

Improving bitumen performance.
Anova[®] gets you there.



Cargill Anova[®] Rheology Modifier

Enhance low quality bitumen by improving durability.

Our bio-based Rheology Modifiers increase the “useful temperature interval” (UTI) of bitumen from many different crude sources. Through higher softening rates at lower temperatures, Cargill’s Anova Rheology Modifiers limit high temperature grade loss.

The unique performance of our Rheology Modifiers are backed by more than 60 years of technical expertise in bio-based chemistry.

Working with Cargill means we are with you every step of the way: from testing your materials and tailoring dosages, to supporting you on-site and collaborating on solutions that work for you.





Cargill Anova Advantages:



Improving performance

- Efficiently improve low temperature performance grade while expanding the useful temperature interval
 - Ideal for modifying penetration for emulsion bases
 - Improve polymer modified bitumen (PMB) compatibility and workability
 - High additive aging resistance and thermal stability
 - Improves asphalt ΔT_c with extended aging
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Creating economic value

- Highest dosage efficiency compared to other performance grade modifiers
 - Enable optimization of PMB formulation and cost
 - Enhance polymer blending efficiency
 - Optimize plant logistics and cost by storing only one bitumen grade
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Reducing environmental impact

- Made from bio-based chemistries
 - Low VOC's and low volatile mass loss (as measured by the Rolling Thin Film Oven)
 - High flash point
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Enriching communities

- Innovative technologies can enable efficient infrastructure investments
 - Renewable raw materials help support farmer livelihood, rural communities and agriculture industry growth
 - Working with farmers, government, industry groups, customers and consumers to make the future of industrial solutions more sustainable
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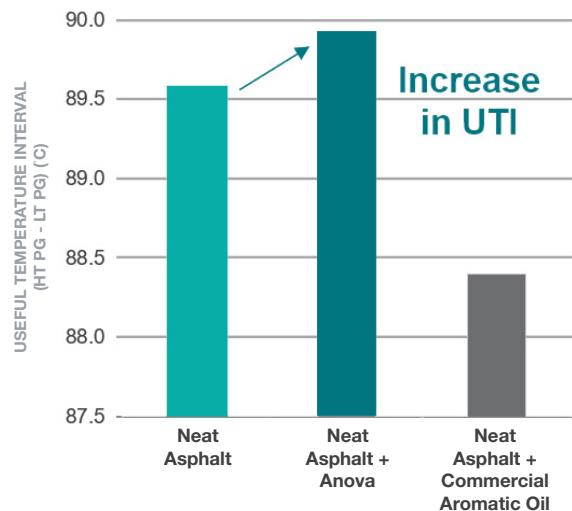
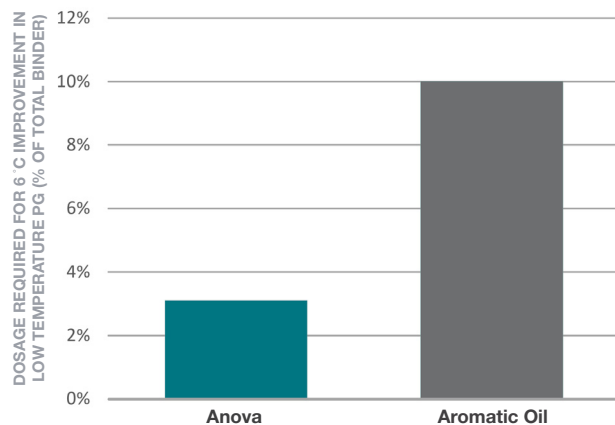
State-of-the-art technology.

High dosage efficiency.

The performance of Cargill Anova Rheology Modifiers has been proven many times over. To demonstrate the performance, ASTM D6648 has been performed and shows that Anova Rheology Modifiers soften up to three times more efficiently than petroleum-based products, in terms of improving the low temperature PG.

