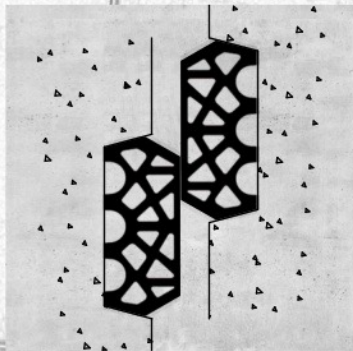
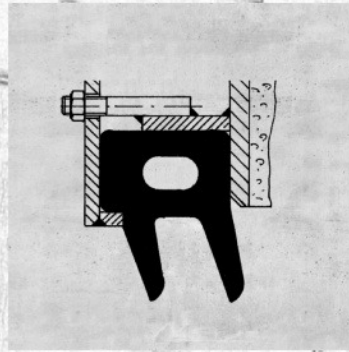




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## CTS Seals for Tunnel Construction



**...best connections!**

[www.cordes.de](http://www.cordes.de)



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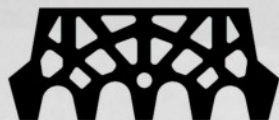
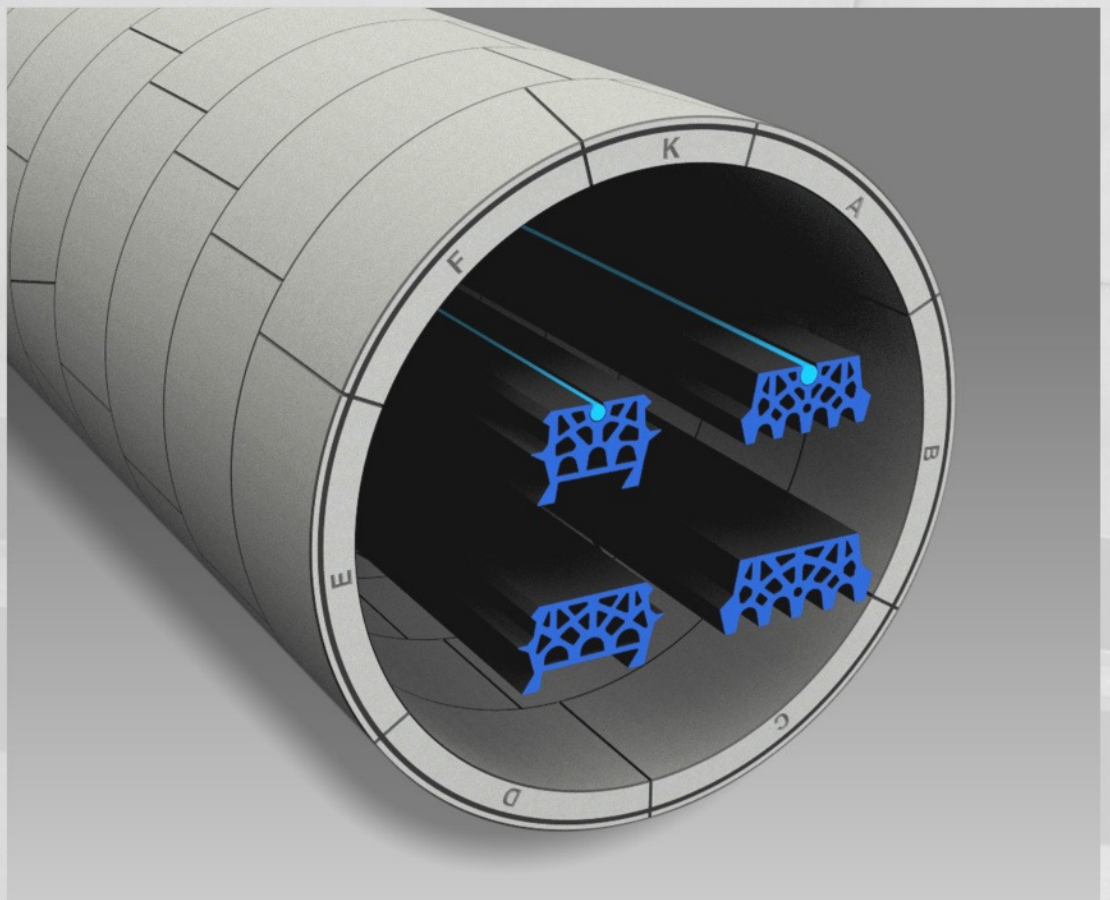
## CTS Tunnel Segment Gaskets



