



**SOPREMA<sup>®</sup>**

Building. Protecting. Sustaining.

A large, circular stone wall made of grey blocks. The word "SOPREMA" is carved into the wall in large, dark, block letters. The wall is situated on a grassy area in front of a modern, multi-story office building with large windows. The sky is clear and blue.

**SOPREMA**

# SOPREMA IN NUMBERS

## GLOBAL

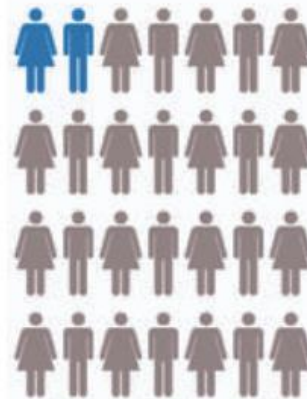
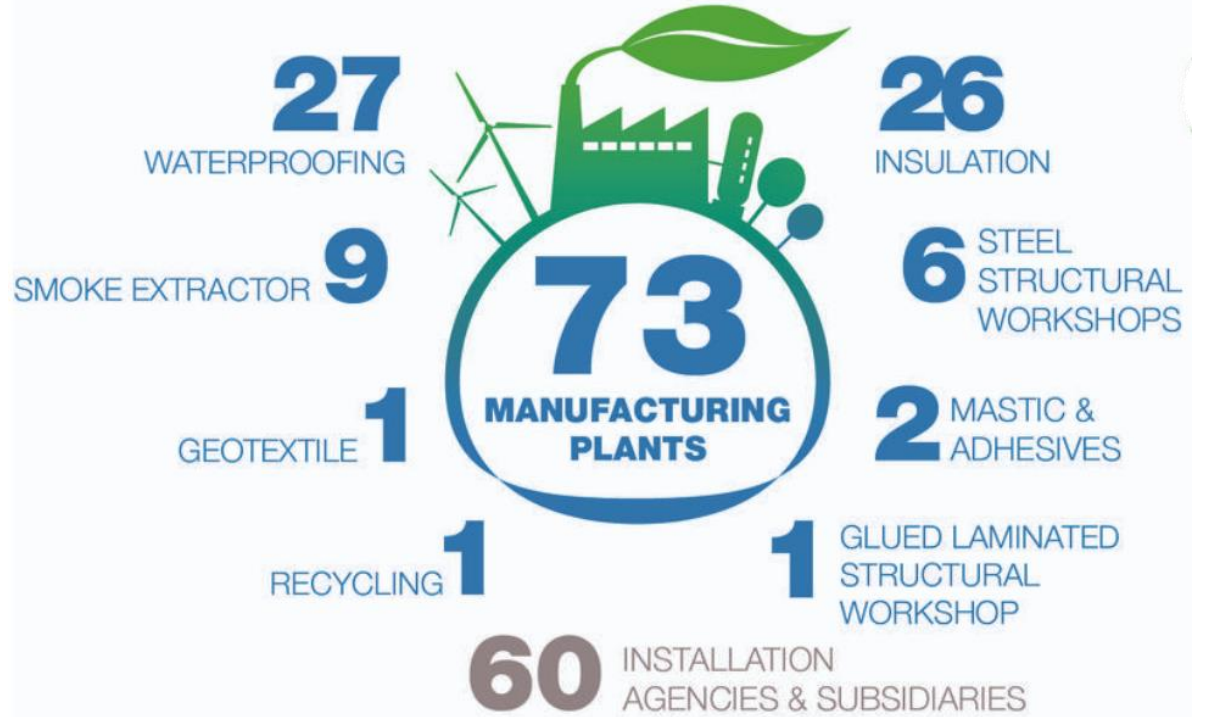


# \$3.6

**BILLION USD**  
OF CONSOLIDATED REVENUE  
IN 2019

MORE THAN  
**90**  
SUBSIDIARIES

MORE THAN  
**4000**  
DISTRIBUTORS



# 8 424

**EMPLOYEES**  
ALL OVER THE WORLD

# COMPANY HISTORY

## OWNERSHIP

1908

### Charles Geisen founds SOPREMA in France

- Pioneer in the industry
- Developed modern waterproofing membranes; jute cloth dipped into asphalt
  - *Resembled Mammoth skin – the Mammoth logo was born*

