# ISO 19973-1:2015-08 (E)

## Pneumatic fluid power - Assessment of component reliability by testing - Part 1: General procedures

## Contents

Page


Foreword ..... iv

Introduction ..... v

1 Scope ..... 1

2 Normative references ..... 1

3 Terms and definitions ..... 1

4 Symbols and units of measurement ..... 3

5 Concept of reliability ..... 3

6 Strategies for conducting testing ..... 4
6.1 Assumptions ..... 4
6.2 Test stand and measurement of parameters ..... 4
6.3 Test planning ..... 4

7 Statistical analysis ..... 4

8 Test conditions ..... 4

9 Sample size and selection criteria ..... 5

10 End of test ..... 6
10.1 Minimum number of failures required ..... 6
10.2 Termination time of a test unit ..... 6
10.3 Termination life ..... 6
10.4 Suspended test unit ..... 6
10.5 Censored test ..... 6

11 Evaluation of reliability characteristics from the test data ..... 6

12 Test report ..... 8

Annex A (normative) Determination of the termination life ..... 10

Annex B (informative) Determination of threshold values for leakage rates ..... 14

Annex C (informative) Calculation procedures for censored data without suspensions ..... 21

Annex D (informative) Calculation procedures for censored data with suspensions ..... 24

Annex E (informative) Verification of minimum life at a specified reliability and one-sided confidence level ..... 28

Annex F (informative) Dealing with outliers in test data ..... 33

Annex G (informative) Examples of test results ..... 39

Bibliography ..... 44