

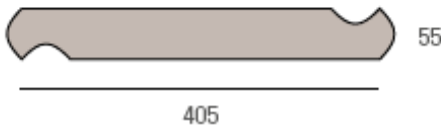
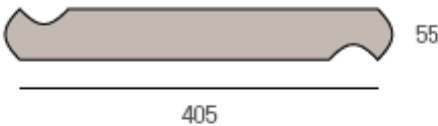
NATURAL GENIUS

BISCUIT N°1

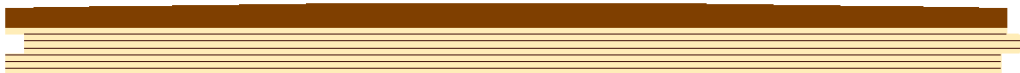
Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.
High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

SPECIFICATIONS

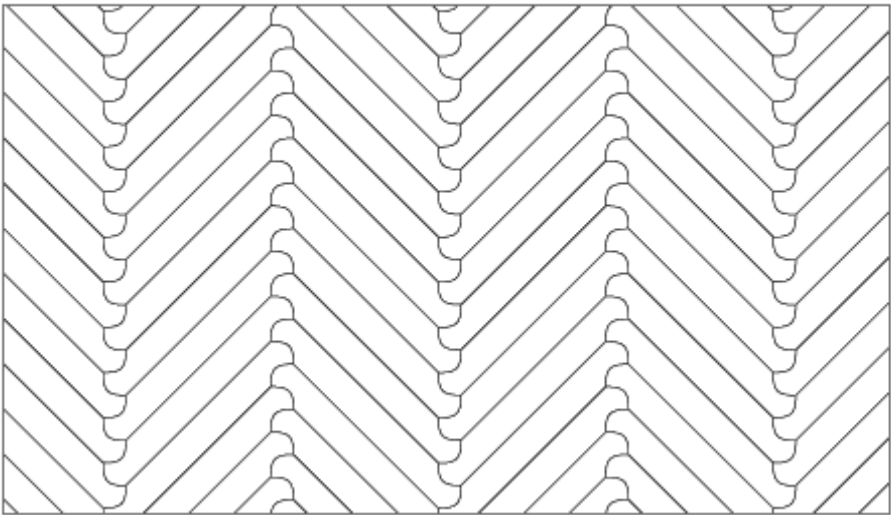
MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
1	55 mm	405 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only



board section



INSTALLATION PATTERNS



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING	Conforms to the requirements of the <i>class D4 of the UNI EN 204 regulation</i> Conforms to the requirements of the <i>JAS type II norm (Japanese Agricultural Standard)</i> (cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)
PROFILE	Interlocking tongues and grooves on all the sides. Bevelled on all the sides. Slight bombe effect of the superficial section of the plank

WOOD SPECIE

WOOD SPECIES	NATURAL VEGETATION AREA	HARDNESS
Oak	European forests	high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

OLEONATURE

Air-dried natural oils-based finish. The oils-based finish incorporates colour pigments in some products. Before finishing is applied, some wood species undergo a brushing treatment, to remove the soft parts, highlighting the wood pores and fibres. Thanks to the industrially applied final protective coating, the Oleonature finish ensures easy maintenance compared to other oil finishes and better resistance against household liquids' penetration.

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept, for instance, in the boxes for a longtime or not being exposed to light and air. It's an utterly natural and transitory phenomenon.

This effect is reversible within a few days and the wood can restore its original appearance, once the boards are exposed to air and direct sunlight whilst in an environment with artificial light it may take up to few weeks.

Wood is a natural material, therefore colour tone and absorption of the finish may vary from one board to the other, or even in the same board according to the variation of its fibre. These colour tone variation is visible even after the application of colour pigments proving the authenticity and the uniqueness of each board.

To verify the combination of the various colours and finishes, consult the current Price list.

GRADE

FIBRAMIX

Mixed grain, possible small knots in some wood boards.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed.

Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.
- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Puliplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C.**

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM.**

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m ² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidisation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advise to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/
Oleonature	Green	Revivo	/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

REVIVO

(Natural oil-wax product to nourish and protect Oleonature wood floors)

Revivo Listone Giordano® is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Revivo Listone Giordano® at temperatures above +15°C.

Shake very well.

Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Revivo Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	Permitted if: Diameter < 12 mm
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

During the production and quality control processes all the above dimensions and characteristics are optically estimated from skilled operators, without using any measurement device.

For this reason allowance are permitted in the above dimensional data.

CERTIFICATIONS



BIOSPHERA

Biosphera is a marking system based upon Listone Giordano's green procurement policy to provide consumers with brief, clear and useful information on the origin of raw materials. Many products of the collection Listone Giordano® Classica offer both in their top layer and in their support the *Biosphera certified* mark that identifies raw materials whose forestry management is certified according to recognized standards at the international level (FSC, PEFC, SFI, OLB, LEI, etc.) or the *Biosphera controlled* mark that identifies raw materials whose legal sourcing and forestry management, although not yet certified, is backed up by specific audit and related papers. The full list of the products certified is available on the technical sheet EC 2 - Biosphera certifications on Listone Giordano® products.



CE Marking

Listone Giordano® Natural Genius Biscuit strictly comply to all CE rules regarding hardwood floors.



AIR EMISSIONS

Certification on the emission level of volatile substances in the rooms that present a toxic risk through inhalation.



SOLVENT FREE

No emission of solvents, as resulting from the analyses conducted on Listone Giordano® by the SERECO BIOTEST chemical laboratory.



FORMALDEHYDE

Listone Giordano® Natural Genius Biscuit comply to the class E1, which is amongst the strictest European regulations (UNI EN 14342).



ANTI-BACTERIAL FINISH CRYSTALCARE

Invisible Touch and Oleonature finishes are antibacterial certified by CATAS S.p.a laboratories according to ISO 22196:2007 regulation.



DIBt

Certification of the construction products released from DIBt - Deutsches Institut für Bautechnik/German institute for civil engineering.



ISO 9001

Quality Management System certification.



ISO 14001

Environmental Management System certification for the Miralduolo di Torgiano (PG) factory

MADE IN

Listone Giordano® Natural Genius Biscuit is Made in Italy.



FIRE REACTION CERTIFICATION

In the following table you can find fire reaction classes of the various products:

PRODUCT	FINISH	FIRE REACTION CLASS
		(according to the requirements of the EN14342 regulation on the CE mark)
BISCUIT	Invisible Touch	Dfl-s1 On demand : Cfl-s1
	Oleonature	Dfl-s1 On demand : Cfl-s1

IMPORTANT INFORMATION ABOUT HARDWOOD FLOORS

WOOD AS A LIVING MATERIAL

Wood is a “living” material interacting with the environment therefore it is affected by exterior elements such as light, UV rays, temperature, humidity and daily use (wear and tear).

COLOUR

The colour of wood largely depends upon particular substances known as extractives which change due to the exposure to light. This results in alterations and more or less marked variations from the original color of every type of wood flooring. Due to the higher extractives content in tropical wood species, these species are especially prone to chromatic changes usually evolving into a darker brown colour tone. Iroko and Doussié are two of the species that experience a stronger colour variation. Doussié especially may show localized effects of rapid and intense oxidation even on boards originally of the same colour tone.

Under specific conditions these alteration traces of mineral substances, where are a natural part of the wood structure, may become more evident.

Teak may initially show more evident colour variations. These variations tend to mitigate and homogenize to a middle-clear tones overtime.

Even Oak, however characterized by a good colour stability in relation with other wood species, is due to change overtime and tends to warmer colour tones, whilst intensifying the yellow hue. This phenomenon occurs even in colour- pigmented products (i.e “Michelangelo” collection).

The long exposure of some wood species to intense and direct sunlight, such through window-panes, may cause discoloration (UV rays produce these effects on materials other than wood). In order to prevent this phenomenon, we recommend the use of curtains or special UV filtering films to be applied to the glass panes.

SAMPLES

Wood is a natural material, not characterized by uniformity-regularity: two elements of the same piece of timber will never have an identical aesthetic appearance. Therefore samples made of few wooden boards can only represent an illustration or general idea and cannot fully show the different tones, grains and uniqueness.

As mentioned above, wood is prone to alter its colour tone overtime, due to exposure to light and air. Therefore a recently installed wood floor may typically show a different aesthetic and colour tone compared to a sample panel of the same product which has been exposed to natural light for a period of time.

MEDULLARY RAYS (Silver Figures)

Strips from a perfect radial section of a log in some wood species (especially Oak and Beech), feature straight grains and typical silver figures, the so-called medullary ray (still evident in the colour finishes as well).

This type of graining is the result of the perfect radial cut of the log and enhances the quality and the value of the wood product. In addition to the better aesthetical appearance it's an indication of improved technical performance (regularity of the fiber, dimensional stability water proof, impermeability, etc.).

WEATHER CONDITIONS

Wood is naturally affected by dimensional variations due to humidity and temperature of the environment. **In order to avoid damages and unwanted effects, the climate conditions of the rooms should meet the following requirements: air temperature must remain between 15°C and 30°C and relative humidity must be between 45% and 65%.** These conditions provide as well a suitable and healthy environment to live in.

