Ausferrite Flake Graphite Cast Iron at the Thermal Fatigue

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The automotive brake (clutch) disks are produced almost exclusively from flake graphite cast iron. These disks must fullfil a variety of strictly controlled parameters - high wear resistance, hardness, resistance against thermal fatigue and good thermal conductivity. The microstructure is created by the IA graphite in pearlite matrix. The isothermal hardening to ausferrite structure (AGI) was made in order to improve standard flake graphite cast iron properties. New methods and procedures of non-destructive structuroscopy, magnetoinductive, ultrasound and magnetic spot methods were used to compare material properties of flake graphite cast iron and ADI. By these methods, elasticity modulus, strength and hardness were evaluated. The resistance against thermal fatigue was evaluated by the Eichelberg factor. In this contribution, Material parameters of standard flake graphite cast iron and AGI are compared. The heat treatment of brake disk matrix from AGI can considerably improve their material parameters, especially durability.

Keywords: Non-destructive testing, thermal fatigue, brake disks, austempered cast irons

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