

# RELMAT LAMINATE FLOORING

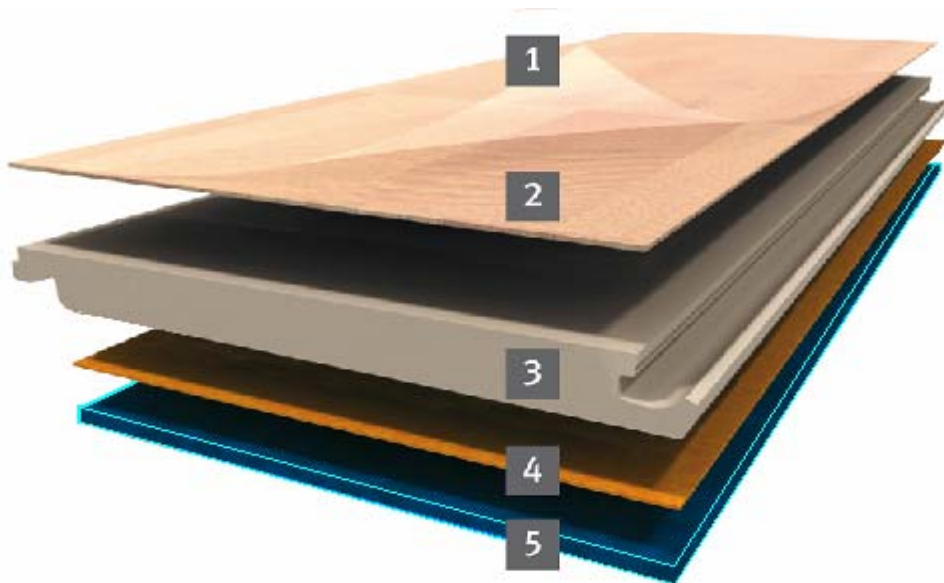
## MELITI LINE

### TECHNICAL SPECIFICATIONS

#### 1. Product Information

Laminate floors are industrially manufactured floor coverings, made through a procedure of pressing a core board together with a resin-impregnated overlay and décor paper, thus forming a long-lasting and robust flooring product.

Silence floors of Meliti Line are differentiated from the simple laminate floors, due to the extra layer of recyclable cellulose underlay that is industrially pasted at the bottom of the strip. This extra underlay amends the noise that comes when walking on laminate floors, thus making it sound more like walking on wooden floor. Also, it distinctly improves comfort underfoot. The unique dimensions and the 4 side V-grooves that provide the look of real wood, render these floors really exceptional for your area!



- 1 Resilient, highly abrasion-resistant overlay
- 2 Melamine resin impregnated decor paper
- 3 Special HDF-coreboard made from natural wood fibres
- 4 Balancer
- 5 Underlay (Silence System)

## 2. Classification Overview & Requirements

European Standard **EN 13329**, specifies characteristics, states requirements and gives test methods for Laminate Floors. All Laminate floors shall conform to the general requirements given in the below table.

