neubau-eyewear.com

# SUSTAINABILITY GUIDE

APRIL 2020

neubau

SEE & DO GOOD
SUSTAINABLE EYEWEAR

# Urban lifestyle and sustainability – that‘s neubau eyewear

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# 01 Executive summary

“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. We make sure that we use our hands, our hearts and our minds to apply these noble objectives to everything we do, whether it’s the way we power our machinery, source our raw materials or package our products.

**We do more than just talk about good intentions.**

## See & Do Good

We have worked hard to build a brand that puts people and the planet at the heart of every decision we make. The purpose of our motto “See & Do Good” is to remind us every day that we are not just creating stylish eyewear that helps people appreciate the beauty of the world around them, we are also making an effort to make the world a fairer, cleaner and healthier place for future generations.

## 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 materials we use to create our high-quality, urban-inspired eyewear. Our innovative bio-based materials naturalPX – used to create our injection molded frames – and natural3D – used to create our 3D printed frames – have been developed using castor beans from India sourced from a farmers’ cooperative that operates in a sustainable manner.

## Consistent ecology

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.

**Achieving sustainability is an ongoing process.**

True sustainability needs transparency. This is why we clearly measure, monitor and report on the impacts of our processes and products and hold ourselves to account every step of the way. We have made great progress, but we know there’s still more to be done. 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 into everything we do. We hope that reading it will persuade you that neubau is so much more than just buzz words and good intentions.

**Let´s talk details.**

# 02 Sustainability facts

## Top 10 sustainability facts

01

### Sustainable materials

Our high-quality eyewear is made using sustainable materials, including bio-based plastics, titanium and stainless steel.

### Bio-based polymer

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

02

03

### 121,000 bottles

Since 2017, over 121,000 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.

04

### 218,000 wrappers

The recycled-plastic cleaning cloths are wrapped exclusively in recyclable paper, which eliminated the need for 218,000 plastic wrappers between 2017 and 2019.

05

### Solar panel

We also feed the power grid at our production site with our three innovative Smartflower solar panel systems which generate 40% more solar energy than traditional panels.

06

### Renewable energy

Since 2017 both neubau production plants in Austria and the Czech Republic have been powered by 100% renewable energy.

07

### 90% smaller footprint

Our recyclable soft cases, introduced in 2017, have a 90% smaller carbon footprint than conventional hard cases.

08

### High air filtering standards

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

### 1 ton/year $CO_2$ savings

By producing our demo lenses in Austria, we save at least one ton of $CO_2$ emissions each year from transportation alone.

09

10

### Code of Conduct

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

# 03
# Brand values

Since day one, neubau eyewear has been dedicated to producing high-quality urban-inspired eyewear using methods and materials that greatly reduce our environmental impact. Our focus is on protecting the planet at every stage of our production process, whether it's using alternative energy to power our production plants, filtering pollutants out of the exhaust air we produce, or carefully managing our resources to avoid waste and recycle materials wherever possible.

# Designed, developed and manufactured in Austria.


## Inspired by urban culture

Our company takes its name from Vienna's most creative district: Neubau, a home to people who are dedicated to making their lives into a work of art. Our products pay homage to creative cosmopolitan hubs around the world, from Williamsburg to Shoreditch and beyond.

## Sustainable by design

At the same time, part of the pleasure of owning our unique urban eyewear is the knowledge that it is produced with the utmost respect for the environment.
Each pair is lovingly crafted from sustainable materials in Austria and the Czech Republic. Conscious use of resources and cutting-edge technologies help us achieve our vision of sustainability.

