Acoustic Insulation

TEXTIL BATAVIA
SINCE 1755

Our Multi-layered Curtains

Our flame retardant acoustic curtains for sound insulation are an ideal solution to problems caused by noise from outside. These curtains can be used in any room that requires acoustic comfort, such as theatres, conference rooms, recording studios, discotheques, pubs, restaurants, offices, meeting rooms or private homes.

We have a wide range of acoustic curtains made up of multiple layers with different performances, which can be adapted to the needs of each client.

Furthermore, we have several models for each composition, offering, in addition to acoustic properties, different decorative possibilities.

The fabrics of our multi-layered curtains are subject to minimal shrinkage and are multi-purpose solutions that, in addition to offering good levels of acoustic insulation, also have sound absorption properties. All our multi-layered curtains have been tested according to international standards UNE-EN ISO 354 and UNE-EN ISO 10140-5 to certify their acoustic properties. With an absorption coefficient higher than 0.4 and acoustic insulation levels higher than 12dB, they are multi-purpose solutions that help to reduce disturbing noise from outside the enclosure and, at the same time, allow you to control the reverberation.

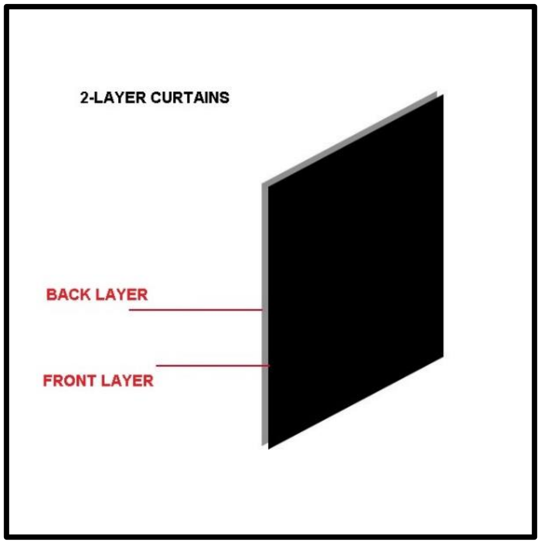
Multi-layered Curtains

Our multi-layered curtains are ideal for insulating all types of high intensity noise. In addition, they are multi-purpose solutions that also have sound-absorbing properties.

Technical Specifications

	Sound Insulation R_w(dB)	Absorption Coefficient α_w
2-Layer Curtains	12-13	0,50-0,55
3-Layer Curtains	14-15	0,40-0,55
4-Layer Curtains	15-16	0,50-0,55
5-Layer Curtains	18-19	0,40-0,55
6-Layer Curtains	19	0,50-0,55
7-Layer Curtains	20	0,55

2-Layer Curtains



Our 2-layer curtains consist of a visual top layer and a back layer.

Both fabrics are subjected to minimal shrinkage and have acoustic properties.

We have two configurations:

MODEL 1: FRONT LAYER OF FLAME RETARDANT MOLTON FABRIC.

MODEL 2

MODEL 2: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

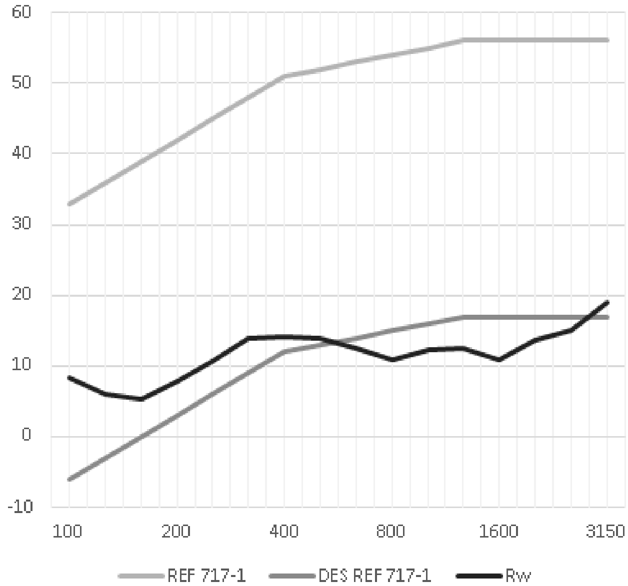
Model 1

FRONT LAYER – MOLTON 500g

Fabric: Molton 500 g/m2.
Composition: Cotton FR 100%.
Colour: Black.
Certificate: Class-1 (UNE-EN 13773)
Textile finish: 2-sided brushed, dyed and fireproofed.

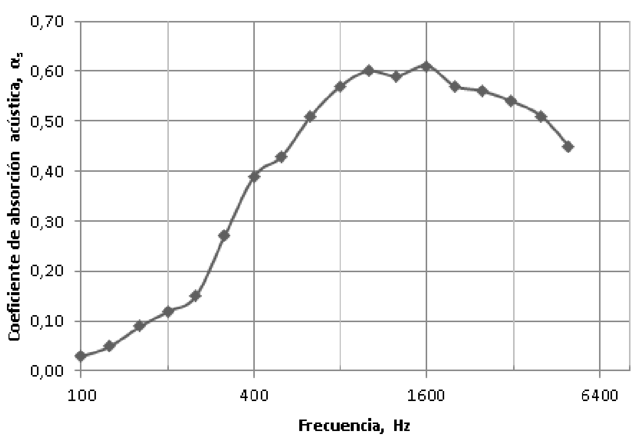
Maximum average load (N)	UNE-EN ISO 13934-1:2013 470 N Warp 930 N Weft
Maximum elongation (%)	UNE-EN ISO 13934-1:2013 11,5 % Lengthwise 14 % Crosswise
Characteristics	Does not burn, does not spread flame, opaque to light.
Maintenance	Do not wash in water. Allows dry cleaning with caution. Do not bleach. Do not iron.

Technical Specifications:



f(Hz)	R
100	**8,4**
125	**6,0**
160	**5,3**
200	**7,9**
250	**10,7**
315	**13,8**
400	**14,2**
500	**13,9**
630	**12,4**
800	**10,9**
1000	**12,3**
1250	**12,6**
1600	**10,9**
2000	**13,7**
2500	**15,0**
3150	**19,0**

Overall Value in dB	Rw=13dB



f(Hz)	α_p
125	**0,06**
250	**0,18**
500	**0,44**
1000	**0,59**
2000	**0,58**
4000	**0,50**

Clase	D
α_w	**0,50**
α_{mid}	**0,53**
NRC	**0,44**
SAA	**0,45**

Model 2

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	

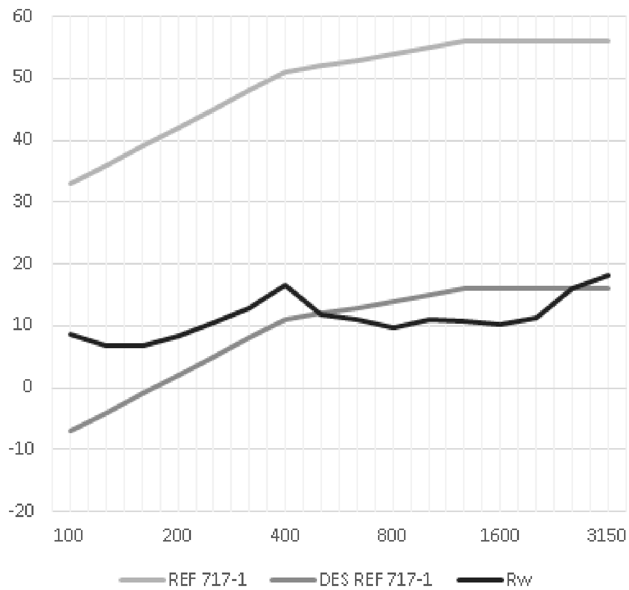
Water temperature not above 30ºC


Do not bleach.


Iron low temperature.

