



BIO WATER-BASED COATINGS FOR ACCOYA® WOOD

QUALITY BY THE LIGHT OF THE SUN





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WORLD LEADERS IN INNOVATIVE COATINGS

Pioneers by vocation. Leaders through expertise. **ICA Group** is a global gold standard in innovative coatings.

The leading Italian group has its headquarters in Civitanova Marche (Macerata) along with two major production facilities. It operates internationally through seven subsidiaries with sites in Spain, Germany, Poland, China, India, the US and Canada.

Committed to **top quality through innovation**. This principle has underpinned the group's every initiative and strategic decision from the very beginning, guaranteeing the development of **sustainable, cutting-edge products**, both in terms of quality and technology.



A NEW HORIZON OF ENVIRONMENTAL SUSTAINABILITY

ICA Group has been researching and developing sustainable products since its early days and recognizes the absolute need for **environmentally friendly solutions**. It is committed to R&D projects aimed at reducing the environmental impact of products and processes, in order to forge a better world.

It has developed a comprehensive range of **water-based coatings** that enable reduced environmental impacts and health risks. These products perfectly replace conventional solvent-based coatings without losing any of the chemical, physical or aesthetic properties.

The **eco-friendly nature** of ICA water-based products is also recognized by the **UL** certification body, well known around the world thanks to **GREENGUARD**, which certifies the reduced interior air pollution and risk of chemical exposure of products in terms of VOCs (Volatile Organic Compounds). UL has also conducted **ECV** (Environmental Claim Validation) on ICA's **BIO** products, certifying the exact percentage of renewable content.



PROVEN EXPERIENCE AND QUALITY

ICA Group has been developing water-based coatings for outdoor wooden surfaces for over 30 years. The company's extensive experience enables selection of the best raw materials and optimization of formulations for their application.

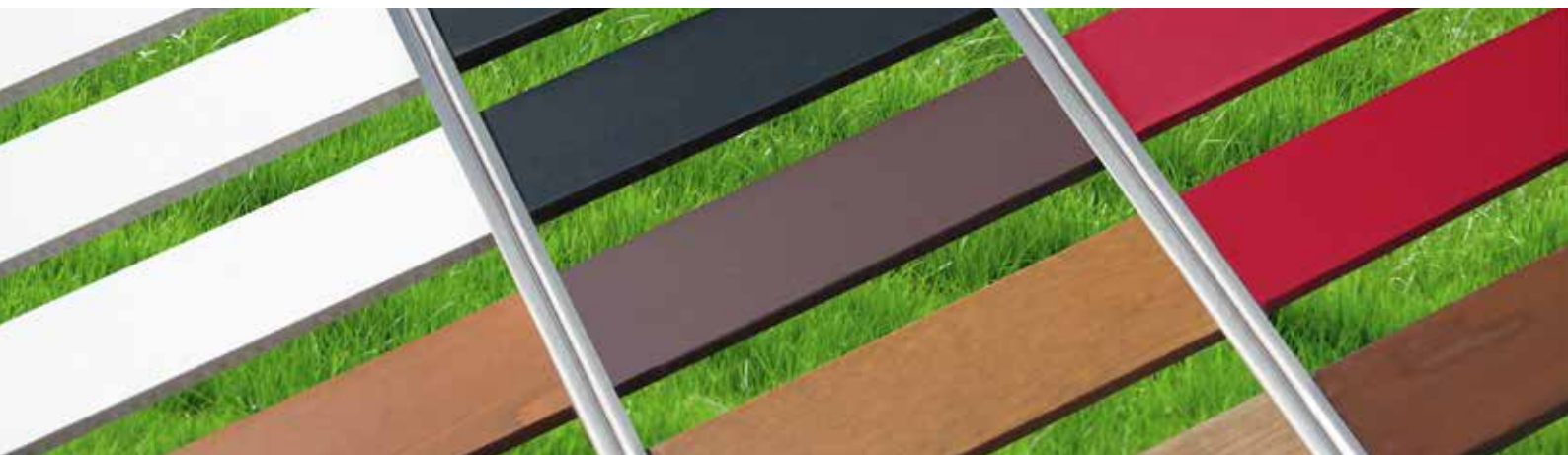
Aligned with its policy of high-quality and full commitment to safeguarding the environment, all ICA Group products undergo **the most rigorous testing**.

