Knorr-Bremse freight car discs have been specially developed to meet the requirements of freight cars fitted with disc brakes. Based on the successful flat seat axle-mounted brake disc system that has a proven track record of several decades, both the friction disc and cooling fin geometry and the flat seat interface were optimized using FEM, CFD and casting solidification simulation techniques. This allowed us to develop a slimmer, lighter, more robust and vibration-optimized brake disc with a standard width of 110 mm. This disc has the same cooling capacity as the 170 mm wide brake discs currently used in freight cars.

**CUSTOMER BENEFITS**

- Lower weight (-45 kg)
- Lower disc width (-60 mm)
- Robust disc bolting
- Vibration-optimized cooling fin and rib geometry
- Optimized cooling channel geometry
- Able to cope with large axle movements
- High tensile strength and wear resistance

**APPLICATIONS**

- Freight trains

Freight Car Brake Discs
TECHNICAL SPECIFICATIONS

- Dimensions: Ø 590 x 110 mm
- Weight: 95 kg
- Material: special gray cast iron
- Wear limit: 10 mm each side
- Hub diameter: 206 mm

VALIDATION

- Dynamometer testing standards
  - DIN EN 14535
  - UIC program 541-3 4A
- Shock and vibration testing
  - Vertical and horizontal shocks of up to 100 g
  - Vibrations tested to IEC 61373

CALCULATION METHODS

- Computational Fluid Dynamics (CFD)
- Finite Element Method (FEM)
- Casting solidification simulation