The prolonged exposure to a very dry atmospheric condition can lead even a modern and technologically advanced multilayer product to shrink and gaps to appear in between wood strips.

This phenomenon is reversible and gaps are due to close again once correct climate conditions are restored.

Extreme dryness or high humidity in the air may generate a certain level of stress and alterations in the wood structure, very high at times, in the worst cases this can create micro-fractures on the top hardwood layer (due to the sliding of the interface in

between growth rings consequential to the exceeding elastic limit). For these reasons it is compulsory that proper climate conditions are to be maintained both during the installation process and afterwards, even if the premises are unoccupied. **In some situations, particularly in the winter months to ensure compliance with the conditions mentioned above the use of an air humidifier may prove necessary.** **In the case of heated floors, in addition to the requirements relating to temperature and humidity of the air, the temperature's limit of the floor surface, when the system is in function, must not exceed 27°C.**

FRACTURES

The appearance overtime of micro-fractures on the top hardwood layer is a natural phenomenon and inevitable in statistic terms even if recommended climate conditions are to be maintained.

HARDNESS

The individual hardness of all wood species processed to manufacture products featured in this pricelist are suitable to become hardwood flooring. However surface indentations may arise in even the hardest of woods, if the hardwood floor is subjected to knocks, falling objects, in addition to highly concentrated weight (stileto heels, ladder, etc.)

HANDCRAFTED WORKS

Atelier and Natural Genius wood flooring collections with crafted treatments feature non homogenous, dimensional and aesthetic characteristics typical of a hand-made product. Therefore prospective tolerances related to the planarity of the boards, or even within the individual boards (i.e. planarity, roughness or colour tone of the surface) are not to be considered by any means a defect but on the contrary the craftsmanship value of the products itself.

The distinctive crafted finishes can create some irregularity and splintering of the wood surface where cloth used for cleaning and maintenance may get trapped. These elements of irregularity and splintering are to be considered (taken into account) when walking bare feet on the floor.

VARNISHES

The wear and tear is prone to alter the shine level of the floor surfaces as time passes, especially in high-traffic areas. A correct maintenance can keep this phenomenon under control.

NATURAL OIL FINISHES

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept in the boxes for a longtime or not being exposed to light and air.

It's an utterly natural and transitory phenomenon. This effect is reversible within a few days, once the wood boards are exposed to direct sunlight whilst in an environment with artificial light it may take up to few weeks before restoring the original appearance.

The oils-based finishing has the characteristic to continue over time to permeate the wood fibers even while the material is still inside the packaging boxes. The possible appearance of surface dryness that you should notice on newly installed planks, will be restored with the application of the specific maintenance product after installation.

USE AND MAINTENANCE INSTRUCTIONS

Instructions of the correct use and maintenance of the wood flooring are available in the dedicated page of the website www.listonegiordano.com/international featuring the technical sheets.

We recommend checking it when selecting the product.

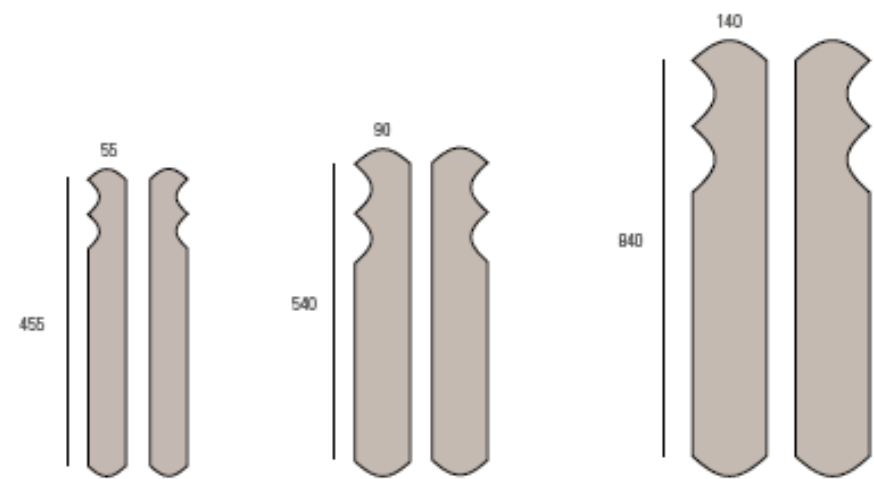
NATURAL GENIUS

BISCUIT N°2

Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.
High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

SPECIFICATIONS

MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
2	55 mm	455 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
	90 mm	540 mm				
	140 mm	840 mm				

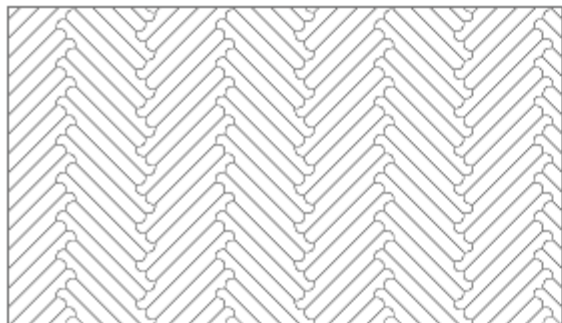


board section

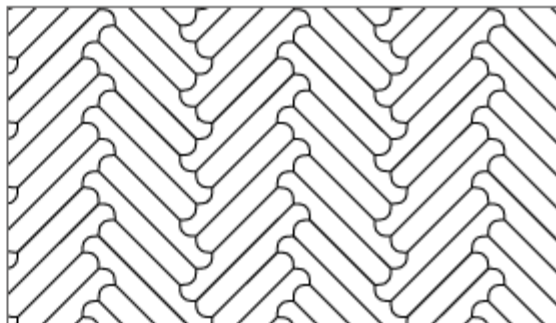


INSTALLATION PATTERNS

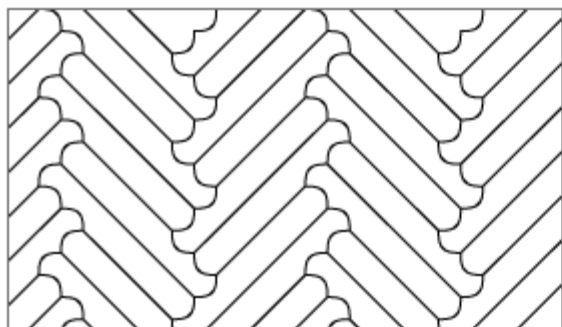
WIDTH 55



WIDTH 90



WIDTH 140



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING

Conforms to the requirements of the *class D4 of the UNI EN 204 regulation*
Conforms to the requirements of the *JAS type II norm (Japanese Agricultural Standard)*
(cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)

PROFILE

Interlocking tongues and grooves on all the sides.
Bevelled on all the sides.
Slight bombe effect of the superficial section of the plank

WOOD SPECIE

WOOD SPECIES

NATURAL VEGETATION AREA

HARDNESS

Oak

European forests

high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

OLEONATURE

Air-dried natural oils-based finish. The oils-based finish incorporates colour pigments in some products. Before finishing is applied, some wood species undergo a brushing treatment, to remove the soft parts, highlighting the wood pores and fibres. Thanks to the industrially applied final protective coating, the Oleonature finish ensures easy maintenance compared to other oil finishes and better resistance against household liquids' penetration.

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This effect is reversible within a few days and the wood can restore its original appearance, once the boards are exposed to air and direct sunlight whilst in an environment with artificial light it may take up to few weeks.

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To verify the combination of the various colours and finishes, consult the current Price list.

GRADE

FIBRAMIX

Mixed grain, possible small knots in some wood boards.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed. Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.
- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Pulplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C.**

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM.**

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m ² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidisation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advice to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/

Oleonature

Green

Revivo

/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

REVIVO

(Natural oil-wax product to nourish and protect Oleonature wood floors)

Revivo Listone Giordano® is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Revivo Listone Giordano® at temperatures above +15°C.

Shake very well.

Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Revivo Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required. 1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	Permitted if: Diameter < 12 mm
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

During the production and quality control processes all the above dimensions and characteristics are optically estimated from skilled operators, without using any measurement device.

For this reason allowance are permitted in the above dimensional data.

CERTIFICATIONS



BIOSPHERA

Biosphera is a marking system based upon Listone Giordano's green procurement policy to provide consumers with brief, clear and useful information on the origin of raw materials.

Many products of the collection Listone Giordano® Classica offer both in their top layer and in their support the *Biosphera certified* mark that identifies raw materials whose forestry management is certified according to recognized standards at the international level (FSC, PEFC, SFI, OLB, LEI, etc.) or the *Biosphera controlled* mark that identifies raw materials whose legal sourcing and forestry management, although not yet certified, is backed up by specific audit and related papers.

The full list of the products certified is available on the technical sheet EC 2 - Biosphera certifications on Listone Giordano® products.



CE Marking

Listone Giordano® Natural Genius Biscuit strictly comply to all CE rules regarding hardwood floors.



AIR EMISSIONS

Certification on the emission level of volatile substances in the rooms that present a toxic risk through inhalation.



SOLVENT FREE

No emission of solvents, as resulting from the analyses conducted on Listone Giordano® by the SERECO BIOTEST chemical laboratory.



FORMALDEHYDE

Listone Giordano® Natural Genius Biscuit comply to the class E1, which is amongst the strictest European regulations (UNI EN 14342).



