



**Where steel reaches its limits.**



# Schöck ComBAR®.

## Unsurpassed properties.

Certified by DIBt in Germany (Z-1.6-238)  
and by KOMO in the Netherlands



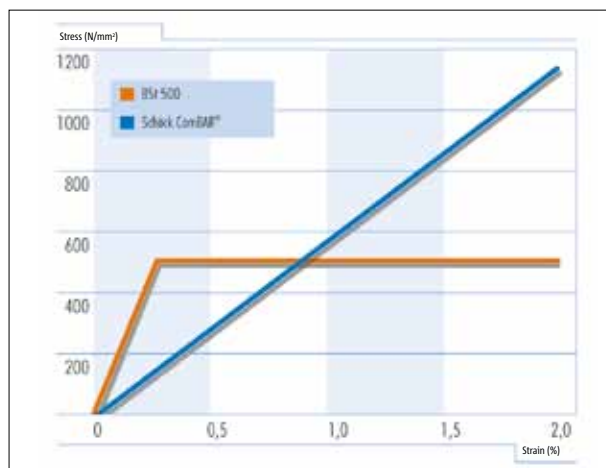
### Schöck ComBAR® – steel: The comparison

material properties of straight bars*	steel rebar (DIN EN ISO 15630 DIN 488)	Schöck ComBAR®
tensile strength $f_{yk}$ (N/mm <sup>2</sup> )	500	≥ 1000
characteristic yield** strength $f_{yd}$ (N/mm <sup>2</sup> )	435	≥ 445
strain at ultimate limit state $\epsilon_{ULS}$	2.18 ‰	7.4 ‰
tension modulus of elasticity (N/mm <sup>2</sup> ) E	200,00	60,000
design value bond stress $f_{bd}$	according to DIN 1045-1, EC 2	similar to DIN 1045-1, EC 2
concrete cover	according to DIN 1045-1, EC 2	$d_t + 10$ mm
density $\gamma$ (g/cm <sup>3</sup> )	7.85	2.23
thermal conductivity $\lambda$ (W/mK)	60	< 0.5
magnetism	yes	no

\* all symbols according to DIN 1045-1/EC-2

\*\* min. char. creep rupture strength 100 years: 580 N/mm<sup>2</sup>

### Stress-strain-diagram



Steel has been used as the primary reinforcing material in concrete for decades. In certain situations, however, the material properties of steel rebar do not meet the requirements. Schöck ComBAR® can be installed in these cases. It has a higher tensile strength, is corrosion resistant, non-magnetic, easily machined and much lighter than steel. Discover the new possibilities of Schöck ComBAR® in special reinforcement solutions, in engineering and the entire spectrum of associated services.



#### **High tensile strength**

The tensile strength of Schöck ComBAR® is more than twice as high as that of steel rebar. The material is linearly elastic up to failure. Suitable for applications such as:

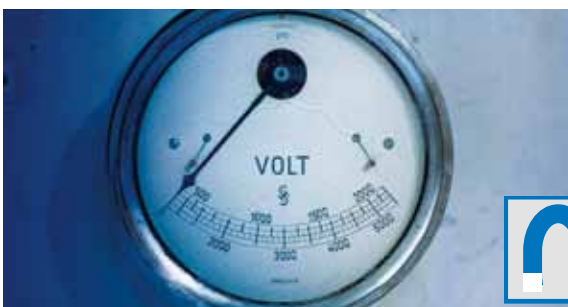
- Bridges
- Industrial structures
- Slender architectural elements



#### **Chemical and corrosion resistance**

Schöck ComBAR® is permanently resistant to acids and bases. Corrosion protection is not required even in highly corrosive environments, such as:

- Parking garages and industrial floors
- Bridge decks and barrier walls
- Shore line stabilisation



#### **Non-conducting**

Schöck ComBAR® is electromagnetically non-conducting. Ideally suited for applications such as:

- Power plants and electric facilities
- Slabs near signals and railway switches
- Research institutions



#### **Easily machined**

Schöck ComBAR® is easily machined and cut. Therefore it is ideally suited for applications such as:

- Soft-eyes of shaft walls in tunnelling
- Formwork anchors
- Temporary concrete structures

