



ATENA S.p.A. HAS A QUALITY
MANAGEMENT SYSTEM CERTIFICATED
BY RINA IN COMPLIANCE WITH
ISO 9001

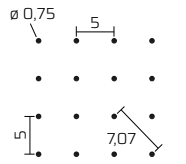
STANDARD AND SPECIAL PERFORATIONS METAL MODULAR & METAL SHAPES RANGE

Atena S.p.A. has a complete range of standard and special perforations to combine with Metal Modular and Metal Shapes tiles.

To overcome design mood and satisfy all requirements Atena S.p.A. has developed a wide range of perforations and produces sublimated perforated tiles equipped with any kind of lighting elements and accessories.

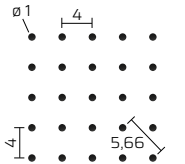
PARALLEL AND QUASAR PERFORATIONS

(*) minimum quantity 300 sqm | (**) material thickness not exceeding 6/10



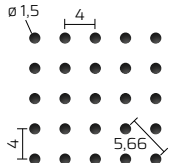
AP 0,75/2% P (*) (*)

Ø 0,75 Parallel
open area 2%
aluminum/steel from 0.5 to 0.6
max coil width 1020 mm
max perforation width 935 mm



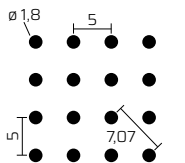
AP 1/5% P

Ø 1 Parallel
open area 5%
aluminum/steel from 0.5 to 0.6
max coil width 830 mm
max perforation width 805 mm



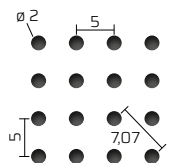
AP 1,5/11% P

Ø 1,5 Parallel
open area 11%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



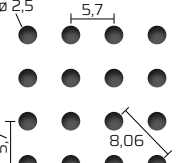
AP 1,8/9,5% P

Ø 1,8 Parallel
open area 9,5%
aluminum/steel da 0.5 a 0.7
max coil width 900 mm
max perforation width 800 mm



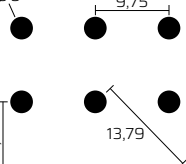
AP 2/12,5% P

Ø 2 Parallel
open area 12,5%
aluminum/steel from 0.5 to 0.7
max coil width 1250 mm
max perforation width 1200 mm



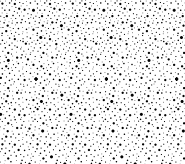
AP 2,5/15% P

Ø 2,5 Parallel
open area 15%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



AP 3/7,5% P

Ø 3 Parallel
open area 7,5%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1000 mm

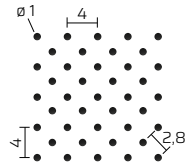


QUASAR

Open area 7%
aluminum/steel from 0.5 to 0.7
max coil width 1000 mm
max perforation width 800 mm

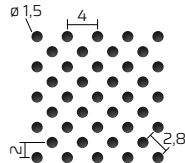
DIAGONAL PERFORATIONS

(**) continuous perforation | (**) suggested thickness 7/10



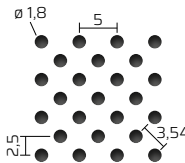
AP 1/10% D

Ø 1 Diagonal (45°)
open area 10%
aluminum/steel from 0.5 to 0.6
max coil width 830 mm
max perforation width 805 mm



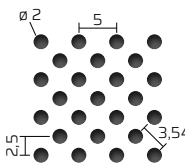
AP 1,5/22% D

Ø 1,5 Diagonal (45°)
open area 22%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



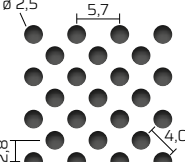
AP 1,8/19% D

Ø 1,8 Diagonal (45°)
open area 19%
aluminum from 0.5 to 0.7
steel from 0.5 to 0.8
max coil width 900 mm
max perforation width 800 mm



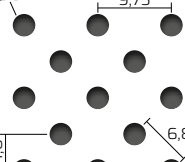
AP 2/25% D

Ø 2 Diagonal (45°)
open area 25%
aluminum from 0.5 to 0.7
steel from 0.5 to 0.8
max coil width 1250 mm
max perforation width 1200 mm



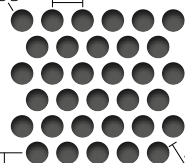
AP 2,5/30% D

Ø 2,5 Diagonal (45°)
open area 30%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



