



NEUBAU

SUSTAINABILITY GUIDE 2023



CONTENTS

01	WE ARE THE SUSTAINABLE AVANTGARDE	02
02	SUSTAINABILITY FACTS	06
03	BRAND VALUES	11
04	CARBON-NEUTRAL PRODUCTION	16
	Local production	18
	Renewable energy	21
05	SUSTAINABLE MATERIALS	23
	Plant-based polymers	24
	naturalPX	29
	natural3D	31
	3D printing process	32
	natural Acetate	36
	Titanium	38
	Stainless steel	40
	Demo lenses	42
	Packaging and accessories	44



01. WE ARE THE SUSTAINABLE AVANTGARDE

We do more than just talk about good intentions.

“Sustainability”, “transparency” and “authenticity” are perhaps the most well-known and over-used buzzwords in business today. They can be very easy to say, but perhaps not always so easy to put into practice. It’s important to us at NEUBAU that we do more than just talk about good intentions.

Sustainability has always been at the core of our company’s values, ever since we started. We are constantly exploring how to take new steps towards sustainability and to expand our existing initiatives. We develop, examine, question and change. We see ourselves as the laboratory of the future, doing our part to handle the world’s resources responsibly. Combining sustainability, responsibility, and design, challenging conventions, and offering new, creative solutions: that’s our philosophy.

JOIN THE SUSTAINABLE AVANTGARDE

SUSTAINABLE MATERIALS

At a time of unprecedented climate change, resource depletion and biodiversity loss, we know it is important to have a clear vision and robust strategies to ensure that we are part of the positive change we want to see. For us this starts with the sourcing of our raw materials to create our high-quality eyewear, to the packaging of our products, as well as to the power supply of our machines.

CONSISTENT SUSTAINABILITY

We are grateful for the energy, dedication and creativity of everyone in the NEUBAU family who is driving forward technical innovation in our production processes and practices, from closing the loop in our 3D printing process to providing cleaning cloths made from recycled PET bottles. **Every effort that is made to minimize waste, conserve energy and safeguard water supplies helps us to live up to our green objectives.**

True sustainability needs transparency. This is why we clearly measure, monitor and report on the impacts of our processes and products and hold ourselves accountable every step of the way. We have made great progress but continue to strive to make every aspect of our business as sustainable as possible.

The purpose of this guide is to explain the key facts behind our products and operations and include information on how we are continually factoring sustainability in everything we do.

Our sustainable brand philosophy is reflected in the following 5 pillars.

5 PILLARS OF SUSTAINABILITY

HANDMADE IN AUSTRIA

ECOLOGICAL PRODUCTION

SOCIAL RESPONSIBILITY

SUSTAINABLE MATERIALS

CLIMATE PROTECTION

O2. SUSTAINABILITY FACTS

O1

CARBON-NEUTRAL PRODUCTION

In 2022, our production facilities in the heart of Austria, has reached carbon neutrality. We were able to achieve this goal by systematically converting a wide range of processes to sustainable methods, as well as through compensation payments towards certified climate protection projects.

O2

PLANT-BASED POLYMER

Our polymer frames are either 65% or 100% plant-based and are partially certified as biodegradable. We are therefore making great progress at a time when only 0.5% of the total plastics produced worldwide are made from plant derivatives.



O3

HIGH AIR FILTERING STANDARDS

Our strict exhaust air purification process filters out 97% of carbon emissions, well above legal requirements.

O4

ZERO WASTE PROCESS

Our 3D printing process is especially sustainable because it only uses the material it needs during the sintering process. Any excess material can be reused.

05

CODE OF CONDUCT

Since 2019, our Code of Conduct for suppliers requires strict adherence to environmental norms and responsible sourcing practices.

06

RENEWABLE ENERGY

Since 2017 our NEUBAU production facility in Austria has been powered by 100% renewable energy.

07

SAVING ELECTRICITY WITH LED

A total of 370 light sources converted to LED at the production site reduce electricity consumption by 60%.



08

180,000 RECYCLED BOTTLES

Since 2017, over 180,000 empty plastic bottles have been recycled into NEUBAU EYEWEAR cleaning cloths. The 12 grams of plastic derived from a single half-liter bottle is enough to make two cloths.