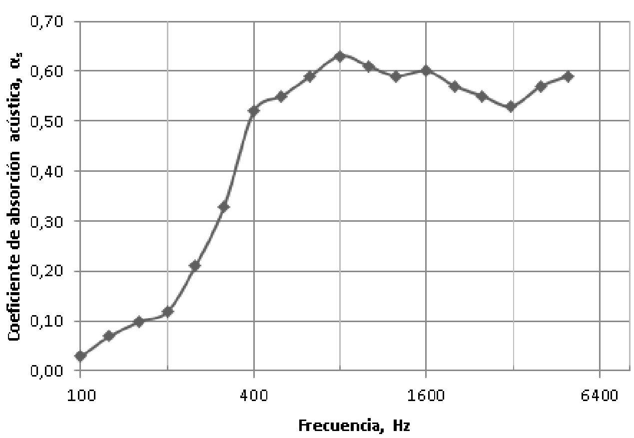
Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**8,6**
125	**6,7**
160	**6,8**
200	**8,5**
250	**10,5**
315	**12,9**
400	**16,5**
500	**11,7**
630	**10,9**
800	**9,7**
1000	**10,9**
1250	**10,7**
1600	**10,1**
2000	**11,2**
2500	**16,0**
3150	**18,1**

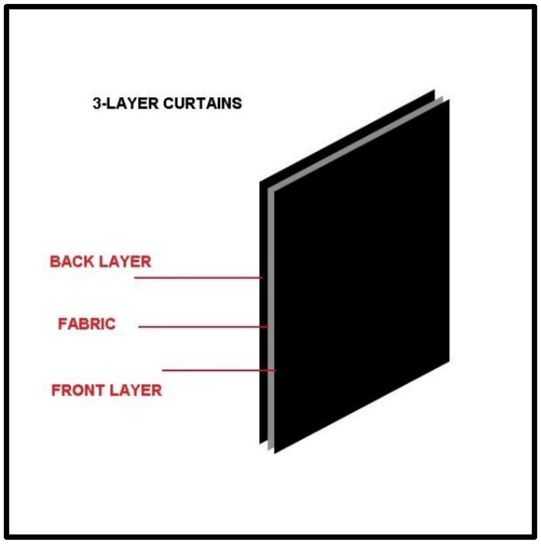
Overall Value in dB	Rw=12dB



f(Hz)	α_p
125	**0,07**
250	**0,22**
500	**0,55**
1000	**0,61**
2000	**0,57**
4000	**0,56**

Clase	D
α_w	**0,55**
α_{mid}	**0,58**
NRC	**0,49**
SAA	**0,49**

3-Layer Curtains



Our 3-layer curtains consist of a visual top layer, a middle layer and a back layer.

All fabrics are subjected to minimal shrinkage and have acoustic properties.

We have three configurations:

<u>MODEL 1</u>: FRONT LAYER OF FLAME RETARDANT PVC TARPAULIN.

<u>MODEL 2</u>: FRONT LAYER OF FLAME RETARDANT MOLTON FABRIC.

<u>MODEL 3</u>: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

Model 1

FRONT LAYER – PVC TARPAULIN 620g

Fabric: PVC tarpaulin 620 g/m2.

Composition: 100% polyester.

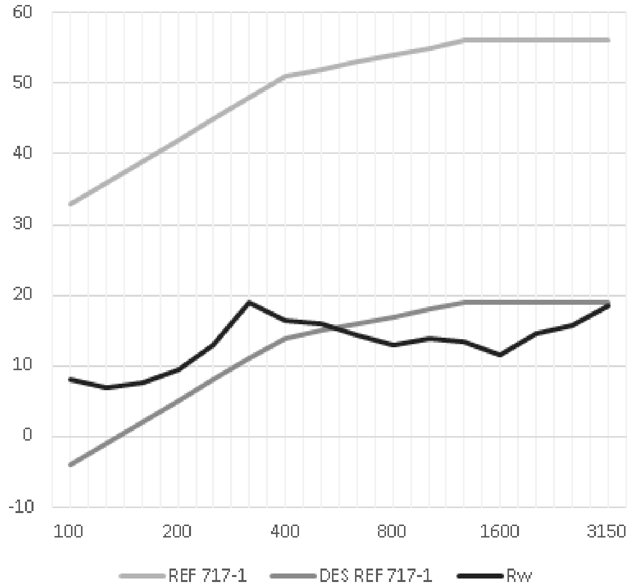
Colour: black.

Certificate: Class-1 (UNE-EN 13773).

Textile finish: Glossy acrylic lacquered 2 sides.

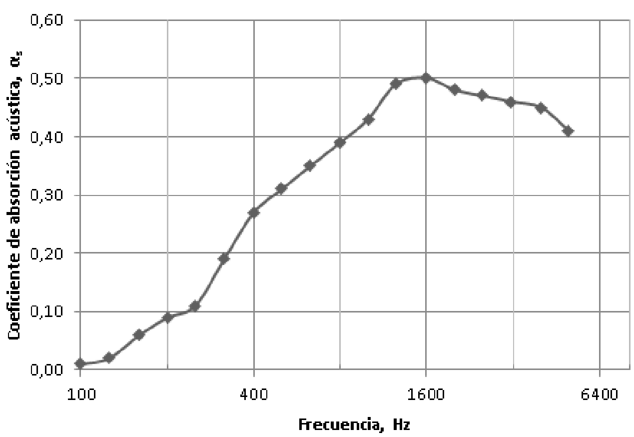
Tensile strength	Warp 240 daN/5cm UNE-EN ISO 1421 Weft 220 daN/5cm UNE-EN ISO 1421
Tear resistance	Weft 20 daN UNE 53326 Warp 91daN UNE 53326
Adherence	10 daN/5cm UNE-EN ISO 2411
Reaction to fire	M1 UNE 23727-90 Cl 1 UNE-EN 13773:2003 EN 1021:1 and 2 / BS 5852 / IMO
Extreme temperature of use	-30 / +70ºC

Technical Specifications:



f(Hz)	R
100	**8,2**
125	**6,9**
160	**7,6**
200	**9,6**
250	**12,9**
315	**19,1**
400	**16,4**
500	**15,9**
630	**14,3**
800	**12,9**
1000	**13,8**
1250	**13,5**
1600	**11,6**
2000	**14,5**
2500	**15,7**
3150	**18,6**

Overall Value in dB	Rw=15dB



f(Hz)	α_p
125	**0,03**
250	**0,13**
500	**0,31**
1000	**0,44**
2000	**0,48**
4000	**0,44**

Clase	D
α_w	**0,40**
α_{mid}	**0,41**
NRC	**0,33**
SAA	**0,34**

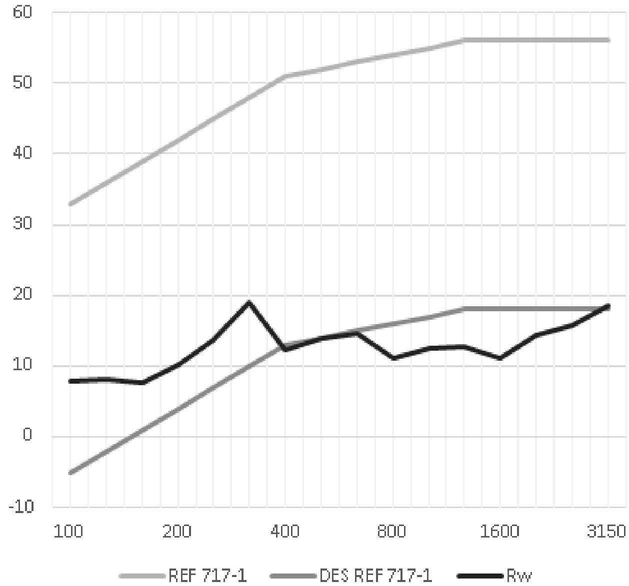
Model 2

FRONT LAYER – MOLTON 500g

Fabric: Molton 500 g/m2.
Composition: Cotton FR 100%.
Colour: Black.
Certificate: Class-1 (UNE-EN 13773)
Textile finish: 2-sided brushed, dyed and fireproofed.

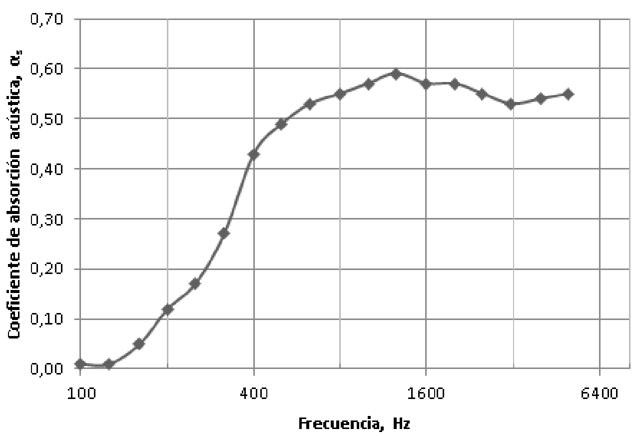
Maximum average load (N)	UNE-EN ISO 13934-1:2013 470 N Warp 930 N Weft
Maximum elongation (%)	UNE-EN ISO 13934-1:2013 11,5 % Lengthwise 14 % Crosswise
Characteristics	Does not burn, does not spread flame, opaque to light.
Maintenance	Do not wash in water. Allows dry cleaning with caution. Do not bleach. Do not iron.

Technical Specifications:



f(Hz)	R
100	**7,8**
125	**8,2**
160	**7,6**
200	**10,2**
250	**13,6**
315	**19,1**
400	**12,3**
500	**13,9**
630	**14,5**
800	**11,0**
1000	**12,6**
1250	**12,8**
1600	**11,0**
2000	**14,3**
2500	**15,7**
3150	**18,6**

Overall Value in dB	Rw=14dB



f(Hz)	α_p
125	**0,02**
250	**0,19**
500	**0,48**
1000	**0,57**
2000	**0,56**
4000	**0,54**

Clase	D
α_w	**0,50**
α_{mid}	**0,54**
NRC	**0,45**
SAA	**0,45**

Model 3

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	

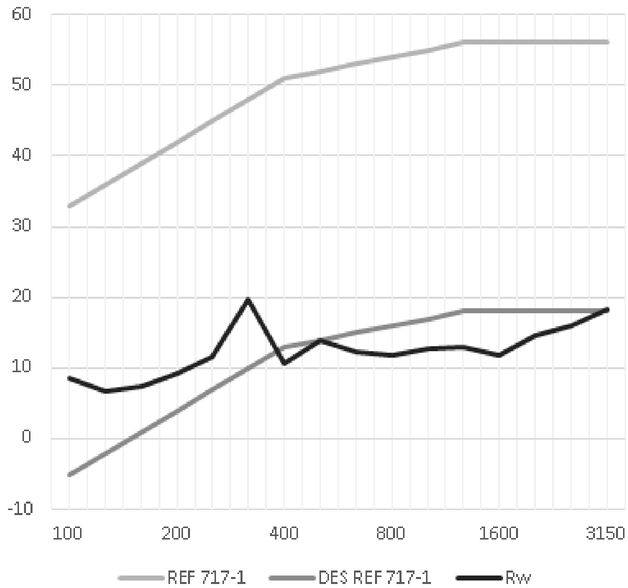
Water temperature not above 30ºC


Do not bleach.