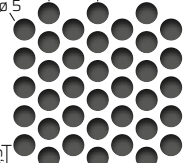
AP 3/15% D

Ø 3 Diagonal (45°)
open area 15%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1000 mm



AP 3/51% D () (**)**

Ø 3 Diagonal (60°)
open area 51%
aluminum/steel from 0.5 to 0.8
max coil width 900 mm
max perforation width 800 mm



AP 5/53% D ()**

Ø 5 Diagonal (30°)
open area 53%
aluminum from 0.5 to 0.8
steel from 0.5 to 1.0
max coil width 900 mm (1100 mm for 1.0)
max perforation width 700 mm (800 mm for 1.0)
scale drawing 1:1,7

MESH PERFORATIONS



R16x8 - A2,5

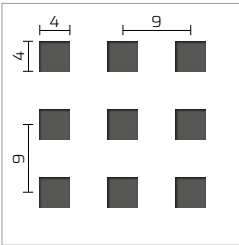
9,23x5,52
open area 42,2%
aluminum/steel from 0.5 to 0.7
max coil width 1020 mm
max perforation width 1007 mm



R25x12,5 - A2

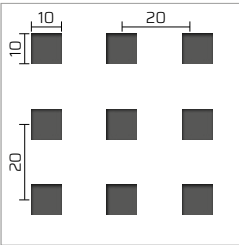
22x9,5
open area 67%
aluminum/steel from 0.5 to 0.7
max coil width 740 mm
max perforation width 662 mm

SQUARE PERFORATIONS



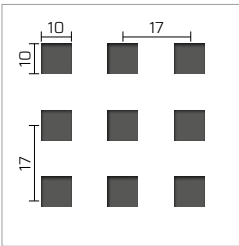
AP Q4/20%P

Q 4x4 parallel
open area 20%
aluminum/steel from 0.5 to 0.7
max coil width 960 mm
max perforation width 815 mm



AP Q10/25%P

Q 10x10 parallel
open area 25%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm
scale drawing 1:2,5



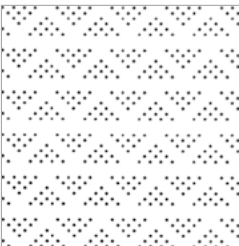
AP Q10/34%P

Q 10x10 parallel
open area 34%
aluminum/steel from 0.5 to 0.7
max coil width 960 mm
max perforation width 809 mm
scale drawing 1:2,5



TISSUE PERFORATIONS

Atena tissue range: continuous perforation only



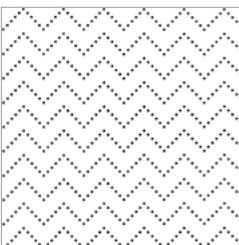
TWEED 1,5/11% D

Ø 1,5 Diagonal (45°)
open area 11%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



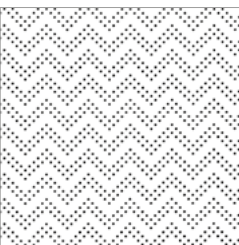
TWEED LARGE 1,5/4% D

Ø 1,5 Diagonal (45°)
open area 4%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



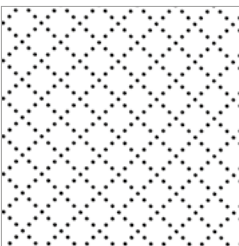
TWEED FINE 1,5/7% D

Ø 1,5 Diagonal (45°)
open area 7%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



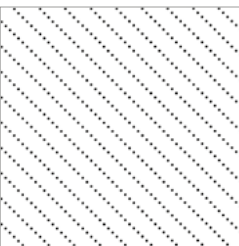
TWEED UNIQUE 1,5/15% D

Ø 1,5 Diagonal (45°)
open area 15%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



PIQUET 1,5/13,5% D

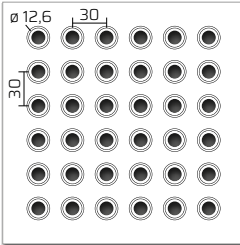
Ø 1,5 Diagonal (45°)
open area 13,5%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm



STRIP 1,5/7% D

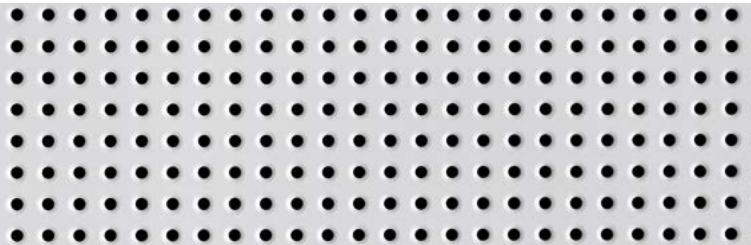
Ø 1,5 Diagonal (45°)
open area 7%
aluminum/steel from 0.5 to 0.7
max coil width 1300 mm
max perforation width 1300 mm

DRAWN HOLES PERFORATION



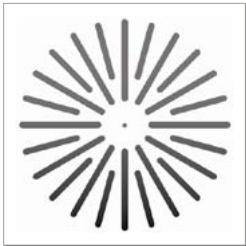
DRAWN HOLES

12,6 Parallel
open area 14%
material and dimension
according to project
requirements.

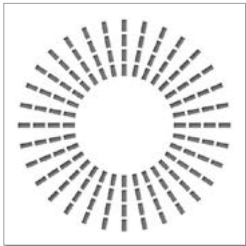


SPECIAL PERFORATIONS

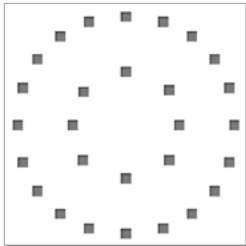
NEW SUN



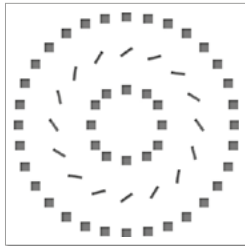
SUN



TIMER



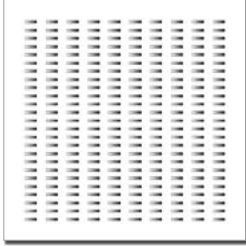
WHEEL



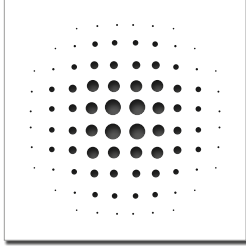
SQUARE ON LINE



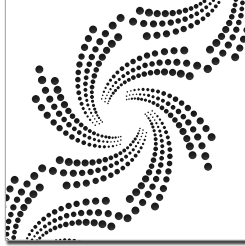
LINE



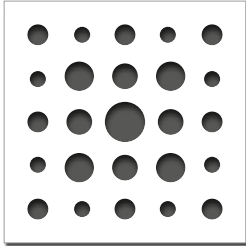
SPHERE



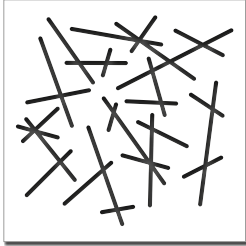
GALAXY



BUBBLES



SHANGHAI



MIRROR



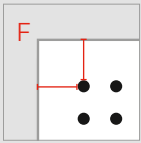
MILKY WAY



CONSULTATION GUIDE

The schedule below reports standard smooth frame per perforation model.
Other measures can be supplied on request.

EXAMPLE
(F) SMOOTH FRAME MEASUREMENTS



TILE	SECTION												
	MODEL		24 LINEAR TEGULAR	15 LINEAR DESIGN (R9)	15 LINEAR DESIGN (S14 S9)	FLAT	PLAN	E. TRIM	E.ESCAPE	ENIGMA E. OPEN E. DOMINO	E. MATROX	E. SPACE	
	BASE		575	585	585	575	575	600	596	600	600	595	
	PERFORATION			SMOOTH FRAME WIDTH									
AP 0,75/2%	P	9,5	4,5	14,5	9,5	12	12	12	12	12	12	12	
AP 1/5%	P	13	6	11,5	13	4,5	7	7	7	7	7	4,5	
AP 1,5/11%	P	13	6	11,5	13	4,5	7	7	7	7	7	4,5	
AP 1,8/9,5%	P	11,5	9	16,5	11,5	6,5	9	9	9	9	9	6,5	
AP 2/12,5%	P	11,5	9	16,5	11,5	6,5	9	9	9	9	9	6,5	
AP 2,5/15%	P	11,5	10,5	16,5	11,5	10	13	13	13	13	13	10	
AP 3/7,5%	P	17,5	13	22,5	17,5	8	10,5	10,5	10,5	10,5	10,5	8	
AP 1/10%	D	11,5	5	10,5	11,5	3,5	6	6	6	6	6	3,5	
AP 1,5/22%	D	11,5	5	10,5	11,5	3,5	6	10	6	6	6	3,5	
AP 1,8/19%	D	10	7,5	15	10	5	7,5	12,5	7,5	7,5	7,5	5	
AP 2/25%	D	10	7,5	15	10	5	7,5	12,5	7,5	7,5	7,5	5	
AP 2,5/30%	D	15,5	9	14,5	15,5	8,5	11	11	11	11	11	8,5	
AP 3/15%	D	15	10,5	20	15	5,5	8	8	8	8	8	5,5	
AP 3/51%	D	ONLY CONTINUOUS PERFORATION											
AP 5/53%	D	NOT AVAILABLE					*	CONTINUOUS PERFORATION					N.A.
AP Q4/20%	P	11	7	16	11	7,5	10	10	10	10	10	7,5	
AP Q10/25%	P	12,5	17,5	17,5	12,5	22,5	25	25	25	25	25	22,5	
AP Q10/34%	P	10,5	15,5	15,5	10,5	20,5	23	23	23	23	23	20,5	

