

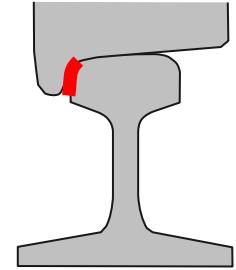
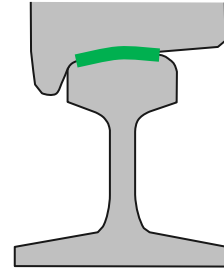
# L.B. Foster Consumables

An Overview of Trackside and On-Board Consumables

# Segmentation of Consumables

## The Targeted Location:

- > Top of Rail/Wheel Tread
- > Gauge Face/Wheel Flange

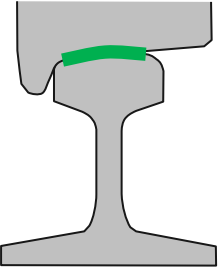
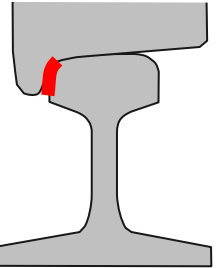


## The Application:

- > Trackside
- > On-Board



# Consumables Overview

		APPLICATION METHOD	
		Trackside	On-Board
APPLICATION LOCATION	 <p>Top of Rail / Wheel Tread</p>	<ul style="list-style-type: none"> <li>&gt; KELTRACK Friction Modifiers</li> <li>&gt; ALLEVIATE Rail Traction Enhancers</li> </ul>	<ul style="list-style-type: none"> <li>&gt; KELTRACK Friction Modifiers</li> <li>&gt; KELSAN Solid Tread Friction Modifier Sticks</li> </ul>
	 <p>Gauge Face / Wheel Flange</p>	<ul style="list-style-type: none"> <li>&gt; Gauge Face Greases</li> </ul>	<ul style="list-style-type: none"> <li>&gt; KELSAN Wheel Flange Lubrication Sticks</li> </ul>



# Top-of-Rail / Wheel Tread Consumables

# Trackside Application

# 01



# KELTRACK® Friction Modifiers

Innovative water-based technology that forms a thin, dry film that controls friction on the TOR without impacting vehicle traction and braking.

Application of the suite of KELTRACK friction modifiers has been proven to:

- > Extend rail and wheel life
- > Drastically reduce TOR squeal noise
- > Mitigate rail corrugation development
- > Improve fuel and energy efficiency
- > Improves vehicle steering to reduce flanging noise
- > Mitigate Rolling Contact Fatigue development
- > Reduce lateral forces in curves
- > Lower derailment potential



