit is depressed to a greater or lesser extent by large quantities of electrolytes, especially neutral salts or alkalis.

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Just like the fatty amines, the Genamin grades, especially in concentrated form, have a corrosive effect on the skin and mucous membranes. The appropriate protective measures must therefore be taken when the products are processed.

Product use

Genamin grades can be combined with all types of nonionic and cationic surfactants. The compatibility with anionic products must be checked in each case. The Genamin grades are resistant to most chemicals in typical concentrations used. They are insensitive to hard water.

Their specific surface active properties make them valuable bases and additives for the chemical technical industry. They can be used to manufacture textile auxiliaries (e.g. products for dyeing) mineral oil additives, crop protection products and pesticides, raw materials for cosmetics and adhesives. There are also other uses which are beyond the scope of this brochure.

Storage
Genamin T 150 can be stored for at least to 2 years in original sealed containers at room temperature under the recommended conditions.
Protect from exposure to cold during transport and storage. The properties of Genamin T 150 are **reversibly altered** by exposure to cold. If Genamin T 150 becomes turbid, thickens or freezes through exposure to cold, thaw slowly at room temperature and afterwards stir briefly.

We will be pleased to give you advice on technical details.

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