All dimensions are nominal and expressed in millimeters
All technical specification data and information can be changed without advise
For further information please contact sales department
tel. +39 0421 75526 commerciale@atena-it.com



ACOUSTIC PERFORMANCES

Metal Sound^{aw}, **Metal Soft^{aw}**, **Metal Life^{aw}** and **Metal Silence^{dB}**: through a wide range of materials and perforated tiles, Atena false ceilings can be used to achieve the desired **acoustic result**. Atena S.p.A. checked the acoustic performance of its systems in defined circumstances and, since a wide range of solutions is available, many of them have been tested and certified by independent bodies.

The acoustic data reported in this catalogue represent an excellent starting point to **adapt the false ceiling** to the acoustic performance required.

To assist customers in the choice of the proper acoustic solution, **Atena S.p.A. collaborates with specialized departments.**
Ask for a technical advice and choose the best Atena acoustic system.

MODEL	ACOUSTIC FUNCTION	ACOUSTIC PAD	FIRE REACTION	PERFORATION RANGE
METAL SOUND ^{aw}	Absorption	Acoustic tissue	A1 A2s1d0	Metal Modular
METAL SOFT ^{aw}	Absorption	Ecofiber and acoustic tissue	B2s1d0	Metal Modular
METAL LIFE ^{aw}	Absorption	Rockwool	A1	Metal Modular
METAL SILENCE ^{dB}	Absorption	Rockwool and acoustic tissue	A1	Metal Modular

ACOUSTIC ABSORPTION COEFFICIENTS

Data sheet certified report according EN ISO 354

MODEL	PERFORATION	QW	CLASS	NCR	FREQUENCY							
					Hz	125	250	500	1000	2000	4000	
METAL SOUND ^{aw} Insulation: acoustic tissue	AP1,8/19%D	0,75	C	0,60	αw	0,42	0,81	0,78	0,66	0,75	0,77	
	AP1,8/9,5%P	0,75	C	0,59	αw	0,43	0,85	0,87	0,69	0,75	0,77	
	AP1,5/22%D	0,75	C	0,61	αw	0,42	0,82	0,79	0,67	0,74	0,74	
	AP2/12,5%P	0,75	C	0,59	αw	0,45	0,86	0,84	0,69	0,76	0,84	
	AP2,5/30%D	0,70	C	0,60	αw	0,46	0,73	0,64	0,65	0,78	0,68	
METAL SOFT ^{aw} Insulation: pad + viledon	AP1,8/19%D	0,80	B	0,54	αw	0,36	0,63	0,84	0,71	0,77	0,68	
	AP1,8/9,5%P	0,80	B	0,58	αw	0,31	0,60	0,80	0,69	0,81	0,82	
METAL LIFE ^{aw} Insulation: mineral fiber	AP2,5/30%P	0,75	C	0,55	αw	0,77	0,99	1,00	0,81	0,73	0,63	
	AP2,0/25%D	0,75	C	0,55	αw	0,57	0,79	0,87	0,61	0,53	0,43	
	AP1,5/22%D	0,80	B	0,60	αw	0,73	0,96	1,00	0,83	0,77	0,66	
	AP0,75/2%P	0,90	A	0,75	αw	0,54	0,80	0,93	0,77	0,90	0,98	