# KELTRACK® Friction Modifiers

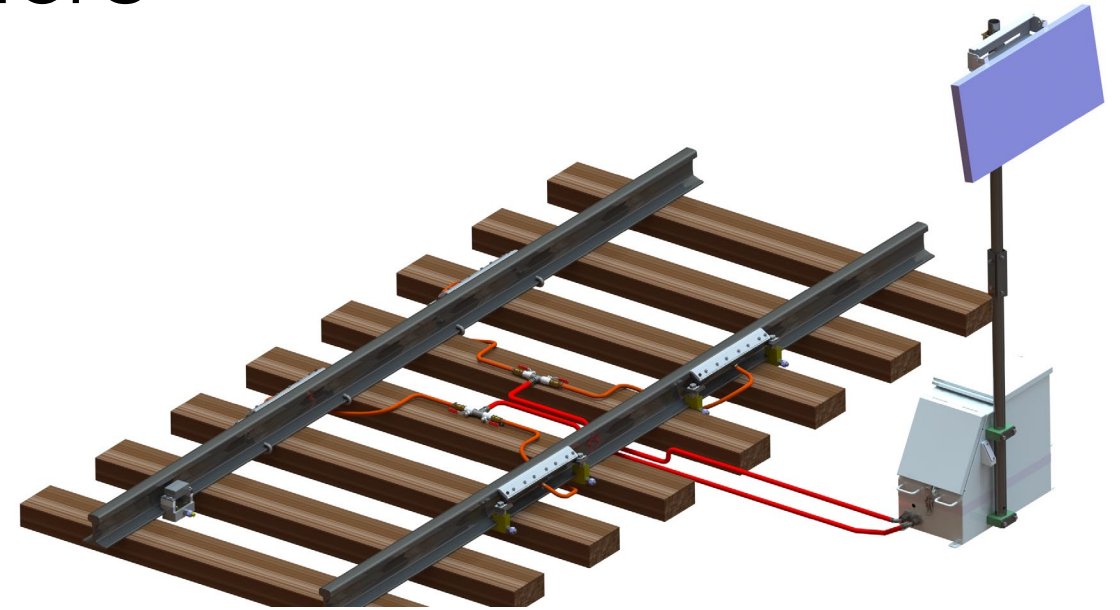
## *For Passenger Rail*

### KELTRACK Transit EX (KTEX)

- > Premium, all-season, water-based friction modifier
- > Formulated to have **EX**tended durability and longer carry down, improved corrosion resistance and extended operating temperature range
- > Positive friction characteristics
- > Environmentally friendly; non-toxic to the aquatic environment
- > Freezing point of -27 °C (-16 °F)

### KELTRACK Trackside Transit (KTT)

- > Water-based friction modifier that provides intermediate friction at the wheel/rail interface
- > Over 20 years of proven performance for
  - > Mitigates noise, corrugation and RCF growth
  - > Rail/wheel wear reduction
- > Environmentally friendly; non-toxic to the aquatic environment
- > Freezing point of -7 °C (19 °F)





# KELTRACK® Friction Modifiers

## *For Freight Rail*

### KELTRACK ER Plus

- > Highly durable TOR friction modifier which promotes extended carry distances or use of lower application rates in severe freight conditions
- > Lower annual product consumption leads to less on-track time and labour required to fill trackside units
- > All-season product; eliminates the need to carry multiple products
- > Contains no oil therefore suitable for flat or graded territory
- > Environmentally friendly; non-toxic to the aquatic environment
- > Exceptional product stability and batch-to-batch consistency

### KELTRACK ER

- > Durable water-based TOR friction modifier which provides excellent wear protection and effective carry down
- > Contains no oil
- > Environmentally friendly; non-toxic to the aquatic environment
- > Summer and Winter versions available





# INFINITRACK™ TOR Lubricant

## *For Freight Rail*

### INFINITRACK

- > Exceedingly durable TOR Lubricant which promotes extended carry distances or use of lower application rates in severe freight conditions
- > Proven 13 km (8 mile) carry down; exceeds durability of traditional TOR friction modifiers
- > Lower annual product consumption leads to less on-track time and labour required to fill trackside units
- > All-season product; eliminates the need to carry multiple products
- > Not-flammable
- > Non-toxic and exceptional product stability and batch-to-batch consistency

