SASOBIT

The versatile additive for asphalt mixes

Sasol Chemicals

Product information

SASOBIT – reliable quality for the highest standards

The driving public in the US and Canada continues to grow, putting greater performance pressure on mix designs. Formulating with **SASOBIT** can help you maximize many performance aspects in your mix design.

SASOBIT is a non-petroleum based synthetic wax that is free from both sulfur and impurities. Successfully used around the world since 1997.

SASOBIT brings process reliability and stability in all asphalt applications performance you can count on especially under adverse conditions.

In particular **SASOBIT** is designed for demanding, high load and high traffic areas. Used with a high level of success in airports, container yards and even race tracks, **SASOBIT** brings a versatile array of benefits. Including:

- Reduced production and placement temperatures
- Improved workability
- Paving at cooler temperatures while still able to make density
- Long haul with workability to provide placement and compaction
- Incorporate higher levels of RAP and RAS
- Placement of thicker lifts and open traffic sooner

All these benefits and more will help you to save energy resources and most importantly reduce costs.

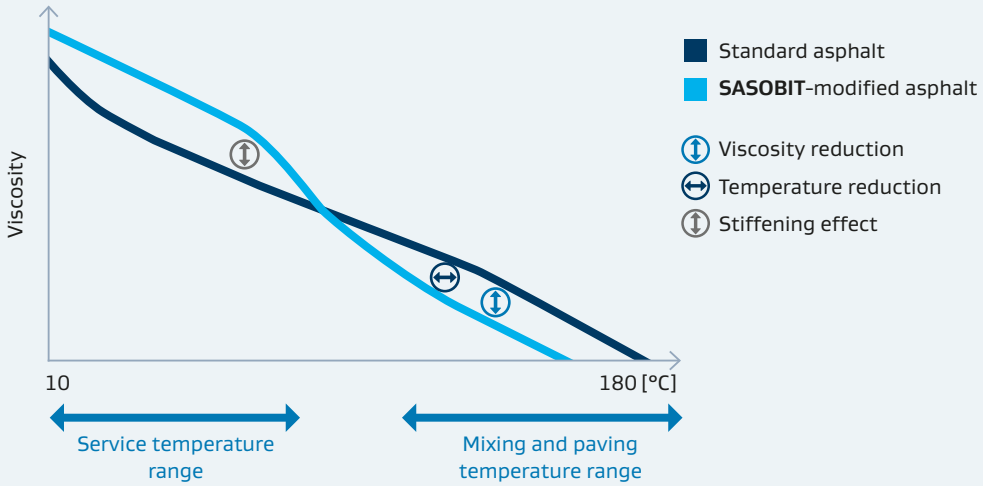
SASOBIT – versatile for many asphalt applications.

Most asphalt producers can preblend **SASOBIT** for Polymer modified mixes, but **SASOBIT** can also be added directly at your asphalt plant as well. **SASOBIT** is ideally suited for a large number of asphalt applications.

- enhanced workability
- improved process reliability
- temperature reduction (Warm Mix)
- increased stability
- extended service life

Working principle: SASOBIT's effect on asphalt viscosity

Viscosity curves of standard asphalt and SASOBIT-modified asphalt



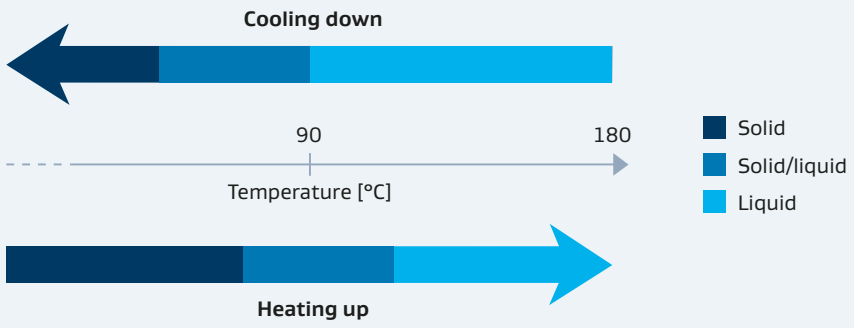
Mixing and paving temperatures can be reduced by as much as 30 °C when using **SASOBIT**, because at temperatures above 115 °C **SASOBIT** is completely soluble in asphalt and reduces viscosity significantly.