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tel. +39 0421 75526 commerciale@atena-it.com



All Atena Systems belonging to **Metal Modular**, **Metal Series**, **Metal Baffle** and **Metal Shapes** range, made of perforated metal surface and coupled with specific absorption materials, represent the **right balance** between **sound reflection and absorption**. Available in different models, to be installed both with hidden and visible structures, they are suitable for every type of environment. The Atena Metal Ceiling systems are **easy to install**, and dismount, **can be quickly opened for inspection** and can be completed **integrated** with lighting fixtures and accessories. Alone or combined with Atena islands and acoustic walls, Atena ceilings represent the right choice to manage and solve **sound insulation** problems, ensuring **comfort** and **high acoustic performance**. A simple choice for a really sophisticated result. When everything is laid out correctly, the sound source seems to disappear, the environment itself gives the impression to vibrate and the receiver empower a unique listening experience: this is the effective and brilliant result of a specific design which takes into account all acoustic aspects, including, the physiological mechanisms of perception and the human ear functioning.

METAL SILENCE^{dB} | FOR ACOUSTIC INSULATION

For sound insulation Atena has conceived **Metal Silence^{dB}** a new range of perforated metal **modules with a multilay pad** made up of high density mineral wool and sound absorption black tissue: custom-made products properly conceived to achieve each **levels of sound insulation greater than 42 dB**.



α_w : weighted sound absorption coefficient
 α_p : pratical sound absorption coefficient
Dncw: average of sound attenuation between two rooms

ACOUSTIC STANDARD TEFERENCES

Acoustic Absorption
EN ISO 354 | EN ISO 11654 | EN 12354-6

Sound reduction
EN ISO 140-3 | EN ISO 717-1

In order to provide a proper tool to compare and choose the right perforation Atena S.p.A., in partnership with Vibro-Acoustic office, has carried out a complete analysis of sound absorption in combination with three types of acoustic pad, and has conceived three different products:

- **Metal Sound^{aw}** with acoustic tissue;
- **Metal Soft^{aw}** with ecofiber;
- **Metal Life^{aw}** with rockwool.

Data are reported in the following pages. The acoustic material features have been tested in compliance with **ISO 10534** and certified by an independent laboratory, sound absorption coefficients are calculated using the **ALPHA-CELL[®]** software (TIMM method), one of the most updated system to predict the acoustic performance of multilayer elastic porous material.

This software takes in charge many factors such as the resistance to air, the porosity, the tortuosity and viscosity, the thermal characteristics and permeability of materials.

The aim of this analysis is not only to provide an accurate result, but allows researchers, engineers, technicians and developers to realize appropriate environmental treatments.

The calculation method takes into account different factors that are not treated in the reverberation chamber system, normally used to certificate products according **UNI-ISO 354**.

In reverberation chamber, in fact, α values can be greater than 1, which is an impossible physical condition. This is the proper starting point to choose the right acoustic solution for metal false ceilings.

ALPHA-CELL[®]METHOD

The calculation method (TIMM) used by the software, ALPHA-CELL[®] is based on the calculation models developed by Delany-Bazely (1 parameter), Johnson-Champoux-Allard (5 parameters), Johnson-Champoux-Allard-Pride-Lafage (8 parameters) , Only-Boutin, dual porosity model with micro perforated panels with both round and square holes.

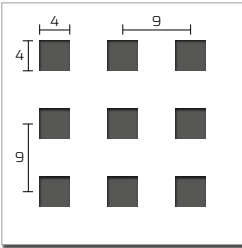


ATENA PERFORATION RANGE



SQUARE PERFORATIONS

AP Q 4 / 20 % P



Q 4x4 par. open area 20%
ALUM./STEEL from 0.5 to 0.7
Max coil width 960 mm
Max perf. width 815 mm

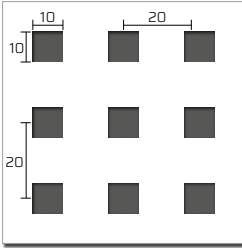


METAL SOUND ^{αw}							CLASS	D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,50	0,60	0,18	0,58	0,76	0,53	0,52	0,29	

METAL SOFT ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,65	0,57	0,17	0,45	0,66	0,53	0,65	0,64	

METAL LIFE ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,70	0,49	0,74	0,86	0,68	0,71	0,67	

