



— ALUMINUM SURFACES

PROCESS & PROTECTIVE FILMS,
MACHINES & LAMINATORS, TECHNICAL TAPES



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ABOUT NOVACEL

As a 40-year-old worldwide leader in surface solutions, Novacel proposes a comprehensive offer to its customers, ranging from industrial process films to technical tapes and paper products, machines and associated services.

Novacel continuously focuses on expertise and innovation to provide its customers and partners with the most appropriate recommendations to add value to their materials and to help enhance their industrial efficiency.

Novacel is present in **90 countries** with more than **750 employees** and several production sites worldwide. In line with its 'Beyond the Surface' ethos, Novacel is deeply committed to sustainability and innovation for People and the Planet. Novacel is part of the Compagnie Chargeurs Invest Group.

NOVACEL, EXPERT IN SURFACE SOLUTIONS FOR YOUR ALUMINUM

Aluminum is a versatile material, lightweight yet strong, durable and flexible, highly reflective and fully recyclable. It is increasingly present in our daily lives and is widely used across many fields thanks to its numerous valuable properties.

Whether bare, brushed, anodized or colored anodized, its various structures and finishes allow for multiple designs, shape effects and esthetics.

Before becoming a finished product, aluminum undergoes a number of demanding industrial processes. To prevent damage to its appearance during these steps, **choosing the right safe process and protective solution is key!**

WHY USE NOVACEL SOLUTIONS?

> A Global Solution Provider

Novacel offers complete solutions with processing films, technical tapes, paper products, machines and associated services.

> Unique Features For Your Specific Needs

We create innovative solutions to improve your industrial efficiency and ensure the well-being of people; like films dedicated to new surfaces or processes, low noise, easy peel or easy unwind.

> Expertise & Technical support

Our teams are dedicated to providing you with the best experience and assisting you from the initial search for the right solution right up to its final implementation.

> A Strong CSR Commitment

Novacel works continuously on its carbon footprint by improving its production, creating eco-responsible solutions and putting human well-being at the heart of its strategy.



— NOVACEL'S RESPONSIBILITY

Novacel's CSR Strategy is organized around three pillars:

- **Preserving the planet's resources**
- **Building a dynamic, human-centered, and inclusive industry**
- **Fostering a responsible industrial community**

As a responsible manufacturer, Novacel takes responsibility for the impacts of its decisions and activities on society and the environment. Reducing the environmental impact of our products by innovating right from their initial conception up to their end-of-life and taking care of teams' and customers' health are at the heart of Novacel's CSR Strategy.

Oxygen, Novacel's unique range of more sustainable products, promises to:

- **Reduce fossil raw materials as far as possible**
- **Maximize the use of renewable resources**
- **Reduce carbon emissions**
- **Be recyclable***



– FOSSIL RESOURCES



– CO₂ EMISSION



+ RECYCLING

Moreover, increasing human wellbeing at work is a daily preoccupation at Novacel both internally and externally. Novacel is constantly developing technologies with this in mind in order to decrease repetitive strain injury (RSI) and increase the quality of the work environment:



EASY PEEL



EASY UNWINDING



LOW NOISE

In addition, Novacel promotes operational excellence and staff engagement through regular team upskilling and training. Finally, through our responsible purchasing charter, we strive to adhere to ethical business practices with our partners and our employees' approach to their work is governed at all times by the Compagnie Chargeurs Invest Group Code of Conduct.

