Cargill

Cargill™ Anova® Asphalt additives

Trust is in the binder

A complete portfolio of bio-based asphalt additives proven in millions of tons of asphalt worldwide

Stronger roads start with the right mix

What asphalt producers face today

The asphalt industry is built on decades of proven practices that have balanced performance, cost, quality, and compliance across changing demands.

But many of today's production parameters are still shaped around past material constraints, legacy specifications, and established ways of working. Those assumptions can limit what asphalt mixes can deliver, as materials, technology, and sustainability expectations evolve.

Today's environment creates an opportunity to embrace performance-based design amid:

- Pressure to reduce costs
- Constant focus on crew safety
- Tightening plant emission standards
- Opportunities to improve efficiency and sustainability

Cargill Anova® additives bridge the gap between opportunity and real-world results, helping producers achieve reliable performance at scale.

The right additive for every challenge

Performance-driven asphalt solutions

Advances in additive technology now make it possible to move beyond those inherited boundaries by unlocking new efficiencies, improving performance, and delivering greater flexibility without sacrificing performance.

Anova® additives are designed to deliver measurable results, across the full asphalt lifecycle, from production to pavement durability.

Our portfolio includes:

Rejuvenators	Restore aged binder properties and enable higher recycled asphalt pavement (RAP) content, extending pavement life
Warm mix additives	Enable lower production temperatures, improved workability, and enhanced aggregate adhesion for more reliable, high-performing pavement
Adhesion promoters	Strengthen asphalt aggregate bonding and improve moisture resistance for durability
Rheology modifiers	Optimize binder properties to meet specifications
Cold mix modifiers	Improve coating and stockpile stability in cold mix applications
Emulsion stabilizers	Enhance emulsion uniformity and prevent oil separation, supporting both short- and long-term emulsion stability

From mix plants to Department of Transportation (DOTs), **Anova additives are trusted across the pavement industry.**

- Bio-based chemistry
- Proven performance
- Lowest cost-in-use
- Safer work environments

Anova® Warm Mix additives

Lower emissions for safer paving, backed by proven performance

Cargill Anova® Warm Mix additives are 100% bio-based and enable the production of smokeless asphalt at lower temperatures.

The result: durability, lower costs, reduced environmental impact, and safer working conditions for crews.

KEY BENEFITS:

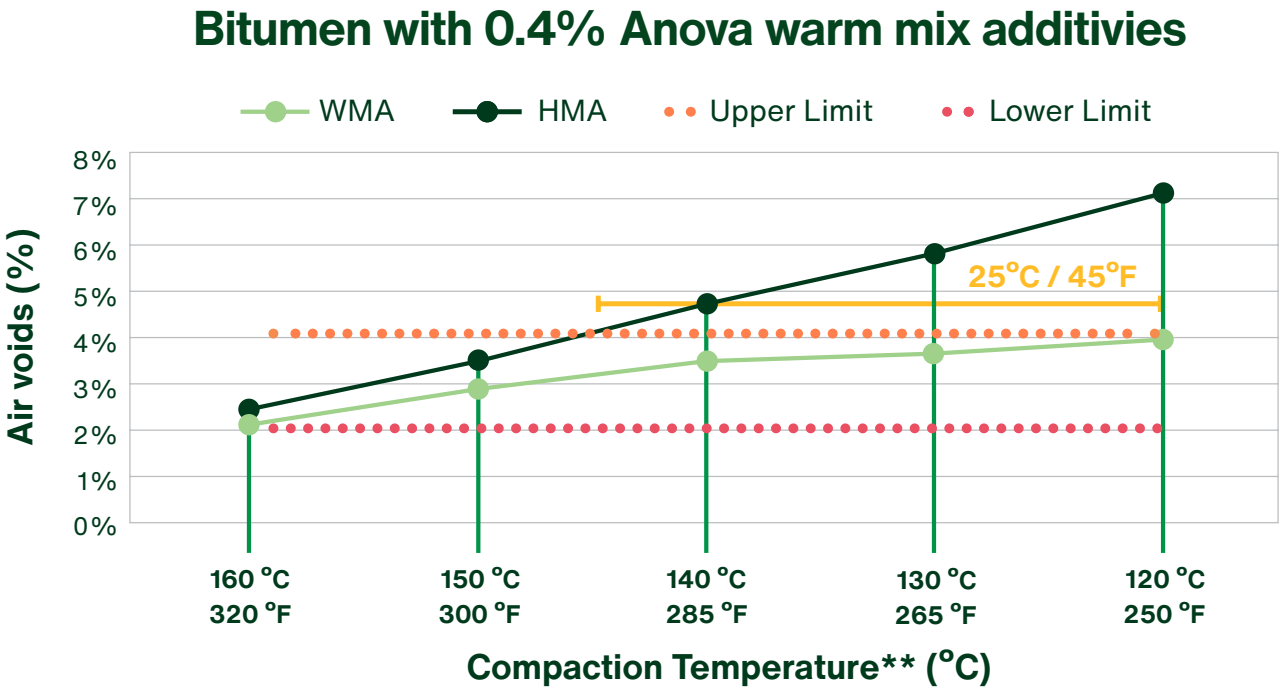
- Improve workability and compaction
- Enhance aggregate adhesion
- Reduce odor and P-10 emissions through lower product temperatures
- Reduces manufacturing temperature up to 50°C (90°F) (compared to HMA)

