

Global Market for Infant Formula and Dairy Ingredients 2019-2023

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1. Introduction

2. Infant formula market

3. Infant formula industry

4. Dairy ingredients used in infant formula

5. Conclusion

Market research of infant formula market and industry



- **Market development 2013-2018 and forecast 2019-2023**

- **Global market**
 - Value
 - Volume
 - Growth rates
- **Regional markets**
 - Western Europe
 - Eastern Europe
 - North America
 - Asia Pacific
 - Latin America
 - Middle East & Africa

- **Key global/regional /local companies**
 - Market shares in key markets
 - Estimated volume 2023
 - Strategic alliances
- **New product development and launches with key ingredients**

- **Estimated volumes for:**
 - SMP
 - DWP
 - Lactose
 - WPC80
 - **Emerging dairy ingredients**
 - Lactoferrin
 - α -Lactalbumin
 - MFGM
 - Osteopontin
 - Native Whey
 - Others

- **Analysis and summary**



Infant Milk Formula (IMF) - types and terminology

- Infant formula products are substitutes for breast feeding, covering the whole age span from 0-3 years
- Infant formulas are typically classified according to age of baby:

Formula 1

- 0-6 months
- First age / (pre-) Term starter / Standard

Formula 2

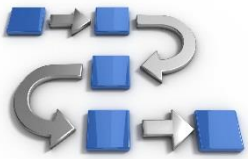
- 6-12 months
- Second age / Follow-on

Formula 3

- 1-3 years
- Third age / Growing-up / Toddler

Formula 4 / Special infant formula

- Whereas infant formulas are generally based on regular dairy ingredients, Formula 4 is an umbrella for special formulas, such as hypo-allergenic formulas based on hydrolysed proteins, as well as lactose-free, anti-reflux formulas, etc.



- Value and volume figures are mainly sourced from Euromonitor
- Global/regional market value figures are based on calculated USD value figures
- All national market values given in national currencies converted from local currency into USD by 3A
- Conversion of currency for all included years into USD done using 2018 fixed exchange rate
- Given this methodology country market values in USD are affected by the 2018-level of local inflation as well as the value of the local currency vis-à-vis the value of the USD
- National market values in USD must therefore be seen as an approximate figure



Five key growth drivers in IMF

1 Economic growth and job creation

2 Increasing number of women in workforce

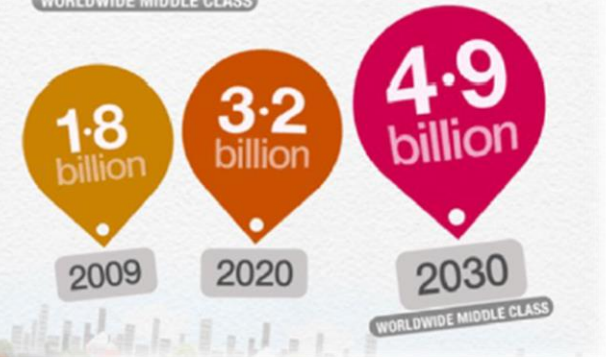
3 Middle-class with increased disposable income

