

UNI EN 1022:2018 Furniture - Seating – Determination of stability

UNI EN 1335-2:2018 Office furniture – Office work chair - Part 2: Safety requirements

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During 2018 two important revisions of European standards in the furniture sector have been published. Important because they deal with seating which is a fundamental furniture element.

The first standard, EN 1022, concerns the stability of seating.

The current version is the third revision, the first one was published in the last century, 1998, and it replaced an equally known and widely used as the “ancient” UNI 8582.

The special attention given by the standardization system to the stability of seating (single or multiple) lies in our common experience that when sitting and the chair starts to get out of its equilibrium condition we are unfortunately not in a position to control the kinematics of our body and in a very short time we can get down, in some cases with very unpleasant and serious effects.

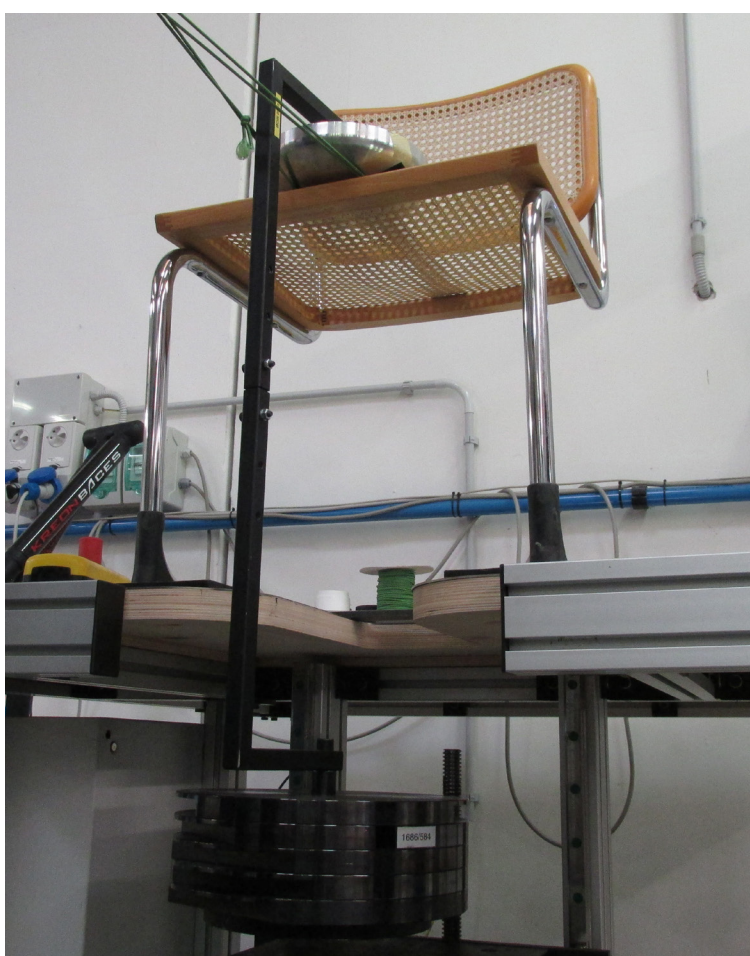
The second revised standard is the EN 1335-2 that defines the safety requirements of office work chairs. Also this version represents the third revision.

The importance of this standard can be easily understood considering the work in our office whether it is for a few hours or for the whole day. The period in which we live now is absolutely characterized by the preponderance of the work activities carried out in the office.

Therefore the safety of all the equipment used in the office needs to be continuously monitored and, among these, seating represents a very relevant component, partly also for the reasons referred to in the previous point concerning stability. The importance of this standard is also due to the close relationship between the technical standards and the current legislation concerning workplace safety (Legislative Decree 81/2008).

The EN 1022 standard.

As the previous version, also this one specifies the test methods and requirements for determining the stability of all types of adult seating. The current version also specifies that it applies to adults weighing up to 110 kg, clarification not present before.



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The standard also specifies that the described test methods can be applied also in the case of children and heavier adults users, by modifying loads values and loading points.

The standard finally takes into consideration all types of seating, regardless of the intended use and it covers all possible scenarios of interaction between the seating and our body. To give an idea of the complexity and completeness achieved by the standard we report below a simplified overview of the loads applicable to the seating in order to assess the stability.

