

CALF MILK REPLACER (CMR)

Understanding the label



Calf milk replacer (CMR) labels provide a list of ingredients, a nutritional breakdown of constituents and additives, and directions for use. More details are needed to compare products and make a buying decision.

This fact sheet highlights the additional information needed to evaluate a CMR and to help in making the right choice of product to support successful calf growth and development cost-effectively.

“Feed costs pre-weaning is the most expensive period in the animal’s life and producers are spending significant sums of money. It is important to know what’s in the calf milk replacer and its feed value. The label provides only basic information. I would encourage producers not to take this at face value but to get answers to some key questions.”

Bianca Theeruth, Cargill calf and heifer specialist

The label

A list of ingredients in descending order; constituents, additives and directions for use, are included on the CMR label.

Providing this information is a **legal requirement**.



Crude protein, crude fat, crude fibre and crude ash are indicators of the CMR **nutritional quality**.

ProviMilk® Daisy

A complete feedingstuff - Milk Replacer suitable for the rearing of calves.

Vitamin E is partially replaced by natural antioxidant PROVIOX 50. PROVIOX 50 contains sources of compounds with anti-oxidant properties. The following quantity of Vitamin E has been replaced by Proviox 50: 100 mg/kg.

Ingredients

Whey powder, Vegetable oil (Palm, Coco, Rape, Soya), Soya (bean) protein concentrate (*), Wheat gluten, Pea-flour extruded, Dextrose, Wheat flour, Calcium carbonate, Onions solubles, Grape pips soluble, Propane-1,2-diol (*) produced from genetically modified soya.

Analytical constituents

Crude protein	22.0 %
Crude fat	18.0 %
Crude fibre	0.3 %
Crude ash	7.9 %
Calcium (Ca)	0.73 %
Phosphorus (P)	0.61 %
Sodium (Na)	0.68 %

Additives per kg

Nutritional	
3b103 Fe (Iron(II) sulphate monohydrate)	91 mg
E4 Cu (Cupric sulphate pentahydrate)	10 mg
3b503 Mn (Manganous sulphate, monohydrate)	40 mg
3b603 Zn (Zinc oxide)	40 mg
3b202 I (Calcium iodate, anhydrous)	1 mg
E8 Se (Sodium selenite)	0.3 mg
3a672a Vitamin A	25000 IU
3a671 Vitamin D3	6000 IU
3a700 Vitamin E/all-rac-alpha-tocopheryl acetate	150 IU

Directions for use

Take 2/3 of the required amount of water at a temperature of 55°C.
Add powder to the water at the ratio of 125 gram powder to 875 ml water (1:7) and mix thoroughly.
Add the remaining water cold and mix thoroughly. Optimal drinking temperature is 40 to 42°C.
Milk needs to be fed out straight after preparation.



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Technological

E433 Polyoxyethylene(20)-sorbitanmonooleate	3.9 g
E321 BHT	2.5 mg
E320 BHA	1.2 mg

Zootechnical

E1700 Bacillus subtilis	640 MCFU
E1700 Bacillus licheniformis	640 MCFU

Sensory

Best Before:
Expiry Date:
Accreditation No: NL01979
Code: 49021 169

To evaluate and compare products, and to make **a sound buying decision**, more information is required above that provided on the label of a CMR. It’s worth asking your CMR supplier for more details about the ingredients in the CMR. This information won’t be found on the label, but it will affect how the product **performs**, its **suitability** to your system and its **value for money**.

Basic requirements

The inclusion rates for components should fall within the levels shown in Table 1.

