1 INTRODUCTION

Eco Fuels Netherlands BV is member of the Bio-Oil group and produces biodiesel from used cooking oil (UCO).

UCO from catering and food industries comes from collections within the company or is purchased from collectors and traders. The UCO is supplied locally and abroad. The UCO supplied for processing consists largely of liquid vegetable and animal oil and fats. The required quantity and transport of UCO is arranged by Bio-Oil.

In order to control the production process Eco Fuels has defined the acceptance criteria for UCO. The acceptance policy ("Acceptatie beleid") describes which UCO can be accepted or not. The processing policy ("Verwerkingsbeleid") describes how UCO is converted into biodiesel. The acceptance and processing (A&V-)policy describe the conditions how UCO is accepted and processed by Eco Fuels. These policies enable Eco Fuels to proof to the licensing authority that the risks of acceptance and processing of UCO is under control and within the permit.

Note: This document is required by the authorities (Omgevingsvergunning section 3.2.4). Any updates are only allowed after written permission from the authorities (Omgevingsvergunning section 3.2.5)

2 PROCESSING

Eco Fuels is permitted to produce annually a maximum of 162,000 ton of biodiesel (UCOME) according to EN 14214 specs, BHO and C16 fraction using the following feedstock:

- UCO or similar waste, consisting of liquid vegetable and animal oil and fats (CAT3 animal by-products), and/or
- Oil obtained from algae (for 3rd generation biodiesel).

The factory is dedicated to chemically convert free fatty acid (FFA) and glycerides (mono-/di-/tri-glycerides) into biodiesel. All other substances (e.g. water, dirt, unsaponifiable matter, contaminants) cannot be converted into biodiesel and result in yield loss (cost) and off spec products. Therefore, control of feedstock quality is key to meet biodiesel specs. The process (BL-PROC-0001) of Eco Fuels is approved by NVWA.

Figure 1 shows feed stock and chemicals which are required to produce biodiesel. This figure also shows the produced products and by-products (bold) and wastes.

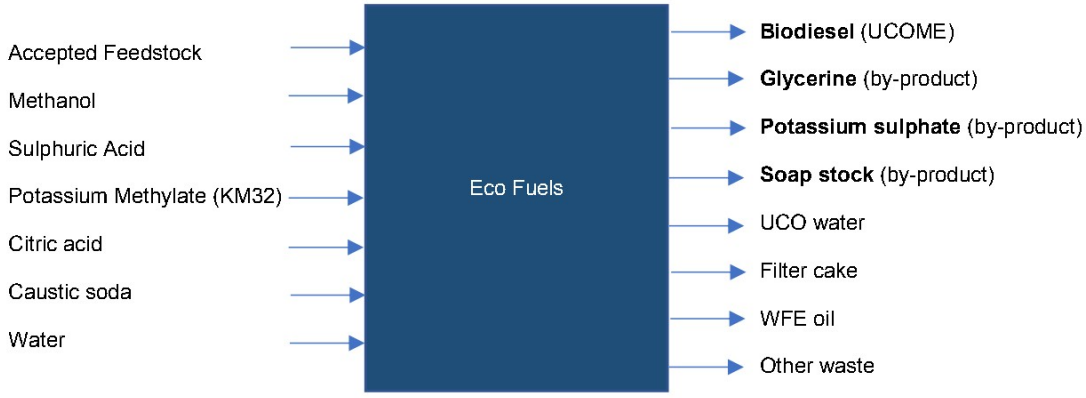

Figure 1 Processing UCO into biodiesel at Eco Fuels

3 ACCEPTED WASTE

3.1 Waste

According to the permit "A maximum of 185,690 tonnes per year of UCO or comparable waste, consisting of liquid vegetable and animal oil and fats falling under the following Eural codes may be accepted for processing at the facility."

According to the permit Eco Fuels is allowed to accept the Eural codes as listed in Table 1 as feedstock. Main feedstock is UCO which is generally not a visible recognizable waste.