Characteristic (Test method)	Requirement
<b>Thickness of the element</b> $t$ <i>EN 13329, Annex A</i>	$\Delta t_{average} \leq 0,50\text{mm}$ (relative to nominal value) $t_{max} - t_{min} \leq 0,50\text{mm}$
<b>Length of the surface layer</b> $l$ <i>EN 13329, Annex A</i>	<b>For the nominal values given, no measured value shall exceed</b> $l \leq 1500\text{mm}: \Delta l \leq 0,50\text{mm}$ $l > 1500\text{mm}: \Delta l \leq 0,30\text{mm/m}$
<b>Width of the surface layer</b> $w$ <i>EN 13329, Annex A</i>	$\Delta w_{average} \leq 0,10\text{mm}$ (relative to nominal value) $w_{max} - w_{min} \leq 0,20\text{mm}$
<b>Length and width of squared elements</b> $l=w$ <i>EN 13329, Annex A</i>	$\Delta l_{average} \leq 0,10\text{mm}$ (relative to nominal value) $\Delta w_{average} \leq 0,10\text{mm}$ (relative to nominal value) $l_{max} - l_{min} \leq 0,20\text{mm}$ $w_{max} - w_{min} \leq 0,20\text{mm}$
<b>Squareness of the element</b> $q$ <i>EN 13329, Annex A</i>	$q_{max} \leq 0,20\text{mm}$
<b>Straightness of the surface layer</b> $s$ <i>EN 13329, Annex A</i>	$s_{max} \leq 0,30\text{mm/m}$
<b>Flatness length and width of the element,</b> $f$ (Maximum single values) <i>EN 13329, Annex A</i>	$f w_{conconcave} < 0.15\%$ $f w_{convex} < 0.20\%$
	$f l_{conconcave} < 0.50\%$ $f l_{convex} < 1.00\%$
<b>Openings between elements</b> $o$ <i>EN 13329, Annex B</i>	$o_{average} \leq 0,15\text{mm}$ $o_{max} \leq 0,20\text{mm}$
<b>Height difference between elements</b> $h$ <i>EN 13329, Annex B</i>	$h_{average} \leq 0,10\text{mm}$ $h_{max} \leq 0,15\text{mm}$
<b>Dimensional variations after changes in the relative humidity</b> $\delta l - \delta w$ <i>EN 13329, Annex C</i>	$\delta l_{average} \leq 0,90\text{mm}$ $\delta w_{average} \leq 0,90\text{mm}$
<b>Surface Soundness</b> <i>EN 13329, Annex D</i>	$\geq 1,0 \text{ N/mm}^2$

European Standard **EN 13329**, also includes a classification system, giving practical requirements for areas of use and levels of use, to indicate where the Laminate floor will give satisfactory service and to encourage the consumer to make an informed choice. Laminate floor is considered for domestic and commercial levels of use. This standard does not specify requirements relating to areas which are subjected to frequent wetting, such as bathrooms, laundry rooms or saunas, but it does apply to domestic kitchens.

The different classifications into classes 21 to 23 and 31 to 33 make it easier for the consumers to decide on the most suitable product, for different application areas.

Class of Use	Symbol	Description	Application
<b>DOMESTIC - Moderate</b>		Temporary Use	Bedrooms, guest rooms
<b>DOMESTIC - Medium</b>		Normal Use	Living rooms, dining rooms, hall ways / living area
<b>DOMESTIC - Heavy</b>		Intensive, Increased Use	Entrance areas, kitchens and complete living area
<b>COMMERCIAL - Moderate</b>		Temporary Use	Hotel rooms, conference rooms, small offices
<b>COMMERCIAL - Medium</b>		Normal Use	Offices, waiting rooms, boutiques
<b>COMMERCIAL - Heavy</b>		Intensive, Increased Use	Open-plan offices, stores, multi-purpose halls

In order to be classified into a certain class, the Laminate floor has to meet different laboratory- technical test requirement. These requirements are listed in the following table and are the **minimum specification values of the new European Norm for laminate floor coverings**.

		Domestic			Commercial		
		Moderate	Medium	Heavy	Moderate	Medium	Heavy
Class		21	22	23	31	32	33
Marks							
<b>EN 13329</b>	Abrasion Resistance	<b>AC1</b>	<b>AC2</b>	<b>AC3</b>		<b>AC4</b>	<b>AC5</b>
<b>EN 13329</b>	Impact Resistance	<b>IC1</b>				<b>IC2</b>	<b>IC3</b>
<b>EN 438</b>	Resistance to staining	<b>Level 4</b> <b>Level 3</b>	<b>Level 5</b> <b>Level 4</b>				
<b>EN 438</b>	Resistance to cigarettes burns	-	<b>4</b>				
<b>EN 424</b>	Effect of furniture leg	-	<b>No damage shall be visible, when tested with Type 0 artefact</b>				
<b>EN 425</b>	Effect of Castor chair	-	<b>No visible change</b>				
<b>EN 13329</b>	Thickness Swelling	<b>≤ 20,0%</b>			<b>≤ 18,0%</b>		