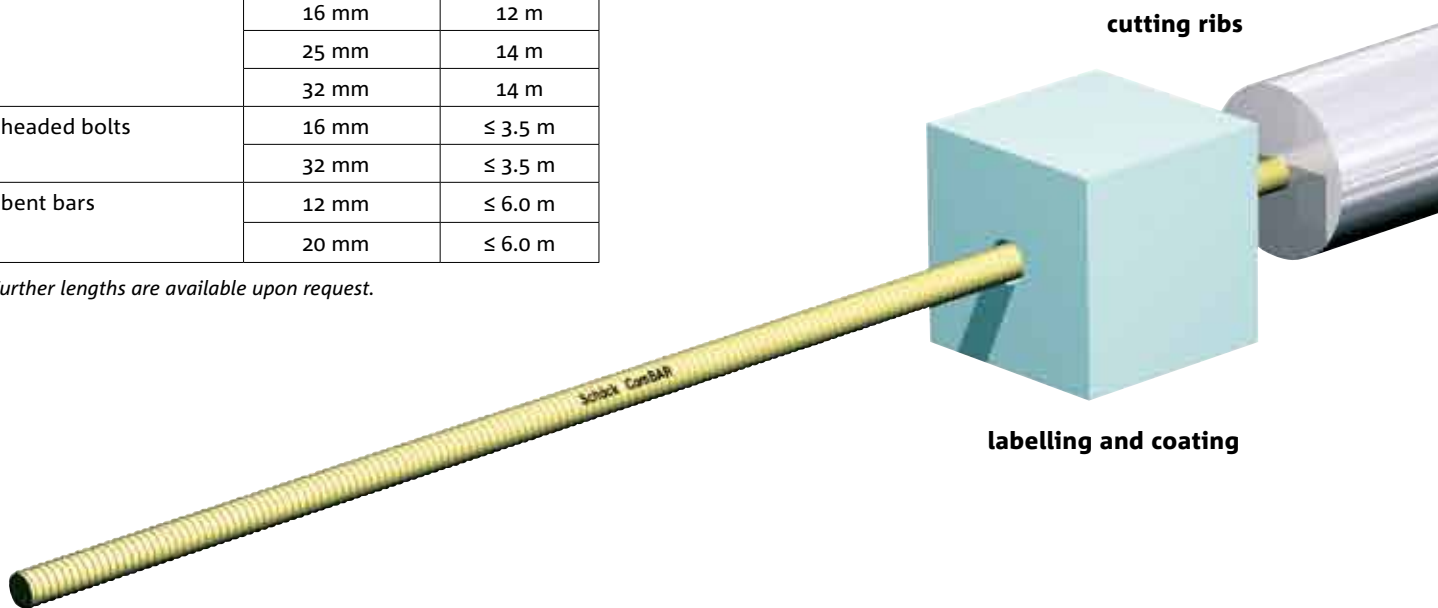
# Schöck ComBAR® - glass fibre rebar.

## A milestone in innovative material technology.

### Product range

type	diameter	standard length
straight bar	8 mm	10 m
	12 mm	10 m
	16 mm	12 m
	25 mm	14 m
	32 mm	14 m
headed bolts	16 mm	≤ 3.5 m
	32 mm	≤ 3.5 m
bent bars	12 mm	≤ 6.0 m
	20 mm	≤ 6.0 m

Further lengths are available upon request.



### Product range Schöck ComBAR®



The classical straight Schöck ComBAR® reinforcing bar, to replace conventional or stainless steel rebar.



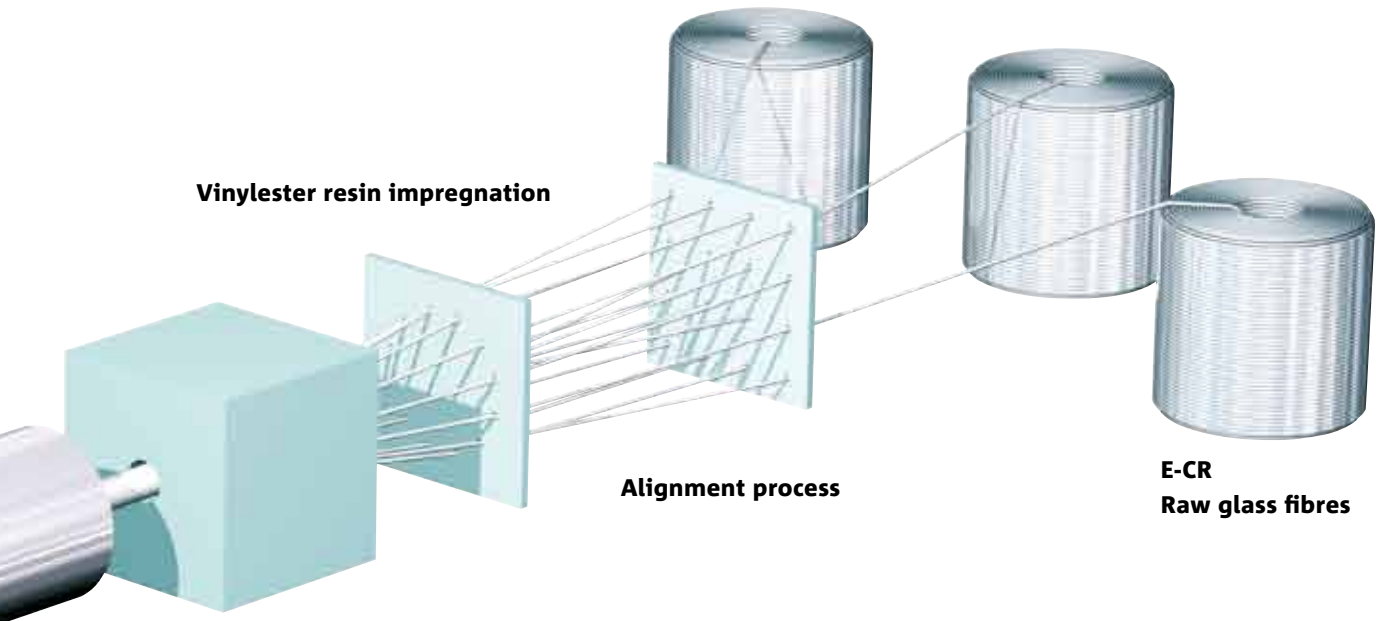
The straight reinforcing bar with an end-anchor head.