### CTS Profile Design

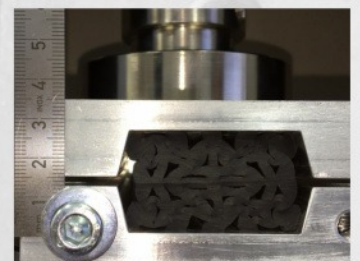
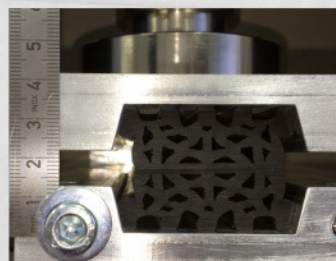
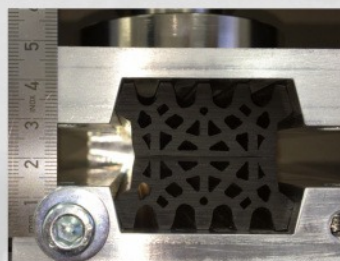
CTS has successfully developed a revolutionary archway-shaped profile design that provides an improved water-proofing performance without increasing the restoring force. As proven in independent laboratory testing this profile geometry provides a significantly balanced deflection behavior without showing any offset-related weaknesses.

That results in a water-proofing performance without significant fluctuations when tested over a wide range of offset scenarios. Modern production machines and latest extrusion technologies enable CTS to manufacture such a sophisticated geometry continuously at highest precision.



### CTS Archway-shaped profile geometry

first developed and used on the German High Speed Rail Project "Albvorlandtunnel" on the Stuttgart 21 Program.



Balanced load-deflection-behavior of archway-shaped profile "CTS 44/20 AVT"



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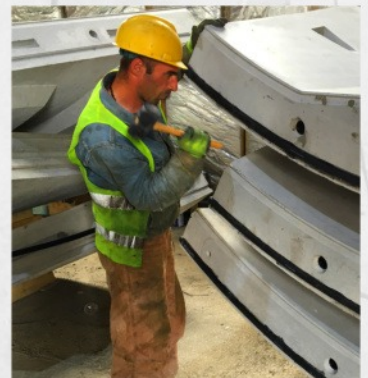
## CTS Tunnel Segment Gaskets

### CTS Application Technique

A strong and reliable bonding of the gasket frames to the concrete segments is a crucial requirement of the tunnelling industry. As an essential part of their sealing system **CTS** provides components & equipment for the installation of their “glued-on” gaskets that offer the highest safety and assistance in improving the gasket performance in the tunnel. **CTS** Engineers advise and assist you in using our products and equipment on site.



- **CTS “Toluene-free” installation adhesive TECO-BOND-3-PLUS**
- **CTS Spraying machine TECO-SPRAY**
- **CTS Cleaner for spraying machine TECO-CLEAN**
- **CTS Lubricant for key-stone insertion TECO-LUBE**
- **CTS Heating device TECO-FLOW**



#### **TECO-BOND-3-PLUS – 3 Additional Advantages!**

- **Ready-to-use without prior stirring**
- **Optimized initial tack**
- **Guaranteed storage life of 18 months**

### CTS HPD Gasket Corner Technology

High Precision Dosing (HPD) on modern vulcanizing presses and the latest injection-moulding technologies enable **CTS** to significantly reduce the material volume on their gasket corners without weakening the stability and tearing resistance in the most sensitive sections of the gasket frame. **CTS** HPD corner technology allows a reduction of both – the lengths of the gasket corner section in general and the length of material inflow into the hollow chambers of the abutting profile sections, whereby the latter is also supported by the typical **CTS** profile geometry.

**CTS** HPD gasket corners are designed to offer the best possible compromise between the risk of concrete flaking and safety in the critical T-joints of the segmental lining.