### 3. Meliti Line Technical Specifications

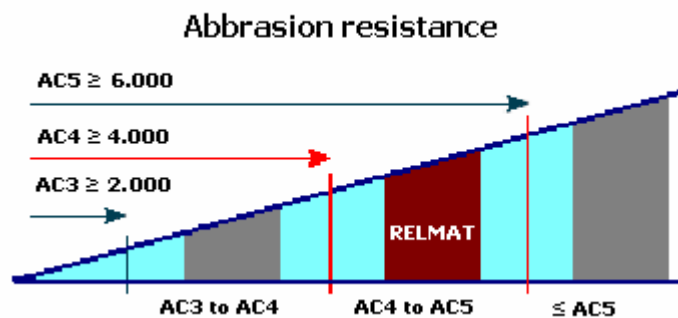
As it is appeared on the Classification Requirements table, the differences in categorizing from 23 to 33 are more or less restricted to abrasion and shock resistance.

#### The difference in Abrasion resistance

Abrasion class	AC3	AC4	AC5
Normative requirement	≥ 2000	≥ 4000	≥ 6000

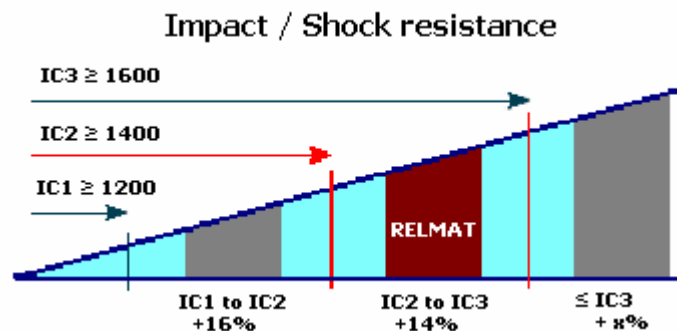
This means that all products which have an abrasion of 2.000 to 4.000 are in class AC 3. Thus the difference between the minimum requirements to the "leap" into the next class is 2.000 revolutions.

Meliti Line from RELMAT is in the medium to the upper area within the classifications and therefore ensures a consistent, high quality. Therefore the guarantee does not exclude the edges of the elements.



#### The difference in Impact / Shock resistance

The differences in impact/ shock resistance are similar to what has been described above. The graph below shows the results of an impact test, highlighting the different categories.



#### 4. Meliti Line Tolerances / Requirements according to EN 13329

Characteristic	EN 13329 Test method	Unit	Meliti Line
<b>Thickness of element (<i>t</i>)</b>	<b>Annex A</b>		
Thickness		mm	± 0,50
Underlay Thickness		mm	± 0,20
Complete Thickness		mm	± 0,70
<b>Length of the surface layer (<i>l</i>)</b>	<b>Annex A</b>		
Length		mm	± 0,20
<b>Width of the surface layer (<i>w</i>)</b>	<b>Annex A</b>		
Width		mm	± 0,10
<b>Length and width of squared element</b>	<b>Annex A</b>		
Length		mm	≤ 0,20 ( $l_{max} - l_{min}$ )
Width		mm	≤ 0,20 ( $w_{max} - w_{min}$ )
<b>Squareness of the element (<i>q</i>)</b>	<b>Annex A</b>		
Squareness		mm	< 0,20
<b>Straightness of the element (<i>s</i>)</b>	<b>Annex A</b>		
Straightness		mm/m	< 0,30
<b>Flatness of the element (<i>f</i>)</b>	<b>Annex A</b>		
$f_w$ concave		%	< 0.15
$f_w$ convex		%	< 0.20
$f_l$ concave		%	< 0.50
$f_l$ convex		%	< 1.00
<b>Openings between the element (<i>o</i>)</b>	<b>Annex B</b>		
Openings		mm	≤ 0,20
<b>Height difference between elements (<i>h</i>)</b>	<b>Annex B</b>		
Height difference		mm	average ≤ 0,10 single value ≤ 0,15 acceptable
<b>Dimensional variations after changes in relative humidity</b>	<b>Annex C</b>		
Variations		mm	≤ 0,90 ( $\delta l_{average}$ and $\delta w_{average}$ )
<b>Surface soundness</b>	<b>Annex D</b>		
Surface soundness		N/mm <sup>2</sup>	≥ 1,4