Bent bars are custom made in the factory and delivered to the site (non-structural reinforcement only).

The core of Schöck ComBAR® is a specially developed pultrusion process. In this continual linear process, high-strength glass fibres are drawn through a tool where they are impregnated with liquid synthetic resin. The ribs are cut into the hardened bars.

**The result:** A reinforcing material with unique structural, physical and chemical properties.



**Schöck has been working with ComBAR for more than ten years. Schöck ComBAR® was developed in cooperation with leading international research institutions. We are especially grateful to:**



Federal Institute of Technology Lausanne (EPFL), (Switzerland)



Rheinisch-Westphalian Technical University, Aachen (Germany)



Technical University Kaiserslautern (Germany)



Institute of Polymer Technology, Erlangen (Germany)



Syracuse University, New York (USA)



Institute of Structural Engineering, Centre of Building Materials and Materials Testing, Munich (Germany)



King Fahd University, Dhahran (Saudi Arabia)



Technical University Delft (The Netherlands)



University of Toronto Department of Civil Engineering (Canada)

# Schöck ComBAR®.

## In many cases the best solution.



**Facade of a school, Zug (CH)**  
Extremely slim precast facade elements, corrosion prevention.  
**Owner:** City of Zug  
**Installation:** 2005 and 2006



**Top-slab, parking garage, Berlin (DE)**  
Thin top-slab for load distribution, shallow concrete cover, corrosion resistant reinforcement.  
**Owner:** Forum Steglitz KG, Berlin  
**Installation:** 2006



**Light rail depot, Basel (CH)**  
Non-metallic reinforcement in floor slab.  
**Owner:** BVB  
**Installation:** 2009



**Quantum Nano Center (CDN)**  
Non-metallic reinforcement in foundation slab; undisturbed operation of research equipment.  
**Owner:** University of Waterloo  
**Installation:** 2008



**Coastal Defence, Blackpool (UK)**  
Reinforcement of high quality aesthetic pre-cast concrete wall units for a seafront wall, instead of stainless steel.  
**Owner:** Blackpool Council  
**Installation:** 2007



**McHugh Street Bridge (CDN)**  
Corrosion resistant highly durable reinforcement in barrier walls.  
**Owner:** City of Windsor  
**Installation:** 2009



**Foundation Slab Transformer Station, Hamneset (NOR)**  
Electromagnetic separation of the foundation from the transformer.  
**Owner:** Statnett, Norway  
**Installation:** 2006



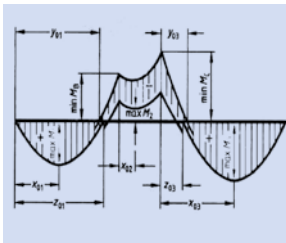
**Floor slab aluminium smelter (Qatar)**  
Floor slab in area of rectifiers with nonmetallic reinforcement.  
**Owner:** Qatar Petroleum, Norske Hydro  
**Installation:** 2008



**North-South Line Subway, Amsterdam (NL)**  
80 tons Schöck ComBAR® in the shaft walls for the penetration by the TBM.  
**Owner:** City of Amsterdam  
**Installation:** 2004 to 2006

Schöck considers itself to be a provider of fully developed innovative engineering systems. Economical solutions to challenging reinforcement problems are developed using the Schöck ComBAR® reinforcement system. This is achieved in close cooperation with the entire design team of architect, civil and structural engineer and the other professionals working on behalf of the owner. The spectrum of services is custom tailored to the specific needs of each project. Schöck has the required know-how and a team of experts capable of supporting construction projects around the world.

### Structural design



On request by the customer, Schöck performs the structural design of the concrete members reinforced with Schöck ComBAR® according to international codes and standards.

### Rebar drawings



Schöck will be glad to provide reinforcement detailing as well as rebar and construction drawings.

### Installation support



On request, Schöck experts will attend at the site to supervise the proper execution of the reinforcement details and to instruct the site personnel in the correct handling of Schöck ComBAR®.

### Quality assurance



Schöck has a complete in-house materials testing laboratory. The required quality control tests are coordinated with the customer's quality assurance program. Schöck is ISO 9001 certified.

### Logistics



Schöck looks back on years of experience in the international shipping of goods. We support our customers regarding the shipping formalities and we organise the timely delivery to the construction site.

### Engineering



Schöck focuses on providing specialised structural solutions. A well established engineering department develops innovative reinforcement solutions using Schöck ComBAR® on a daily basis.

# Your Contacts.

## Experienced specialists.

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