ANTI-BACTERIAL FINISH CRYSTALCARE

Invisible Touch and Oleonature finishes are antibacterial certified by CATAS S.p.a laboratories according to ISO 22196:2007 regulation.



DIBt

Certification of the construction products released from DIBt - Deutsches Institut für Bautechnik/German institute for civil engineering.



ISO 9001

Quality Management System certification.



ISO 14001

Environmental Management System certification for the Miralduolo di Torgiano (PG) factory

MADE IN

Listone Giordano® Natural Genius Biscuit is Made in Italy.

**FIRE REACTION CERTIFICATION**

In the following table you can find fire reaction classes of the various products:

PRODUCT	FINISH	FIRE REACTION CLASS
		(according to the requirements of the EN14342 regulation on the CE mark)
BISCUIT	Invisible Touch	Dfl-s1 On demand : Cfl-s1
	Oleonature	Dfl-s1 On demand : Cfl-s1

IMPORTANT INFORMATION ABOUT HARDWOOD FLOORS

WOOD AS A LIVING MATERIAL

Wood is a “living” material interacting with the environment therefore it is affected by exterior elements such as light, UV rays, temperature, humidity and daily use (wear and tear).

COLOUR

The colour of wood largely depends upon particular substances known as extractives which change due to the exposure to light. This results in alterations and more or less marked variations from the original color of every type of wood flooring. Due to the higher extractives content in tropical wood species, these species are especially prone to chromatic changes usually evolving into a darker brown colour tone. Iroko and Doussié are two of the species that experience a stronger colour variation. Doussié especially may show localized effects of rapid and intense oxidation even on boards originally of the same colour tone.

Under specific conditions these alteration traces of mineral substances, where are a natural part of the wood structure, may become more evident.

Teak may initially show more evident colour variations. These variations tend to mitigate and homogenize to a middle-clear tones overtime.

Even Oak, however characterized by a good colour stability in relation with other wood species, is due to change overtime and tends to warmer colour tones, whilst intensifying the yellow hue. This phenomenon occurs even in colour- pigmented products (i.e “Michelangelo” collection).

The long exposure of some wood species to intense and direct sunlight, such through window-panes, may cause discoloration (UV rays produce these effects on materials other than wood). In order to prevent this phenomenon, we recommend the use of curtains or special UV filtering films to be applied to the glass panes.

SAMPLES

Wood is a natural material, not characterized by uniformity-regularity: two elements of the same piece of timber will never have an identical aesthetic appearance. Therefore samples made of few wooden boards can only represent an illustration or general idea and cannot fully show the different tones, grains and uniqueness.

As mentioned above, wood is prone to alter its colour tone overtime, due to exposure to light and air. Therefore a recently installed wood floor may typically show a different aesthetic and colour tone compared to a sample panel of the same product which has been exposed to natural light for a period of time.

MEDULLARY RAYS (Silver Figures)

Strips from a perfect radial section of a log in some wood species (especially Oak and Beech), feature straight grains and typical silver figures, the so-called medullary ray (still evident in the colour finishes as well).

This type of graining is the result of the perfect radial cut of the log and enhances the quality and the value of the wood product. In addition to the better aesthetical appearance it's an indication of improved technical performance (regularity of the fiber, dimensional stability water proof, impermeability, etc.).

WEATHER CONDITIONS

Wood is naturally affected by dimensional variations due to humidity and temperature of the environment. **In order to avoid damages and unwanted effects, the climate conditions of the rooms should meet the following requirements: air temperature must remain between 15°C and 30°C and relative humidity must be between 45% and 65%.** These conditions provide as well a suitable and healthy environment to live in.

The prolonged exposure to a very dry atmospheric condition can lead even a modern and technologically advanced multilayer product to shrink and gaps to appear in between wood strips.

This phenomenon is reversible and gaps are due to close again once correct climate conditions are restored.

Extreme dryness or high humidity in the air may generate a certain level of stress and alterations in the wood structure, very high at times, in the worst cases this can create micro-fractures on the top hardwood layer (due to the sliding of the interface in

between growth rings consequential to the exceeding elastic limit). For these reasons it is compulsory that proper climate conditions are to be maintained both during the installation process and afterwards, even if the premises are unoccupied. **In some situations, particularly in the winter months to ensure compliance with the conditions mentioned above the use of an air humidifier may prove necessary.** **In the case of heated floors, in addition to the requirements relating to temperature and humidity of the air, the temperature's limit of the floor surface, when the system is in function, must not exceed 27°C.**

FRACTURES

The appearance overtime of micro-fractures on the top hardwood layer is a natural phenomenon and inevitable in statistic terms even if recommended climate conditions are to be maintained.

HARDNESS

The individual hardness of all wood species processed to manufacture products featured in this pricelist are suitable to become hardwood flooring. However surface indentations may arise in even the hardest of woods, if the hardwood floor is subjected to knocks, falling objects, in addition to highly concentrated weight (stileto heels, ladder, etc.)

HANDCRAFTED WORKS

Atelier and Natural Genius wood flooring collections with crafted treatments feature non homogenous, dimensional and aesthetic characteristics typical of a hand-made product. Therefore prospective tolerances related to the planarity of the boards, or even within the individual boards (i.e. planarity, roughness or colour tone of the surface) are not to be considered by any means a defect but on the contrary the craftsmanship value of the products itself.

The distinctive crafted finishes can create some irregularity and splintering of the wood surface where cloth used for cleaning and maintenance may get trapped. These elements of irregularity and splintering are to be considered (taken into account) when walking bare feet on the floor.

VARNISHES

The wear and tear is prone to alter the shine level of the floor surfaces as time passes, especially in high-traffic areas. A correct maintenance can keep this phenomenon under control.

NATURAL OIL FINISHES

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept in the boxes for a longtime or not being exposed to light and air.

It's an utterly natural and transitory phenomenon. This effect is reversible within a few days, once the wood boards are exposed to direct sunlight whilst in an environment with artificial light it may take up to few weeks before restoring the original appearance.

The oils-based finishing has the characteristic to continue over time to permeate the wood fibers even while the material is still inside the packaging boxes. The possible appearance of surface dryness that you should notice on newly installed planks, will be restored with the application of the specific maintenance product after installation.

USE AND MAINTENANCE INSTRUCTIONS

Instructions of the correct use and maintenance of the wood flooring are available in the dedicated page of the website www.listonegiordano.com/international featuring the technical sheets.

We recommend checking it when selecting the product.

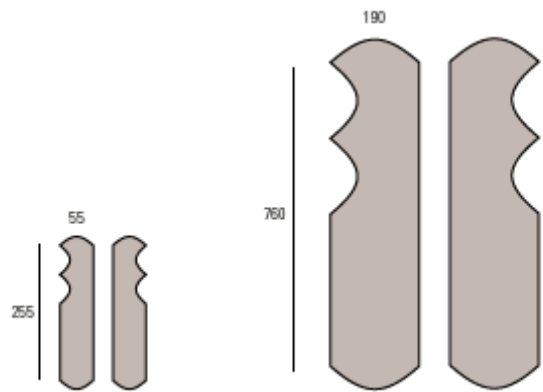
NATURAL GENIUS

BISCUIT N°3

Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.
High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

SPECIFICATIONS

MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
3	55 mm	255 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
	190 mm	760 mm				

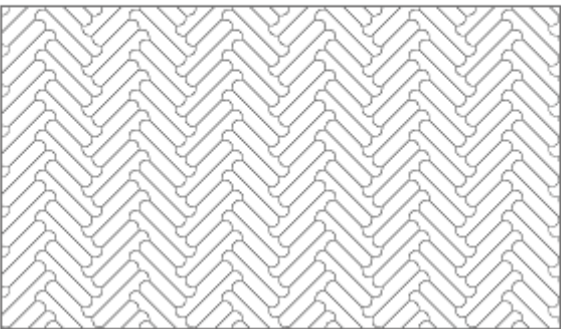


board section

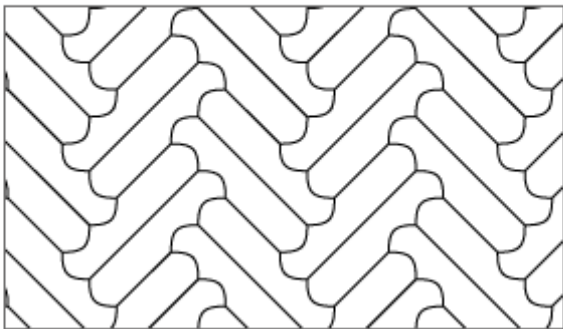


INSTALLATION PATTERNS

WIDTH 55



WIDTH 190



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING	Conforms to the requirements of the <i>class D4 of the UNI EN 204 regulation</i> Conforms to the requirements of the <i>JAS type II norm (Japanese Agricultural Standard)</i> (cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)
PROFILE	Interlocking tongues and grooves on all the sides. Bevelled on all the sides. Slight bombe effect of the superficial section of the plank

WOOD SPECIE

WOOD SPECIES	NATURAL VEGETATION AREA	HARDNESS
Oak	European forests	high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

OLEONATURE

Air-dried natural oils-based finish. The oils-based finish incorporates colour pigments in some products. Before finishing is applied, some wood species undergo a brushing treatment, to remove the soft parts, highlighting the wood pores and fibres. Thanks to the industrially applied final protective coating, the Oleonature finish ensures easy maintenance compared to other oil finishes and better resistance against household liquids' penetration.