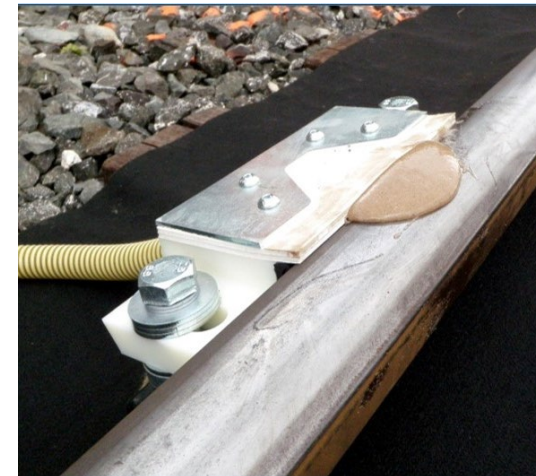
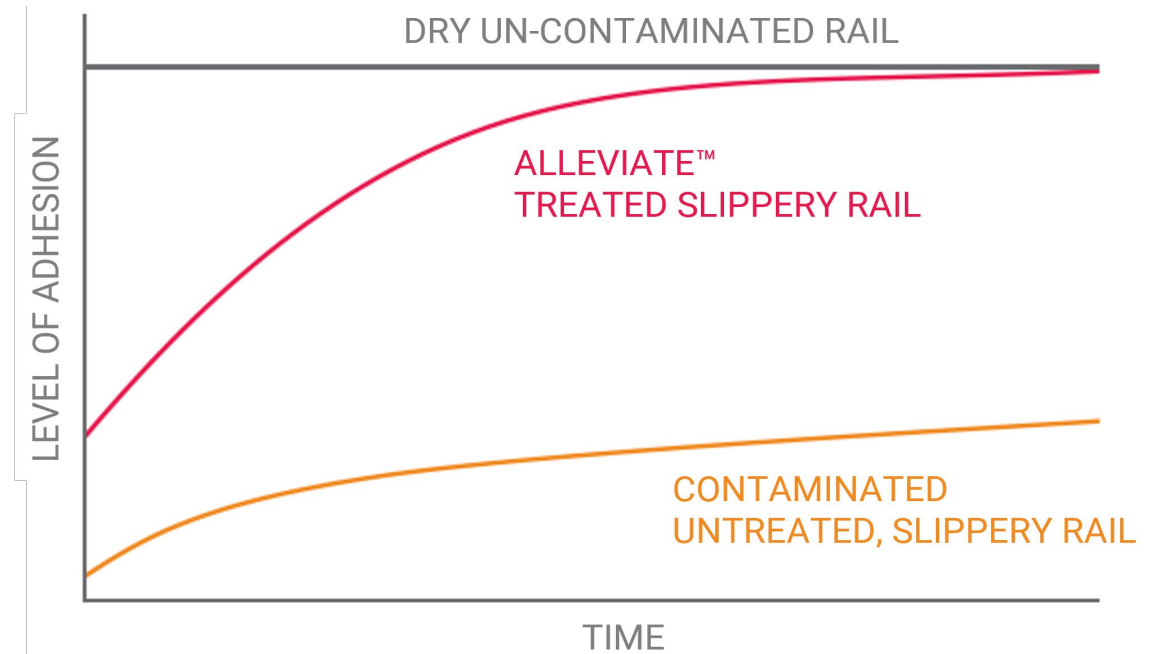


# Alleivate<sup>®</sup>

## Rail Traction Enhancers

Water-based, high performance traction enhancers designed to improve adhesion conditions at the wheel/rail interface. Designed for use on all locations and at all times of the year where loss of traction could be an issue. Benefits include:

- > Enhanced braking and traction capability
- > Fewer operational safety related problems
- > Reduced risk of signals passed at danger (SPAD)
- > Fewer station overruns
- > Less train delays and improved reliability
- > Reduced risk of track circuit failures
- > Fewer wheel flats
- > Breaks leaf film during autumn season



