SBS BITUFLEX Mineral

SBS Modified Bitumen Waterproofing Membranes
With Composite Polyester Reinforcement.

THE PRODUCT

BITUFLEX Mineral are self-protected elastomeric waterproofing membranes, manufactured in an advanced continuous calendaring process by saturating and coating a composite carrier with a waterproofing compound made of a special grade of bitumen, modified with SBS polymers. While the SBS polymers enhance the thermal, mechanical, and aging properties of the membrane compound, the mechanical characteristics of **BITUFLEX Mineral** are established by the composite carrier made of non-woven Polyester armoured with Glassfiber filaments, which acts as the reinforcement that provides the membrane with the profound mechanical properties of the Polyester and the prominent dimensional stability of Glassfiber mats.

The upper surfaces of **BITUFLEX Mineral** is covered with colored mineral slate chips, with an 8cm slate free side margin for overlap welding, whereas the lower surface is laminated with a thermo-fusible polyethylene film.

USES

BITUFLEX Mineral can be used for roofing and waterproofing applications with high dimensional stability requirements & subjected to considerable movements induced by stresses, and to critical weathering conditions.

BITUFLEX Mineral is used as a top layer in an exposed multi layer roofing system where there is a need to satisfy specific aesthetical requirements and/or for exposed systems for the following roofing applications:

- Pre-stressed concrete or pre engineered steel structures.
- Metal decks or wooden substrates
- Re-roofing jobs on existing bituminous felts, tiles and other compatible substrates.
- Under roofing clay tiles on pitched roofs where tiles are fixed with mortar
- Flashings for exposed up-stands in SBS modified bitumen roofing systems.

MAJOR FEATURES

- **Enhanced Surface Characteristics:** the slate chips surfacing reduces the membrane's exposure to thermal stresses, extending its service life and decelerating its aging.
- **Substantial Dimensional Stability**.
- **Good Resistance to Chemicals** and industrial environment when used without protection.
- **Superior Isotropic Mechanical Properties**: the composite reinforcement provides the membrane with isotropic mechanical properties, which enables it to exhibit uniform behavior in all directions unlike other types of non-woven polyester.
- **Significant Compound Elastic Behavior**, which enables the compound to recover 100% of its original dimensions after 100% elongation.
- **High Performance** under a wide range of temperature fluctuation, (from -15◦C to 120◦C)
- **Fire Retarding Properties.**

SURFACE FINISH

The lower surface of **BITUFLEX Mineral** is laminated with a Polyethylene film while the upper surface is covered with one of the mineral slate chips or special granules, available in the following colors:

- Grey **BITUFLEX Mineral** – GY
- Green **BITUFLEX Mineral** – GR
- Red **BITUFLEX Mineral** – R
- white **BITUFLEX Mineral** – W

APPLICATION

BITUFLEX Mineral is usually applied by using a propane torch or a hot air generator as well as by mechanical fastening. It can also be applied using special adhesives in cold or hot applications. The substrate surface must be clean, dry, smooth, and free from any irregularities. According to the surface conditions, a coat of BituNil primer maybe required prior to the application of the membrane. **BITUFLEX Mineral** can be applied to the substrate fully bonded, semi bonded or mechanically fastened, and the method of adhesion to the substrate shall be decided according to the waterproofing system design. Side laps shall be 8 cm, while end laps shall be from 12-15 cm. Loose mineral slate chips can be used to treat overlaps for aesthetical requirements. For more info on application refer to BituNil application guide.

STORAGE & HANDLING

BITUFLEX Mineral rolls should be kept in an upright position in a flat, properly ventilated and sheltered storage area.

STANDARD SUPPLY DATA & PALLETISING

Group 1000	Group 1005	Weight*	Standard Roll size	Rolls/ Pallet	
				Group 1000	Group 1005
3000	3005	3.0 Kg/sqm	1M X 10M	39	39
3500	3505	3.5 Kg/sqm	1M X 10M	30	33
4000	4005	4.0 Kg/sqm	1M X 10M	30	30
4500	4505	4.5 Kg/sqm	1M X 10M	25	25
5000	5005	5.0 Kg/sqm	1M X 10M	23	25

*Weight tolerance as per UEAtc. Directives for Group 1000 and UEAtc. ± 5% for Group 1005

BITUFLEX
Mineral

BITUFLEX 5 Mineral
BITUFLEX 10 Mineral
BITUFLEX 15 Mineral

SBS Modified Bitumen Waterproofing Membranes

C: Composite Polyester Reinforcement
CP: Low Wt. CS: Medium Wt. CX: High Wt. CZ: Heavy Duty .