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept, for instance, in the boxes for a longtime or not being exposed to light and air. It's an utterly natural and transitory phenomenon.

This effect is reversible within a few days and the wood can restore its original appearance, once the boards are exposed to air and direct sunlight whilst in an environment with artificial light it may take up to few weeks.

Wood is a natural material, therefore colour tone and absorption of the finish may vary from one board to the other, or even in the same board according to the variation of its fibre. These colour tone variation is visible even after the application of colour pigments proving the authenticity and the uniqueness of each board.

To verify the combination of the various colours and finishes, consult the current Price list.

GRADE

FIBRAMIX

Mixed grain, possible small knots in some wood boards.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed. Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.
- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Pulplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C.**

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM.**

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advise to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/
Oleonature	Green	Revivo	/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

REVIVO

(Natural oil-wax product to nourish and protect Oleonature wood floors)

Revivo Listone Giordano® is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Revivo Listone Giordano® at temperatures above +15°C.

Shake very well.

Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Revivo Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	Permitted if: Diameter < 12 mm
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

During the production and quality control processes all the above dimensions and characteristics are optically estimated from skilled operators, without using any measurement device.

For this reason allowance are permitted in the above dimensional data.

CERTIFICATIONS



BIOSPHERA

Biosphera is a marking system based upon Listone Giordano's green procurement policy to provide consumers with brief, clear and useful information on the origin of raw materials. Many products of the collection Listone Giordano® Classica offer both in their top layer and in their support the *Biosphera certified* mark that identifies raw materials whose forestry management is certified according to recognized standards at the international level (FSC, PEFC, SFI, OLB, LEI, etc.) or the *Biosphera controlled* mark that identifies raw materials whose legal sourcing and forestry management, although not yet certified, is backed up by specific audit and related papers. The full list of the products certified is available on the technical sheet EC 2 - Biosphera certifications on Listone Giordano® products.



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Listone Giordano® Natural Genius Biscuit strictly comply to all CE rules regarding hardwood floors.



AIR EMISSIONS

Certification on the emission level of volatile substances in the rooms that present a toxic risk through inhalation.



SOLVENT FREE

No emission of solvents, as resulting from the analyses conducted on Listone Giordano® by the SERECO BIOTEST chemical laboratory.



FORMALDEHYDE

Listone Giordano® Natural Genius Biscuit comply to the class E1, which is amongst the strictest European regulations (UNI EN 14342).



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Invisible Touch and Oleonature finishes are antibacterial certified by CATAS S.p.a laboratories according to ISO 22196:2007 regulation.



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ISO 9001

Quality Management System certification.



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Environmental Management System certification for the Miralduolo di Torgiano (PG) factory

MADE IN

Listone Giordano® Natural Genius Biscuit is Made in Italy.

**FIRE REACTION CERTIFICATION**

In the following table you can find fire reaction classes of the various products:

PRODUCT	FINISH	FIRE REACTION CLASS
		(according to the requirements of the EN14342 regulation on the CE mark)
BISCUIT	Invisible Touch	Dfl-s1 On demand : Cfl-s1
	Oleonature	Dfl-s1 On demand : Cfl-s1

IMPORTANT INFORMATION ABOUT HARDWOOD FLOORS

WOOD AS A LIVING MATERIAL

Wood is a “living” material interacting with the environment therefore it is affected by exterior elements such as light, UV rays, temperature, humidity and daily use (wear and tear).

COLOUR

The colour of wood largely depends upon particular substances known as extractives which change due to the exposure to light. This results in alterations and more or less marked variations from the original color of every type of wood flooring. Due to the higher extractives content in tropical wood species, these species are especially prone to chromatic changes usually evolving into a darker brown colour tone. Iroko and Doussié are two of the species that experience a stronger colour variation. Doussié especially may show localized effects of rapid and intense oxidation even on boards originally of the same colour tone.

Under specific conditions these alteration traces of mineral substances, where are a natural part of the wood structure, may become more evident.

Teak may initially show more evident colour variations. These variations tend to mitigate and homogenize to a middle-clear tones overtime.

Even Oak, however characterized by a good colour stability in relation with other wood species, is due to change overtime and tends to warmer colour tones, whilst intensifying the yellow hue. This phenomenon occurs even in colour- pigmented products (i.e “Michelangelo” collection).

The long exposure of some wood species to intense and direct sunlight, such through window-panes, may cause discoloration (UV rays produce these effects on materials other than wood). In order to prevent this phenomenon, we recommend the use of curtains or special UV filtering films to be applied to the glass panes.

SAMPLES

Wood is a natural material, not characterized by uniformity-regularity: two elements of the same piece of timber will never have an identical aesthetic appearance. Therefore samples made of few wooden boards can only represent an illustration or general idea and cannot fully show the different tones, grains and uniqueness.

As mentioned above, wood is prone to alter its colour tone overtime, due to exposure to light and air. Therefore a recently installed wood floor may typically show a different aesthetic and colour tone compared to a sample panel of the same product which has been exposed to natural light for a period of time.

MEDULLARY RAYS (Silver Figures)

Strips from a perfect radial section of a log in some wood species (especially Oak and Beech), feature straight grains and typical silver figures, the so-called medullary ray (still evident in the colour finishes as well).

This type of graining is the result of the perfect radial cut of the log and enhances the quality and the value of the wood product. In addition to the better aesthetical appearance it's an indication of improved technical performance (regularity of the fiber, dimensional stability water proof, impermeability, etc.).

WEATHER CONDITIONS

Wood is naturally affected by dimensional variations due to humidity and temperature of the environment. **In order to avoid damages and unwanted effects, the climate conditions of the rooms should meet the following requirements: air temperature must remain between 15°C and 30°C and relative humidity must be between 45% and 65%.** These conditions provide as well a suitable and healthy environment to live in.

The prolonged exposure to a very dry atmospheric condition can lead even a modern and technologically advanced multilayer product to shrink and gaps to appear in between wood strips.

This phenomenon is reversible and gaps are due to close again once correct climate conditions are restored.

Extreme dryness or high humidity in the air may generate a certain level of stress and alterations in the wood structure, very high at times, in the worst cases this can create micro-fractures on the top hardwood layer (due to the sliding of the interface in

between growth rings consequential to the exceeding elastic limit). For these reasons it is compulsory that proper climate conditions are to be maintained both during the installation process and afterwards, even if the premises are unoccupied. **In some situations, particularly in the winter months to ensure compliance with the conditions mentioned above the use of an air humidifier may prove necessary.** **In the case of heated floors, in addition to the requirements relating to temperature and humidity of the air, the temperature's limit of the floor surface, when the system is in function, must not exceed 27°C.**

FRACTURES

The appearance overtime of micro-fractures on the top hardwood layer is a natural phenomenon and inevitable in statistic terms even if recommended climate conditions are to be maintained.

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The individual hardness of all wood species processed to manufacture products featured in this pricelist are suitable to become hardwood flooring. However surface indentations may arise in even the hardest of woods, if the hardwood floor is subjected to knocks, falling objects, in addition to highly concentrated weight (stiletto heels, ladder, etc.)

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The wear and tear is prone to alter the shine level of the floor surfaces as time passes, especially in high-traffic areas. A correct maintenance can keep this phenomenon under control.

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Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept in the boxes for a longtime or not being exposed to light and air.

It's an utterly natural and transitory phenomenon. This effect is reversible within a few days, once the wood boards are exposed to direct sunlight whilst in an environment with artificial light it may take up to few weeks before restoring the original appearance.

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NATURAL GENIUS

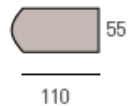
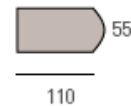
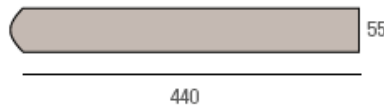
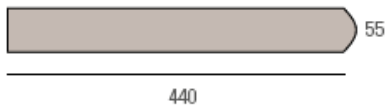
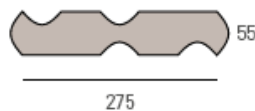
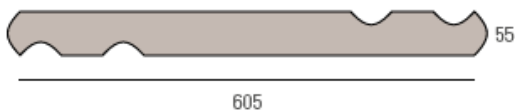
BISCUIT N°4

Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.