Characteristics	Symbol	Test Method	Meliti Line
Class		EN 13329	32
Abrasion Resistance		EN 13329	AC 4
Impact Resistance Small ball (N) Big ball (mm)		EN 13329	IC 2 ≥15N / ≥1000mm ≥12N / ≥1400mm
Resistance to stains		EN 438	Level 5 (Group 1*+2*) Level 4 (Group 3*)
Slip Resistance		EN 13893	$\mu > 0,43$
Cigarette burn Resistance		EN 438	Level 4**
Reaction to fire		EN ISO 11925-2	Cfl
Formaldéhyde émission		EN 717	E1
Effet of a furniture leg		EN 424	No visible damage
Effect of a castor chair		EN 425	No visible damage
Thickness Swelling		EN 13329	≤ 18%
Thermal Conductivity		EN 12667	0,07 m <sup>2</sup> K/W <b>Installation ONLY on hot water systems</b>
Static Indentation with a straight steel cylinder Ø 11,30mm		EN 433	< 0,01
Guarantee In Domestic Area			20 years
Guarantee In Commercial Area			5 years

\* The EN 438-2:2005 describes which substances the flooring has to resist to in order to be classified in the certain groups

- Group 1 (duration of impingement, 16h): toothpaste, crème (for hands), urine, alcoholic beverages, juice, lemonades, meat, sausages, greases and oils, water, salt, soap etc
- Group 2 (duration of impingement, 16h): coffee (80 °C), black tea (80 °C), milk (80 °C), coke, vinegar, nail varnish, lipstick, water based colors, water resistant ink, ball pen ink etc
- Group 3 (duration of impingement, 10m): shoe polish, hair coloring and bleaching agents, boric acid, lacquers, adhesives, etc

\*\* According to the EN 438-2 the rating scale is 1 to 5, were; 5: states that there are no visible changes, 4: Slight change of gloss visible at certain viewing angles and/or slight brown stain, 3: Moderate change of gloss and/or moderate brown stain, 2: Severe brown mark, but no destruction of the surface, 1: Blistering and/or cracks.

## Underlay Characteristics

Characteristic	Unit	Meliti Line
<b>Quality Description</b>		<b>Silence Plus 2.5mm</b>
<b>Composite</b>		<b>Natural Cellulose</b>
<b>Type</b>		<b>Direct coated under the floorboard</b>
<b>Thickness of material without floorboard</b>		
Thickness	mm	2,5 ± 0,20
<b>Length of Silence layer</b>		
Length	mm	1285,0 ± 2,00
<b>Width of Silence layer</b>		
Width	mm	128,0 ± 2,0
<b>Weight</b>		
Weight of surface per m <sup>2</sup>	kg	1,1
<b>Subsonic noise with floorboard</b>		
Improvement of Impact noise	dB	18
<b>Ambience with floorboard</b>		
Improvement of audible echoes	dB	14
<b>Waste disposal</b>		
Recycling		Recyclable
Waste disposal		Incinerator / dump

*Remark on the acoustic noise:*

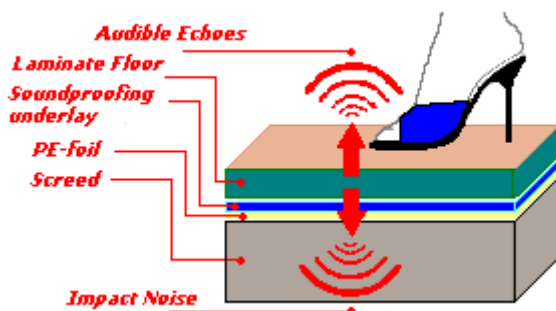
*According to the specialists a bisection of the subjective noise level can be achieved due to the reduction of the above mentioned characteristics.*

*These characteristics refer to the improvement of ambience and the displacement of frequency.*

When consumers refer to noise, they often mix up the terms of audible echoes and impact noise.