09

360.000 PLASTIC WRAPPERS SAVED

The recycled-plastic cleaning cloths are wrapped exclusively in recyclable paper, which eliminated the need for over 360,000 plastic wrappers since 2017.



03. BRAND VALUES

Since day one, NEUBAU EYEWEAR has been dedicated to manufacturing high-quality design eyewear based on a sustainable brand philosophy. **Each of our steps focuses on the following aspects:**

SUSTAINABLE AVANTGARDE

We are the sustainable Avantgarde. That means that we are a socially fair and ecologically responsible business that improves living together today and leaves a better planet to the next generation. **We are pioneers in using creative and innovative impulses that challenge the status quo and set new rules.** With our products we show a lifestyle people want to pursue, because it makes the world a more livable place with progressive ideas, style and premium fashion.

PREMIUM QUALITY

Premium in design means attention to detail, clear implementation of the idea and no compromise on quality. **Each of our frames is lovingly crafted in Austria from sustainable materials. Conscious use of resources and cutting-edge technologies not only help us achieve our vision of sustainability, but to maintain the highest quality standards.** We continue to challenge conventions and offer bold, new and creative solutions to meet our quality and design standards. We create glasses with a unique design that stand out from the crowd.

Our key values are reflected in everything we do.





DESIGNED, DEVELOPED AND HANDMADE IN AUSTRIA.

SUSTAINABLE MATERIALS

For our high-quality eyewear, we use only sustainable materials such as plant-based polymers, titanium and recycled stainless steel. Environmental awareness is always at the forefront of NEUBAU, even when it comes to our accessories and by-products. Only carefully selected materials that meet our high environmental standards are used for our accessories, packaging, and marketing brochures. **Our Code of Conduct for suppliers and partners also ensures strict compliance with environmental regulations and responsible sourcing practices.**

SUSTAINABLE PRODUCTION

All of our glasses are developed, manufactured and handmade in our carbon-neutral production facility in the heart of Austria. True to the motto "Handmade in Austria", each pair of glasses is manufactured in 200 to 300 steps, of which around 80% are manual processes. Producing locally gives us direct control over flexible, efficient production processes we can be sure that they have a minimal impact on the environment.



04. CARBON-NEUTRAL PRODUCTION

To achieve our sustainability goals, we take every action possible to reduce the environmental impact of our production practices. Now, we have succeeded in going one step further and reach a new milestone in our mission. From 2022, our production facilities in the heart of Austria, will reach carbon neutrality (with compensation). We were able to achieve this goal by systematically converting a wide range of processes to sustainable methods, as well as through compensation payments towards certified climate protection projects.

*Local production, green energy
and zero emissions.*

HANDMADE IN AUSTRIA

Since 1964, our family-owned parent company, Silhouette Group, has proudly produced its eyewear in our home country of Austria, in the heart of Europe. This gives us **direct control over the production processes we use**, so that we can be sure of their minimal environmental impact. **Since Austria is home to some of the strictest environmental protection regulations in the world**, it is a perfect location for promoting our sustainable production practices.

SUSTAINABLE ARCHITECTURE

Just like our eyewear, the buildings on our company campus in Linz are designed to combine striking aesthetics with eco-friendly technologies. **Powered by renewable energy, and designed to optimize natural climate control and daylight**, they offer our employees one of the greenest working environments in Austria. Our buildings are encircled by a beautiful park, carefully designed to promote natural biodiversity while also offering a relaxing environment for our employees to get in touch with nature during their break times.

EMISSIONS PURIFICATION

Our headquarters in Linz is situated in a densely populated residential area. We feel an obligation towards our neighbours to minimize noise and air pollution from our production facilities. **We use sophisticated filtration technologies to purify exhaust air, removing 97% of pollutants.** The exhaust gas purification at our headquarters far exceeds the legal requirements for emissions reduction, resulting in nearly zero emissions.



By systematically converting a wide range of processes to sustainable methods, our production facility is carbon neutral since 2022.



