



Business plan for a DIN SPEC project
according to the PAS procedure on

**"Test method for Textiles - Determination
of textile abrasion, fibre debris and aerobic
degradation level in aqueous
medium in consideration of ecotoxicity"**

Status:
**For DIN SPEC development after adoption
on 2021-06-29**

Recipients of this business plan are requested to name **all patent rights**
known to them to be relevant to the project and to make available
all supporting documents.

Berlin, 2021-06-29 (Version 2)

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1. Status/version of the business plan

- **For developing the DIN SPEC after adoption on 2021-06-29**

Changes to the previous version 1:

- Title of planned document changed
- Section 2: Table of participating organizations added
- Section 3.1 (background) and 3.2 (scope) substantially changed
- Section 3.3: Related activities added
- Section 7: Information on consortium leader added

2. Initiator and other consortium members

- Initiator:

Person/Organization	Short description
Dr. Timo Hammer Hohenstein Laboratories GmbH & Co. KG Schlosssteige 1 74357 Boennigheim t.hammer@hohenstein.de Tel.: +49 7143 271 410 www.hohenstein.de	Hohenstein is an international research and service center focusing on the development, testing and certification of textile products. It carries out the tests and tests of product quality and performance in the accredited laboratories in a neutral and independent manner.

- Other potential participants:

This DIN SPEC will be developed in a consortium (temporary body) that is open to any interested party. The participation of other experts would be helpful and is desired. It is recommended that

- Manufacturer of textiles
- Supplier of textile raw products and chemistry
- Retailers and importers of textile goods
- Testing laboratories for textiles
- etc.

take part in the development of this DIN SPEC.

- Organisations that have adopted this business plan (consortium members):

Person	Organization
Dr. Timo Hammer	Hohenstein Laboratories GmbH & Co. KG
Laura Huhn	Hohenstein Laboratories GmbH & Co. KG

Person	Organization
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Marielis Zambrano	Intrinsic Advanced Materials LLC
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Roland Feistner	Paradies GmbH
Amelie Banhart	DIN

3. Objectives of the project

3.1. General

Microplastics have already been found in waste water from the treatment process, in lakes, rivers and oceans, as well as in sediments and even in the deep sea. The plastic particles are insoluble in water, difficult to degrade and can accumulate in organisms. Microplastics in the aquatic ecosystem may affect the growth, development, behaviour, reproduction and mortality of marine and freshwater wildlife. The widespread contamination is increasingly becoming a global health risk for humans as plastic enters our food chain and water supplies. Although mismanaged plastic waste is still the main source of marine plastic pollution globally, in some countries, more plastics may be released from driving and washing activities than from the mismanagement of waste. The International Union for Conservation of Nature (IUCN) estimated that a range between 0.8 and 2.5 Mt per year of plastics directly released into the environment as small particles, also known as primary microplastics, are released into the ocean. Apart from the erosion of tyres the micro-size fibres generated from the abrasion of textiles during laundering represents one of the most significant portions. Not all textiles behave in the same way. For example, according to a British study, fleece materials lose an estimated 1900 fibres per wash cycle - and a polyester shirt fabric loses only about half as many. Furthermore, in studies of textiles made of cellulose or acrylic fibres, for example, fibre loss was more noticeable than in other compositions. Other studies have shown that in mixed materials the main discharge consisted of cellulosic fibres. The use and especially the washing process of textiles releases microparticles and fibres that are not completely retained by wastewater treatment plants and can enter the environment. Although modern wastewater treatment plants already remove microplastics very well, large amounts of wastewater with low concentrations of microplastics are discharged into freshwater and oceans every day. Due to the longevity of non-biodegradable fibres, they pose the highest risk to the environment. However,

this does not mean that biodegradable fibres, such as natural fibres, are completely harmless. This is because biodegradable fibres also remain in the environment for a certain period of time until they are completely degraded and can therefore also have a negative impact on the environment. In addition, additives or auxiliaries used in textile production as well as finishes can further slowdown the degradation process and can themselves be harmful to the environment due to their presence.

Against this background, this DIN SPEC represents a standardised procedure for the classification of textiles based on their environmental input during use, in particular through the washing process. The textile discharge produced during the washing process are classified in terms of fibre release with the aid of a suitable analysis system. In addition, the textile discharge are further classified by testing their biodegradability and determining the degree of degradation within a defined period of time. Finally, after the environmental input or after the degradation process, a suitable ecotoxicity test is carried out. This tests whether chemical substances, e.g. from textile finishing, have been released or metabolised into the environmental medium as a result of the input and in particular as a result of the biological degradation and whether these residues cause negative changes in the corresponding environmental medium.