**Audible echoes:** These are noises caused by every day use such as foot traffic within the room

**Impact noise:** This is an acoustic noise which is transmitted through creeds, ceilings and walls.  
 Impact noise is therefore audible in adjoining rooms of floors below.

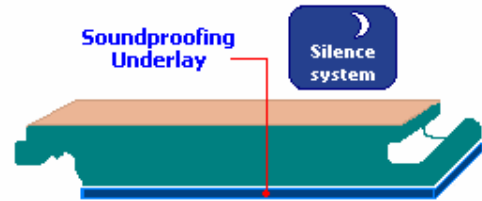




New concept

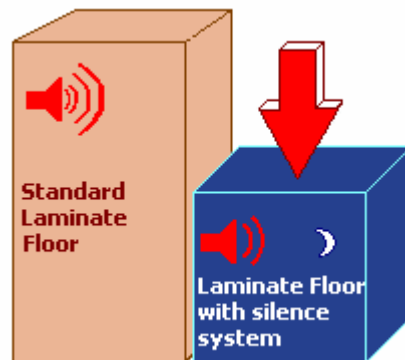


The soundproofing underlay is attached to the panel in such way that it will not come apart, even after some time of use. However, when disposing of the floor the soundproofing underlay can easily be separated from the flooring making it possible to recycle this part.



With the 2.5mm thickness special cellulose underlay silence system; Meliti Line provides noticeable reduced footstep and ambient noise and also distinctly improves comfort underfoot.

Meliti Line floor with the silence system, impact noise can be reduced by up to 18dB. The reduction of audible noise is, according to the measuring method developed by WKI, 14dB with the silence system compared to an equivalent floor without silence system installed on a PE foam. Experts in sonics say that with a reduction of 10dB, audible echoes are reduced by almost half.



In future, audible echo results will not be indicated with the known units of dB and Hertz. The new unit of measure for audible echoes is called sone. This new measuring method only records those noise ranges, which are perceptible to the human ear.

At present the EPLF elaborates a new standard to show sound classes. One can indicate the introduction of a classification for sound similar to the one of abrasion classes within the next few years.

However, the question remains as whether or not the consumer even understands the meanings of terms such as sone, dB and Hertz. It was all the above important for RELMAT SA, to introduce a product which adjusts to its model of wood also in terms of sound. Thus, Meliti Line from RELMAT does not only look like wood floors, but also sounds like wooden floors when you walk on it thanks to the silence system 2.5mm thickness.



New concept



## 5. CE 14041:2004

The CE Marking guarantees that the product properties correspond to the requirements set by the European Union.

Meliti Line from RELMAT, carries the CE sign, which guarantees that the product properties correspond to the requirements HEALTH, SAFETY and ENERGY SAVING



### HEALTH

#### PCP test (pentachlorophenol)

Requirement	Meliti Line
PCP may not be contained This applies when the percentage by mass is <0.1%	<b>Do not contain PCP (percentage by mass 0.0%)</b>

*This means that the consumer is not put at any risk concerning PCP release.*

#### FORMALDEHYDE test

Requirement	Meliti Line
E1 – This means that the max formaldehyde release permitted is 0.1ppm	<b>Have E1- with formaldehyde release of 0.01ppm and thus reach only 1/10 of the permissible limiting value</b>

*The formaldehyde release of Meliti Line corresponds to the formaldehyde release of grown wood.*

### SAFETY

#### REACTION TO FIRE test

Requirement	Meliti Line
Laminate floors thicker than 6.5mm are automatically classified into fire class E <sub>f</sub> (Normal flammability)	<b>Are categorized as fire class C<sub>f</sub> (Low flammability)</b>

*Thus the consumer knows that the spread of fire and development of smoke is minimized in case of fire.*

#### SLIPPAGE RESISTANCE test

Requirement	Meliti Line
Coefficient of sliding friction > 0,30	<b>All Meliti Line surfaces have a coefficient of sliding friction of &gt; 0,43 – this is greater than required by 44%</b>