Iron low temperature.

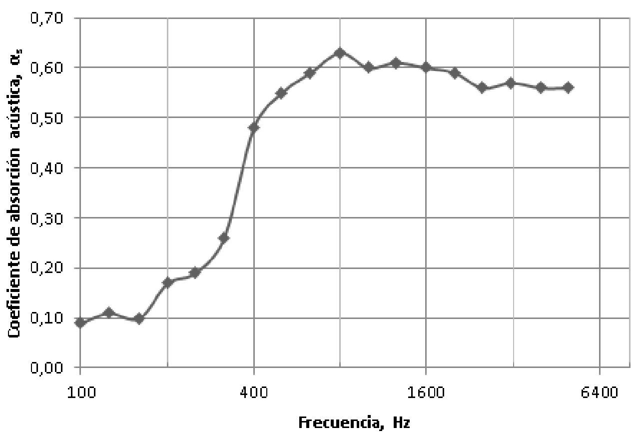
Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**8,5**
125	**6,8**
160	**7,5**
200	**9,2**
250	**11,6**
315	**19,8**
400	**10,6**
500	**13,9**
630	**12,3**
800	**11,8**
1000	**12,8**
1250	**12,9**
1600	**11,7**
2000	**14,6**
2500	**15,9**
3150	**18,2**

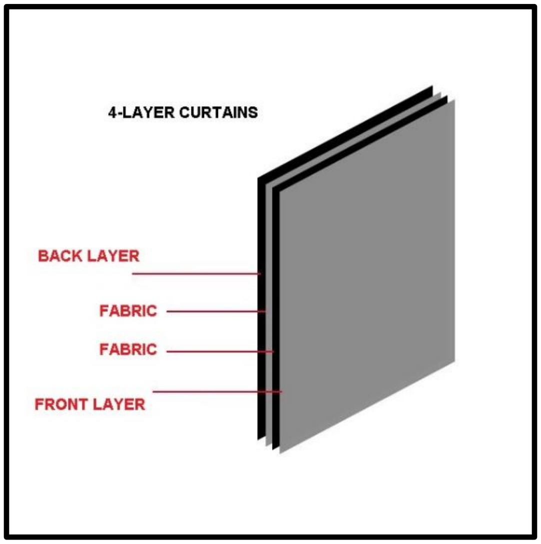
Overall Value in dB	Rw=14dB



f(Hz)	α_p
125	**0,10**
250	**0,21**
500	**0,54**
1000	**0,61**
2000	**0,58**
4000	**0,56**

Clase	D
α_w	**0,55**
α_{mid}	**0,58**
NRC	**0,48**
SAA	**0,49**

4-Layer Curtains



Our 4-layer curtains consist of a visual top layer, two middle layers and a back layer.

All fabrics are subjected to minimal shrinkage and have acoustic properties.

We have two configurations:

<u>MODEL 1</u>: FRONT LAYER OF FLAME RETARDANT PVC TARPAULIN.

<u>MODEL 2</u>: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

Model 1

FRONT LAYER – PVC TARPAULIN 620g

Fabric: PVC tarpaulin 620 g/m2.

Composition: 100% polyester.

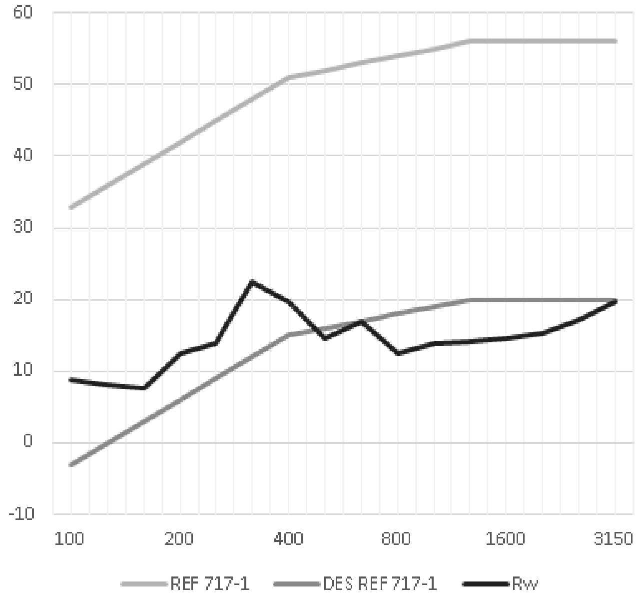
Colour: black.

Certificate: Class-1 (UNE-EN 13773).

Textile finish: Glossy acrylic lacquered 2 sides.

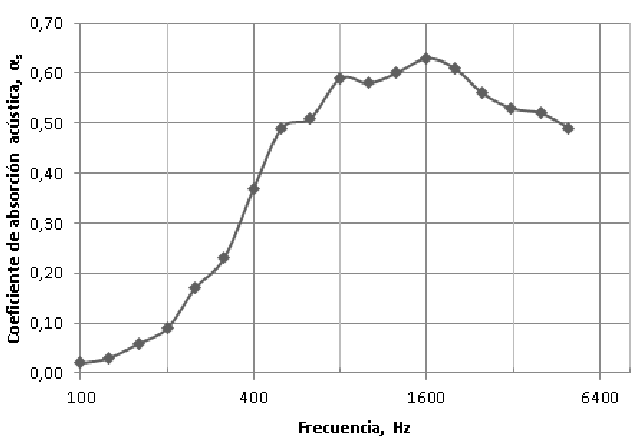
Tensile strength	Warp 240 daN/5cm UNE-EN ISO 1421 Weft 220 daN/5cm UNE-EN ISO 1421
Tear resistance	Weft 20 daN UNE 53326 Warp 91daN UNE 53326
Adherence	10 daN/5cm UNE-EN ISO 2411
Reaction to fire	M1 UNE 23727-90 Cl 1 UNE-EN 13773:2003 EN 1021:1 and 2 / BS 5852 / IMO
Extreme temperature of use	-30 / +70ºC

Technical Specifications:



f(Hz)	R
100	**8,7**
125	**8,1**
160	**7,6**
200	**12,6**
250	**13,9**
315	**22,4**
400	**19,8**
500	**14,7**
630	**16,8**
800	**12,5**
1000	**13,9**
1250	**14,1**
1600	**14,5**
2000	**15,2**
2500	**17,1**
3150	**19,6**

Overall Value in dB	Rw=16dB



f(Hz)	α_p
125	**0,04**
250	**0,16**
500	**0,46**
1000	**0,59**
2000	**0,60**
4000	**0,51**

Clase	D
α_w	**0,50**
α_{mid}	**0,56**
NRC	**0,46**
SAA	**0,45**

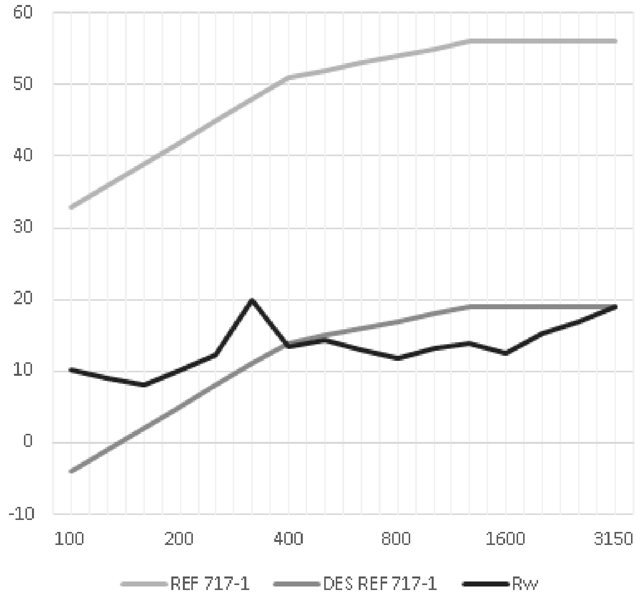
Model 2

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

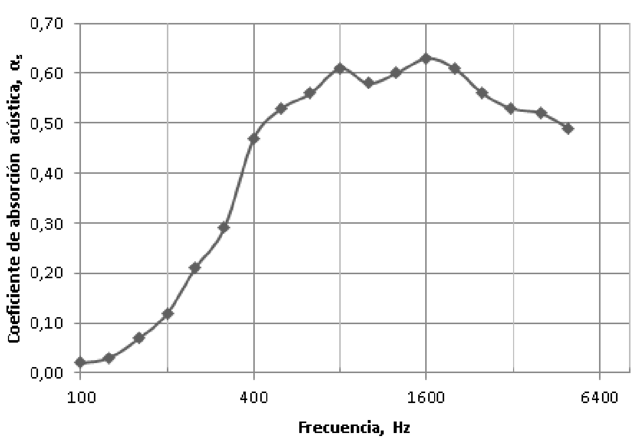
Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	
	Water temperature not above 30ºC
	Do not bleach.
	Iron low temperature.
	Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**10,2**
125	**9,1**
160	**8,1**
200	**10,1**
250	**12,3**
315	**19,9**
400	**13,4**
500	**14,3**
630	**12,9**
800	**11,9**
1000	**13,2**
1250	**13,9**
1600	**12,4**
2000	**15,4**
2500	**16,8**
3150	**19,0**

