

NEWTLAC®

High Durability Asphalt Additive



Enriching lives, in harmony with nature.

We have the necessary technical horsepower and production capability to develop and manufacture customer-tailored differentiated and high value-added solutions.

Kao Specialties Americas

Kao Specialties Americas LLC (KSA) is a wholly owned subsidiary of Kao Corporation. KSA is a world class specialty chemical manufacturing company operating in High Point, North Carolina with three major business segments:

- Oleo Chemicals – Fatty Alcohols, Tertiary Amines and SLES
- Performance Chemicals – Esters, Nonionic and Anionic surfactants
- Imaging Materials – Toner Binder Polyester Resins

KSA operates three ISO 9001:2015 and RC 14001:2015 certified manufacturing plants to serve diversified business segments:

- Specialty Surfactant Production Plant
- Toner Binder Production Plant
- Reactor and Mix & Blend Production Plant



KSA has been serving the specialty chemicals industry through its major business segments for over 30 years by offering a wide variety of naturally derived Fatty Alcohols, Amines, and specialty surfactants for use in a various markets and specialized applications.

KSA chemistries find use in a variety of applications, ranging from Vinyl polymerization, Catalytic hydrosilation, Emulsion polymerization, Paint/Coatings, Asphalt, Construction, Pulp & Paper and Oilfield, and much more...

The KSA product line includes specialty surfactant alkoxylates, polymer intermediates, phosphate esters, imidazolines, amides, amine alkoxylates, amines oxides, ethoxylated polycarboxylates, quaternary ammonium salts, and foam control additives. The major functional properties of these products are:

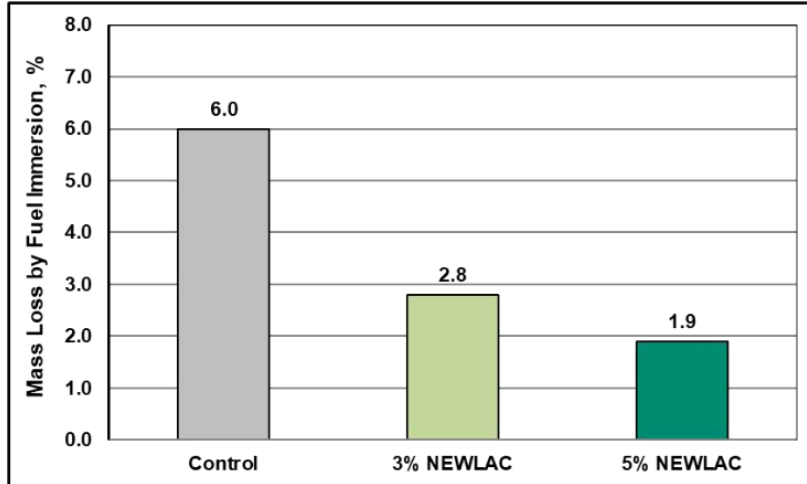
- Asphalt Emulsification
- Asphalt Fuel Resistance
- Asphalt Anti-Rutting
- Asphalt Anti-Stripping
- Scale and Corrosion Inhibition
- Pigments dispersion/stabilization
- Emulsification/De-emulsification
- Surface Activity/Wetting

NEWTLAC Description

NEWTLAC® is a patented polymeric asphalt additive that can be added to hot-mix asphalt at the plant or to the asphalt binder. The additive maintains the original performance grade of the base binder while providing improved resistance to fuel damage and permanent deformation, making it ideal for truck stops and commercial parking lots adding years to the life of the pavement and significantly reducing repair and maintenance costs.

Fuel Resistance Performance

Comparative Fuel Resistance of Superpave mix design (7.0% VA)
6.1% PG 64-22 asphalt, 32% Limestone #8, 38% Limestone screening, 10% Natural sand, 20% RAP
- Pods soaked in fuel for 24 hrs -



Case History: Comparative Pavement Appearance after 4 yrs
- Quimi Kao Parking lot (Mexico) -