COMPACTION EFFICIENCY:

Achieves density at lower temperatures

In this example, Anova Warm Mix achieved a 25°C (45°F) reduction in compaction temperature while still achieving air void targets between 2%-4%.

The data shown reflects a single test case, demonstrating the material's ability to achieve density and improved workability compared to conventional hot mix asphalt.



**Mix samples were produced at 160 °C and compated with a Marshall compactor at independent laboratory.

Anova® Rejuvenators

Allows for up to 100% usage of recycled asphalt pavement

Cargill Anova® Rejuvenators are 100% bio-based and restore balance and flexibility to aged binders, enabling higher recycled content while maintaining or exceeding the performance of lower RAP asphalt mixes.

MEASURABLE SAVINGS:

Lower your mix costs

By enabling higher recycled content, you can reduce material demand and lower costs in use.

30% RAP typical mix

Estimated material cost: **$30/ton mix**

45% RAP mix

Estimated material cost: **$27/ton mix**

Estimated Savings:
$3/ton mix

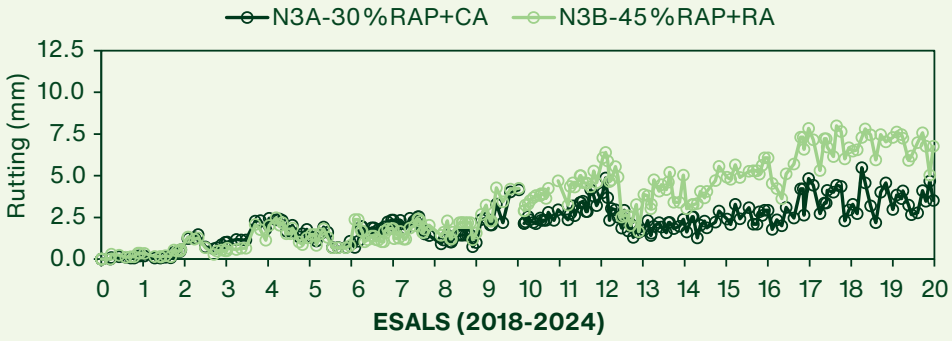
NCAT TEST TRACK CASE STUDY:

Enhances pavement performance

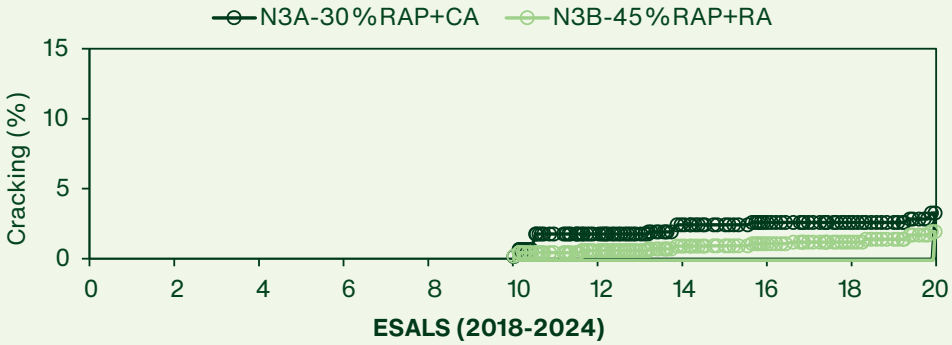
After more than 20 million ESALs of NCAT testing over seven years, data shows high-RAP pavements with Cargill Anova bio-based Rejuvenator delivers reliable, consistent performance.