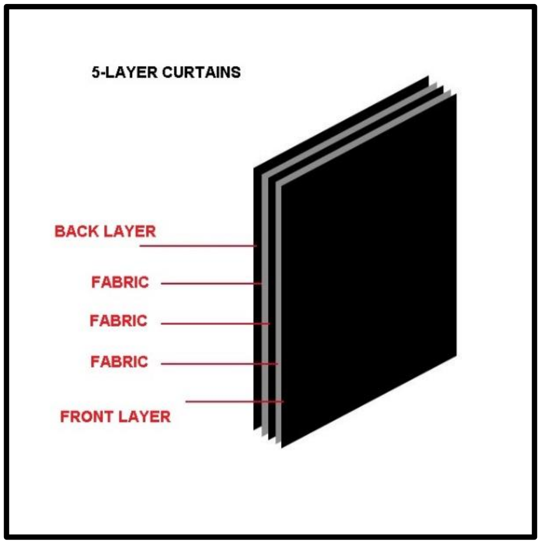
Overall Value in dB	Rw=15dB



f(Hz)	α_p
125	**0,04**
250	**0,21**
500	**0,52**
1000	**0,60**
2000	**0,60**
4000	**0,51**

Clase	D
α_w	**0,55**
α_{mid}	**0,57**
NRC	**0,48**
SAA	**0,48**

5-Layer Curtains



Our 5-layer curtains consist of a visual top layer, three middle layers and a back layer.

All fabrics are subjected to minimal shrinkage and have acoustic properties.

We have three configurations:

MODEL 1: FRONT LAYER OF FLAME RETARDANT PVC TARPAULIN.

MODEL 2: FRONT LAYER OF FLAME RETARDANT MOLTON FABRIC.

MODEL 3: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

Model 1

FRONT LAYER – PVC TARPAULIN 620g

Fabric: PVC tarpaulin 620 g/m2.

Composition: 100% polyester.

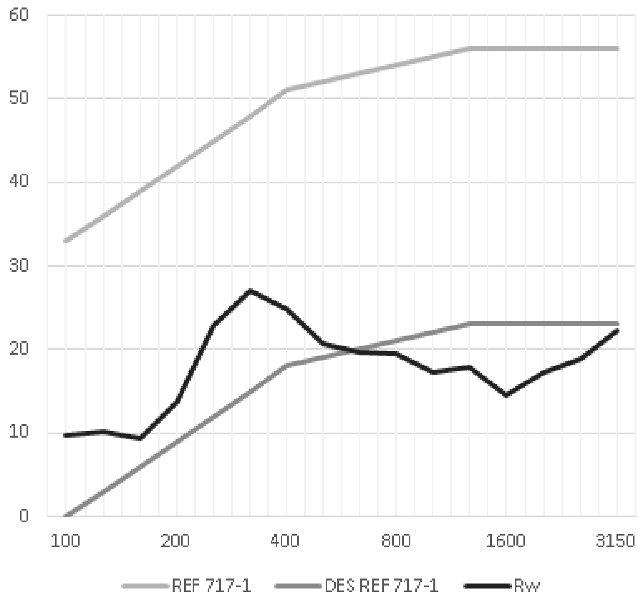
Colour: black.

Certificate: Class-1 (UNE-EN 13773).

Textile finish: Glossy acrylic lacquered 2 sides.

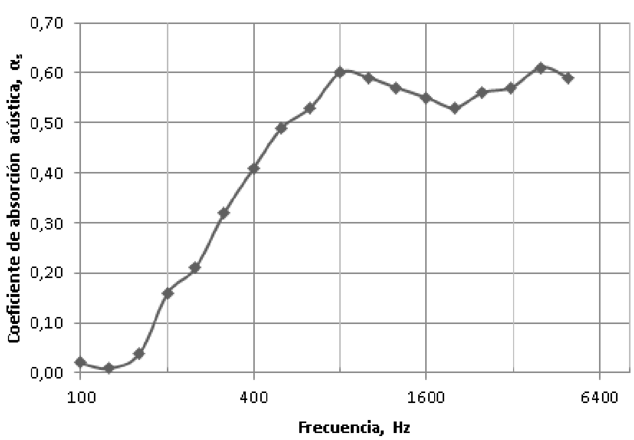
Tensile strength	Warp 240 daN/5cm UNE-EN ISO 1421 Weft 220 daN/5cm UNE-EN ISO 1421
Tear resistance	Weft 20 daN UNE 53326 Warp 91daN UNE 53326
Adherence	10 daN/5cm UNE-EN ISO 2411
Reaction to fire	M1 UNE 23727-90 Cl 1 UNE-EN 13773:2003 EN 1021:1 and 2 / BS 5852 / IMO
Extreme temperature of use	-30 / +70ºC

Technical Specifications:



f(Hz)	R
100	**9,7**
125	**10,2**
160	**9,4**
200	**13,7**
250	**22,9**
315	**27,1**
400	**24,9**
500	**20,6**
630	**19,6**
800	**19,4**
1000	**17,3**
1250	**17,9**
1600	**14,5**
2000	**17,3**
2500	**18,9**
3150	**22,3**

Overall Value in dB	Rw=19dB



f(Hz)	α_p
125	**0,02**
250	**0,23**
500	**0,48**
1000	**0,59**
2000	**0,55**
4000	**0,59**

Clase	D
α_w	**0,55**
α_{mid}	**0,54**
NRC	**0,46**
SAA	**0,46**

Model 2

FRONT LAYER – MOLTON 500g

Fabric: Molton 500 g/m2.
Composition: Cotton FR 100%.
Colour: Black.
Certificate: Class-1 (UNE-EN 13773)
Textile finish: 2-sided brushed, dyed and fireproofed.

Maximum average load (N)

UNE-EN ISO 13934-1:2013
470 N Warp
930 N Weft

Maximum elongation (%)

UNE-EN ISO 13934-1:2013
11,5 % Lengthwise
14 % Crosswise

Characteristics

Does not burn, does not spread flame, opaque to light.

Maintenance

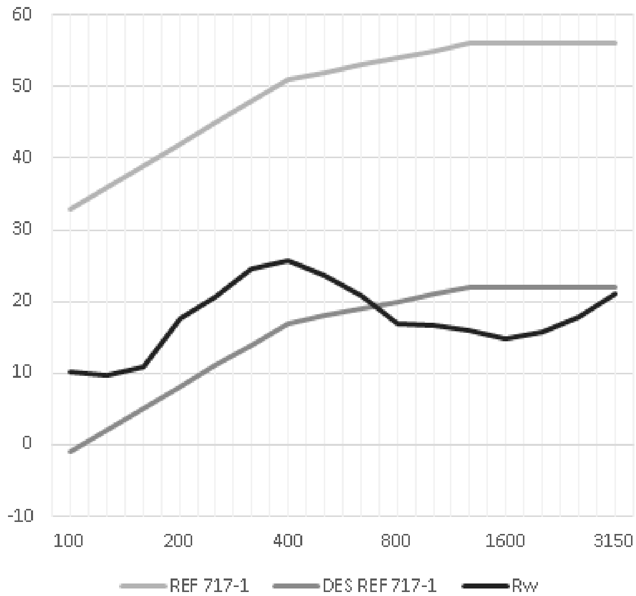

Do not wash in water.


Allows dry cleaning with caution.


Do not bleach.

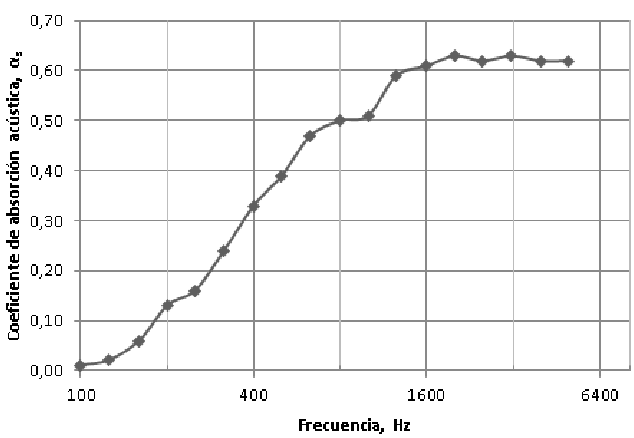

Do not iron.