Inside the group's accredited **Performance Lab**, experts verify the chemical/physical properties of coatings to guarantee outstanding performance, certify product service life and guide the development of new solutions.

In addition to laboratory testing, it also conducts **natural weathering tests at various sites**.

The **ARBOREA SUN** project to analyze the performance of ICA outdoor water-based coatings was launched in 2010 in collaboration with the group's technology partner **Q-Lab**, an accredited materials testing laboratory.

The project assessed the durability of various coating cycles applied to different woods.



ACCOYA® WOOD: AN ULTRA-HIGH PERFORMANCE SUSTAINABLE WOOD

Accoya® long life modified wood has become the timber industry benchmark for performance and sustainability. No other timber can offer this combination of **stability, durability and versatility**. This modified wood is sustainably sourced with **FSC® certification** and has minimal environmental impact throughout its life; from production, through its use, right the way to the end of its life.

Accoya® wood offers unprecedented reliability for timber. It is manufactured and tested to avoid visible swelling, shrinkage or distortion. Highly durable and stable, **Accoya®** excels in any climate in tough applications like windows, doors, cladding and decking.



TRICOYA®

Many of the benefits offered by Accoya® solid acetylated wood, including enhanced dimensional stability, durability and fungal resistance, hold true for **Tricoya®**.

The functionality and versatility of wood-based composite panels give them universal appeal. Up until this point, the suitability of MDF panels for indoor and outdoor environments that are constantly wet has been limited and over laid by practical limitations.

Tricoya® combines the versatility, ease of machining, ease of coating and large panel format with the performance heritage and credentials of Accoya®. Accoya® and Tricoya® have been in the market since 2007 and 2011 respectively, predominantly in Europe, and are living up to their promise to manufacturers and specifiers alike.

The market for **Tricoya®** wood-based panels is limitless, and can include:

- Window and door components
- Door skins
- Trim
- Façade cladding/siding
- Signage
- Fascia/soffit panels and other secondary exterior applications
- Wet interiors, including wall linings in swimming pools, bathrooms, changing rooms, etc.
- Outdoor kitchens
- Specialty furniture including lockers, cubicles, chairs & tables
- Play frames, tree houses & exterior composite furniture
- Sound barriers

WHY CHOOSE ACCOYA® AND TRICOYA®

Multiple weathering tests run by accredited external laboratories have demonstrated that ICA coating cycles on Accoya® and Tricoya® wood guarantee **extraordinary performance**.

Other benefits:

- Design freedom, with a multitude of textural options, including smooth, and brushed finishes
- Bespoke size and finish options for ultimate creative freedom
- Proven outstanding coating performance
- Easy cleaning and renewal with ICA Easy Coat water-based refresher

KEY FEATURES



100%
RECYCLABLE



INSECT
RESISTANT



MULTIPLE
FINISHES



DESIGN
FREEDOM



LONG
SERVICE LIFE



NON
TOXIC



HIGHLY
DURABLE



LOW
MAINTENANCE



HIGHLY
STABLE



IDEAL
FOR
COATING



EXCELLENT
MACHINABILITY



WARRANTY

ACCOYA® AND ARBOREA BIO FOR A SUSTAINABLE FUTURE

Accoya® wood is a high-quality choice that **fully supports environmental sustainability requirements**. Accoya® wood products generally last longer than the time required to grow trees used to produce the material, thus reducing atmospheric CO₂ emissions in comparison with other woods.

