

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