1939

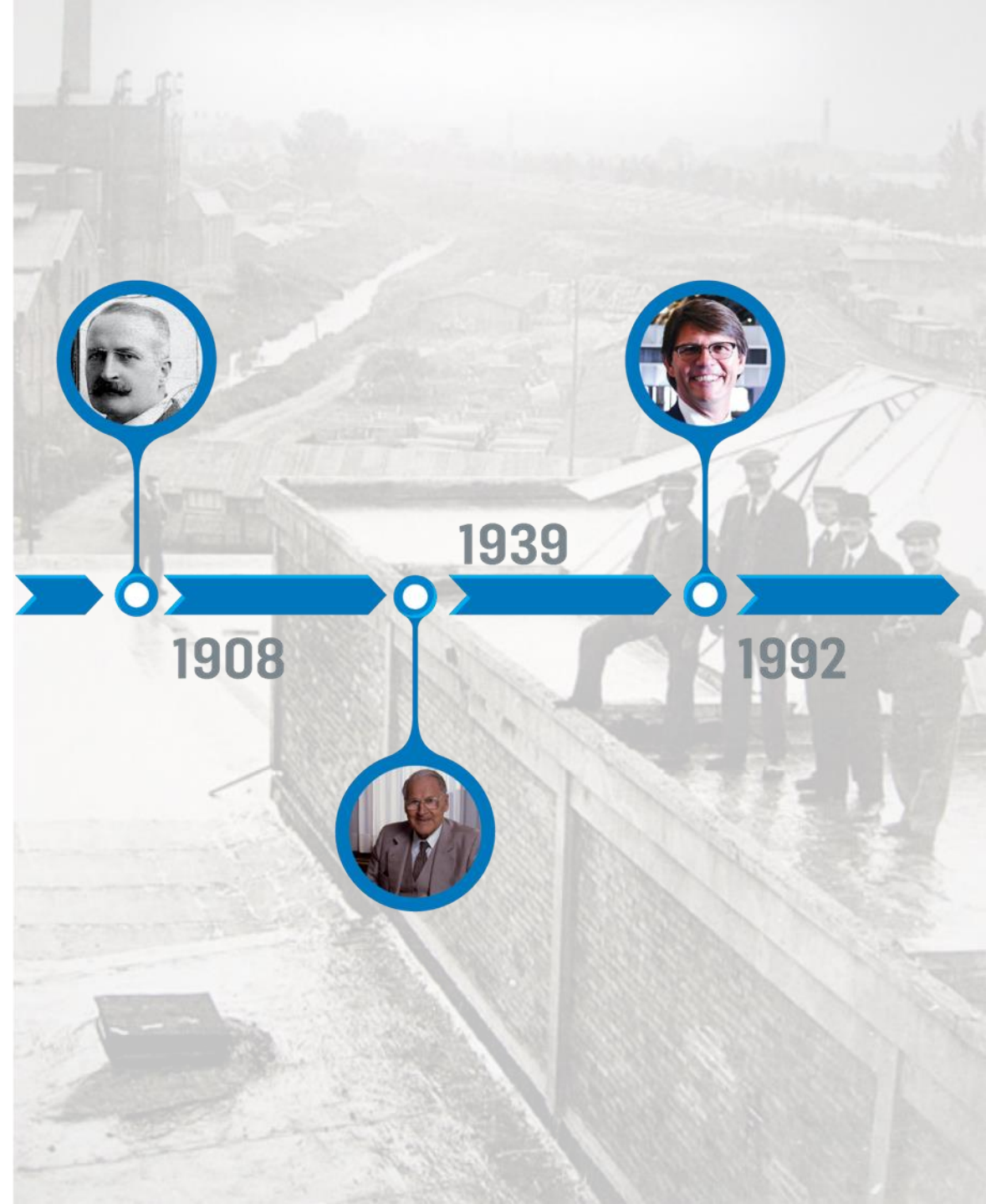
### Pierre Geisen (Charles' son) assumes leadership