Properties		Test	Unit	Test Method	Tolerance	BITUFLEX 5 CSM	BITUFLEX 10 CSM	BITUFLEX 15 CSM
Dimensional Properties		Thickness	mm	EN-1849-1	± 5%	-	-	-
		Weight (Mass Per Unit Area)	kg/m^2	EN-1849-1	± 10%	4.5	4.5	4.5
		Determination Of Width	m	EN-1848-1	± 1%	1	1	1
		Determination Of Length	m	EN-1848-1	± 1%	10	10	10
		Straightness (Ortometry)	mm	EN-1848-1	-	± 10	± 10	± 10
Compound Properties		Softening point (R&B)	° C	ASTM D- 36	Min.	110	120	125
		Compound Elongation	%	UNI 8202/8	± 15%	900	1000	1100
Membrane Properties	Mechanical properties	Tensile Strength - Longitudinal	N/50mm	EN-12311-1	± 20%	850	850	850
		Tensile Strength - Transverse	N/50mm	EN-12311-1	± 20%	550	550	550
		Elongation At Break - Longitudinal	%	EN-12311-1	±15	35	35	35
		Elongation At Break - Transverse	%	EN-12311-1	±15	35	35	35
		Tearing Strength - Longitudinal (Nail-Shank)	N	EN-12310-1	± 30%	175	200	200
		Tearing Strength - Transverse(Nail-Shank)	N	EN-12310-1	± 30%	200	225	225
		Tensile Tear Resistance - Longitudinal	N	ASTM D- 5147 . D 4073	± 30%	750	750	750
		Tensile Tear Resistance - Transverse	N	ASTM D- 5147 . D 4073	± 30%	400	400	400
		Resistance to Static Loading	Kg	EN 12730 Method A	Min.	25	25	25
		Dynamic Puncturing (Impact Resistance)	mm	EN 12691 Method B	Min.	750	750	750
	Thermal Properties	Flow Resistance At Elevated Temprature	° C	EN-1110	Min.	90	100	100
		Flexability At Low Temprature(1)	° C	EN-1109	-	-10 TO -5	-15 TO -10	-20 TO -15
		Dimensional Stability	%	EN-1107-1	Max.	±0.3	±0.3	±0.3
		Water Impermeablility- Watertightness at Low pressure	60 Kpa	EN-1928 Method A	-	Passed	Passed	Passed
		Water Impermeablility- Watertightness at High pressure(2)	Kpa	EN-1928 Method B	Min.	300	300	300
	Miscellaneous Properties	Water Absorption	%	ASTM D-5147	Max.	< 1	< 1	< 1
		Vapour Permeability	μ	EN 1931	-	40000	60000	60000
		Fatigue resistance on cracks	200 cycles	UNI 8202/13	-	Passed	Passed	Passed
			500 cycles			Passed	Passed	Passed
		Shear Resistance Of joints - Longitudinal	N/50mm	EN-12317-1	± 20%	850	850	850
		Shear Resistance Of joints - Transverse	N/50mm	EN-12317-1	± 20%	550	550	550
		Thermal Ageing in air *(in oven 28 days at 70 °C)*	-	UNI 8202 /26	-	Passed	Passed	Passed
		Ageing Due To Atmospheric Agents *(U.V Test weathering)*	-	ASTM G 53 UNI 8202/29	-	Passed	Passed	Passed
		Fatigue resistance at Joints	200 cycles	UNI 8202/32	-	Passed	Passed	Passed
			500 cycles		-	Passed	Passed	Passed
		Fire Classification - Extemal Fire Performance	Class	EN 13501-5/ ENV 1187	-	F Roof	B Roof(t2)	B Roof(t2)
		Reaction to fire	Class	EN 13501-1	-	E	E	E
		Adhesion Of Granules	%	EN-12039	Max.	≤30	≤30	≤30
		Adhesion To Concrete (*Torch Applied*)	N/ 50mm	Pelage UEAtc	-	40	40	40
		Resistance to root pentration	-	EN-13948	-	NPD	NPD	NPD
Supply Data		weight	kg/m2	-	-	3 to 6	3 to 6	3 to 6
		Thickness	mm	-	-	2 to 5	2 to 5	2 to 5
		Roll Length	M	-	-	10	10	10
		Roll Width	M	-	-	1	1	1
		Surface finish (E: Polyethylene film S: Sand SL:Slates GR: Granule)						
		Upper Surface Finish	-	-	-	SL or GR	SL or GR	SL or GR
		Lower Surface Finish	-	-	-	S or E	S or E	S or E

The declared average values represent the best performance achieved at the present state of our knowledge, BITUNIL S.A.E reserves the possibility to change, without warning, the technical characteristics in order to make the product more responding to the application requirements. The choice of the type of membrane for the kind of use is at the purchaser's discretion .

Distributor:

Tolerances for the above values if not mentioned are according to the UEAtc directives.

(1) Exact value depends on thickness of the product.
(2) Deviating from the standard method , The assessment is made in 1 Hour test 4mm or 4.5Kg/m2 products.

Nile Waterproofing Material Co. S.A.E
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Web Site: www.Bitunil.com **Email: bitunil@bitunil.com**

SBS BITUFLEX Smooth

SBS Modified Bitumen Waterproofing Membranes
With Composite Polyester Reinforcement.

THE PRODUCT

BITUFLEX are elastomeric waterproofing membranes, manufactured in an advanced continuous calendaring process by saturating and coating a composite carrier with a waterproofing compound made of a special grade of bitumen, modified with SBS polymers. While the SBS polymers enhance the thermal, mechanical, and aging properties of the membrane compound, the mechanical characteristics of **BITUFLEX** are established by the composite carrier made of non-woven Polyester armoured with Glassfiber filaments, which acts as the reinforcement that provides the membrane with the profound mechanical properties of the Polyester and the prominent dimensional stability of Glassfiber mats.
The upper surfaces of **BITUFLEX** is covered with an anti adhesive finish material, whereas the lower surface is laminated with a thermo-fusible polyethylene film.

USES

BITUFLEX can be used for roofing and waterproofing applications with high dimensional stability requirements and subjected to considerable movements induced by stresses, and to critical weathering conditions.

