

Mechanisms of Hollow Wear of Tread Braked Wheels

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Root cause and mechanism of development of hollow wear of tread braked wheels were investigated using a full-scale wheel/rail/block brake performance tester. RTRI has already reported that softening of the tread surface due to temperature rise during the tread braking plays a major role in the development of the hollow wear of the tread braked wheels. However its development conditions have been left unclear due to complicated temperature change during braking and difficulties in defining it. Dynamometer experiments employing the rolling contact under the constant tread temperature has revealed the temperature dependence of the tread wear rate of tread braked wheels. Furthermore, methodologies to identify tread temperature, which is defined as inner temperature and thus cannot heretofore be measured in actual vehicle, applicable to actual vehicle have been proposed.