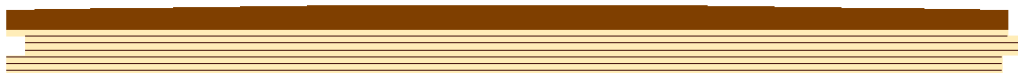
High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

SPECIFICATIONS

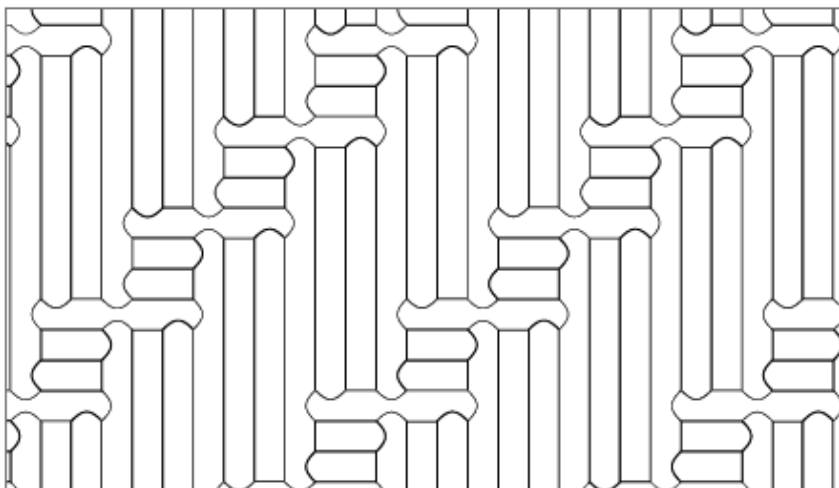
MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
4	55 mm	605 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
		275 mm				
		440 mm				
		110 mm				



board section



INSTALLATION PATTERNS



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING	Conforms to the requirements of the <i>class D4 of the UNI EN 204 regulation</i> Conforms to the requirements of the <i>JAS type II norm (Japanese Agricultural Standard)</i> (cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)
PROFILE	Interlocking tongues and grooves on all the sides. Bevelled on all the sides. Slight bombe effect of the superficial section of the plank

WOOD SPECIE

WOOD SPECIES	NATURAL VEGETATION AREA	HARDNESS
Oak	European forests	high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

GRADE

FIBRAMIX

Mixed grain, possible small knots in some wood boards.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed. Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.

- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Pulplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C.**

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM.**

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidisation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advise to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	Permitted if: Diameter < 12 mm
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

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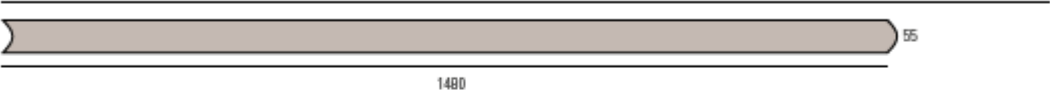
BISCUIT N°5 SMALL

Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.
High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

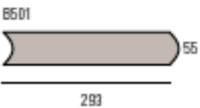
SPECIFICATIONS

MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
5 SMALL (standard element)	55 mm	1480 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
5 SMALL (decorative element)		293 mm (B501)				

STANDARD ELEMENT



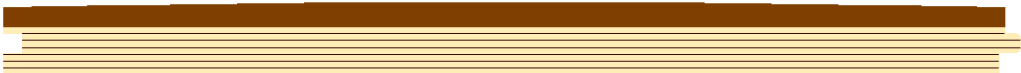
DECORATIVE ELEMENT



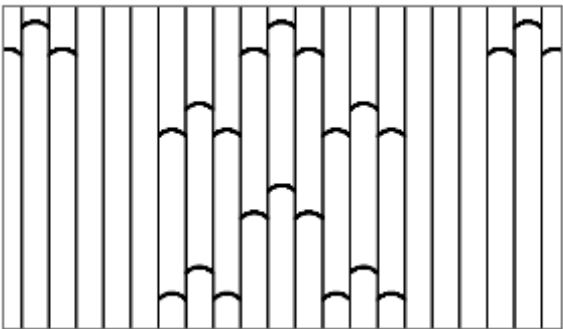
COLOUR INSERTS



board section



INSTALLATION PATTERNS



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING	<p>Conforms to the requirements of the <i>class D4 of the UNI EN 204 regulation</i></p> <p>Conforms to the requirements of the <i>JAS type II norm (Japanese Agricultural Standard)</i> (cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)</p>
PROFILE	<p>Interlocking tongues and grooves on all the sides.</p> <p>Bevelled on all the sides.</p> <p>Slight bombe effect of the superficial section of the plank</p>

WOOD SPECIE

WOOD SPECIES	NATURAL VEGETATION AREA	HARDNESS
Oak	European forests	high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

OLEONATURE

Air-dried natural oils-based finish. The oils-based finish incorporates colour pigments in some products. Before finishing is applied, some wood species undergo a brushing treatment, to remove the soft parts, highlighting the wood pores and fibres. Thanks to the industrially applied final protective coating, the Oleonature finish ensures easy maintenance compared to other oil finishes and better resistance against household liquids' penetration.

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept, for instance, in the boxes for a longtime or not being exposed to light and air. It's an utterly natural and transitory phenomenon.

This effect is reversible within a few days and the wood can restore its original appearance, once the boards are exposed to air and direct sunlight whilst in an environment with artificial light it may take up to few weeks.

Wood is a natural material, therefore colour tone and absorption of the finish may vary from one board to the other, or even in the same board according to the variation of its fibre. These colour tone variation is visible even after the application of colour pigments proving the authenticity and the uniqueness of each board.

To verify the combination of the various colours and finishes, consult the current Price list.

GRADE

FIBRAMIX

Mixed grain, possible small knots in some wood boards.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed. Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.
- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Pulplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C.**

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM.**

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advice to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/
Oleonature	Green	Revivo	/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

REVIVO

(Natural oil-wax product to nourish and protect Oleonature wood floors)

Revivo Listone Giordano® is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Revivo Listone Giordano® at temperatures above +15°C.

Shake very well.

Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Revivo Listone Giordano® because it

could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	Permitted if: Diameter < 12 mm
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

During the production and quality control processes all the above dimensions and characteristics are optically estimated from skilled operators, without using any measurement device.

For this reason allowance are permitted in the above dimensional data.

CERTIFICATIONS



BIOSPHERA

Biosphera is a marking system based upon Listone Giordano's green procurement policy to provide consumers with brief, clear and useful information on the origin of raw materials. Many products of the collection Listone Giordano® Classica offer both in their top layer and in their support the *Biosphera certified* mark that identifies raw materials whose forestry management is certified according to recognized standards at the international level (FSC, PEFC, SFI, OLB, LEI, etc.) or the *Biosphera controlled* mark that identifies raw materials whose legal sourcing and forestry management, although not yet certified, is backed up by specific audit and related papers. The full list of the products certified is available on the technical sheet EC 2 - Biosphera certifications on Listone Giordano® products.



CE Marking

Listone Giordano® Natural Genius Biscuit strictly comply to all CE rules regarding hardwood floors.



AIR EMISSIONS

Certification on the emission level of volatile substances in the rooms that present a toxic risk through inhalation.



SOLVENT FREE

No emission of solvents, as resulting from the analyses conducted on Listone Giordano® by the SERECO BIOTEST chemical laboratory.



FORMALDEHYDE

Listone Giordano® Natural Genius Biscuit comply to the class E1, which is amongst the strictest European regulations (UNI EN 14342).



ANTI-BACTERIAL FINISH CRYSTALCARE

Invisible Touch and Oleonature finishes are antibacterial certified by CATAS S.p.a laboratories according to ISO 22196:2007 regulation.



DIBt

Certification of the construction products released from DIBt - Deutsches Institut für Bautechnik/German institute for civil engineering.



ISO 9001

Quality Management System certification.



ISO 14001

Environmental Management System certification for the Miralduolo di Torgiano (PG) factory

MADE IN

Listone Giordano® Natural Genius Biscuit is Made in Italy.

**FIRE REACTION CERTIFICATION**

In the following table you can find fire reaction classes of the various products:

PRODUCT	FINISH	FIRE REACTION CLASS
		(according to the requirements of the EN14342 regulation on the CE mark)
BISCUIT	Invisible Touch	Dfl-s1 On demand : Cfl-s1
	Oleonature	Dfl-s1 On demand : Cfl-s1

IMPORTANT INFORMATION ABOUT HARDWOOD FLOORS

WOOD AS A LIVING MATERIAL

Wood is a “living” material interacting with the environment therefore it is affected by exterior elements such as light, UV rays, temperature, humidity and daily use (wear and tear).

COLOUR

The colour of wood largely depends upon particular substances known as extractives which change due to the exposure to light. This results in alterations and more or less marked variations from the original color of every type of wood flooring. Due to the higher extractives content in tropical wood species, these species are especially prone to chromatic changes usually evolving into a darker brown colour tone. Iroko and Doussié are two of the species that experience a stronger colour variation. Doussié especially may show localized effects of rapid and intense oxidation even on boards originally of the same colour tone.

Under specific conditions these alteration traces of mineral substances, where are a natural part of the wood structure, may become more evident.

Teak may initially show more evident colour variations. These variations tend to mitigate and homogenize to a middle-clear tones overtime.

Even Oak, however characterized by a good colour stability in relation with other wood species, is due to change overtime and tends to warmer colour tones, whilst intensifying the yellow hue. This phenomenon occurs even in colour- pigmented products (i.e “Michelangelo” collection).

The long exposure of some wood species to intense and direct sunlight, such through window-panes, may cause discoloration (UV rays produce these effects on materials other than wood). In order to prevent this phenomenon, we recommend the use of curtains or special UV filtering films to be applied to the glass panes.

SAMPLES

Wood is a natural material, not characterized by uniformity-regularity: two elements of the same piece of timber will never have an identical aesthetic appearance. Therefore samples made of few wooden boards can only represent an illustration or general idea and cannot fully show the different tones, grains and uniqueness.