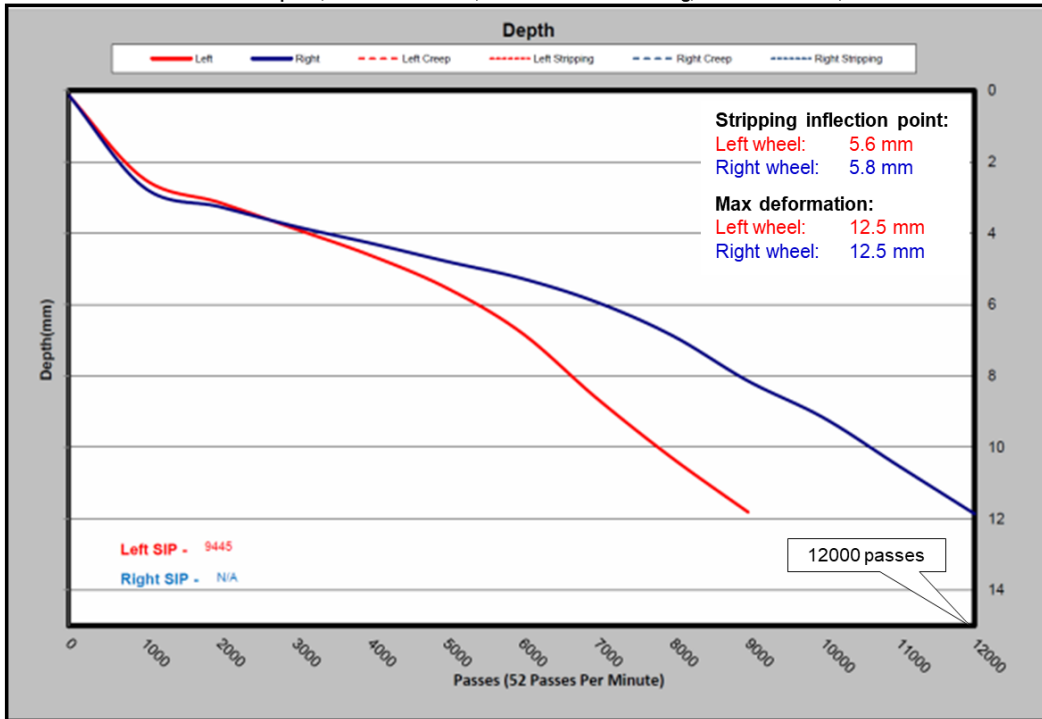


Conventional Mix

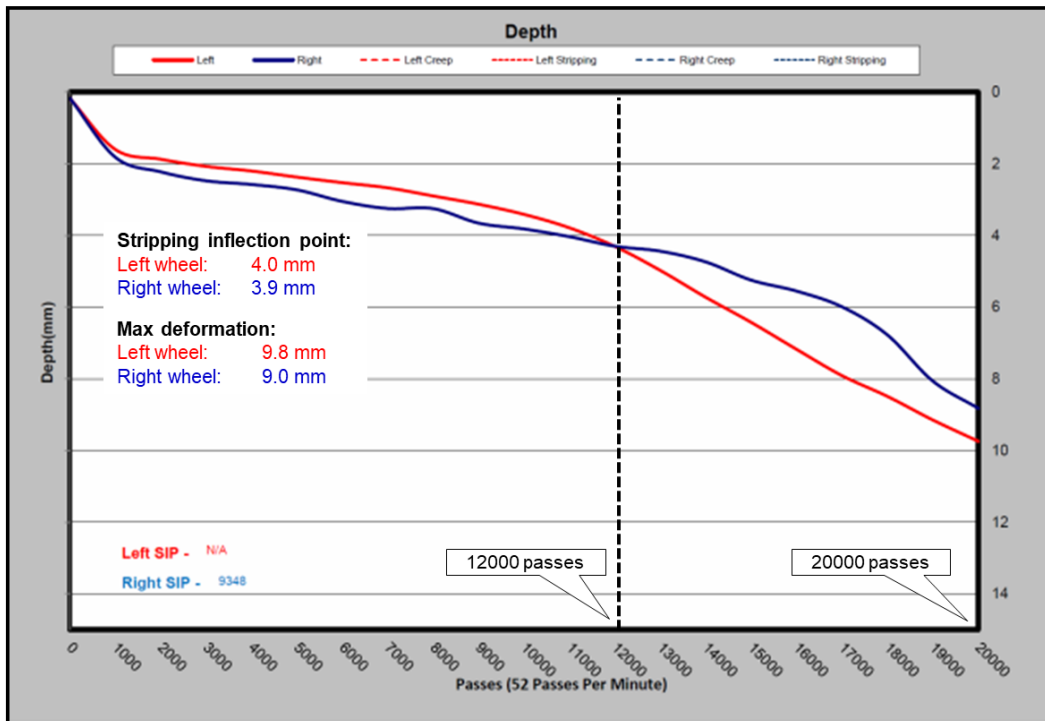
5% NEWTLAC Mix

Anti-Rutting Performance

Hamburg Wheel-Track Test of Superpave mix design (7.0% VA) at 50 °C (Control)
 5.6% PG 64-22 asphalt, 32% Limestone #8, 38% Limestone screening, 10% Natural sand, 20% RAP