WATER CONSERVATION

Our Linz headquarters is located within a national water conservation area. **Every day, the wastewater from our production is carefully analyzed.** The pH value, temperature and volume of wastewater output are all continually monitored. Austria has some of the strictest wastewater regulations in the world. Therefore, our wastewater is treated in-house to filter out pollutants and make it safe for water treatment. **104,000 liters of water are reprocessed each day inside the water conservation area where we are located.**

100% RENEWABLE ENERGY

Sustainable production all begins with emissions-free, sustainable, 100% renewable electricity! **Our headquarters in Linz is supplied with 100% renewable energy, fueled by a combination of solar, wind, hydropower, biomass and biogas.** Our buildings are climate-controlled using environmentally friendly district heating. This conserves waste heat flow to be used for heating purposes, waste heat generated during individual production steps is used for air drying in our eyewear production.

SMARTFLOWER SOLAR PANELS

We are constantly looking for ways to get even more out of our renewable energy sources. That's why we installed state-of-the-art solar panel **"Smartflowers" on our company campus in Linz. Smartflowers are an Austrian-made solar panel system that produce up to 40% more energy than conventional solar panels.** The Smartflowers feature a unique, smart design which makes them self-maintaining. Just like a real flower, they fold themselves up each evening at sunset. This initiates a self-cleaning process to ensure optimal power generation the next day. In addition, all existing and expandable roof areas have been used for extensive photovoltaic installations.

SAVING ELECTRICITY WITH LED

A total of 370 light sources converted to LED at the production site reduce electricity consumption by 60%.

ENVIRONMENTALLY FRIENDLY MEANS OF TRANSPORT

Together with our parent company Silhouette Group, we mostly use company cars that are electric.

INVESTING IN CLIMATE PROTECTION

In addition to systematically converting from conventional production processes to sustainable methods, every year we invest in a climate protection project to offset those emissions that are still unavoidable. Electricity is the most used form of energy in eyewear production, which is why, together with the Silhouette Group, we are devoting special attention to this topic. The 2023 compensation amount will be invested in the expansion of a 400 MW photovoltaic plant in India. The purpose of the project is to generate power using renewable energy source which is exported to the regional grid system of India. In addition, we are continuing to expand our own power initiative through photovoltaic systems on our roofs within the production facility in Linz, Austria.

With sustainability as a foundation of our company, we are always mindful when it come to our planet. This is why we are working with special dedication on pursuing new important milestones within our sustainability philosophy. After the production facility has been carbon-neutral with compensation since 2022, we have set a new goal: By 2027, our eyewear production will be carbon-neutral, completely without compensation through external environmental protection projects.



A close-up photograph of several bright red, spiky plant pods, likely from a castor bean plant, resting on large green leaves. The pods are covered in numerous sharp, red spines and are arranged in a cluster. The background is dark, making the red pods and green leaves stand out.

05. SUSTAINABLE MATERIALS

Along with our strict environmentally friendly production practices, we source and use as many sustainable materials as possible to ensure we minimize our impact on the planet. This calls for some high-tech solutions, turning sustainable organic materials into some of the highest-quality materials on the eyewear market today.

PLANT-BASED POLYMERS



We have called upon Mother Nature to create effective and versatile materials that can be used to produce our spectacle frames.

The heavy use of petroleum-based plastics around the world is taking a huge toll on the environment. The overconsumption of these plastics depletes precious mineral resources and destroy massive parts of our environment. **The distillation of petroleum and the cracking of naphtha require enormous amounts of energy. These factors led us to opt for plant-based alternatives: *naturalPX* and *natural3D* based on the castor plant, as well as natural acetate from cotton and wood.**

CASTOR OIL – A HIGH-PERFORMANCE AND SUSTAINABLE RAW MATERIAL

SUSTAINABLE SOURCING

The castor beans used to produce oil for our plant-based plastics *naturalPX* and *natural3D* are sourced from a cooperative of 5,800 certified farmers in India. The farmers are part of a sustainable farming movement called the PRAGATI Initiative. Under this initiative, they have adopted improved farm waste management practices and received safety kits and intensive training to improve their skills and help them cultivate in an ecological way. The castor oil plants used for our eyewear are all non-genetically modified (non-GMO).

