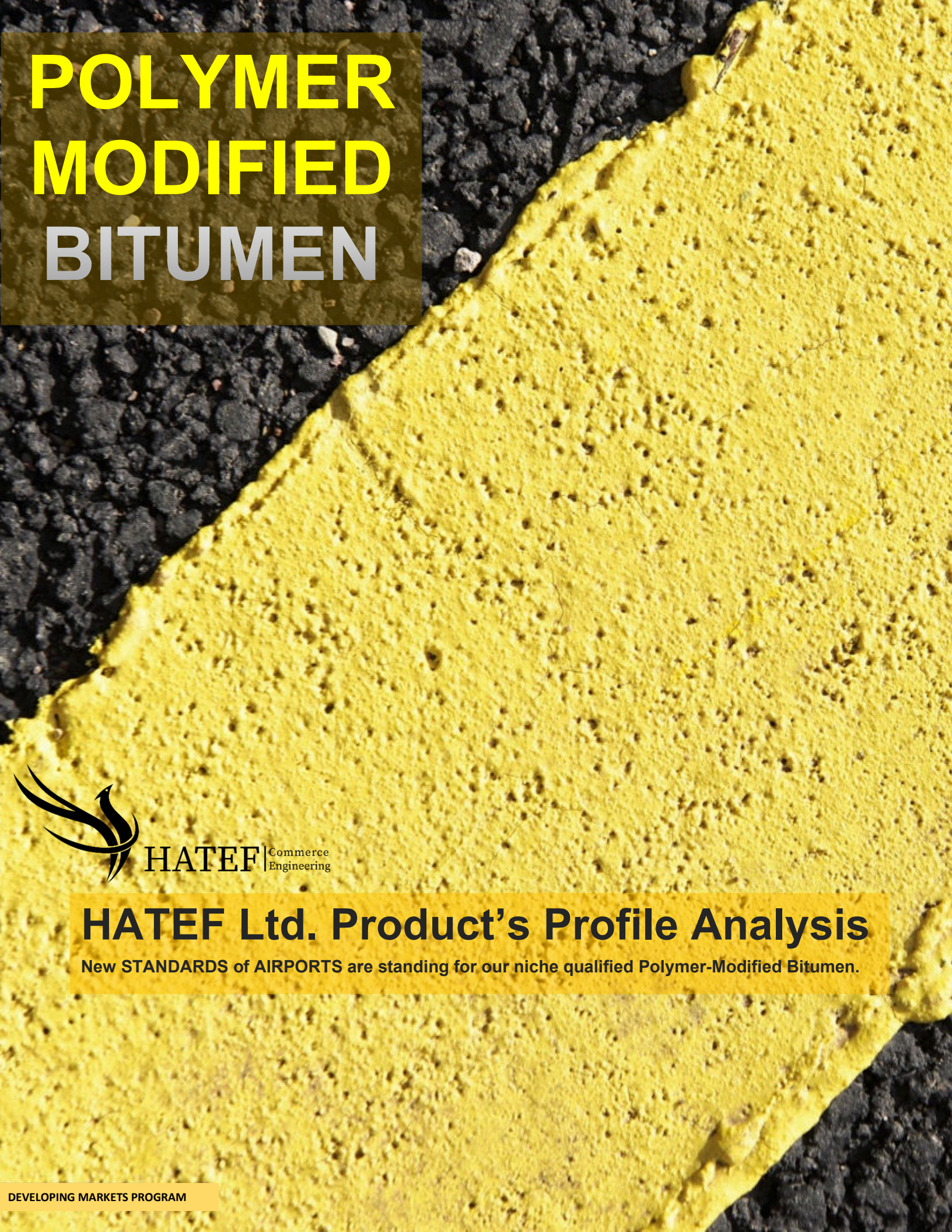
POLYMER MODIFIED BITUMEN



HATEF | Commerce Engineering

HATEF Ltd. Product's Profile Analysis

New STANDARDS of AIRPORTS are standing for our niche qualified Polymer-Modified Bitumen.

