

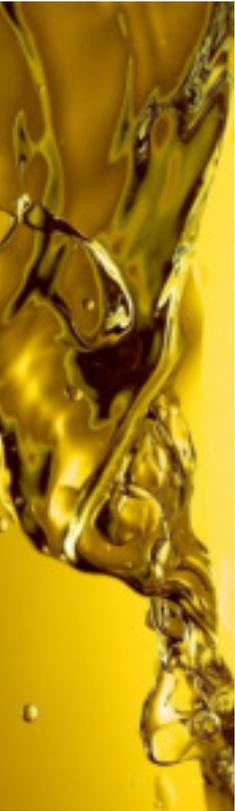
**CMBITALY**



**TECHNOILGY**

*The tradition of designing the future*

*The tradition of designing the future*



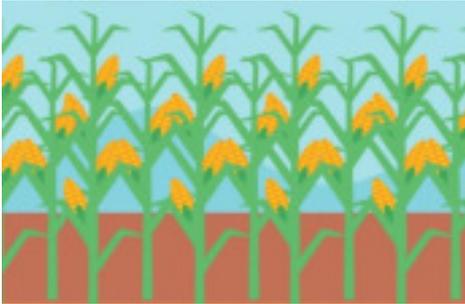
**ANIMAL FAT  
TREATMENT**



# CLASSIFICATION OF BIOFUELS

The idea behind biofuels is to replace traditional fuels (fossil fuels) with fuels made from plant material (renewable feedstocks), inedible feedstock or waste oils and fats. Over the year, Biofuels have been classified as follows:

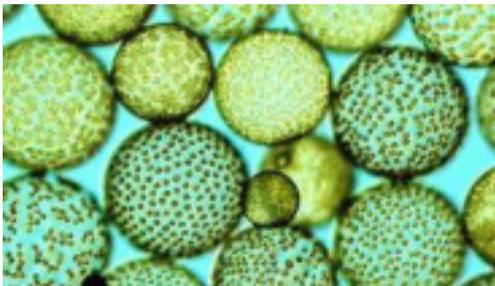
**1<sup>st</sup>** generation biofuels when produced directly from edible feedstock such as crops, animal fats, vegetable oil



**2<sup>nd</sup>** generation biofuels when produced from inedible feedstock such as tallow, Jatropha UCO, (Used Cooking Oil), waste oils and fats



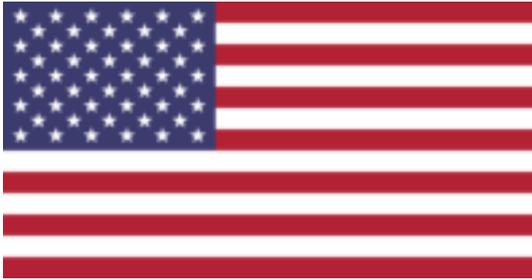
**3<sup>rd</sup>** generation biofuels when coming from algae



**4<sup>th</sup>** generation biofuels when not requiring the destruction of any biomass for their production



# MAJOR TALLOW PRODUCERS



UNITED STATES



RUSSIA



BRAZIL



ARGENTINE



GERMANY

# CATEGORIES OF TALLOW

Tallow is classified by degree of quality, from high to low, in order to determine product categories it can be used for.

## ANIMAL FATS INTENDED FOR HUMAN CONSUMPTION

### CATEGORY 3

Tallow that can be used for animal feed and cosmetics. For example parts of slaughtered animals, which are fit for human consumption in accordance with EU legislation, but are not intended for human consumption for commercial reasons.

### CATEGORY 2

Tallow that can be used for soil enhancement and for technical purposes, such as oleochemical products and special chemicals. Examples of this Category include manure and digestive tract content, (parts of) animals that have died from other causes than by being slaughtered for human consumption, including animals killed to eradicate an epizootic disease

# CATEGORIES OF TALLOW

## CATEGORY 1

Category 1: Tallow that presents a high risk for human health, for example animals suspected of being infected by a TSE<sup>2</sup> or in which the presence of a TSE has been officially confirmed; specified risk material. Tallow in this category can be used for energy purposes and is not allowed to enter the human or animal food chains.

When products of different categories are mixed, the entire mix is classified according to the lowest category in the mix (e.g. if Category 1 and 3 tallow are mixed then this is classified as Category 1).

