SLOVENSKI STANDARD
kSIST-TP FprCEN/TR 17292:2018

01-september-2018

Tehnično poročilo o natančnosti rezultatov, dobljenih v skladu s standardi EN 12720, EN 12721, EN 12722, EN 15185 in EN 15186

Technical report regarding precision data for standards EN 12720, EN 12721, EN 12722, EN 15185 and EN 15186

Technischer Bericht über Präzisionsdaten der Normen EN 12720, EN 12721, EN 12722, EN 15185 und EN 15186

Ta slovenski standard je istoveten z: **FprCEN/TR 17292**

ICS:

97.140   Pohištvo   Furniture

kSIST-TP FprCEN/TR 17292:2018   **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

**FINAL DRAFT
FprCEN/TR 17292**

July 2018

ICS 97.140

English Version

Technical report regarding precision data for standards EN 12720, EN 12721, EN 12722, EN 15185 and EN 15186

Technischer Bericht über Präzisionsdaten der Normen EN 12720, EN 12721, EN 12722, EN 15185 und EN 15186

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 207.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a Technical Report. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a Technical Report.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. FprCEN/TR 17292:2018 E

FprCEN/TR 17292:2018 (E)

Contents   Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

European foreword

This document (FprCEN/TR 17292:2018) has been prepared by Technical Committee CEN/TC 207 "Furniture", the secretariat of which is held by UNI.

This document is currently submitted to the Vote on TR.

FprCEN/TR 17292:2018 (E)

1 Scope

This document specifies repeatability standard deviation and reproducibility standard deviation for results obtained from tests methods carried out according to following standards:

— EN 12720:2009+A1:2013, *Furniture — Assessment of surface resistance to cold liquids,*

— EN 12721:2009+A1:2013, *Furniture — Assessment of surface resistance to wet heat,*

— EN 12722:2009+A1:2013, *Furniture — Assessment of surface resistance to dry heat,*

— EN 15185:2011, *Furniture — Assessment of the surface resistance to abrasion,*

— EN 15186:2012, *Furniture — Assessment of the surface resistance to scratching,*

in order to provide the accuracy of results.

The above standards deal with all rigid furniture surfaces regardless of materials and they not apply to leather and textile surfaces.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5725-1:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions*

ISO 5725-1:1994/COR 1:1998, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions Technical corrigendum 1*

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 5725-2:1994/COR 1:2002, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method Technical corrigendum 1*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia. available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
precision
closeness of agreement between independent test results obtained under stipulated conditions

Note 1 to entry: Precision depends only on the distribution of random errors and does not relate to the true value or the specified value.

4

Note 2 to entry: The measure of precision is usually expressed in terms of imprecision and computed as a standard deviation of the test results. Less precision is reflected by a larger standard deviation.

Note 3 to entry: "Independent test results" means results obtained in a manner not influenced by any previous result on the same or similar test object. Quantitative measures of precision depend critically on the stipulated conditions. Repeatability and reproducibility conditions are particular sets of extreme conditions.

3.2
accuracy
closeness of agreement between a test result and the accepted reference value

Note 1 to entry: The term accuracy, when applied to a set of test results, involves a combination of random components and a common systematic error or bias component.

3.3
repeatability limit
r
value less than or equal to which the absolute difference between two test results obtained under repeatability conditions may be expected to be with a probability of 95 %

Note 1 to entry: The symbol used is r.

Note 2 to entry: A rough estimation of the repeatability limit can be obtained by multiplying the repeatability standard deviation by 2,8.

Note 3 to entry: Two test results obtained within one laboratory shall be judged not equivalent if they differ by more than the "r" value; "r" is the interval representing the critical difference between two test results for the same material, obtained by the same operator using the same equipment on the same day in the same laboratory.

3.4
reproducibility limit
R
value less than or equal to which the absolute difference between two test results obtained under reproducibility conditions may be expected to be with a probability of 95 %

Note 1 to entry: The symbol used is R.

Note 2 to entry: A rough estimation of the reproducibility limit can be obtained by multiplying the reproducibility standard deviation by 2,8.

Note 3 to entry: Two test results shall be judged not equivalent if they differ by more than the "R" value; "R" is the interval representing the critical difference between two test results for the same material, obtained by different operators using different equipment in different laboratories.

3.5
repeatability
precision under repeatability conditions

3.6
repeatability conditions
conditions where independent test results are obtained with the same method on identical test items in the same laboratory by the same operator using the same equipment within short intervals of time

3.7
reproducibility
precision under reproducibility conditions

3.8
reproducibility conditions
conditions where test results are obtained with the same method on identical test items in different laboratories with different operators using different equipment

3.9
repeatability standard deviation
standard deviation of test results obtained under repeatability conditions

Note 1 to entry: It is a measure of dispersion of the distribution of test results under repeatability conditions.

