

**Development of Equipment to Remove Black Leaf Layer
Formed on Rail Top Surface by Fallen Leaves**

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On mountain railways in autumn, a black leaf layer is formed when fallen leaves are stepped on by wheels, containing moisture. This layer tends to reduce adhesion in wet conditions, resulting in wheel spinning or sliding. Our focus was on the chelating effect of citric acid, and we verified its effectiveness in removing the black leaf layer. We then proposed a method of removing the black leaf layer involving spraying citric acid, sliding a brush and cleaning with water, and developed equipment for carrying out these procedures. Following test on a commercial line using this equipment, we confirmed that it had sufficient performance to remove the black leaf layer.