AP Q 10 / 25 % P



Q 10x10 par. open area 25%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1300 mm

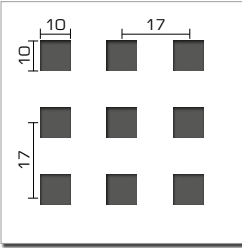
scale drawing 1:2,5

METAL SOUND ^{αw}							CLASS	D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,60	0,64	0,21	0,61	0,79	0,54	0,61	0,48	

METAL SOFT ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,65	0,59	0,19	0,47	0,67	0,54	0,66	0,65	

METAL LIFE ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,71	0,51	0,76	0,87	0,70	0,73	0,67	

AP Q 10 / 34 % P



Q 10x10 par. open area 34%
ALUM./STEEL from 0.5 to 0.7
Max coil width 960 mm
Max perf. width 809 mm

scale drawing 1:2,5

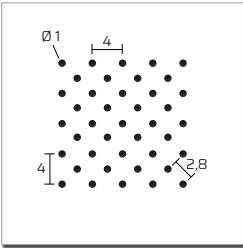
METAL SOUND ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,60	0,64	0,18	0,58	0,76	0,51	0,58	0,45	

METAL SOFT ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,65	0,59	0,17	0,45	0,65	0,52	0,64	0,63	

METAL LIFE ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,71	0,49	0,74	0,85	0,68	0,71	0,65	

DIAGONAL PERFORATIONS

AP 1 / 10 % D



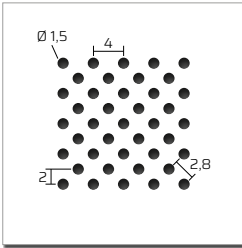
1 Diag. (45°) open area 10%
ALUM./STEEL from 0.5 to 0.6
Max coil width 830 mm
Max perf. width 805 mm

METAL SOUND ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,60	0,39	0,81	0,84	0,66	0,72	0,71	

METAL SOFT ^{αw}							CLASS	A
AlphaW	NRC	125	250	500	1000	2000	4000	
0,90	0,85	0,59	0,85	0,97	0,79	0,82	0,79	

METAL LIFE ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,75	0,74	0,97	1,00	0,84	0,78	0,67	

AP 1,5 / 22 % D



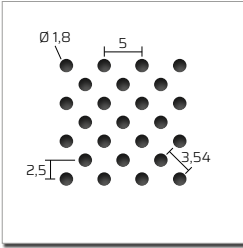
1,5 Diag. (45°) open area 22%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1300 mm

METAL SOUND ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,70	0,70	0,35	0,65	0,85	0,60	0,70	0,70	

METAL SOFT ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,75	0,41	0,67	0,88	0,75	0,79	0,68	

METAL LIFE ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,60	0,73	0,96	1,00	0,83	0,77	0,66	

AP 1,8 / 19 % D



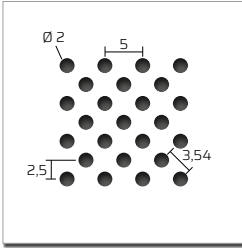
1,8 Diag.(45°) open area 19%
ALUMINUM from 0.5 to 0.8
STEEL from 0.5 to 0.7
Max coil width 900 mm
Max perf. width 800 mm

METAL SOUND ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,75	0,42	0,81	0,78	0,66	0,75	0,77	

METAL SOFT ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,73	0,36	0,63	0,84	0,71	0,77	0,68	

METAL LIFE ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,87	0,68	0,91	1,00	0,80	0,77	0,67	

AP 2 / 25 % D



2 Diag. (45°) open area 25%
ALUMINUM from 0.5 to 0.8
STEEL from 0.5 to 0.7
Max coil width 1250 mm
Max perf. width 1200 mm

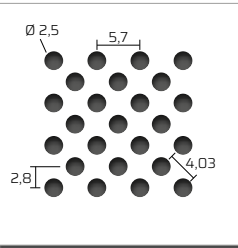
METAL SOUND ^{αw}							CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,70	0,50	0,55	0,65	0,80	0,85	0,90	

METAL SOFT ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,51	0,35	0,62	0,83	0,69	0,72	0,59	

METAL LIFE ^{αw}							CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,55	0,57	0,79	0,87	0,61	0,53	0,43	