4 Increasing spend on premium nutrition

5 Baby population



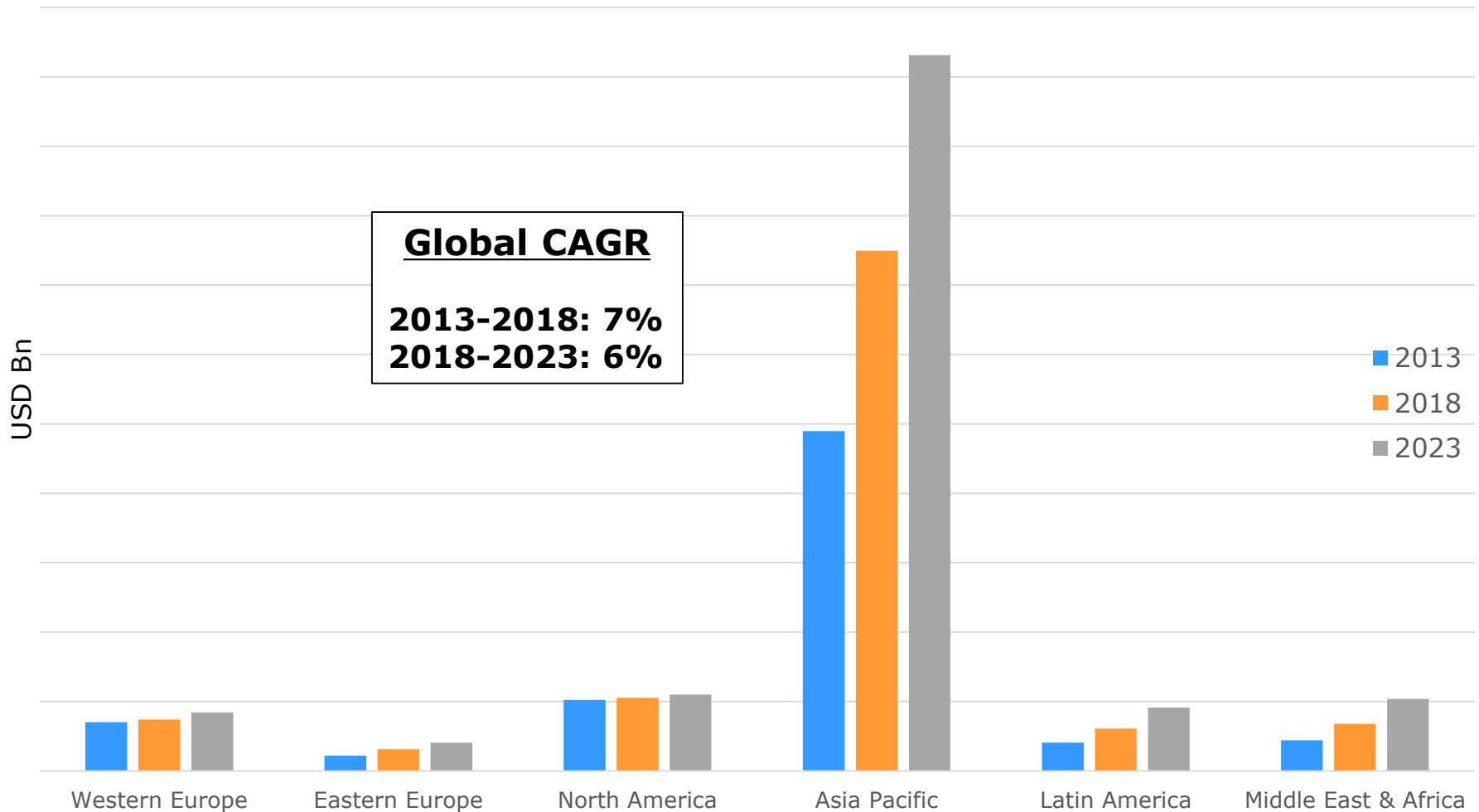
WORLDWIDE MIDDLE CLASS