- Metal foil protected bitumen membranes developed
  - *Life cycle of membranes extended*

1992

### Pierre-Etienne Bindschedler (great-grandson of Charles Geisen)

- 3<sup>rd</sup> CEO in company history



# WHO WE ARE TODAY



A global company that manufactures and markets:

Roofing

Waterproofing

Wall Systems

Related Materials



RESISTO

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# WHO WE ARE TODAY

- Modified bitumen
  - *SBS (rubber)*
  - *APP (plastic)*
- Liquid-applied membranes (decks, roofs, & more)
  - *PMMA & PMA (catalyzed acrylics)*
  - *PU*
- Synthetic membranes
  - *PVC (synthetic thermoplastic)*
- Reflective roof coatings
  - *Acrylic*
  - *Silicone*
- Sealants and adhesives
  - *Ultra low VOC STPE*
  - *Bituminous*
- Insulation
  - *Polyiso*
  - *XPS*
- Insulation adhesives
  - *PU*
- Vegetated systems



## BUILDING ENVELOPE PROTECTION



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The image shows two construction workers on a flat roof. One worker is wearing a white shirt, a white hard hat, and a safety harness. The other is wearing a grey shirt and a blue hard hat. They are standing on a roof with a blue metal curb and a stack of blue roof panels. The background shows a cityscape with various buildings under a clear sky. A large blue rectangular overlay covers the right side of the image, containing the text 'SBS ROOFING TECHNOLOGY & DESIGN' in white, bold, sans-serif font.

# SBS ROOFING TECHNOLOGY & DESIGN

# What Do All of These Have in Common?



# What Do All of These Have in Common?

They are  
redundantly  
engineered,  
not value-engineered,  
for  
**PROTECTION!**





# Low-Slope Roofing Fact!

Which low-slope roofing product category was the **ONLY** product category to gain volume, and market share, in 2020?

- EPDM
- TPO
- PVC
- SBS-modified bitumen
- APP-modified bitumen



ROOFING



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# Low-Slope Roofing Fact!

Which low-slope roofing product category was the **ONLY** product category to gain volume, and market share, in 2020?

- **SBS-modified bitumen**



ROOFING



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# Low-Slope Roofing Fact!

Which low-slope roofing product category was the **ONLY** product category to gain volume, and market share, in 2020?

- **SBS-modified bitumen**

## WHY ?



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ROOFING



# WHY?

- New construction was down in 2020
- Renovation/reroofing was strong
- Which projects are typically value-engineered?
  - New construction or Renovation?



## ROOFING



RESISTO.

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DERBIGUM

A photograph of three construction workers on a rooftop, overlaid with a semi-transparent blue filter. The workers are wearing hard hats and safety harnesses. One worker is standing on the left, another is leaning on a ledge in the center, and a third is standing on the right. The background shows a cityscape with various buildings. The word "HISTORY" is written in white, bold, uppercase letters across the center of the image.

