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# Alle<sup>v</sup>iate®

Top of Rail  
Traction Enhancer

**SECTOR**

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Rail Infrastructure

**AVAILABLE**

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Worldwide

# Alleivate®

## Top of Rail Traction Enhancer

**SECTOR**

Rail Infrastructure

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Adhesion between vehicle wheels and rails is dictated by top of rail surface conditions/contamination. This contact surface is critical for transmitting braking and traction forces and can be adversely affected by a number of phenomena.

**A leader in Friction Management**

L.B. Foster has been a pioneer in Friction Management for more than 25 years and has specific expertise in and understanding of the fundamentals behind wheel/rail interaction.



### The Problems

- > Reduced Coefficient of Friction
- > Reduced braking capability
- > Reduced traction capability
- > Loss of train detection (Signalling)

### The Impacts

- > Signals passed at danger (SPAD)
- > Station overruns
- > Wrong side track circuit failure (WSTCF)
- > Timetable delays
- > Need for increased headways
- > Disruption to operational reliability
- > Reduced driving and braking capability
- > Wheel Flats

### The Solution

- > Traction enhancer placed on the rail head
- > Traction enhancer dispersed with wheel passes up to a distance of 100m
- > Improved friction/adhesion levels
- > Contamination broken down

### The Benefits

- > Fewer operational safety related problems
- > Reduced risk of signals passed at danger
- > Fewer station overruns
- > Less train delays and improved reliability
- > Less risk to vehicle headways
- > Reduced risk of track circuit failures
- > Fewer wheel flats
- > Enhanced braking and traction capability
- > Leaf film broken down

## ISSUES IN TRACTION MANAGEMENT

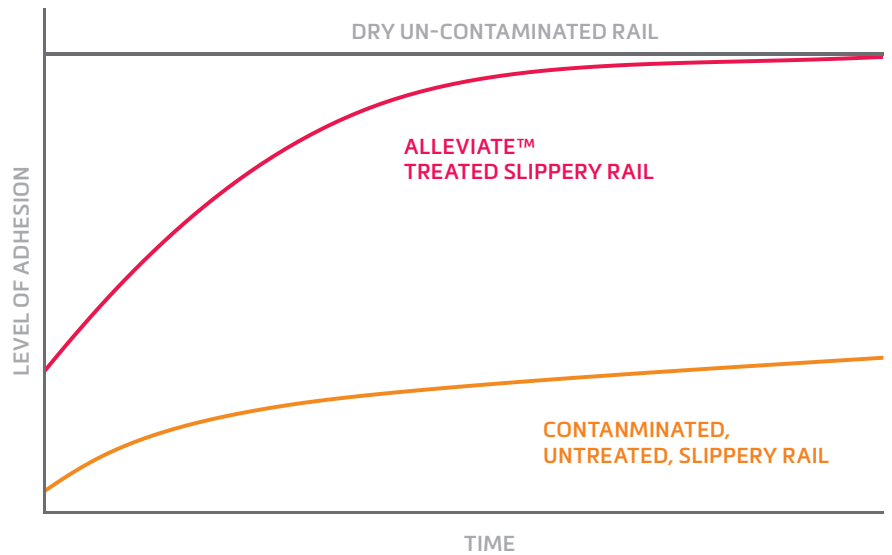
Traction problems are caused by numerous natural events, such as morning dew, damp weather and the onset of light rain, all of which can result in slippery rails. There are also the physical conditions of the railway, in certain locations, greater levels of adhesion are required to allow trains to travel uphill or downhill safely.

In addition to year round traction problems there is also the seasonal problem of autumn leaf fall.

Fallen leaves are drawn on to the track and are subsequently compacted by vehicle wheels creating a very slippery (Teflon like) surface which is particularly exaggerated in the presence of moisture.

It has also been found that in some situations, the compacted leaf layer electrically isolates the wheels from the rails resulting in false signalling readings/reports.

The effect of the slippery surface on the top of the rail leads to the loss of grip and results in braking and traction problems. In extreme cases, the lack of grip can result in trains sliding past signals or sliding past designated stopping points such as station platforms.



The lack of grip can also result in loss of traction with vehicles having difficulty pulling away from stations or travelling up inclines, this in turn can also lead to wheel spin resulting in damage to both the track infrastructure and the vehicle wheels.

The effect of poor traction can have significant safety and cost implications, the latter resulting from train delays and the need for timetable alterations that impact on operating capacity.

## SOLUTION

L.B. Foster has undertaken considerable research in the development of traction enhancing materials and one of the products developed from this research, together with L.B. Foster's extensive knowledge of friction modifiers and their effects at the wheel/rail interface, is **ALLEVIATE®**.

- > ALLEVIATE® is a water-based biodegradable liquid consisting of an engineered composite of abrasive solids (graded sands), thickeners, binders and other additives including corrosion inhibitors, fungicide and anti-freeze. The product is manufactured under an ISO 9001:2008 quality control regime, has a freezing point of -6 °C is non-flammable and has an 18 month shelf life. Alleviate is fully Network Rail approved, for use with all Network Rail accepted equipment. Approval number PA05/04882, PAD no 0057/055766.
- > A low temperature variant of Alleviate is also available with a freezing point of -16°C
- > ALLEVIATE® is a high performance traction enhancer designed to improve adhesion conditions at the wheel/rail interface. Its designed for use on all locations and at all times of the year where loss of traction could be an issue. As Alleviate is a water-based gel and due to its viscosity, it can be applied directly on to the rail head and is proven not to interfere with track signalling. It achieves this by a combination of abrasive action to weaken and remove hardened leaf layers and placement of sand particles directly on the rail head to provide grip between wheel and rail.
- > ALLEVIATE® can be offered as a complete system solution using the L.B. Foster TGA3 wayside Traction Gel Applicator providing a regulated output delivery for optimum performance or can be applied using other equipment such as hand-held devices or vehicle mounted systems.
- > ALLEVIATE® can be used as a seasonal traction enhancer and is specifically useful for dealing with the problems of leaf fall or other problematic surface conditions.
- > Product effectiveness has been verified by various means, including field trials, laboratory studies and performance testing on the SUROS twin disk machine at the University of Sheffield. Testing demonstrated the ability of ALLEVIATE® to rapidly restore adhesion to a safe operating level similar to that of uncontaminated conditions.

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**LB Foster**<sup>®</sup>