

Specialty fats fractionation: new possibilities

Statoliser® Technologies



Optimize your performance...

Compared to conventional fractionation, De Smet specialty fat Fractionation Technologies like Statoliser® works magic on your wallet.

It not only requires less floor area, thus saving expensive space, but also substantially reduce investment costs, and minimize labour cost by increasing reliability, safety and obtained yields.

Discover high added value applications and increase your competitive edge by producing fully customised quality products.

Major advantages

- Large cooling surface to oil volume ratio, with short oil to cooling surface distance
- Swept cooling surface with minimal distance between cooling walls and agitators avoiding any dead areas.
- Perfect agitation, resulting in homogeneity in mass and temperature
- Consistent high heat transfer capacity and hence, very strict control of cooling curve which is of essence for a perfect product
- Fully automated process for high quality control
- Consistency in plant production capacity
- Constant quality of end product
- Flexibility in operation and in product change-over thanks to the limited amount of product in process apparatus
- Highly selective separation yields, high value added products for easy marketing
- Minimal time hold-up reducing operation costs.
- Perfect extrapolation of operating parameters from the Desmet Ballestra laboratory pilot plant

Oils & Fats
Oleochemicals

desmet ballestra

Examples of production of specialty fats by dry fractionation								
Feedstock			Oleins	Stearins	Yield	Stages		
	IV MP (°C)		IV MP (°C)	IV MP (°C)	% olein			
Palm Kernel RBD	18	28	25	23	7	33	38	single
Palm mid fraction	48	31	55	18	36	34	50	triple
Soyabean Part. Hydrog.	81	32	88	18	73	35	55	double
Cocoa Butter Soft CB	35	31	37	29	33	34.5	50	single

Specialty Fats & Statoliser®

Use of specialty fats

A group of fats which requires special fractionation techniques, are the confectionery or specialty fats.

These specialty fats are applied in a whole range of special foods where specific physical properties are required.

The are applied in combination with other ingredients like cocoa powder, milk products, sugar, flavours ans a whole range of other additives, and are mostly consumed as such.

Characteristics of specialty fats

Many of the specialty fats are intended to be added to cocoa butter (CB) or to replace it, partially or even totally.

Very crucial for a good CB replacement fat is the steep melting behaviour in the mouth, giving a cooling effect with no greasy impression.

To obtain this, the fat needs to be solid at room temperature, have a desirable snap, with a smooth and rapid melting: in the mouth.

Origin of CBR

CB replacement fats are mostly from vegetable origin, although some are made from animal fats as for example: tallow. They can be categorised into three main groups, according to their origin and degree of compatibility in the solid state with cocoa butter.

Most fractionated specialty fats, used in the confectionery industry today, are still produced traditionally by the labour intensive panning & pressing method or by miscella fractionation, using mostly acetone as a solvent.

New advanced technology

Recent developments in the dry fractionation technology, have opened new alternatives for the production of a whole range of confectionery products. With the introduction of reliable high pressure membrane filter presses and high viscosity resistant crystallisers, high specialty fats can now be produced in a more cost effective way.

Cocoa Butter

CB has a very high solid fat content at room temperature, which gives the fat its typical hard and snappy characteristics. Between 25 and 35°C, it melts quickly and completely, leaving a cooling sensation in the mouth together with a sudden flavour release.

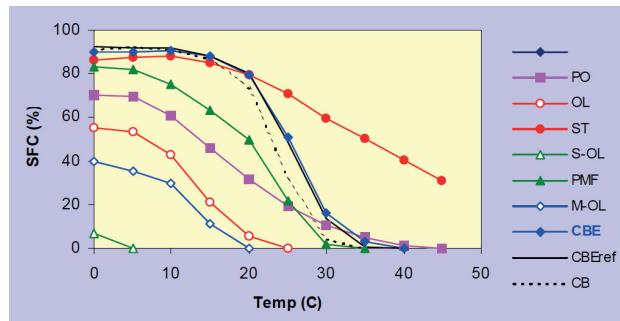
The main components in CB responsible for this specific physical behaviour are the symmetrical mono-unsaturated triglycerides POP, POS and SOS (65-80%)



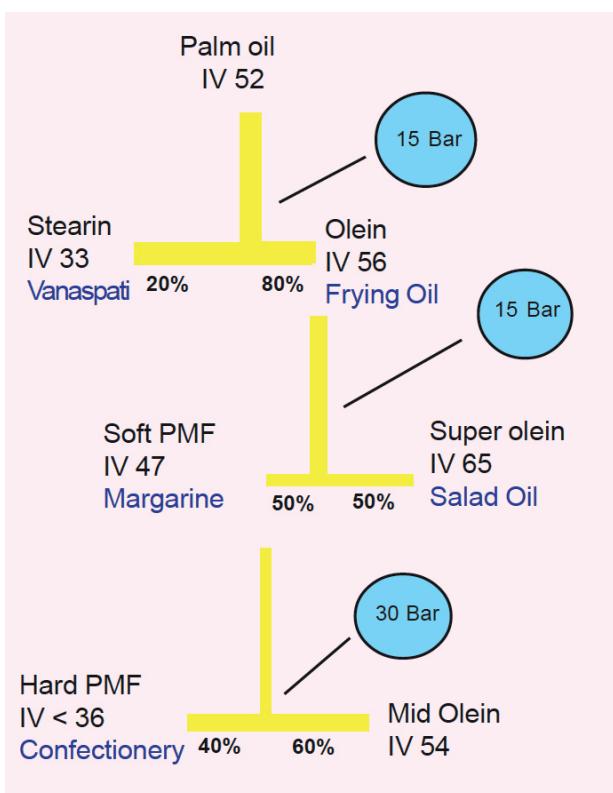
Palm Oil

Palm oil is by far the most versatile oil to be used. By applying multiple dry fractionation, fractions of distinct different physical properties can be produced.