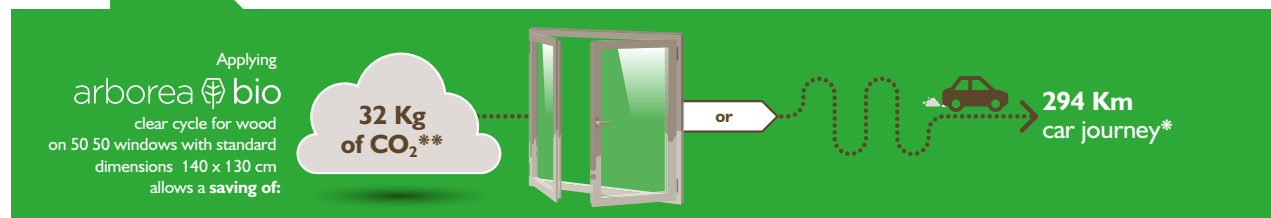
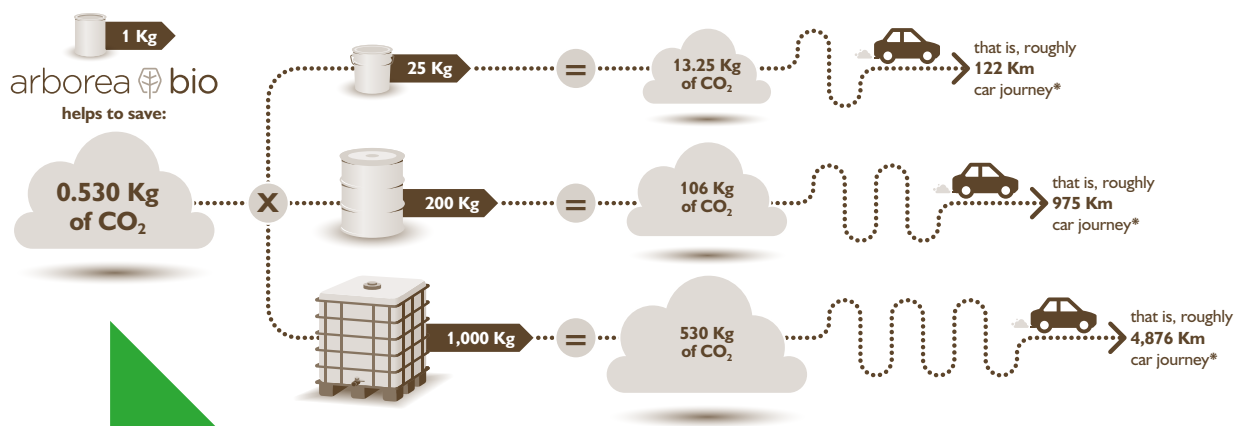
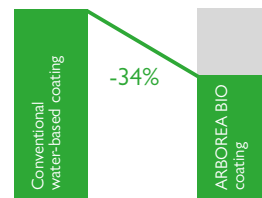
ARBOREA BIO water-based coatings are made with renewable materials from an innovative refining process which converts waste vegetable matter that is not fit for human consumption. When applied to Accoya® wood, further reduces CO₂ emissions through a special formulation guaranteeing a certified content of renewable raw materials. ARBOREA BIO products boast a **Carbon Footprint** that is 34% lower than conventional water-based coatings.

Using 1000 kg of ARBOREA BIO, compared with the same amount of a conventional water-based coating, saves 530 kg of CO₂ emissions, which is the same amount of carbon dioxide emitted by a car in 4,876 km.

The combination of ICA coatings and Accoya® wood thus reduces the environmental impact of outdoor wooden products and frames and shutters as never before, with **guaranteed service life and unequaled aesthetic results**.



Carbon Footprint:
Conventional
water-based coating
vs ARBOREA BIO
on Accoya®



*Calculation uses the mean value of 108 g of CO₂/km emitted by a newly registered car (EEA data, Regulation (EU) 2019/631, 29 June 2021).
**Calculated on reference product LA321IG20BIO, including overspray.

ACCELERATED WEATHERING AS PER EN 927

The accelerated weathering test as per EN 927 was repeated twice successfully, for a total of 4,032 hours.

When a cut is made into the coating layer, Accoya® wood passes the test, while other woods suffer coating detachment and color changes around the cut before the test is completed.