Note 2 to entry: Similarly "repeatability variance" and "repeatability coefficient of variation" could be defined and used as measures of the dispersion of test results under repeatability conditions.

Note 3 to entry: The symbol used is s_r.

3.10
reproducibility standard deviation
standard deviation of test results obtained under reproducibility conditions

Note 1 to entry: It is a measure of the dispersion of the distribution of test results under reproducibility conditions.

Note 2 to entry: Similarly "reproducibility variance" and "reproducibility coefficient of variation" could be defined and used as measures of the dispersion of test results under reproducibility conditions.

Note 3 to entry: The symbol used is s_R.

3.11
surface
combination of a specified substrate and a specified coating

4   General principles

The accuracy is provided by repeatability standard deviation and reproducibility standard deviation.

On the basis of an inter-laboratory study for test methods involved, in which from one to three operators of participating's tested the samples prepared to cover the current range of surfaces, the repeatability and reproducibility standard deviations and limits were calculated.

The best available estimate of the true value of the characteristic under study is the overall mean of all results due to a lack of a reference material.

The number of participating laboratories was from 6 to 8, depending on test method.

ISO 5725-1:1994 assumes that the characteristic values are continuous and follow normal distribution. These assumptions do not hold for qualitative measurements. Therefore, recently, some methodological researches for qualitative and non-continuous data based on a variety of assumptions have been carried out, showing its usefulness.

NOTE   The repeatability and reproducibility standard deviations are precision estimates, and therefore are subject to estimation errors. They can be used as guides to assess the validity or relevance of results produced by the measurement method and not as rigid numerical criteria to discard or validate results. Common sense can prevail in all cases.

5   Repeatability standard deviation and reproducibility standard deviation

5.1 Abrasion

On the basis of an interlaboratory study for this test method carried out by six laboratories, testing five surfaces, having a broad range of abrasion resistance and following the criteria stated on ISO 5725-2:1994 and its corrigendum, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   IP ≤ 100 cycles, 10 cycles

    IP > 250 cycles, 50 cycles

— Reproducibility standard deviation (s_R):   IP ≤ 100 cycles, 20 cycles

    IP > 250 cycles, 60 cycles

The given s_r and s_R are the highest results obtained for each test method, among all the samples tested following a conservative criterion.

5.2 Scratching

5.2.1 Lineal scratching

On the basis of an interlaboratory study for this test method carried out by five laboratories, testing four materials (combination of substrate and coating), having a broad range of scratching resistance, and following the criteria stated on ISO 5725-2:1994 and its corrigendum, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   1 N

— Reproducibility standard deviation (s_R):   2 N

The given s_r and s_R are the highest results obtained for each test method, among all the samples tested following a conservative criterion.

5.2.2 Circular scratching

On the basis of an interlaboratory study for this test method carried out by five laboratories, testing five materials (combination of substrate and coating), having a broad range of scratching resistance, and following the criteria stated on ISO 5725-2:1994 and its corrigendum, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   0,1 N

— Reproducibility standard deviation (s_R):   0,5 N

The given s_r and s_R are the highest results obtained for each test method, among all the samples tested following a conservative criterion.

5.3 Cold liquids

On the basis of an interlaboratory study for this test method carried out by six laboratories, testing five materials (combination of substrate and coating), having a broad range of cold liquids resistance, and following the criteria stated on ISO 5725-2:1994 and its corrigendum, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   0,3

FprCEN/TR 17292:2018 (E)

— Reproducibility standard deviation (s_R):   0,5

The given s_r and s_R are the highest results obtained for each test method, among all the samples and liquids tested following a conservative criterion.

5.4 Dry heat

On the basis of an interlaboratory study for this test method carried out by eight laboratories, testing five materials (combination of substrate and coating), having a broad range of dry heat resistance, and following the criteria stated on ISO 5725-2:1994 and its corrigendum, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   0,3

— Reproducibility standard deviation (s_R):   0,8

The given s_r and s_R are the highest results obtained for each test method, among all the samples and liquids tested following a conservative criterion.

5.5 Wet heat

On the basis of an interlaboratory study for this test method carried out by eight laboratories, testing five materials (combination of substrate and coating), having a broad range of wet heat resistance, and following the criteria stated on ISO 5725-2:1994, the repeatability standard deviation and reproducibility standard deviation were obtained:

— Repeatability standard deviation (s_r):   0,2

— Reproducibility standard deviation (s_R):   0,9

The given s_r and s_R are the highest results obtained for each test method, among all the samples and liquids tested following a conservative criterion.

8