Scleral lenses

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i-Shape® Scleral
Scan based Freeform Technology

Advanced Freeform Technology



i-shape.ch

Freeform scleral lenses

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Scleral lenses:

complex anatomy, complex fitting.

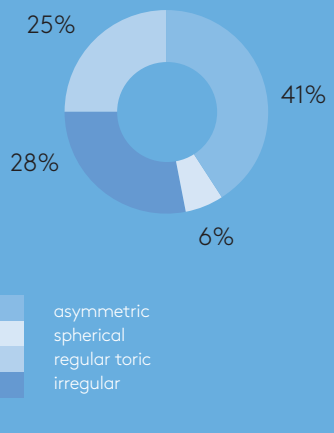
→ Challenges in fitting conventional scleral lenses

Even weight and pressure distribution across the conjunctiva is essential to avoid vascular compression, pressure points, and discomfort while wearing the lens.

Sucessfull fitting depends **heavily on the individual, often unknown geometrical structures of the eye bulb**, which vary greatly from person to person.

Fitting requires a **high degree of practical experience**, as 66% of all scleral shapes are naturally asymmetrical or irregular.

→ 66% of scleral shapes show asymmetric or irregular surface patterns*



→ Conventional scleral lens fitting based on trial lenses



Trial kit containing 15 scleral lenses to evaluate the appropriate scleral lens for a patient before the final lens is custom made using the standard procedure.

***Scleral surface patterns, observed in 140 scleral lens patient** Qualitative Assessment of Scleral Shape Patterns Using a New Wide Field Ocular Surface Elevation Topographer: The SSSG Study. By Gregory DeNaeyer, OD[1], Donald R. Sanders, MD, PhD[2], Eef van der Worp, OD[3], Jason Jedlicka, OD[4], Langis Michaud, OD[5], Sheila Morrison, OD[6]

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What does «freeform» mean?

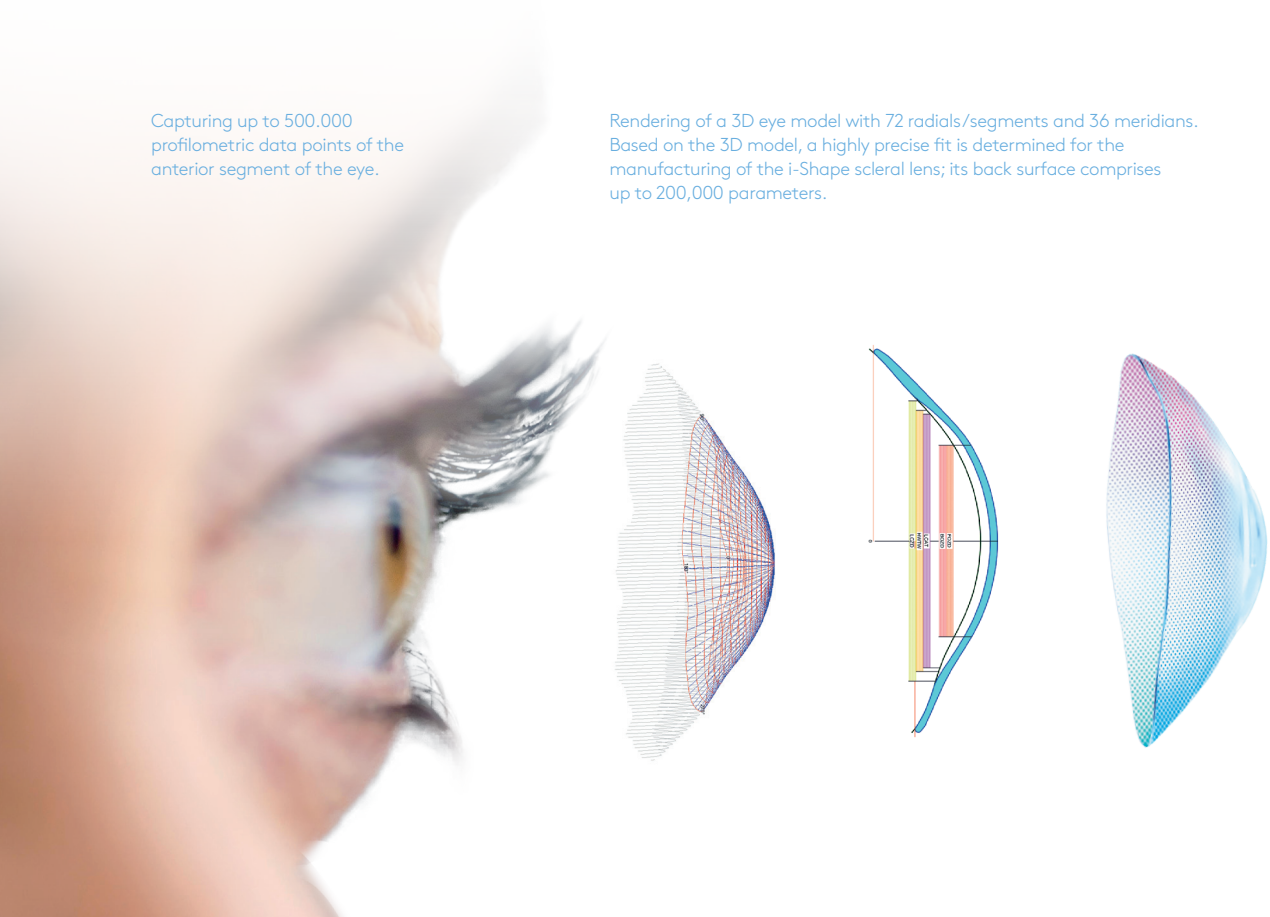
Unlike conventional scleral lens fitting with trial lenses, the i-Shape is fitted entirely via sofware based on individual scleral profilometry.