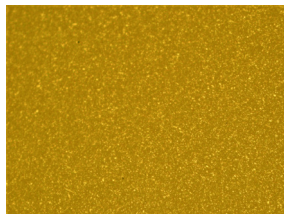
Anova Rheology Modifiers also show an improvement in UTI compared to commercial aromatic oils, as shown in the results from AASHTO M320.

Rheology Modifier:



Increase Polymer Compatibility and Reduce Blending Time.

For many formulations, Cargill Anova Rheology Modifiers enable better elastomer (SBS) utilization in asphalt formulations and improve PMB workability without significant loss of elastic recovery.



Polymer Modified binder*



Polymer Modified binder preblended with Cargill Anova Rheology Modifier*

*image take after 2hrs of SBS blending

Our unique solutions. Unmatched performance.

Cargill Anova Rheology Modifiers are produced using a patented proprietary chemical modification and stabilization process, resulting in unique performance, aging resistance, and compatibility properties. Unlike commodity vegetable oils and many petroleum-based additives, our Rheology Modifiers are created to perfectly fit the purpose and to enhance the properties of asphalt. This means that Anova Rheology Modifiers deliver performance that equals—and in some ways, exceeds that of virgin asphalt.

Criteria	Useful Temperature Span	Low Temperature Grade	High Temperature Grade	Polymer Compatibility	Durability and Aging	Safety and Handling Advantages
Cargill Anova Rheology Modifier	▲▲▲	▲▲▲	▲	▲▲▲	▲▲▲	▲▲▲
Commodity Vegetable Oils	---	▲▲	---	▲	▼	▲▲▲
Soft Asphalt / Flux	▼▼	▲	▼	▲	▼	▼
Modified Tall Oil-based	▼	▲▲	▼	---	▼▼	▲▲▲
Tall Oil-based	▼▼	▲	▼	---	▼▼▼	▼
Aromatic Oils	▼▼	▲	▼	▲▲	▼▼	▼▼
Paraffinic Oils / REOB	▲▲	---	▲	▼▼▼	▼▼▼	▼▼

▲ Positive Impact ▼ Negative Impact - No Impact



Cargill Anova Products

CATEGORY	DESCRIPTION	VISCOSITY, CP AT 25°C	OPEN CUP FLASH POINT, °C
Modifiers			
Cargill Anova 1005 Rheology Modifier	Rheology modifier with long-term, high-temperature stability. Increases polymer compatibility with asphalt. Ideal for modifying penetration grades for emulsified asphalts.	45-55	>270
Cargill Anova 1006 Rheology Modifier	Rheology modifier with high-temperature stability. Increases polymer compatibility with asphalt. Ideal for improving low temperature performance grade and increasing penetration.	42-52	>220
Rejuvenators			
Cargill Anova 1815 Rejuvenator	High-performance rejuvenator designed to increase recycled content in hot mix asphalt. Will also aid in compaction.	90-110	>270
Cargill Anova 1845 Rejuvenator	High-viscosity rejuvenator designed to meet specifications for scrub seal emulsions.	400-500	>270
Warm Mix Additive			
Cargill Anova 1501 Warm Mix Additive	High-performance, non-toxic, liquid warm mix additive. Designed to reduce pavement application temperatures and aid in compaction.	150-200	>200

Listed above is a selection of the products we have to offer. Talk to us to find out which product will help you solve any challenges you may be facing.



Cargill Anova Asphalt solutions have been proven in millions of tons of pavement around the globe.

Proven performance. The Cargill way.

A partnership with Cargill provides your business an undeniable advantage. We offer you a proven record of support from our state-of-the-art asphalt applications lab. Cargill's unique support system starts with materials evaluation, trial assistance, plant implementation and integration and continues through quality assurance and ongoing support, meaning you can count on us to provide the expertise and chemistries required to meet your toughest challenges.



**State-of-the-art
research**



**Bio-based
chemistry**



**In-depth binder
analysis**



**On-site
support**



**Proven global
technology**

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