Experimental Investigation of Friction Coefficient between Steel Wheel and Concrete Slab

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It is very important to secure running safety of railway vehicles even when vehicles get derailed. In 2004, a Shinkansen train was derailed by a huge earthquake and its derailed wheels ran on concrete slabs. Taking account of this kind of accidents, a number of vehicle-guide devices have been developed. Some of these devices are designed so as to lead derailed wheels onto a runway made of concrete slabs. In order to simulate the derailed cars' running behavior on a runway of concrete slabs, it is necessary to make clear creep force characteristics and friction coefficients between wheels and concrete slabs, which are essential elements in determining vehicle dynamics. However, there is scarcely a study of rolling contact between steel wheels and concrete slabs; therefore the authors have executed an experimental investigation to evaluate creep force characteristics and friction coefficients between a steel testing wheel and a concrete slab.