

EXPERIENCE
MORE +
MINERAL SOLUTIONS



DEFINITION OF TECHNICAL PERFORMANCE ICONS



SOUND ABSORPTION

A single-number rating for random incidence sound absorption coefficients as calculated by reference to EN ISO 11654 (aw) or to ASTM C 423 (NRC).



SOUND ABSORPTION CLASS

A classification for sound absorption (A – E) based upon the sound absorption α_w value.



SOUND REDUCTION

A single-number rating for airborne sound transmission (single pass) as calculated by reference to EN ISO 717-1.



SOUND ATTENUATION

A single-number rating for flanking sound transmission between adjacent rooms, as calculated by reference to EN ISO 717-1 (Dnfw) and/or ASTM E413-10 (CAC).



FIRE REACTION

Reaction to fire classification in accordance with EN 13501-1 expressed as Euroclass (A1 – F). Additionally in accordance with ASTM E84, expressed as Class A and 123-FZ, expressed as KM0 – KM2.



HUMIDITY RESISTANCE

Maximum relative humidity conditions for installation and lifetime of ceiling.



LIGHT REFLECTANCE

Light reflection is the proportion of incident light that is reflected back off the product, when tested in accordance with EN ISO 7724-2 and 3.



LIGHT DIFFUSION

The percentage of reflected light which is diffused.



INDOOR AIR QUALITY

The Eurofins Indoor Air Comfort (Gold) certification ensures that all product-related health criteria on product emissions are sufficiently fulfilled. It is a sign confirming the quality claim of the manufacturer and its contribution to a healthy indoor climate. Mainly VOCs emissions can pose a serious risk, especially to children. Limiting VOC from indoor building products is the subject of many national regulations and voluntary quality labels. A lot of these regulations are covered by IAC(G).



AIR PERMEABILITY

Tested in accordance with DIN 18177, the air permeability rating indicates the cubic metres of air leakage per hour per square metre.



RECYCLED CONTENT

The recycled content of the product, as calculated in accordance with ISO 14021:2016.



ENVIRONMENTAL PRODUCT DECLARATION (EPD)

are independently verified and registered documents that communicate transparent and comparable information about the life-cycle environmental impact of products. Knauf Ceiling Solutions EPDs have been third party certified by IBU (Institut Bauen und Umwelt e.V. (IBU) as conforming to the requirements of ISO 14025.



M1 CLASSIFICATION

The Finnish emission label for building products is one of the leading test labels in the Scandinavian region. M1 is the best category and stands for "low emission". The M1 classification sets requirements for the emission of VOC, formaldehyde, ammonia and other substances.



VOC

The VOC emission performance in accordance with the French labelling requirements.



FORMALDEHYDE (E1)

Formaldehyde emission level (E1 = lowest test result possible).



BLUE ANGEL

The Blue Angel ecolabel is awarded by an independent Jury to environmentally friendly products. Each label specifies that the product meets a list of criteria considering environmental and health-related aspects.

www.blauer-engel.de/uz132



ISO 9001

This icon demonstrates Knauf Ceiling Solutions ability to consistently provide products and services that meet customer and regulatory quality management system requirements.



THERMAL CONDUCTIVITY

Tested in accordance with EN 12667, the thermal conductivity rating measures the rate of heat flow through a material.



EDGE DETAILS

Indicates the different edge details available for the ceiling tile of reference.



THICKNESS

Indicates the thickness for the ceiling tile of reference.



DIMENSIONS

Indicates the sizes available for the ceiling tile of reference.



SYSTEMS

Indicates the suspension systems compatible with the ceiling tile of reference.



WEIGHT

Weight per unit area of the product (kg/m²).



COLOURS

Custom colours available for products with this icon.



ANTIMICROBIAL

Antimicrobial finish on standard mineral tiles and available as a custom option on metal products with this icon.



SCRATCH RESISTANCE

Products with this icon offer a superior level of surface scratch resistance, evaluated with the Hess Rake test.



PRODUCT HANDLING & DURABILITY

Solutions with enhanced durability for improved handling and resistance to damage.

CLEANING AND DISINFECTION

The frequency and cleaning method of a ceiling varies from one application to another. All products can at least be cleaned with a dry cloth or vacuum cleaner.



For standard cleaning of dust, loose dirt or deposits, a soft brush, a clean, dry, soft white cloth, a normal vacuum cleaner with a soft brush or focus compressed air can be used.



For more intensive cleaning, the surfaces can be damp cleaned. This should be carried out with a wrung-out soft cloth or sponge. After cleaning, the surfaces of the tile should be dried with a soft cloth.



Wet cleaning should be carried out with lukewarm water (up to 40°C), using a sponge and mild cleaning agent (with a pH value between 7 and 9), and using medium pressure. After cleaning, the surface should be dried with a soft cloth.



Can be cleaned using a high pressure water spray. After cleaning, the surface should be dried.