# Alleivate®

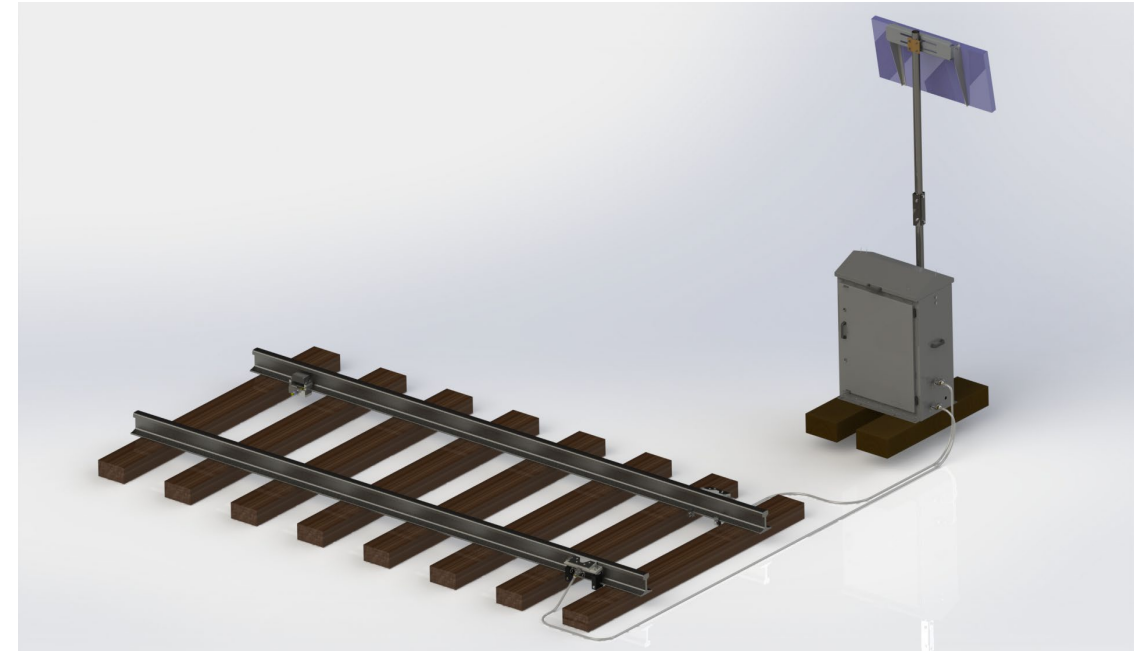
## Rail Traction Enhancers

### ALLEVIATE

- > Water-based engineered composite of abrasive solids, thickeners and other additives
- > Manufactured under ISO 9001:2015 quality control program
- > Excellent product stability
- > Freezing point of -6 °C (21 °F)

### ALLEVIATE LT

- > Low Temperature version of ALLEVIATE
- > Improved freezing point of -16 °C (3.2 °F)





# On-Board Application

# 02

# KELTRACK® Friction Modifiers

## *For On-Board Application*

### KELTRACK AP EX

- > Premium, water-based TOR friction modifier that provides friction control via on-board application via L.B. Foster's KOB System
- > Application does not affect vehicle traction / braking performance or track signaling systems
- > Very low environmental impact; uses latest technology in environmentally friendly raw material components
- > Contains no oil and provides intermediate friction
- > Optimized spray quality for an expanded operating temperature range (all-season). Freezing point of -25 °C (-13 °F)
- > Exceptional product stability and batch-to-batch consistency



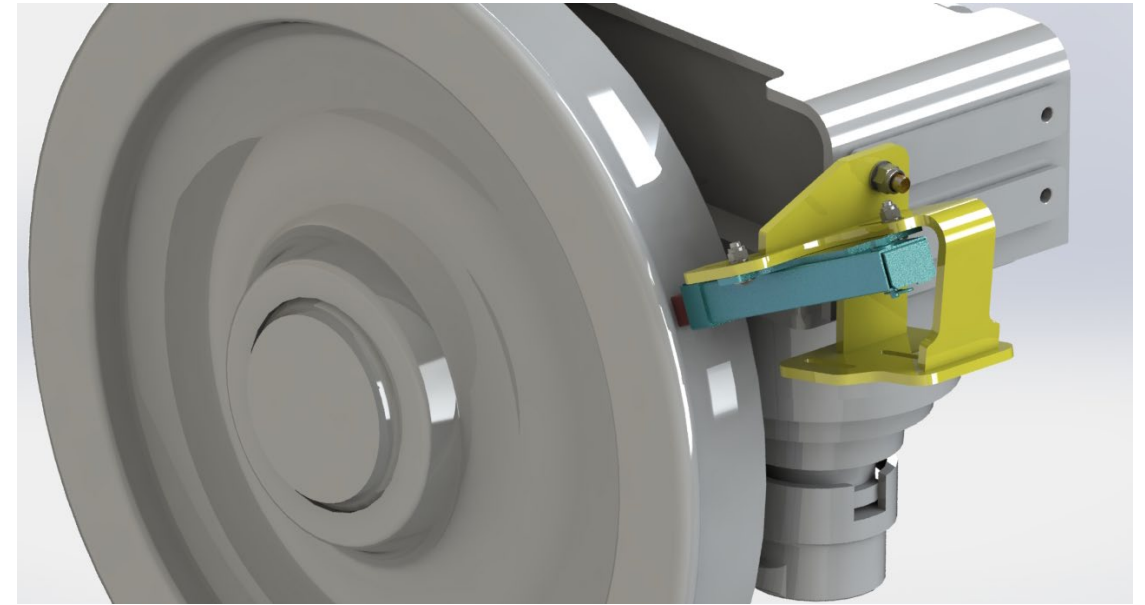
# KELSAN® Solid Stick Technology

## *For On-Board Application*


Globally proven train-mounted solid stick technology to provide friction management benefits for transit, high speed, tram, and freight systems. These systems are customized to meet the vehicle design, application configuration, and wear rate target for each customer while meeting industry standard shock and vibration specifications.

