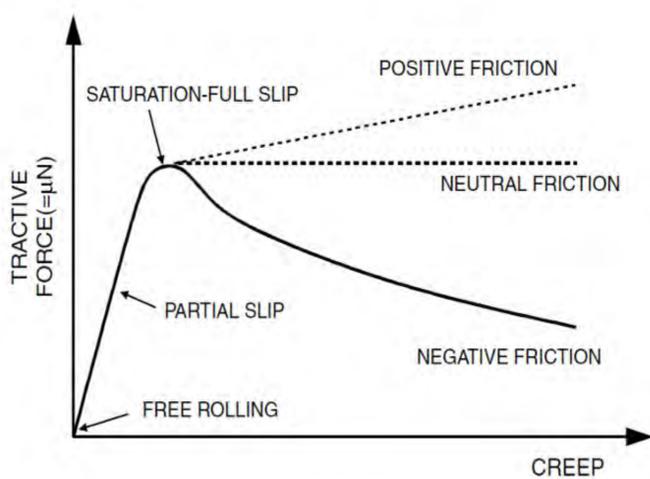
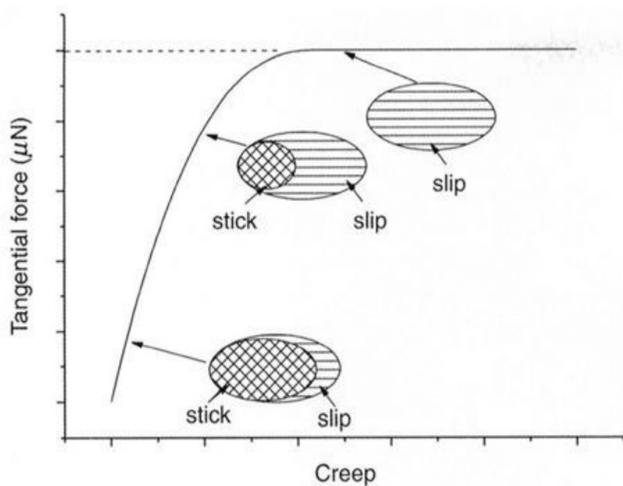


FRICITION MANAGEMENT AT THE WHEEL-RAIL INTERFACE

OVERVIEW

Friction conditions at the wheel-rail interface can influence the steering, traction and braking behaviour of railway vehicles, as well as damage to wheel and rail materials.

- Reducing friction levels between the rail gauge face and wheel flange is important in reducing wear rates in curved track.
- Contact between the wheel tread and rail running surface requires a moderate friction level (0.30-0.35) for consistent traction, braking and steering behaviour.



RESEARCH AND INDUSTRY SUPPORT ACTIVITIES

IRT activities have focused on is the introduction or improvement of friction management strategies. Activities include:

- Measurement of lubrication effectiveness
- On-site measurement of friction behaviour using a Salient Systems® Push Tribometer
- Investigating abnormal friction behaviour associated with train overruns
- Developing improved friction management strategies to address issues such as accelerated wheel wear and wheel squeal

UNDERSTANDING AND MEASURING FRICTION BEHAVIOUR AT THE WHEEL-RAIL INTERFACE

Wear Reduction

Track-mounted equipment is the most widely-used method for lubrication of the rail gauge face. The effectiveness of this approach is dependent on the design and configuration of the equipment, but generally decreases with increasing distance from the point of application. Vehicle-mounted application systems are also used, on locomotives or in some mass transit systems.

Reducing friction levels at this interface also contributes to lowering rolling resistance and decreasing tractive effort requirements.

Lubricant type, ambient weather conditions, track curvatures, and many other factors, influence the effectiveness of the lubrication strategy.

Traction, Braking and Steering Behaviour

Variable, unstable or high friction levels in the primary wheel rail contact region of the rail are often associated with the following:

- Wheel squeal due to “stick-slip” behaviour in response to steering forces
- Train overruns under braking
- Loss of traction under power
- Development of surface defects (e.g. corrugations)

