



Description

(2-hydroxyethyl) trimethylammonium chloride or choline chloride is an essential nutrient, and finds its main application as a nutritional feed additive.

TAMINIZER[®] C are free flowing granulates containing more than 96 % choline chloride.

Chemical properties of TAMINIZER[®] C

Property	Value
Molecular formula	C ₅ H ₁₄ ClNO
CAS Nr.	67-48-1
EINECS Nr.	200-655-4
ENCS/ISHL listed	
TSCA listed	
Molecular weight	139.6 g/mol

Quality Management & Control

In the interest of its customers, Taminco follows a number of strict rules to guarantee the quality of TAMINIZER[®] C as a high valuable feed additive.

Our company is certified ISO 9001, and owns also a GMP certificate for TAMINIZER[®] C.

The product conforms to the specifications set out in the European legislation (directives, guidelines)

The product is GMO free and complies with European Directives (2002/32/EC, 2006/13/EC and amendments) on impurity levels

Further we can certify that our product is free of bacteria, viruses, yeasts or fungi.

Specifications

	Unit	TAMINIZER [®] C	Method of Analysis
C.C. min.	% w/w	96	Titration
H ₂ O max.	% w/w	0.5	Karl Fischer

Physical properties

Appearance	---	White microgranulates
Particle size	µm	100<x<800
Apparent density	kg/l	0.55 – 0.60

Methods of Analysis

Research from recent years clearly shows that the choline chloride content from some competitive sources is significantly lower than the content which is mentioned on the certificates of analysis, due to intentional adulteration of the product by adding other chlorides, e.g. household salt. When analyzing choline chloride with the standard Volhardt method (= the chloride method), this common salt will be calculated as choline chloride.

Therefore, if the product quality is suspected, we recommend to use a more selective method of analysis, for example the Reinecke salt gravimetric method or ion chromatography.

Packaging

Multilayer bags with moisture barrier (15 kg)

External layer: PES with aluminium foil barrier

Internal layer: coex linear low MDPE

Shelf-life

2 years when stored in closed bags at room temperature.

Physical and Chemical Properties

See Material Safety Data Sheet

Transport regulations

Since choline chloride is not referred to in the regulations relating to the transport of dangerous goods, TAMINIZER[®] C is not subject to any regulation.

Storage and handling

TAMINIZER[®] C should be stored in its original sealed packaging at ambient conditions in a cool and dry place,

Open bags should be used immediately.

Other information

Those who want more detailed information on health and safety aspects can find a lot of supplementary information (properties, exposure, toxicological and ecological data) on our Material Safety Data Sheet, which is available on request.

Use of TAMINIZER[®] C

Choline is commonly classified as a vitamin. It belongs to the family of water soluble B-vitamins. It was formerly known as vitamin B4.

Like other vitamins, it plays a significant role in nutrition, but its daily requirement seems to be hundreds of times greater than that of other vitamins.

Choline has three essential metabolic functions :

- As a constituent of phospholipids, improving fat transport and cell construction
- As a precursor in the synthesis of acetylcholine, interacting in muscle control (neurotransmitter)
- As a source of labile methyl groups, essential for numerous biological processes.

Choline occurs in almost all feed ingredients (see for example publications by the NRC); however not all naturally occurring choline is bio-available.

Many animals have a choline requirement that is not fully covered by the natural choline content of the feed.

Therefore extra choline is often supplemented, and choline chloride salt is the common form in which choline is added to the feed.

Addition levels vary by species, but are also dependent on age, feed composition, environmental stress, and breed. The required addition level is the difference between the requirements on the one hand and the levels of natural available choline on the other. It is further augmented with a safety margin, to cover up for variations of choline levels in natural feed ingredients.

Dosing

The following supplementation levels reflect average recommendation values for TAMINIZER[®] C addition to practical diets :

<u>Species</u>		TAMINIZER [®] C Supplement <u>in mg/kg feed</u> (90 % dry matter)
Broilers	Starting (0-8 weeks)	600-850
Broilers	Growing (8-18 w.)	350-700
Layers		300-600
Layers	Breeding	350-700
Turkeys	Starting (0-8 weeks)	950-1200
Turkeys	Fattening (8 – end)	600-850
Turkeys	Breeding	600-850
Ducks	Market/Breeding	1100
Pigs	Starting (10-25 kg)	350-700
Pigs	Growing (25-60 kg)	250-500
Pigs	Finishing (60kg-end)	200-350
Pigs	Gestating/Lactating	200-600
Fish	depends on species	350-950
Shrimp		500-700
Calves		250-350
Dogs		1200-1400
Cats		1200-1650

These recommendations can serve as a general guideline only, since diet composition and vitamin availability from regular feed ingredients can vary greatly.

For further questions please contact our regional sales departments

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