(**) continuous perforation
(**) suggested thickness 7/10

AP 2,5/30 % D



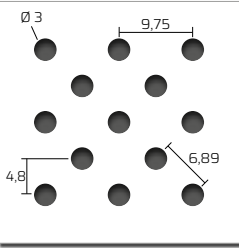
2,5 Diag. (45°) open area 30%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1300 mm

METAL SOUND ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,70	0,60	0,46	0,73	0,64	0,65	0,78	0,68	

METAL SOFT ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,75	0,41	0,67	0,88	0,75	0,79	0,68	

METAL LIFE ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,55	0,77	0,99	1,00	0,81	0,73	0,63	

AP 3/15 % D



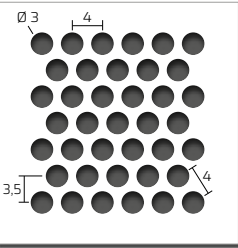
3 Diag. (45°) open area 15%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1000 mm

METAL SOUND ^{αW}				CLASS				D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,55	0,57	0,34	0,70	0,61	0,52	0,64	0,72	

METAL SOFT ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,65	0,56	0,16	0,44	0,64	0,53	0,62	0,58	

METAL LIFE ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,65	0,66	0,44	0,67	0,79	0,60	0,60	0,55	

AP 3/51 % D (**)(**)



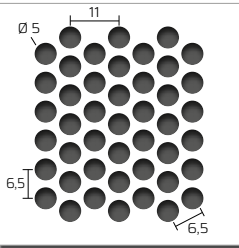
3 Diag. (60°) open area 51%
ALUM./STEEL from 0.5 to 0.8
Max coil width 900 mm
Max perf. width 800 mm

METAL SOUND ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,60	0,57	0,47	0,55	0,50	0,63	0,61	0,63	

METAL SOFT ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,70	0,65	0,64	0,65	0,57	0,71	0,68	0,67	

METAL LIFE ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,55	0,44	0,66	0,84	0,88	0,57	0,48	0,44	

AP 5/53 % D (**)



5 Diag. (30°) open area 53%
ALUMIUNUM from 0.5 to 0.8
STEEL from 0.5 to 1.0
Max coil width 900 mm (1100 mm for 1.0)
Max perforation width 700 mm
(800 mm for 1.0)

scale drawing 1:1,7

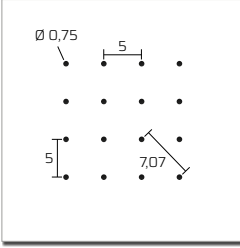
METAL SOUND ^{αW}				CLASS				D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,55	0,50	0,51	0,38	0,39	0,58	0,67	0,72	

METAL SOFT ^{αW}				CLASS				D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,55	0,43	0,24	0,48	0,71	0,49	0,47	0,44	

METAL LIFE ^{αW}				CLASS				D
AlphaW	NRC	125	250	500	1000	2000	4000	
0,55	0,45	0,61	0,79	0,83	0,52	0,45	0,51	

PARALLEL PERFORATIONS

AP 0,75/2 % P (*) (*)



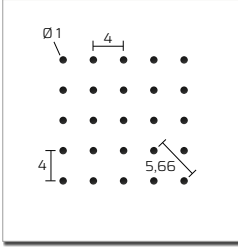
0,75 Par. open area 2%
ALUM./STEEL from 0.5 to 0.6
Max coil width 1020 mm
Max perf. width 935 mm

METAL SOUND ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,60	0,50	0,74	0,89	0,65	0,72	0,71	

METAL SOFT ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,85	0,79	0,50	0,93	0,94	0,84	0,84	0,74	

METAL LIFE ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,90	0,75	0,54	0,80	0,93	0,77	0,90	0,98	

AP 1/5 % P



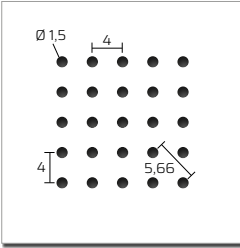
1 Par open area 5%
ALUM./STEEL from 0.5 to 0.6
Max coil width 830 mm
Max perf. width 805 mm

METAL SOUND ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,61	0,33	0,76	0,91	0,66	0,73	0,72	