BITUFLEX membranes are particularly recommended for the following applications:

- Flat and sloped roofs protected applications for medium and large areas.
- Foundations and underground structures with critical site conditions
- Protected waterproofing of roof decks or substrates subject to movements, such as metal decks, insulation boards, tiles, etc.

MAJOR FEATURES

- **Substantial Dimensional Stability**: The composite reinforcement provides the membrane with superior dimensional stability properties when exposed to high temperature during both production process and application in the field.
- **Enhanced Resistance to Chemicals**: the premium quality bitumen compound used in **BITUFLEX** makes it resistant to the attack by acids, salts and basic solutions usually found in the soil and rainwater.
- **Good Isotropic Mechanical Properties**: the composite reinforcement provides **BITUFLEX** with isotropic mechanical properties, which enables It to exhibit uniform behavior in all directions unlike other types of non-woven polyester.
- **Significant Compound Elastic Behavior**, which enables the compound to recover 100% of its original dimensions after 100% elongation.
- **Superior Performance** under a wide range of temperature fluctuation, (from -15◦C to 120◦C)

SURFACE FINISH

The lower surface of **BITUFLEX** is laminated with a Polyethylene film while the upper surface is covered with one of the following surface finish materials:

- Fine Sand **BITUFLEX** – S/E
- Polyethylene Film **BITUFLEX** – E/E
- Mineral Slate Chips or Special Granules (refer to BITUFLEX Mineral separate TDS)

APPLICATION

BITUFLEX is usually applied by using a propane torch or a hot air generator as well as by mechanical fastening. It can also be applied using special adhesives in cold or hot applications. The substrate surface must be clean, dry, smooth, and free from any irregularities. According to the surface conditions, a coat of BituNil primer maybe required prior to the application of the membrane. **BITUFLEX** can be applied to the substrate fully bonded, semi bonded or loose laid, and the method of adhesion to the substrate shall be decided according to the waterproofing system design. Side laps should be from 8-10 cm, while end laps should be from 12-15 cm. For more information on application refer to BituNil application guide.

STORAGE & HANDLING

BITUFLEX rolls should be kept in an upright position in a flat, properly ventilated and sheltered storage area.

SUPPLY DATA & PALLETISING

Group 100	Group 105	Thickness *	Standard Roll Size	Rolls/ Pallet	
				Group 100	Group 105
200	205	2mm	1M x 10M	28	28
300	305	3mm	1M x 10M	28	28
400	405	4mm	1M x 10M	23	23
500	505	5mm	1M x 8 M	23	23

*Thickness tolerance as per UEAtc. Directives for Group 100 and UEAtc. ± 5% for Group 105

BITUFLEX
Smooth

BITUFLEX 5
BITUFLEX 10
BITUFLEX 15

SBS Modified Bitumen Waterproofing Membranes

C: Composite Polyester Reinforcement
CP: Low Wt. CS: Medium Wt. CX: High Wt. CZ: Heavy Duty .

Properties		Test	Unit	Test Method	Tolerance	BITUFLEX 5 CS	BITUFLEX 10 CS	BITUFLEX 15 CS
Dimensional Properties		Thickness	mm	EN-1849-1	± 5%	4	4	4
		Weight (Mass Per Unit Area)	kg/m^2	EN-1849-1	± 10%	-	-	-
		Determination Of Width	m	EN-1848-1	± 1%	1	1	1
		Determination Of Length	m	EN-1848-1	± 1%	10	10	10
		Straightness (Ortometry)	mm	EN-1848-1	-	± 10	± 10	± 10
Compound Properties		Softening point (R&B)	° C	ASTM D- 36	Min.	110	120	125
		Compound Elongation	%	UNI 8202/8	± 15%	900	1000	1100
Membrane Properties	Mechanical properties	Tensile Strength - Longitudinal	N/50mm	EN-12311-1	± 20%	850	850	850
		Tensile Strength - Transverse	N/50mm	EN-12311-1	± 20%	550	550	550
		Elongation At Break - Longitudinal	%	EN-12311-1	±15	35	35	35
		Elongation At Break - Transverse	%	EN-12311-1	±15	35	35	35
		Tearing Strength - Longitudinal (Nail-Shank)	N	EN-12310-1	± 30%	175	200	200
		Tearing Strength - Transverse(Nail-Shank)	N	EN-12310-1	± 30%	200	225	225
		Tensile Tear Resistance - Longitudinal	N	ASTM D- 5147 . D 4073	± 30%	750	750	750
		Tensile Tear Resistance - Transverse	N	ASTM D- 5147 . D 4073	± 30%	400	400	400
		Resistance to Static Loading	Kg	EN 12730 Method A	Min.	25	25	25
		Dynamic Puncturing (Impact Resistance)	mm	EN 12691 Method B	Min.	750	750	750
	Thermal Properties	Flow Resistance At Elevated Temprature	° C	EN-1110	Min.	90	100	100
		Flexability At Low Temprature(1)	° C	EN-1109	-	-10 TO -5	-15 TO -10	-20 TO -15
		Dimensional Stability	%	EN-1107-1	Max.	±0.3	±0.3	±0.3
		Water Impermeablility- Watertightness at Low pressure	60 Kpa	EN-1928 Method A	-	Passed	Passed	Passed
		Water Impermeablility- Watertightness at High pressure(2)	Kpa	EN-1928 Method B	Min.	300	300	300
	Miscellaneous Properties	Water Absorption	%	ASTM D-5147	Max.	< 1	< 1	< 1
		Vapour Permeability	μ	EN 1931	-	40000	60000	60000
		Fatigue resistance on cracks	200 cycles	UNI 8202/13	-	Passed	Passed	Passed
			500 cycles			Passed	Passed	Passed
		Shear Resistance Of joints - Longitudinal	N/50mm	EN-12317-1	± 20%	850	850	850
		Shear Resistance Of joints - Transverse	N/50mm	EN-12317-1	± 20%	550	550	550
		Thermal Ageing in air (*in oven 28 days at 70°C*)	-	UNI 8202 /26	-	Passed	Passed	Passed
		Ageing Due To Atmospheric Agents (*U.V Test weathering*)	-	ASTM G 53 UNI 8202/29	-	Passed	Passed	Passed
		Fatigue resistance at Joints	200 cycles	UNI 8202/32	-	Passed	Passed	Passed
			500 cycles		-	Passed	Passed	Passed
		Fire Classification - Extemal Fire Performance	Class	EN 13501-5/ ENV 1187	-	F Roof	B Roof(t2)	B Roof(t2)
		Reaction to fire	Class	EN 13501-1	-	E	E	E
		Adhesion Of Granules	%	EN-12039	Max.	-	-	-
		Adhesion To Concrete (*Torch Applied*)	N/ 50mm	Pelage UEAtc	-	40	40	40
		Resistance to root pentration	-	EN-13948	-	NPD	NPD	NPD
Supply Data		weight	kg/m2	-	-	3 to 6	3 to 6	3 to 6
		Thickness	mm	-	-	2 to 5	2 to 5	2 to 5
		Roll Length	M	-	-	10	10	10
		Roll Width	M	-	-	1	1	1
		Surface finish (E: Polyethylene film S: Sand SL:Slates GR: Granule)						
		Upper Surface Finish	-	-	-	S or E	S or E	S or E
		Lower Surface Finish	-	-	-	S or E	S or E	S or E