DEVELOPING MARKETS PROGRAM

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EXECUTIVE SUMMARY

Product differentiation is a brand-new marketing strategy which businesses use to distinguish a product from similar offerings on the market. The difference could be something concrete, like speed, power, performance and better service. On the other hand, it could be a more ephemeral quality, such as being more friendly or more stylish than your competitors. For enterprise businesses, a product differentiation strategy may provide a competitive advantage in a market dominated by larger companies.

SET POINTS

#1

Based on our experience and insights we understand the importance of the relationship between ‘’pavement design’’ and the final choice of the ‘’construction materials’’.

Improving the asphalt mixture properties extends the lifetime of the pavement. The best results are obtained by incorporating specific polymers in the bitumen. Under the trade name ***Sealoflex®***, Ooms offers a complete range of polymer-modified bitumen **(PMB)** for the production of asphalt.

#2

We look forward to be involved in a mutual intend of participation in markets with whoever having desire to enroll in the developing PMB business in the target markets. This matter can come off in a win-win manner by a third foreign company who could be “exclusively” authorized by our marketing license or either by an individual trader with the right deep network and business relations.

HATEF Sealoflex® Performance Grades

Performance Grading (PG) in Bitumen Market is reported using two numbers (PG xx-yy) – the first being the **average seven-day maximum pavement temperature (◦C)** and the second being the **minimum pavement design temperature likely to be experienced (◦C)**. Thus, a **PG 58-22** is intended for use where the average seven-day maximum pavement temperature is 58 ◦C and the expected minimum pavement temperature is -22 ◦C. Other parameters include the better quality of PMB brand are single axle load (ESAL) pressure and traffic load rate tolerance.

Sealoflex® Grade	% SBS	Objective	Specific Application	PG
SFB 2	2	General Application	PMB according China specifications	70 – 10
SFB 2-45A	2	General Application	PMB according German specifications (TL PmB StB 2007)	70 – 16
SFB 3-50	3	General Application	Base, binder and surface courses for heavy duty roads	76 – 22
SFB 3-70	3	General Application	Base, binder and surface courses for heavy duty roads	70 – 22
SFB 3-100	3	General Application	Thin surface courses	70 – 28
SFB 5-50 [HS]	5	[High Stability]	Base, binder and surface courses for heavy duty roads, industrial pavements and airports	82 – 22
SFB 5-50 [HT]	5	[High Toughness]	Base, binder and surface courses for heavy duty roads, industrial pavements and Airports (including on CTB or PCC)	76 – 28
SFB 5-50 [PA]	5	[Porous Asphalt]	Porous surface courses	70 – 22
SFB 5-50 [GA]	5	General Application	Base, binder and surface courses for heavy duty roads, industrial pavements and airports	82 – 22
SFB 5-50 [JR]	5	[Jet Fuel Resistance]	Improved resistance against fuels, oils and chemicals for heavy duty binder and surface courses of industrial pavements (Airports)	76 – 22
SFB 5-90	5	[Interlayer]	Interlayer asphalt mixtures / joint-less asphalt pavement	70 – 28
SFB 5-90 [JR]	5	[Jet Fuel Resistance]	Improved resistance against fuels, oils and chemicals for heavy duty binder and Interlayer asphalt mixtures / joint-less asphalt	76 – 28

Worldwide Competitive Product Sealoflex®

Climate changes, higher traffic volumes, heavier wheel loads, …

Today, many different factors limit the durability of asphalt pavements. The *Sealoflex® SFB5* range of polymer-modified binders has been specially designed to cope with such extreme loading cases which runways and taxiways have to deal with. *Sealoflex® SFB5* binders provide quality and durability unrivalled by any other kind of asphalt binder.