CHARACTERISTICS

Castor oil is a colorless to pale liquid with a very distinct taste and smell. The oil and its derivatives are used in a wide range of manufacturing applications, including lubricants, hydraulic and brake fluids, paints, dyes, coatings, inks and nylon. Its many remarkable properties have earned the castor oil plant the title of “miracle plant”, however, it is also well known for being the source of the deadly toxin ricin. This toxic protein is only found in the seeds of the plants which must be handled with extreme care. Ricin is insoluble in oil which means it can be safely removed from the oil during the pressing process. **Cold pressed castor oil is therefore non-toxic which is why it is also widely used in medications, cosmetics and as the base of biopolymers such as *naturalPX* and *natural3D*.**



*Traditional craftsmanship benefits from
modern expertise and innovation.*

BENEFITS OF PLANT-BASED POLYMERS

*Free from harmful chemicals
such as BPA, BPS and plasticizers.*



RESOURCE-SAVING

naturalPX and *natural3D* are both plant-based plastics made from GMO-free castor oil, opposite to non-renewable petroleum-based resources that are damaging to the environment. **At the moment, plant-based plastics only make up 0.5% of all manufactured plastics world-wide, so we are leading the way** in developing and utilizing materials that do not deplete the planet's precious mineral resources.

BEAUTY AND FLEXIBILITY IN DESIGN

naturalPX is more transparent than glass. This wonderful characteristic makes it possible to produce a wide variety of innovative color combinations and crystal-clear finishes, perfect for customers who want to express their unique style and personality. *natural3D* has slightly different properties, but still offers a great deal of flexibility in terms of colors and styles. Our 3D frames are distinguished by their fine details, rich opaque colors and textures which would be hard to achieve using conventional manufacturing methods.

FANTASTIC WEARABILITY

naturalPX and *natural3D* are not just kinder to the environment, they also have many special properties that optimize the look and feel of NEUBAU EYEWEAR. Their high elasticity and form stability also ensure that the NEUBAU frames fit well and retain their shape.

POLLUTANT-FREE

The processes involved in the extraction of castor oil do not demand high levels of energy, which means carbon dioxide emissions are very low. Our customers can therefore purchase our eyewear safe in the knowledge that we are doing everything possible to minimize our company's carbon footprint. In addition, **both materials are free from harmful chemicals such as BPA, BPS and plasticizers** which are major pollutants and are linked to a wide range of health problems.

MADE TO LAST

Today's environmentally conscious consumers are looking for well-designed products that last. Frames made from *naturalPX* and *natural3D* are designed to stay in shape and stand the test of time which is great for customers who follow the ethos of "buy less and buy better".

SKIN-FRIENDLY

naturalPX and *natural3D* are hypoallergenic materials. This means they do not react with your body's natural chemicals or anything else you put on your skin.

*We push things forward
with new technologies and
sustainable materials.*



NATURAL PX

65% of this innovative plant-based polyamide material is made up of oil extracted from organically grown castor beans. The remaining 35% is regular polymer which is needed to reinforce the strength and elasticity of the material.

naturalPX doesn't just help us minimize our carbon footprint, it allows us to design and manufacture high-performance eyewear in a wide range of beautiful colors and finishes.

THE COLORING PROCESS

We have spent many years developing sophisticated production methods to produce attractive colored spectacle frames. Two methods are used to produce our collections of vibrant or subtly shaded eyewear. Color can be added to the *naturalPX* material before it runs through the injection molding process, or additional color can be added after this process through air brushing, dip dyeing, digital printing and other processes which are well-guarded trade secrets.

INJECTION MOLDING

We have developed an extremely fast injection molding process for our *naturalPX* material. This high-speed injection molding method controls the flow of *naturalPX* more precisely as it enters the mold which makes the process more efficient and prevents unnecessary waste. The machine is heated to 290° Celsius and then the liquid *naturalPX* is injected into a mold which is cooler. As it cools down to room temperature the *naturalPX* hardens perfectly to the shape of the mold cavity.

More than 90% of the material that is used, is processed to produce a new frame. Any small amounts of excess *naturalPX* that escape can be recycled. 400 frames can be produced by each injection molding machine every day, making this a highly efficient and sustainable manufacturing process.



