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