Can be cleaned using focus compressed air. The apparatus used should be a cleaner that generates steam under pressure (8 bar and 175°C).



Can be cleaned with specific disinfectants commonly used in healthcare premises. Disinfectants should be used as a spray on wipes.

For detailed information please ask us for the cleaning instructions.

CE MARKING

In Europe, the Construction Products Regulations (305/2011/ EU) defines essential requirements for products (and projects) such that they are safe and fit for their intended use. Harmonized Product Standards respond to these essential requirements and set out what tests must be conducted and how the performance must be communicated. For suspended ceilings the applicable product standard is EN 13964 Suspended Ceilings – Requirements & Test Methods.

The essential requirements identified for suspended ceiling membranes (tiles & baffles) include:

- Reaction to Fire (mandatory)
- Formaldehyde Emissions (mandatory)
- Sound Absorption
- Flexural Tensile Strength / Durability
- Thermal conductivity

It is mandatory to CE Mark products within the scope of EN 13964 and provide a Declaration of Performance in order to place the product on the market.

All Knauf Ceiling Solutions Declarations of Performance can be found on Knauf Ceiling Solutions website.



Classic Fissured/ Perforated

CHOOSE A FISSURED SURFACE FROM THE CLASSIC MINERAL RANGE TO ENJOY ITS UNIQUE COMBINATION OF SUPERIOR SOUND ABSORPTION AND SOUND ATTENUATION FOR IMPROVED INTELLIGIBILITY.



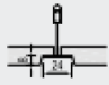
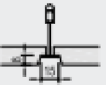


AMF THERMATEX® Star

- AMF THERMATEX Star features fine, uneven perforations with a smooth surface finish, and meets the needs for a modern, elegant design visual
- Good sound absorption (0.60 αw)
- Good sound attenuation (34 dB)
- Excellent light reflectance (88%)
- Ideal for retail, offices and meeting rooms, installation rooms or production areas



AMF THERMATEX® STAR

Edge details Additional edge details on request		Board 	Tegular 24 	Tegular 15 	K2C2 														
Thickness (mm)		15	15	15	15														
Dimensions (mm) Additional sizes on request		600 x 600 625 x 625 1200 x 600 1250 x 625 2500 x 300	600 x 600 625 x 625 1200 x 600	600 x 600 625 x 625 1200 x 600	2000 x 312,5 2500 x 312,5														
System		Exposed demountable - System C Exposed - Bandraster, demountable - System I.3 Exposed - Corridor, demountable - System F.3			Semi-concealed planks, non-demountable - System I.3														
Weight		3.6 - 3.8 kg / m²																	
Colour		White																	
Sound absorption		EN ISO 354 α_w = 0.60 as per EN ISO 11654 - Class C <table><tr><td>Frequency f (Hz)</td><td>125</td><td>250</td><td>500</td><td>1000</td><td>2000</td><td>4000</td></tr><tr><td>α_p</td><td>0.45</td><td>0.50</td><td>0.55</td><td>0.70</td><td>0.65</td><td>0.50</td></tr></table> NRC = 0.60 as per ASTM C 423				Frequency f (Hz)	125	250	500	1000	2000	4000	α_p	0.45	0.50	0.55	0.70	0.65	0.50
Frequency f (Hz)	125	250	500	1000	2000	4000													
α_p	0.45	0.50	0.55	0.70	0.65	0.50													
Sound attenuation		EN ISO 10848-2 $D_{n,t,w}$ = 34 dB as per EN ISO 717-1 CAC = 35 dB as per ASTM E 413-10																	
Sound reduction		EN ISO 10140-2 R_w = 21 dB as per EN ISO 717-1																	
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84 RUS KM1 (G1, V1, D1, T1) as per 123-FZ																	
Light reflectance		88%																	
Thermal conductivity		λ = 0.060 W/mk as per EN 12667																	
Humidity resistance		95% RH																	
Indoor air quality		 A+	 E1	 IACG															
Cleanability																			
Sustainability		 EN ISO 14021 37-48%	 EPD EN ISO 14025	 BIOBUILD WOOD BY SUSTAINABLE WOODS															

ACOUSTIC TECHNICAL GLOSSARY

WEIGHTED SOUND ABSORPTION COEFFICIENT, a_w

A single-number rating for random incidence sound absorption coefficients calculated by reference to EN ISO 11654. With this method measured values obtained in accordance with EN ISO 354, are converted into octave bands at 250, 500, 1000, 2000 and 4000 Hz and are plotted onto a graph. A standard reference curve is then shifted towards the measured values in steps of 0.05 until a “best fit” is obtained. The derived value of a_w will vary between 0.00 and 1.00 but is only expressed in multiples of 0.05, e.g. $a_w = 0.65$.

SHAPE INDICATOR

With reference to EN ISO 11654, the calculated value of w may be qualified by one or max. two letters (in brackets) to indicate if the product has excess sound absorption at low (L), medium (M) or high (H) frequencies.

