

SELENIZZA



SELENIZZA®
NATURAL BITUMEN


AVENTURA SERVICES INC
CRAFTED BY NATURE, DESIGNED FOR LIFE


TONNEL
CREATION INC.

Natural bitumen Selenizza Col®

What is Selenizza Col[®] ?

- ❑ **Selenizza Col[®]** is a **natural asphalt** extracted from our mine in Colombia and is used in the production of asphalt mixes to **enhance their performance**
- ❑ **Dosed** in an average proportion of **1% of the weight** of the asphalt mixture, it is a **reinforcing agent** applied to **improve the asphalt mix mechanical behavior** conferring **higher resistance to rutting and fatigue**
- ❑ Packaged in **powder/granules**, it is **compatible** with all petroleum **bitumen** and Polymer modified Bitumen (**PmB**) and is **completely soluble** in the base binder.



Why use Selenizza Col[®]?

An alternative solution to produce hard grade bitumen & high-durability asphalt mixtures in heavy traffic areas subjected to significant temperature variations

- ❑ **Lack** of hard bitumen in certain geographical areas
- ❑ **Impossibility** of obtaining **hard bitumen** with certain petroleum crude oils
- ❑ Offering **new price-quality solutions** compared to traditional binders
- ❑ Overcomes the **defects of hard petroleum** bitumen such as excessive **brittleness at low temperatures** and **sensitivity to aging**
- ❑ **Improves** bitumen-aggregate **adhesion**
- ❑ **Greater resistance to hydrocarbons** than conventional binders
- ❑ Can **partially or totally replace** the use of **SBS polymers** in modified asphalts **at lower cost**



Multipurpose additive

Wide range of applications

- ❑ **Road & Highway** construction
- ❑ **Ports, Airports**
- ❑ **Industrial platforms**, heavy-duty pavements with aggressive load channeling
- ❑ Pavements subjected to **static loads**
- ❑ **Tram & Bus stations**
- ❑ **Warehouses** and industrial **premises**
- ❑ **Mastic asphalt**, waterproofing, and protection of bridges, tunnels, viaducts...
- ❑ **Pipe Coating**
- ❑ **Asphalt emulsion sealers**
- ❑ **Drilling mud** fluids and oil **well cementing**



Selenizza Col[®]-modified High Modulus Mixtures

Advantages that convince

More efficient and eco-friendly binders

- Wider Useful Temperature Interval (UTI)**
- Improved **high-temperature performance** of asphalt binder
- Increased **low-temperature performance** vs traditional hard bitumen of equivalent grade
- Resistant to **aging**
- Environmentally responsible** binder thanks to the addition of Selenizza, a **naturally occurring asphalt which emits XX % less CO₂ during its production**, compared to a conventional bitumen

High Modulus Mixtures (HMAC) more resistant to permanent deformation

High resistance to high dynamic and static loading

- Stiffness Modulus (15°C, 10 Hz) > **14 000 MPa**
- Improved **anti-rutting performance**
- Improved **fatigue performance**

High mechanical properties

- Reducing layer **thickness**
- Durable** pavements



HMAC with Selenizza Typical formulation

Characteristics of Selenizza Col®

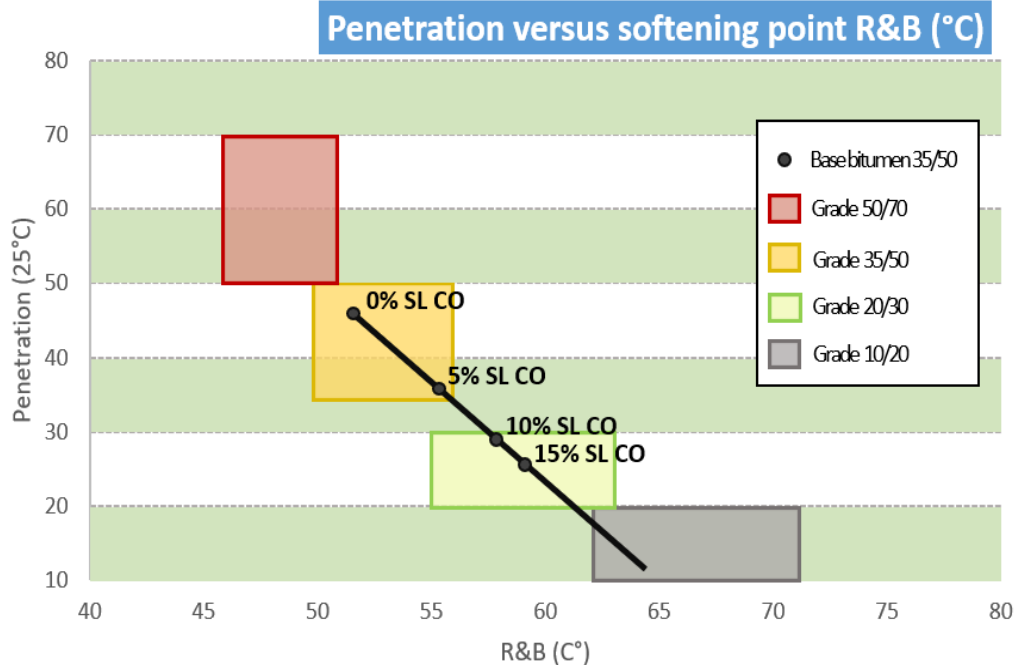
Penetration (1/10 mm) \leq	1
R&B (°C)	\leq 180
Solubility (wt %)	97-100
Ash (%)	< 2
Density (g/cm ³)	1,16

Typical average dosage in an HMAC

5 – 10 %
of the binder weight

0.3 – 0.5 %
by total weight of
asphalt mixture

Example of a mixing curve with a base bitumen 46 pen and 51.6 R&B



Each base bitumen must be tested in a lab to validate the % of Selenizza®.
Generally, an appropriate mixture allows it to be within the values of refinery bitumen.