With up to 500.000 profilometric measurement points per eye, the i-Shape achieves a precise fit on the sclera – free of pressure points and offernig maximum comfort.

Using 72 radials/segments and 36 meridians, all asymmetries of the sclera and limbus are captured. They are transferred to the impact point of the limbal clearance zone and the scleral landing zone of the i-Shape, ensuring optimal alignment and pressure distribution on the sclera.

Capturing up to 500.000 profilometric data points of the anterior segment of the eye.

Rendering of a 3D eye model with 72 radials/segments and 36 meridians. Based on the 3D model, a highly precise fit is determined for the manufacturing of the i-Shape scleral lens; its back surface comprises up to 200,000 parameters.



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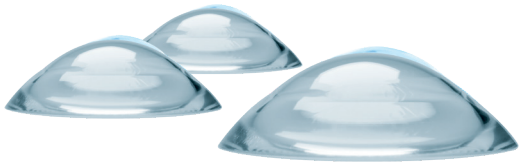
The key differences

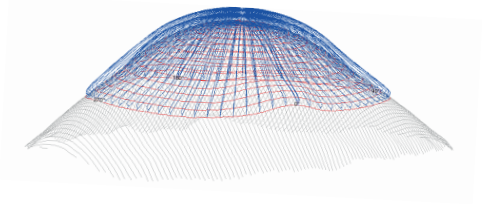
→ Conventional scleral lenses

Conventional fitting is based on a more or less comprehensive standard trial kit

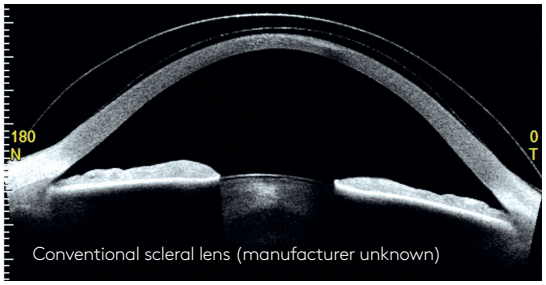


→ i-Shape Freeform scleral lens

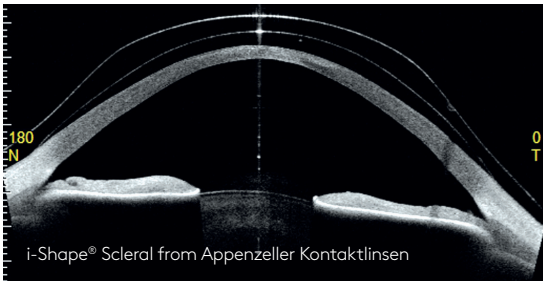
No longer a standard procedure, but a profilometric screenig: for the i-Shape, the eye is digitally scanned.