*Thus the consumer knows that it is safe to walk on the floor and the risk of slipping is small.*

Extremely caution must be given to the EN14041:2004 and especially in Annex C. The information given in this annex is aimed at raising the awareness of the problem of slips and falls and resultant injuries. However, in giving advice on how to help reduce some of the major contributors to such accidents, it can only provide guidance rather than an absolute guarantee

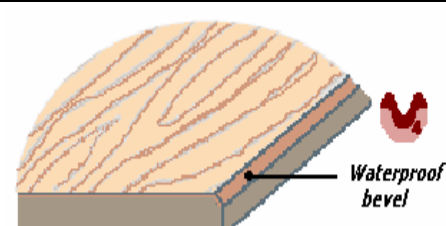
## ENERGY SAVING

### THERMAL RESISTANCE test FOR THE SUITABILITY AS UNDERFLOOR HEATING

Requirement	Meliti Line
Thermal resistance < 0,15 m <sup>2</sup> K/W	<b>Meliti Line has a thermal resistance of &lt; 0,07 m<sup>2</sup>K/W – less than half of the allowed maximum value</b>

*Thus the consumer knows that: the less resistance, the less energy needs to be spent. This saves heating costs.*

## 6. Dimensions – Packing Info

Characteristic	Unit	Meliti Line
<b>Core layer</b>		HDF core layer swell stop plus
<b>Type</b>		Plank
<b>Thickness of element</b>		
Thickness	mm	10,5 (8,0 + 2,5mm Silence system) ± 0,70
<b>Length of the surface</b>		
Length	mm	1292,0 ± 0,20
<b>Width of the surface</b>		
Width	mm	134,0 ± 0,10
<b>Panel per parcel</b>		
Number of pieces	pieces	6
<b>Weight</b>		
Per parcel	kg	7,98
<b>Surface per parcel</b>		
Surface	m <sup>2</sup>	1,0388
<b>Parcel per pallet</b>		
Number of parcels	parcels	75
<b>Weight per pallet</b>		
Approximately	kg	592
<b>Surface per pallet</b>		
Surface	m <sup>2</sup>	77,9076
<b>Edges</b>		
4 Side Micro Bevel	<p><i>The lacquered bevel creates the appearance of a shadow groove. The lacquer used is water-resistant when cured and has a smooth surface</i></p>	 <p>Waterproof bevel</p>

## 7. Meliti Line Properties



### HYGIENE

One of the most Hygienic solutions - no firmly sticking dirt, no stains which can not be removed, no formation of bacteria on the floor



### SHOCK RESISTANCE

Guaranteed no damage - Even if something falls on it - we vouch for a timeless beautiful floor with our shock resistance guarantee



### APPEARANCE

Brilliant beauty - The unique decors with their beautiful and noble appearances even surpass their natural originals. Exotic decors, rustic floor appearance or natural pore - diversity for every need



### LONGEVITY

Guaranteed long lasting beautiful floors. The extremely hard surface of the floor provides for long-lasting beautiful decor surfaces and edges. We ensure this with the abrasion results. That does not exclude edges



### LIGHT-FASTNESS

UV light fast. Even after years of exposure to light, your floor will remain as new: No fading, No stains, No shading



### SWELLING

Robust to moisture- The specially developed swell barrier coreboard makes your floor resistant to ingress of moisture. Even if a mishap does occur your floor will remain as new



### ANTISTATIC

The antistatic feature prevents electrostatic charges from building up



### ECOLOGICAL COMPONENT

Environmental conscious. The Laminate floor consists of over 90% wood. The wood used is residual wood from sustainable managed forest enterprises. We protect nature and the rain forest



### SILENCE

Softer sounds - The specially developed Silence sound proofing underlay makes an audible difference: an appealing warm sound - Just like a wooden floor



PATENTED  
 Just clic

### CLIC TECHNOLOGY

Easy and quick - No special tools and knowledge required  
 Quickly installed