As mentioned above, wood is prone to alter its colour tone overtime, due to exposure to light and air. Therefore a recently installed wood floor may typically show a different aesthetic and colour tone compared to a sample panel of the same product which has been exposed to natural light for a period of time.

MEDULLARY RAYS (Silver Figures)

Strips from a perfect radial section of a log in some wood species (especially Oak and Beech), feature straight grains and typical silver figures, the so-called medullary ray (still evident in the colour finishes as well).

This type of graining is the result of the perfect radial cut of the log and enhances the quality and the value of the wood product. In addition to the better aesthetical appearance it's an indication of improved technical performance (regularity of the fiber, dimensional stability water proof, impermeability, etc.).

WEATHER CONDITIONS

Wood is naturally affected by dimensional variations due to humidity and temperature of the environment. **In order to avoid damages and unwanted effects, the climate conditions of the rooms should meet the following requirements: air temperature must remain between 15°C and 30°C and relative humidity must be between 45% and 65%.** These conditions provide as well a suitable and healthy environment to live in.

The prolonged exposure to a very dry atmospheric condition can lead even a modern and technologically advanced multilayer product to shrink and gaps to appear in between wood strips.

This phenomenon is reversible and gaps are due to close again once correct climate conditions are restored.

Extreme dryness or high humidity in the air may generate a certain level of stress and alterations in the wood structure, very high at times, in the worst cases this can create micro-fractures on the top hardwood layer (due to the sliding of the interface in

between growth rings consequential to the exceeding elastic limit). For these reasons it is compulsory that proper climate conditions are to be maintained both during the installation process and afterwards, even if the premises are unoccupied. **In some situations, particularly in the winter months to ensure compliance with the conditions mentioned above the use of an air humidifier may prove necessary.** **In the case of heated floors, in addition to the requirements relating to temperature and humidity of the air, the temperature's limit of the floor surface, when the system is in function, must not exceed 27°C.**

FRACTURES

The appearance overtime of micro-fractures on the top hardwood layer is a natural phenomenon and inevitable in statistic terms even if recommended climate conditions are to be maintained.

HARDNESS

The individual hardness of all wood species processed to manufacture products featured in this pricelist are suitable to become hardwood flooring. However surface indentations may arise in even the hardest of woods, if the hardwood floor is subjected to knocks, falling objects, in addition to highly concentrated weight (stileto heels, ladder, etc.)

HANDCRAFTED WORKS

Atelier and Natural Genius wood flooring collections with crafted treatments feature non homogenous, dimensional and aesthetic characteristics typical of a hand-made product. Therefore prospective tolerances related to the planarity of the boards, or even within the individual boards (i.e. planarity, roughness or colour tone of the surface) are not to be considered by any means a defect but on the contrary the craftsmanship value of the products itself.

The distinctive crafted finishes can create some irregularity and splintering of the wood surface where cloth used for cleaning and maintenance may get trapped. These elements of irregularity and splintering are to be considered (taken into account) when walking bare feet on the floor.

VARNISHES

The wear and tear is prone to alter the shine level of the floor surfaces as time passes, especially in high-traffic areas. A correct maintenance can keep this phenomenon under control.

NATURAL OIL FINISHES

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept in the boxes for a longtime or not being exposed to light and air.

It's an utterly natural and transitory phenomenon. This effect is reversible within a few days, once the wood boards are exposed to direct sunlight whilst in an environment with artificial light it may take up to few weeks before restoring the original appearance.

The oils-based finishing has the characteristic to continue over time to permeate the wood fibers even while the material is still inside the packaging boxes. The possible appearance of surface dryness that you should notice on newly installed planks, will be restored with the application of the specific maintenance product after installation.

USE AND MAINTENANCE INSTRUCTIONS

Instructions of the correct use and maintenance of the wood flooring are available in the dedicated page of the website www.listonegiordano.com/international featuring the technical sheets.

We recommend checking it when selecting the product.

NATURAL GENIUS

BISCUIT N°5 LARGE

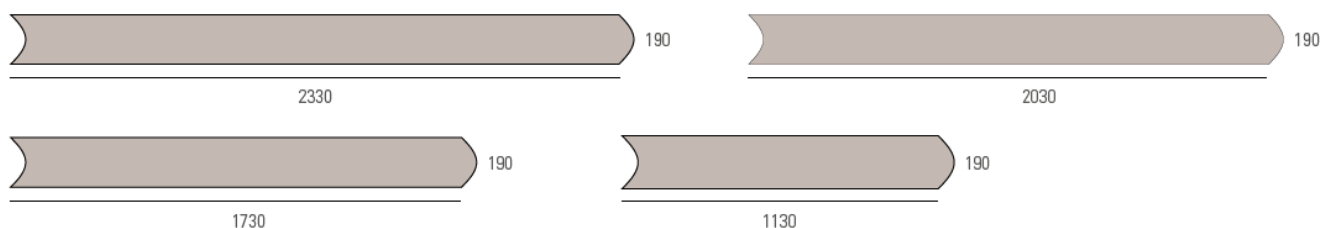
Re-thinking traditional hardwood floor, where rounded, bevelled and curved boards along with slight bombe effect of the surface create a new language.

High-end two-layers engineered hardwood floor with a top layer and crossed-fibres birch plywood support.

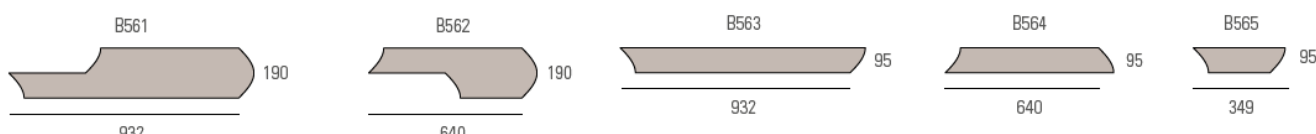
SPECIFICATIONS

MODEL	WIDTH	LENGTH	TOTAL THICKNESS	TOP LAYER	SUPPORT	INSTALLATION SYSTEMS
5 LARGE (standard elements)	190 mm	1130 mm	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
		1730 mm				
		2030 mm				
		2330 mm				
5 LARGE (decorative elements)	190 mm	932 mm (B561)	12,5 mm	3/3,5 mm	multilayer birch plywood	glued only
		640 mm (B562)				
		932 mm (B563)				
		640 mm (B564)				
		349 mm (B565)				

STANDARD ELEMENTS



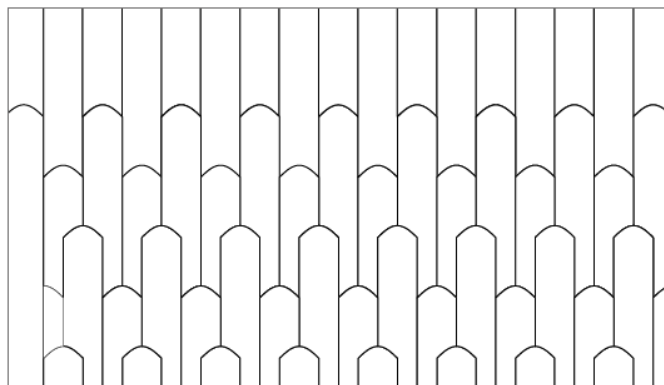
DECORATIVE ELEMENTS



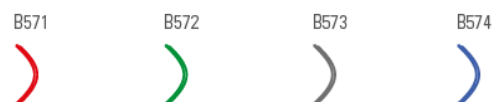
board section



INSTALLATION PATTERNS



COLOUR INSERTS



OTHER TECHNICAL INFORMATION

TOP-SUPPORT LAYER GLUING

Conforms to the requirements of the *class D4 of the UNI EN 204 regulation*
Conforms to the requirements of the *JAS type II norm (Japanese Agricultural Standard)*
(cycle made of 2h in hot water at 70°C and then immediately 3h in an airy stove at 60°C)

PROFILE

Interlocking tongues and grooves on all the sides.
Bevelled on all the sides.
Slight bombe effect of the superficial section of the plank

WOOD SPECIE

WOOD SPECIES

NATURAL VEGETATION AREA

HARDNESS

Oak

European forests

high

FINISH

INVISIBLE TOUCH

Water-based finish, has the characteristic of protecting the wood whilst maintaining the typical appearance and colour of an untreated hardwood floor.

The specific application technique open pore allows the varnish offering a natural appearance, both visual and tactile.

OLEONATURE

Air-dried natural oils-based finish. The oils-based finish incorporates colour pigments in some products. Before finishing is applied, some wood species undergo a brushing treatment, to remove the soft parts, highlighting the wood pores and fibres. Thanks to the industrially applied final protective coating, the Oleonature finish ensures easy maintenance compared to other oil finishes and better resistance against household liquids' penetration.

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept, for instance, in the boxes for a longtime or not being exposed to light and air. It's an utterly natural and transitory phenomenon.

This effect is reversible within a few days and the wood can restore its original appearance, once the boards are exposed to air and direct sunlight whilst in an environment with artificial light it may take up to few weeks.