The declared average values represent the best performance achieved at the present state of our knowledge, BITUNIL S.A.E reserves the possibility to change, without warning, the technical characteristics in order to make the product more responding to the application requirements. The choice of the type of membrane for the kind of use is at the purchaser's discretion .

Distributor:

Tolerances for the above values if not mentioned are according to the UEAtc directives.

(1) Exact value depends on thickness of the product.
(2) Deviating from the standard method , The assessment is made in 1 Hour test 4mm or 4.5Kg/m2 products.

Nile Waterproofing Material Co. S.A.E
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SBS BITUGUM Mineral

Heavy Duty SBS Modified Bitumen Waterproofing Membranes
With Composite Polyester Reinforcement.

THE PRODUCT

BITUGUM Mineral are self-protected elastomeric waterproofing membranes, manufactured in an advanced continuous calendaring process by saturating and coating a composite carrier with a waterproofing compound made of a special grade of bitumen, modified with SBS polymers. While the SBS polymers enhance the thermal, mechanical, and aging properties of the membrane compound, the mechanical characteristics of **BITUGUM Mineral** are established by the composite carrier made of non-woven Polyester armoured with Glassfiber filaments, which acts as the reinforcement that provides the membrane with the profound mechanical properties of the Polyester and the prominent dimensional stability of Glassfiber mats.

The upper surfaces of **BITUGUM Mineral** is covered with colored mineral slate chips, with an 8cm slate free side margin for overlap welding, whereas the lower surface is laminated with a thermo-fusible polyethylene film.

USES

BITUGUM Mineral can be used for heavy duty roofing and waterproofing applications with high dimensional stability requirements & subjected to excessive movements induced by stresses, and to extreme weathering conditions.

BITUGUM Mineral is used as a top layer in an exposed multi layer roofing system where there is a need to satisfy specific aesthetical requirements and/or for exposed systems for the following roofing applications:

- Pre-stressed concrete or pre engineered steel structures.
- Metal decks or wooden substrates
- Re-roofing jobs on existing bituminous felts, tiles and other compatible substrates.
- Under roofing clay tiles on pitched roofs where tiles are fixed with mortar
- Flashings for exposed up-stands in SBS modified bitumen roofing systems.

MAJOR FEATURES

- **Excellent Surface Characteristics:** the slate chips surfacing reduces the membrane's exposure to thermal stresses, extending its service life and decelerating its aging.
- **Substantial Dimensional Stability**.
- **High Resistance to Chemicals** and industrial environment when used without protection.
- **Superior Isotropic Mechanical Properties**: the composite reinforcement provides the membrane with isotropic mechanical properties, which enables it to exhibit uniform behavior in all directions unlike other types of non-woven polyester.
- **Outstanding Compound Elastic Behavior**, which enables the compound to recover 100% of its original dimensions after 200% elongation.
- **High Performance** under a wide range of temperature fluctuation, (from -30◦C to 120◦C)
- **Fire Retarding Properties.**

SURFACE FINISH

The lower surface of **BITUGUM Mineral** is laminated with a Polyethylene film while the upper surface is covered with one of the mineral slate chips or special granules, available in the following colors:

- Grey **BITUGUM Mineral** – GY
- Green **BITUGUM Mineral** – GR
- Red **BITUGUM Mineral** – R
- white **BITUGUM Mineral** – W

APPLICATION

BITUGUM Mineral is usually applied by using a propane torch or a hot air generator as well as by mechanical fastening. It can also be applied using special adhesives in cold or hot applications. The substrate surface must be clean, dry, smooth, and free from any irregularities. According to the surface conditions, a coat of BituNil primer maybe required prior to the application of the membrane. **BITUGUM Mineral** can be applied to the substrate fully bonded, semi bonded or mechanically fastened, and the method of adhesion to the substrate shall be decided according to the waterproofing system design. Side laps shall be 8 cm, while end laps shall be from 12-15 cm. Loose mineral slate chips can be used to treat overlaps for aesthetical requirements. For more info on application refer to BituNil application guide.