In direct comparison - on the same eye - the i-Shape (right image) clearly stands out from a conventional scleral lens due to its slim design, optimal scleral alignment and limbal clearance, and absence of compression of the chamber angle.



Conventional scleral lens (manufacturer unknown)



i-Shape® Scleral from Appenzeller Kontaktlinsen





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The key advantages at a glance

→ High-performance profilometry measurement devices and innovative design software



→ Optimal comfort: a perfectly fitting, slim, oxygen-permeable lens that stays in place without any pressure sensation



→ High-precision profiling: The eye is digitally measured using up to 500.000 data points



→ Optimal alignment and pressure distribution on the sclera, even on asymmetrical or irregular surface patterns



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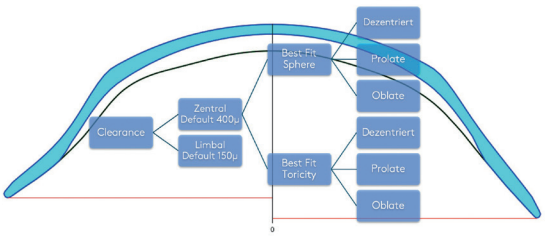
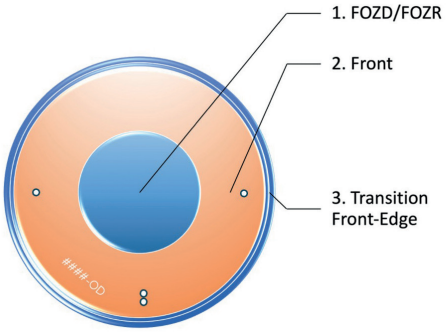
The Design



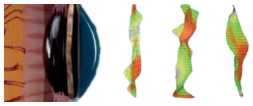


→ Biometric Design

The underlying indvidual eye model defines the design of the i-Shape. The corneal clearance can be interpreted as either prolate or oblate , as well as visualized and manufactured as a «best fit sphere» or «best fit toricity». To ensure the most uniform global corneal clearance possible, any necessary decentration of the BOZD (Back Optic Zone Diameter) is automatically determined by the design software.

→ Variants

- i-Shape spheric or toric
- i-Shape multi CD/CN
- i-Shape with HOA-Correction
- i-Shape with HOA-Correction (wavefront-guided optik, correction of high order abberations)



→ Markings

Stabilization markings at 0° and 180°	
Orientation markings as insertion aid:	
– Variant 1	at 270° = 1 or 2 black dots
– Variant 2	at 90° = 1 or 2 black dots
SN engraving	

→ Materials

OPTIMUM INFINITE

Optimum Extra	transparent and aqua
Optimum Extreme	transparent
Optimum Infinite	transparent and aqua