Table 1 Accepted feed stocks

Eural code[1]	Description
02.01.03	plant-tissue waste
02.02.03	materials unsuitable for consumption or processing
02.03.01	Sludges from washing, cleaning, peeling, centrifuging and seperation
02.03.03	wastes from solvent extraction
02.03.04	materials unsuitable for consumption or processing
02.03.05	sludges from on-site effluent treatment
02.03.99	wastes not otherwise specified
07.01.99	Wastes not otherwise specified
07.06.99	Wastes not otherwise specified
19.02.03	premixed wastes composed only of non-hazardous wastes
19.08.09	grease and oil mixture from oil/water separation containing edible oil and fats
19.08.10	grease and oil mixture from oil/water separation other than those mentioned in 19.08.09
20.01.08	biodegradable kitchen and canteen waste
20.01.25	edible oil and fat
20.01.26	oil and fat other than those mentioned in 20.01.25

* The concentration of dangerous substances must be low enough to ensure that the material is not regarded as "dangerous waste".

According to the permit the maximum quantity of stored feedstock is 5.358m^3.

3.2 Animal by-product (CAT3)

In the Netherlands, UCO can also be regarded as an animal by-product (category 3 or CAT3-material). As UCO can contain animal fat, most UCO is regarded as CAT3 material as defined in the animal by-products regulation according to EG1069/2009 and EG142/2011. This regulation has authority over waste regulations. When non-CAT3 UCO is mixed with any quantity of non-CAT3 UCO to total quantity becomes CAT3. Eco Fuels is registered by NVWA to produce biodiesel from CAT3-material.

When imported into the Netherlands, the UCO is assessed as waste. Eco Fuels imports all UCO that can be used as raw material as waste products, and accepts them for processing.

3.3 ZZS

The Dutch government takes priority action in minimizing the release of the so-called National substances of concern (ZZS). This is implemented in the LAP3 policy framework which describes national waste prevention and management.

LAP3 has defined 85 sector plans for various waste streams. An extensive report was written by SGS (SGS, 2019) which indicates which ZZS can be present for every sector plan. Feedstock processed by Eco Fuels are covered by the following sector plans:

- Sector plan 3: Process-dependent industrial waste
- Sector plan 65: Animal waste

[1] Eural-code and description as defined in EG1013

Antea investigated for Eco Fuels the risk of presence of ZZS for each permitted feed stock (Table 1) (Antea, 2022). In this report Antea concludes: "The ZZS analysis based on Eural codes and the SGS publication concludes that there is a negligible chance that ZZS are present above the general concentration limit value mentioned in LAP. This general concentration limit of ZZS in waste is set at 0.1%. The (P)ZZS analysis based on the supplied safety information concludes that no (P)ZZS components are present in the mixtures. This demonstrates that the raw materials used for the test did not contain any (P)ZZS components."

Moreover, Antea also investigated in 2023 for Eco Fuels the risk of presence of ZZS for each permitted feedstock as indicated in the permit of 2023.

Therefore we conclude that acceptance criteria for ZZS are not required for the permitted feed stock.

3.4 Blending

UCO is an inhomogeneous waste because it is composed of different animal and vegetable based used cooking oils. Changes in origin, supply and composition of UCO can have strong effects on the processability and chemical usage for the produced biodiesel. It is desirable to blend feed stock to have a constant quality In order to have a stable process and a good biodiesel quality.

Incoming feed stocks are already mixed before they are accepted for processing by Eco Fuels. It concerns mainly batches mixed by suppliers. Therefore it is allowed in the permit to further mix the incoming feedstock, on the understanding that the mixing may not be done in order to mix or blend away hazardous waste materials.

Eco Fuels is permitted to carry out the following blending operations within the facility:

- Blending of different feedstock: UCO or similar waste, consisting of liquid vegetable and animal oil and fats (CAT3 animal by-products), for the production of products as specified in section 2;
- Blending of feedstock with algae oil (which is not a waste), for the production of the products as specified in section 2.

4 ACCEPTANCE CRITERIA

Table 2 shows the pre-acceptance and acceptance criteria for all feedstock.