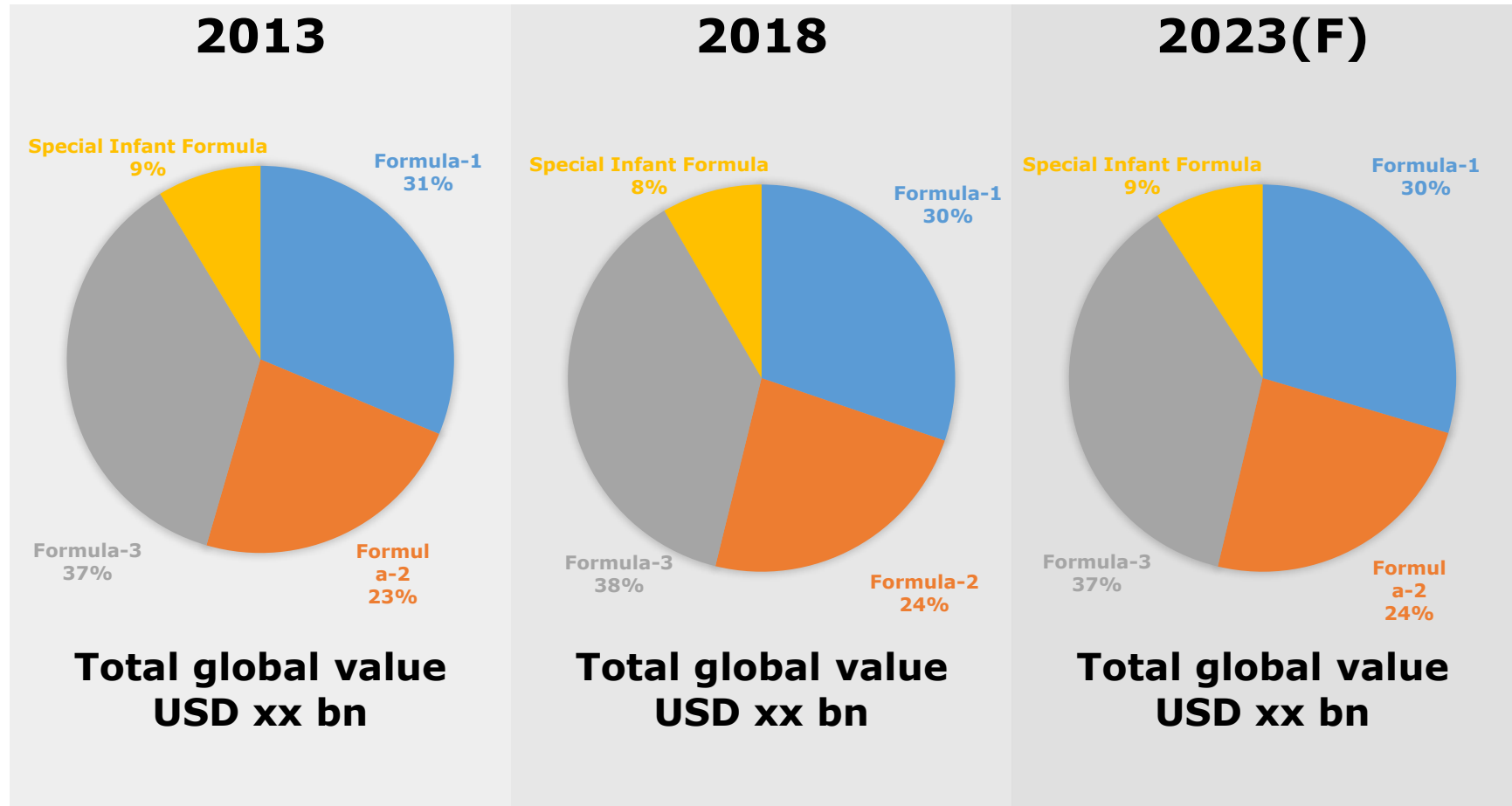
Regional breakdown of infant formula market 2013, 2018 and 2023(F)

Infant formula value sales 2013, 2018 and 2023(F)