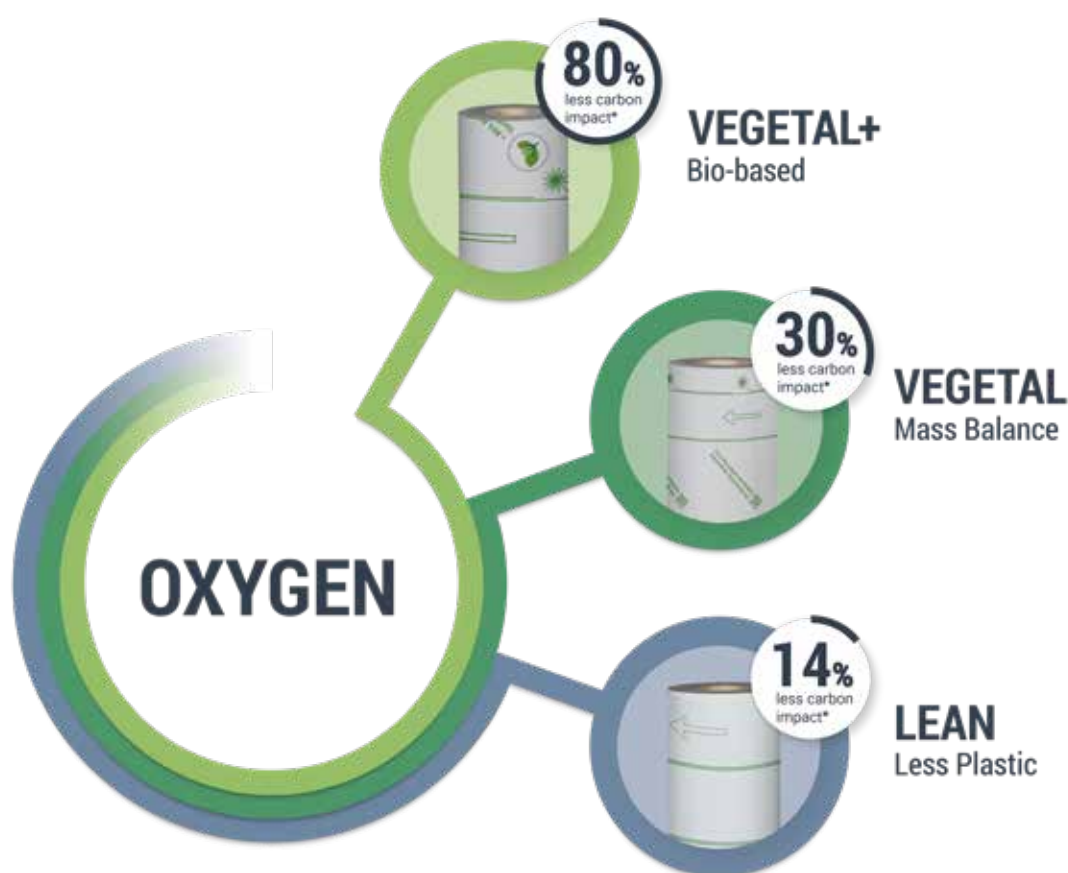
**Recyclable by the forms of recycling as defined by ISO 472:2013 Plastics*

— OXYGEN, NOVACEL ECO-CONCEIVED RANGE

Manufacturers of aluminum are driven by sustainability and committed to preserving the environment. They aim to reduce their carbon footprint by significantly increasing the overall post-consumer recycled content in their materials and reducing the use of fossil-based films.

Building on of its commitment to responsibility, **Novacel has designed the first more eco-responsible range of process and protective films**, based on its successful, well-established products designed for aluminum.

Novacel OXYGEN, 3 technologies to reduce your carbon impact



*Estimation based on the certified LCIs (Life Cycle Inventories) of similar standard products.