Technical Specifications:



f(Hz)	R
100	**10,1**
125	**9,7**
160	**10,8**
200	**17,5**
250	**20,6**
315	**24,6**
400	**25,7**
500	**23,7**
630	**20,9**
800	**16,9**
1000	**16,7**
1250	**16,0**
1600	**14,9**
2000	**15,7**
2500	**17,8**
3150	**21,1**

Overall Value in dB	Rw=18dB



f(Hz)	α_p
125	**0,03**
250	**0,18**
500	**0,40**
1000	**0,53**
2000	**0,62**
4000	**0,62**

Clase	D
α_w	**0,55**
α_{mid}	**0,51**
NRC	**0,42**
SAA	**0,43**

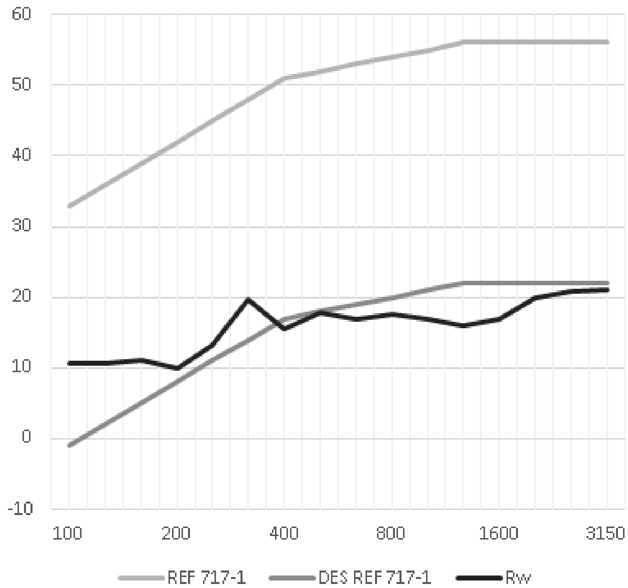
Model 3

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

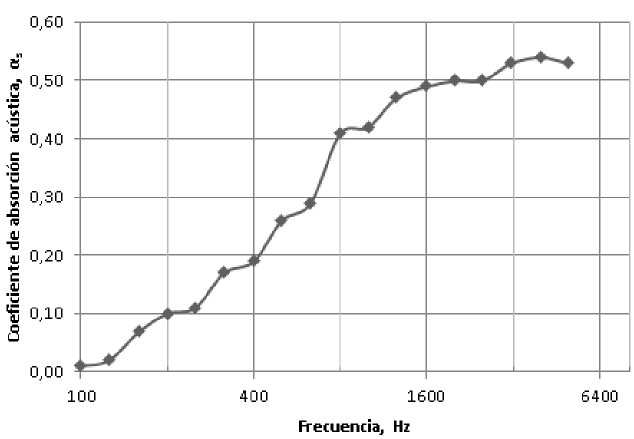
Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	
	Water temperature not above 30ºC
	Do not bleach.
	Iron low temperature.
	Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**10,6**
125	**10,6**
160	**11,0**
200	**9,9**
250	**13,2**
315	**19,6**
400	**15,5**
500	**17,8**
630	**16,8**
800	**17,6**
1000	**16,9**
1250	**15,9**
1600	**16,9**
2000	**19,9**
2500	**20,9**
3150	**21,1**

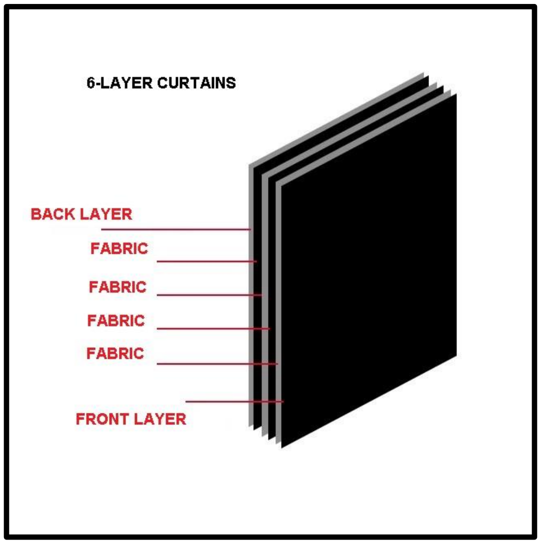
Overall Value in dB	**Rw=18dB**



f(Hz)	α_p
125	**0,03**
250	**0,13**
500	**0,25**
1000	**0,43**
2000	**0,50**
4000	**0,53**

Clase	D
α_w	**0,40**
α_{mid}	**0,39**
NRC	**0,32**
SAA	**0,33**

6-Layer Curtains



Our 6-layer curtains consist of a visual top layer, four middle layers and a back layer.

All fabrics are subjected to minimal shrinkage and have acoustic properties.

We have two configurations:

MODEL 1: FRONT LAYER OF FLAME RETARDANT MOLTON FABRIC.

MODEL 2: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

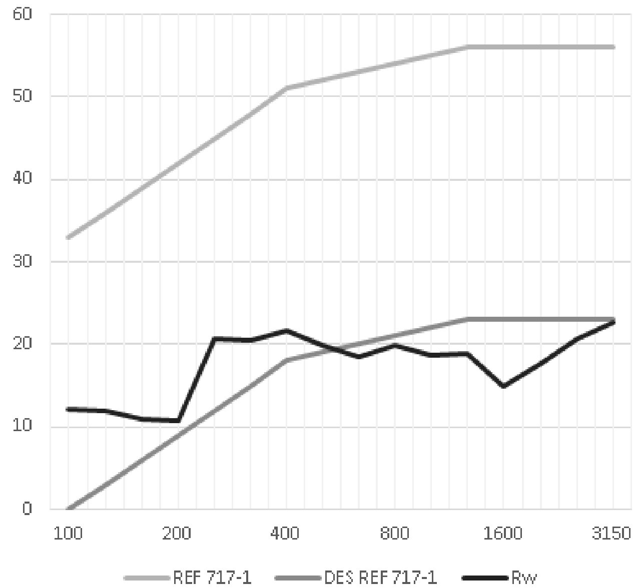
Model 1

FRONT LAYER – SELLA 500g

Fabric: Molton 500 g/m2.
Composition: Cotton FR 100%.
Colour: Black.
Certificate: Class-1 (UNE-EN 13773)
Textile finish: 2-sided brushed, dyed and fireproofed.

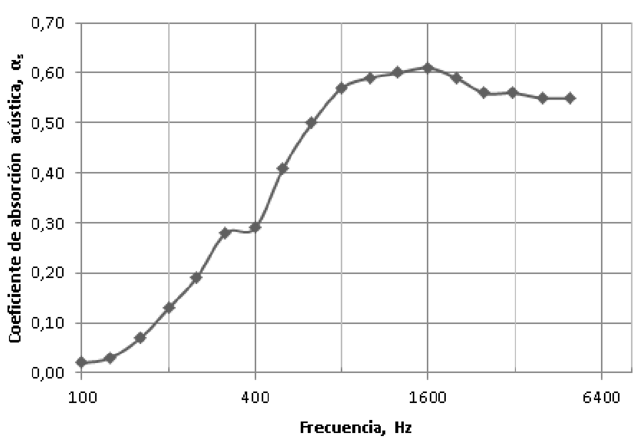
Maximum average load (N)	UNE-EN ISO 13934-1:2013 470 N Warp 930 N Weft
Maximum elongation (%)	UNE-EN ISO 13934-1:2013 11,5 % Lengthwise 14 % Crosswise
Characteristics	Does not burn, does not spread flame, opaque to light.
Maintenance	
	Do not wash in water.
	Allows dry cleaning with caution.
	Do not bleach.
	Do not iron.