# HISTORY

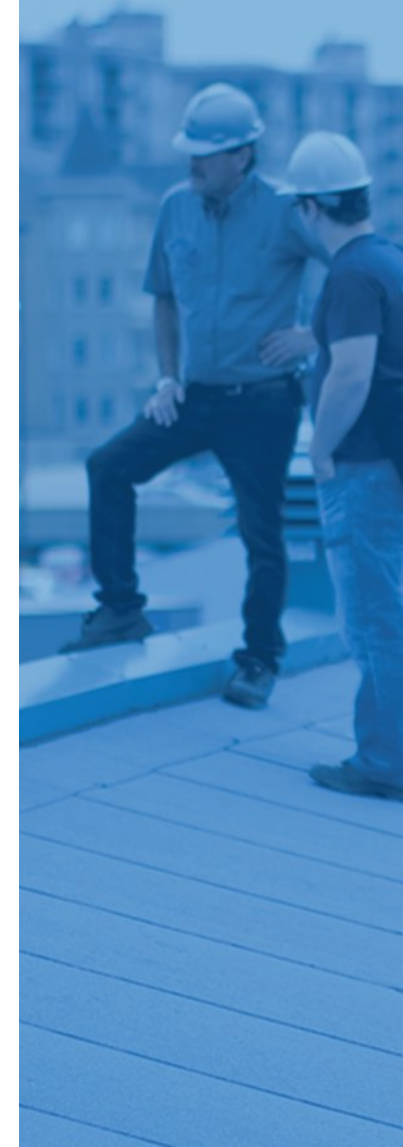
# Shift in Design & Construction

## Historical Roofs

- Slope 1-to-3-inch slope
- Little equipment on roof
  - *Vents, AC units, etc.*
- High mass
  - *Concrete & wood*
  - *Limited movement*
  - *Traditional roof membranes lasted decades*

## Modern Roofs

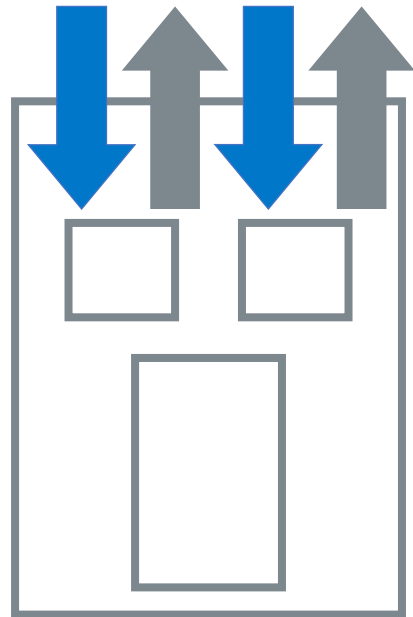
- Commonly 1/4-to-1/2-inch slope
- More equipment & traffic
- Lightweight steel construction
  - *Low mass*
  - *More deck movement*
- Increase in insulation (R-Value)
  - *Faster “aging” of roof membrane*



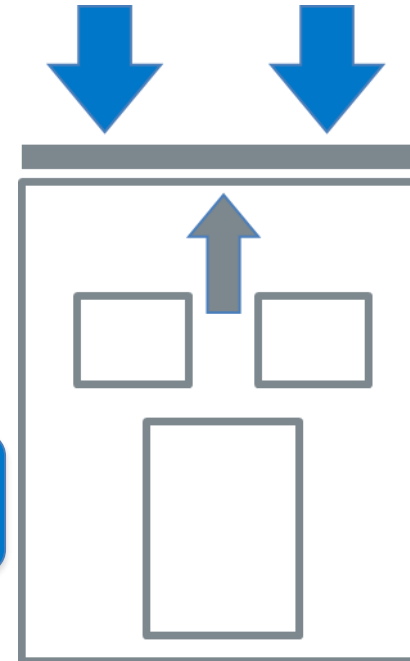
# Heat Transfer

OLD SCHOOL ROOF MEMBRANE TEMPERATURE	
DAYTIME	120°F
NIGHTTIME	60°F
<b>TEMPERATURE DIFFERENTIAL (<math>\Delta T</math>)</b>	<b>60°F</b>