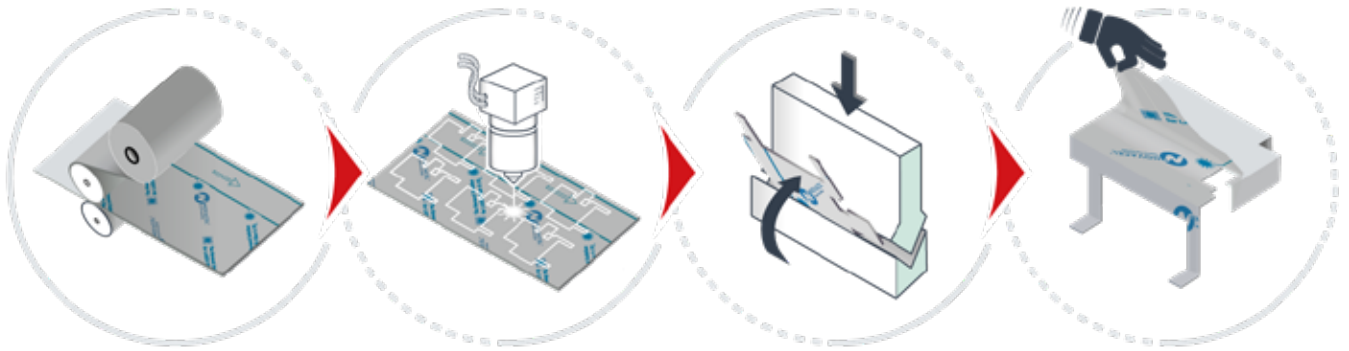
Novacel is certified ISCC+ for its Oxygen vegetal range. By sourcing ISCC-certified mass-balanced material, Novacel helps replace virgin fossil resources with renewable feedstocks and reaffirms its commitment to best environmental practices.

Find all Oxygen codes and their specificities in green in the tables inside the brochure.

FILMS FOR LASER PROCESSES

The laser cutting process has always been demanding, from the original CO₂ sources to today's newest fiber technologies. Films used in this process must be resilient, with **appropriate laser absorption and resistance to cutting gas pressure** as essential prerequisites.

Novacel is the **worldwide leader of surface solutions for laser cutting operations**. With years of experience and continuous innovation, Novacel offers the widest range on the market to meet all your needs. Novacel stands by your side to help you overcome your daily industrial challenges.



NOVACEL ASSETS

- **Single-step, full-speed cutting**
- **No bubbling and no surface marking**
- **Minimal shrinkage**
- **Accurate film edges**
- **Peel-off in one piece**

OXYGEN 3300, AN ECO-CONCEIVED ALTERNATIVE

- Thickness: 100 µm / 3.9 mils
- More than **80% of bio-sourced polyethylene**
- **Reduces CO₂ emissions by 80%**, with 0.06 kg CO₂/m²*
- **Recyclable****



NOVACEL EXPERTISE: THE LOW NOISE TECHNOLOGY

> **The 4464RLN solution** with **Low Noise Technology** enables **very high-adhesion** processing and protective film rolls to be unwound at **noise levels below 85dB**, which is below what is required by existing international standards.



> **Protect your employees' health** with the Low Noise range, which minimizes unwinding noise and limits risks of musculoskeletal disorders (MSD) for your teams.



* Minimum reduction based on certified LCIs (Life Cycle Inventories)

**Recyclable by the forms of recycling as defined by ISO 472:2013 Plastics



Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finishes	Specific features
4273RES	105 µm/4.1mils	Ultra High	6 months	Textured	/
4228REF	100 µm/3.9 mils	Very High	6 months	All kinds	/
4464RLN	100 µm/3.9 mils	Very High	6 months	All kinds	Low Noise technology
3300	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Vegetal+, an eco-conceived alternative with 80% CO₂ reduction
3030GAB	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Vegetal, an eco-conceived alternative with 30% CO₂ reduction
3200GAB	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Lean, an eco-conceived alternative with 14% CO₂ reduction
4188REF	100 µm/3.9 mils	Very High	/	All kinds	Clear transparent for indoor use
4329REH	80 µm/3.2 mils	High	6 months	Glossy and lightly brushed	/
4318REM	75 µm/3.0 mils	Medium	6 months	Glossy	Dedicated to thin sheets (<1mm)
4327RFA	70 µm/2.8 mils	High	6 months	Glossy and lightly brushed	For glossy and lightly brushed finishes
4236RET	60 µm/2.4 mils	High	6 months	Glossy and lightly brushed	Dedicated to thin sheets (<1mm) Perfect for coverage of the underside of sheets

All grades are grey/black films, except 4188REF, which is a clear transparent film.

— FILMS FOR DEEP DRAWING PROCESS

Whatever the application — design and decoration, lighting, furniture, household appliances or other general products — the deep drawing process for aluminum surfaces is one of widely used methods for shaping sheets into end-products.