STORAGE & HANDLING

BITUGUM Mineral rolls should be kept in an upright position in a flat, properly ventilated and sheltered storage area.

STANDARD SUPPLY DATA & PALLETISING

Group 1000	Group 1005	Weight*	Standard Roll size	Rolls/ Pallet	
				Group 1000	Group 1005
3000	3005	3.0 Kg/sqm	1M X 10M	39	39
3500	3505	3.5 Kg/sqm	1M X 10M	30	33
4000	4005	4.0 Kg/sqm	1M X 10M	30	30
4500	4505	4.5 Kg/sqm	1M X 10M	25	25
5000	5005	5.0 Kg/sqm	1M X 10M	23	25

*Weight tolerance as per UEAtc. Directives for Group 1000 and UEAtc. ± 5% for Group 1005

BITUGUM
Mineral

BITUGUM 20 Mineral
BITUGUM 25 Mineral
BITUGUM 30 Mineral

SBS Modified Bitumen Waterproofing Membranes

C: Composite Polyester Reinforcement
CP: Low Wt. CS: Medium Wt. CX: High Wt. CZ: Heavy Duty .

Properties		Test	Unit	Test Method	Tolerance	BITUGUM 20 CXM	BITUGUM 25 CXM	BITUGUM 30 CXM
Dimensional Properties		Thickness	mm	EN-1849-1	± 5%	-	-	-
		Weight (Mass Per Unit Area)	kg/m^2	EN-1849-1	± 10%	4.5	4.5	4.5
		Determination Of Width	m	EN-1848-1	± 1%	1	1	1
		Determination Of Length	m	EN-1848-1	± 1%	10	10	10
		Straightness (Ortometry)	mm	EN-1848-1	-	± 10	± 10	± 10
Compound Properties		Softening point (R&B)	°C	ASTM D- 36	Min.	130	130	130
		Compound Elongation	%	UNI 8202/8	± 15%	1200	1500	1600
Membrane Properties	Mechanical properties	Tensile Strength - Longitudinal	N/50mm	EN-12311-1	± 20%	1000	1000	1000
		Tensile Strength - Transverse	N/50mm	EN-12311-1	± 20%	650	650	650
		Elongation At Break - Longitudinal	%	EN-12311-1	±15	40	40	40
		Elongation At Break - Transverse	%	EN-12311-1	±15	40	40	40
		Tearing Strength - Longitudinal (Nail-Shank)	N	EN-12310-1	± 30%	250	250	275
		Tearing Strength - Transverse(Nail-Shank)	N	EN-12310-1	± 30%	325	325	350
		Tensile Tear Resistance - Longitudinal	N	ASTM D- 5147 . D 4073	± 30%	750	750	750
		Tensile Tear Resistance - Transverse	N	ASTM D- 5147 . D 4073	± 30%	500	500	500
		Resistance to Static Loading	Kg	EN 12730 Method A	Min.	25	25	25
		Dynamic Puncturing (Impact Resistance)	mm	EN 12691 Method B	Min.	1000	1000	1000
	Thermal Properties	Flow Resistance At Elevated Temprature	°C	EN-1110	Min.	110	120	120
		Flexability At Low Temprature(1)	°C	EN-1109	-	-25 TO -20	-30 TO -25	≤ -30
		Dimensional Stability	%	EN-1107-1	Max.	±0.3	±0.3	±0.3
		Water Impermeablility- Watertightness at Low pressure	60 Kpa	EN-1928 Method A	-	Passed	Passed	Passed
		Water Impermeablility- Watertightness at High pressure(2)	Kpa	EN-1928 Method B	Min.	500	500	500
	Miscellaneous Properties	Water Absorption	%	ASTM D-5147	Max.	< 1	< 1	< 1
		Vapour Permeability	μ	EN 1931	-	80000	80000	80000
		Fatigue resistance on cracks	200 cycles	UNI 8202/13	-	Passed	Passed	Passed
			500 cycles			Passed	Passed	Passed
		Shear Resistance Of joints - Longitudinal	N/50mm	EN-12317-1	± 20%	1000	1000	1000
		Shear Resistance Of joints - Transverse	N/50mm	EN-12317-1	± 20%	650	650	650
		Thermal Ageing in air *(in oven 28 days at 70°C)*	-	UNI 8202 /26	-	Passed	Passed	Passed
		Ageing Due To Atmospheric Agents *(U.V Test weathering)*	-	ASTM G 53 UNI 8202/29	-	Passed	Passed	Passed
		Fatigue resistance at Joints	200 cycles	UNI 8202/32	-	Passed	Passed	Passed
			500 cycles		-	Passed	Passed	Passed
		Fire Classification - Extemal Fire Performance	Class	EN 13501-5/ ENV 1187	-	B Roof(t2)	B Roof(t2)	B Roof(t2)
		Reaction to fire	Class	EN 13501-1	-	E	E	E
		Adhesion Of Granules	%	EN-12039	Max.	≤30	≤30	≤30
		Adhesion To Concrete (*Torch Applied*)	N/ 50mm	Pelage UEAtc	-	40	40	40
		Resistance to root pentration	-	EN-13948	-	NPD	NPD	NPD
Supply Data		weight	kg/m2	-	-	3 to 6	3 to 6	3 to 6
		Thickness	mm	-	-	2 to 5	2 to 5	2 to 5
		Roll Length	M	-	-	10	10	10
		Roll Width	M	-	-	1	1	1
		Surface finish (E: Polyethylene film S: Sand SL:Slates GR: Granule)						
		Upper Surface Finish	-	-	-	SL or GR	SL or GR	SL or GR
		Lower Surface Finish	-	-	-	S or E	S or E	S or E

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Distributor:

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(2) Deviating from the standard method , The assessment is made in 1 Hour test 4mm or 4.5Kg/m2 products.