Reduced viscosity at standard temperatures enhances the workability of the asphalt mix. **SASOBIT** increases process reliability and significantly reduces the risk of improper paving operations.

During the cooling phase **SASOBIT** starts to crystallize at 90 °C and forms a lattice structure in the asphalt which has a stiffening effect (the frequently cited congealing point of 100 to 105 °C refers to pure **SASOBIT**).

Deformation resistance increases significantly when adding the appropriate quantity of **SASOBIT**, without impairing low-temperature performance.

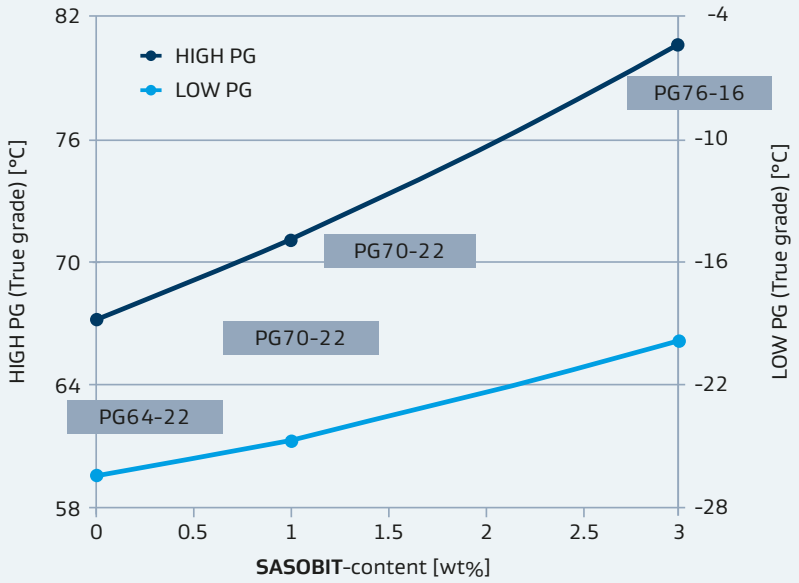
Physical state of SASOBIT when mixed into asphalt



Impact on Performance Graded (PG) binder specifications – PG BUMP with SASOBIT

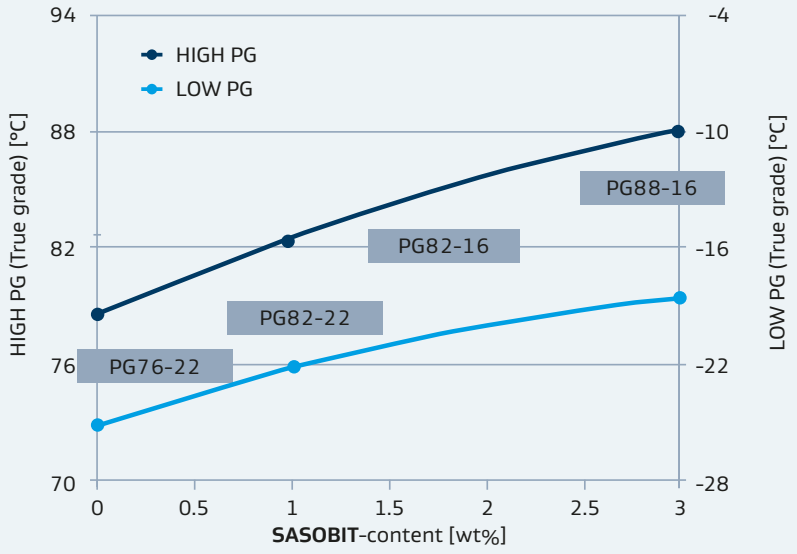
The addition of **SASOBIT** leads to an increase in the HIGH PG, consequently improves the rutting resistance. Furthermore the impact on the LOW PG is much lower than the impact on the HIGH PG. This combination can also extend the plasticity range and Useful Temperature Interval UTI. The following graphs shall illustrate these contexts in examples.

