

# The artificial eye

Advice for patients



Dear patient,

There are various reasons for having a prosthetic eye. Congenital eye diseases, such as anophthalmia, microphthalmia or phthisis bulbi may usually be the cause. Yet malignant tumours (e.g. uveal melanoma, retinoblastoma), eye injuries, traumas or accidents may also mean that an artificial eye has to be fitted.

Our experienced ocularists are experts in all areas of prosthetic eyes, both in treating the eye socket after enucleation or evisceration and covering the bulb of an eye that has lost its sight.

Our institute has been providing patients with customized prosthetic eyes made of glass or synthetic material since 1947, covering an area from the Saarland to the Pfalz and into the Black Forest. Alongside our main institute in Saarbrücken, we regularly provide services to our patients in our two fully equipped permanent branches in Ludwigshafen (since 1953) and Homburg/Saar (since 1978) and during a regular consultation day in Lörrach.

All our institutes meet the current requirements of the health insurances schemes and are recognised by the prequalification body for resources as an official service provider for medical resources.

## The artificial eye

In Germany and other European countries, glass eyes have been made for many years and are usually manufactured from a special form of glass (cryolite glass) that is highly biocompatible and which does not include any chemical additives.

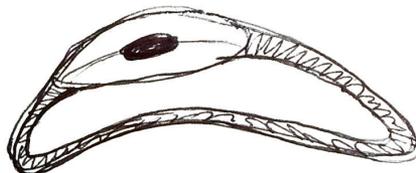
The extremely smooth surface of the glass means that a permeable tear film can form on the eye. In this way, the glass eye may be worn comfortably and without it feeling dry. Glass is also ideally suited to the manufacture of prosthetic eyes because of its high resistance to the harmful effect of the lacrimal fluid. There have been no allergic reactions to glass reported.

Every artificial eye is an individual custom-made product that in its colour, shape and size is optimally made to suit the needs of every patient.

In some cases, it may be sensible to opt for a prosthetic eye made of synthetic material rather than glass. This is especially advisable if there would otherwise be the danger of a glass eye frequently breaking, e.g. with people who are unable to grasp objects, patients with Parkinson 's disease, etc.

Eyes made of synthetic material are subject to a significantly quicker deterioration than glass prosthetics as the synthetic material has a demonstrably softer surface that is easier to damage. However, unlike glass, these prosthetic eyes can be repolished, which, in most cases leads to a longer life. As synthetics are water resistant, there is no complete, natural tear film on prosthetic eyes made of synthetic material. This can lead to lid and conjunctival irritation and create the feeling of dryness. Furthermore, allergic reactions to artificial eyes made of synthetic material are also possible. Last but not least, every prosthetic eye made of synthetic material is subject to separate approval by the health insurance scheme.

Our institute specialises in the manufacture of glass eyes. However, we can also make artificial eyes made of synthetic material for you. So please speak to us if you think that wearing a prosthetic eye made of synthetic material is sensible for you. We'll gladly give you advice.



Cross section of a double-walled glass eye

## Manufacture of glass eyes

A glass eye is produced in three stages that build upon each other:

**1** The blank with the sketch of the iris

The base material for the manufacture of our artificial eyes is a tube of white cryolite glass, from which a sphere is blown. So as to copy the individual colouring and structure of the iris, in the next stage, coloured glass is put onto the white sphere with diverse, specifically made colouring rods, in parts, layer upon layer. After adding the pupil with black glass, the anterior chamber of the eye, the cornea is reproduced. Through this, the design of the iris gets its own spatial depth.

The sphere with the complete design of the iris forms the basis for the individual production of the prosthesis. For this purpose, we always provide about 3,000 blanks. And if we do not happen to have a specific eye colour in stock, it is manufactured on-site for the patient.





## The custom requirement of the eye colour

The customized iris colour is selected and adapted further together with the patient. For this purpose, the size requirement of the iris must match that of the remaining eye as must the correct copy of the veins and the cloudiness of the white part of the eyeball, the sclera. Age-related eye changes, as for instance arcus senilis or increased visible veins are also individually incorporated by our ocularists into the prosthesis.