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SBS BITUGUM Smooth

Heavy Duty SBS Modified Bitumen Waterproofing Membranes
With Composite Polyester Reinforcement.

THE PRODUCT

BITUGUM are elastomeric waterproofing membranes, manufactured in an advanced continuous calendaring process by saturating and coating a composite carrier with a waterproofing compound made of a special grade of bitumen, modified with SBS polymers. While the SBS polymers enhance the thermal, mechanical, and aging properties of the membrane compound, the mechanical characteristics of **BITUGUM** are established by the composite carrier made of non-woven Polyester armoured with Glassfiber filaments, which acts as the reinforcement that provides the membrane with the profound mechanical properties of the Polyester and the prominent dimensional stability of Glassfiber mats.
The upper surface of **BITUGUM** is covered with an anti adhesive finish material, whereas the lower surface is laminated with a thermo-fusible polyethylene film.

USES

BITUGUM membranes are used for heavy duty roofing and waterproofing applications with high dimensional stability requirements & subjected to excessive movements induced by stresses, and to extreme weathering conditions.

BITUGUM membranes are particularly recommended for the following applications:

- Protected roofing subject to high movements such as pre-stressed, pre-cast concrete, or steel structures.
- Roofing for substrates where high vapor impermeability is required.
- Protected waterproofing for civil engineering applications such as hydraulic works, parking decks, bridges, viaducts, tunnels, waste dumps, etc.

MAJOR FEATURES

- **Outstanding compound elastic behavior**, which enables the compound to recover 100% of its original dimensions after 100% elongation.
- **Substantial Dimensional Stability**: The composite reinforcement provides the membrane with superior dimensional stability properties when exposed to high temperature during both production process and application in the field.
- **Excellent Resistance to Chemicals**: the superior quality bitumen compound used in **BITUGUM** makes it resistant to the attack by acids, salts and basic solutions usually found in the soil and rainwater.
- **Superior Isotropic Mechanical Properties**: the composite reinforcement provides **BITUGUM** with isotropic mechanical properties, which enables It to exhibit uniform behavior in all directions unlike other types of non-woven polyester.
- **Enormous Resistance,** to impact loads, tear, and puncture.
- **Optimum performance** under a wide range of temperature fluctuation, (from -30◦C to 130◦C)

SURFACE FINISH

The lower surface of **BITUGUM** is laminated with a Polyethylene film while the upper surface is covered with one of the following surface finish materials:

- Fine Sand **BITUGUM** – S/E
- Polyethylene Film **BITUGUM** – E/E
- Mineral Slate Chips or Special Granules (refer to BITUGUM Mineral separate TDS)

APPLICATION

BITUGUM is usually applied by using a propane torch or a hot air generator as well as by mechanical fastening. It can also be applied using special adhesives in cold or hot applications. The substrate surface must be clean, dry, smooth, and free from any irregularities. According to the surface conditions, a coat of BituNil primer maybe required prior to the application of the membrane. **BITUGUM** can be applied to the substrate fully bonded, semi bonded or loose laid, and the method of adhesion to the substrate shall be decided according to the waterproofing system design. Side laps should be from 8-10 cm, while end laps should be from 12-15 cm. For more information on application refer to BituNil application guide.

STORAGE & HANDLING

BITUGUM rolls should be kept in an upright position in a flat, properly ventilated and sheltered storage area.

SUPPLY DATA & PALLETISING

Group 100	Group 105	Thickness *	Standard Roll Size	Rolls/ Pallet	
				Group 100	Group 105
200	205	2mm	1M x 10M	28	28
300	305	3mm	1M x 10M	28	28
400	405	4mm	1M x 10M	23	23
500	505	5mm	1M x 8 M	23	23

*Thickness tolerance as per UEAtc. Directives for Group 100 and UEAtc. ± 5% for Group 105

BITUGUM
Smooth

BITUGUM 20
BITUGUM 25
BITUGUM 30

SBS Modified Bitumen Waterproofing Membranes

C: Composite Polyester Reinforcement
CP: Low Wt. CS: Medium Wt. CX: High Wt. CZ: Heavy Duty .