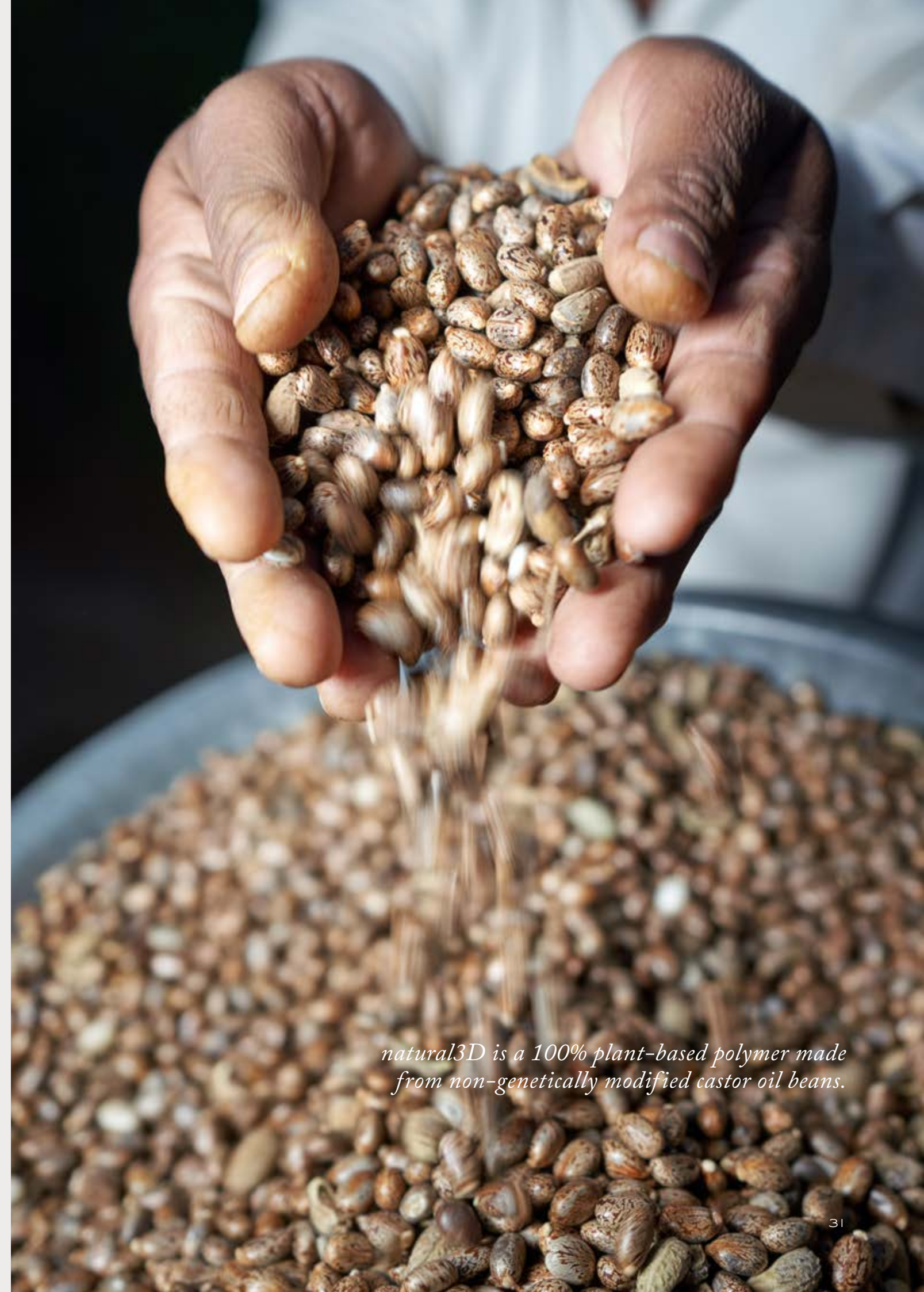
NATURAL 3D

natural3D is a 100% plant-based polymer made from non-genetically modified castor oil beans which we use in our 3D printing process. **This material is not only derived from a renewable source, it also enables us to produce the frames without creating solid or cutting waste, so the whole process leaves an extremely small ecological footprint.**

natural3D produces extremely robust and durable components comparable to those created with our *naturalPX* material. It is also solvent resistant and plasticizer free.



