

## Service life of the brake

The service life of brake liners and their wear behaviour is only one factor (albeit an important one!) in their assessment. From the concept of its formula and the requirements to be met, each liner is a compromise between the following essential assessment criteria:

- Friction coefficient stability under all operating conditions
- Comfort behaviour (squealing, judder, response, etc.)
- Wear behaviour

Extremely one-sided requirements generally have a negative effect on the other factors involved. Physically, the braking action is a process of dry friction and needs specific friction liner and counter-material wear to maintain the effectiveness of the braking and to achieve on-going regeneration of the surfaces in friction contact.

Brake liners are, therefore, typical wear parts, although their wear rate is influenced by many factors. These can be differentiated as follows:

### 1. Friction-material-related properties

The primary influence on the wear rate is the temperature range of the brake disc or drum as well as the speed range, i.e. the energy turnover during braking. Wear strongly increases at higher temperature ranges.

Production-related or batch-related differences in wear behaviour are negligible compared to the other influential factors.

### 2. Operating conditions

Driving style (such as braking frequency and speed ranges), traffic conditions as well as topographic and climatic conditions are most influential on wear behaviour. Experience has shown that it is primarily the driving style which significantly influences the service life of a brake liner.

### 3. Condition of the brake system

The brake system is exposed to dirt, moisture, chemical substances (e.g. salt) as well as high temperatures and mechanical forces. As it contains function-relevant sliding parts, it requires regular maintenance. Jammed or tightly moving parts can have a highly adverse effect on the functionality of the brake as well as on liner and counter-material wear.

However, the condition of brake disc or drum (surface, minimum thickness, geometrical form) is no less responsible for functional and wear behaviour.

In view of the above and assuming no functional defect of the brake system, liner service life is actually a statistical quantity, whereby the distribution function for passenger car liners shows that the upper service life values exceed the lower ones by a factor of 10-15.

This means a statistical mileage range of between 6,000 miles and 90,000 miles.

In individual cases, the mileage may, of course, be below or above these limit values, so that the manufacturers of brake liners are unable to specify definitive service life values.