Test	Parameter	Loads for swivelling seats	Loads for all other seating
Forwards overturning	Vertical force	600 N	600 N
	Horizontal force	20 N	20 N
Forwards overturning for seating with foot rest	Vertical force	1 100 N	600 N
	Horizontal force	20 N	20 N
Corner stability test	Vertical force	300 N	300 N
Sideways overturning, all seating without arms	Vertical force	600 N	600 N
	Horizontal force	20 N	20 N
Sideways overturning, all other seating	Seat vertical force	250 N	250 N
	Armrest vertical force	350 N	350 N
	Horizontal force	20N	20N
Rearwards overturning, all seating with back rests	Vertical force	600 N	600 N
	Horizontal force ($H^* \geq 720$ mm)	80 N	80 N
	Horizontal force ($H^* < 720$ mm)	$0,2857 \cdot (1000 - H^*)$	$0,2857 \cdot (1000 - H^*)$
Tilting seating	Number of discs	13	11
Reclining seating with leg rest	Number of discs - back	-	8
	Number of balancing discs	-	3
Reclining seating without leg rest	Number of discs - back	-	8
	Number of balancing discs	-	3
Rearwards stability for rocking chairs	Number of discs	-	8

* Height of the loaded seat above the floor (in millimetres).

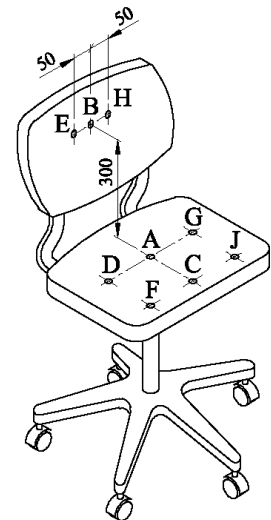
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Compared with the previous edition (2005 version), the main the main amendments are the following:

- The title and the field of application of the standard have been modified in order to include all the the seating intended use, not only the domestic one;
- All the test methods used to evaluate the stability of the seats used in European furniture standards have been collected in a single document. The 2018 version now contains the methods of the previous EN 1022, EN 581-2 for outdoor furniture and EN 1335-3 for the office chairs.
- Test methods have been harmonized to evaluate the stability of office chairs and all other seating.
- A test method has been introduced to assess stability in the seat angle for all chair types.



The EN 1335-2 standard.

The 2018 version of this fundamental standard in the furniture sector is a further step forward in the parameterization / simplification of standards for furniture that on the one hand provide an important set of standards that define the common test methods for all the intended uses, on the other hand provide a set of mechanical requirements standards that draw from the first set by selecting the relevant test methods.

In light of this new dynamic regarding the structure and writing of the standards, in comparison with the previous edition, the main changes are the reference to the test methods described in the EN 1022: 2018 as regards stability (see previous point) and in the EN 1728: 2012 as regards strength and durability.

Stability requirements are the same as in the previous version except for a slight increase in stability load in the seat angle from 27 to 30 kg but with a load application point placed at 60 mm from the edge of the seat pad.

Loads and cycles of static load and durability tests have not changed: they are the same reported up to the last month in the “old” EN 1335-3 that now no longer exists. As evidence of this we report the table of the above tests and the image of the various points on the office chair taken into account.

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Test	Reference	Loads and cycles	Test parameters
Combined seat and back static load test	EN 1728:2012, 7.3	Seat force, N Back rest force F2, N Cycles	1600 560 10
Seat front edge static load test	EN 1728:2012, 7.4	Seat force, N Cycles	1 600 10
Foot rest static load test	EN 1728:2012, 7.8	Force, N Cycles	1 300 10
Seat and back durability	EN 1728:2012, 7.9	Step 1: Seat force, N, point A Cycles Step 2: Seat force, N, point C Back rest force, N, point B Cycles Step 3: Seat force, N, point J Back rest force, N, point E Cycles Step 4: Seat force, N, point F Back rest force, N, point H Cycles Step 5: Seat force, N, points D e G Cycles	1 500 120 000 1 200 320 80 000 1 200 320 20 000 1 200 320 20 000 1 100 20 000
Armrests durability	EN 1728:2012, 7.10	Armrest force, N Cycles	400 60 000
Armrests static load test (before stability)	EN 1728:2012, 7.5	Armrest force, N Cycles	750 5
Armrests static load test (after stability)		Armrest force, N Cycles	900 5

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