Boston XO	transparent

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Compatible devices



→ eaglet-eye

ESP-Eye Surface Profiler



→ TOMEY

Tomey Casia2



→ OCULUS®

Pentacam HR
Pentacam AXL Wave



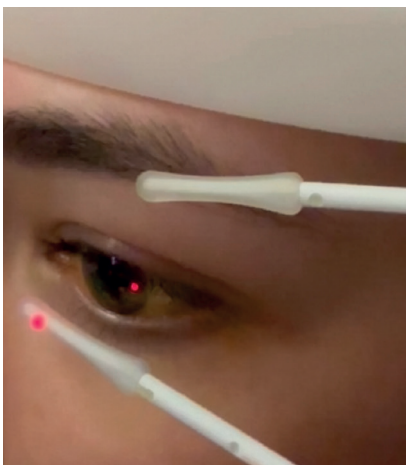
→ medmont

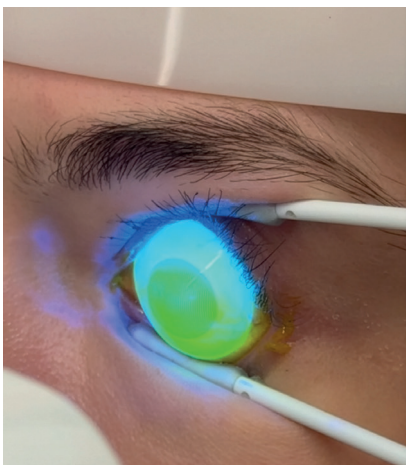
Meridia Vantage



→ MediWorks

Scansys Pro





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Fitting in 4 steps

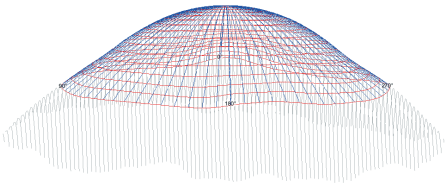
→ 1: Profilometry scan

- Precise alignment of the head in the headrest
- If possible «one-shot-measurement»
- Open eyelids manually
- Use the lidstick
- Analysis of the scan



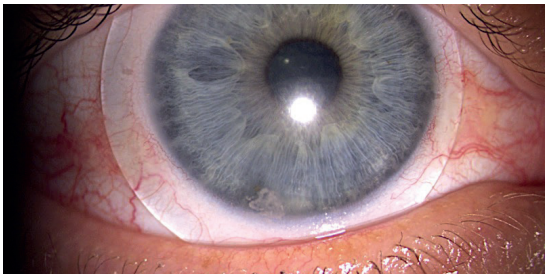
→ 3: High-Precision Fit Determination

- Rendering of a 3D eye model
- Configuration of the i-shape using design software



→ 2: Determination of the Final Power

- Insertion of the trial lens
- Overrefraction
- Data transmission to Appenzeller Kontaktlinsen AG



→ 4: Manufacturing of the i-SHAPE Scleral Lens

- Transfer of software to the lens
- Manufacturing using a diamond grinding process (CNC)



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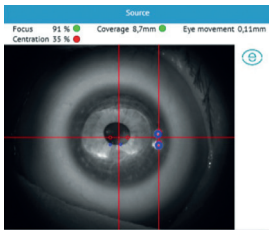
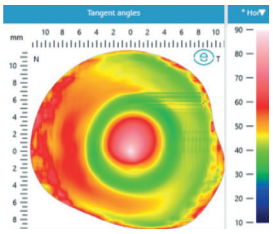
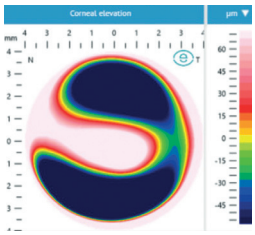
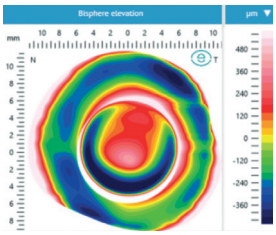
Case studies

