®Genamin C 100

Surfactant for the chemical-technological industry

Composition

Coconut fatty amine ethoxylate with 10 mol EO

Product properties *)

Active substance content
about 100%

Appearance at 20 °C
yellowish to brownish clear liquid

pH of a 1% aqueous solution (20 °C)
9 - 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 (DIN 51757)
0.9 – 1.0 g/cm³

Viscosity at 50 °C (DIN 53015)
approx. 40 mPas

Refractive index at 50 °C (DIN/ISO 3016)
approx. 1.458

Pour point (DIN/ISO 3016)
approx. -15 °C

Flash point (DIN 51584)
above 200°C

Alkaline value *(mg KOH / 1 g amine)*
85 - 89

Lime soap dispersing power (DIN 53903)
approx. 4 %

Surface tension (DIN 53914) *(1 g/L)*
approx. 39 mN/m

Dip-wetting ability (DIN 53901) 100 s at 25 °C
approx. 5.0 g/L

*) These characteristics are for guidance only and are 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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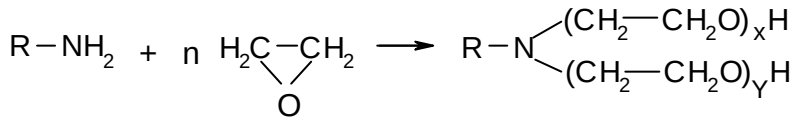
Other Genamin C grades

Genamin C 020
Genamin C 050
Genamin C 100
Genamin C 200

Fatty amine ethyloxylates

The 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

As a result of the addition of ethylene oxide to the fatty amines, dihydric alcohols with terminal hydroxyl groups are produced. Under suitable conditions further reactions with these are possible. Moreover, the bridge nitrogen can be quaternized.
Fatty amine ethoxylates are in principle basic in nature, 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, prove to be substantive.
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.

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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:

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 neighboring 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.

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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.
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.
Genamin grades can be combined unreservedly with nonionic and other cationic surface-active substances. Compatibility with anionic products must however be checked in each case.
The Genamin grades are largely resistant to most chemicals in the common application concentrations and are practically indifferent to hard water.
Their specific surface-active properties make them valuable raw materials and mixing components for the chemical-technological industry. They are suitable e.g. for the manufacture of dyeing and other textile auxiliaries, mineral oil additives, crop protection products, pesticides, cosmetic starting materials and bonding agents, details of which are beyond the scope of this data sheet.
We will gladly offer advice and information on any technical questions you may have.

Product use

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

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 also other uses which are beyond the scope of this brochure.

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

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