# ABPR IN EU COUNTRIES

The scope of the Animal By Product Regulation (ABPR) set by the EU in 2002 and modified in 2009, is the safe collection, treatment and use of ABP, including full traceability at all stages.

Cat.	Incineration	Combustion	Oleochemistry	Biodiesel	Biogas	Fertiliser	Feed	Pet food
1	X	X	X <sup>1</sup>	X	X <sup>2</sup>			
2	X	X	X <sup>1</sup>	X	X <sup>3</sup>	X <sup>3</sup>		
3	X	X	X <sup>1</sup>	X	X <sup>3</sup>	X <sup>3</sup>	X	X

<sup>1</sup> Only for limited purposes (i.e. no cosmetics, no pharmaceuticals, etc.).  
<sup>2</sup> After high pressure thermo-hydrolysis, residues must be disposed of.  
<sup>3</sup> After pressure sterilisation.

Source: AOCS

# TALLOW QUALITY

	ANIMAL FAT	TALLOW GR. 3	TALLOW GR. 1 & 2
PHOSPHOROUS	20 - 50	60 - 100	120 - 300
METALS	50 -150	250 -400	500 - 1000
NITROGEN	50 - 150	200 - 500	800 - 3000
SULPHUR	10 - 30	40 - 80	100 -300
UNSAT.	0,5 % max	1 – 1,5 %	2% max
CHLORINE	20 - 50	80 - 120	150 - 250

# TALLOW TREATMENT

**In Biodiesel Production**, treated tallow specifications are not as stringent as for HVO:

- FFA < 0.1 %
- Phosphorous < 10 ppm
- Water < 0.05 %

Content of metals, chlorine, nitrogen and unsaponifiabiles has very **low impact** on Biodiesel. Therefore the tallow treatment is usually quite easy, except for filterability problems.

**In HVO Production**, the treatment is stronger as it needs to be more effective to reach much more stringents specifications:

- Phosphorous < 3 ppm
- Metals < 10 ppm
- Free water Absent
- Chlorine between 1 – 10 ppm
- Polyethylene 50 ppm
- Sulphur 100 ppm
- Unsap. 1%
- Nitrogen 175 ppm

# TALLOW TREATMENT

In order to comply with these specifications, producers are often attentive to the quality of feedstock and tend to choose Animal fats for Biodiesel and HVO Production.

As a matter of fact, grade 3 and especially Grade 1&2 need a proper treatment to eliminate contaminants such as unsaponifiables, polyethylene and nitrogen before being processed in the main Refining line.



# IMPORTANCE OF TREATMENT



ANIMAL FAT

TALLOW

PRE-TREATMENT

Reduction of:  
Polyethilene  
Nitrogen  
Unsaponifiables

ADVANCED  
REFINING

Reduction of:  
Phosphorous  
Chlorine  
Nitrogen  
Metals  
Unsaponifiables

ADVANCED  
REFINING

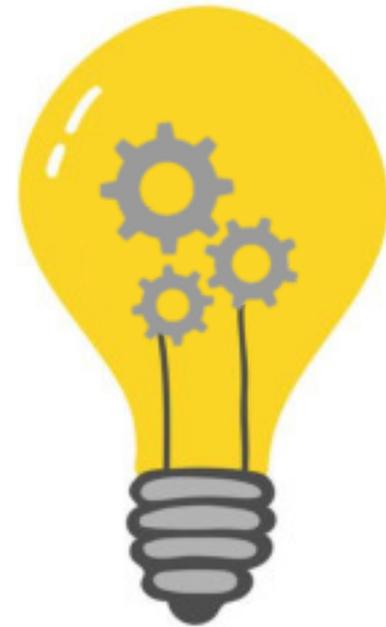
Reduction of:  
Prosphorous  
Chlorine  
Metals

TREATED ANIMAL  
FAT

TREATED TALLOW

## IMPORTANCE OF TALLOW PRE-TREATMENT FOR HVO

**CMBITALY-TECHNOIOLOGY** offers a complete technology to treat any grade of tallow in compliance with HVO specifications and to facilitate the operations of the Hydrotreatment unit and avoid problems of fouling, corrosion and quick catalyst poisoning.





**FROM SEEDS TO BIOFUELS,  
YOUR IDEAL PARTNER.**

**BECAUSE WE CARE ABOUT ENVIRONMENT.**