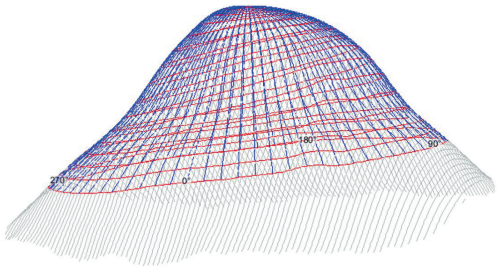
→ Example 1



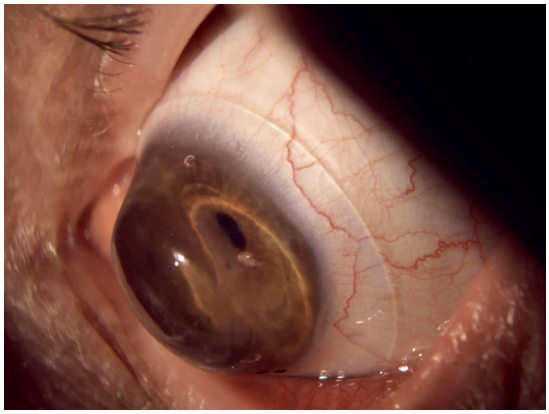








Patient male, Jg. 1966
KC OD; PKP OS 1999
OD RGP; OS unfitted



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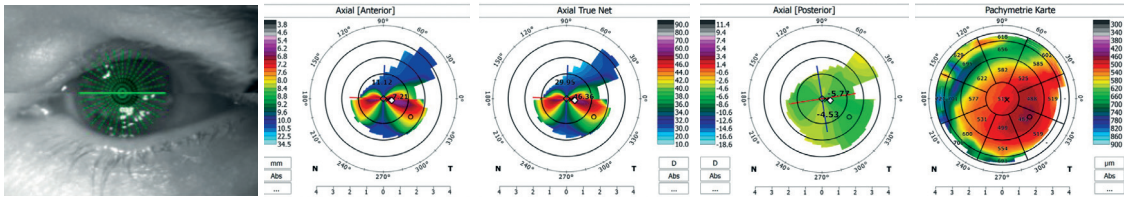
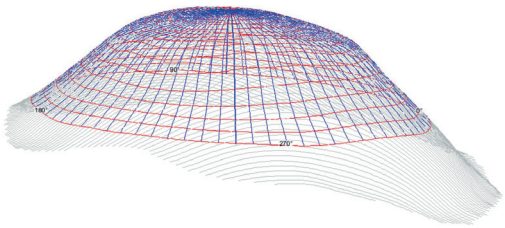
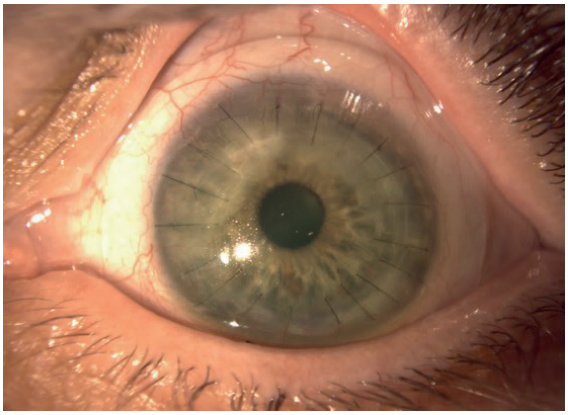
→ Example 2

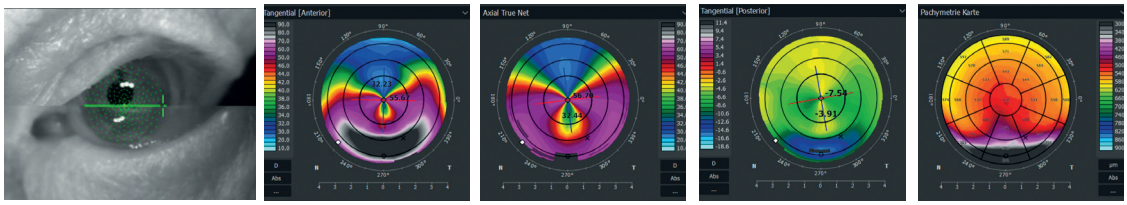


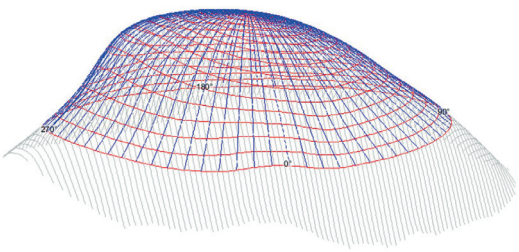


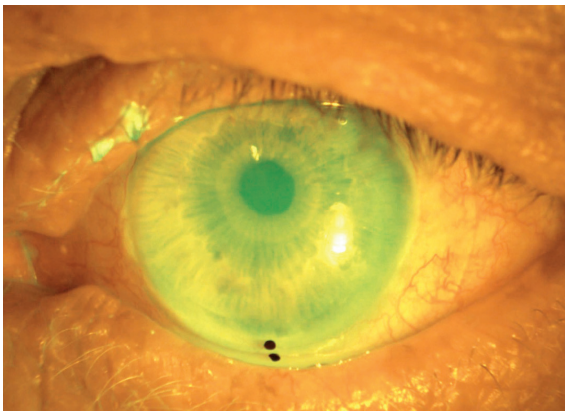


Patient male, Jg. 1974
Already SCL wearer
PKP OU around 30 years ago – extreme bulging
Compressions sutures for stabilization
and flattening of the anterior chamber
OD 2024; OS 2025/06

→ Example 3







Patient male, Jg. 1954
PMD OU, OS > OD
Failed SCL FIT before

Little bowls of plastic – big window to the world.

