

# More oil means more profit

Increase your profits by releasing the vegetable oil normally lost in gums with Novozymes' and Desmet Ballestra's innovative enzyme solution. Lecitase<sup>®</sup> Ultra ensures higher yield by extracting more of the oil from the gums produced during water degumming. The enzymatic process requires only simple treatment tanks and a separator. A three-hour incubation time is all that is needed to increase your profits. Then the oil can be easily separated.

## The benefits of enzymatic oil recovery are:

### Key benefit

#### Increased profits

Normally 0.8–1.5% of oil is lost to the gums. Mixing Lecitase Ultra with the gums dramatically reduces the loss. The recovered oil has a higher value than gums added to the protein meal, which improves your bottom-line. In addition, the remaining gums are converted into lysolecithin, a valuable feed ingredient.

### Additional benefits

#### Reduced viscosity

Gums treated by Lecitase Ultra have lower viscosity and volume than normal and are easier to handle. These gums are also converted into lysophospholipids, which improves their emulsification properties.

#### Reduced dilution of protein

Lecitase Ultra reduces the weight of the gums added to the meal, so there is less dilution of protein.

#### Reduced need for drying meal

The gums do not have to be dried to ensure the correct protein level, leading to savings in drying and energy costs.

#### Lysolecithin is a valuable feed ingredient

Several companies produce and market lysolecithin as a feed additive and have documented its usefulness.

#### Reduced environmental impact

Higher oil yields reduce the carbon dioxide footprint of the production, and the lower energy costs also reduce the impact of the process on the environment.

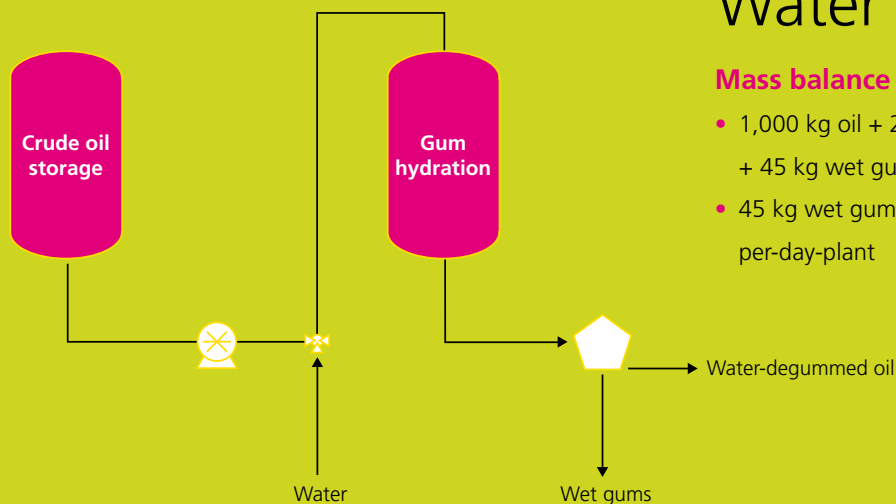
#### A head start on the future

Novozymes is a partner on the fast track to the future. We merge nature and technology into experimental bioinnovations, leading the way in finding sustainable solutions for forward-thinking companies. Join us in preparing the oils & fats industry for the future.



Novozymes is the world leader in bioinnovation. Together with customers across a broad array of industries, we create tomorrow's industrial biosolutions, improving our customers' business and the use of our planet's resources.

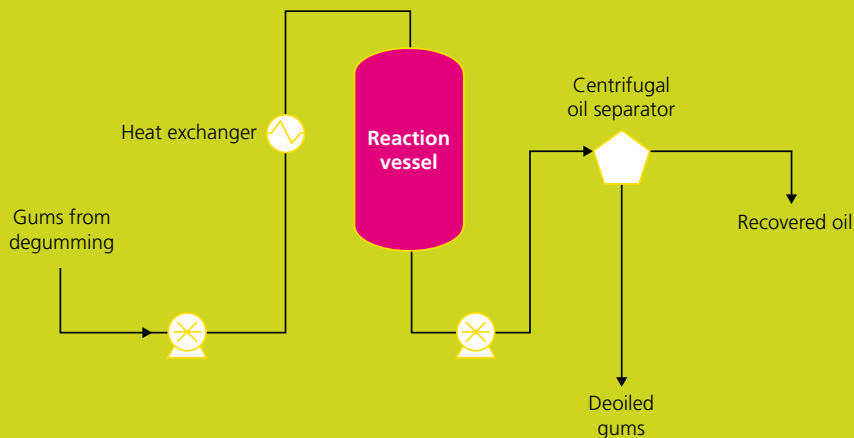
## Water degumming



### Mass balance

- 1,000 kg oil + 20 kg water → 975 kg water-degummed oil + 45 kg wet gums
- 45 kg wet gums contains 9 kg oil or 9 tons oil in a 1,000-tons-per-day-plant

## Enzymatic oil recovery



Enzymatic oil recovery from gums is a simple, low-energy process. Only low-volume reaction tanks are required, and the recovered oil can be blended back into the process or used for biodiesel or other applications.



Science behind technology

For more information, or for more office addresses, visit [www.novozymes.com](http://www.novozymes.com)

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