Technical Specifications:



f(Hz)	R
100	**12,1**
125	**11,9**
160	**10,9**
200	**10,8**
250	**20,7**
315	**20,5**
400	**21,7**
500	**19,9**
630	**18,4**
800	**19,8**
1000	**18,7**
1250	**18,9**
1600	**14,9**
2000	**17,8**
2500	**20,7**
3150	**22,7**

Overall Value in dB	Rw=19dB



f(Hz)	α_p
125	**0,04**
250	**0,20**
500	**0,40**
1000	**0,59**
2000	**0,59**
4000	**0,55**

Clase	D
α_w	**0,50**
α_{mid}	**0,53**
NRC	**0,45**
SAA	**0,44**

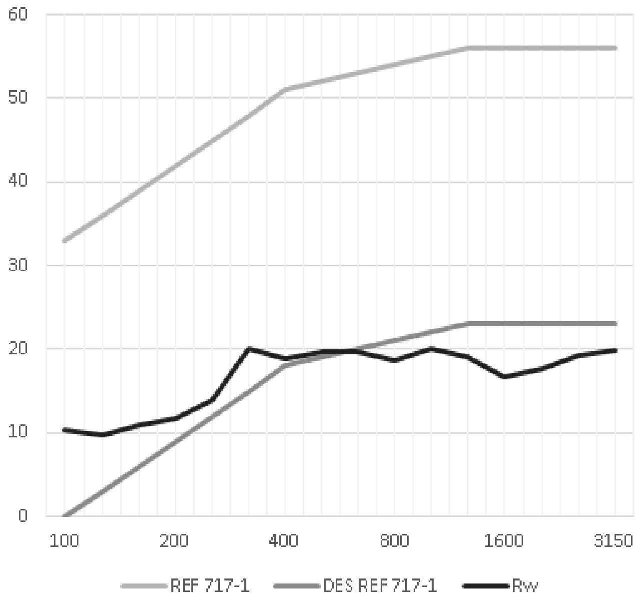
Model 2

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

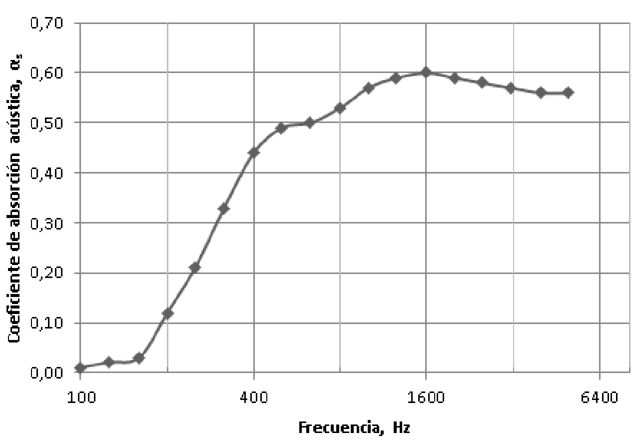
Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	
30°	Water temperature not above 30ºC
	Do not bleach.
	Iron low temperature.
P	Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**10,4**
125	**9,7**
160	**10,9**
200	**11,8**
250	**13,9**
315	**20,1**
400	**18,8**
500	**19,6**
630	**19,7**
800	**18,7**
1000	**20,1**
1250	**19,1**
1600	**16,7**
2000	**17,8**
2500	**19,3**
3150	**19,9**

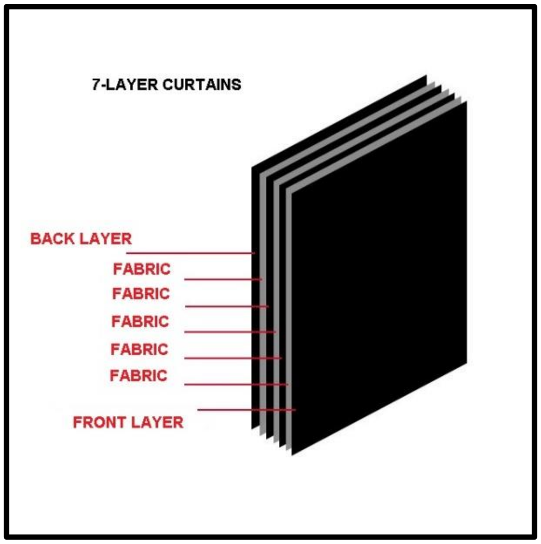
Overall Value in dB	Rw=19dB



f(Hz)	α_p
125	**0,02**
250	**0,22**
500	**0,48**
1000	**0,56**
2000	**0,59**
4000	**0,56**

Clase	D
α_w	**0,55**
α_{mid}	**0,55**
NRC	**0,47**
SAA	**0,46**

7-Layer Curtains



Our 7-layer curtains consist of a visual top layer, five middle layers and a back layer.

All fabrics are subjected to minimal shrinkage and have acoustic properties.

We have three configurations:

MODEL 1: FRONT LAYER OF FLAME RETARDANT PVC TARPAULIN.

MODEL 2: FRONT LAYER OF FLAME RETARDANT MOLTON FABRIC.

MODEL 3: FRONT LAYER OF FLAME RETARDANT POLYESTER VELVET.

Model 1

FRONT LAYER – PVC TARPAULIN 620g

Fabric: PVC tarpaulin 620 g/m2.

Composition: 100% polyester.

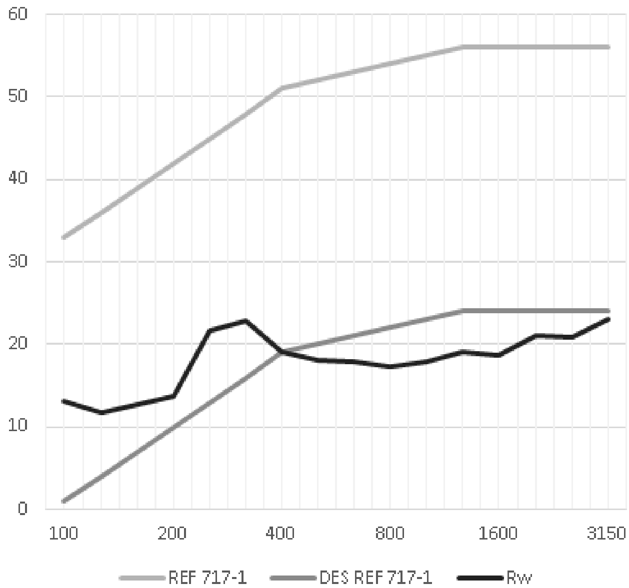
Colour: black.

Certificate: Class-1 (UNE-EN 13773).

Textile finish: Glossy acrylic lacquered 2 sides.

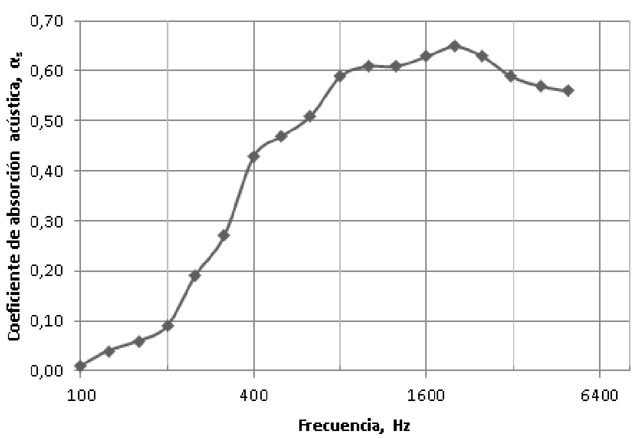
Tensile strength	Warp 240 daN/5cm UNE-EN ISO 1421 Weft 220 daN/5cm UNE-EN ISO 1421
Tear resistance	Weft 20 daN UNE 53326 Warp 91daN UNE 53326
Adherence	10 daN/5cm UNE-EN ISO 2411
Reaction to fire	M1 UNE 23727-90 Cl 1 UNE-EN 13773:2003 EN 1021:1 and 2 / BS 5852 / IMO
Extreme temperature of use	-30 / +70ºC

Technical Specifications:



f(Hz)	R
100	**13,1**
125	**11,7**
160	**12,7**
200	**13,7**
250	**21,7**
315	**22,8**
400	**19,1**
500	**18,1**
630	**17,9**
800	**17,3**
1000	**17,9**
1250	**19,1**
1600	**18,7**
2000	**21,1**
2500	**20,9**
3150	**23,1**

Overall Value in dB	Rw=20dB



f(Hz)	α_p
125	**0,04**
250	**0,18**
500	**0,47**
1000	**0,60**
2000	**0,64**
4000	**0,57**

Clase	D
α_w	**0,55**
α_{mid}	**0,58**
NRC	**0,48**
SAA	**0,47**

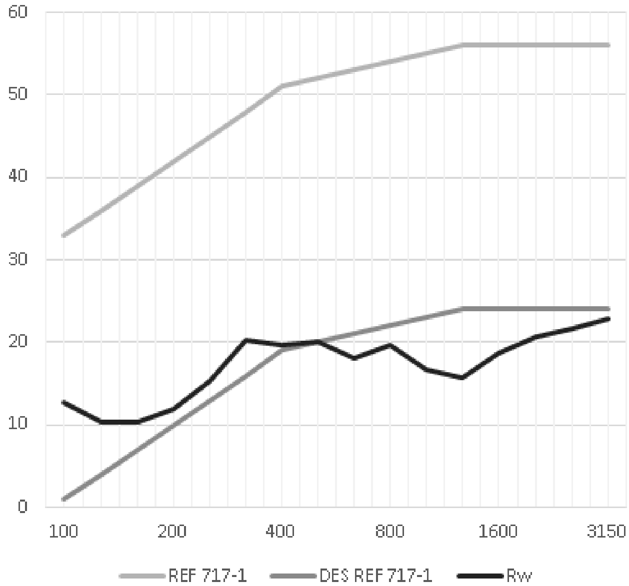
Model 2

FRONT LAYER – MOLTON 500g

Fabric: Molton 500 g/m2.
Composition: Cotton FR 100%.
Colour: Black.
Certificate: Class-1 (UNE-EN 13773)
Textile finish: 2-sided brushed, dyed and fireproofed.