The pupil of a healthy eye constantly adapts to the prevailing light conditions. A glass eye can't behave in the same way. So we select an "average size" for the pupil which matches the mean normal condition of the patient's pupil diameter.



## The custom requirement of the shape

Now the prosthetic eye gets its shape that is unique to every patient. Here, there are two variants: the double-walled reformation eyes and the obviously thinner shell eyes. Double-walled prosthetic eyes constitute the common treatment for empty eye sockets. On the other hand, single-walled shells are used in the case of very narrow spaces within the eye socket and to cover an eye that has lost its sight (in this case called the bulb scleral shell). In both cases, the original sphere gets the necessary individual shape by melting away the superfluous glass material, a millimetre at a time.

Finally, at the end of this stage, the completed, semicircular prosthetic eye is ready.

## Life with a prosthetic eye

Life with a prosthetic eye represents first of all a new and strange situation that may throw up many questions.

### **Will it be obvious that I am wearing an artificial eye?**

It is our declared aim to ensure that the artificial eye matches the shape of your face as best as possible. To this end, with you, we match the artificial eye in its colour, shape and size perfectly to the healthy eye. Yet essential for the appearance is always the situation within the eye socket, too. This is affected by the particular cause for the loss of the eye and your medical history. With optimal anatomical preconditions of the eye socket, we can achieve a very good movement of the prosthetic eye that operates naturally as far as possible and you can wear your artificial eye without attention being drawn to it.

### **Is it bad if I don't wear the prosthesis for some time?**

Prosthetic eyes are not only there to reconstruct the visual appearance as well as possible but they also fulfil medical needs. For this reason, you should never take out your artificial eye for a long time! An empty eye socket may cause irritation of the conjunctiva and other complications resulting from a collapse and turning inwards of the lids. As a rule, the prosthetic eye may also be worn during the night – your oculist will be happy to give you individual advice. If, in your case, it is sensible to take the artificial eye at night, please never put it in liquid overnight!

## Can I do sport or have a sauna with my prosthesis?

In principle, you can move freely with a prosthesis.

However, there are certain rules that should be observed:

We recommend to our patients, particularly when playing sports involving a ball where the eyes are in danger, such as tennis, squash or golf, to wear a pair of sports glasses as protection and to keep a sufficient safety distance from the ball and opponent. Care is also called for when riding. Riders should also properly protect their eyes and watch out particularly in open country that their eyes are not injured by branches whipping back.

You can go swimming with a prosthetic eye without any problems. However, you should always wear goggles to protect your eye socket and the conjunctiva from so-called "swimming pool conjunctivitis". That is an inflammation of the eyes' mucous membranes that may unfortunately arise occasionally from contaminated water in public pools. However, what you should avoid doing in a swimming pool is diving. The prosthesis may be swept out of the eye socket through the pressure of diving quickly into the water.

Visits to the sauna are also possible without problems. Nevertheless, be careful not to submit the artificial eye to an overly quick change in temperature. For example, a visit to a 90-degree sauna with then a plunge into the ice pool possibly lead to the prosthetic eye being damaged. If you do extreme sports such as diving, parachuting or bungee jumping, your ocularist will be happy to give you individual advice.

## **What do I have to be aware of when at work?**

In the vast majority of cases, the wearing of a prosthetic eye doesn't impose additional limitations on you at work. If, for instance, you work at the computer, you'll see that the artificial eye – just like the healthy eye – will possibly get dry quicker. For both eyes, you can use the same eye drops for this complaint. There are no specific safety precautions for laboratory work either. Protect your artificial eye simply just as you would your healthy eye.

If you work at a trade and are more exposed to dust, this may lead to the prosthetic eye wearing out quicker.

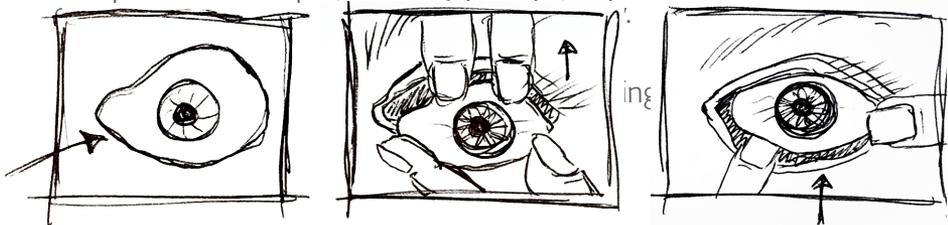
Should you have further questions relating to your specific professional situation, please speak to your ocularist about it. They will point out any individual risks or safety precautions to you if necessary.

