



Stress optimized wheels | product specification

Since 2000 majority of existing and newly-build freight wagons in Europe have been running on BONATRANS wheelsets and wheels. Three generations of stress optimized railway wheels from BONATRANS are dedicated for railway vehicles in which wheels are exposed to high thermal and mechanical loadings, especially for freight wagons equipped with tread brakes.

GHH-BONATRANS offers a wide range of optimized wheel designs tailored for customers' needs and verified by tests as well as proven by certificates issued by the most important European railway companies and by the UIC committee. And most importantly, they have passed tens of millions of kilometers in safe and reliable operation.

BONATRANS BRAKE STABILITY

- Safe and reliable
- Low residual stress
- Lower deformations
- High axle loading capacity – up to 25 tonnes
- High resistance to thermal loading
- Standardised solution – nominal diameter of the wheel: 920/840 mm or other diameters according to customer requirement



GHH-BONATRANS
Pioneers of wheelset solutions

Higher resistance to thermal loading

Composite brake blocks considerably reduce noise during braking but, on the other hand, they increase the wheel's thermal loading due to low thermal conductivity of the blocks.

Through careful optimization of wheel design and material and through implementation of the most developed calculation and testing methods, the wheels are considerably more resistant to thermal loading than existing commonly used wheel designs.

Low level internal residual stress

BONATRANS optimized wheels are characterized by a low level of internal residual stresses and permanent deformations which significantly reduces the risk of a wheel defect.

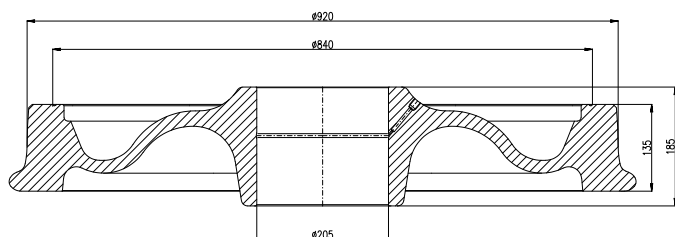
Strict verification tests

Designs of the wheels have been verified using the finite element method (FEM) analysis and during the brake test (according to UIC 510-5) on braking stands in the accredited laboratories. The wheels are certified in accordance with the TSI subsystem "Rolling Stock - Freight Wagons".

BONA314 BONA324

The first generation of stress optimized wheels

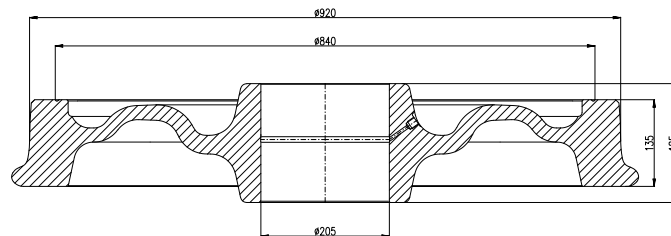
- Steel grade: mainly ER7 with a quenched rim in line with the European standard EN 13262:2020



BONA318 BONA319

The second generation of stress optimized wheels

- Wheels for extreme mechanical and thermal stresses. Optimal wheels for railway wagons equipped with composite brake blocks (materials L, LL, K)
- Steel grade: mainly ER7 with a quenched rim in line with the European standard EN 13262:2020



BONA313 BONA320

The third generation of stress optimized wheels

- Low weight – from 313 kg for a wheel with a diameter of 920 mm
- Low noise – the wheel **BONA320** is equipped with high efficiency noise damping rings **BONASILENCE®R+**
- Optimal wheels for railway wagons equipped with composite brake blocks (materials L, LL, K)
- High lifespan due to innovative steel grade **BONASTAR®ER7** with a quenched rim in line with the European standard EN 13262:2020