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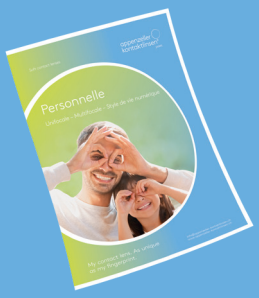
i-SOFT



3-monthly soft contact lenses
My yearly supply of soft contact lenses.
Per eye.

Personnelle



Single vision – Multifocal – Digital Lifestyle
My contact lens.
As unique as my fingerprint.

Excellent AS
Excellent MK



Single vision – Multifocal – Bifocal
Classic, practical, excellent:
You can count on this contact lens.

i-MAP AS



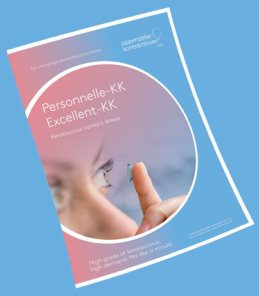
Single vision – Multifocal – Bifocal
High-tech for my everyday life:
Coping with any situation.

i-NIGHT



Orthokeratology at the highest level
Wear overnight – see during the day:
Without spectacles, without contact lenses.

Personnelle-KK
Excellent-KK



Keratoconus contact lenses
High grade of keratoconus,
high demand: fits like a mould.

i-MAP



For fitting with irregular corneae
Fits when nothing else will.

i-MATRIX



Scleral lenses
Corneal damage, keratoconus,
keratoplasty? Still fits.

*pro*ASSIST



Professional support with progressive myopia
Smart contact lenses instead of thick
spectacle lenses.

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10 Reasons

to Choose Appenzeller Contact Lenses.

→ Successful fitting

Everything possible is done to implement your requirements and expectations with precision. This helps make every fitting a complete success – for both you and your customers.

→ Technological advantage

Continuous research and development always ensure access to the latest contact lens technology, supporting improved fittings and convincing results.

→ Swiss made

The lenses stand for uncompromising quality and the highest level of precision. This is a promise of quality that your customers will notice too.

→ Reproducibility

Reliability you can depend on: every repeat order is supplied with identical lenses, ensuring consistent fitting results and long-term customer satisfaction.

→ A listening ear

The field sales and Professional Service team provides personal, solution-focused support in every situation. Assistance is delivered promptly, competently and on equal terms, helping the right solution be found for every case.

→ Bespoke manufacturing

Every lens is individually manufactured to your specifications. This results in precisely tailored solutions that make the fitting process both efficient and successful.

→ Right of exchange

Flexibility throughout the fitting process: the «with right of exchange» option provides financial reassurance for both you and your patient. Lenses can be exchanged within the applicable period, and only the excess is charged. The relevant date is the date shown on the delivery note:

3-month lenses	→ 1 month*
6-month lenses	→ 2 months*
Annual lenses	→ 3 months

*Right of exchange.

→ Price advantage

Particularly attractive payment terms are available for advance payments. Further details can be provided personally on request.

→ Warranty cover

Peace of mind for both you and your customers: quality is backed by clearly defined warranty cover.

3-month lenses	→ 1 month
6-month lenses	→ 2 months
Annual lenses	→ 3 months

In the event of breakage, the defective lens should be returned within the warranty period. It will then either be replaced or credited accordingly. The relevant date is the date shown on the delivery note.

→ Long-term partnership

The focus is on building a sustainable partnership with you. Dependability matters, because your long-term success is the goal as well.

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Wir tragen als Unternehmen Sorge zur Natur und haben eine Verpackungslizenz vom Grünen Punkt.

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