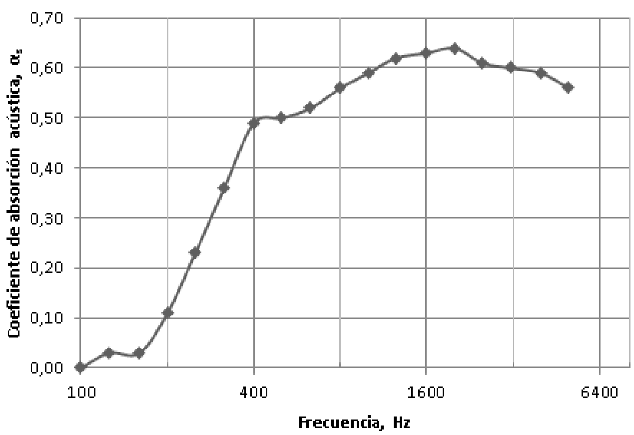
Maximum average load (N)	UNE-EN ISO 13934-1:2013 470 N Warp 930 N Weft
Maximum elongation (%)	UNE-EN ISO 13934-1:2013 11,5 % Lengthwise 14 % Crosswise
Characteristics	Does not burn, does not spread flame, opaque to light.
Maintenance	Do not wash in water. Allows dry cleaning with caution. Do not bleach. Do not iron.

Technical Specifications:



f(Hz)	R
100	**12,7**
125	**10,4**
160	**10,4**
200	**11,9**
250	**15,3**
315	**20,3**
400	**19,7**
500	**20,0**
630	**18,0**
800	**19,7**
1000	**16,7**
1250	**15,7**
1600	**18,7**
2000	**20,7**
2500	**21,7**
3150	**22,9**

Overall Value in dB	Rw=20dB



f(Hz)	α_p
125	**0,02**
250	**0,23**
500	**0,50**
1000	**0,59**
2000	**0,63**
4000	**0,58**

Clase	D
α_w	**0,55**
α_{mid}	**0,58**
NRC	**0,49**
SAA	**0,49**

Model 3

FRONT LAYER – VELVET 390g

Fabric: Velvet 390 g/m^2.
Composition: Polyester FR velvet.
Colour: consult.
Certificate: Class-1 (UNE-EN 13773) Bs1-d0+ CE.

Tensile strength	UNE-EN ISO 13934-1:2013 900 N Warp 1000 N Weft
Elongation at break	UNE -EN ISO 13934-1:2013 18 % Warp 30 % Weft
Abrasion resistance	UNE-EN ISO 12947-21999/AC 80.000 cycles
Upholstery	UNE-EN 14465 :2004 A Category
Maintenance	

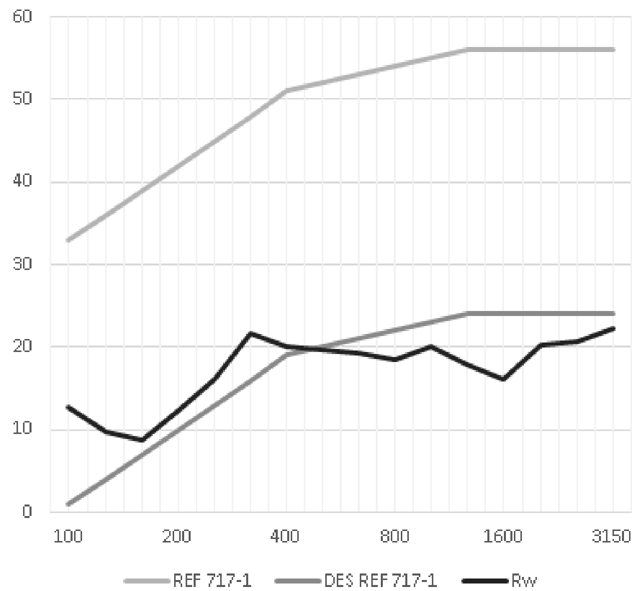
Water temperature not above 30ºC


Do not bleach.


Iron low temperature.

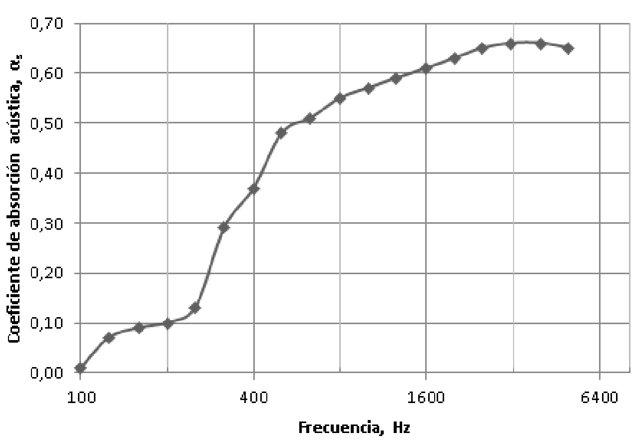
Allows dry cleaning with caution.

Technical Specifications:



f(Hz)	R
100	**12,7**
125	**9,8**
160	**8,7**
200	**12,4**
250	**16,2**
315	**21,7**
400	**20,1**
500	**19,6**
630	**19,3**
800	**18,4**
1000	**20,1**
1250	**17,9**
1600	**16,1**
2000	**20,3**
2500	**20,7**
3150	**22,2**

Overall Value in dB	Rw=20dB



f(Hz)	α_p
125	**0,06**
250	**0,17**
500	**0,45**
1000	**0,57**
2000	**0,63**
4000	**0,66**

Clase	D
α_w	**0,55**
α_{mid}	**0,56**
NRC	**0,45**
SAA	**0,46**

Frequently Asked Questions

About Acoustic Insulation

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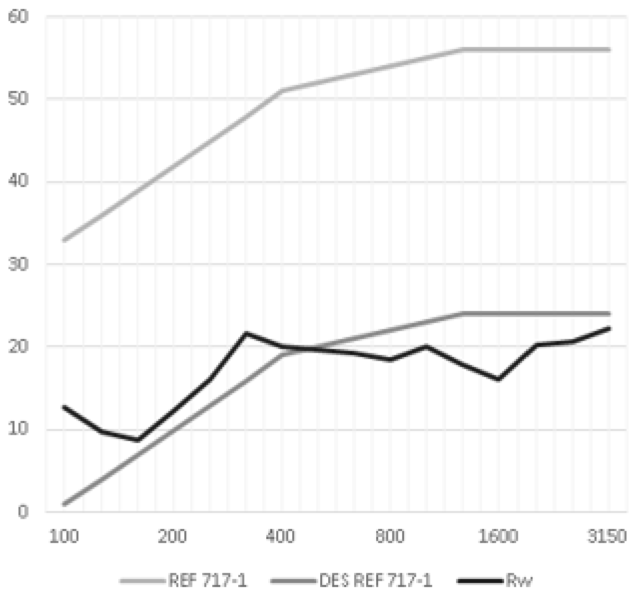
Index

What do the parameters in the catalogue mean?

In the technical specifications of our acoustic curtains, we can find the following information:



f(Hz)	R
100	**12,7**
125	**9,8**
160	**8,7**
200	**12,4**
250	**16,2**
315	**21,7**
400	**20,1**
500	**19,6**
630	**19,3**
800	**18,4**
1000	**20,1**
1250	**17,9**
1600	**16,1**
2000	**20,3**
2500	**20,7**
3150	**22,2**

Overall Value in dB	Rw=20dB

Both the graph on the left and the tables provide information on the sound insulation level of the curtain.

What is sound insulation?

Whether you live in a big city or in a village, in a single-family house or in a block of flats, it is very likely that you have experienced noise problems generated outside your home, as described in the following situations:

-Noise from neighbours walking around - children running, heels, etc.
-Noise from neighbours' cisterns.
-Noise from the premises located in the commercial ground floor of the building - bars, pubs, cafes, etc.-.
-Noise from the terrace of a bar.
-Noise from an air-conditioning unit in another dwelling.
-Noise from traffic.
-Noise from a mechanical garage door.
-Noise from the building's lift.
-Noise from a neighbour's TV.

And many more.
These problems are not exclusive to private homes, but also occur in other environments that we frequent regularly, such as the workplace.
Sound insulation can be defined as the set of acoustic solutions that are used in rooms that have problems such as those described above. These solutions range from construction elements - walls and floors made with acoustic insulation - to other technical elements such as acoustic curtains, and their objective is to prevent noise from outside from filtering into a room.

How is sound insulation measured?

To measure the sound insulation of a material - such as acoustic curtains or building materials - the sound reduction index (R) is used. This index can be defined as the difference between the sound pressure level inside the room and the sound pressure level outside the room. In other words, the noise level that the material can reduce, expressed in decibels.

What is the sound reduction index for?

The sound reduction index is used to obtain the sound insulation level of a material. Thus, knowing this value, we can calculate the noise level that a material will be able to reduce when installed and know in advance if it will serve to reduce the noise coming from outside.