TEST RESULTS COMPARED



NATURAL WEATHERING IN FLORIDA

To check the effectiveness of its coating cycles in the most extreme environmental conditions, ICA exposed its products to **natural weathering** at the **Q-Lab** test stations in **Florida** and **Arizona**.

Florida's **hot and humid climate** makes it possible to verify the performance of ICA coatings under significant stress due to the combined effect of high levels of energy produced by solar radiation and high relative humidity (70% RH).

To verify effectiveness of its coating cycles under exceptional exposure conditions, ICA goes beyond the natural weathering tests conducted in Florida's harsh climate, also putting its products to the test in the even more unforgiving environment of the Arizona desert.



NATURAL ACCELERATED WEATHERING IN ARIZONA

Arizona's **hot and dry climate** is characterized by very intense sunlight, very high temperatures, reaching 46°C during the summer, and very low rainfall and humidity. Furthermore, the nights are generally cold, and temperature changes severely stress both wood and coating.

These were the conditions used for the **Q-TRAC** accelerated weathering tests with a number of coating cycles on Accoya®. The test method uses mirrors to direct sunlight onto the test panel, further stressing the coating layer.

In addition, during the day, a mechanism makes it possible to track the sun's movement in order to guarantee maximum exposure at all times. With this method, the sum of UV radiation is around five times higher than natural exposure in Florida. In addition, the sample is subjected to a cycle of humidification from sunset until sunrise using pre-programmed sprays. This is therefore an extremely tough test, not only due to the energy involved but also the artificially generated humidity.



Q-TRAC ON CLEAR AND PIGMENTED CYCLES

With outdoor exposure, the type of wood used is a key factor for coating-cycle duration.

Subjected to the stress generated by combined action of sunlight and humidity in the Arizona desert, ICA's clear and pigmented cycles passed the Q-TRAC test when applied to Accoya® wood.

On other woods, such as non-acetylated pine, the pigmented cycles passed the test without damage, unlike the clear cycles. This is because the coating will last much longer if the substrate is effectively shielded from the sunlight, as with pigmented cycles, or highly resistant by nature, like Accoya®.

Since the Q-TRAC test is much more severe than the EN 927 test, it is possible that coating cycles which are fully compliant with European standards would fail the testing conducted in the extreme conditions of the Arizona desert.

TEST RESULTS COMPARED



EXTREME BIO

Sustainable choices are possible, even in extreme conditions.

On July 27, 2021, a team of ICA Group lab technicians took ten wood samples coated with the ARBOREA BIO products to one of the highest mountain huts in Italy, Punta Penia (3,343 m).

Found right at the summit of the Marmolada group, the location enables prolonged exposure to sunlight from dawn till dusk.

The climate is particularly harsh: after the strong solar exposure during the summer (UV radiation over 30%), the site is covered in snow for around seven months in winter, with temperatures dropping below -20°C.

This is an extremely harsh natural weathering test lasting two years, in accordance with standard EN927-3, after which it was verified that the finish on the panels remained almost completely unaffected, despite the extreme conditions they were exposed to.

BIO products not only respect the environment but also offer extraordinary chemical and physical properties and are capable of overcoming any challenge.



EXAMPLES OF ICA COATING CYCLES ON ACCOYA®

APPLICATION TO WINDOWS AND DOORS

BIO pigmented cycle with spraying application [N°A1]

- IM216BIO Transparent one-component BIO water-based exterior wood stain - 50 micron
- FA34BBIO White one-component BIO water-based base coat for outdoor applications - 175 micron
- LA321IBG20BIO-LA321IBG20BIO/RAL.. White/pigmented BIO matt water-based top coat for outdoor applications (20 gloss) - 300 micron

BIO metallic cycle with spraying application [N°A2]

- IM216BIO Transparent one-component BIO water-based exterior wood stain - 50 micron
- FA34BBIO White one-component BIO water-based base coat for outdoor applications - 175 micron
- LA321IG20BIOVM... ARBOREA METAL Metallic BIO water-based top coat (20 gloss) - 300 micron

BIO stained cycle with spraying application [N°A3]