**CTS** controlled HPD injection moulding procedure:

- High repeat accuracy
- Multiple-step injection speed
- Optimized heat injection control
- Optimized thermal conductivity



Typical archway-shaped CTS gasket corner with reduced material inflow

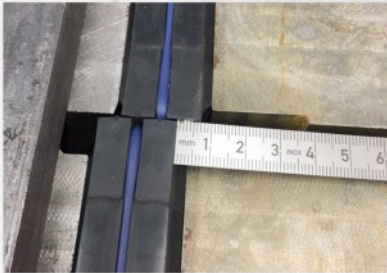


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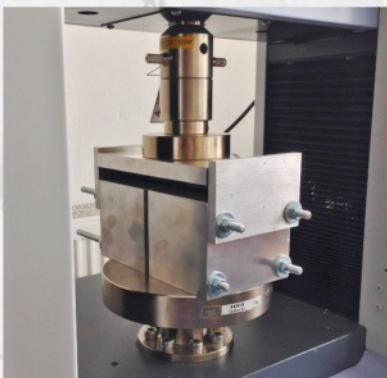
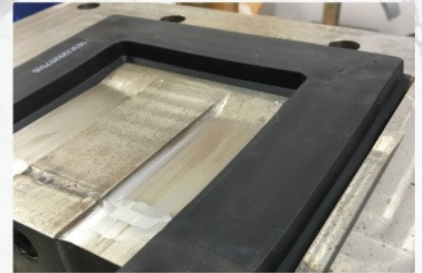
## CTS In-House Performance Testing

### CTS Development & Performance Testing according to STUVA Recommendations

CTS has two fully equipped test laboratories for material and product performance testing. A highly skilled staff supports our R&D engineers in developing new products by providing fast and reliable results tested in-house. Frequent material property testing is the basis of the CTS self-monitoring quality control program. A variety of project specific approval testing on our CTS tunnel gaskets can be performed and also witnessed by our clients.

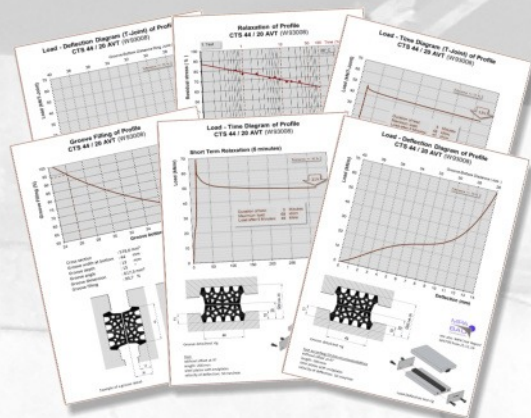
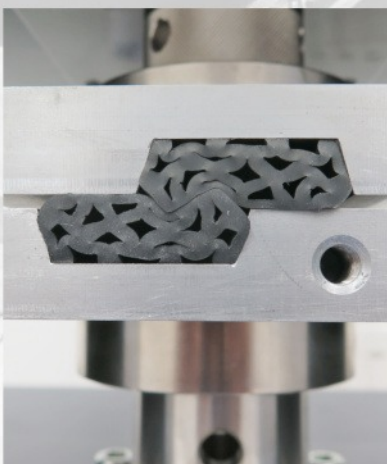
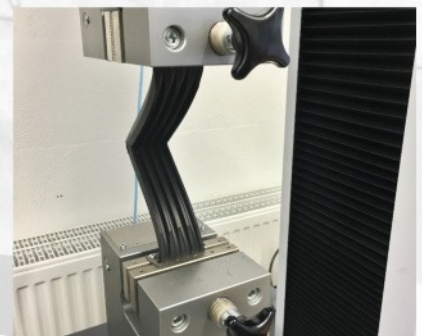
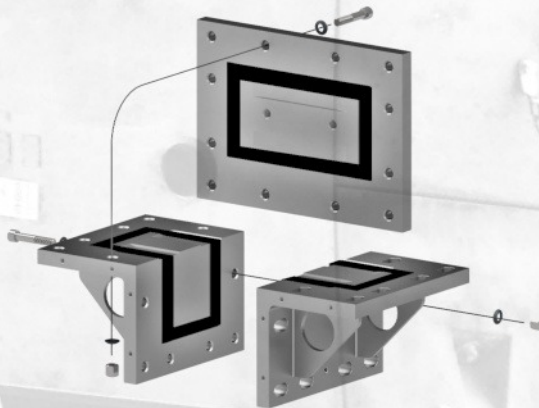
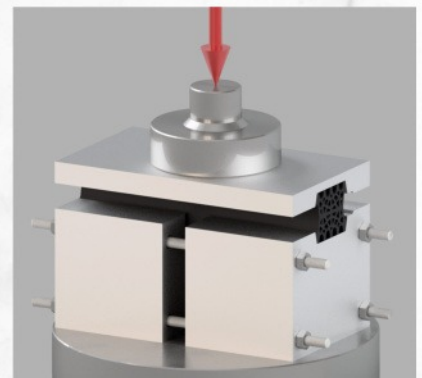