Our *natural3D* printed frames are extremely flexible and impact resistant. This robust material ensures that the frames retain their shape and are built to last. 3D printed frames are also extremely lightweight. The cutting-edge finishing and sealing processes used during 3D printing produces frames with a beautiful finely pored surface, so they look and feel great too.



natural3D is a 100% plant-based polymer made from non-genetically modified castor oil beans.

3D PRINTING WITH NATURAL3D



In simple terms, our 3D printing process involves sintering layers of powdered plastic into a solid structure. This is known as SLS (selective laser sintering). “Sintering” is the process of forming a solid shape by heat without melting it to the point of liquefaction. The SLS process is carried out in the following steps:

1. HEATING

The highly refined super-light bio-polyamide powder (natural3D) is heated by a high-powered laser to just below melting point (165°C).

2. PRINTING

The 3D structure is created by printing layer upon layer of powder that are each separately sintered by the laser. This process takes 12 hours.

3. COOLING

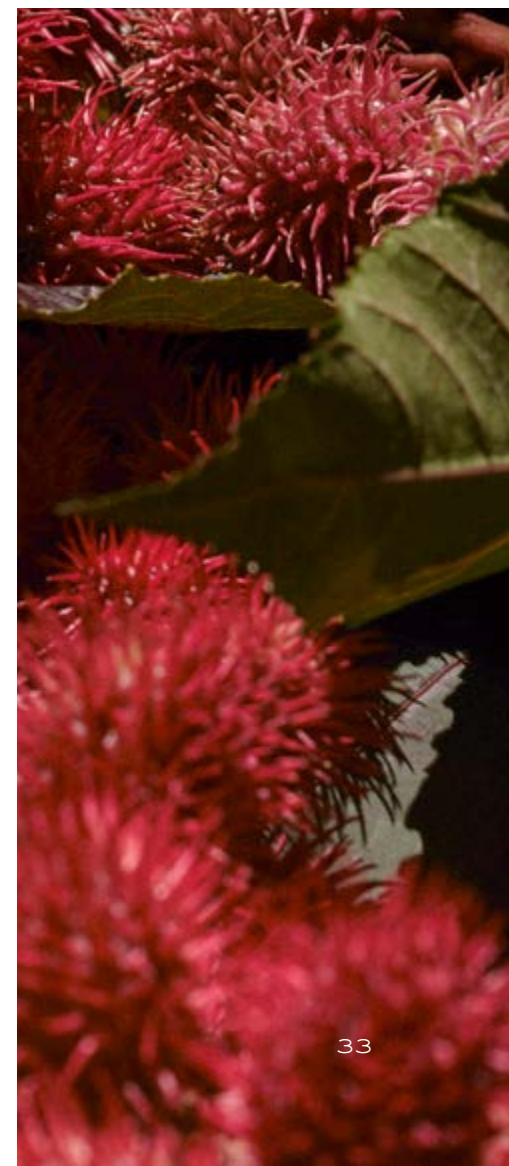
The cooling process also takes 12 hours after printing and then the printed parts can be unpacked ready for surface treatment and coloration.

SURFACE TREATMENT

The parts have an opaque white finish when they come out of the printer. They have to undergo surface treatment before they can be color treated. A sand blasting process is used to remove any residues of the polyamide powder. This step is carefully executed to prevent any surface damage. The surface is then polished ready for the coloration process.

THE COLORING PROCESS FOR 3D PRINTED FRAMES

Our high-tech coloring process is a well-guarded company secret. We only produce parts in monochrome shades at the moment, but we are continually developing new and innovative color options. The colors are resistant to natural chemicals (such as sweat), UV light and any type of solvent normally used by opticians.





3D printing improves sustainable design and minimizes the amount of resources needed.

SUSTAINABLE ASPECTS OF 3D PRINTING

3D printing is a more resource-efficient manufacturing method than traditional production of frames. It is especially sustainable because it only uses the material it needs during the sintering process. This results in an exceptionally efficient, zero-waste manufacturing solution.