Properties		Test	Unit	Test Method	Tolerance	BITUGUM 20 CX	BITUGUM 25 CX	BITUGUM 30 CX
Dimensional Properties		Thickness	mm	EN-1849-1	± 5%	4	4	4
		Weight (Mass Per Unit Area)	kg/m^2	EN-1849-1	± 10%	-	-	-
		Determination Of Width	m	EN-1848-1	± 1%	1	1	1
		Determination Of Length	m	EN-1848-1	± 1%	10	10	10
		Straightness (Ortometry)	mm	EN-1848-1	-	± 10	± 10	± 10
Compound Properties		Softening point (R&B)	°C	ASTM D- 36	Min.	130	130	130
		Compound Elongation	%	UNI 8202/8	± 15%	1200	1500	1600
Membrane Properties	Mechanical properties	Tensile Strength - Longitudinal	N/50mm	EN-12311-1	± 20%	1000	1000	1000
		Tensile Strength - Transverse	N/50mm	EN-12311-1	± 20%	650	650	650
		Elongation At Break - Longitudinal	%	EN-12311-1	±15	40	40	40
		Elongation At Break - Transverse	%	EN-12311-1	±15	40	40	40
		Tearing Strength - Longitudinal (Nail-Shank)	N	EN-12310-1	± 30%	250	250	275
		Tearing Strength - Transverse(Nail-Shank)	N	EN-12310-1	± 30%	325	325	350
		Tensile Tear Resistance - Longitudinal	N	ASTM D- 5147 . D 4073	± 30%	750	750	750
		Tensile Tear Resistance - Transverse	N	ASTM D- 5147 . D 4073	± 30%	500	500	500
		Resistance to Static Loading	Kg	EN 12730 Method A	Min.	25	25	25
		Dynamic Puncturing (Impact Resistance)	mm	EN 12691 Method B	Min.	1000	1000	1000
	Thermal Properties	Flow Resistance At Elevated Temprature	°C	EN-1110	Min.	110	120	120
		Flexability At Low Temprature(1)	°C	EN-1109	-	-25 TO -20	-30 TO -25	≤ -30
		Dimensional Stability	%	EN-1107-1	Max.	±0.3	±0.3	±0.3
		Water Impermeablility- Watertightness at Low pressure	60 Kpa	EN-1928 Method A	-	Passed	Passed	Passed
		Water Impermeablility- Watertightness at High pressure(2)	Kpa	EN-1928 Method B	Min.	500	500	500
	Miscellaneous Properties	Water Absorption	%	ASTM D-5147	Max.	< 1	< 1	< 1
		Vapour Permeability	μ	EN 1931	-	80000	80000	80000
		Fatigue resistance on cracks	200 cycles	UNI 8202/13	-	Passed	Passed	Passed
			500 cycles			Passed	Passed	Passed
		Shear Resistance Of joints - Longitudinal	N/50mm	EN-12317-1	± 20%	1000	1000	1000
		Shear Resistance Of joints - Transverse	N/50mm	EN-12317-1	± 20%	650	650	650
		Thermal Ageing in air *(in oven 28 days at 70°C)*	-	UNI 8202 /26	-	Passed	Passed	Passed
		Ageing Due To Atmospheric Agents *(U.V Test weathering)*	-	ASTM G 53 UNI 8202/29	-	Passed	Passed	Passed
		Fatigue resistance at Joints	200 cycles	UNI 8202/32	-	Passed	Passed	Passed
			500 cycles		-	Passed	Passed	Passed
		Fire Classification - External Fire Performance	Class	EN 13501-5/ ENV 1187	-	B Roof(t2)	B Roof(t2)	B Roof(t2)
		Reaction to fire	Class	EN 13501-1	-	E	E	E
		Adhesion Of Granules	%	EN-12039	Max.	-	-	-
		Adhesion To Concrete (*Torch Applied*)	N/ 50mm	Pelage UEAtc	-	40	40	40
		Resistance to root pentration	-	EN-13948	-	NPD	NPD	NPD
Supply Data		weight	kg/m2	-	-	3 to 6	3 to 6	3 to 6
		Thickness	mm	-	-	2 to 5	2 to 5	2 to 5
		Roll Length	M	-	-	10	10	10
		Roll Width	M	-	-	1	1	1
		Surface finish (E: Polyethylene film S: Sand SL:Slates GR: Granule)						
		Upper Surface Finish	-	-	-	S or E	S or E	S or E
		Lower Surface Finish	-	-	-	S or E	S or E	S or E

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Distributor:

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(1) Exact value depends on thickness of the product.
(2) Deviating from the standard method , The assessment is made in 1 Hour test 4mm or 4.5Kg/m2 products.

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SBS TORCHFLEX

SBS Modified Bitumen Waterproofing Membrane
With Composite Polyester Reinforcement.

THE PRODUCT

TORCHFLEX is an elastomeric waterproofing membrane, manufactured in an advanced continuous calendaring process by saturating and coating a composite carrier with a waterproofing compound made of a special grade of bitumen, modified with SBS polymers. While the SBS polymers enhance the thermal, mechanical, and aging properties of the membrane compound, the mechanical characteristics of **TORCHFLEX** are established by the composite carrier made of non-woven Polyester armoured with Glassfiber filaments, which acts as the reinforcement that provides the membrane with the profound mechanical properties of the Polyester and the prominent dimensional stability of Glassfiber mats.
The upper surfaces of **TORCHFLEX** is covered with an anti adhesive finish material, whereas the lower surface is laminated with a thermo-fusible polyethylene film.

MAJOR FEATURES

- Substantial dimensional stability provided by the composite reinforcement
- Significant compound elastic, behavior which enables the compound to recover its original dimensions after elongation

USES

TORCHFLEX can be used for roofing and waterproofing applications with high dimensional stability requirements & subjected to normal movements induced by stresses & to normal weathering conditions.

TORCHFLEX membranes is particularly recommended for the following applications:

- Flat and sloped roofs protected applications for small areas.
- Protected waterproofing of substrates subject to movements.
- Under-layer in waterproofing or re-roofing works.

