



Stress optimized wheels | product specification

Optimized railway wheels **BONA314**, **BONA324** and **BONA318**, **BONA319** are dedicated for railway vehicles in which wheels are exposed to high thermal and mechanical loads, 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
- Minor deformations
- High loading capacity
- High resistance to thermal load
- Standardised solution



GHH-BONATRANS
Pioneers of wheelset solutions

Higher resistance to thermal loading

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 show a low level of internal residual stress and permanent deformations which significantly reduces the risk of a wheel defect.

Higher number of reprofilings

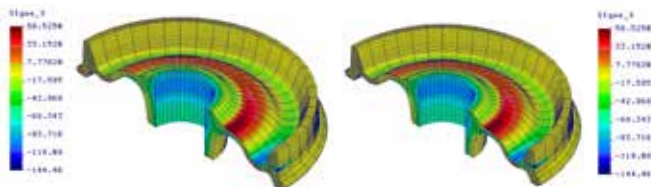
The optimized wheels retain their low stress and minor deformations even in cases of a substantially higher level of permissible wear, which increases the number of possible reprofilings of the wheel.

Increased thermal loading

The composite tread 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.

Strict verification tests

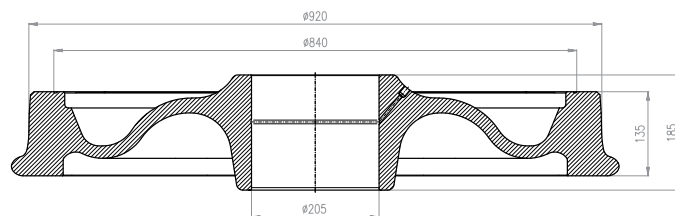
Designs of the wheels have been verified using the finite element method (FEM) analysis and during the brake test (according to UIC 510-5) on braking stands in the accredited laboratory of Slovak Railways in the Technical University of Žilina.



Graphical outputs of computer simulation using the finite element method.

BONA314 BONA324

- Low weight – from 312 kg for a wheel with a diameter of 920 mm
- Axle load up - 25 tonnes and more
- Nominal diameter of the wheel: 813-920 mm, other diameters upon customer request
- Steel grade: mainly ER7 with a hardened rim according to the European standard EN 13262
- Certificates: UIC (510-5), DB (Ba 314/324), SBB (Db10/77/97), SNCB, ČD, ŽS, PKP, VR, Network Rail and more
- Certified to TSI in accordance with the subsystem "Rolling Stock - Freight Wagons"



BONA318 BONA319

- Particularly good resistance to increased thermal stress. Optimal wheel for railway cars equipped with composite brake blocks (materials K, L, LL)
- Axle load up to 25 tonnes
- Nominal diameter of the wheel: 730-920 mm, other diameters upon customer request
- Steel grade: mainly ER7 with a hardened rim according to the European standard EN 13262
- Certificates: UIC (510-5), DB (Ba 318/319), SBB (Db-11sa), SNCB and more
- Certified to TSI in accordance with the subsystem "Rolling Stock - Freight Wagons"