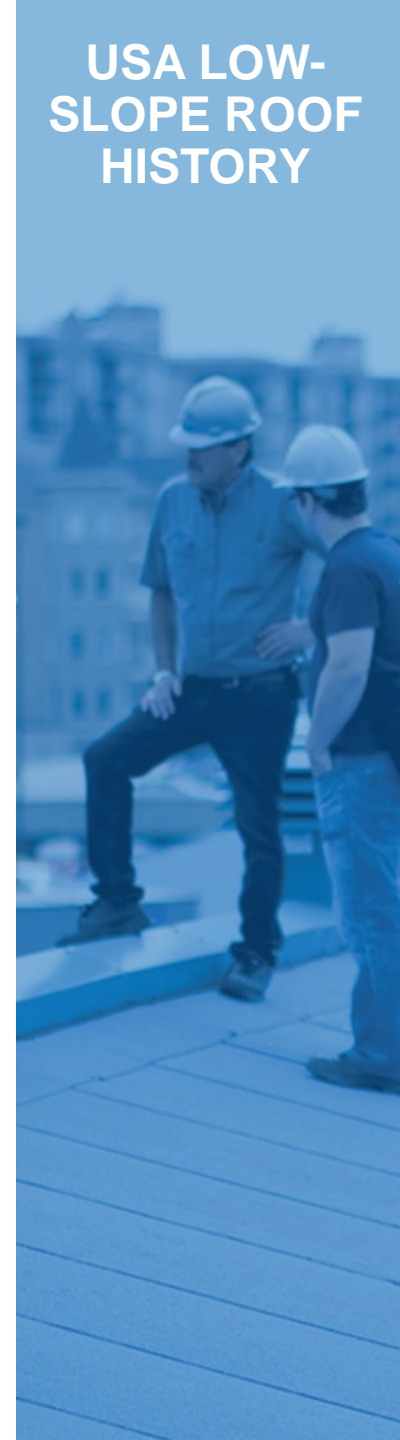
MODERN ROOF MEMBRANE TEMPERATURE	
DAYTIME	170°F
NIGHTTIME	50°F
<b>TEMPERATURE DIFFERENTIAL (<math>\Delta T</math>)</b>	<b>120°F</b>



Limited Insulation  
( $R \leq 3$ )

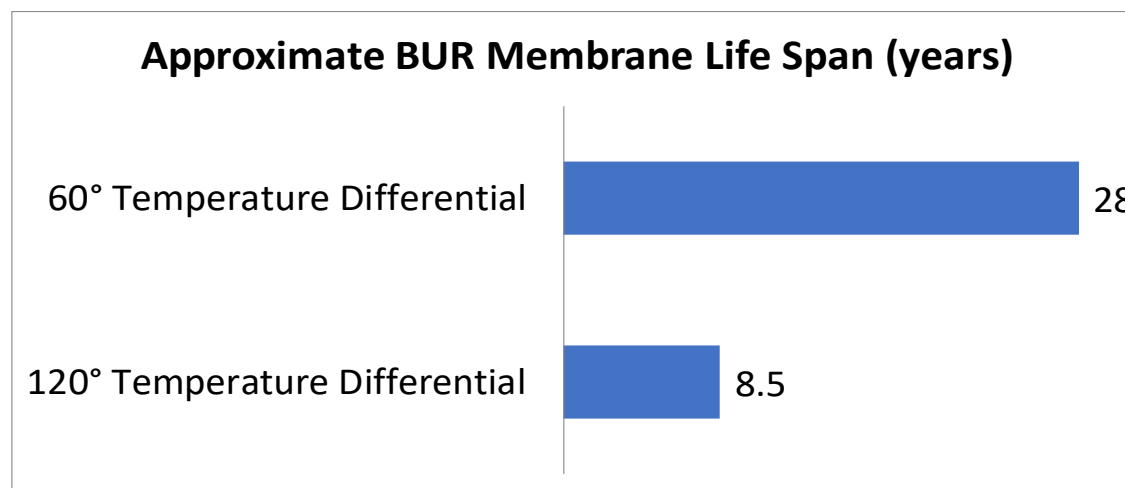


Insulation  
( $R \geq 20$ )



# Very Simply, Higher Heat + Oxygen = Reduced Membrane Life Expectancy

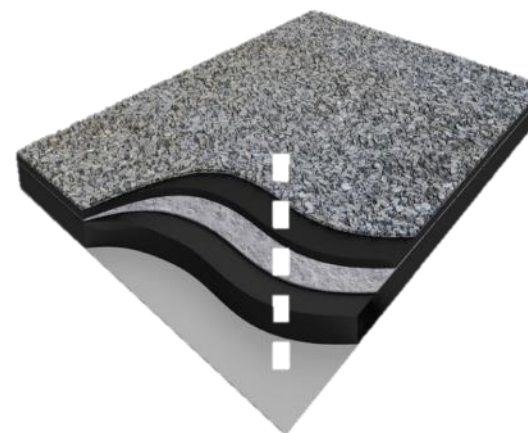
- Arrhenius equation
  - *For every increase of 18F (10C) = 2X aging (reaction) rate*
- With higher heat load, higher performing materials needed
- Historical data for BUR below