Novacel is here to help you to find the right match for each new shape or model you need to produce. Novacel continues to innovate, adding new tools to your toolkit for deep-drawing applications with a dedicated range of films.

This smart technology greatly improves films performance during pressing operations. Combined with **high-performance adhesive systems, Novacel offers optimal solutions for every drawing depth, shape, and process.** This range delivers **unmatched and unprecedented conformability** on the market for a polyolefin backing.

Novacel Deep Drawing is an **exclusive range of PVC-free films dedicated to the highly demanding deep-drawing process.**

NOVACEL'S CHOICE: **9309** - The long-lasting film

- **Very long-lasting, high-performance process and protective film**
- **Preserves your finish** up to the end customer
- **Compatible with deep drawing process**
- **Highly conformable**



NOVACEL ASSETS

- **Perfect conformability** to the shape of your piece
- **High-quality backing and coating** to prevent impacts and scratches during application of pressure
- **Premium adhesion** adapted to your drawing depth, finish and process time
- **No lifting** during the process



NOVACEL'S EXPERTISE: THE EASY PEEL TECHNOLOGY



In addition to improved performance, you can **protect your workers from musculoskeletal disorders (MSD)** by making unwinding effortless.

Novacel Easy Peel films, such as **9245, 4255 and 4105**, offer the perfect solution right up to the end of the production line with no compromise to adhesion during the manufacturing process.



Quality inspection is essential at the end of the manufacturing line: **Novacel's Easy-Peel solution is 10 times faster and easier to remove than other products**, allowing quality control while keeping the same productivity.



Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finishes	Specific features
9309	75 µm/3 mils	High	/	All kinds	Exceptional conformability
4105 /4107	60 µm/2.4 mils	Low	/	Glossy	Easy Peel technology for continuous processes
9245	60 µm/2.4 mils	Medium - Low	/	Glossy	Easy Peel technology for continuous processes Exceptional conformability
4241	60 µm/2.4 mils	Medium - High	/	All kinds	Versatile solution, suitable for a wide range of applications
4806	60 µm/2.4 mils	Medium - Low	2 months	Glossy	Easy Peel technology for continuous processes
4805	50 µm/2 mils	Medium - Low	2 months	Glossy	Easy Peel technology for continuous processes
4255	50 µm/2 mils	Medium	2 months	Mill and brushed	Easy Peel technology for continuous processes
4432	45 µm/1.8 mils	Medium - Low	/	All kinds	Versatile solution, easy to remove

All grades are blue transparent.

FILMS FOR MULTIPURPOSE PROCESSES

Aluminum surfaces undergo many other processes, during the production of the final product, each with its own specific features, such as: drilling, slitting, profiling, bending, punching, stamping, etc. These operations subject aluminum sheets and coils to high levels of stress, which can sometimes damage the surfaces.

With Novacel's process and protective films, you can be confident that **your aluminum surfaces will reach your customers in a perfect condition, free from scratches, scuffs, or soiling.**

You can rest assured that **your surfaces will be preserved during a wide range of processes** with Novacel's versatile solutions. This ensures that all manufacturing processes on aluminum can be carried out without constraints or post-process treatments. Our industry experience allows us to provide high-quality films that are specifically tailored for your needs.

That's why Novacel has developed a wide variety of **multipurpose films for aluminum.**

NOVACEL ASSETS

- **Premium adhesion** to protect the most common aluminum finishes
- **Optimum protection** during mechanical processing (bending, punching, etc.).
- **Easy to remove**
- **Outdoor warranty**



OXYGEN 3000, AN ECO-CONCEIVED ALTERNATIVE

- Thickness: 70 µm / 2.8 mils
- **Uses 30% vegetal oil waste** via mass balance approach
- **Reduces CO₂ by approximately 30%**, with 0.16 to 0.18 kg CO₂/m²*
- **Recyclable****



Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finish	Specific features
4233	70 µm/2.8 mils	Medium	6 months	All kinds	Versatile solution for mechanical processes
3000	70 µm/2.8 mils	Medium	6 months	All kinds	Oxygen Vegetal, an eco-conceived alternative with 30% of CO₂ reduction
3230	70 µm/2.8 mils	Medium	6 months	All kinds	Oxygen Lean, an eco-conceived alternative with 14% of CO₂ reduction
4256	60 µm/2.4 mils	Medium - Low	3 months	High-gloss and mill	Easy to peel
4218	50 µm/1.9 mils	Low	/	High-gloss	/
9251	50 µm/1.9 mils	Medium - Low	/	All kinds	Versatile solution, easy to peel, blue transparent

All grades are black/white, except 9251 which is blue transparent and 4218 which is yellow.

* Minimum reduction based on certified LCIs (Life Cycle Inventories)

**Recyclable by the forms of recycling as defined by ISO 472:2013 Plastics

— THE INTERLAYER FILM FOR COILS

The **Novacel interlayer solution** is a high-quality, polyolefin glueless film designed specifically for **interlayer applications during the winding of aluminum coils** prior to surface treatment. Its clear transparency ensures **optimal visibility and complete surface covering** without compromising the integrity of your material.



NOVACEL ASSETS

- **Very long-lasting, high-performance film**
- **Anti-static performance** – prevents static build-up between sheets
- **Preserves your finish** up to the end customer - prevents scratches and damage unlike traditional paper
- **No adhesive, no residue** – 100% glue-free solution for easy handling
- **Cost-effective** – more economical than paper alternatives



Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finish	Specific feature
9131	29 µm/1.1 mils	High	/	All kinds	Glueless interlayer film

— LAMINATION MACHINES

Through its Omma and Walco brands, the **Novacel Special Machines (NSM)** division offers **cutting-edge gluing and lamination technology** dedicated to the aluminum industry. For decades, our expertise and know-how have driven the development of innovative, reliable, and unique solutions.

Our **Laminators** provide easy and fast lamination with wrinkle and bubble-free film application on flat surfaces of any size. They can be integrated into new or existing production lines or used as stand-alone machines, equipped with either manual or automatic cutting technology.

NOVACEL ASSETS

- **High-quality machines** for **precise and damage-free application** of film to aluminum surfaces
- **Integration into new or existing production lines**, or as **stand-alone machines**
- **Manual or automatic cutting** technology
- **Services:** Installation and startup, maintenance, troubleshooting and software updates.
- **Auto-switch:** automatically replaces the roll of process film, allowing lamination to continue seamlessly, saving time, costs and material.

CUSTOM DESIGNED

We design and manufacture custom gluing, composition, and lamination lines tailored to your specific technical requirements. Whether you need standalone machines or fully integrated solutions, we adapt to your needs.

From small to large working widths, high-speed operations, asymmetrical substrates, or unique layout configurations, our technical team is dedicated to supporting you throughout your project and finding the best possible solutions.

Walco and Omma also specialize in applying consumables beyond standard process and protective films. Thanks to our extensive technical expertise, we provide solutions that address even your most complex challenges!

