

**Evaluation of Relationship between Water Flow Rate and Tangential Contact Force of Wheel/Rail  
Using Twin-disc Rolling Machine**

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In this study, to investigate the effects of various experimental conditions such as circumferential velocity of the test wheel, amount of water spray, and contact pressure on the tangential contact force characteristics, experiments to measure the tangential contact force were carried out at a maximum circumferential velocity of 130km/h. The results show that a small amount of water on the contact surface has a great influence on a decrease in the tangential contact force. Furthermore, it is clarified that the amount of water between actual wheels and rails when running in rainy conditions may be extremely small, when the amount of water intervenes on the contact surface is considered as an inverse problem from the experimental results under several water flow rate conditions. This tendency is similar for all contact pressure conditions and is qualitatively consistent with the actual phenomenon.