This new specification enables companies to test, evaluate and compare their developments into textile products with reduced fibre release or textile products made out of natural fibres, biobased or biodegradable fibre materials for the first time. Thus, after testing and classification, an optimisation of the product portfolio and at the same time a more targeted product development can take place, as the environmental input can be actively and consciously controlled.

3.2. Planned scope

This document defines a test scheme to determine and classify the environmental input of textiles and textile products during care using the following parameters for classification:

- (1) fibre release (clause 6);
- (2) biodegradability of the textile discharge (clause 7);
- (3) ecotoxicology of the textile residues on water quality (clause 8).

This document is designed to assess loss from all fibres such as natural, man-made and synthetical man-made fibres including mixtures of the fibres as well as from coated, laminated or finished textiles and textile products.

This document specifies methods to provide a means of systematically evaluating textile discharge from fabrics and textile products under defined washing conditions to achieve comparable results.

The methods of the washing process provide a means to systematically assess textile discharge from fabrics and textile products during care.

The method of the analysis of the fibre release allows obtaining a quantitative analytical determination of the fibres. The method defines the fibre count and the dimensional distribution.

The method for biodegradability applies to textile discharge. The biodegradability defines the degradation level within a defined period of time without the necessity of ultimate aerobic biodegradation.

The ecotoxicological assessment is a screening and does not include a full consideration of the ecotoxicological impact.

3.3. Related activities

The subject of the planned DIN SPEC is not at present the subject of a standard. However, there are committees, standards and/or other technical rules that deal with related subjects and thus need to be taken into account - and involved or incorporated, where necessary - in this project:

- PWI DIN 16460-1, *Mit Kautschuk und Kunststoff beschichtete Textilien - Bestimmung der Beständigkeit gegenüber Medien - Teil 1: Allgemeine Grundlagen*
- EN 13432 *Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging*
- EN 14995 *Plastics - Evaluation of compostability - Test scheme and specifications*
- EN 17427 *Packaging - Requirements and test scheme for carrier bags suitable for treatment in well-managed home composting installations*
- EN 17428, *Packaging - Determination of the degree of disintegration under simulated home composting conditions*
- prEN 12225 *Geosynthetics - Method for determining the microbiological resistance by a soil burial test*
- EN ISO 17556 *Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved*
- EN ISO 16929 *Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test*
- ISO 14851 *Bestimmung der vollständigen aeroben Bioabbaubarkeit von Kunststoff-Materialien in einem wässrigen Medium - Verfahren mittels Messung des Sauerstoffbedarfs in einem geschlossenen Respirometer*
- ISO 16221 *Water quality — Guidance for determination of biodegradability in the marine environment*
- ASTM D 6400 *Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities*

– ASTM D 6691 *Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum*

– NA 054-03-02 AA *Biodegradable plastics*

– NA 054-04-04 AA *Plastics films and plastics coated fabrics (artificial leather); General test methods*

– NA 115-04-10 AA *Packaging and Environment*

4. Work programme

The aim of the project is to develop a DIN SPEC according to the PAS procedure (see www.din.de/go/din-spec-en). The DIN SPEC shall be consistent with the body of German standards and shall not be in conflict with any DIN Standard.

The kick-off meeting took place on 2021-06-29 and 2021-06-30 (Web-Meeting). The project duration will be about 12 months.

At this kick-off meeting, the consortium for developing the DIN SPEC will be constituted, further organizational issues will be decided on and clarified, and, where possible, work on the subject matter will be begun.

A draft for public commenting will not be published.

A total of 3 project meetings (kick-off meeting and work meetings) conducted as web conferences will be held, during which the content of the DIN SPEC will be presented, discussed and approved. The content of the DIN SPEC can be drawn up by individual consortium members or in working groups.

Dates of further meetings and/or web conferences are to be agreed on within the consortium in consultation with DIN.

The DIN SPEC will be drawn up in English (language of meetings, minutes, etc.). The DIN SPEC will be written in English.

NOTE The calculation covers only one language version. Please keep in mind the fact that other language versions involve additional expenses; for this reason, they shall be agreed on separately. If another language version is desired, Beuth/DIN can provide a translation. Requests for translations are to be submitted after the DIN SPEC manuscript has been approved for publication.

5. Resource planning

Each consortium member shall bear the expenses he/she incurs as a result of participation in the project.

If the DIN Executive Board approves the project, the initiator of the project will then conclude a contract with DIN.

The performance of this project as set out in the programme of work will result in DIN incurring costs to a total of 25.854 euros, excluding VAT. Additional services give rise to additional costs.

Sharing the burden of these costs is a prerequisite for membership in the consortium.

By adopting this business plan, consortium members declare their willingness to bear their share of the project costs, which is based on the number of consortium members.

