

# DIN SPEC 4872:2023-02 (E)

## Test Method for Textiles - Determination of fibre release during washing and aerobic degradation level in aqueous medium in consideration of ecotoxicity; Text in English

---

Inhalt	Seite
Foreword .....	5
Introduction.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions.....	7
4 Equipment .....	8
4.1 General.....	8
4.2 Equipment for textile preparation and lab scale washing process .....	9
4.3 Equipment for analysis of fibre release .....	9
4.4 Equipment for Biodegradation in aqueous medium.....	9
4.5 Equipment for ecotoxicological screening.....	10
5 Reagents .....	10
5.1 Reagents for Washing test procedure.....	10
5.2 Reagents for Analysis of fibre release .....	10
5.3 Reagents for Biodegradation in aqueous medium .....	10
5.4 Reagents for Ecotoxicological screening .....	10
6 Test scheme.....	10
6.1 General.....	10
6.2 Textile materials.....	11
6.3 Exceptions of textile materials.....	11
6.3.1 Identical material and construction.....	11
6.3.2 Different Colours .....	11
6.4 Working conditions .....	11
7 Analysis of fibre release .....	12
7.1 Lab scale washing process.....	12
7.1.1 General.....	12
7.1.2 Textile preparation.....	12
7.1.3 Washing and rinsing procedure .....	13
7.2 Analysis of the fibre release with the Dynamic Image Analyser .....	13
7.2.1 General.....	13
7.2.2 Calibration of the Dynamic Image Analyser .....	13
7.2.3 Measurement.....	14
7.2.4 Results.....	14
7.3 Determination of synthetic and cellulose fibres with sulfuric acid treatment .....	16
7.3.1 General.....	16
7.3.2 Filtration of process waste water.....	16
7.3.3 Solution in acid.....	16
7.3.4 Dynamic Image Analysis of synthetic fibres .....	16
7.3.5 Results of sulfuric acid treatment.....	16
8 Analysis of environmental impact .....	17
8.1 Biodegradation in aqueous medium.....	17
8.1.1 General.....	17
8.1.2 Test method for biodegradation .....	17

8.1.3	Reference textile material.....	17
8.1.4	Sample preparation.....	17
8.1.5	Results .....	18
8.2	Ecotoxicological screening.....	18
8.2.1	General .....	18
8.2.2	Test method for ecotoxicological screening.....	19
8.2.3	Controls .....	19
8.2.4	Sample preparation.....	19
8.2.5	Results .....	19
9	Classification.....	19
9.1	General .....	19
9.2	Classification of fibre release .....	19
9.3	Classification of biodegradation level .....	20
9.4	Classification of ecotoxicological impact.....	20
9.5	Classification Code .....	20
10	Report .....	21
	Bibliography .....	22

## Figures

Figure 1	— Overview of the test scheme .....	11
Figure 2	— Sample preparation. On the left: Cut test specimen; on the right: Front- and backside of a prepared test specimen, with one long and one short edge sewn to the front and backside.....	13
Figure 3	— Example: Length distribution of the fibre release of 100 % organic cotton (reference textile material) .....	15
Figure 4	— Example: Degradation process of 100 % organic cotton (reference textile material) in 49 days .....	18

## Tables

Table 1	— Assessment parameters for the quantitative evaluation of straight fibres .....	14
Table 2	— Assessment parameters for the quantitative evaluation of bended fibres .....	14
Table 3	— Classification of the fibre release.....	20
Table 4	— Classification of the biodegradation level.....	20
Table 5	— Classification of the ecotoxicological impact .....	20
Table 6	— Classification scheme.....	21
Table 7	— Classification overview .....	21