### How is the artificial eye cleaned?

At your first visit to us you'll get comprehensive advice about caring for, and handling, your prosthetic eye.

The artificial eye should be cleaned every day with tepid water. Never take out the prosthetic eye at the wash basin or over tiled floors! A slip may otherwise quickly mean the prosthesis breaking. We also advise you against cleaning it under running water, as the artificial eye may easily break in the wash basin.

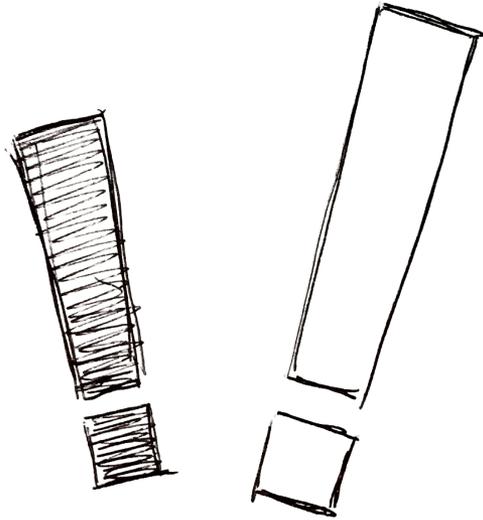
We recommend you to sit at a table to clean the eye. Spread a hand towel in front of you and have a small dish of water ready. Now you



The short part of your prosthesis points towards the nose.

To insert: raise the upper lid, push the prosthesis under it and position behind the lower lid

To take out: Pull the lower lid down and take the prosthesis out from the bottom



## Your visit to us

### **Before the first visit**

If your eye was removed, you generally receive a so-called conformer (temporary plastic shell) fitted into the eye socket when you are still in hospital. At this early stage, you should phone us so that we can arrange an appointment promptly. Your first visit to us takes place about two weeks after the enucleation/evisceration. During this time, swelling in the eye socket may possibly keep going down.

If you are registered under the Government health insurance scheme, you will already have been handed a prescription for the treatment with us in the clinic. If a conformer was fitted, you will receive an additional second prescription about this. Please be aware that the health insurance scheme asks for an additional contribution of 10 euros per artificial eye unless you have a relevant exemption certificate (if necessary, ask your health insurance scheme). Prosthetic eyes paid for by the orthopaedic supply centres and social security offices are subject to authorization.

## Your first appointment

Please don't forget to bring the following to every appointment with us:

- a valid prescription from the eye consultant or the clinic where you are being treated  
(redeemable with us, independent of the quarterly period)
- 10 euros additional contribution  
(exempt from this rule are minors and individuals who have a valid exemption certificate. Please bring relevant proof with you where appropriate.)

At your first appointment, we spend a particularly large amount of time with you. Your ocularist will give you detailed advice and answer all your questions about your new life with the prosthetic eye.

Provided that there are no medical constraints, they will then make with you your first prosthetic eye. In order to do this, some dummy eyes will be fitted, so as to determine the ideal shape for your artificial eye. Don't worry, this doesn't hurt! Then come the choice of suitable colour and the individual fitting to your eye socket. Of course you will also receive detailed instruction on how to handle and care for your prosthetic eye at this appointment. We expect the whole appointment will last one to two hours; then you can go home straight away with your new artificial eye.

Wearing a prosthetic eye is, of course, somewhat strange at first but it shouldn't be painful. However, if you feel pain or pressure after fitting, please get in contact with us as soon as possible. We'll find the cause and solve the problem together.

## The follow-up treatment procedure

As the eye socket will further heal in the first months after the operation and the swelling in it will go down, you're entitled to a new prosthetic eye three months after the first model. You will get the relevant prescription from your eye consultant.