Wood is a natural material, therefore colour tone and absorption of the finish may vary from one board to the other, or even in the same board according to the variation of its fibre. These colour tone variation is visible even after the application of colour pigments proving the authenticity and the uniqueness of each board.

To verify the combination of the various colours and finishes, consult the current Price list.

GRADE

Varied grain figure and colour tone. The boards have a widespread presence of large knots adherent, firm or partially filled; sometime partially filled or open cracks and typical characteristics of the wood species may occur.

DIRECTIONS FOR LAYING

INTERIOR CONDITIONS

Before the installation make sure that all work on site (decoration, installation of sanitary fixtures, etc.) has been completed. Maintain the humidity level between 45% and 65% and the temperature between 16 and 25°C because outside of these ranges the boards may suffer deformation and adhesives and other products used for the installation may not work correctly.

SUBFLOOR CHECK

The subfloor on which the hardwood flooring is to be installed must be smooth, level, and have a compact surface so as to guarantee the best possible contact between the underside of the planks and the subfloor itself.

Carry out the following checks before installation:

- **Smoothness/Flatness of the subfloor:** a 2 metre long straight edge should be placed on the subfloor, the maximum allowable tolerance is 2÷3 mm.
- **Concrete subfloor superficial structural strength:** when hammering the surface no marks or deep cracking should appear.
- **Concrete subfloor superficial compactness control:** it should not be possible to create deep scratches or excessive dust when scrapping the surface of the subfloor with a nail.
- **Fissuring:** small fissures created as a result of the normal shrinkage of the cement are allowable, but excessive cracks, in particular those which permeate throughout the complete thickness of the subfloor, must be properly consolidated by suitable and permanent means.
- **Cleaning:** before the installation begins it is very important to carefully clean and check the surface of the subfloor.
- **Moisture content:** the moisture content of the subfloor has to be within the recommended limits for the specific type of subfloor. The subfloor residual moisture control has to be executed only using calcium carbide hygrometer (other tools could give wrong measurements in certain conditions) and the maximum values allowed for the installation are:
 - 2,0% for a concrete slab (max. thickness 80 mm);
 - 0,4% for anhydride slab;
 - 10,0% for wooden panels.

In case of thick subfloor this control has to be done on the total thickness, not only on the surface.

In case of installation on underfloor heating system the maximum values allowed are lower (see paragraph "Installation on underfloor radiating system" below).

Should these requirements not be fulfilled, implement proper operation before installation.

The laying of Listone Giordano® can also be carried out on pre-existing flooring, provided that they are checked all the conditions of flatness, solidity, compactness, cleaning of the surface, absence of cracks and of residual moisture or lift necessary to ensure proper contact at every point of the surface and the protection from external side. For installation over existing hard flooring (ceramic, stone, etc.), should in particular ensure that the surface is likely to ensure proper bonding. Where necessary action must be taken with a preliminary treatment of deep cleaning, degreasing, scratch the surface by mechanical means and/or suitable chemicals.

The glued installation is not compatible with pre-existing type textile floor coverings (i.e carpets) or resilient (linoleum, pvc, etc.), which must therefore necessarily be removed.

MATERIAL STORAGE

We recommend the boxes of hardwood flooring are stored in secure, dry and weather proof rooms and not placed directly on the ground. Open the boxes only as the flooring is being installed and no more than what is needed.

INSTALLATION SYSTEMS

Please follow directions below according to the installation system.

GLUE DOWN INSTALLATION

Choose an adhesive that is compatible with the characteristics of the sub-floor and that won't transmit humidity to the wood (do not to use adhesives that contain water).

Ecolfit® Listone Giordano® is the one component adhesive recommended for all the range of our hardwood floors.

The glue is to be applied homogeneously onto the whole subfloor surface (do not apply it on individual strip/board or discontinuously). Do not apply the glue directly underneath the boards.

Spread the adhesive on the subfloor only using a suitably notched trowel and lay the boards on top by interlocking them, if possible, using only a little pressure.

The boards have to be joined only by hands avoiding the use of other tools (for instance the mallets) that can create damages on the surface and the corners of the boards.

During this operation take care not to allow adhesive into the joints or on the surface.

It's forbidden the use of Pulplus® Listone Giordano or aggressive solvents to remove adhesive residues on oil finished hardwood floor especially if stained.

Around the entire perimeter of the interiors, including the point of junction with thresholds of other flooring materials, it is compulsory to form an expansion joint amplitude of about 10 mm to be filled with appropriate skirting along the vertical walls and thresholds in connection with other joints in the floors.

INSTALLATION ON UNDERFLOOR RADIATING SYSTEM

When the glue down installation is over an underfloor heating system, it is necessary first of all check that:

- the distance between the wood and the heating pipes or cables embedded in the screed is at no point less than 30 mm;
- the heating system is one that functions at a low temperature
- the system is provided of proper regulation tools in order to avoid that **the contact temperature of the hardwood floor surface will exceed 27°C**.

Should these indications not be fully complied the floor could suffer not only dimensional deformations and gapping between the boards but also permanent damages.

The construction characteristics of the sub-floor have a greater importance in case of installation on underfloor radiating system; particularly **the maximum residual humidity that cannot be more than 1.7% CM**.

The glue down installation on an area with an underfloor heating system is strongly advisable to reach best performances both regarding the best conduction of heat into the rooms and because it confers greater dimensional stability on the planks (the variation of interior conditions creates minor deformations).

The thermal resistance values (the lower the thermal resistance, the better is the heating conduction) are reported in the table below:

PRODUCT	TOTAL THICKNESS	THERMAL RESISTANCE R [m² K / W]*
BISCUIT	12,5 mm	0,077

*approximate values related to the oak top layer version.

For any further information about installation, see the sheets PO 1 - Listone Giordano® over underfloor heating system.

AFTER THE INSTALLATION

At the end of the laying remove the dirt and dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Wash the floor with Green Listone Giordano® diluting half a cup (approximately 100 ml) of product in a 5 l bucket of water.

INSTRUCTIONS FOR USE

Maintain the humidity level of the atmosphere between 45% and 65% and the temperature between 15 and 30°C.

This is also the same environmental conditions recommended for ensuring people's comfort and health.

The use of humidifiers or dehumidifiers is highly recommended in order to keep the above mentioned conditions.

Temperature or air humidity level not complying to the conditions above may cause deformations, cracks and sometimes permanent damages of the hardwood floor.

Use protective felt pads for furniture, chair legs, etc.

Any armchair on castors should be covered with suitable rubber.

We recommend the use of a proper door-mat to clean the shoes.

Rugs and carpets should be removed from time to time especially soon after hardwood floor installation in order to avoid creating areas with different colour tone according to the natural oxidation of the wood.

Objects with weight concentrated over small surface areas cause localised indentations in the surface of the wood.

Rubber shoes soles leave dirty marks on the surface which could prove hard to remove.

Not to use sticky tape and adhesives materials on the surface because, in case of remaining for a prolonged time or with high temperature, they can leave marks difficult to remove.

A slight darkening effect can appear in time in the deeper parts of the wood (brushings, sawings, etc.) due to the accumulation of the dust. Regular maintenance of the floor will reduce this appearance.

CLEANING AND MAINTENANCE

Never wash the floor with tap water only: it will not efficiently clean the surface of the floor and, moreover, the minerals contained in water may leave behind a residue that could affect the surface appearance of the floor.

Do not use liquids containing acid or basic concentrations, such as bleach or ammonia, which could create marks/halos on the wood that would be impossible to remove.

For proper cleaning and maintenance we advise to only use products recommended by ourselves for the finish as indicated in the following table

FINISH	CLEANING	ORDINARY MAINTENANCE	PROFESSIONAL USE
Invisible Touch	Green	Vitanova	/
Oleonature	Green	Revivo	/

You can find below directions for use of each product.

GREEN

(Mild detergent for the cleaning of Oleonature and Invisible Touch finished hardwood floors)

Remove the dust found on the floor's surface by cleaning with a vacuum cleaner equipped with a brush suitable for hardwood floors.

Shake well.

Dilute half a cup of Green Listone Giordano® (100 ml approximately) in a 5 l bucket of water.

Immerse a lint free soft cotton rag in the solution, wring well and pass it over the floor's surface using a long-handled floor brush/mop. Use a cloth that will not leave fibre residues.

No need to rinse.

In case of tough dirt wash the floor with Green Listone Giordano® in double dose.

Never exceed this concentration and don't use often this detergent in double dose: it may cause older appearance of the surface over a shorter period of time.

Do not repeat often this operation because the surface could appear less consistent.

1 litre of product is sufficient for washing approximately 10 times a surface area of 100 m².

REVIVO

(Natural oil-wax product to nourish and protect Oleonature wood floors)

Revivo Listone Giordano® is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Revivo Listone Giordano® at temperatures above +15°C.

Shake very well.

Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Revivo Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

VITANOVA

(Protective and renovating product for Invisible Touch finished hardwood floors)

Vitanova is a protective and renovating liquid: its regular use slows natural wear caused by foot traffic and restores an homogeneous appearance on the surface.

Before applying it, thoroughly clean the surface of the floor using Green Listone Giordano® in double dose according to the instructions above. Always use Vitanova Listone Giordano® at temperatures above +15°C.

Shake very well. Wait the floor will be well dry.

