



Low fat cheese with Nutrilac[®] CH-4560



Why not produce high quality low-fat cheese?

Consumer trends show that there is an increasing demand for low fat alternative dairy products, with the low fat cheese segment sharing enormous potential for growth.

Because of the high fat content in cheese, producing a low fat variant with the same quality and texture found in the full fat reference can prove to be extremely difficult for cheese producers.

Nutrilac® CH-4560 may be the solution

At Arla Foods Ingredients we have expertise in producing specialised milk and whey protein solutions, that utilise the functional benefits from all milk protein fractions. With our unique micro-particulated formula Nutrilac® CH-4560, it is possible to produce a low fat cheese with up to 10% reduced total fat, with the same creaminess and smooth texture as a full fat alternative.

Benefits of Nutrilac® CH-4560

- › Reduces your standard product fat content by up to 10%*
- › Reduce raw material cost by up to 4%
- › Creates a more appetising and natural coloured low fat cheese
- › Increases the watercontent with up to 3%*, without negative effects

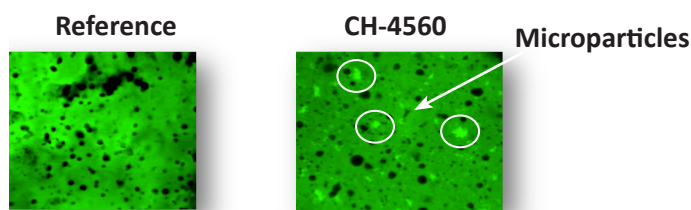
** Dependent on cheese type and manufacturing process*



Why choose Nutrilac® CH-4560?

Unique fat replacement properties

- › **Feature:** Nutrilac® CH-4560 holds more than 65% protein particles in the range of 2-8 microns, with an average size of 4-5 microns. Each batch is analysed at our lab to ensure that all Nutrilac® CH-4560 sent to our customers matches this exact profile.
- › **Benefit:** The protein particles in Nutrilac® CH-4560 imitate the removed fat globules, and ensure that cheese containing Nutrilac® CH-4560 has the same creaminess and texture (mouthfeel) as a full fat alternative. Production is standardised, ensuring the exact same product every time.



It is easy to observe and compare the light green microparticles of Nutrilac® CH-4560, in the right-hand photo, that imitate the size and shape of the black fat globules.

Cost savings through improved water binding capacity

- › **Feature:** The water binding capacity of Nutrilac® CH-4560 protein particles are significantly higher than regular casein protein.
- › **Benefit:** Nutrilac® CH-4560 makes it possible to increase the water content in cheese by up to 3%, without resulting in softer textures. This can increase yields by 5-18%, with a reduced raw material cost per kg cheese of 2-4%.

Milky flavour

- › **Feature:** It is very important that the flavour profile of all ingredients used are fresh and milky, especially in the case of fresh cheese types. Nutrilac® CH-4560 contributes to the flavour in the same way as milk fat would.
- › **Benefit:** As a result of the selected raw materials, and the microparticulation process, Nutrilac® CH-4560 has a surprisingly milky taste.

More appealing natural colour

- › **Feature:** Low fat cheeses tend to have a more grey and transparent appearance as a consequence of lowering the fat level, but by adding Nutrilac® CH-4560 to the cheese milk this change in the cheese colour is much less apparent.
- › **Benefit:** The proteins in Nutrilac® CH-4560 disperse light in the same way as milk fat globules would, creating a more natural cheese colour.

Free of clostride spores

- › **Feature:** Nutrilac® CH-4560 has undergone production steps in our factories to eliminate any trace of spores (especially clostrides); a well known challenge when using powders in cheese production that can potentially destroy the cheese in the storage room after 4-6 weeks.
- › **Benefit:** The level of spores in a manufacturer's cheese milk will not increase as a result of using our ingredients, and there is no extra wastage as a result of using Nutrilac® CH-4560.





Cheese types & Nutrilac® usage

Cheese type	Fat reduction efficiency	Lowest total fat level	Recommended dosage level*
Hard Cheese e.g. Emmenthal, Manchego, Cheddar	++	6%	0.25-0.8%
Semihard Cheese e.g. Gouda, Edam, Tilsit, Port Salut	+++	9%	0.4-0.8%
Pasta Filata e.g. Mozzarella, Provolone, Kashkaval	++	11%	0.3-0.8%
Fresh Cheese eg. Burgos, Minas, Panela, Cottage Cheese	+++	<5%	0.3-0.8%
Moulded Cheese eg. Camembert, Blue cheese	+++	11%	0.3-0.6%

*) Dosage based on the volume of cheese milk.

Frequently asked questions

Is Nutrilac® CH-4560 safe to use in all cheese types?

Yes, the specification of Nutrilac® CH-4560 is very unique, as it holds no clostrides. At the same time the total plate count is at such a low level that the low dosages recommended can not cause any cheese defects! Read: "cheese types & Nutrilac® dosage" for further details.

Is Nutrilac® CH-4560 easy to use?

Yes. The special production method results in a fast dispersible powder, allowing Nutrilac® CH-4560 to easily dissolve in both water and milk. If resting longer than 30 minutes, you are required to stir the solution, to ensure a homogeneous mix.

Does the addition of Nutrilac® CH-4560 change the protein breakdown during ripening?

No. Unlike whey proteins in general, the micro-particles from Nutrilac® CH-4560 do not influence the casein breakdown (soluble nitrogen). The micro-particles are placed individually in the cheese matrix, and the ripening enzymes therefore have full access to perform the proteolysis of the caseins.

Will the cheese become more bitter from adding Nutrilac® CH-4560?

No. Bitter taste in cheese is a result of a slow proteolysis of casein, creating long chained peptides with a bitter taste. Tests shows that microparticulates from Nutrilac® do not slow the proteolysis.

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