Example 1: SASOBIT addition to unmodified neat binder PG64-22



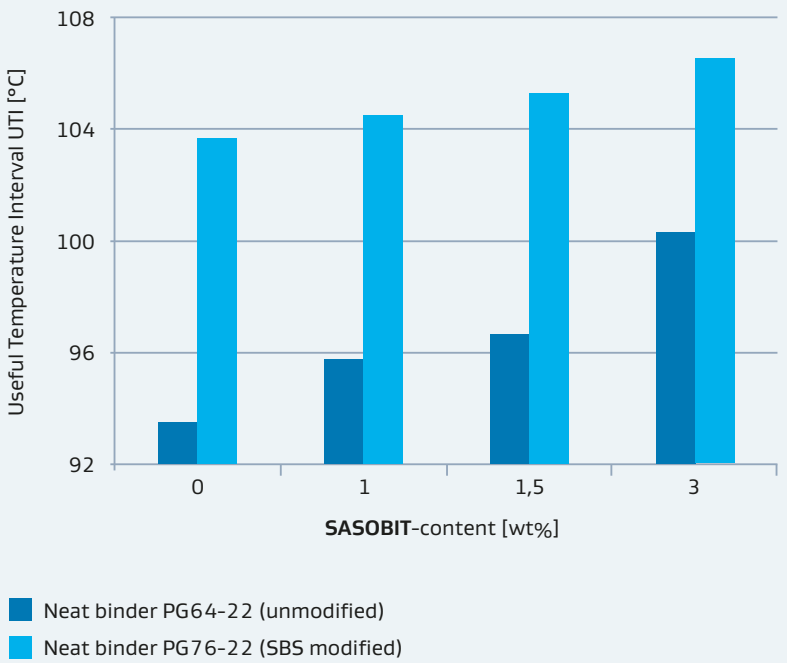
In order to bump the high end one grade and to keep the low end: Recommended dosage 1.5 wt%

Example 2: SASOBIT addition to polymer modified neat binder PG76-22



In order to bump the high end one grade and to keep the low end: Recommended dosage 1.0 wt%

Example 1 & 2: Impact of SASOBIT on Useful Temperature Interval UTI

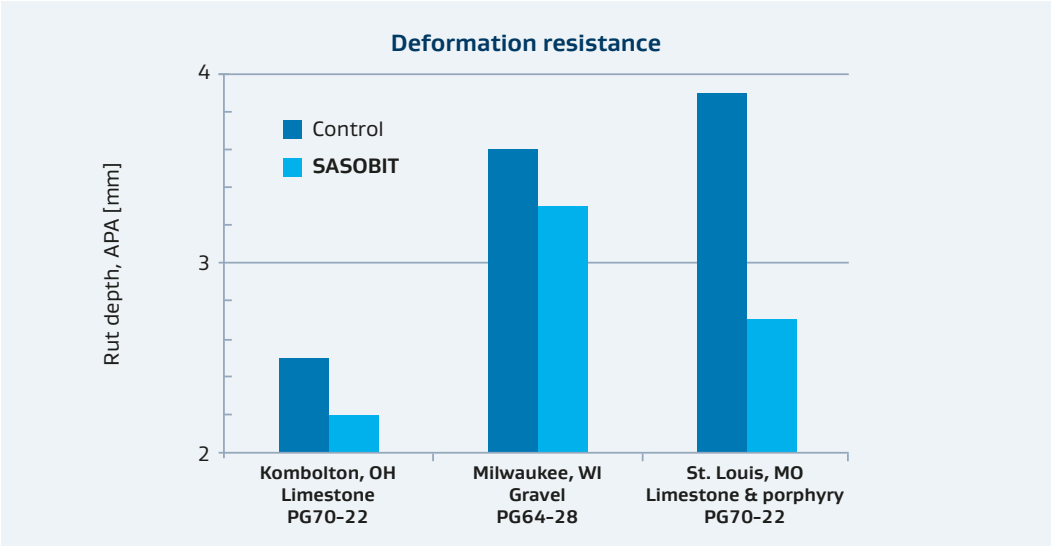


The characteristics of binder modified with **SASOBIT** have to be taken into account when designing asphalt mixes. In the end not only to fulfill a PG binder specification is important, the performance of the selected asphalt mix is decisive.

