

SELENIZZA

Natural bitumen Selenizza® SLN

M. Sc. Eng Edith Tartari

Selenice Bitumi

What is Selenizza®SLN ?

- ❑ **Selenizza®** is a **natural asphalt** extracted from the mine of Selenice (Albania) 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[®]SLN?

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® - 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 44% 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

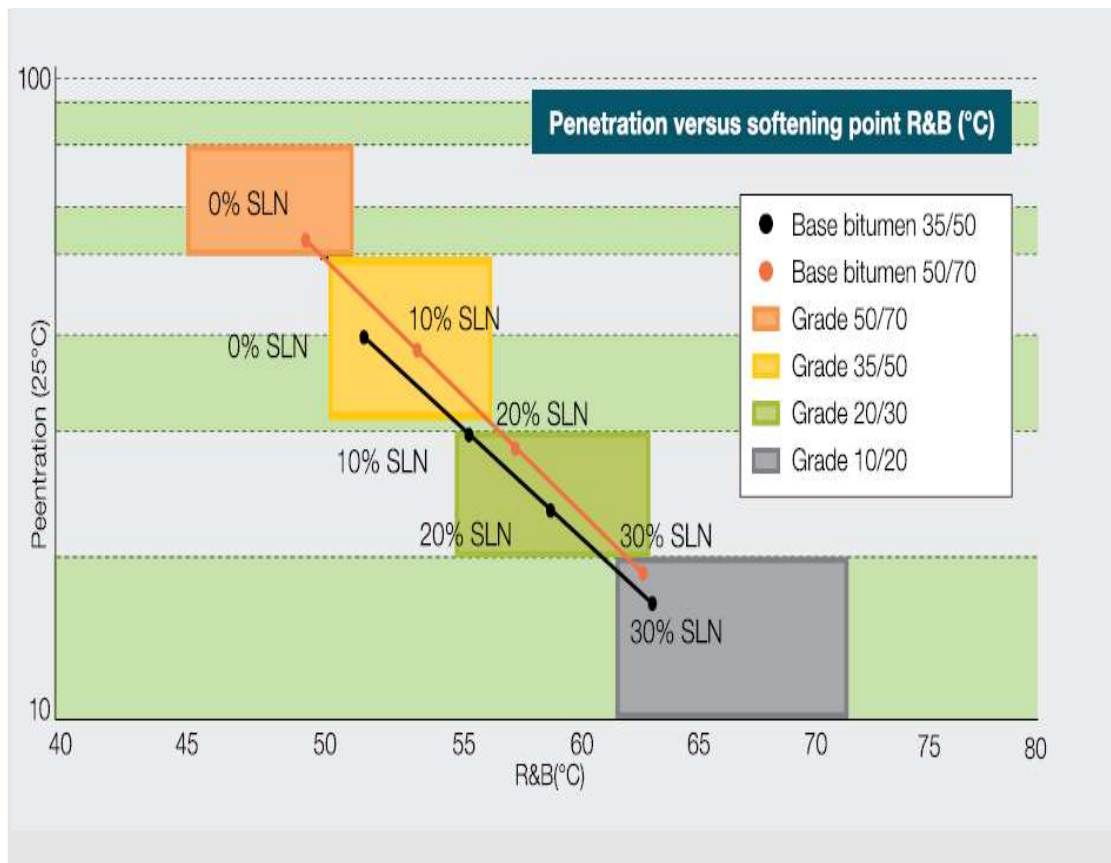
Characteristics of Selenizza SLN

Penetration (1/10 mm) \leq 2	
R&B ($^{\circ}$ C) \leq 120	
Solubility (wt %) 83-85	
Ash (%) 15-17	
Density (g/cm ³) 1,16	

