

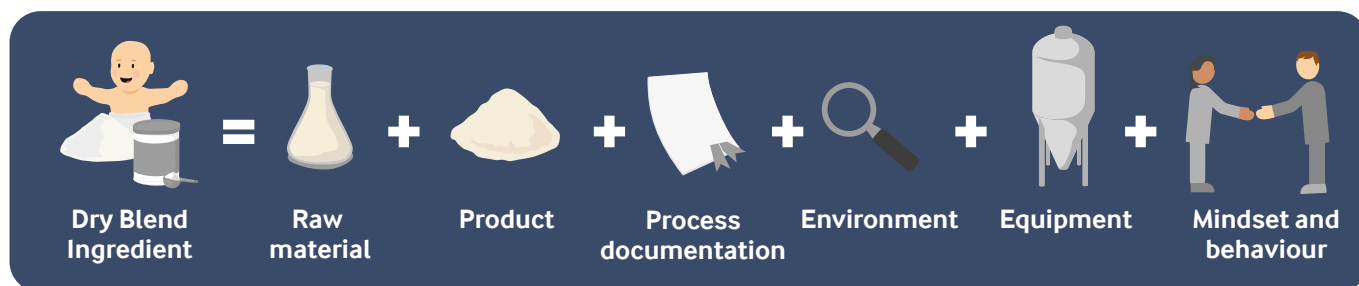
# Proteins for dry blending

Infant formula manufacturers have long benefitted from dry-blend lactose. Now attention is turning to dry-blend proteins, creating new opportunities to save energy, cut processing costs and optimise capacity utilisation. Correctly applied, dry-blend proteins offer processors the flexibility to produce both dry-blend and wet-blend recipes from one base powder.

## The challenges

Drying is one of the most resource-intensive operations in the production of powdered infant formula. Since the introduction of dry-blend lactose, manufacturers have been able to save energy and expand their capacity by adding lactose after the drying process. Proteins for dry blending, on the other hand, were initially of less interest, as most of the protein in infant formula is either added as liquid milk or to support the emulsification process. Today, perceptions have changed, as manufacturers increasingly recognise the potential of dry-blend proteins to improve the flexibility and efficiency of their production.

As a well-established supplier to the infant formula industry, Arla Foods Ingredients has learned that there is much more to the production of dry-blend ingredients than the products alone. The following six focus areas are equally essential:



The production of dry-blend proteins is particularly challenging due to the thermodynamic properties of whey proteins and the legally required kill step – pasteurisation – prior to drying. This has made it difficult to design a process that will consistently result in products that are free of the Gram-negative pathogens *Cronobacter* spp – the primary indicators of a product’s suitability for dry blending.

### Quality by selection no more

It is known that matrix effects can be obtained by combining proteins with other macronutrients, like carbohydrates and lipids, to improve the heat stability of the proteins.

Arla Foods Ingredients has investigated combining whey proteins with lactose to reducing the protein content and, in that way, facilitate heat treatment. This has enabled the development of Lacprodan® Premium ALPHA-10 – a dry-blend version of Lacprodan® ALPHA-10 with a similar content of alpha-lactalbumin.

	Lacprodan® ALPHA-10	Lacprodan® Premium ALPHA-10
Protein	Min. 81 %	Min. 41 %
Alpha-lactalbumin of protein	Min. 43 %	Min. 41 %
Lactose	Max. 10 %	Max. 55 %
Application	Infant	Infant

### Wet and dry-blend solutions

As a result, Arla Foods Ingredients is now able to supply an alpha-lactalbumin fraction for wet and dry-blend applications. Their suitability for each purpose is highlighted on the product label.

Lacprodan® Premium ALPHA-10 eliminates downstream food safety risks for processors that work with dry-blend applications. For processors who operate a Cronobacter sakazakii-free environment in wet-blend production, Lacprodan® ALPHA-10 is available with 'Cronobacter spp. not detected, determined by selection' documentation.

### New GB Standard is the opportunity to reformulate

Lacprodan® Premium ALPHA-10 is currently globally available for trial and will be launched for commercial production later in 2021. It is also ideal timing to incorporate Lacprodan® ALPHA-10 in recipes which eventually are destined for the Chinese market, due to the latest expectation with regards revision of the GB standard and the subsequent revision of infant formula recipes.

### Further information

It is Arla Foods Ingredients' opinion that we have created a win-win solution. Our customers will benefit from the true dry blend qualities of Lacprodan® Premium ALPHA-10 and later other ingredients as well making it possible to move from quality by selection for this demanding application. We are therefore looking forward to expand on this white paper in the following weeks and months.

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