Thereafter, you have the right to have a new artificial eye made once a year. All prosthetic eyes are exposed to environmental influences and are subject to natural wear and tear. The lacrimal fluid attacks the surface and makes it gradually become rough. So to avoid hassle and to prevent skin irritation, it is advisable to exchange the prosthetic eye after a year. Your eye consultant will give you a new prescription without special authorisation.

If at any time you are unhappy with your prosthetic eye after an appointment, please get in touch with us as soon as possible so that we can make an appropriate adjustment. Please bear in mind that we can consider complaints only within two months of making the prosthesis. With later complaints we will have to ask you to produce a new prescription.

An exception to this is with children and teenagers as they are still growing. With them it is necessary to have a prosthetic eye fitted more often than once a year. As a rule of thumb we say "New shoes, new eye." If you think that your child's artificial eye is getting too small, please get in contact with us as soon as possible.

Of course one day it may also happen that your artificial eye falls out and breaks. If your prosthetic eye is broken or damaged, please arrange an appointment with us immediately. You'll need a new prescription from your eye consultant for the new eye with the note that the current prosthetic eye has been broken.

Please bring all the available fragments to your appointment! This is very important for us so that we can reconstruct the shape of your prosthetic eye as best we can.

Important notice: Please bear in mind that we can't undertake any house calls. The manufacture of an artificial eye requires specialised and extensive equipment that is only available to us in our branches and on consultation days.

Incidentally, it is always sensible to have a replacement prosthesis handy, in case one day your prosthesis gets broken. In this way, your eye socket doesn't remain unprotected until the appointment. So it's also worthwhile regularly keeping your annual appointment. This means you'll always have a suitable and largely up-to-date replacement prosthesis at your disposal.

## Our institute

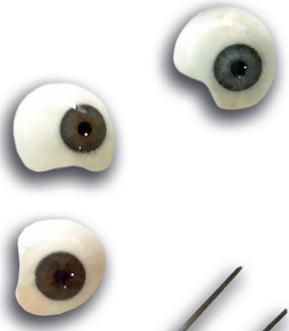
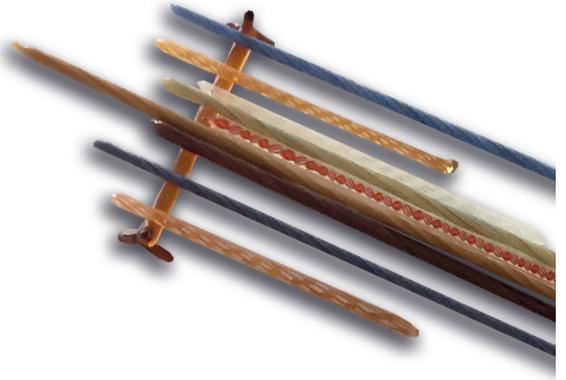
In 1969, Ferdinand A. Förster, the founder of our institute, took up his training as an ophthalmologist in the artificial eye institute of F. Ad. Müller and sons (Kunstaugeninstitut F. Ad. Müller Söhne) in Wiesbaden and successfully graduated in 1975. In 1977, he became technical director of the Otto Adam Institute in Saarbrücken. He took this over in 1983 and after that founded Ferdinand A. Förster Ltd., where he treats patients today together with the trained ophthalmologists Stephan Wunn and Matthias Hurtz.

Our institute is a member of the following associations:

- Deutsche Ocularistische Gesellschaft Bundesverband (DOGB)  
(Federal German Ocularist Association)
- Institute of Maxillofacial Prosthetists & Technologists, England (IMPT)
- International Anaplastology Assosation, USA (IAA)
- International Society for Surgical Prosthetics and Epithetics,  
Austria (IASPE)

Alongside our main institute in Saarbücken, we are regularly available for our patients in our two fully equipped permanent branches in Ludwigshafen and Homburg/Saar, as well as during a regular consultation day in Lörrach. Please consult our list of consultation days for the current appointments. This can be obtained by calling us or by going to [www.kunstaugen.com](http://www.kunstaugen.com).

Please arrange your appointment in good time at the desired place through our central offices in Saarbrücken.





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