

brake lining. Fiber grades 4 through 7 are used, and occasionally, several sizes are mixed or even calcined to improve performance characteristics. Amosite, crocidolite, or other amphibole asbestos varieties are not used because they are too harsh and tend to score the brake drums.

Organic binders

Organic binders are primarily phenolic type resins selected for high binding strength. Unmodified phenolic resins when subjected to heat usually become hard and brittle. To prevent this, linseed, cashew nut, or China wood oils or cresols are added. Rubber, which also finds use as a binder, imparts desirable friction qualities and improves the flexibility of the lining material.

Friction modifiers

Friction modifiers are added to achieve a desirable CF over all operating conditions. These modifiers also produce a more homogeneous lining surface. Included among these materials are lead, zinc, brass, cashew nut oil, graphite, and oxides of iron and copper.

Fillers

Fillers such as rubber scrap, barites, clays, silica, coke, coal and other minerals are used. These also have utility in achieving desired friction properties, in some cases through action as abrasives to recondition braking surfaces. One major purpose of the reconditioning agents is to retard the formation of forsterite which may accumulate on the surface of the brake lining. Forsterite is a mineral not originally present in the brake material, but is created by dehydroxylation and recrystallization of chrysotile asbestos at high temperatures. The hardness of forsterite (6.5-7.0