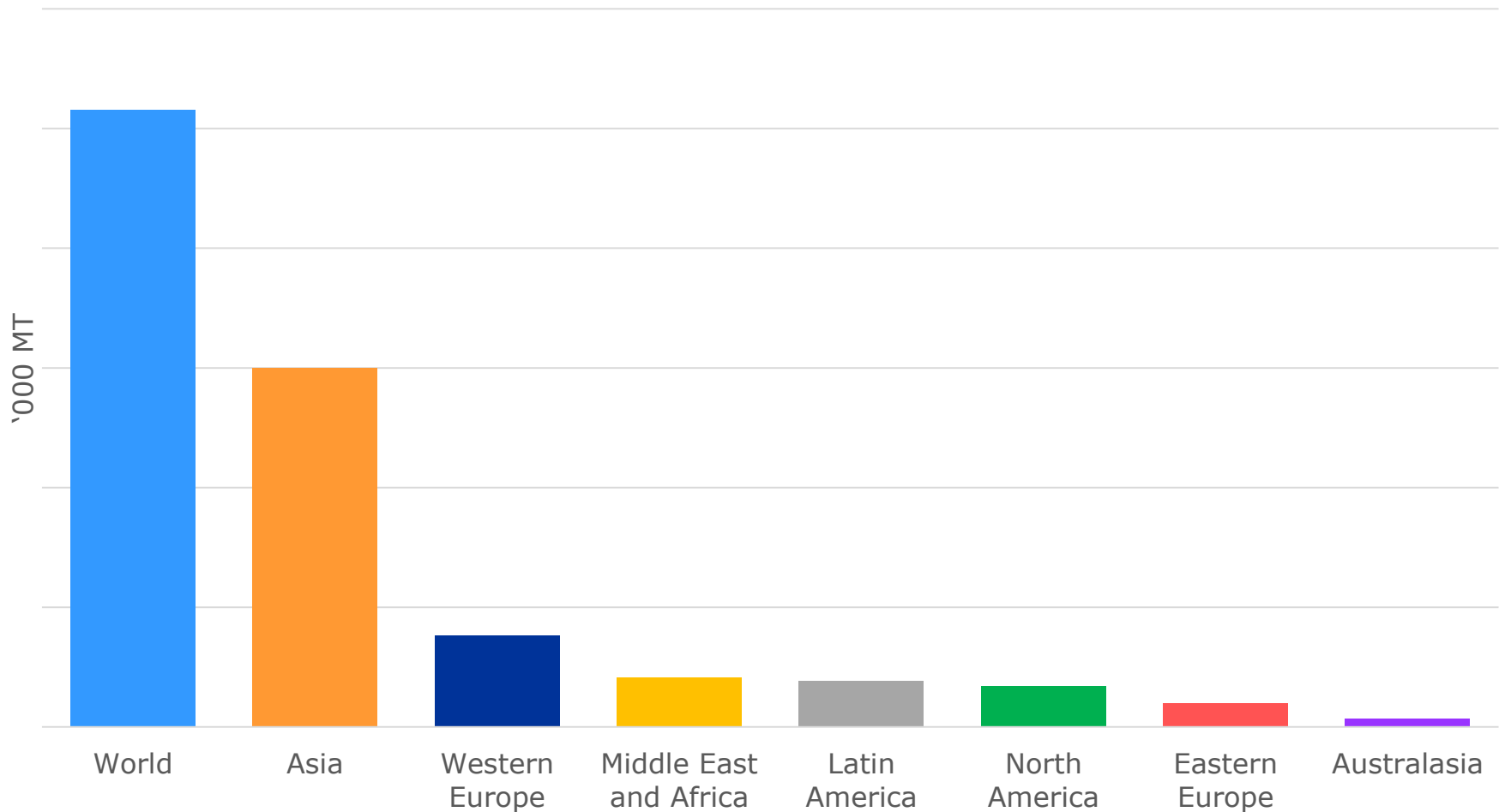


Value distribution - per infant formula category





Volume per market



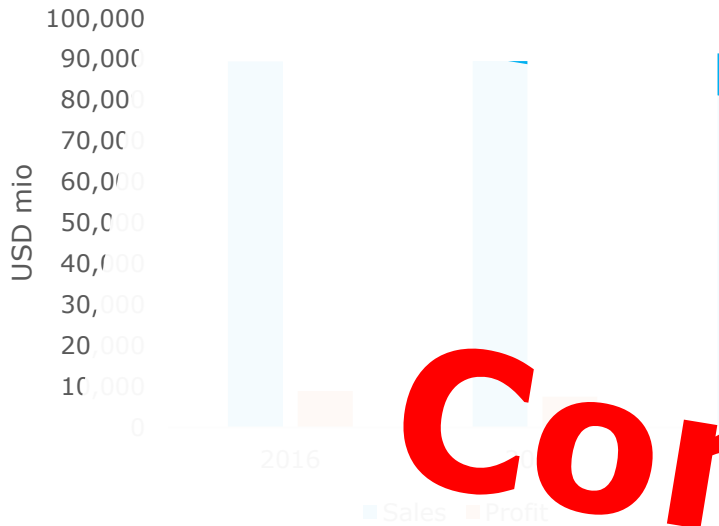
A small handful of global companies the 'Big Four' dominate the global IMF business in 2018

Overall ranking	Company	Approx. market share %
1	Nestlé	20
2	Danone	13
3	Reckitt Benckiser	9
4	Abbott	8

