

# A new horizon for zero-trans fats...

## Enzymatic interesterification - Interzym® Technology



De Smet has developed an enzymatic interesterification technology, called Interzym, in collaboration with the company Novozymes (Denmark). Enzymatic interesterification is an efficient way of controlling the melting characteristics of edible oils and fats.

This is done by controlling the degree of conversion/reaction.

No chemicals are used in the process and no trans fats are formed as in other production methods.

Until recently the technology was not widely used due to the high cost of the enzyme, but now the application using the enzyme Lipozyme® TL IM is a cost-effective alternative to both chemical interesterification and hydrogenation.

### The benefits of Interzym

- **It's a cost-efficient process** - Neither washing nor bleaching of the interesterified fat is required, as the low temperature enzymatic process produces no side-products.
- **The capital investment costs are lower** - The Interzym investment costs are lower than those of both hydrogenation and chemical interesterification
- **It's a simple and easy process** - A specific melting profile of the fat is achieved by passing the oil once through the enzyme column
- **No trans fatty acids are produced** - Interzym produces no transfatty acids, which are believed to have a negative impact on our health.
- **It improves industrial hygiene / safety** - Contrary to both hydrogenation and chemical interesterification, Interzym requires no chemicals. The enzyme is fixed in the column throughout the production, so the only handling of the enzyme is when it is changed after production. Enzymes are not hazardous to the environment nor dangerous to handle.
- **It allows for a wide range of end-products** - Interzym enables very accurate control of the process, which allows specific melting profiles to be achieved. This means that products with new and improved melting profiles can be produced.
- **More natural fat is produced** - The catalyst in Interzym is a 1,3-specific lipase. The enzymes rearrange the fatty acids in the 1- and 3-positions (the 2-position is preserved). In chemical interesterification, all three positions are shifted randomly.

Oils & Fats  
Oleochemicals

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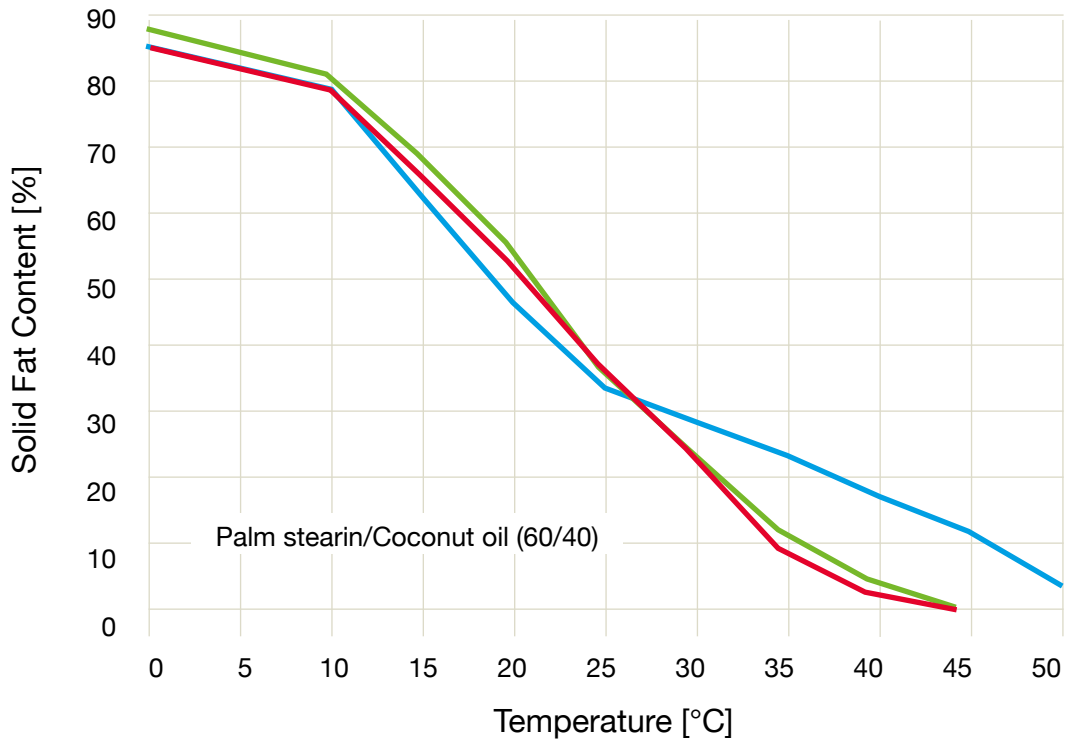
*in collaboration with*

**novozymes**<sup>®</sup>  
Rethink Tomorrow

## ... with the Interzym® process

### Enzymatic interesterification Interzym® versus chemical interesterification Interchem®

Being able to control the melting characteristics, Interzym® can produce fats with physical properties similar to fats produced using Interchem® chemical interesterification.



Starting Material    Immobilized Enzyme    Sodium Methoxide



Novozymes is the world's leading enzyme producer, commanding more than 40% of the global market for industrial enzymes, and is a business built on biotechnology. Novozymes has been producing enzymes for the edible oils & fats industry for 20 years.



Desmet Ballestra is the world's leader in oils & fats technologies, commanding more than 40% of the technological applications, and is a business built on a scientific approach of the technologies. Desmet Ballestra has been supplying technologies for the edible oils & fats industry for 50 years.



For more information on Interzym® Technology for your specific process, contact your local Desmet Ballestra office!