## Respectful relationships

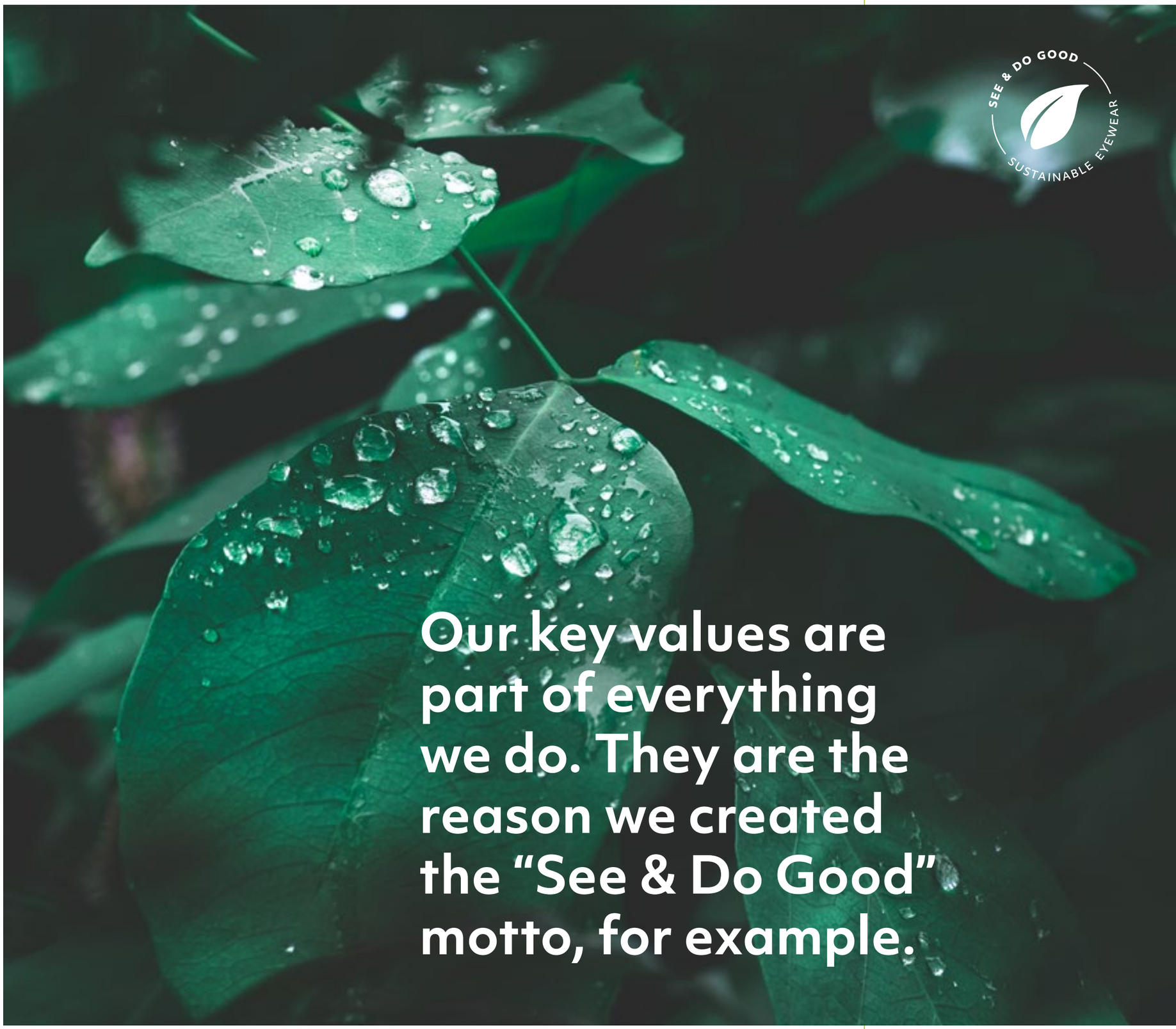
Along with our strongly held values, we believe that a respectful relationship with our shareholders, partners and customers is essential to our long-term success. Our diverse workforce includes people of 29 different nationalities.
56% of our employees at our headquarters in Linz, Austria are women, including 18% of our managers in leading positions.

## Our vision

We will become a real force in the premium segment. Premium in design and sustainability. Design in its literal sense: we are not interested in designer glasses with licensed logos. The people we are talking to want style, they want premium designer eyewear. Here we will dominate - and continue to go forward.

## Our values

Our core values are urban lifestyle and sustainability, as enshrined in our motto “See & Do Good.” These values shape our company culture and motivate our employees and inspire our customers to “see and do good” every day. We want our eyewear to open people’s eyes — and their hearts and minds — to the possibilities of sustainable fashion. Our company proves that excellent eyewear design and environmentally friendly business practices can go hand in hand.