Minimal cracking.
No significant rutting.

Field rut depth measurements



Field surface cracking measurements



"We've looked closely at cracking, rutting, and the macro texture over 7.5 years, and **it's exceeding our expectations.**"

— Nam Tram, Assistant Director and Research Professor, NCAT

Smarter chemistry across every Anova® solution

Cargill Anova® additives are engineered to meet modern asphalt demands for reliable performance and durability across applications.

What sets Anova additives apart:

- **Bio-based chemistry**, compared to traditional hazardous, petroleum-based products
- **Proven performance**, engineered to improve durability
- **Lowest cost-in-use**, with reduced odor and emissions
- **Safer work environments**, enabled by being non-corrosive and non-hazardous*

*Non-hazardous according to Regulation (EC) No. 1272/2008 and 29 CFR 1910.1200

Anova Asphalt Solutions Product Guide

CATEGORY/ PRODUCT NAME & DESCRIPTION	TYPICAL VISCOSITY, CP AT 25°C	OPEN CUP, FLASH POINT, °C	COMPACTION AID	WARM MIX (TEMPERATURE REDUCTION)	ADHESION PROMOTER	REJUVENATION CAPACITY	RHEOLOGY MODIFIER	EMULSION STABILIZER
WARM MIX ADDITIVES								
Anova 1501 and 1503 additive (NA and LATAM) (EU and APAC) Enhances workability and supports lower-temperature compaction.	210	211	♦♦♦	♦♦♦	♦♦	-	-	-
Anova 1599 additive Compaction aid with enhanced adhesion that improves asphalt workability and enables lower-temperature compaction.	1,500	289	♦♦♦	♦♦♦	♦♦♦	-	-	-
REJUVENATORS								
Anova 1815 and 187 rejuvenator (NA and LATAM) (EU and APAC) Enables high recycled content while improving durability, aging resistance, compaction, and workability.	100	300	♦	-	-	♦♦♦	-	-
Anova 1825 rejuvenator Supports moderate recycled content while improving durability and workability. *limited availability.	60	277	-	-	-	♦♦	-	-
Anova 1845 rejuvenator Compatibilizer for highly aged recycled binders, improving durability, aging resistance, compaction, and workability.	470	265	♦♦	-	-	♦♦♦	-	-

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RHEOLOGY MODIFIERS								
Anova 1000 modifier (EU and APAC) Adjusting low-temperature PG, reducing viscosity, and increasing penetration grades in paving and emulsified asphalt binders.	51	290	-	-	-	-	●●	-
Anova 1005 modifier Enhanced temperature range, long-term stability, and polymer compatibility that improves low-temperature PG, reduces viscosity, and increases penetration grades in asphalt binders.	61	290	-	-	-	-	●●●	-
Anova 1006 modifier (NA and LATAM) Enhanced temperature range, long-term stability, and polymer compatibility for improving low-temperature PG, reducing viscosity, and increasing penetration grades in asphalt binders.	63	213	-	-	-	-	●●●	-
ADHESION PROMOTERS								
Anova 1440 adhesion promoter Low odor, liquid anti-strip additive that significantly enhances asphalt–aggregate adhesion.	420	303	-	-	●●●	-	-	-
COLD MIX MODIFIERS								
Anova 1300 rejuvenating cold mix modifier Low VOC, high flashpoint cold mix and cold patch additive compatible with virgin and 100% RAP mixtures.	12	180	-	-	-	●●●	●●●	-
Anova 1310 and 1312 rejuvenating cold mix modifier (NA and LATAM) (EU and APAC) Low VOC, high flashpoint cold mix and cold patch additive for virgin and 100% RAP mixtures that improves coating and moisture resistance.	14	175	-	-	●●	●●●	●●●	-
EMULSION STABILIZERS								
Anova 1701 Stabilizes anionic and cationic bituminous emulsions, extending short- and long-term storage stability and improving homogeneity.	Water Soluble Powder	-	-	-	-	-	-	●●●

Additional marks equals enhanced feature: ●

Built on science. Proven in the field. *Ready for the road.*

Why Cargill

- **Undeniable partnership** advantage backed by decades of proven performance
- **60+ years of bio-based chemistry** expertise trusted by DOTs and paving crews worldwide
- **End-to-end unique support system**, from testing and trials to implementation and ongoing quality assurance

Talk to an expert

Scan QR code for more information

Learn more at **cargill.com/anova**

Email: **anova-asphalt@cargill.com**

Cargill™