

## Guide for requirements and procurement of sound absorbing table and floor screens, sound absorbers and furniture ensembles and enclosures

### Screens

A screen can have the following acoustic properties: sound-absorbing, sound-absorbing or sound-diffusing. Sound diffusion can be important but is not yet accepted and is not normally specified. Therefore, it is not touched upon further in this document. When procuring, there should therefore be one or possibly two requirements for a screen

1. Sound absorption
2. Possibly sound attenuation

The most common and important thing is that the absorbency of the screen (point 1 above) is taken into account and it must always be well documented. The difference between absorption and attenuation is illustrated in Figure 1 below.

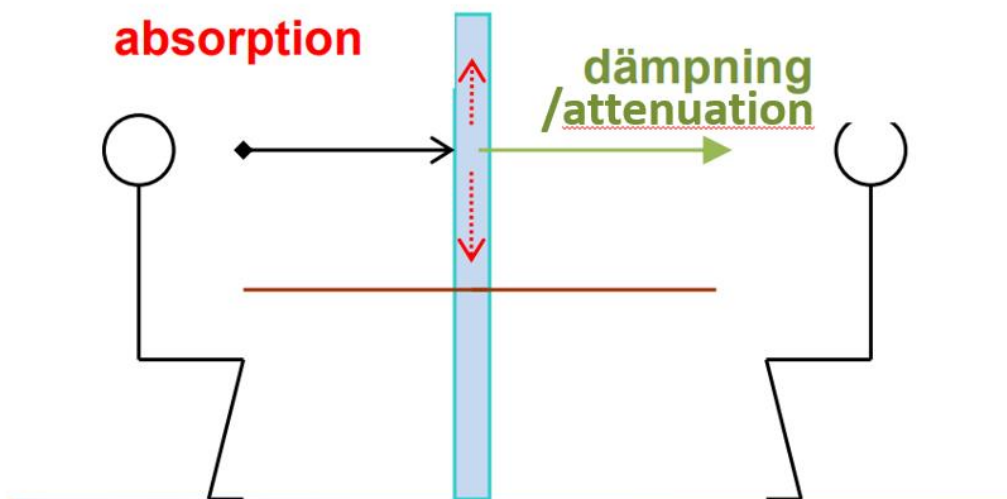


Figure 1. Illustration of sound absorption and sound attenuation

### Sound absorption (SS-ISO 20189:2018)<sup>1</sup>

It is easy to verify the sound absorption of a table screen or a floor screen provided that the products are evaluated and reported according to the Swedish and international standard SS – ISO 20189:2019.

To further simplify procurement with a unit value, some of the Nordic furniture industry's representatives (acousticfacts.com) have developed a measure called  $N_{10}$ .  $N_{10}$  is not yet standardized

<sup>1</sup> Swedish and international standard SS-ISO 20189 (2019) Acoustics - Screens, furniture and single objects intended for indoor use - Evaluation of sound absorption and noise reduction of screen elements based on laboratory measurements (ISO 20189:2018, IDT)

but it is a measurement that can be used to compare the absorbency of absorbent screens with a single value. Below is a description of how it is calculated and the value can be invoked in connection with procurement:

$$N_{10} = \frac{10}{A_{500}}$$

where

$A_{500}$  = the absorption area value given at the 500 Hz octave band for the screen in question.

#### Table screens

- For table screens with size 1600×650,  $N_{10}$  should be less than 19.
- For table screens with size 1800×650,  $N_{10}$  should be less than 17.
  - For other sizes of table screens, other values of  $N_{10}$  apply, see table 1 below.

Table 1.  $N_{10}$  for different sizes of desk screens:

Size (b×h i mm)	$N_{10} \leq$	A(m <sup>2</sup> )
650×2000	15	1,30
650×1800	18	1,17
650×1600	19	0,04
650×1400	22	0,91
650×1200	25	0,78
650×1000	30	0,65
650×800	37	0,52

Note. If the exact measurements do not match the above given, then choose the area where is closest.

#### Floor screens

- For floor screens with size 1200×1500,  $N_{10}$  should be less than 8.
  - For other sizes that do not differ significantly from the above, an indication is given in Table 2. The size variation is estimated to be smaller for floor screens than for desk screens.

If you compare two products of the same size, lower  $N_{10}$  means better sound absorption.<sup>2</sup>

<sup>2</sup>The absorption area should not drop at higher frequencies → the values at 1000, 2000 and 4000 Hz are at least as high as the value at 500 Hz.

Table 1. $N_{10}$ for different sizes of floor screens: Size (b×h i mm)	$N_{10} \leq$	A(m <sup>2</sup> )
1200×1500	8	1,80
1200×1600	8	1,92
1200×1800	7	2,16
1000×1500	9	1,50
1000×1600	9	1,60
1000×1800	8	1,80

Note. If the exact measurements do not match the above, then choose the area that is closest.

### Sound attenuation (floor screens only, SS-ISO 10053 and Annex C of SS-ISO 20189)

A floor screen can be voluntarily declared with respect to its screen attenuation,  $\Delta L_{s,w}$ . If there is a requirement for screen attenuation, the value  $\Delta L_{s,w}$  should **exceed 15 dB** to provide any significant attenuation in reality. Möbelfakta does not require this.

For many major suppliers, tests regarding both absorbency and attenuation are now verified, see [www.acousticfacts.com/products](http://www.acousticfacts.com/products).

### Sound-absorbing wall units

Absorbers intended for wall mounting can also be evaluated in connection with procurement. A good absorber generally has a value  $A_{obj}$  at 500 Hz ( $A_{500}$ ) that is close to or equal to its true area.

According to Möbelfakta's requirement specification, all acoustic products must be tested according to a standard, SS-EN ISO 354:2003 and evaluated according to SS-ISO 20189. SS-ISO 20189 also contains installation instructions for how individual objects are tested in the laboratory. In Möbelfakta, only the product's sound-absorbing capacity is taken into account.

For continuous acoustic panels that cover large parts of a wall or ceiling, sound absorption is measured according to the same standard as other products, SS-EN ISO 354:2003, but evaluated according to another standard, EN ISO 11654.

A good full panel absorber has an absorption factor  $\alpha_w$  ("alpha w") that is close to 1.0 and this means that all sound that falls towards the absorber is absorbed.

### Möbelenheter / rumsenheter furniture

A mobile room unit or cubicle can have the following acoustic properties: sound-absorbing (furniture), sound-absorbing or sound-diffusing. Sound diffusion can be important but is not yet accepted and is not normally specified. Therefore, it is not touched upon further in this document.

When procuring, there should therefore be one or possibly two requirements for a mobile room unit/cubicle

1. ljudabsorption
2. Call level attenuation

Möbelfakta only requires attenuation of the level of conversation. This is given as  $D_{S,A}$  [dB] and the value shall be documented by measurement in accordance with ISO 23352-1; "Acoustics — Measurement of speech level reduction of furniture ensembles and enclosures - Part 1:Laboratory method".

$D_{S,A}$  [dB] and can be described in the following classification systems:

Class	A+	A	B	C	D	Unclassified
$D_{S,A}$ [dB]	>33	>30	>25	>20	>15	≤15

Möbelfakta only requires that the value is declared, not on the value that is reported.

### Version of this guide

In the event of differences between the Swedish and English versions of the guide, the Swedish version applies before the English version.