### KELSAN HPF / SFM

- > Engineered composite of solid friction modifying materials bound together by a thermosetting resin that provides excellent protection to wheel treads
- > Applied directly to the wheel tread
- > Patented interlocking technology to minimize product waste
- > Non-toxic and non-flammable
- > Proven to:
  - > Extend wheel tread and TOR rail life
  - > Reduces short pitch rail corrugations
  - > Reduces tread defects / RCF







# Gauge Face / Wheel Flange Consumables

# Trackside Application

# 03

# L.B. Foster Grease Portfolio

L.B. Foster has the most extensive and advanced portfolio of gauge face greases and application systems specifically designed for the wheel / rail environment.

Recognized globally as the experts in railroad friction management, we continue to develop innovative products that:

- > Reduce wheel and rail wear
- > Reduce derailment potential
- > Reduce energy consumption
- > Reduce Rolling Contact Fatigue (RCF) development

Our trackside gauge face grease portfolio starts with **SYNCURVE™**, an exceedingly durable all-season rail curve lubricant. We also provide a full range of high-performance and environmentally friendly gauge face lubricants.





# SYNCURVE™

L.B. Foster Rail Technologies has applied its knowledge of the wheel/rail interface in conjunction with rigorous scientific analysis and in-track field testing to create **SYNCURVE**.

**SYNCURVE** is an exceedingly durable, all-season rail curve lubricant, which is proven to:

- > Dramatically reduce rail wear
- > Promote exceptional carry distances with lower application rates
- > Lower annual grease consumption which leads to less on-track time to fill trackside units
- > Have a low propensity for application bar clogging
- > Have excellent low temperature pumpability

**SYNCURVE** is also ultimately biodegradable and non-toxic to the aquatic environment



# L.B. Foster Grease Portfolio

Along with SYNCURVE®, we also provide a full range of high-performance and environmentally friendly gauge face lubricants including:

- > **ALLCURVE™** is a cost-effective, *all-season* petroleum grease that meets adhesion, pumpability and load carrying requirements at all operating temperatures.
- > **DURACURVE™ PRO** is a highly durable rail curve grease that has extended carry distances and excellent wear protection. **DURACURVE™ PRO** has been formulated to optimize the pumpability, adhesion and water resistance required in the wheel / rail environment.
- > **DURACURVE™ CE** is a grease specifically designed to provide good wear protection, weather resistance, and effective carry-down at an economical cost.
- > **BIOCURVE™ LB2** is a premium quality readily biodegradable rail curve grease formulated with vegetable oils. Recommended for locations requiring the highest level of biodegradability, such as near waterways or other environmentally sensitive areas.



