

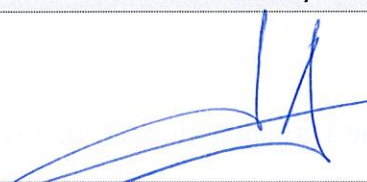
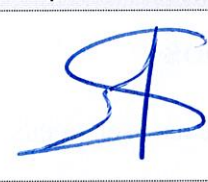
EU Environmental Technology
Verification pilot programme



Statement of ETV verification

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|--------------------------------|--------------------|
| Technology : | BioFibra BF-LHE-01 |
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Statement of ETV verification

Environmental Technology Verification (ETV) is carried out by a third party to evaluate the performance of a technology or a product for a given application under specific conditions with an assurance of the quality of the data.

The verification was performed by RESCOLL according to the requirements of the General Verification Protocol (GVP) set out under the European ETV pilot program [EU, 2014]. The process is based on methods from the GVP and in accordance to ISO 17020 standard.

I. Product description

The formulation developed by FuturaMat named **Biofibra® BF-LHE-01** is a biobased compound. This compound is in the area of « material, waste and resources ». This formulation is composed of biomass product (for example : wood meal) and biopolymer (recycled PLA) which are combined with additives and plasticers to functionalise vegetable fibers. This makes the vegetable fiber and the polymer more compatible.

II. Application

II.1 Matrix

This compound is manufactured from renewable resources.

II.2 Purpose

The compound meets user needs and is made from renewable resources instead of fossil resources.

II.3 Conditions of operation and use

The condition of implementation are those of a commercial polymer. This compound may be extruded, injection molded, or thermoformed. This compound is used for the manufacture of everyday objects in the field of horticulture, packaging or for single-use technical components.

II.4 Verification parameters definition summary

For the verification of the **Biofibra BF-LHE-01** compound, the performance parameter that has been verified is :

- Biobased carbon content as a fraction of total organic carbon content, expressed as a percentage of the total organic carbon content

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Additional parameter that has been determined is :

- Mass percent of hazardous substances included in the list of substances subject to authorization in the annex XIV of the REACH Regulation and in the candidate list for authorization contained in the BioFibra BF-LHE-01 compound.

III. Test and analysis design

III.1 Existing and new data

There were no existing data for the verification parameters. Therefore, no data has been accepted.

Additional tests have been conducted in ISO 17025 accredited laboratories for testing methods applicable to the verification as defined in the SVP.

All tests have been carried out as part of the verification.

III.2 Laboratory or fields conditions

All tests have been carried out in laboratories.

Biobased content as a fraction of total organic carbon content have been conducted by **Beta Analytic** Laboratory, USA.

In order to keep a record of samples' spectrum, RESCOLL laboratory performed infrared spectroscopy analysis on each of them.

Both laboratories are accredited according to ISO 17025 standard for test methods defined in the verification protocol.

The sampling has been made by FuturaMat as defined in the specific verification protocol

III.3 Matrix compositions

The composition of **BioFibra® BF-LHE-01** of three different production batches have been analyzed in order to keep a record of samples' spectrum of the compound produce by FuturaMat. These three batches have been produced on 02/05/2011, 29/01/2016 and 02/02/2016. For information, the production of **BioFibra® BF-LHE-01** compound was interrupted between 2011 and 2016.

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III.4 Test and analysis parameters

The performance parameter verified is :

- The content of biobased carbon as a fraction of the total organic carbon content.

The additional parameter determined from information provided by Futuramat on the polymer composition is :

- Mass percentage of hazardous substances in the list of substances subject to authorisation in annex XIV of the REACH Regulation and in the candidate list of authorisation contained in BioFibra® BF-LHE-01.

III.5 Tests and analysis methods summary

For the biobased content, the tests have been based on the standard CEN/TS 16137 – Method C. All three samples come from the same batch (02/05/2011).

For the infrared spectrum, the tests have been based on the standard T51 -500.

The presence of hazardous compound in the Biofibra BF-LHE-01 formulation has been made on the website of the European Chemicals Agency.

III.6 Parameters measured

The measured performance parameter is :

- The content of biobased carbon as a fraction of the total organic carbon content.

IV. Verification results

IV.1 Performance parameters

Tests results are presented in the table below :

| Parameter | Verified performance | Comments |
|--|----------------------|---|
| The content of biobased carbon as a fraction of the total organic carbon content (expressed as a percentage of the total organic carbon content) | 100% | Average on 3 tests Standard deviation : +0%/ -1% |

Tableau 1 : performance parameter for the compound BF-LHE-01

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IV.1 Operational parameters

The biobased content remains constant regardless the operating parameters. It depends only of the compound composition.

IV.2 Environmental parameters

No environmental parameters have been defined as part of this verification

IV.3 Additional parameters

The mass percentage of hazardous substances included in the list of substances subject to authorization in Annex XIV of the REACH regulation and in the candidate list for autorisation used in the BioFibra® BF-LHE-01 formulation is 0%.

These informations are based on data provided by FuturaMat on the composition of the BioFibra® BF-LHE-01 compound as well as data from the literature and safety data sheets of raw materials.

V. Additional information

No additional informations have been defined as part of this verification.

VI. Quality assurance and deviations

The verification was performed by RESCOLL accredited as a verification body according to the standard ISO 17020 to apply the ETV General Verification Protocole. The range of this accreditation mainly covers the area of « materials, wastes and resources »

Tests have been performed by Beta Analytic Laboratory, an ISO 17025 body accredited for the performed tests.

The verification has been conducted according to the quality assurance plan described in the specific verification protocol.

Independant external review and internal audit were carried out on ETV inspection process to ensure an adequate level of quality and reliability.

None deviation on the tests has been observed compared to specific verification protocol.

IV. Questionnaire

The questionnaire is a key component of the project. It is designed to gather information from the project team and stakeholders regarding the project's progress and challenges.

IV.1 Environmental Analysis

The environmental analysis is a critical part of the project. It involves identifying the project's external and internal factors that may impact its success.

IV.2 Additional Analysis

The additional analysis is a key component of the project. It involves identifying the project's internal and external factors that may impact its success. This analysis is conducted in the form of a questionnaire, which is distributed to the project team and stakeholders.

The questionnaire is a key component of the project. It is designed to gather information from the project team and stakeholders regarding the project's progress and challenges. The questionnaire is distributed to the project team and stakeholders, and the results are used to inform the project's progress and challenges.

V. Additional Information

Additional information is provided below to support the project's progress and challenges.

VI. Quality Assurance and Deviations

The quality assurance and deviations section is a key component of the project. It involves identifying the project's quality assurance and deviations. This section is designed to ensure that the project's quality assurance and deviations are identified and addressed in a timely manner.

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