

# DIN EN 17033:2018-03 (E)

## Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods

---

Contents	Page
EUROPEAN FOREWORD .....	4
1 SCOPE .....	5
2 NORMATIVE REFERENCES .....	5
3 TERMS AND DEFINITIONS .....	6
3.1 DEFINITIONS RELATED TO FILMS .....	6
3.2 DEFINITIONS RELATED TO BIODEGRADATION AND DISINTEGRATION .....	7
3.3 DEFINITIONS RELATED TO TEST SOIL .....	8
3.4 DEFINITIONS RELATED TO ECOTOXICITY AND CONTROL OF CONSTITUENTS .....	9
4 GENERAL REQUIREMENTS .....	9
5 REQUIREMENTS FOR MATERIALS, TESTING SCHEMES AND EVALUATION CRITERIA FOR BIODEGRADATION AND ECOTOXICITY .....	9
5.1 CONTROL OF CONSTITUENTS .....	9
5.2 BIODEGRADATION .....	10
5.3 ECOTOXICITY .....	11
6 DIMENSIONAL, MECHANICAL AND OPTICAL PROPERTIES OF THE FILMS .....	14
6.1 REQUIREMENTS .....	14
6.2 APPEARANCE OF FILMS .....	15
6.3 TEST METHODS .....	15
7 DELIVERY CHECKING .....	17
8 FILM DESIGNATION .....	17
9 MARKING .....	17
9.1 MARKING OF THE FILM (OPTIONAL) .....	17
9.2 MARKING ON PACKAGING OR LABEL .....	18
10 TEST REPORT .....	18
11 FUNCTIONS AND SERVICE LIFE OF BIODEGRADABLE MULCH FILMS .....	18
12 CONDITIONS FOR INSTALLATION AND USE OF MULCH FILMS .....	18
ANNEX A (NORMATIVE) PREPARATION OF SOILS FOR ECOTOXICITY TESTING .....	19
A.1 GENERAL .....	19
A.2 PREPARATION OF THE SOIL .....	19
A.3 REACTORS .....	19
A.4 INITIAL TEST ITEM CONCENTRATION .....	19
A.5 TEST DURATION .....	20
ANNEX B (NORMATIVE) DETERMINATION OF ACUTE EFFECTS OF MATERIALS ON THE EMERGENCE AND GROWTH OF HIGHER PLANTS .....	21
B.1 GENERAL .....	21
B.2 PROCEDURE .....	21

<b>B.3</b>	<b>EVALUATION OF THE RESULTS .....</b>	<b>22</b>
<b>ANNEX C (NORMATIVE) DETERMINATION OF ACUTE EFFECTS OF MATERIALS ON EARTHWORMS.....</b>		<b>23</b>
<b>C.1</b>	<b>GENERAL.....</b>	<b>23</b>
<b>C.2</b>	<b>PROCEDURE.....</b>	<b>23</b>
<b>C.3</b>	<b>EVALUATION OF THE RESULTS .....</b>	<b>23</b>
<b>ANNEX D (NORMATIVE) DETERMINATION OF EFFECTS OF MATERIALS ON REPRODUCTION OF EARTHWORMS .....</b>		<b>24</b>
<b>D.1</b>	<b>GENERAL.....</b>	<b>24</b>
<b>D.2</b>	<b>PROCEDURE.....</b>	<b>24</b>
<b>D.3</b>	<b>EVALUATION OF THE RESULTS .....</b>	<b>24</b>
<b>ANNEX E (NORMATIVE) DETERMINATION OF NITRIFICATION ACTIVITY OF SOIL MICROORGANISMS.....</b>		<b>25</b>
<b>E.1</b>	<b>GENERAL.....</b>	<b>25</b>
<b>E.2</b>	<b>PROCEDURE.....</b>	<b>25</b>
<b>E.3</b>	<b>EVALUATION OF THE RESULTS .....</b>	<b>25</b>
<b>ANNEX F (NORMATIVE) DETERMINATION OF RELATIVE LIGHT TRANSMISSION.....</b>		<b>26</b>
<b>F.1</b>	<b>PRINCIPLE .....</b>	<b>26</b>
<b>F.2</b>	<b>APPARATUS .....</b>	<b>26</b>
<b>F.3</b>	<b>PROCEDURE.....</b>	<b>26</b>
<b>F.4</b>	<b>EXPRESSION OF RESULTS .....</b>	<b>26</b>
<b>ANNEX G (INFORMATIVE) FUNCTIONS AND SERVICE LIFE OF BIODEGRADABLE MULCH FILMS.....</b>		<b>27</b>
<b>G.1</b>	<b>GENERAL.....</b>	<b>27</b>
<b>G.2</b>	<b>FACTORS OF DEGRADATION OF BIODEGRADABLE MULCH FILMS .....</b>	<b>27</b>
<b>G.3</b>	<b>MAIN FUNCTIONS OF BIODEGRADABLE MULCH FILMS .....</b>	<b>27</b>
<b>G.4</b>	<b>SERVICE LIFE ON SOIL OF BIODEGRADABLE MULCH FILMS.....</b>	<b>28</b>
<b>ANNEX H (INFORMATIVE) GOOD PRACTICE GUIDANCE FOR USE OF BIODEGRADABLE MULCH FILMS.....</b>		<b>31</b>
<b>H.1</b>	<b>WARNING .....</b>	<b>31</b>
<b>H.2</b>	<b>SOIL PREPARATION.....</b>	<b>31</b>
<b>H.3</b>	<b>FILM LAYING .....</b>	<b>31</b>
<b>H.4</b>	<b>FILM PERFORATION .....</b>	<b>31</b>
<b>H.5</b>	<b>CULTIVATION TECHNIQUES AND BIODEGRADABLE FILMS .....</b>	<b>32</b>
<b>H.6</b>	<b>FILM LIFETIME .....</b>	<b>33</b>
<b>H.7</b>	<b>TREATMENT OF FILMS AT THE END OF CULTIVATION .....</b>	<b>33</b>
<b>H.8</b>	<b>STORAGE .....</b>	<b>33</b>
<b>ANNEX I (INFORMATIVE) QUALITATIVE EVALUATION OF THE DISINTEGRATION IN A SLIDE FRAME TEST .....</b>		<b>35</b>
<b>BIBLIOGRAPHY .....</b>		<b>38</b>