Each consortium member is to declare this willingness to take on his/her share of costs by individual agreement with the initiator.

If the consortium is expanded later, the additional consortium members shall pay the initiator the same fee to cover costs as the original consortium members.

The initiator is obliged to use the financial resources that have been made available to him by the consortium members solely for purposes furthering the project, and to return any surplus amount in equal parts to all consortium members without delay.

6. Rules of cooperation in the DIN SPEC consortium

This project is governed by the PAS procedural rules. All interested parties and consortium members are to inform themselves of these procedures by going to www.din.de/go/din-spec-en.

The consortium will be constituted during the course of the kick-off meeting. The kick-off meeting will not take place until the business plan has been published and approved by DIN's Management Board. The consortium shall comprise at least three members from different organizations¹. It is not necessary that these members come from different areas and represent different stakeholders. By approving this business plan, the interested parties declare their willingness to participate in the consortium and will be formally named as consortium members, with the associated rights and duties. Participants at the kick-off meeting who do not approve the business plan are not given the status of a consortium member and are thus excluded from further decisions made during the kick-off meeting and from any other decisions regarding the project.

¹ Organizations are participating legal entities that send the experts to the DIN SPEC consortium and are assigned to a corporate structure as defined by § 15 of the German Stock Corporation Act or § 271 paragraph 2 of the German Commercial Code.

If an organization (e.g. an association) sends someone who is not an employee to the consortium, this person shall be authorized by the organization, who shall provide proof of this to DIN.

Each consortium member is entitled to vote and has one vote. If an organization sends several experts to the consortium, that organization has only one vote, regardless of how many consortium participants it sends. Transferring voting rights to other consortium members is not permitted. During voting procedures, decisions are passed by simple majority; abstentions never count.

As a rule, the consortium is closed once it is constituted. The current consortium members shall decide whether any additional members will be accepted or not.

During the kick-off meeting, the consortium members shall elect a consortium leader, who is responsible for content management and any decision-making and voting procedures. The leader is supported by the responsible DIN Project Manager, whereby DIN will always remain neutral regarding the content of the DIN SPEC. Furthermore, the DIN Project Manager shall ensure that DIN's rules of procedure, rules of presentation, and the principles governing the publication of DIN SPEC have been observed. Should a consortium leader no longer be able to carry out his/her duties, the DIN Project Manager shall initiate the election of a new leader.

The DIN Project Manager is responsible for organizing and leading the kick-off meeting, in consultation with the initiator. Further project meetings and/or web conferences shall be organized by the DIN Project Manager in consultation with the consortium leader.

If consortium members cannot be present when the DIN SPEC or its draft is approved, an alternative means of including them in the voting procedure shall be used (e.g. in writing, electronically).

All consortium members who voted for the publication of the DIN SPEC or its draft will be named as authors in the Foreword, including the organizations which they represent. All consortium members who voted against the publication of the DIN SPEC or its draft, or who have abstained, will not be named in the Foreword.

Any expansion of the consortium at a later date is decided on by the members making up the consortium at that time. It is particularly important to consider these aspects:

- a) expansion would be conducive to shortening the duration of the project or to avoiding or averting an impending delay in the planned duration of the project;
- b) the expansion would not result in the project taking longer to complete;
- c) the new consortium member would not address any new or complementary issues beyond the scope defined and approved in the business plan;

- d) the new consortium member would bring complementary expertise into the consortium in order to incorporate the latest scientific findings and state-of-the-art knowledge;
- e) the new consortium member would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
- f) the new consortium member would ensure wider application of the DIN SPEC.

To allow the legal reproduction and distribution of results for the purposes of project work, the consortium members grant DIN rights of use on the basis of the copyright that will accrue to them for the results of their work on the DIN SPEC. The transfer of these utilization rights does not prevent the consortium members from using and further developing the knowledge, experience and findings they bring to the project.

Consortium members are requested to inform DIN of all patent rights known to them to be relevant to this DIN SPEC project.

Subsequent changes to the scope (Section 3.2) or to the resource planning (Section 5) require, in addition to a two-thirds majority of all votes cast, the approval of DIN.

7. Contacts

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Annex: Project schedule (preliminary)

DIN SPEC project	2021																	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Initiation																		
1. Request and review																		
2. Business plan drawn up																		
3. Publication of business plan																		
Development phase																		
4. Kick-off meeting/consortium constituted																		
5. DIN SPEC drawn up																		
6. DIN SPEC approved by consortium																		
Publication																		
7. Review and release by DIN																		
8. Publication of DIN SPEC																		
Milestones																		

K Kick-off
W Web conference
A Adoption of DIN SPEC