Asphalt mix performance

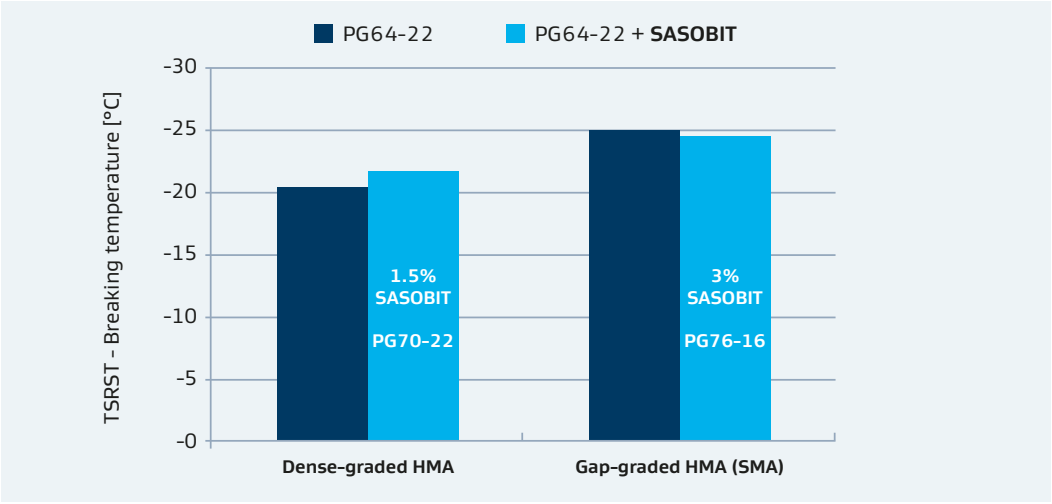
Mix performance can be defined at deformation and crack resistance. Performance is assured when the mix is compacted properly.
A 1.5% modification with **SASOBIT** increases process reliability and compaction. Pavement performance is greatly improved by **SASOBIT's** stiffening effect translating into pavement durability. Since 1997 project after project has resulted in longer pavement life which contributes to significantly lower maintenance costs.

SASOBIT's ability to produce stiffer mixes with both polymer modified and non-modified mixes makes it ideal for heavy-duty pavements under high dynamic and static loads. Eliminating any worry about future rutting.



Lab tests and practical experience demonstrate that the performance of **SASOBIT** modified asphalt mixes show better rutting resistance and at least comparable crack resistance with associated unmodified asphalt mixes.

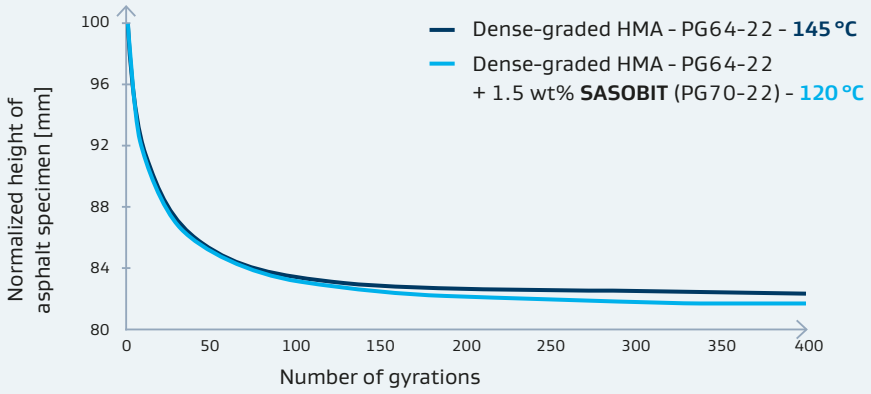
On top you will gain all the other benefits of mixes modified with **SASOBIT.**



Process reliability

Process reliability increases when adding only 1.5% **SASOBIT** by weight of asphalt – from the production to the extended period of use and eventual reuse. So it is no surprise that **SASOBIT** has been successfully used for years, even under difficult conditions.