- IM216BIOC.. Stained one-component BIO water-based exterior wood stain - 50 micron
- IM441BIO Transparent one-component BIO water-based exterior wood stain and sealer - 50 micron
- LA321IG20BIO Douglas one-component BIO matt water-based top coat (20 gloss) - 300 micron

BIO pastel cycle with spraying application [N°A4]

- IM538C... ARBOREA PASTEL stained semi-matt water-based exterior wood stain - 50 micron
- IM441BIO Transparent one-component BIO water-based exterior wood stain and sealer - 50 micron
- LA321IBAG20BIO Transparent one-component BIO water-based matt wood primer and finish (20 gloss) +5% IM538C.. - 300 micron

Note:

Colors can be chosen from any of the three color charts (ICA, RAL and NCS), which encompass more than 2,300 colors, all of which can be faithfully reproduced using the ICA Color tintometric system. ICA can also create sample colors at the client's request, and conduct color checks using a spectrophotometer.



EXAMPLES OF ICA COATING CYCLES ON ACCOYA®

APPLICATION TO CLADDING

Medium-build BIO stained cycle with spraying application [N°A9]

- IM764BIO Exterior wood stain and sealer with wax finish - 50 micron (2 coats)

High-build BIO stained cycle with spraying application [N°A10]

- IM216BIOC... Stained one-component BIO water-based exterior wood stain - 50 micron
- LA321IG20BIO Douglas one-component BIO matt water-based top coat (20 gloss) - 300 micron

Medium-build BIO pigmented cycle with spraying application [N°A11]

- IM127BBIO White one-component BIO water-based exterior wood stain - 50 micron
- LA321IG20BIO Douglas one-component BIO matt water-based top coat (20 gloss) - 300 micron

High-build BIO pigmented cycle with spraying application [N°A12]

- IM127BBIO White one-component BIO water-based exterior wood stain - 50 micron
- LA321IBG20BIO-LA321IBG20BIO/RAL.. White/pigmented BIO matt water-based top coat for outdoors applications (20 gloss) - 300 micron

Note:

To reduce moisture absorption into frame edges or end grains, it is recommended to apply the SA10 clear, water-based, one-component sealer, by brush or spatula, or the SA11, using a thin-tipped dispenser.



EXAMPLES OF ICA COATING CYCLES ON ACCOYA®

APPLICATION TO **DECKING**

Low-build BIO stained cycle with spraying application [N°A13]

- IM983BIO BIO water-based oil made up of linseed oil and natural waxes for outdoor applications
- 50 micron (2 coats)



EXAMPLES OF ICA COATING CYCLES ON TRICOYA®

APPLICATION TO TRICOYA® PANELS

BIO pigmented cycle with spraying application [N°A5]

- FA34BBIO White one-component BIO water-based base coat for outdoor applications - 150 micron
- LA321IBG20BIO-LA321IBG20BIO/RAL.. White/pigmented BIO matt water-based top coat for outdoor applications (20 gloss) - 250 micron

BIO pigmented cycle with spraying application [N°A6]

- IM121S Transparent one-component water-based exterior wood stain - 50 micron
- LA321IBG20BIO-LA321IBG20BIO/RAL.. White/pigmented BIO matt water-based top coat for outdoor applications (20 gloss) - 300 micron

BIO metallic cycle with spraying application [N°A7]

- FA34BBIO White one-component BIO water-based base coat for outdoor applications - 175 micron
- LA321IG20BIOVM... ARBOREA METAL Metallic BIO water-based top coat (20 gloss) - 300 micron

BIO metallic cycle with spraying application [N°A8]

- IM121S Transparent one-component water-based exterior wood stain - 50 micron
- LA321IG20BIOVM... ARBOREA METAL Metallic BIO water-based top coat (20 gloss) - 300 micron



CARING FOR WOOD

ICA coating cycles offer outstanding, long-lasting protection for wood.

EASY COAT ready-to-use water-based refresher is recommended to keep the coating looking good.

When used regularly, **EASY COAT** prevents the coating layer from weathering and extends its protective power, delaying the need for maintenance.



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