# 04
# Sustainable production facilities

To achieve our sustainability goals, we take every measure possible to reduce the environmental impact of our production practices. This means using energy from clean sources only, filtering air pollutants and conserving water. At neubau eyewear, we don’t just talk the talk, but actually walk the walk when it comes to sustainable production.

# Local production, green energy and zero emissions

## Made in Austria

Since 1964, our family-owned parent company, Silhouette International, 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 assured 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.

## Emissions purification

Our headquarters in Linz is situated in a densely populated residential area. We feel an obligation towards our neighbors 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!

## Sustainable architecture

Just like our eyewear, the buildings on our company campus is 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.

**100% renewable energy, fueled by a combination of solar, wind, hydropower, biomass and biogas.**

### 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. The 10-20% of our wastewater that exceeds legal pollution limits 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 renewable energy and our production facilities in the Czech Republic also runs on 100% renewable energy, fueled by a combination of solar, wind, hydropower, biomass and biogas. Our buildings in Linz are climate-controlled using environmentally friendly district heating. This conserves waste heat flow for heating purposes.

### 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.

# 05
# Sustainable materials

Along with our strict environmentally friendly production practices, we take every effort to 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.


# Castor oil – a high-performance and sustainable raw material

## Sustainable sourcing

The castor beans used to produce oil for our bio-based plastic are sourced from a cooperative of 2,730 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.

# From castor oil to innovative biopolymers

We have called upon Mother Nature to create effective and versatile materials that can be used to produce our spectacle frames. It all starts with the castor oil plant which is known as the miracle plant for very good reasons.

The heavy use of petroleum-based plastics around the world is taking a huge toll on the environment. The overconsumption of these plastics deplete precious mineral resources and destroy massive parts of our environment. The distillation of petroleum and the cracking of naphta require enormous amounts of energy. These factors led to the development of our plant-based alternatives naturalPX and natural3D.