Compaction using a gyrator compactor

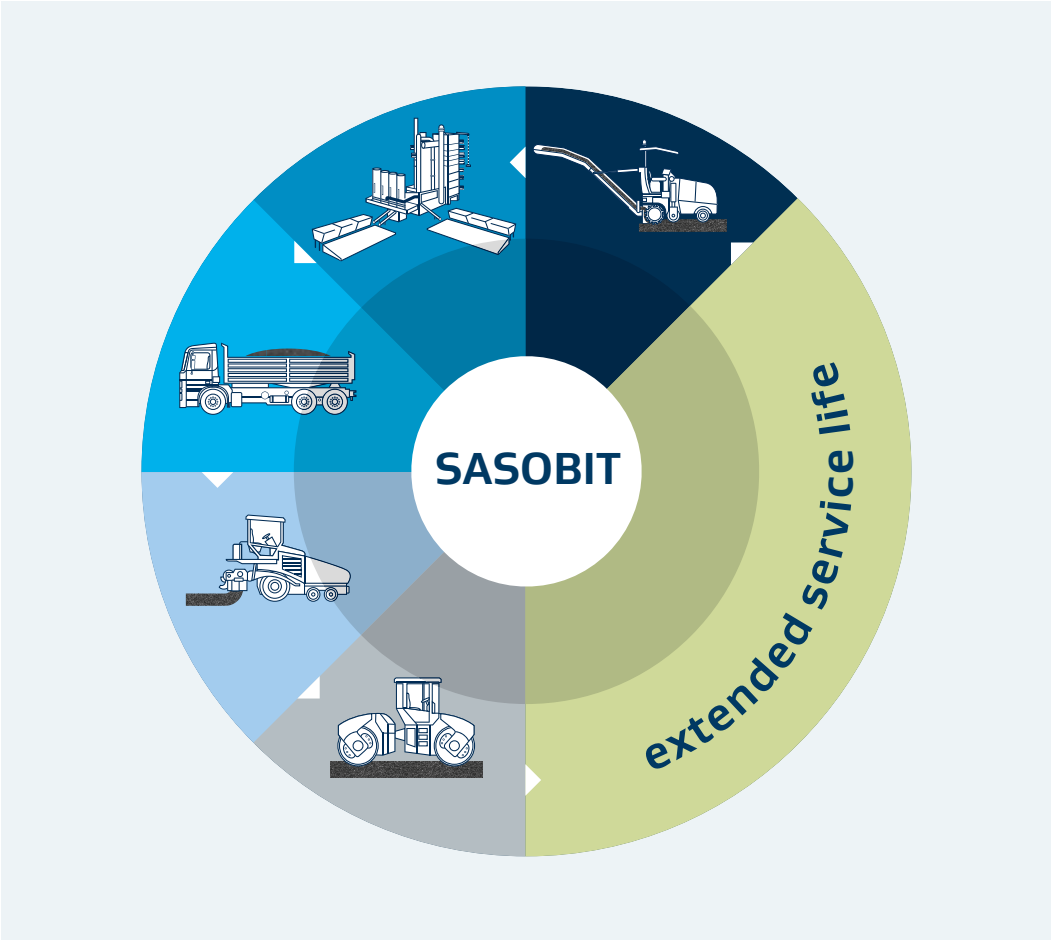


Improved workability and easier compaction

The modfied variant showed better results even though the test was carried out at 25°C lower temperature.

SASOBIT improves workability and benefits:

- Improved and easier compaction
- Asphalt quality is improved with better mix production
- Allows a wide variety of asphalt to be utilized from soft to hard and high viscosity
- Longer haul possible even at regular mix temperatures
- Assures workability and compaction in poor weather conditions
- Extends the construction season into cooler months
- Improves hand work areas



Compaction

Compaction improvement has long been recognized as the single most important factor to long term pavement life. Many state DOT's agree and offer pay incentives to assure density. Many studies have demonstrated that reduced air voids will have a dramatic effect on improving both rutting resistance and fatigue behavior.

For example just a 1% increase of in-place density from 92% to 93% can increase long-term durability and pavement life by at least 10%. In the long run and based on life cycle cost analysis **SASOBIT** can save DOT's money while assuring the contractor in-place density.

SASOBIT's ability to improve compaction along with workability provides assurance to give you the best chance at reducing air voids on a predictable and reliable basis.

Enhanced fuel resistance

Coal tar based asphalts are now being eliminated from many federal and state mix designs due to worker health concerns.

There are many applications where fuel resistance of pavement is highly relevant:

- Airports
- Parking lots
- Toll Booth entrances
- Gas stations
- Industry areas
- Bus stations
- Agriculture areas
- Military areas

SASOBIT can offer significant fuel resistance improvements while still providing all of the other benefits. **SASOBIT** is nearly insoluble in diesel, kerosene and gasolines. Fuel resistance is assured from both chemical standpoint and better compaction.

