



# FrontLine®

MARKETING INFORMATION FOR  
TODAY'S FEED PROFESSIONAL

## Classification of Milk Replacer Types

Modern milk replacers can be classified by protein source, energy content and presence of medication.<sup>1</sup>

### Protein Sources

Protein sources are generally classified as milk or alternative proteins.

### Protein/Energy Levels

Protein and energy levels are both important to choosing a milk replacer. Protein levels in calf milk replacers generally range from 18% to 22% and fat levels from as low as 10% to 22%. Calf growth and performance is related to a large number of factors; and differing protein levels, protein/energy ratios, and protein sources interact. Growth is regulated by daily intake of protein and energy, therefore, different feeding levels will also affect performance. Some applications, such as cold weather feeding, require a higher energy level. (Because fat is a very concentrated energy source, the content of fat in a milk replacer will be responsible for most of the difference in energy levels.)

### All Milk Protein

#### Alternative Protein

Dried Whey Protein Concentrate

Soy Protein Isolate

Dried Whey

Protein Modified Soy Flour

Dried Whey Product

Soy Protein Concentrate

Skim Milk

Soy Flour

Casein

Plasma Protein

Sodium or Calcium Caseinate

Modified Wheat Protein

### Low Fat

#### High Fat

Protein 18-22%

Protein 18-22%

Fat 10-15%

Fat 16-22%

Metabolizable Energy Level

1660 - 1810 kcal/lb.

Metabolizable Energy Level

1770 - 1950 kcal/lb.



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## Medicated Versus Non-Medicated

Including medication in milk replacers can provide significant benefits in calf health and performance. However, use of medication may require a withdrawal period prior to slaughter. Five medications have approval for use in milk replacers: Chlortetracycline (CTC), Oxytetracycline (OTC), Oxytetracycline in combination with Neomycin (OXY/NEO), Decoquinatate and Lasalocid. The first three medications are antibacterial while Decoquinatate and Lasalocid aid in the prevention of coccidiosis. (See Table below for use levels and withdrawal).

Medication	Use Level	Statement	Withdrawal Period
Chlortetracycline	20 g/ton	For increased rate of weight gain and improved feed efficiency.	None Required
	2000 g/ton	Treatment of bacterial enteritis caused by <i>E. coli</i> susceptible to chlortetracycline.	Treat for not more than 5 days. Do not use in calves to be processed for veal.
Oxytetracycline	10-20 g/ton	For increased rate of weight gain and improved feed efficiency.	None Required
	2000 g/ton	Treatment of bacterial enteritis caused by <i>E. coli</i> susceptible to oxytetracycline.	Withdraw 5 days before slaughter.
Oxytetracycline/ Neomycin	100 g/ton Oxy 200 g/ton Neo	Aid in the prevention of bacterial diarrhea (scours).	Withdraw 30 days before slaughter.
	200 g/ton Oxy and 400 g/ton Neo to 400 g/ton Oxy and 800 g/ton Neo	Aid in the treatment of bacterial diarrhea (scours).	
Decoquinatate	45.4 g/ton (to give 22.7 mg decoquinatate per 100 lbs. body weight).	For the prevention of coccidiosis in ruminating and non-ruminating calves and cattle caused by <i>E. bovis</i> and <i>E. zurnii</i> .	None Required.
Lasalocid	90 g/ton	For the control of coccidiosis caused by <i>Eimeria bovis</i> and <i>Eimeria zuernii</i> in replacement calves.	None Required.