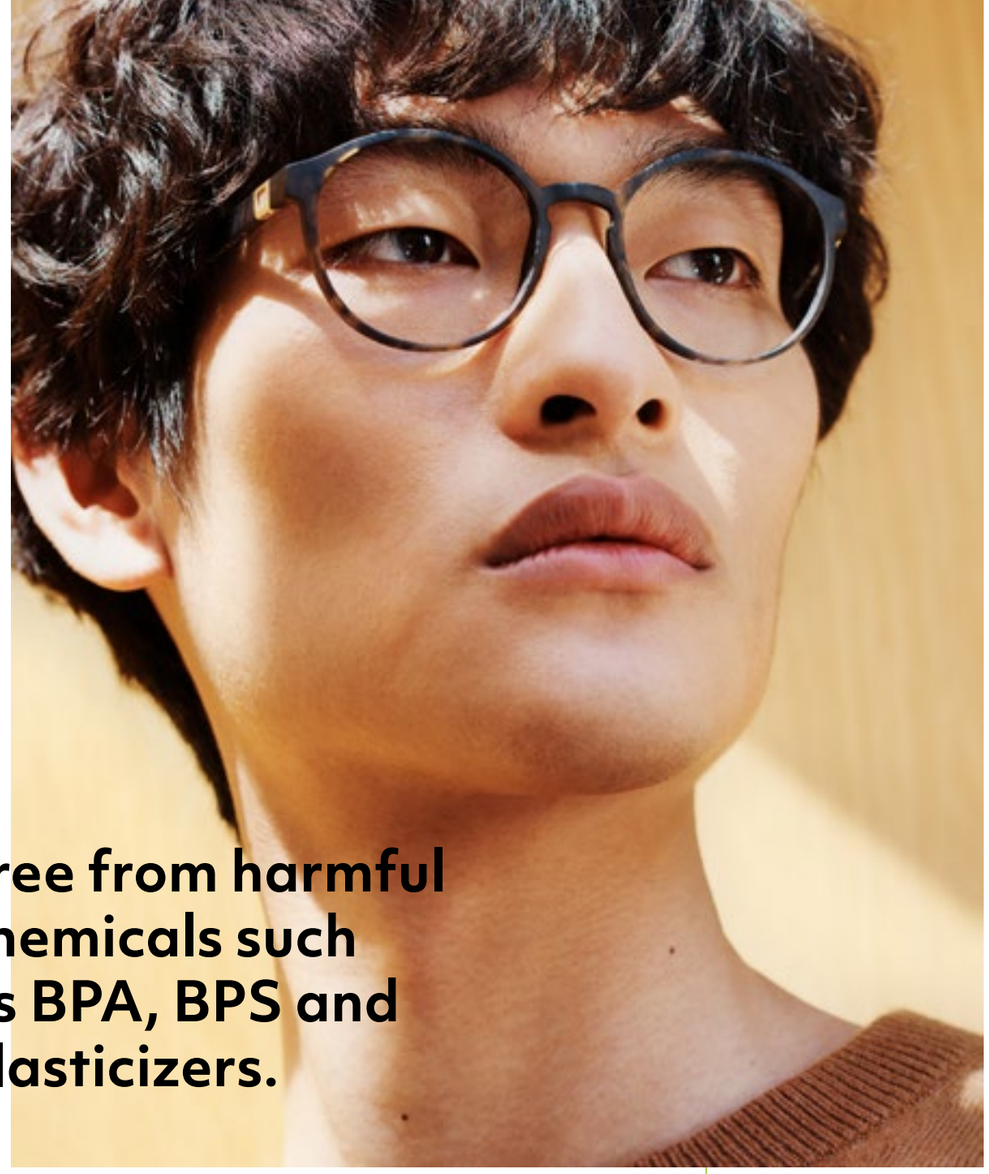
# Benefits

### Resource-saving
naturalPX and natural3D are both biobased plastics made from renewable castor oil, opposite to non-renewable petroleum-based resources that are damaging to the environment. At the moment, biobased 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.

### 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. They are even 30% lighter than acetate, which is the most commonly used plastic for the production of eyewear. Their high elasticity and form stability also ensure that the frames fit well and retain their shape.

### 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.

### 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.



naturalPX

65% of this innovative bio-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 stylish colors and finishes.

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

### Injection molding

We have developed an extremely fast injection molding process for our naturalPX material which takes approximately 1 minute for every frame. The machine is heated to 290° Celsius and then the molten naturalPX is injected into a mold which is a cooler temperature. The naturalPX hardens perfectly to the shape of the mold cavity as it cools down to room temperature.
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. 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.

### 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 dying, digital printing and other processes which are well-guarded trade secrets.

natural3D is a 100% bio-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.

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

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; in fact, they are 30% lighter than acetate. 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.

# 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.

# Sustainable aspects of 3D printing

3D printing is much greener than traditional manufacturing methods which are used to produce acetate 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 IS0 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.**



# Stainless steel

LIGHTWEIGHT FLEXIBLE ULTRA-THIN HIGHLY DURABLE

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 recycled material on the planet.**
Stainless steel is an ideal material for products such as our neubau frames that are designed to look good and last a long time. It's lightweight, has **excellent mechanical properties and a sleek appearance.** It is also resistant to corrosion as the chromium in the stainless steel prevents it from corroding by forming a protective layer over the metals underneath so that they never come into contact with oxygen.

## 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.

# Titanium

LIGHTWEIGHT ELASTIC STRONG HIGHLY DURABLE

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 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.**

## 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.



# Sustainable demo lenses

RECYCLED MADE IN AUSTRIA ENERGY-SAVING

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.

1. We recycle leftover materials from our eyewear production process to produce new demo lenses.

2. We do not believe that demo lenses require antireflective (AR) coatings, so we have chosen to save energy and resources by dispensing with this unnecessary feature.

AR coatings are usually applied in Asia and, as this is no longer a requirement, we can **produce all our demo lenses in Austria**. As it is not necessary to ship the lenses to and from these suppliers, we are able to save 1 ton of $CO_2$ emissions every year.

# 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 from a mixture of innovative recycled and recyclable materials.**
In 2017, we developed a case for all naturalPX frames manufactured from a cellulose based material. Introducing this innovative case has allowed us to reduce the Product Carbon Footprint by around 90% compared with the previous hard case. The carbon emissions created from producing this case are around three times less than one car produces driving just one kilometer (case: 64 gm, car: 165 gm). The case is also recyclable because we don't use glue to bind it together.

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 218,000 plastic wrappers since 2017 (as of the end of 2019).

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.

# Step by step, we’re taking neubau eyewear towards a greener future.

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