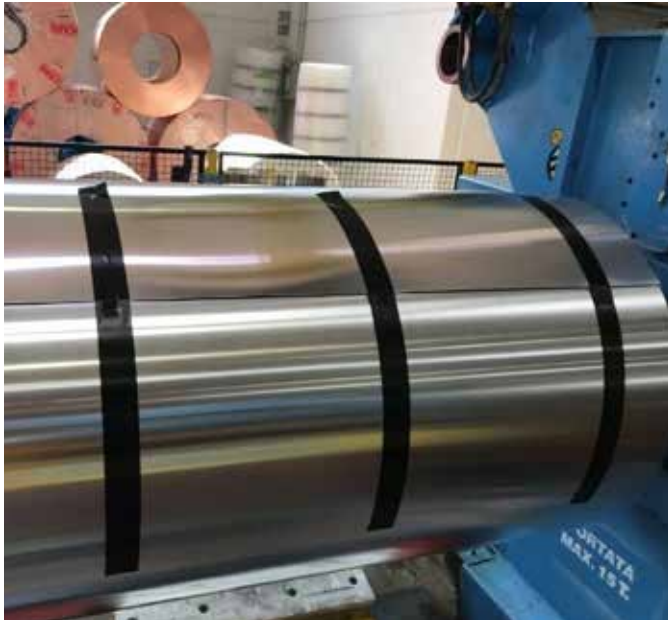


Lamination	Machine	Standard dimension	Thickness	Film application	Specific features
Horizontal	TX	Widths: 1 300mm (51") up to 2 200mm (86")	Up to 80mm (3.15")	Single or double-sided	- Automatic length detection - Automatic cut
Horizontal	PRO-JET	Widths: 1 400mm (55") up to 2 000 mm (78")	Up to 80mm (3.1")	Single or double-sided	- Entry-level applicator - Manual cut
Horizontal	PRO-J	Widths: 1 300mm (51") up to 2 200mm (86")	Up to 80mm (3.2")	Single or double-sided	- Automatic cut - Wide customization possibilities
Horizontal	I-Walco	Widths: 1 220 mm (48") to 4 570 mm (180")*	Up to 60mm (2.5")	Single or double-sided	- Designed for sheet fed operation - Protective or permanent film application

**Other sizes available on customer request.*

— TECHNICAL TAPES

Whether you produce or ship aluminum, securing metal coils with **reliable tapes is essential to protect both your staff and your products**. Novacel has developed a range of **technical tapes** that provide high tensile strength and long elongation to **prevent lift-up or tearing during handling**.

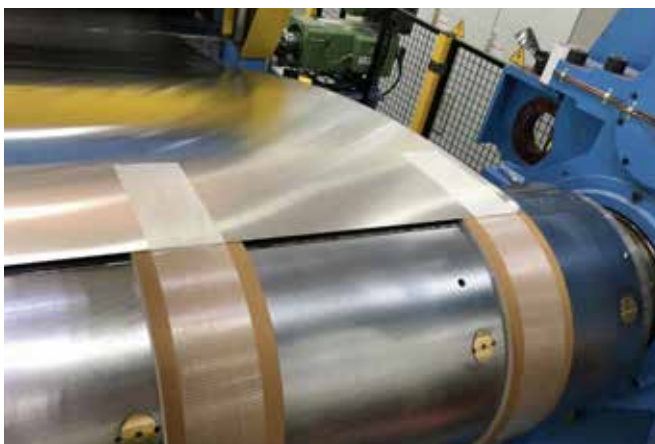


NOVACEL ASSETS

- **Metal coil end tabbing tapes:** a single-sided adhesive range offering strong adhesion and high tensile strength for securely fastening metal coils, easy to remove and leaving no residue
- **Metal overlap splicing tapes:** double-sided adhesive tape with high-stress and high-temperature resistance, ensuring high efficiency in metal-manufacturing processes
- **Metal butt splicing and coil core starting tapes:** a high-adhesive single-sided reinforced range providing maximum efficiency for metal splicing and coil core starting applications

Grade	Color	Carrier/backing	Type of adhesive	Total thickness (µm)	Tensile Strength (daN/cm)	Removability
BN6489	●	MOPP	Rubber Based	100	28MD*	★
BN6490	●	MOPP	Rubber Based	110	30MD*	★★★
BN811	○	PET	Acrylic Solvent	90	/	No
BN53	●	PET	Silicone	80	/	★★
BN6440 (mono-oriented)	○	PP reinforced	Synthetic Rubber Based	130	25 MD*	No
BN6441 (cross weave)	○	PP reinforced	Synthetic Rubber Based	130	27 MD*	No

*MD : Machine Direction



FIND YOUR MATCH

A formal approval process by Novacel experts is imperative before using our products. Our technical and safety data sheets are available on request. As the applications of Novacel films are very wide-ranging and the conditions of use may vary from one company to another, Novacel recommends that you systematically carry out qualification tests on an industrial line before using the product and that you inform Novacel of the results.