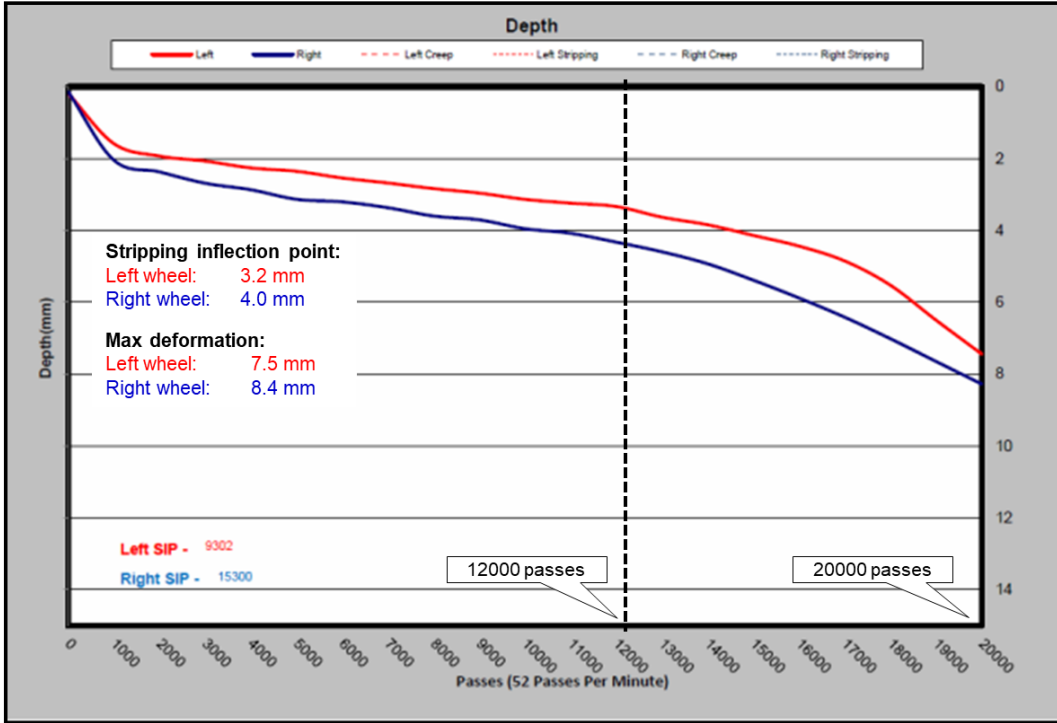


Hamburg Wheel-Track Test of Superpave mix design (7.0% VA) at 50 °C
 5.6% PG 64-22 asphalt, 32% Limestone #8, 38% Limestone screening, 10% Natural sand, 20% RAP, 3% NEWTLAC



Hamburg Wheel-Track Test of Superpave mix design (7.0% VA) at 50 °C

5.6% PG 64-22 asphalt, 32% Limestone #8, 38% Limestone screening, 10% Natural sand, 20% RAP, 5% NEWTLAC