Typical average dosage in an HMAC

**15 – 20 %
of the binder weight**

**0.9 - 1 %
by total weight of
asphalt mixture**



Easy to implement

Added directly at the production site of the asphalt plant

1. *Batch plants*

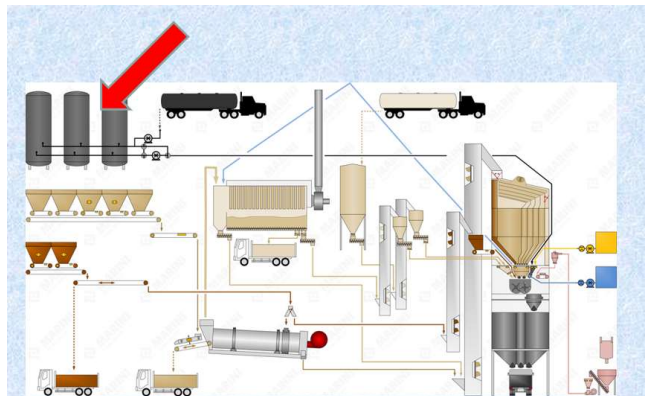
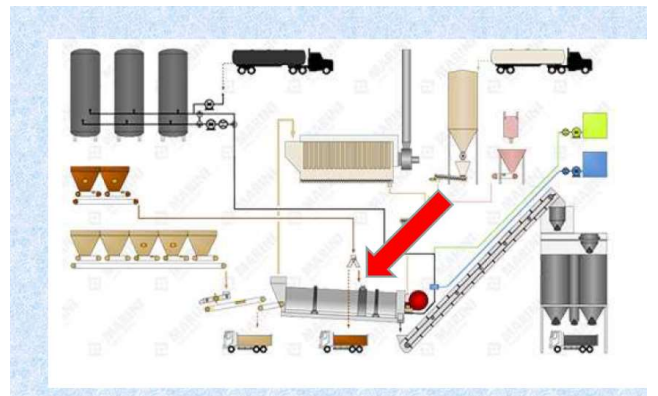
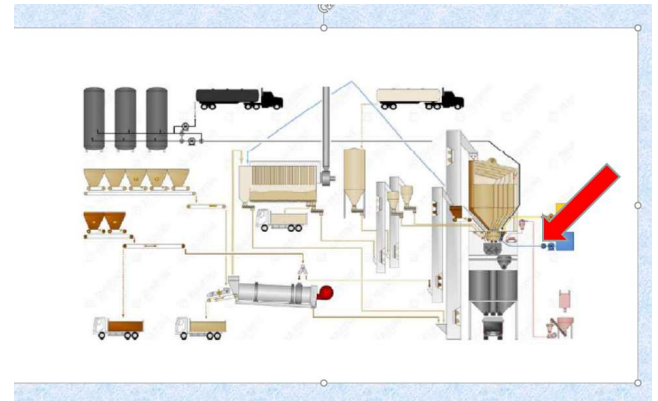
Added to the mixer during hot mix manufacture

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® SLN 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® SLN to different countries all over the world

Storage

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

Health and Safety

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

Packaging
Transport
Storage

Contrary to existing assumptions

Quality Assurance Plan QAP

- According to a Quality Assurance Plan and performance procedures, Selenizza SLN meets the requirements of **constant invariable quality**
- The mine production process is verified by a **competent, accredited independent body ICMQ** (since 2012)
- The product is supplied in **different qualities** distinguished by their **ashes content**, whose changes in the percentage, lie within the **permissible limits** and, considering the **dosage**, with **no impact** on the properties of asphalt mixes.
- A **certificate of analysis is issued** for each production lot.

A natural non-hazardous product

- Low level of PAHs** (Polycyclic Aromatic Hydrocarbons) up to **10 times lower** than the concentrations of HAP in traditional bitumens.

Handling and storage

- No risk of caking in** a relatively short period if the storing recommendations are respected.

Identification of the product and supplier

Product Name: Naturally Occurring Asphalt from Albania

Particle Size: S00FFLEB

Company Name: SELENIZZA BITUMI SH.A

Client: DELIVERY PLACE

Postal Address: Rr. "Skënderbeu", P.O. Box 4326, Vlorë, 48200

3333 Therrë - ALBANIA

Tel: 00 376 04 46 00 104

Fax: 00 376 04 46 00 103

E-mail: info@selenizza.com

Web: www.selenizza.com

2. Results of Analysis on samples

Reference of Sample: According to EN 12597

Reference of QAP: According to EN 13108-6:2016/AC:2017

Parameter	Unit	Value	Limit	Conformity	Remarks
Temperature at 10°C	°C	5.1	5.2	OK	
Softening Point (Ring)	°C	114.8	108	OK	
Penetration	0.1 mm	15.0	10	OK	
Softening Point, % by mass	%	18.1	15.0	OK	
Softening Point, °C at 100°C	°C	114.8	108	OK	
Penetration, % by mass	%	15.0	10	OK	
Penetration, °C at 100°C	°C	114.8	108	OK	
Penetration, 100°C	%	15.0	10	OK	
Penetration, 100°C	%	15.0	10	OK	

3. Packaging

Reference	TRAIL	LABEL	IN ACC.	Reference	TRAIL	LABEL	IN ACC.	Reference	TRAIL	LABEL	IN ACC.

Notes: 1. If the reference table, represents the average value of all the 10% top/most part of the sample. 2. If the reference table, represents the average value of all the 10% top/most part of the sample. 3. If the reference table, represents the average value of all the 10% top/most part of the sample.



INSPECTION CERTIFICATE

CERTIFICATE N°: 0263/19/ISP

COMPANY: Selenizza Bitumi Sh.a.
Head Quarter: Po Box 4326 Vlorë - ALBANIA

OBJECT OF THE CERTIFICATE: Selenizza® SLN bitumen
Conformity verification of the activities carried out by SELENIZZA BITUMI SH.A. with the internal procedure "Quality Plan for the production and supply of Selenizza® SLN bitumen and Selenizza® ONAT bitumen"

RESULT OF THE CERTIFICATION: The conformity verification of the activities carried out by Selenizza Bitumi SH.A. with the internal procedure "Quality Plan for the production and supply of Selenizza® SLN bitumen and Selenizza® ONAT bitumen", according to the standards UNI CEI EN ISO/IEC 17020, was successful.

This examination is described in the Inspection Report n. 0263/19/ISP, which is the technical annex to this certificate.

ISSUE DATE: 04 April 2019

EXPIRY VALIDITY DATE: 03 April 2020

The Official Manager: MR. LORENZO DIPIREDDO

Rev: 0 ICMQ S.p.A. - Via G. De Castella, 10 - 20024 Pinerolo - www.icmq.org 1 of 1



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!!!***