# Modified Bitumen (SBS & APP) Enters The Market (1970's)

- Modifiers added to asphalt to improve performance
- Reinforced membranes
  - *Polyester, fiberglass, composites*
- Factory controlled, watertight membranes
- Typical multi-ply mod bit system > 200 mils
  - *Commonly up to 250 mils thick (5 dimes thick)*



1970

2021



# One Dime or Five Dimes?



- **Synthetic singles ply membranes are typically 45 to 60 mils thick.**
  - One dime = 50 mils (1.3 mm)
- **Modified bitumen, as mentioned is 200 to 250 mils thick**
  - Four to five dimes thick
  
- **That's my 50 cents on that topic!**

# Advantages of SBS-Modified Bitumen

- High elongation & recovery
- Multiply PROTECTION - redundancy
- Excellent low-temperature flexibility
- Superior long-term aging
- Installation options





# Initial Cost vs. Ownership Cost

# SBS COMPOSITION

The image shows three construction workers on a flat roof. They are wearing hard hats and safety harnesses. The roof surface is covered with a grey, textured material, likely SBS-modified asphalt. In the background, there are several multi-story buildings under a clear sky. The entire image is overlaid with a semi-transparent blue filter. The text 'SBS COMPOSITION' is centered in white, bold, sans-serif font.

# Components of SBS Membrane

A background image of three construction workers in hard hats and safety harnesses on a flat roof. The image is overlaid with a blue tint and large blue numbers 1, 2, and 3, each corresponding to a component of an SBS membrane.

