

# DIN EN ISO 18674-4:2020-10 (E)

## Geotechnical investigation and testing - Geotechnical monitoring by field instrumentation - Part 4: Measurement of pore water pressure: Piezometers (ISO 18674-4:2020)

---

| <b>Contents</b>                                                                        | <b>Page</b> |
|----------------------------------------------------------------------------------------|-------------|
| <b>European foreword</b> .....                                                         | <b>3</b>    |
| <b>Foreword</b> .....                                                                  | <b>4</b>    |
| <b>1 Scope</b> .....                                                                   | <b>5</b>    |
| <b>2 Normative references</b> .....                                                    | <b>5</b>    |
| <b>3 Terms and definitions</b> .....                                                   | <b>5</b>    |
| <b>4 Symbols and abbreviated terms</b> .....                                           | <b>11</b>   |
| <b>5 Instruments</b> .....                                                             | <b>11</b>   |
| 5.1 General .....                                                                      | 11          |
| 5.2 Open piezometer systems .....                                                      | 13          |
| 5.2.1 General .....                                                                    | 13          |
| 5.2.2 Types of open piezometer systems .....                                           | 14          |
| 5.3 Closed piezometer systems .....                                                    | 17          |
| 5.3.1 General .....                                                                    | 17          |
| 5.3.2 Types of closed piezometer systems .....                                         | 20          |
| 5.4 Absolute versus relative measurements and atmospheric compensation .....           | 21          |
| 5.5 Requirements for filters .....                                                     | 23          |
| 5.5.1 Filters in open piezometer systems .....                                         | 23          |
| 5.5.2 Filters in closed piezometer systems .....                                       | 23          |
| 5.6 Measuring range and accuracy .....                                                 | 24          |
| <b>6 Installation and measuring procedure</b> .....                                    | <b>24</b>   |
| 6.1 Installation .....                                                                 | 24          |
| 6.1.1 General .....                                                                    | 24          |
| 6.1.2 Installation of open piezometer systems .....                                    | 25          |
| 6.1.3 Installation of closed piezometer systems .....                                  | 27          |
| 6.1.4 Checks before, during and after installation .....                               | 28          |
| 6.1.5 Maintenance .....                                                                | 29          |
| 6.2 Carrying out the measurement .....                                                 | 29          |
| 6.2.1 Instrumentation check and calibration .....                                      | 29          |
| 6.2.2 Measurement .....                                                                | 30          |
| <b>7 Data processing and evaluation</b> .....                                          | <b>30</b>   |
| <b>8 Reporting</b> .....                                                               | <b>30</b>   |
| 8.1 Installation report .....                                                          | 30          |
| 8.2 Monitoring report .....                                                            | 30          |
| <b>Annex A (normative) Measuring and evaluation procedure</b> .....                    | <b>31</b>   |
| <b>Annex B (informative) Geo-engineering applications</b> .....                        | <b>38</b>   |
| <b>Annex C (informative) Protection of piezometers at the ground level</b> .....       | <b>40</b>   |
| <b>Annex D (informative) Response time for pore water pressure measurements</b> .....  | <b>43</b>   |
| <b>Annex E (normative) Fully grouted piezometer installation</b> .....                 | <b>46</b>   |
| <b>Annex F (normative) Measuring negative pore water pressure (soil suction)</b> ..... | <b>48</b>   |
| <b>Annex G (informative) Measuring examples</b> .....                                  | <b>49</b>   |
| <b>Bibliography</b> .....                                                              | <b>61</b>   |