Hamburg wheel-track test Summary

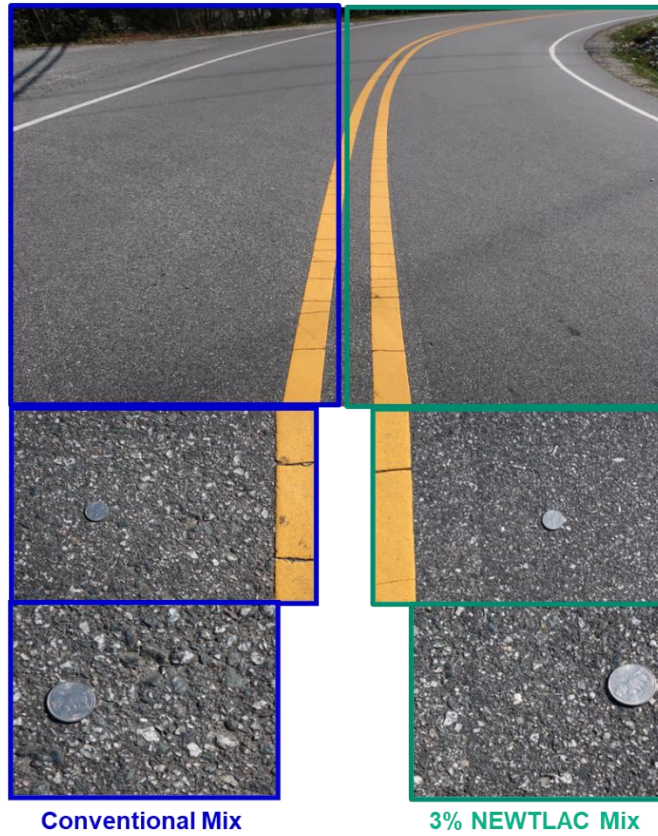
Test Conditions: Superpave mix design

- Aggregates
 - 32% Limestone #8
 - 38% Limestone screenings
 - 10% Natural sand
 - 20% RAP
- Asphalt: PG64-22
- AC: 5.6%
- VA: 7.0%
- NEWTLAC: 0, 3% & 5% per asphalt binder

H.W.	Stripping inflection point				Max deformation			
	Left wheel		Right wheel		Left wheel		Right wheel	
	Pass Count	Deformation	Pass Count	Deformation	Pass Count	Deformation	Pass Count	Deformation
Control	5,082	5.6 mm	6,759	5.8 mm	9,490	12.5 mm	12,512	12.5 mm
3% NEWTLAC	11,424	4.0 mm	10,181	3.8 mm	19,954	9.8 mm	19,928	9.0 mm
5% NEWTLAC	10,439	3.2 mm	10,680	4.0 mm	20,006	7.4 mm	19,986	8.4 mm

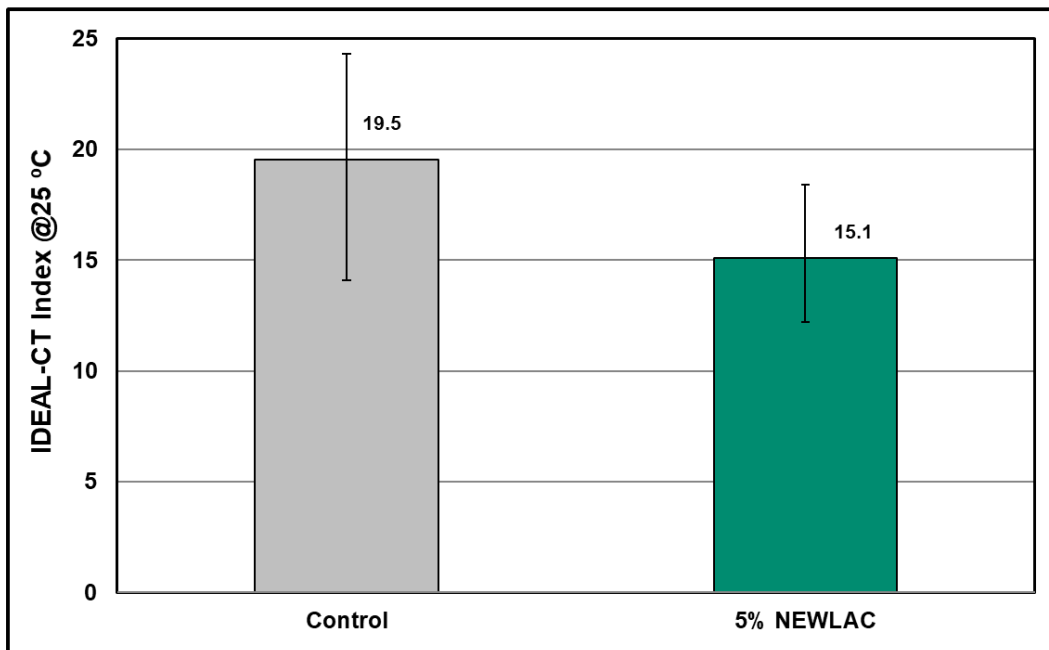
Case History: Trinity Ave/Bethel Dr, High Point, NC (Paved April 2019)

Case History: Comparative Pavement Appearance after 2 yrs
- City of High Point, NC (public road) -