FILMS FOR LASER PROCESSES

Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finishes	Specific features
4273RES	105 µm/4.1mils	Ultra High	6 months	Textured	/
4228REF	100 µm/3.9 mils	Very High	6 months	All kinds	/
4464RLN	100 µm/3.9 mils	Very High	6 months	All kinds	Low Noise technology
3300	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Vegetal+, an eco-conceived alternative with 80% CO₂ reduction
3030GAB	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Vegetal, an eco-conceived alternative with 30% CO₂ reduction
3200GAB	100 µm/3.9 mils	Very High	6 months	All kinds	Oxygen Lean, an eco-conceived alternative with 14% CO₂ reduction
4188REF	100 µm/3.9 mils	Very High	/	All kinds	Clear transparent for indoor use
4329REH	80 µm/3.2 mils	High	6 months	Glossy and lightly brushed	/
4318REM	75 µm/3.0 mils	Medium	6 months	Glossy	Dedicated to thin sheets (<1mm)
4327RFA	70 µm/2.8 mils	High	6 months	Glossy and lightly brushed	For glossy and lightly brushed finishes
4236RET	60 µm/2.4 mils	High	6 months	Glossy and lightly brushed	Dedicated to thin sheets (<1mm) Perfect for coverage of the underside of sheets

All grades are grey/black films, except 4188REF, which is a clear transparent film.

FILMS FOR DEEP DRAWING PROCESS

Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finishes	Specific features
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4806	60 µm/2.4 mils	Medium - Low	2 months	Glossy	Easy Peel technology for continuous processes
4805	50 µm/2 mils	Medium - Low	2 months	Glossy	Easy Peel technology for continuous processes
4255	50 µm/2 mils	Medium	2 months	Mill and brushed	Easy Peel technology for continuous processes
4432	45 µm/1.8 mils	Medium - Low	/	All kinds	Versatile solution, easy to remove

All grades are blue transparent.

FILMS FOR MULTIPURPOSE PROCESSES

Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finish	Specific features
4233	70 µm/2.8 mils	Medium	6 months	All kinds	Versatile solution for mechanical processes
3000	70 µm/2.8 mils	Medium	6 months	All kinds	Oxygen Vegetal, an eco-conceived alternative with 30% of CO₂ reduction
3230	70 µm/2.8 mils	Medium	6 months	All kinds	Oxygen Lean, an eco-conceived alternative with 14% of CO₂ reduction
4256	60 µm/2.4 mils	Medium - Low	3 months	High-gloss and mill	Easy to peel
4218	50 µm/1.9 mils	Low	/	High-gloss	/
9251	50 µm/1.9 mils	Medium - Low	/	All kinds	Versatile solution, easy to peel, blue transparent

All grades are black/white, except 9251 which is blue transparent and 4218 which is yellow.

INTERLAYER FILM FOR COILS

Grade	Thickness (µm/mils)	Adhesion	Outdoor resistance	Finish	Specific feature
9131	29 µm/1.1 mils	High	/	All kinds	Glueless interlayer film

LAMINATION MACHINES

Lamination	Machine	Standard dimension	Thickness	Film application	Specific features
Horizontal	TX	Widths: 1 300mm (51") up to 2 200mm (86")	Up to 80mm (3.15")	Single or double-sided	- Automatic length detection - Automatic cut
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TECHNICAL TAPES

Grade	Color	Carrier/backing	Type of adhesive	Total thickness (µm)	Tensile Strength (daN/cm)	Removability
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BN6490	●	MOPP	Rubber Based	110	30MD*	★★★
BN811	○	PET	Acrylic Solvent	90	/	No
BN53	●	PET	Silicone	80	/	★★
BN6440 (mono-oriented)	○	PP reinforced	Synthetic Rubber Based	130	25 MD*	No
BN6441 (cross weave)	○	PP reinforced	Synthetic Rubber Based	130	27 MD*	No

*MD : Machine Direction

For more grades or information, please refer to your sales representative.



NOVACEL



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