We strictly follow the testing recommendations of **STUVA** Germany, an internationally recognized institution for underground construction.



CTS tunnel segment gaskets are designed and tested in accordance with the STUVA recommendations.

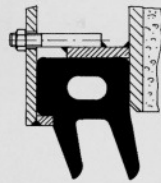
CTS is a member of the STUVA, Germany



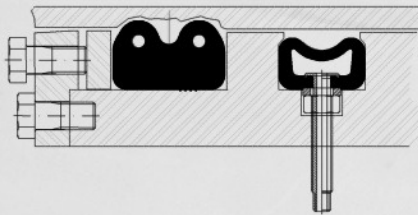


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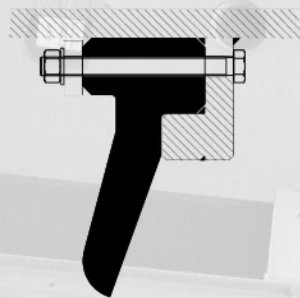
## CTS Seals for Tunnel Boring Machines



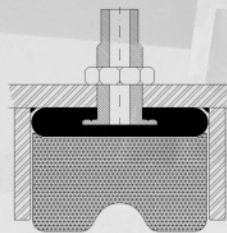
Start Seal



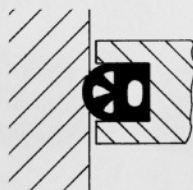
Shield Joint Seal + Emergency Seal  
Seal for Intermediate Jacking Station



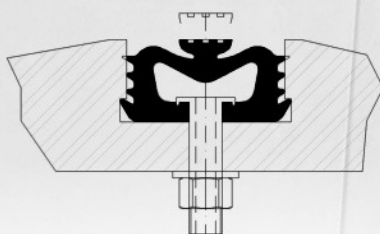
Start Seal



Emergency Seal



Caisson Door Seal



Activatable Seal



### TBM Seals

CTS offers a variety of seals for the use in tunnel boring machines (TBMs) and jacking stations as well as for the critical moments of the exit of the TBM from the launching shaft.

The CTS product range is being completed by further special sealing systems used on shield joints and caisson doors as well as activatable emergency seals, intermediate station seals, and also seals used in offshore technology.

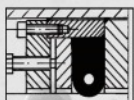
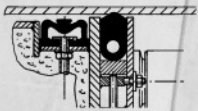
All CTS seals for TBM use are made of a sophisticated rubber compound and manufactured by autoclave vulcanization providing specific material properties to withstand the extreme application conditions.

As a specialist in manufacturing TBM and pipe seals CTS also provides consulting service as well as on-site assembly and repair service world-wide.



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## CTS Seals for Tunnel Construction



Cordes Headquarters at Senden near Münster i. Westf.



Cordes plant at Boizenburg/Elbe

### Cordes CTS stands for Quality & Reliability

For more than 50 years Cordes has been one of the most important manufacturers and suppliers of sealing systems for underground construction. We produce our high-quality products in three production centers with extensive production and storage capacities in Germany.

As a matter of course Cordes has established a certified quality management system. In permanently striving for highest quality we focus on both - our products and our daily work & customer service.

Benefit from our expertise and know how - our application engineers speak your language. From the early feasibility & design study to the start of your project and throughout the project completion we assist you in finding the best sealing solutions and we always look forward to helping you with our tailor made products & services.

### CTS cordes tubes & seals GmbH & Co. KG

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