SOUND ABSORPTION CLASS

With reference to EN ISO 11654, the calculated value of w may additionally be allocated into one of six descriptive classes in accordance with the following table:

Sound Absorption Class	a_w
A	0.90; 0.95; 1.00
B	0.80; 0.85
C	0.60; 0.65; 0.70; 0.75
D	0.30; 0.35; 0.40; 0.45; 0.50; 0.55
E	0.15; 0.20; 0.25
Not Classified	0.00; 0.05; 0.10

WEIGHTED SUSPENDED CEILING NORMALISED LEVEL DIFFERENCE, D_{ncw}

A single-number rating of the laboratory measurement of room-to-room (horizontal) airborne sound insulation of a suspended ceiling above adjacent rooms sharing a common ceiling plenum. It is determined in accordance with EN ISO 717-1 from measurements made in accordance with EN 20140-9. Note: EN 20149-9 has now been withdrawn and superseded by EN ISO 10848-2 (see D_{nfw}), although D_{ncw} test results still continue to be valid.

WEIGHTED SUSPENDED CEILING NORMALISED FLANKING LEVEL DIFFERENCE, D_{nfw}

A single-number rating of the laboratory measurement of room-to-room (horizontal) airborne flanking sound transmission of a suspended ceiling above adjacent rooms sharing a common ceiling plenum. It is determined in accordance with EN ISO 717-1 from measurements made in accordance with EN ISO 10848-2. This has now superseded EN 20149-9. (see D_{ncw}).

WEIGHTED SOUND REDUCTION INDEX, R_w

A single-number rating of the laboratory measurement of (vertical) airborne sound reduction of a suspended ceiling. It is determined by reference to EN ISO 717-1 from measurements of sound reduction index made in accordance with EN ISO 140-3.

RAIN NOISE SOUND INTENSITY LEVEL, L

The laboratory measurement of the sound intensity in a room below a roof construction when subjected to rainfall. It is determined by reference to EN ISO 140-18:2006 – Laboratory measurement of sound generated by rainfall on building elements. The roof's performance can be tested with or without a suspended ceiling beneath. The intensity of the rainfall tested can be selected from the options given in the standard. A combined A-weighted single-number (LIA) can also be determined. Unlike Dnfw and Rw data, where the higher the value the better the insulation provided, the lower the intensity value (weighted LIA) the better the insulation performance of the ceiling and roof combination.

EQUIVALENT ABSORPTION AREA (EAA)

The equivalent absorption is a measure of the total sound absorption by discrete objects (canopies, screens, furniture etc) when installed in an architectural space. Because these types of absorbers have more than one surface and may be irregular in form, it is not meaningful to assign sound absorption coefficients to them. Hence the Equivalent Absorption Area per unit (measured in Sabines) is preferred to characterise the absorption provided by an individual 'space absorber'.

SOUND REDUCTION

A term used in relation to the vertical transmission of sound through a suspended ceiling.

SOUND ATTENUATION

A term used in relation to the horizontal transmission of sound through a suspended ceiling above adjacent rooms sharing a common ceiling plenum.

NOISE REDUCTION COEFFICIENT, NRC

A single-number descriptor of random incidence sound absorption coefficients. Defined in ASTM C423 as the arithmetical average, to the nearest multiple of 0.05, of the measured sound absorption coefficients for the four one-third octave band centre frequencies of 250, 500, 1,000 and 2,000 Hz.

STRUCTURAL FIRE PROTECTION

Throughout Europe, there is a requirement for a building's structure to be protected from fire. This is primarily for the structure to remain stable during a fire to allow the occupants to escape and also to enable fire fighters to work without threat of the building's collapse. The duration of the required protection will usually depend upon the height of, and location within, the building (*i.e.* typical floor, basement, roof construction etc), whether there is any active methods of fire protection (sprinklers etc.) and the type of construction to be protected (steel beams, timber or mezzanine floors etc). In the case of structural fire protection, the suspended ceiling is classified together with the soffit and the complete construction.

Knauf Ceiling Solutions ceilings achieve building component classifications of REI30 to REI120, depending on the type of soffit. Regular fire testing is carried out to ensure the highest up to date system quality and built in safety for our customers.

INDEPENDENT FIRE RESISTANCE

Independent fire rated ceilings provide fire protection both from above (ceiling void) as well as from the underside of the ceiling. Fittings, such as lighting, loudspeakers and signage etc. as well as the connection to light-weight partition systems, bulkheads etc. are tested and classified as well.

In case of a fire in the ceiling void (incidentally, the most common fire source) the underlying escape routes are protected by AMF THERMATEx® Uno fire rated ceiling for 30 minutes.

Fire resistant certificates such as the German abP- certificates are available on request.

BUILDING REGULATIONS

Fire reaction performance for suspended ceilings is shown using the Euroclass fire reaction classification. Most Knauf Ceiling Solutions products are reaching A2-s1,d0 acc. to EN 13501-1.