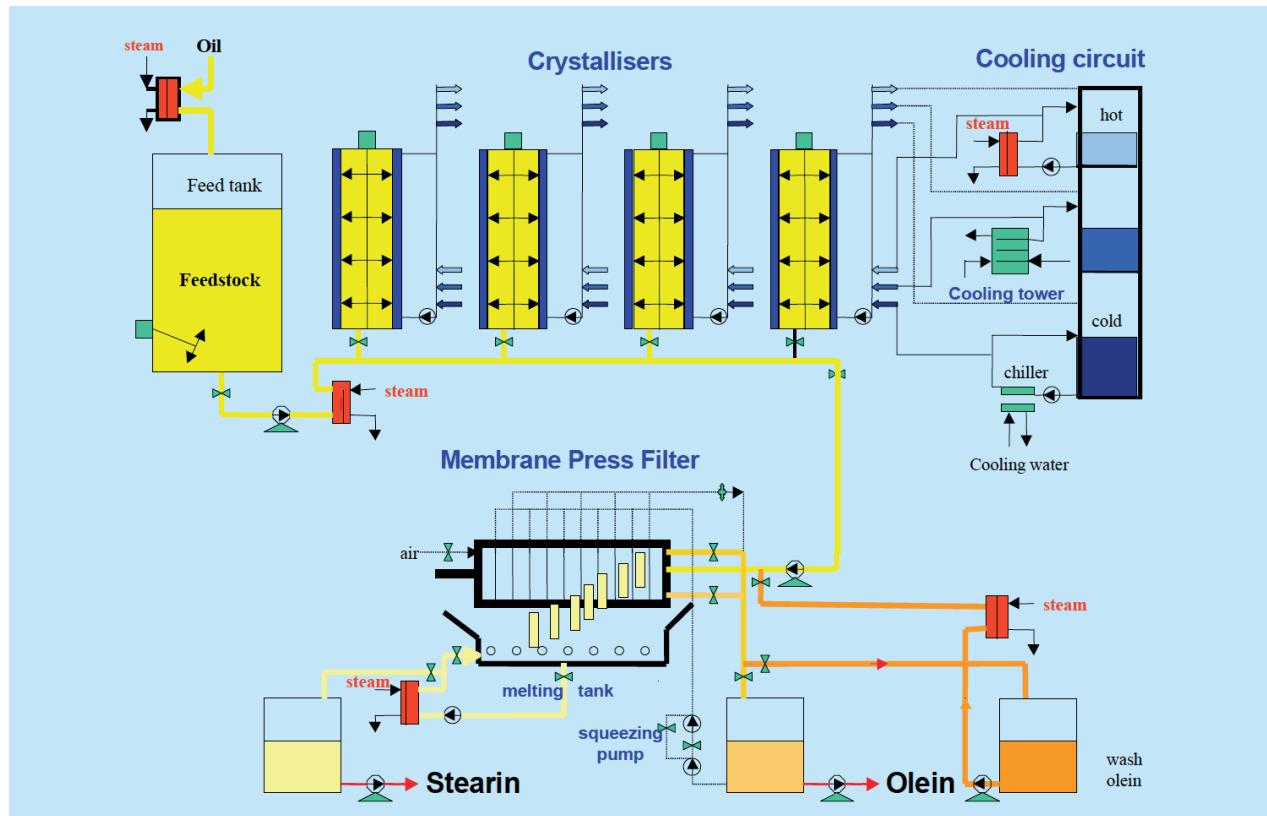
Solid fat content profiles of palm oil fractions



Multiple dry fractionation route for palm oil



Desmet Ballestra Palm Oil Fractionation



Palm Kernel Oil

Fractionation of Palm kernel oil (PKO) is primarily done to make part of the oil suitable as a cocoa butter replacement fat. In order to reply to a demand from specialty fat producers for fully automated dry fractionation plants with low manual operation, the Desmet Ballestra multifunctional dry fractionation process for specialty fat production has been further extended with a new Statoliser® technology (patented) which allows to obtain results similar to panning & pressing or solvent fractionation, but with a fully automated operation, requiring minimal manpower and very low operating costs.

The availability of more detailed technical information is subject to the signature of a secrecy agreement.



Industrial data of PKO fractionation with Statoliser®

Palm Kernel oil stear		PK olein	PK
RBD (South Amer)			
IV	19.2	25.3	6.7
Yield (%)		66	34
SFC 30°C (%)	0	0	34
CMP (°C)	29		34
RBD (South Amer)			
IV	19.5	25.8	7.2
Yield (%)		64	36
SFC 30°C (%)	0	0	32
CMP (°C)	28.5		33
Crude PKO			
FFA (%)	2.8		
IV	18.3	24.7	6.6
Yield (%)		63	37
SFC 30°C (%)	0	0	35
CMP (°C)	28		33
Crude PKO			
FFA (%)	2.8		
IV	18.2	23.7	5.6
Yield (%)		69	31
SFC 30°C (%)	0	0	45
CMP (°C)	28		35

Desmet Ballestra Fractionation with Statoliser® Technology