METAL SOFT ^{αW}				CLASS				A
AlphaW	NRC	125	250	500	1000	2000	4000	
0,90	0,80	0,51	0,95	0,96	0,86	0,86	0,76	

METAL LIFE ^{αW}				CLASS				A
AlphaW	NRC	125	250	500	1000	2000	4000	
0,90	0,87	0,55	0,82	0,95	0,79	0,92	1,00	

AP 1,5/11 % P



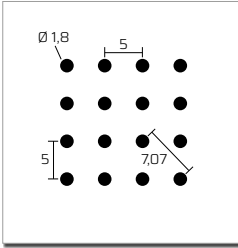
1,5 Par. open area 11%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1300 mm

METAL SOUND ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,59	0,38	0,80	0,83	0,64	0,70	0,70	

METAL SOFT ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,70	0,31	0,60	0,80	0,69	0,80	0,79	

METAL LIFE ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,85	0,69	0,58	0,83	0,95	0,77	0,80	0,77	

AP 1,8/9,5 % P



1,8 Par. open area 9,5%
ALUM./STEEL from 0.5 to 0.7
Max coil width 900 mm
Max perf. width 800 mm

METAL SOUND ^{αW}				CLASS				C
AlphaW	NRC	125	250	500	1000	2000	4000	
0,75	0,59	0,43	0,85	0,87	0,69	0,75	0,77	

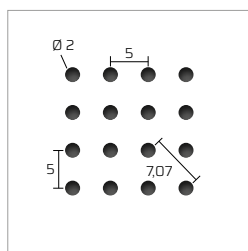
METAL SOFT ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,58	0,31	0,60	0,80	0,69	0,81	0,82	

METAL LIFE ^{αW}				CLASS				B
AlphaW	NRC	125	250	500	1000	2000	4000	
0,80	0,70	0,53	0,78	0,90	0,73	0,78	0,77	

(*) minimum quantity 300 m²

(*) material thickness not exceeding 6/10

AP 2/12,5 % P



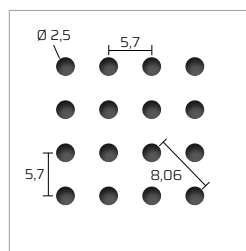
2 Par. open area 12,5%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1250 mm
Max perf. width 1200 mm

METAL SOUND ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,78	0,45	0,86	0,84	0,69	0,76	0,84		

METAL SOFT ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,67	0,26	0,55	0,75	0,63	0,74	0,71		

METAL LIFE ^{αW}								CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000		
0,80	0,77	0,53	0,78	0,89	0,71	0,73	0,69		

AP 2,5/15 % P



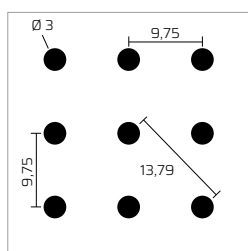
2,5 Par. open area 15%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1300 mm
Max perf. width 1300 mm

METAL SOUND ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,65	0,58	0,33	0,71	0,64	0,54	0,64	0,73		

METAL SOFT ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,48	0,28	0,55	0,71	0,48	0,57	0,55		

METAL LIFE ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,66	0,53	0,77	0,88	0,69	0,69	0,63		

AP 3/7,5 % P



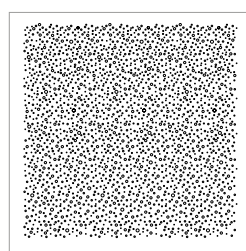
3 Par. open area 7,5%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1250 mm
Max perf. width 1000 mm

METAL SOUND ^{αW}								CLASS	D
AlphaW	NRC	125	250	500	1000	2000	4000		
0,55	0,57	0,23	0,65	0,64	0,47	0,53	0,61		

METAL SOFT ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,65	0,58	0,16	0,46	0,66	0,54	0,68	0,71		

METAL LIFE ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,72	0,44	0,69	0,81	0,65	0,72	0,74		

QUASAR PERFORATION



Open area 7%
ALUM./STEEL from 0.5 to 0.7
Max coil width 1000 mm
Max perf. width 800 mm

METAL SOUND ^{αW}								CLASS	C
AlphaW	NRC	125	250	500	1000	2000	4000		
0,75	0,59	0,37	0,80	0,86	0,66	0,72	0,73		

METAL SOFT ^{αW}								CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000		
0,80	0,65	0,37	0,71	0,85	0,74	0,82	0,78		

METAL LIFE ^{αW}								CLASS	B
AlphaW	NRC	125	250	500	1000	2000	4000		
0,85	0,71	0,55	0,80	0,93	0,76	0,83	0,84		