**1**  
Modified  
Blend

Reinforcement  
**2**

Surfacing  
**3**

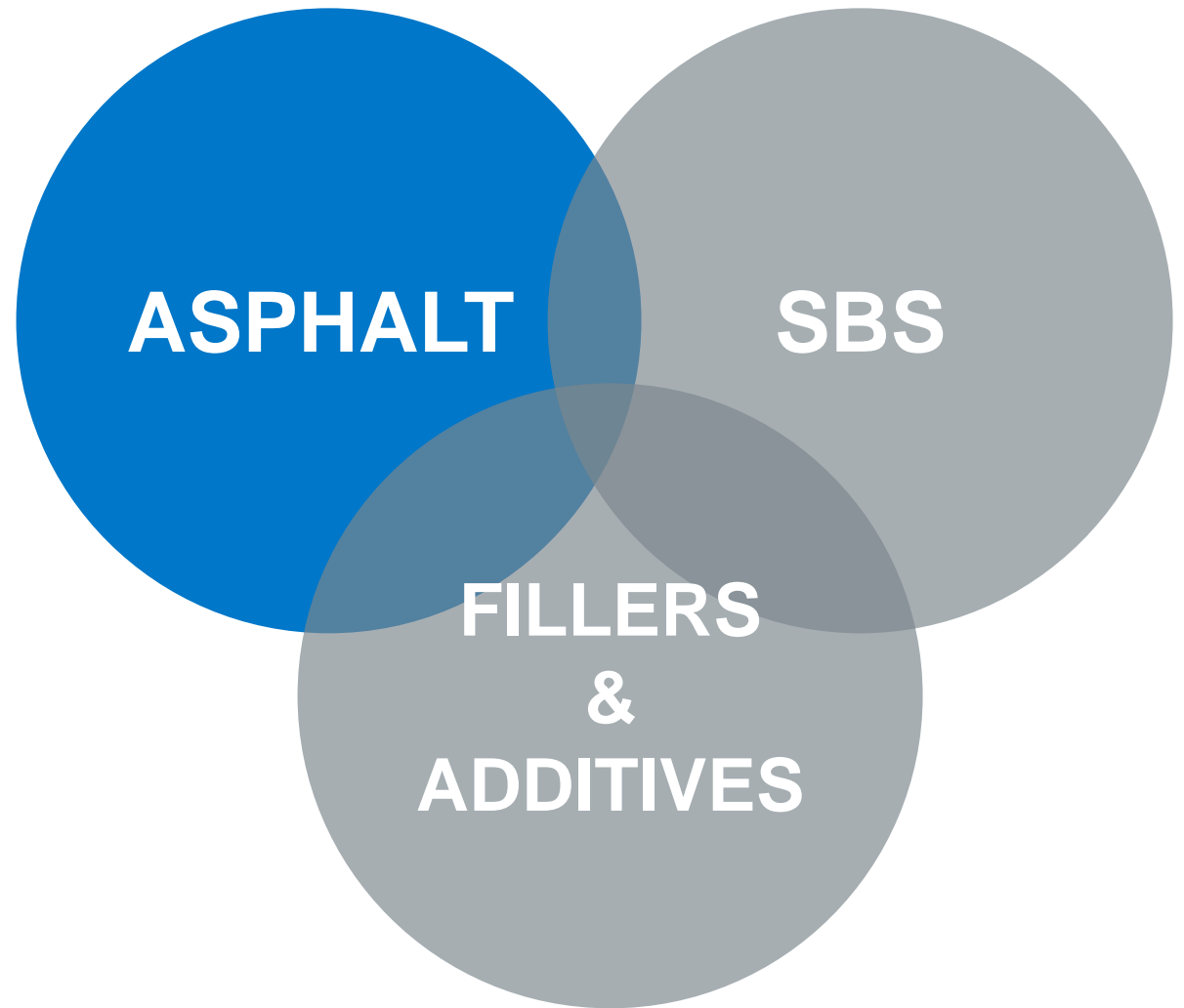


Proven Formulae



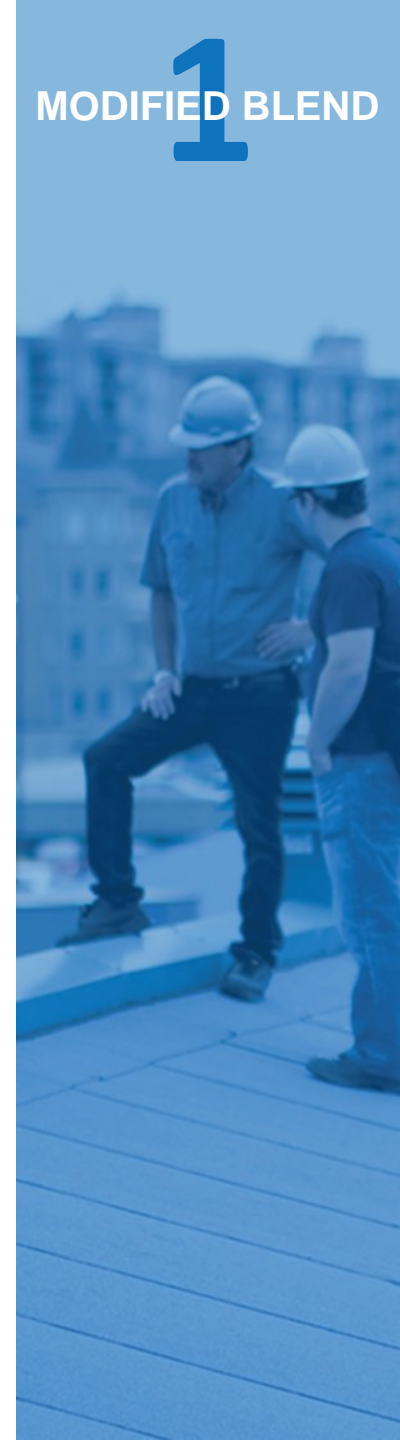