Table 2 Acceptance criteria for all feedstock

Parameter	Analysis Method		Acceptance criteria
	Internal lab	External lab	
• FFA	WI-LAB-0034	ISO 660	< 15m%
• Water	WI-LAB-0005	ISO 662 / ISO 8534	< 9m%
• Dirt	WI-LAB-0011	ISO 663	< 40%

Eco Fuels does not accept dangerous waste. In case of feedstock with Eural-code 19.08.10* and 20.01.26* the total water- and impurities content is checked if it meets the regular amounts (see Table 3).

Table 3 Acceptance criteria for feedstock Eural-code 19.08.10 and 20.01.26* only*

Parameter	Analysis Method		Acceptance criteria
	Internal lab	External lab	
• Water + Impurities			< 3m%

4.1 Pre-Acceptance

The pre-acceptance work flow is valid for:

- feedstock supplied by a trader or collector
- feedstock from a new supplier (only in this case sample and analysis required)
- feedstock from an existing supplier
- feedstock with different composition
- Delivery of small quantities (trucks) and large quantities (ship). Specific cases are indicated with (ship) or (truck).

For ships usually a certificate of analysis (COA) is issued by the supplier.

Director Trade of Bio-Oil is responsible for pre-acceptance:

- Contracts with suppliers must meet the acceptance criteria
- Feedstock with any parameters outside the acceptance criteria cannot be processed by Eco Fuels or will certainly result in off spec biodiesel or will violate the permit. This feedstock is NOT ACCEPTED during pre-acceptance and acceptance.
- Feedstock with all parameters within the acceptance criteria is ACCEPTED regarding the A&V-policy.

4.2 Acceptance

All incoming trucks are sampled by Eco Fuels and analysed on the lab. All incoming ships are sampled by an independent surveyor and analysed by the Eco Fuels lab and/or an external lab.

The Plant Manager of Eco Fuels is responsible for acceptance:

- Feedstock with any parameters outside the acceptance criteria cannot be processed by Eco Fuels or will certainly result in off spec biodiesel or will violate the permit. This feedstock is NOT ACCEPTED during pre-acceptance and acceptance.
- Feedstock with all parameters within the acceptance criteria is ACCEPTED regarding the A&V-policy.

4.3 Exceptions

In case of any exceptions, the Plant Manager will decide how to proceed according to all relevant laws and permits.

4.4 Evaluation A&V-Policy

- The A&V-policy is annually evaluated as part of the Management Review.
- Plant Manager is owner of this policy and responsible for changing it. Any changes of this policy must be approved by the authorities (permit)

5 REFERENCES

• "permit"	• OMGEVINGSVERGUNNING EN BESLUIT MAATWERKVOORSCHRIFTEN ACTIVITEITENBESLUIT, Z2020-00006845, 17-03-2021 • OMGEVINGSVERGUNNING, Z2022-000450, 31-05-2022 • OMGEVINGSVERGUNNING, Z2023-006060, 08-08-2023
• LAP3 - Landelijk Afvalbeheer Plan	https://lap3.nl/
• KRA - Kader Richtlijn Afvalstoffen	
• EG1013/2016	Regulation on shipment of waste
• EG1069/2009	Regulation on laying down health rules as regards animal by-products and derived products not intended for human consumption
• EG142/2011	Implementing Regulation (EC) No 1069/2009
• BL-PROC-0001	Procesinstellingen
• SGS, 2019	ZZS in afvalstoffen, [redacted], SGS Intron BV, 18-12-2019
• Antea, 2022	Memo "ZZS-analyse grondstoffen", Antea, 25-01-2022
• Antea, 2023	Memo "ZZS-verwachtingen Ecofuels", Antea, 09-05-2023

6 REVISIONS

Revision	Changes	Changed by	Date
5	New version: new permit, dated 17-03-2021	[redacted]	21-jan-2022
6	Updated: updated permit, dated 31-05-2022	[redacted]	15-jul-2022
7	Updated: new permit, dated 08-08-2023	[redacted]	28-8-2023