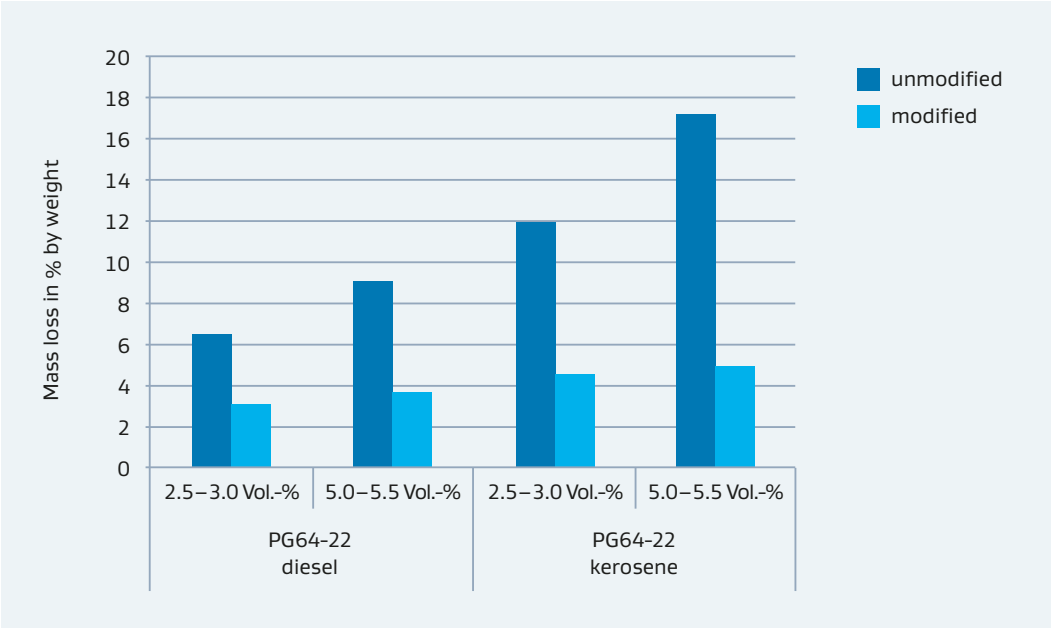
Without SASOBIT

With SASOBIT

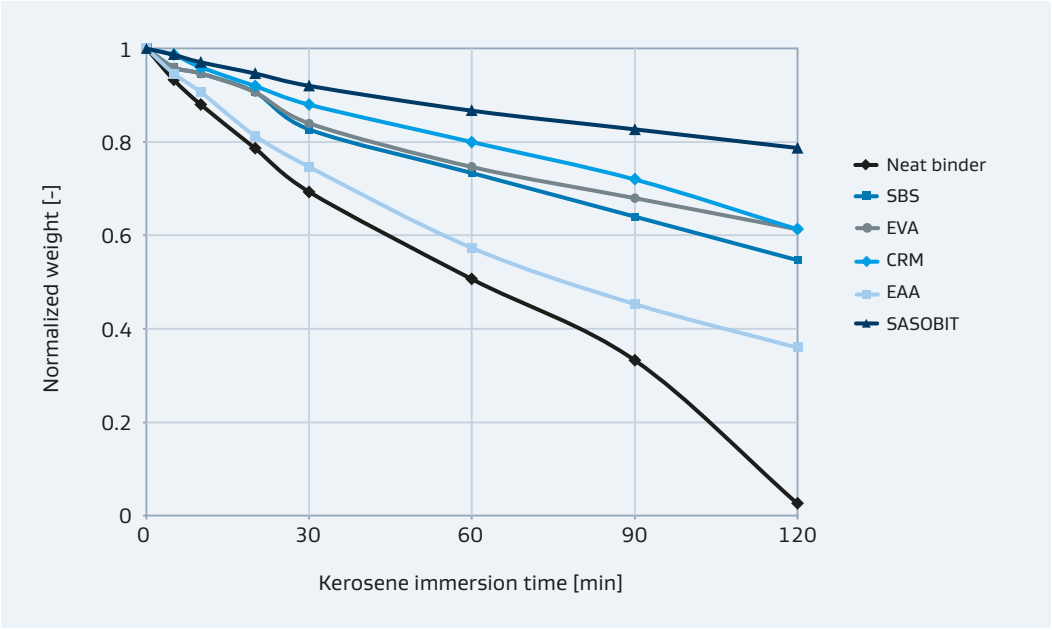
Source: Geostrada/Africon Pretoria, South Africa

Vienna University of Technology tested **SASOBIT** modified asphalt mixes against non-modified asphalt mixes. The following results were carried out:

- The denser the asphalt mix the better the fuel resistance
- **SASOBIT** improves significantly resistance to diesel and kerosene for all tested variations
- Mass loss is reduced by 54% (diesel) and by 66% (kerosene) on average



A study of the University of Parma showed that **SASOBIT** modification performed better than modification with any other additive regarding fuel resistance against kerosene.