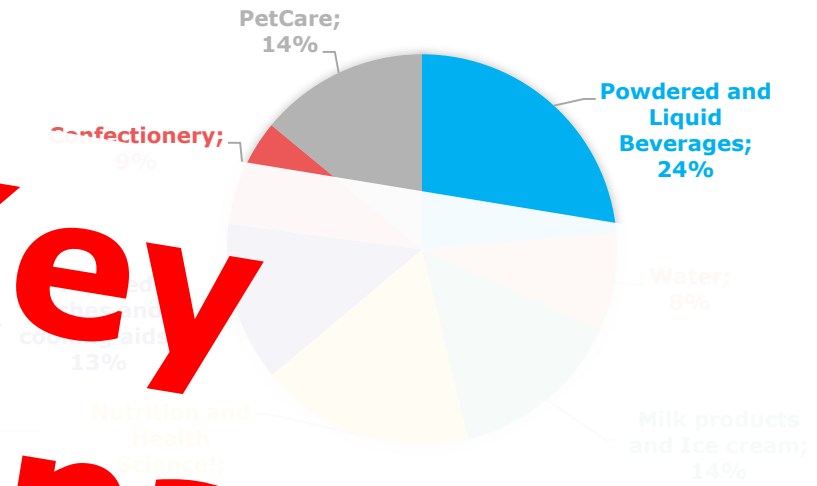
- Nestlé and Danone are key players in all 4 IMF categories
- Reckitt Benckiser and Abbott have their relative strength in the Formula- 1 and Formula-2 product categories. Reckitt Benckiser also has a particular strength in the special infant formula category
- Besides from the "big four" the IMF market is fragmented with regional companies such as: Heilongjiang, Yili, Biostime, DMK, Sodiaal, Lactalis, Hipp, Hero, FrieslandCampina, Arla, Heinz etc.



SALES AND PROFIT



DIVISION SHARE OF SALES, 2018



Key Company Profiles

- Nestlé is a major infant formula company with products designed for infants in all development stages and infant formula sales are more than \$5 Bn in 2018 making it the largest company in the infant formula industry
- Nestlé infant formula brands include NAN, Nestlé Gold, NAN S-26 Gold (Wyeth) for all stages of infants' development, and Alfaré, Altré, and others that target the specific nutritional needs of infants with cow's milk allergies and other food allergies/intolerances
- Nestlé has three reportable market segments comprised of AMS, LHMNA and AOA² accounting for 34%, 21% and 23% of net sales in 2018, while residual sales were generated by other businesses





Most active national markets of NPL - China by far the most active national market



**Total # of NPL between January 2013-December 2018
= xx**



Product examples with ingredients

Description:

Aptamil Profutura First Infant Milk is a nutritionally complete, whey-based infant breast milk substitute, designed to complement breastfeeding. It contains a high level of palmitic acid in the sn-3 position, the structure provides a better profile of fatty acids, closer to that of breast milk.

Ingredients include:

Demineralised whey (from milk), **lactose** (from milk), **skimmed milk**, anhydrous milk fat, vegetable oils, galactooligosaccharides (from milk), whey protein concentrate (from milk), phospholipid, fructooligosaccharides, calcium carbonate, fish oil, potassium chloride, magnesium chloride etc.



Description:

Advanced milk formula for babies aged 6 months to 12 months. Formulated to support infant growth, cell formation and prevent

Ingredients include:

Whey protein, maltodextrin, **skimmed milk powder**, vegetable oil mixture, fructooligosaccharides, inulin, **lactose**, sucrose, full cream powder, monoglycerols, **icosahexaenoic acid**, soy lecithin, vitamins and **choline chloride**

issues



SMP volume estimation

- methodology I: Extrapolation from reported SMP content

Methodology I	Value	Volume	% SMP	SMP volume
Formula-1	USD 16 Bn	620,000 MT	12%	74,400 MT
Formula-2	USD 13 Bn	510,000 MT	15%	135,000 MT
Formula-3	USD 21 Bn	1,290,000 MT	40%	516,000 MT
Formula-4	USD 5 Bn	130,000 MT	12%	15,600 MT
Total	USD 54 Bn	2,580,000 MT		741,000 MT

**Global
SMP**

**Volume
usage**

- Methodology I calculates SMP volumes based on percentage content of SMP, as reported in infant formulae
- Based on the extrapolation from the IMF volume and reported SMP content, approx. 741,000 MT SMP was applied in infant formula in 2018
- Most SMP goes into Formula-3, while Formula-1, Formula-2 and Formula-4 use an IMF-grade SMP of higher quality due to higher microbiological standards in these IMF products