A significant proportion of the *natural3D* material used in the printing process can be recycled. After each batch has been printed, 50% of the residue powder can be mixed with new powder to create a new batch of products or printing filaments. This production method does not require any extra tools, so it also saves on resources.

OUR 3D PRINTING RECYCLING PROCESS

The ethos of circularity in manufacturing drives all our decisions and is why we introduced our closed-loop 3D manufacturing process at the beginning of 2019. Circularity is achieved by recycling residue polyamide in our production process and by ensuring waste we are unable to use can be used in other applications. We are able to achieve this in a cost-effective way that conforms with our environmental commitments as specified in the ISO 14001 standard.

During every printing process, a rectangular box is completely filled with powder. Not all of the powder is melted during the 3D printing process and is defined as “used” powder. This can be mixed with new powder and reused to produce a new batch of components. The mixture cannot contain more than 50% used powder.

Once the old powder is no longer usable, it is collected by a specialist plastics processing company which ensures that the powder is properly recycled within environmental management guidelines. As long as the material is free of any traces of oxidation and contamination, it can be recycled in any production process that does not specifically require 100% virgin products. The manufacturer of our 3D printer covers the transport costs and acts as an intermediary between us and the recycling company. The money is used to fund social initiatives as part of their Corporate Social Responsibility program.



NATURAL ACETATE

With *natural Acetate*, we are expanding our product portfolio with another plant-based polymer with outstanding properties. In contrast to traditionally used acetates, our *natural Acetate* is a purely plant-based material composition of cotton and wood, which is processed at NEUBAU in the form of LA-ES Biocell and Mazzuccheli M49. Using plasticizers of plant origin and renewable raw materials, the sustainable acetate is certified biodegradable.



In a harmonious combination of sustainable acetate and durable beta titanium, the eyewear models impress with exceptionally high product quality, tangible lightness and ultimate wearing comfort. A particularly noteworthy innovation is the specially developed, patented screwless hinge for optimum handling and adjustment.

Due to outstanding characteristics such as particularly vivid color depth and pleasant haptics, acetate is a universally used material and popular far beyond the eyewear industry.



TITANIUM



The titanium we use in our eyewear is made from high-quality beta titanium which is an alloy of titanium with the addition of other metals such as vanadium and aluminum which provide additional strength and toughness. The exact composition of the alloy we use is a well-guarded company secret.

We only use high-grade beta-titanium from Japan from suppliers who meet our rigorous quality requirements. Titanium can also be used in a sustainable way as only minimal amounts of material are used to produce excellent results. Titanium can also be considered as a sustainable material because it does not deteriorate, it can be used forever and is easy to recycle. Due to its high strength and low density, products can be made small and light which avoids the unnecessary use of energy resources. In addition, only a minimal amount of material is required to manufacture our eyewear.

CHARACTERISTICS

Our titanium provides our frames with great elasticity, strength and stability, making them the ideal choice for active people. This material has many benefits as it's stronger and more lightweight than many ordinary metals. It is highly resistant to wear and tear and will stay looking newer for longer. It is also hypoallergenic and can be used for medical purposes such as transplants.

LIGHT
FLEXIBLE
LONG-LASTING
ROBUST

STAINLESS STEEL

Stainless steel is an alloy of iron and carbon steel with chromium and other elements. It is widely used in the food industry and medical applications because of its durability, surface finish and resistance to corrosion. It is an environmentally friendly choice of material as it can be recycled an indefinite number of times, with no degradation. 65% of the stainless steel we use for our products is recycled steel and it is estimated that around 80% of all stainless steel worldwide is recycled, making it the most re-used material on the planet.