SFB5 (HT) Specification:

HATEF

SEALOFLEX® Polymer Modified Bitumen

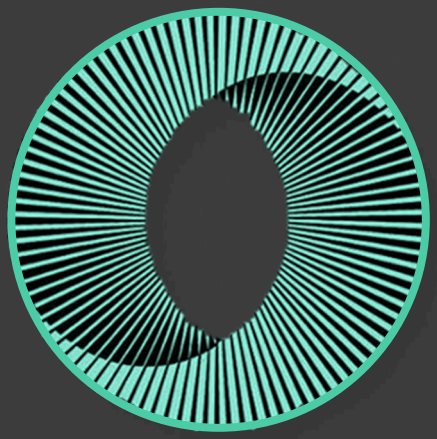
- Temperature susceptibility
- Elasticity and resistance to deformation
- Ductility and resistance to fatigue
- Ageing
- Adhesion promotion
- Expect 50% to 300% increased pavement life
- Reduce pavement layer thickness

PROPERTY	TEST METHOD	SPECIFICATION	CLASS
Essential requirements			
Penetration at 25°C	EN 1426	60 - 90 [0.1 mm]	5
Softening Point R&B	EN 1427	≥ 90°C	2
Cohesion Force-ductility at 5°C - Displacement till break at 5°C - Energy 20-40 cm at 5°C	EN 13589 / EN 13703	≥ 11.5 J/cm^2 (total) ≥ 30 cm ≥ 3 J/cm^2	- - 2
Change of Mass after hardening	EN 12607-1	≤ 0.3% m/m	2
Retained penetration after hardening	EN 12607-1 / EN1426	≥ 70 %	7
Increase in softening point after hardening	EN 12607-1 / EN1427	≤ 2°C	2
Flash Point	EN ISO 2592	≥ 250°C	2
Additional requirements			
Fraaß breaking point	EN 12593	≤ -16°C	7
Elastic recovery at 25°C	EN 13398	≥ 90 %	2
Storage stability Difference R&B $_{top}$ – R&B $_{bottom}$	EN 13399	≤ 2°C	2

PROPERTY	TEST METHOD	SPECIFICATION
Density at 25°C (indicative)		1,025 kg/m^3
Viscosity at 135°C (indicative)	EN 13702-2 (approx. SR 5 1/s)	2,000 – 4,500 mPa·s
Viscosity at 185°C (indicative)	EN 13702-2 (approx. SR 50 1/s)	250 - 450 mPa·s
Asphalt mixing and short term storage temperature*		190 ± 5°C
Maximum storage temperature*		Max 205°C

* reference is made to our full handling and storage instructions

HATEF's Intelligent Trading System



By unlocking the customer-market value proposition,

We build the finest trading roads so you can all move forward faster.

To ensure that you can progress faster, we build the smart system of solutions.

With our accumulated ***know-how***, we are an innovative driver that sets the pace for an entire pavement industry.

Identifying the Inquiries

- Estimating Network Loops
- Determining the financial shape
- Extracting the complicated data

Guidance & Counseling

- Providing competitive price
- Responding effectively
- Resolving the financial hosts

Project Vector Analysis

- Driving convenience to new level
- Modeling competitive landscape
- Developing stronger differentiation

Execute with Insightful Actions

- Helping to benchmark client's value
- Enhancing financial strategy
- Providing Services tailored in line with client's needs

HATEF Engineering & Services [Iran]

The company with intellectual-intelligent trading system and the only authorized "**Exclusive Sale Agent**" of Sealoflex® brand for exporting polymer- modified bitumen. HATEF is privileged to have the confidence resulting from a 12-year experience of being expert in "**dig-in-trading**" for Carbon-Based-Lifeforms products with special applications in targeted markets and industries.

OOMS Corporate [Netherland] is developing high quality polymer-modified bitumen (PMB) for asphalt under the trademark ***Sealoflex®*** to cope with extreme loading cases and extreme climate conditions with which airport infrastructure has to deal and Miladco [IRAN] company is license holder of OOMS Production BV, Europe. The **HATEF Ltd.** is the only IRANIAN authorized "Exclusive Sale Agent" of ***Sealoflex®***.

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