Spread a thin and homogeneous layer of the product according to the wood grain. Use a soft lint free cotton cloth that will not leave fibre residues underneath a long-handled floor brush or by hand.

In case of brushed or open pore floors we recommend to apply a limited quantity of Vitanova Listone Giordano® because it could permeate the brushings or the pores making it difficult to be removed.

Once the product is applied, the floor's surface should have a slightly wet appearance.

After 1-2 hours the floor is dry and can be walked upon.

The application of Vitanova Listone Giordano® helps to homogenize the floor; no other application is therefore required.

1 litre of product is sufficient for spreading a coat on a surface area of approximately 30 m².

Use this product approximately every 6 months in the first year after the installation of the hardwood flooring and every 12 months from the second year on.

We recommend more frequent maintenance operations in case of average and heavy-duty traffic environments.

GRADES CHARACTERISTICS

(according to the requirements of the european norm EN13489 – Multi-layer parquet elements – *Free class*)

CHARACTERISTIC

Sound sapwood	Not permitted
Knots (sound, intergrown and unsound)	All permitted without limits
Yellow stain	Permitted
Checks	Not permitted
Bark pockets	Not permitted
Lightning shake	Not permitted
Curly grain	Permitted
Slope of grain	Permitted without limit
Sound heart	Permitted
Colour variation (including blackheart, red heart, etc.)	Permitted
Stick marks	Not permitted
Medullary ray	Permitted
Biodeterioration	Not permitted

During the production and quality control processes all the above dimensions and characteristics are optically estimated from skilled operators, without using any measurement device.

For this reason allowance are permitted in the above dimensional data.

CERTIFICATIONS



BIOSPHERA

Biosphera is a marking system based upon Listone Giordano's green procurement policy to provide consumers with brief, clear and useful information on the origin of raw materials. Many products of the collection Listone Giordano® Classica offer both in their top layer and in their support the *Biosphera certified* mark that identifies raw materials whose forestry management is certified according to recognized standards at the international level (FSC, PEFC, SFI, OLB, LEI, etc.) or the *Biosphera controlled* mark that identifies raw materials whose legal sourcing and forestry management, although not yet certified, is backed up by specific audit and related papers. The full list of the products certified is available on the technical sheet EC 2 - Biosphera certifications on Listone Giordano® products.



CE Marking

Listone Giordano® Natural Genius Biscuit strictly comply to all CE rules regarding hardwood floors.



AIR EMISSIONS

Certification on the emission level of volatile substances in the rooms that present a toxic risk through inhalation.



SOLVENT FREE

No emission of solvents, as resulting from the analyses conducted on Listone Giordano® by the SERECO BIOTEST chemical laboratory.



FORMALDEHYDE

Listone Giordano® Natural Genius Biscuit comply to the class E1, which is amongst the strictest European regulations (UNI EN 14342).



ANTI-BACTERIAL FINISH CRYSTALCARE

Invisible Touch and Oleonature finishes are antibacterial certified by CATAS S.p.a laboratories according to ISO 22196:2007 regulation.



DIBt

Certification of the construction products released from DIBt - Deutsches Institut für Bautechnik/German institute for civil engineering.



ISO 9001

Quality Management System certification.



ISO 14001

Environmental Management System certification for the Miralduolo di Torgiano (PG) factory

MADE IN

Listone Giordano® Natural Genius Biscuit is Made in Italy.

**FIRE REACTION CERTIFICATION**

In the following table you can find fire reaction classes of the various products:

PRODUCT	FINISH	FIRE REACTION CLASS
		(according to the requirements of the EN14342 regulation on the CE mark)
BISCUIT	Invisible Touch	Dfl-s1 On demand : Cfl-s1
	Oleonature	Dfl-s1 On demand : Cfl-s1

IMPORTANT INFORMATION ABOUT HARDWOOD FLOORS

WOOD AS A LIVING MATERIAL

Wood is a “living” material interacting with the environment therefore it is affected by exterior elements such as light, UV rays, temperature, humidity and daily use (wear and tear).

COLOUR

The colour of wood largely depends upon particular substances known as extractives which change due to the exposure to light. This results in alterations and more or less marked variations from the original color of every type of wood flooring. Due to the higher extractives content in tropical wood species, these species are especially prone to chromatic changes usually evolving into a darker brown colour tone. Iroko and Doussié are two of the species that experience a stronger colour variation. Doussié especially may show localized effects of rapid and intense oxidation even on boards originally of the same colour tone.

Under specific conditions these alteration traces of mineral substances, where are a natural part of the wood structure, may become more evident.

Teak may initially show more evident colour variations. These variations tend to mitigate and homogenize to a middle-clear tones overtime.

Even Oak, however characterized by a good colour stability in relation with other wood species, is due to change overtime and tends to warmer colour tones, whilst intensifying the yellow hue. This phenomenon occurs even in colour- pigmented products (i.e “Michelangelo” collection).

The long exposure of some wood species to intense and direct sunlight, such through window-panes, may cause discoloration (UV rays produce these effects on materials other than wood). In order to prevent this phenomenon, we recommend the use of curtains or special UV filtering films to be applied to the glass panes.

SAMPLES

Wood is a natural material, not characterized by uniformity-regularity: two elements of the same piece of timber will never have an identical aesthetic appearance. Therefore samples made of few wooden boards can only represent an illustration or general idea and cannot fully show the different tones, grains and uniqueness.

As mentioned above, wood is prone to alter its colour tone overtime, due to exposure to light and air. Therefore a recently installed wood floor may typically show a different aesthetic and colour tone compared to a sample panel of the same product which has been exposed to natural light for a period of time.

MEDULLARY RAYS (Silver Figures)

Strips from a perfect radial section of a log in some wood species (especially Oak and Beech), feature straight grains and typical silver figures, the so-called medullary ray (still evident in the colour finishes as well).

This type of graining is the result of the perfect radial cut of the log and enhances the quality and the value of the wood product. In addition to the better aesthetical appearance it's an indication of improved technical performance (regularity of the fiber, dimensional stability water proof, impermeability, etc.).

WEATHER CONDITIONS

Wood is naturally affected by dimensional variations due to humidity and temperature of the environment. **In order to avoid damages and unwanted effects, the climate conditions of the rooms should meet the following requirements: air temperature must remain between 15°C and 30°C and relative humidity must be between 45% and 65%.** These conditions provide as well a suitable and healthy environment to live in.

The prolonged exposure to a very dry atmospheric condition can lead even a modern and technologically advanced multilayer product to shrink and gaps to appear in between wood strips.

This phenomenon is reversible and gaps are due to close again once correct climate conditions are restored.

Extreme dryness or high humidity in the air may generate a certain level of stress and alterations in the wood structure, very high at times, in the worst cases this can create micro-fractures on the top hardwood layer (due to the sliding of the interface in

between growth rings consequential to the exceeding elastic limit). For these reasons it is compulsory that proper climate conditions are to be maintained both during the installation process and afterwards, even if the premises are unoccupied. **In some situations, particularly in the winter months to ensure compliance with the conditions mentioned above the use of an air humidifier may prove necessary.** **In the case of heated floors, in addition to the requirements relating to temperature and humidity of the air, the temperature's limit of the floor surface, when the system is in function, must not exceed 27°C.**

FRACTURES

The appearance overtime of micro-fractures on the top hardwood layer is a natural phenomenon and inevitable in statistic terms even if recommended climate conditions are to be maintained.

HARDNESS

The individual hardness of all wood species processed to manufacture products featured in this pricelist are suitable to become hardwood flooring. However surface indentations may arise in even the hardest of woods, if the hardwood floor is subjected to knocks, falling objects, in addition to highly concentrated weight (stileto heels, ladder, etc.)

HANDCRAFTED WORKS

Atelier and Natural Genius wood flooring collections with crafted treatments feature non homogenous, dimensional and aesthetic characteristics typical of a hand-made product. Therefore prospective tolerances related to the planarity of the boards, or even within the individual boards (i.e. planarity, roughness or colour tone of the surface) are not to be considered by any means a defect but on the contrary the craftsmanship value of the products itself.

The distinctive crafted finishes can create some irregularity and splintering of the wood surface where cloth used for cleaning and maintenance may get trapped. These elements of irregularity and splintering are to be considered (taken into account) when walking bare feet on the floor.

VARNISHES

The wear and tear is prone to alter the shine level of the floor surfaces as time passes, especially in high-traffic areas. A correct maintenance can keep this phenomenon under control.

NATURAL OIL FINISHES

Products with natural oil finishing tend to get a yellowish colour tone, should these products be kept in the boxes for a longtime or not being exposed to light and air.

It's an utterly natural and transitory phenomenon. This effect is reversible within a few days, once the wood boards are exposed to direct sunlight whilst in an environment with artificial light it may take up to few weeks before restoring the original appearance.

The oils-based finishing has the characteristic to continue over time to permeate the wood fibers even while the material is still inside the packaging boxes. The possible appearance of surface dryness that you should notice on newly installed planks, will be restored with the application of the specific maintenance product after installation.

USE AND MAINTENANCE INSTRUCTIONS

Instructions of the correct use and maintenance of the wood flooring are available in the dedicated page of the website www.listonegiordano.com/international featuring the technical sheets.

We recommend checking it when selecting the product.