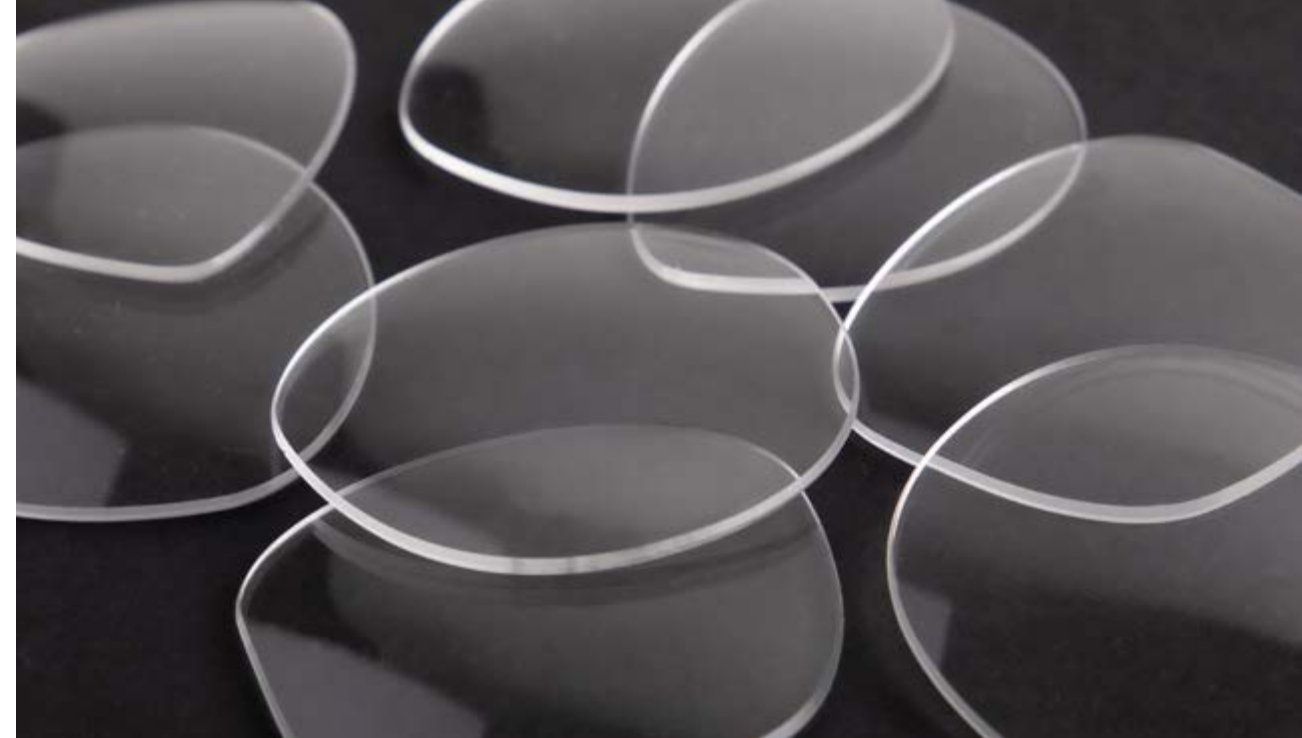
CHARACTERISTICS

Stainless steel is very lightweight and flexible, making it a great choice where comfort is a priority. As it is also a very ductile material, it allows us to create ultra-thin and intricate frame designs. It is also non-corrosive, highly durable and resistant to breakage. Stainless steel is complying with the EN 1811 standard which defines the safety parameters for metals that come into contact with the skin.





SUSTAINABLE DEMO LENSES



We identified that large amounts of precious resources are wasted when producing demo lenses in an unsustainable way, so we decided to take a different approach.

Over the last years we managed to save over one ton of CO₂ per year by producing all demo lenses of our foundation collection out of recycled materials from our own eyewear production. This means over two thirds of our demo lenses are produced inhouse in the heart of Austria and don't need to be shipped from our suppliers.



SUSTAINABLE PACKAGING AND ACCESSORIES



Recycled, innovative, eco-friendly.

All our accessories for our eyewear are manufactured with functionality and the good of the environment in mind. All NEUBAU optical glasses and sunglasses are shipped with a cleaning cloth and a case made using the highest possible amount of a mixture of innovative recycled and recyclable materials .



The cleaning cloth that comes with all our eyewear is also made from 100% recycled plastic bottles and is only packed in recyclable paper which is FSC (Forest Stewardship Council) certified. Using paper has eliminated the need for 360,000 plastic wrappers since 2017.

Even our marketing materials which are distributed at the point of sale are produced with carefully selected materials sourced from suppliers who meet our high environmental standards.



JOIN THE
SUSTAINABLE
AVANTGARDE



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