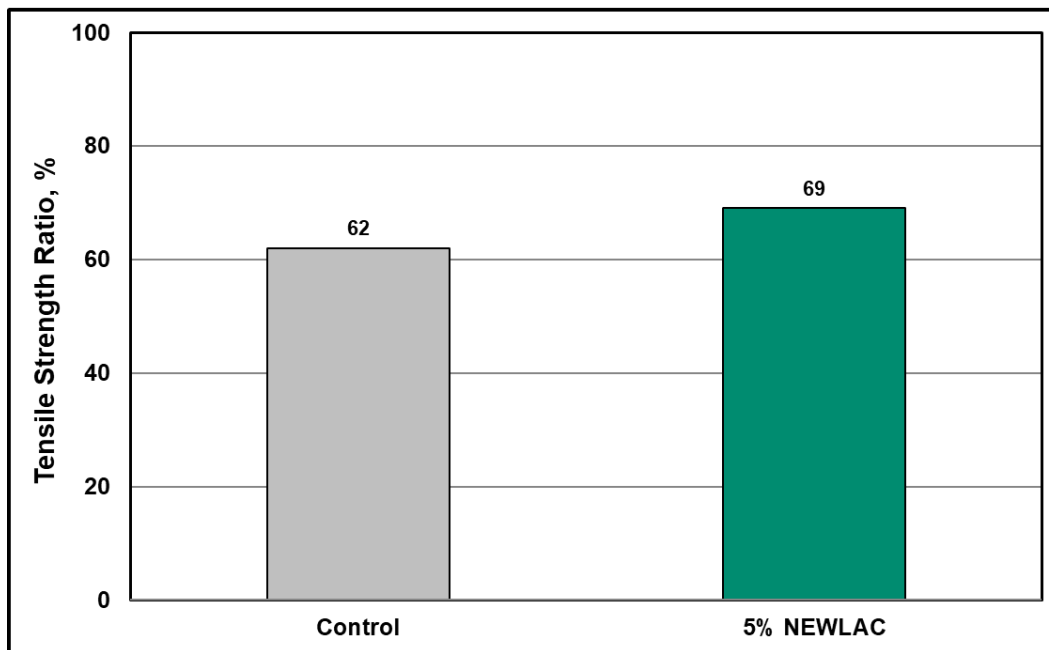
Anti-Cracking Performance

Comparative IDEAL-CT INDEX of Superpave mix design (4.0% VA)
5.3% & 5.6% PG64-22 asphalt binder (FDOT approved), 12.5mm NMAS, 20% RAP, 75 Gyration, 0% Anti-strip



Moisture Susceptibility Performance (Tensile Strength Ratio)

Comparative Moisture Susceptibility of Superpave mix design (4.0% VA)
 PG64-22 asphalt binder (FDOT approved), 12.5mm NMAS, 20% RAP, 75 Gyrations, 0% Anti-strip



	Asphalt Content	Unconditioned Strength	Conditioned Strength	Tensile Strength Ratio
Control	5.3%	278.1 lbf.	172.9 lbf.	62%
5% NEWTLAC	5.5%	278.7 lbf.	192.3 lbf.	69%


NEWTLAC Performance Summary

	Fuel Resistance (Mass Loss)	Hamburg Wheel-Track (Avg Left/Right deformation)		TSR	IDEAL-CT Index	Comments
Control	6.0%	11,001 pass	12.5 mm	62%	20.0	- 5.3% Asphalt content (PG64-22)
3% NEWTLAC	2.8%	19,941 pass	9.4 mm	ND	ND	- NEWTLAC Improves Fuel and Rutting resistance
5% NEWTLAC	1.9%	19,996 pass	7.9 mm	69%	15.0	- 5.5% Asphalt content (PG64-22) - NEWTLAC Improves Fuel and Rutting resistance - IDEAL-CT & TSR not statistically different than the control mixture] - No liquid anti-strip added into the mix to evaluate the TSR




NEWTLAC Benefits

- ✓ Fuel resistant performance with polymer modified and unmodified binder grades
- ✓ Fuel resistant performance in mixes containing recycled material like RAP and RAS
- ✓ Improved resistance to deformation (rutting) under heavy loads
- ✓ Extends the life of the pavement
- ✓ Reduced maintenance and repair costs
- ✓ Ease of handling and flexibility
- ✓ Lower mix cost relative to other fuel resistant mix options

The information presented herein is believed to be accurate and reliable but is presented without guarantee or responsibility on the part of Kao Specialties Americas LLC. It is the user to comply with all applicable laws and regulations and to provide for a safe workplace. The user should consider any health and safety hazards or information contained herein only as a guide, and should take those precautions which are necessary or prudent to instruct employees and to develop work practice procedures in order to promote a safe work environment. Further, nothing contained herein shall be taken as an inducement or recommendation to manufacture or use any of the herein materials or processes in violation of existing or future patents.

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