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Table 1. Inclusion range of key constituents in CMR

Nutrient	Min level	Max level	Comments
Protein %	20	26	Higher level for greater frame growth
Oil %	15	22	Main energy source alongside lactose
Fibre %	0	0.5	Higher levels indicate inclusion of non-milk protein
Ash %	6	8	CMR ingredients can affect ash
Vitamin E mg/kg	0	250	Higher levels costly but show improved immune function in animal
Selenium mg/kg	6	0.3	0.3mg/kg is the legal maximum inclusion level in complete feed

Information requirements

Check the basic information on the label. Constituent levels should fall within those listed in Table 1

Determine whether the CMR is skim-based or whey-based. If whey powder is the first ingredient listed, then the CMR is whey-based and vice versa for a skim-based CMR.

The type of CMR required will depend on your rearing system, disease risk and rearing objectives.

In the case of skim-based CMR, find out the inclusion rate of the skim milk or skim derivatives, as this will determine clotting ability. Note, skim derivatives can include butter milk, whole milk powder and casein.



Skim derivatives are usually cheaper, but it is important to know the quality and processing method of these derivatives; these factors can affect feeding characteristics and nutritional value.

CMR that include skim milk powder are considered premium products.

Constituent information

All ingredients should be high quality, free from anti-nutritional factors and correctly processed. Reputable manufacturers will be following guidelines regarding raw materials and their processing.



Protein

Protein provides essential amino acids for tissue synthesis required for lean structural growth. The amount contained in the CMR and its source should be evaluated. Protein sources can vary in bioavailability to animal and presence of anti-nutritional factors.

Calves have a requirement for specific amino acids for muscle growth and optimal immune system function. Quality CMR should be formulated specifically to meet the amino acid requirements.

Vegetable protein sources can be used successfully as an economic alternative to dairy protein sources in CMR.

They are listed on the label as, for example, hydrolysed wheat gluten, soya protein concentrate and pea protein. Vegetable proteins contribute to the fibre content in a CMR, whereas dairy proteins do not contain any fibre. But note that a CMR with a zero fibre content could have up to 0.04% vegetable protein as values are rounded down if below 0.05 % and up to the nearest 0.1% if above 0.05 %.

Fats and oils

Fats, oils and lactose in CMR fill the frame and make up the energy fragment of milk replacer. They provide a concentrated energy source; 2.25 times that of carbohydrate. They also provide essential fatty acids and are important in maintaining a shiny coat.

Excessively high fat levels can suppress starter intake, leading to poor rumen development.

Fats in CMR are plant based from sources such as palm, coconut, rapeseed and soya oil. These will be listed on the label. Palm and coconut oil are the most commonly used in CMR as they have similar digestibility to milk fat (+/- 96 %).

Ash

The ash content in a CMR represents the overall level of minerals in the product and it is listed as a percentage of total composition on the label.

Ash in a CMR is comprised mostly of ions of sodium, potassium, chloride and trace minerals that come from whey or skim ingredients.

Ash is not added to milk replacers as fillers; it is a natural and variable component based on ingredients and the CMR formula; these will determine the ash content. The CMR is ideally formulated to the ash content in whole milk (6%) but higher levels, that can result from the ingredients used in the formulation, may not be detrimental to calf health and performance.

Fibre

Fibre quoted on the CMR label is related to the amount of vegetable protein, such as soya or wheat. Fibre content will vary depending on the sources and fibre content is not a reflection of the CMR quality.

Some plant protein sources, such as soya protein products, contain a variety of antinutritional factors that decrease their digestibility. However recent advancements in processing have improved the quality of soya protein products and they can be well utilised at moderate inclusion levels.



Summary

Labels on CMR give a broad outline of the nutritional content, but not enough detail on which to base a sound buying decision.

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Labels on CMR contain the legally required information.

They give a broad outline of the nutritional content, but not enough detail on which to base a sound buying decision.

Don't take the label at face value.

Buy a reputable brand from a reputable company known to specialise in dairy and calf nutrition.

Compare like for like.

It is important, in terms of nutritional value, cost and your own objectives, to compare like for like. The label will not provide enough information.

Ask questions.

Take advantage of the manufacturer's technical support team and additional product information.

For further information contact your Cargill representative or contact Cargill using the details below.

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