Easy to implement

Added directly at the production site of the asphalt plant

1. *Batch plants*

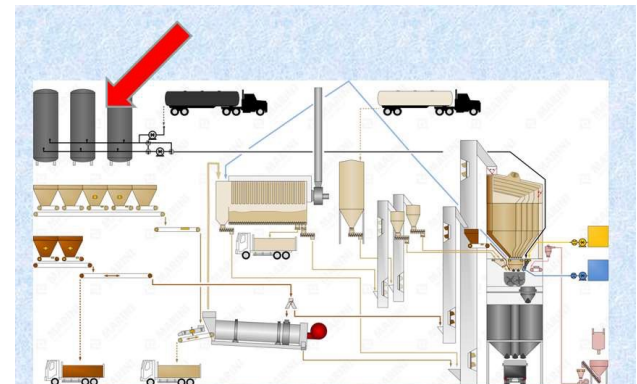
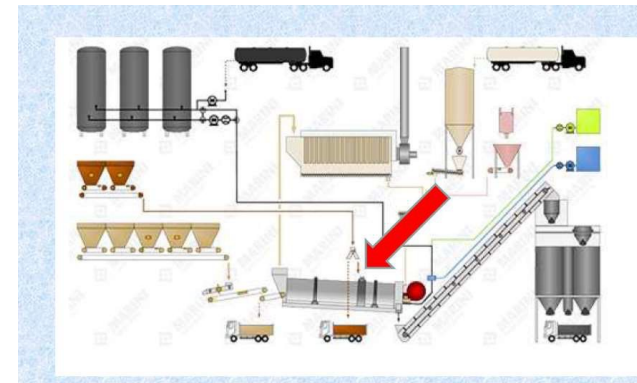
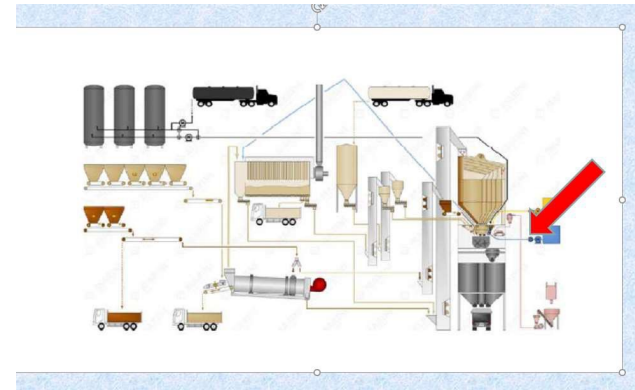
Added to the mixer during hot mix manufacture

2. *Continuous plants*

Added to the aggregate in the drum mixer through the recycling ring

3. *Bitumen tank*

Predisolved in hot bitumen tank before the addition of the binder to the mix





Packaging

Selenizza Col® is available according to customers requirements in:

- Powder form 0 - 5 mm**, packed 15 kg meltable plastic bags palletized and stretch wrapped
- Granular form ranging from 4 -12 mm in size**, packed in 0,8-1,4 ton big-bags.

Transport

- Delivery by sea, land, and air since the creation of Selenice Bitumi Sha.
- Regular shipments of Selenizza COL® to different countries all over the world

Storage

- Easy to store in a well-ventilated place under a roof

Health and Safety

- Selenizza COL® is a naturally occurring hydrocarbon, not toxic and not **hazardous**

Packaging
Transport
Storage

A product used throughout the world

FRANCE

- EIFFAGE
- COLAS
- SIORAT/NGE
- SPIE BATIGNOLLES MALET
- BONNEFOY TP
- ROGER MARTIN SA
- TOFFOLUTTI SA

SUISSE

- WEIBEL AG
- COMIBIT SA
- WALO BERTSCHINGER AG
- GRISARD BITUMEN AG

ITALIE

- TODINI & SALINI IMPREGILO S.p.A
- NEW ASPHALT Srl
- ITERCHIMICA Srl

GRECE

- AKTOR SA
- TERNA SA

REPUBLIQUE TCHEQUE

- CIUR as.

UKRAINE

- AVTODOR

CHINE

- SHANGSHUN INTERNATIONAL TRADE Co. Ltd

VIETNAM

- BMT-GROUP
- C2C Manufacturing Trading and Services LLC

COREE

- A-One Road Co. Ltd.

MAROC

- AFRIC ASPHALTE – S.S.M.T.

CAMEROUN

- GROUPEMENT ANDRADE GUTIERREZ/ZAGOPE

...

Selenizza was adopted by EIFFAGE as the optimal solution for the runway construction of the new launcher ARIANE VI - Guyana





Conclusions

- ❑ Complies with standards **EN 13108-4** and **EN 12970**
- ❑ **100% compatible** with all **petroleum road bitumens** (and polymer modified bitumens)
- ❑ Widens the **Useful Temperature Interval (UTI)**
- ❑ High-performance **HMAC Modulus & Rutting**
- ❑ Reduced **temperature susceptibility**
- ❑ Better adhesion between **aggregates and bitumen** and improved asphalt mixture workability
- ❑ Reduced asphalt layer **thickness**
- ❑ **Aging retarder & durable pavements**
- ❑ **Reduced environmental impact**

***Thank you
for your
attention!!!***



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