materials, usually by selection of an appropriate commercial grade or grades and by proper blending. Asbestos provides many desirable attributes to the linings, both in manufacture and in service usage.

During the mixing and molding process, asbestos helps to hold the materials together. This is referred to as "green strength" in the preforming and molding operations. During molding, and also during usage, the asbestos provides permeability to the lining, letting internally generated volatiles escape before they can produce high internal pressures and possibly blister or crack the brake linings.

Chrysotile asbestos, being hydrated, loses this water as the temperature rises. At around 650 degrees Celsius (about 1200 degrees F) this dehydroxylation causes about a 14-percent weight loss to the asbestos. At slightly higher temperatures, the chrysotile asbestos converts to an amorphous or glassy phase. One common product of this conversion is called forsterite. In this converted phase, the chrysotile asbestos normally has been transformed from a fiber to a very fine powder. At very high temperatures, forsterite can deposit in smeared layers over the disc or drum braking surfaces, but this is quite uncommon and undesired.

Each vehicle application requires friction materials exhibiting different frictional and mechanical properties. Passenger car and light truck drum brake linings, called segments, usually contain from 30 to 70 percent by weight of asbestos. If held together with a liquid resin, these are referred to as wet mixes. Such materials are commonly roll-molded to their basic cross-sectional shape, but also may be formed by extrusion or other molding processes. When a powdered binder resin is used, the mix is referred to as a dry mix. These generally require an initial molding or briquetting operation to produce the required shape. Both are cured by heat in a process that is both time and temperature dependent.

A wide range of friction, wear, and other properties can be built into such materials, particularly with over 70 years of formulation development time. Asbestos provides good static friction properties, important to drum brakes with integral parking brakes, and is easily formed, by many processes, to make durable and dimensionally stable segments.

Passenger car and light truck disc brake linings are almost exclusively made with powdered binder resins in dry mix processes that