Why proteins for infant formula - demineralised whey protein volume estimation

	Volume	Protein content (avg. 11%)	Whey protein share	Whey protein volume	DWP share	DWP (100% protein)	DWP (13% protein)
Formula-1	620,000 MT	68,200 MT	50%	34,100 MT	50%	24,500 MT	188,500 MT
Formula-2	540,000 MT	59,400 MT	60%	35,600 MT	50%	17,800 MT	136,900 MT
Formula-3	1,290,000 MT	141,900 MT	100%	141,900 MT	100%	2,800 MT	21,500 MT
Formula-4	130,000 MT	14,300 MT	50%	7,200 MT	10%	700 MT	5,400 MT
Total	2,580,000	283,000		112,100		45,800	352,300

**Global
DWP
Volume
usage**

- Based on above calculation, DWP volume has been estimated that 352,300 MT DWP was applied in infant formula in 2018
- (Given the CAGR on INF volumes of 2%, DWP demand in infant formula can be estimated as 7,000 MT per year towards 2023)



Whey proteins for infant formula

- whey protein concentrate volume estimation

	Volume	Protein content (avg. 11%)	Whey protein share (%)	Whey protein (MT)	WPC share (%)	WPC (100% protein)	WPC (80% protein)
Formula-1	620,000 MT	68,200 MT	50%	34,100 MT	50%	16,400 MT	20,500 MT
Formula-2	540,000 MT	59,400 MT	60%	35,600 MT	50%	17,800 MT	22,300 MT
Formula-3	1,290,000 MT	141,900 MT	50%	70,950 MT	50%	35,475 MT	44,344 MT
Formula-4	130,000 MT	14,300 MT	50%	7,150 MT	50%	3,575 MT	4,469 MT
Total	2,580,000 MT	283,800 MT		112,100 MT		66,300 Mt	82,900 MT

**Global
WPC80
Volume
usage**

- Based on above calculation, it can be estimated that 82,900 MT WPC80 was applied in infant formula in 2018
- Applying the CAGR of 2% demand for WPC80 in infant formula can be estimated to be 104,000 MT per year towards **2023**



Lactose volume estimation

- Lactose as a source of carbohydrates is provided both as a pure product as well as in the form of DWP, WPC, SMP, etc. **making estimation of added pure lactose somewhat complicated**
- Pure lactose is mainly added to Formula-1 and Formula-2 and even less in Formula-3 and Formula-4 using more maltodextrin etc.
- Globally, the demand for lactose amounted to approx. 1,500,000 MT in 2018, of which 35-37% has been estimated to go into infant formula **leading to approx. 525,000-555,000 MT lactose being added in infant formula**
- Given that most of the pure lactose going into infant formula is used in Formula-1 and Formula-2, perhaps volume growth in these infant formula categories, estimated to approx. 2% **corresponding to 11,000-12,000 MT** may be a good indicator of growth in demand of lactose for infant formula **2023**



- **Galactooligosaccharides** are prebiotics that raise levels of certain probiotic bacteria supporting healthy gut flora and immune system function. Usage of GOS in infant formula has increased strongly in recent years. The volume of GOS applied in infant formula amounts to **more than 50,000 MT** in 2018

- **Protein Hydrolysates** are easily digested as they are already partially digested through the breakdown into peptides, thereby permitting absorption in the stomach and making the protein non-allergenic. Whey Protein Hydrolysates are used in infant formula in 2018 is estimated to be **more than 15,000 MT**

- **α -Lactalbumin** is the primary whey protein found in breast milk accounting for 20% of total protein and containing all essential amino acids required by humans, thus making it an important protein for growth in infants. In whey protein powder, β -Lactoglobulin which is not contained in human breast milk accounts for approx. 50%, and α -Lactalbumin for around 20-25%. Some premium infant formulas are produced using α -Lactalbumin for this reason. Estimated use in infant formula is **more than 20,000 MT** in 2018

- **Lactoferrin** is a glycoprotein present in both human and animal whey. The concentrations in the latter. It is an essential factor in immune response for maintaining infant health and functioning of the intestinal tract. **300-400 MT** of Lactoferrin is estimated to have been applied in infant formula in 2018, most of which in Asia

Emerging Dairy Ingredients



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Emerging Dairy Ingredients

Global Infant Formula Report - project management and costs

Team

3A Business Consulting team:

- Managing partner - Tage Affertsholt
- Junior consultant – Patrick Ravn Poulsen

Time

Report available in PDF format – in total approx. 120 slides – from June 2019

Cost

EUR 3,600