Source: Filippo Merusi et al. (2011): "Kerosene-Resistant Asphalt Binders Based on Nonconventional Modification", University of Parma, Department of Civil and Environmental Engineering

SASOBIT
One product – multiple benefits

Warm Mix with SASOBIT – green & sustainable

SASOBIT is one of the original WMA additives examined on the first European Scan tour. It continues to offer many advantages over a large and ever growing WMA market. Why? Because **SASOBIT** offer multiple benefits beyond just lower temperatures.

WMA mixes in general bring:

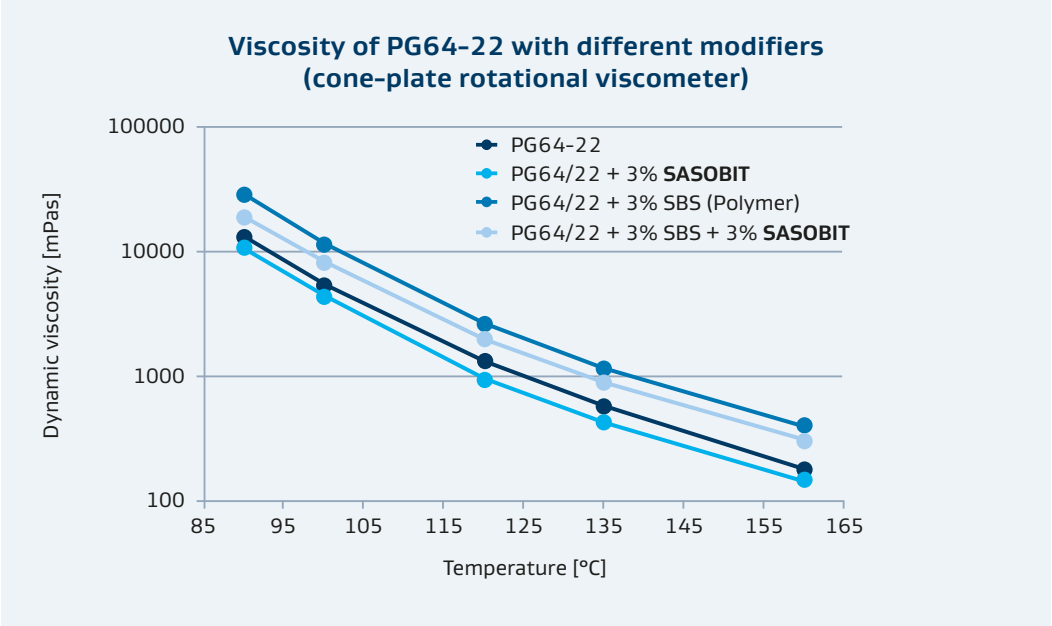
- Less CO_2 greenhouse gases
- Less energy consumption
- Lower fumes and particulates
- Less asphalt aging due to oxidation
- Less wear and tear on asphalt equipment

Early traffic release

Traffic delays grow larger everyday due to higher volumes but it is especially affected during road construction. Paving at lower temperatures with better compaction and initial stability can reduce these delays and the get the traffic moving again.

Enhanced polymer & rubber modification at standard production temperatures

The growing use of polymer and rubber in mix designs produces a very high viscosity mix necessitating a higher than normal production temperatures which further accelerates the oxidation process. **SASOBIT** allows for much easier mixing even at standard temperatures yielding reducing emissions and aging effects while making polymer and rubber easier to use.



More recycling options

RAP and RAS usage continues to grow throughout North America. However RAP and RAS can make your mix stiffer and harder to work with, requiring more energy to assure a uniform asphalt mix. **SASOBIT** is ideal to improve your chances of a quality mix without degrading the mix from overheating.


STOP

Our global footprint

● Sasol Chemicals' business locations, e.g. offices, production sites, JVs, laboratories, etc.

Source reference: Cover: AdobeStock/zhu difeng, p. 2: AdobeStock/Cmon; p.5: AdobeStock/06photo, AdobeStock/surawutob; p. 7: AdobeStock/Iakov Kalinin; p. 8: AdobeStock/surawutob, Sasol Chemicals/Michael Kottmeier; p. 12: AdobeStock/Kara; p. 14: Sasol Chemicals/Geoff Brown

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