# On-Board Application

# 04



# KELSAN® Solid Stick Technology

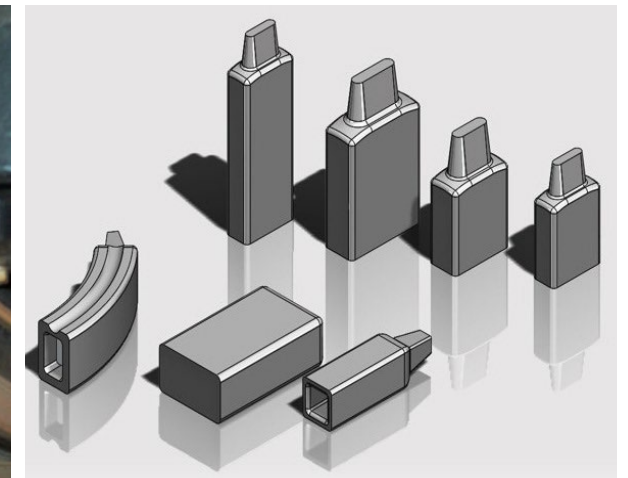
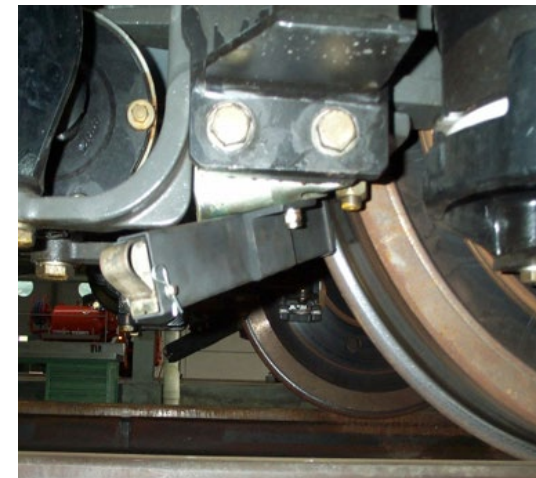
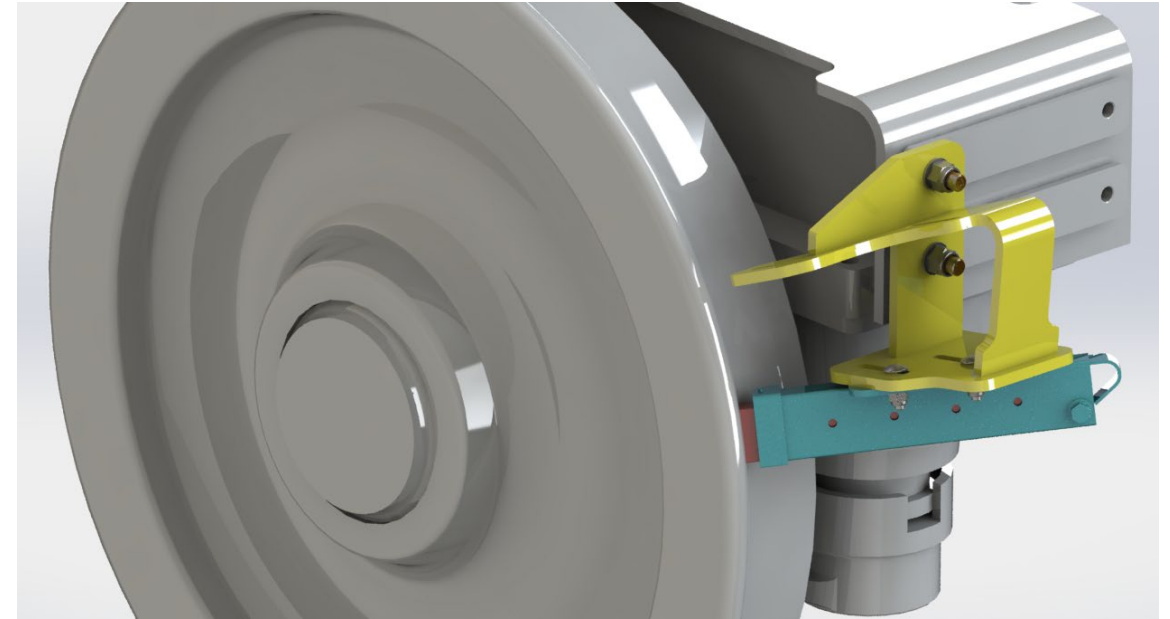
## *For On-Board Application*

KELSAN solid flange lubrication sticks are engineered composites of solid lubricant materials bound together by a thermosetting resin that provides excellent protection to wheel flanges. The products are applied directly to the wheel flanges and proven to:

- > Extend wheel flange and rail gauge life
- > Reduce risk of low-speed wheel climb derailments

All L.B. Foster's solid flange lubrication products utilize patented interlock to provide consistent product application with minimal wastage. The products are non-toxic and non-flammable

- > KELSAN LCF is a premium solid flange lubricant that provides a low coefficient of friction and excellent flange wear protection
- > KELSAN LCF-S2 is a cost-effective wheel flange lubrication solid stick that provides a balance between cost and performance.
- > KELSAN LCF-AR is the abrasion-resistant wheel flange lubrication solid stick for harsher environments such as trams



# Thank you