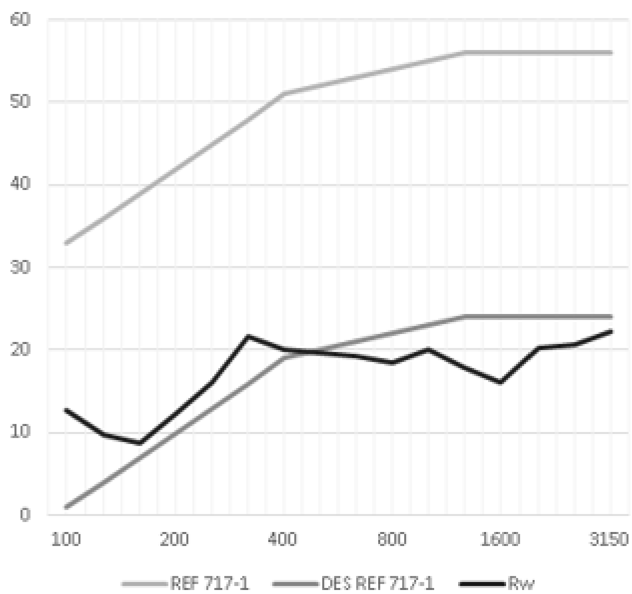
How is the sound reduction index obtained?

The only way to obtain the sound reduction index of a material is from standardised tests. The tests to obtain the acoustic reduction index of any material are carried out in accordance with the specifications established in the international standard UNE-EN ISO 10140-2. This standard establishes the test methodology to obtain the acoustic reduction index of a material, indicating the degree to which it can reduce the noise coming from outside the enclosure where it is to be installed.

The sound reduction index tests of this standard are carried out in standardised transmission chambers. These chambers are composed of two adjacent enclosures separated only by a partition surface where the sample to be tested is placed. For the test, noise is emitted in an omnidirectional loudspeaker in one of the enclosures (transmitting enclosure) and measurements are made of the noise reaching the other enclosure (receiving enclosure). From the difference between the noise emitted and the noise received at the receiver, the noise level that the material under test is capable of reducing is obtained.

How do I interpret the catalogue parameters?

In the catalogue we have two tables:



f(Hz)	R
100	12,7
125	9,8
160	8,7
200	12,4
250	16,2
315	21,7
400	20,1
500	19,6
630	19,3
800	18,4
1000	20,1
1250	17,9
1600	16,1
2000	20,3
2500	20,7
3150	22,2

Overall Value in dB	Rw=20dB

2-Global value of sound reduction index Rw

1-Frequency values of the sound reduction index

1-Value of the acoustic reduction index by frequencies R:

What is frequency?

If we take a musical instrument, for example, a guitar, when one of its strings is plucked, it produces a sound - a musical note. To produce the musical note, the plucked string vibrates around its initial position. Frequency is measured in Hertz (Hz) and is defined as the number of times per second the string vibrates. Thus, when you tune your guitar, you are adjusting the tension of the string so that it vibrates at the desired frequency when is plucked. For example, the note A is tuned to 440Hz, so that each time that note is plucked, the string that generates it vibrates at a rate of 440 times per second.

As sounds are made up of frequencies and the human ear does not perceive all frequencies in the same way, the UNE-EN ISO 10140-2 standard - and in general all standards related to acoustic insulation - establishes the frequencies at which the results should be presented, as these are considered to be the most representative. These frequencies are 100, 125, 160, 200, 250, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150Hz. For each of these frequencies, the averaged value of the acoustic reduction index obtained from the averaging of the frequencies adjacent to them is given. At the 2500Hz frequency, for example, the tested acoustic curtain has a sound insulation index of 19,6dB. This means that for all sound waves with a frequency of 4000Hz, the acoustic curtain will reduce the sound pressure generated by them by 19,6dB.

2-Global Rw Value

This is the weight value in decibels obtained from the values of the sound reduction index for each one of the frequencies explained in the previous section.

What is a decibel (dB)?

The decibel is a unit of measurement widely used in telecommunications to express quantities of other units on a logarithmic scale. Thus, the word decibel can refer to several concepts. In the field of acoustics, decibels are used to measure both sound pressure and sound power.

To better understand what decibels are, let's look at the following example:

Sound can be broadly defined as the physical phenomenon that occurs when an emitting body vibrates in a medium. When we speak, for example, our vocal cords vibrate, generating a sound wave.

As our vocal cords are in contact with the air - the medium - the wave generated creates pressure variations in the air, causing the particles that form it to vibrate. Thus, the air particles oscillate around their normal position, transmit the vibration to their neighbouring particles and then return to their initial position. In this way the sound wave propagates through the air particles at a speed that depends on the density and elasticity of the medium - approximately 340m/s in air.

When the wave reaches the receiver, it enters the ear and impacts with the eardrum. The impact of the wave is received as a nerve stimulus that the brain decodes as sound.

The discomfort these sound waves cause us is equivalent to the pressure they exert on the membrane of our ears and corresponds to what is colloquially known as the volume at which they are heard. The volume, therefore, can be equated with the pressure that the sound waves exert on the medium.

To normalise and measure sound pressure, sound level meters are used, the operation of which is inspired by that of the human ear. A sound level meter contains a microphone made up of a membrane that receives the pressure that sound waves exert on its surface when they impact on it. From a transducer, the value of the pressure exerted is obtained.

Sound pressure is measured in Pascals (P), after Pascal. However, in practice, the measurement in Pascals is converted to a logarithmic scale to normalise its value and is called sound pressure level, measured in decibels.

To normalise the decibel value, the following formula is used:

$$L_p = 20x\log (P / P_{ref})$$

Where Lp is the sound pressure level, i.e., the pressure value measured in decibels.

P is the pressure that the sound wave makes.

Pref is the reference value by which the measured sound pressure is normalised. It has a constant value of $2x10^{-5}$P.

Looking at the expression we see that it contains units of pressure in both the numerator and the denominator, the result being dimensionless. Therefore, the result is only expressed in dB (decibels) and not in decibels of Pascals (dBP). In other fields of telecommunications, units of measurement such as dBW are used, as they are not obtained from dimensionless expressions.

The reason for this standardisation is simple: since the decibel is only a unit of measurement that depends on another unit (in this case sound pressure), it was possible to establish a value to be used as a reference.

This is better understood if we look at it mathematically: if we take a sound wave that exerts a pressure on the membrane of our ears -or on the membrane of a loudspeaker- of $2x10^{-5}$P, applying the formula and the properties of logarithms, we will obtain the value of 0 decibels. Thus, the value of $2x10^{-5}$P becomes the reference value in the new decibel scale. If we take any lower value, the result will be negative. And if we do the same with any higher value, the results will be positive.

The value of $2x10^{-5}$P is used as a reference because it corresponds to the threshold of human hearing. In other words, sounds that exert pressures on the membranes of our ears below this value are not perceived by our ears - colloquially put: the lowest volume we can hear. Thus, when converted to decibels, the values obtained greater than 0 correspond to the pressures that are perceptible to the human ear. As mentioned above, sound level meters have been developed inspired by the human ear. Therefore, the electronic circuits of sound level meters do not register pressures lower than the reference pressure either, so that in practice the dB values will always be higher than 0dB and therefore any dB value will always be a value perceptible to the human ear.

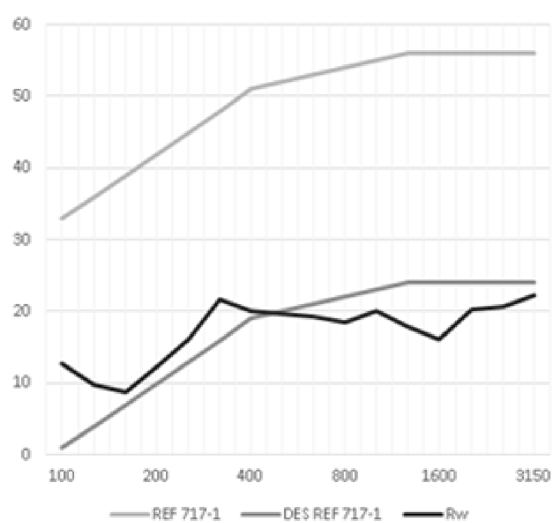
The sound pressure level representing the pain threshold is approximately 135-140dB.

Why are dBs used?

dB is used for two main reasons. The first is that, as explained in detail in the previous section, it allows us to normalise the pressure values so that we only have values of pressures that we can perceive. In addition, the logarithmic scale makes its assimilation easier. For example: If we take the value of the minimum threshold - the aforementioned $2x10^{-5}$P, corresponding to 0dB - and place the maximum at around 140dB, whose pressure is around 200P, we will have a too large range of numbers of pressure in Pascals. That is, the range of pressure values in Pascals is vast, making it unintuitive. Another example: if we have a sound wave that has a pressure of $2x10^{-3}$P, it is intuitively more difficult to establish whether it is a large or small value than if we compare it to its value in dB, which is 60dB.

The second reason why dB is used is related to human perception. Our auditory system does not respond in a linear way to sound stimuli. When our ear hears a pure tone of a certain sound pressure, if this pressure is doubled, the subjective perception does not interpret that the loudness has doubled, but subjectively perceives an increase of a lesser degree. In this way, the perception of the ear is better related to the values of the logarithmic scale.

Finally, we have a graph:



This graph shows the values of the sound reduction index R for the frequencies 100, 125, 160, 200, 250, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500 and 3150 Hz.

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