SURFACE FINISH

The lower surface of **TORCHFLEX** is laminated with a polyethylene film. The upper surface is covered with the following surface finish material:

- Polyethylene Film **TORCHFLEX** – E/E

APPLICATION

TORCHFLEX is usually applied by using a propane torch or hot air generator as well as the mechanical fastening. It can also be applied using special adhesives in cold or hot applications. The substrate surface must be clean, dry, smooth, and free from any irregularities. According to the surface conditions, a coat of BituNil primer maybe required prior to the application of the membrane. **TORCHFLEX** can be applied to the substrate fully bonded, semi bonded or loose laid, and the method of adhesion to the substrate shall be decided according to the waterproofing system design. Side laps should be from 8-10 cm, while end laps should be from 12-15 cm. For more information on application refer to BituNil Application Guide.

STORAGE & HANDLING

TORCHFLEX rolls should be kept in an upright position in a flat, properly ventilated and sheltered storage area.

SUPPLY DATA & PALLETISING

Group 100	Group 105	Thickness *	Standard Roll Size	Rolls/ Pallet	
				Group 100	Group 105
200	205	2mm	1M x 10M	28	28
300	305	3mm	1M x 10M	28	28
400	405	4mm	1M x 10M	23	23
500	505	5mm	1M x 8 M	23	23

*Thickness tolerance as per UEAtc. Directives for Group 100 and UEAtc. ± 5% for Group 105

TORCHFLEX

SBS Modified Bitumen Waterproofing Membrane

C: Composite Polyester Reinforcement
CP: Low Wt. CS: Medium Wt. CX: High Wt. CZ: Heavy Duty .

Properties		Test	Unit	Test Method	Tolerance	TORCHFLEX CP
Dimensional Properties		Thickness	mm	EN-1849-1	± 5%	4
		Weight (Mass Per Unit Area)	kg/m^2	EN-1849-1	± 10%	-
		Determination Of Width	m	EN-1848-1	± 1%	1
		Determination Of Length	m	EN-1848-1	± 1%	10
		Straightness (Ortometry)	mm	EN-1848-1	-	± 10
Compound Properties		Softening point (R&B)	° C	ASTM D- 36	Min.	100
		Compound Elongation	%	UNI 8202/8	± 15%	800
Membrane Properties	Mechanical properties	Tensile Strength - Longitudinal	N/50mm	EN-12311-1	± 20%	500
		Tensile Strength - Transverse	N/50mm	EN-12311-1	± 20%	300
		Elongation At Break - Longitudinal	%	EN-12311-1	±15	30
		Elongation At Break - Transverse	%	EN-12311-1	±15	30
		Tearing Strength - Longitudinal (Nail-Shank)	N	EN-12310-1	± 30%	125
		Tearing Strength - Transverse(Nail-Shank)	N	EN-12310-1	± 30%	150
		Tensile Tear Resistance - Longitudinal	N	ASTM D- 5147 . D 4073	± 30%	400
		Tensile Tear Resistance - Transverse	N	ASTM D- 5147 . D 4073	± 30%	225
		Resistance to Static Loading	Kg	EN 12730 Method A	Min.	10
		Dynamic Puncturing (Impact Resistance)	mm	EN 12691 Method B	Min.	550
	Thermal Properties	Flow Resistance At Elevated Temprature	° C	EN-1110	Min.	90
		Flexability At Low Temprature(1)	° C	EN-1109	-	-5 TO 0
		Dimensional Stability	%	EN-1107-1	Max.	±0.3
		Water Impermeablility- Watertightness at Low pressure	60 Kpa	EN-1928 Method A	-	Passed
		Water Impermeablility- Watertightness at High pressure(2)	Kpa	EN-1928 Method B	Min.	100
	Miscellaneous Properties	Water Absorption	%	ASTM D-5147	Max.	< 1
		Vapour Permeability	μ	EN 1931	-	40000
		Fatigue resistance on cracks	500 cycles	UNI 8202/13	-	Passed
			200 cycles			Passed
		Shear Resistance Of joints - Longitudinal	N/50mm	EN-12317-1	± 20%	500
		Shear Resistance Of joints - Transverse	N/50mm	EN-12317-1	± 20%	300
		Thermal Ageing in air *(in oven 28 days at 70 ° C)*	-	UNI 8202 /26	-	Passed
		Ageing Due To Atmospheric Agents *(U.V Test weathering)*	-	ASTM G 53 UNI 8202/29	-	Passed
		Fatigue resistance at Joints	200 cycles	UNI 8202/32	-	Passed
			500 cycles		-	Passed
		Fire Classification - Extemal Fire Performance	Class	EN 13501-5/ ENV 1187	-	F Roof
		Reaction to fire	Class	EN 13501-1	-	E
		Adhesion Of Granules	%	EN-12039	Max.	-
		Adhesion To Concrete (*Torch Applied*)	N/ 50mm	Pelage UEAtc	-	40
		Resistance to root pentration	-	EN-13948	-	NPD
Supply Data		weight	kg/m2	-	-	3 to 6
		Thickness	mm	-	-	2 to 5
		Roll Length	M	-	-	10
		Roll Width	M	-	-	1
		Surface finish (E: Polyethylene film S: Sand SL:Slates GR: Granule)				
		Upper Surface Finish	-	-	-	E
		Lower Surface Finish	-	-	-	E

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