ISO/TR 18228-9:2022-04 (E)

Design using geosynthetics - Part 9: Barriers

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Pictograms 2
4.1 Product and function 2
4.2 Applications 2
4.2.1 Containment application, non-landfill (CA) 2
4.2.2 Chemical containment, non-landfill (CC) 2
4.2.3 Construction waterproofing (CW) 3
4.2.4 Landfill base lining (LBL) 3
4.2.5 Landfills caps (LC) 3
4.2.6 Secondary containment (SC) 4
4.2.7 Transport infrastructure applications (TIA) 4
4.2.8 Tunnels (Tu) 5
4.2.9 Water retaining structure (WRS-e), e.g. balancing ponds, dams, dykes and canals (usually empty) 5
4.2.10 Water retaining structure (WRS-f), e.g. reservoirs, canals (usually full) 5

5 Design Criteria 6

6 Materials 7
6.1 General 7
6.2 HDPE 7
6.3 LLDPE 7
6.4 fPP 7
6.5 PVC 7
6.6 EPDM 7
6.7 Bitumen 7
6.8 EIA (ethylene interpolymer alloy) 7
6.9 Bentonite 7
6.10 Sodium bentonite 8
6.11 Calcium bentonite 8

7 Properties relevant to design 8
7.1 General 8
7.2 Chemical resistance 9
7.3 Physical properties 9
7.4 Durability/weathering 10
7.4.1 General 10
7.4.2 Mechanisms of degradation of the GBR 10
7.4.3 Mechanisms of degradation of the joints 10

8 Principles of design 11
8.1 General 11
8.2 Subgrade preparation 11

8.3 Slope stability 11
8.4 Climate conditions 12
8.5 Temperature effects (thermal expansion and stiffness) 12
8.6 Protection and testing 12
8.6.1 Puncture protection 12
8.6.2 Installation issues, excluding jointing 12
8.6.3 QC on site 13
8.6.4 Hydraulic uplift 14

ISO/TR 18228-9:2022(E) 9 Example design chart 14

Bibliography 16