

Contact lenses

Thin, clear, and curved lenses made of plastic, that can be worn in eyes to improve vision. They float on a film of tears on the surface of eye. The lenses are given a slight tinge of color to make them easier for users to spot and handle. Contact lenses are primarily of two types: hard and soft. Just like spectacles, contact lenses are helpful in correcting and improving vision for people with refractive errors such as, myopia (nearsightedness), hyperopia (farsightedness), astigmatism, and presbyopia. Other than wearing contact lenses that are meant for vision correction, there are contact lenses which are used purely for cosmetic purpose as a fashion statement. All contact lenses - vision correcting and cosmetic ones - are regarded as medical devices, that are regulated by health departments and can be provided under prescription only. The reason being the possibility of an eye infection or inflammation due to the use of contact lenses.

Contact lenses can be categorized based on various criteria such as material, purpose, and duration of use. In relation to the material, there are two possible variants:

- Rigid Gas Permeable (RGP) Contact Lenses (Hard Contact Lenses); they are more durable and provide a clearer and sharper vision; handling RGP contact lenses is easier than soft lenses and they are also less likely to be torn than soft lenses; they maintain their shape firmly due to hardness but can also let oxygen flow through the lens to the eyes. RGP lenses are good for people with astigmatism as well as for people having keratoconus (progressive thinning of cornea) because they can provide sharper and crisper vision as compared to soft lenses; RGP lens is also good for people who have eye allergies or people who often get protein deposited on their contact lenses; however,, compared to soft contact lenses, they are not much comfortable to wear in first few weeks.
- Soft Contact Lenses: they are made of a soft gel-like, water-containing plastics called hydrogels; the thin material allows the oxygen to pass through to the cornea; the softness of the contact lenses makes it easier for users to adjust to them comfortably in a matter of few days; newer soft contact lenses are made of silicone-hydrogel and are more porous than hydrogel lenses; they allow more oxygen to reach the eyes; silicone hydrogel contact lenses are widely prescribed in the world now.

In relation to the duration of use, there are two possible variants:

- Daily Wear Contact Lens: they can be worn during the daytime but must be removed at night before sleeping.
- Extended Wear Contact Lens: they can be worn overnight and for several days without removing them. Some extended wear contact lenses are classified as continuous wear with time ranging up to 30 days; extended wear contact lenses are soft contact lenses.

• Product Classification

- APL (WHO Assistive Product Priority List): 37 (Spectacles; low vision, short distance, long distance, filters and protection)
- ISO 9999:2022: 220306 (Spectacles and contact lenses)

• Possible configuration variants

- Lenses for long distance vision (concave in shape, available in different powers or diopters).
- Lenses for short distance vision (convex in shape, available in different powers or diopters).
- Bifocal lenses (lenses allowing focusing on objects both at a distance and at close-up).
- Multifocal lenses (lenses allowing focusing on objects at long distance, medium distance and nearby; they are also called progressive lenses as they are capable of changing their power as the user changes focus).
- Toric lenses.

- Prosthetic lenses.
 - Bandage lenses.
 - Lenses for sport activities.
- Possible accessories or optional components
 - Lens case with two containers marked right and left.
 - Cleaning and disinfecting solution.
 - Soft tweezer.
 - Soaking solution.
- Product goals

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

 - Seeing [\[b210\]](#).
- Indicated impairments

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

 - Seeing [\[b210\]](#) (difficulty due to eye refractive error).
- Contraindicated impairments

Difficulties for which the product may be inappropriate:

 - Eye infections.
 - Severe allergic reactions.
 - Inflammation of the eyelids.
 - Problems with eye lubrication (dry eye syndrome).
 - Difficulty in fine hand use.
- Indicated environments

Specific environments in which the product should be used:
None specified.
- Contraindicated environments

Environments in which the product may be inappropriate:

 - Windy places.
 - Dusty places.
 - Dirty places.
 - Smoky places.
- Other indicated factors

Other factors or situations the product is intended to address:

 - Myopia. *Only if used with variants: Lenses for long distance vision*
 - Hyperopia. *Only if used with variants: Lenses for short distance vision*
 - Presbyopia. *Only if used with variants: Bifocal lenses, Multifocal lenses*
 - Astigmatism. *Only if used with variants: Toric lenses*
 - Refractive errors and X chrome for photophobia.
 - Corneal opacity. *Only if used with variants: Prosthetic lenses*
 - Need to control release of eye drops. *Only if used with variants: Bandage lenses*
 - Use in sport activity. *Only if used with variants: Lenses for sport activities*
- Other contraindicated factors

Other factors or situations in which the product may be inappropriate:

 - Poor hygiene.
 - Inability to replace lenses at required interval.
- Points to be considered in product selection
 - Age of the user: Using and handling contact lenses needs a special care and practice. Hence, they are not ideal for younger children. Middle-aged and older adults are at high risk of having a dry eye. Wearing contact lenses of any type can be uncomfortable for them .

- Cost of contact lens: Contact lenses are relatively expensive compared to spectacles and must be considered when prescribing to a person who might face difficulty in purchasing them.
- Surroundings or the environment of a user: The nature of work of a person or their surroundings must be considered when prescribing them contact lenses.
- Material of contact lens: Soft lenses are used by majority of the people all over the world as it is more comfortable to wear and quicker to adjust to.
- **Points to be considered in product fitting**
 - Wearing silicone hydrogel lenses may also reduce the symptoms of dry eye. This is because silicone allows more oxygen to flow to the eye, which is essential for producing healthy natural tears.
 - A trained eye health professional should prescribe contact lenses to people as different contact lenses are made from different materials and different sizes. One material and one size does not suit everybody. Some materials may cause discomfort or eye infections.
 - All contact lenses, even purely cosmetic ones, are considered medical devices and require a prescription.
 - Prescription of continuous-wear contact lens depends on lens type and users' tolerance for overnight wear.
 - The prescription of contact lenses is done on yearly basis and a user needs to be reexamined annually for fitting of new contact lenses.
 - Users need to be trained to properly use their contact lenses. They must be educated and trained on how to keep their contact lenses clean and safe and how to wear them or remove them.
- **Points to be considered in product use**
 - Users need some time to adjust to the contact lenses. They must be informed to be extra careful when wearing and using contact lenses .
 - Contact lenses have a risk of causing severe eye infections or injuries to eyes. These can be prevented through clean and safe handling of contact lenses. Following good hygiene (clean hands, eyes, and lenses) is of key importance in ensuring long-term use of contact lenses. Taking regular breaks from wearing lenses also helps.
 - Using contact lenses may cause various problems, such as stinging, burning, itching or any pain in eye, discomfort over time, excessive watering of the eyes, unusual secretions from eyes, redness of the eyes, sensitivity to light .
 - A user should immediately remove the contact lenses in such cases and contact their doctor.
 - Contact lenses should be replaced frequently to prevent any lens related deposits in the eye and contamination.
- **Points to be considered in product maintenance / follow-up**
 - The users need to be advised on proper method of cleaning the contact lenses.
 - Contact lenses, when not in use, should be stored in the relevant case for left and right eye lens, soaked in a special storage solution that keeps them from getting dried while stored.
 - The case must be rinsed with disinfecting solution to clean it of any dust before storing the lenses in it.
 - The contact lenses should never be cleaned or rinsed with water. They must be cleaned periodically as recommended by the eye care professional, and thoroughly rinsed with a good quality disinfecting solution to clean them of any dirt, or mucus.
- **Examples of products available on the market**
 - Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=220306>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

The team was composed of Renzo Andrich (Italy, group leader), Natasha Layton (Australia), Stefan von Prondzinski (Italy), Jerry Weisman (USA), Silvana Contepomi (Argentina) and Hasan Minto (Pakistan).

The project led to a prototype online tool called ASPREX (ASsistive PProduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.