

PLASTIC BY MILLING PROCESS

KEY STEPS OF A "LONG PROCESS"

Raw material, which arrives from an exclusive supplier as a large acetate sheet, is cut into smaller plaques at our Santa Maria di Sala plant (Italy).

...
The plaque is cut and milled and a shaped front and 2 temples are obtained.

...
Tumbling: temples and fronts are placed inside wooden, polygon-shaped containers called 'buratti'. This is the same «burattatura» process which was used 100 years ago

...
Hinges are inserted manually onto the temples and assembled together with the front.

...
Smoothing with abrasive tape aims to perfectly pair together of the endpiece and temple.

...
The style is finally personalized with decorations (logos, metal plaques, rhinestones, etc.) and then it is ready for quality control.



Raw materials



Milling



"Burattatura"



Assembly



Smoothing



Decoration insertion



Quality control

The **cellulose acetate** is obtained from natural elements, flakes of cotton and wood, and it's able to assume a variety of polychromatic colors.

Advantages:

- wide range of color combinations
- wide stylistic variety
- good mechanical and chemical resistance
- easy lens insertion
- great adaptability to consumer needs
- hypoallergenic material: nickel free with great resistance to sweat, detergents and cosmetics.

Bio-acetate



54% natural thanks to cellulose in the material (+9% vs classic acetate with 45% cellulose). It has better technical and chromatic characteristics thanks to a special blend of natural additives and natural plasticizers. Bioacetate is both biodegradable and recyclable

Nb: Bio-acetate is both recyclable and biodegradable. Frames as a whole are not, as composed of different components (ie. metal hinges) that should be differentiated one by one.

Safilo has introduced the use of a new acetate, the «**hard acetate**» also called «**HD acetate**». It is characterized by an intrinsic high density composition, making it exceedingly resistant compared to traditional acetate and allowing Safilo to create styles with thinner sections (3,5 mm vs. regular acetate 5,6mm). Another characteristic is the resistance to higher temperatures compared to traditional acetate, resulting in the need for longer heat exposure for temples adjustment. The new hard acetate, as well as the traditional one, complies with the quality standards required by European, American and Australian laws.



HOW TO WORK WITH ACETATE

Heat the materials with air warming system at 60°- 70°C (140°-158°F) for glazing (lens insertion), temples and front adjustment.

MAIN OBJECTION

"IT'S HEAVY!"

Acetate can be produced in several thicknesses and used for the production both of front and temples. The thickness normally used for the front is 6-8 mm and for the temples is 4 mm, but each plate is polished to obtain the desired thickness. Remember: there's a minimal weight that guarantees robustness and *each acetate frame is a unique piece of craftsmanship!*



PLASTIC BY INJECTION

INJECTION PROCESS

For most thermoplastic materials, melted material is injected under high-pressure into a steel mould. The final quality of the product depends on the raw material used. The tumbling process is always guaranteed as the final finissage phases.

S Safilo guarantees a good resistance to scratches thanks to the varnishing process for injected models



HOW TO WORK WITH INJECTED PLASTICS:

For polyamide the temples are usually without wirecore and thus not adjustable, but in specific situations i.e. thick temples, it can be heated at 130°C (265°F), paying specific attention not to damage the varnishing and the lenses. The cold glazing can be done without heating.

Cellulose propionate is treated in the same way as acetate, with an air warming system at 60°-70°C (140°-158°F).

MAIN OBJECTION

«INJECTED FRAMES ARE OF A LOWER QUALITY WHEN COMPARED TO...»

Injection and milling are 2 different processes but we can also make cellulose-based material frames (propionate) from an injection process. Therefore quality doesn't depend on process but on raw materials used.

Polyamide (nylon) is a thermoplastic material used in injection molding. Researches in the field of plastic materials have led to the development of a high quality Nylon, particularly resistant to light and weathering. Trogamid and Grilamid all belong to this material.

Advantages:

- Resistance to breakage
- Transparency and lightweight
- High resistance to UV rays
- Good resistance to chemical products and to sweat, cosmetics, detergents and weathering
- Possibility to obtain small and thin thicknesses/sections
- Aesthetic results, both in color and in design



Raw materials



Melting



Injection



Assembly



Finishing

(Cellulose) Propionate is a thermoplastic material with similar characteristics to acetate, but it's injected and moulded in its final frame shape.

Grilamid XE 4066 is a transparent polyamide that has superior technical characteristics when compared to Grilamid: it maintains the same degree of transparency with higher resistance to breakage, staying stable even at higher temperatures. Safilo was the first company in the eyewear industry that started to use it, taking advantage of its high performance to develop elegant styles, particularly thin but still robust.

Ultem is characterized by an extremely high mechanical resistance, making it the best material to be used in the production of light and thin styles.

It is also a highly flexible and elastic material: sunglasses and frames can be warped in an evident way without being damaged and recovering the original shape. Temples in ultem cannot be registered, this is possible only if combined with acetate or propionate end-tip with metal wirecore.

Polyamide (nylon) bio-based

58% derived from castor oil (environmentally sustainable) and 42% from fossil oil. On top of this, bio-injection material used by Safilo does not include the waste of food materials, compared to other Bio materials (eg. derived from corn). During the synthesis phase emissions of carbon dioxide are reduced.



Nb: Polyamide (Nylon) Bio-based is recyclable but not biodegradable. Frames as a whole are not, as composed of different components (ie. metal hinges) that should be differentiated one by one.

Rubber guarantees maximum user comfort. Temples in rubber with a metal core can be cold treated.

Bio-based rubber

With 44%-48% derived from castor oil, the Safilo Kids glasses represent the first application of this material in the sector. The application of this material ensures soft and flexible components that are also safe and hypoallergenic for contact with kids.