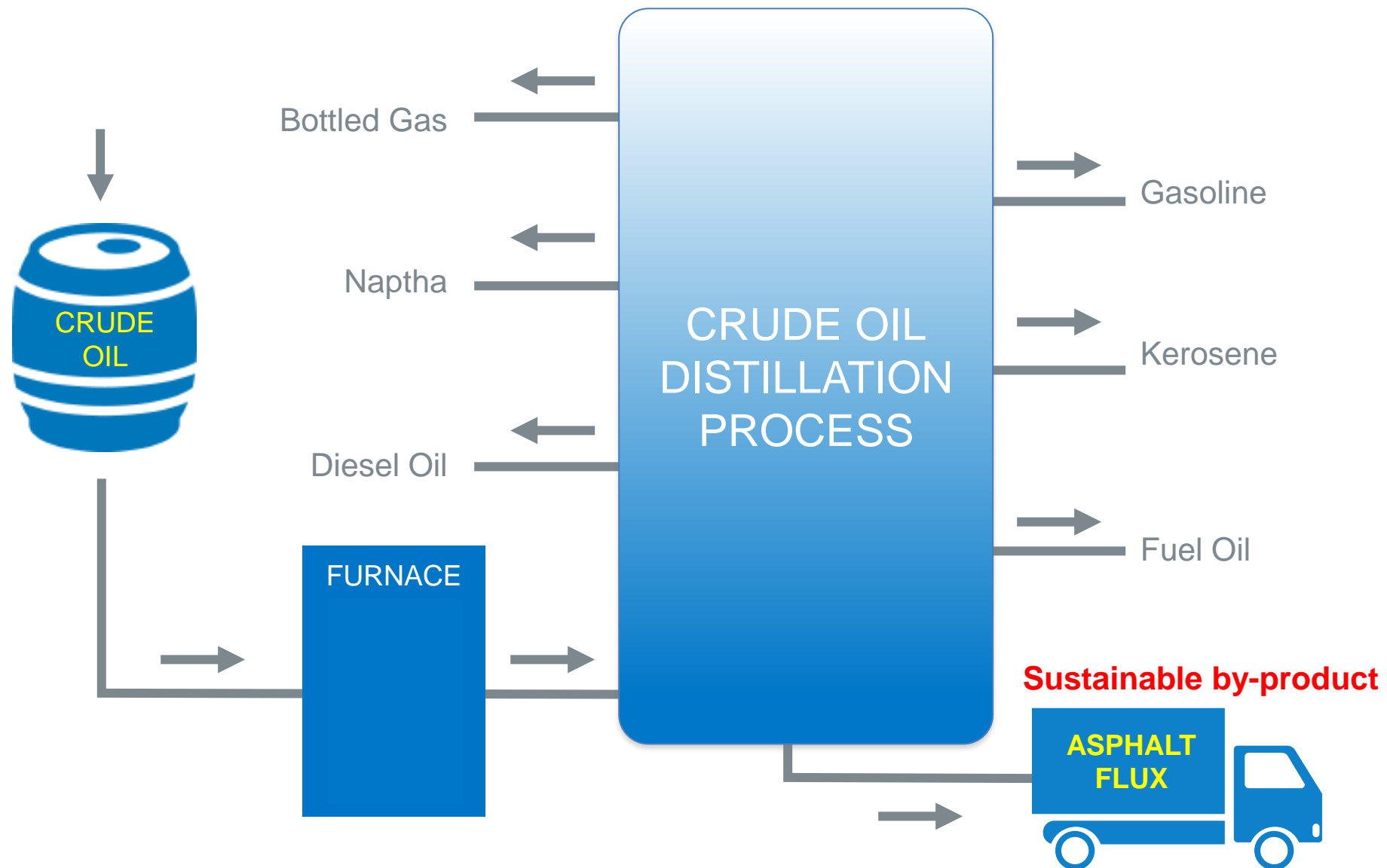
The "Other" Formulae

# What Ingredients Comprise Modified Bitumen Blend?





# Asphalt is the Key Ingredient

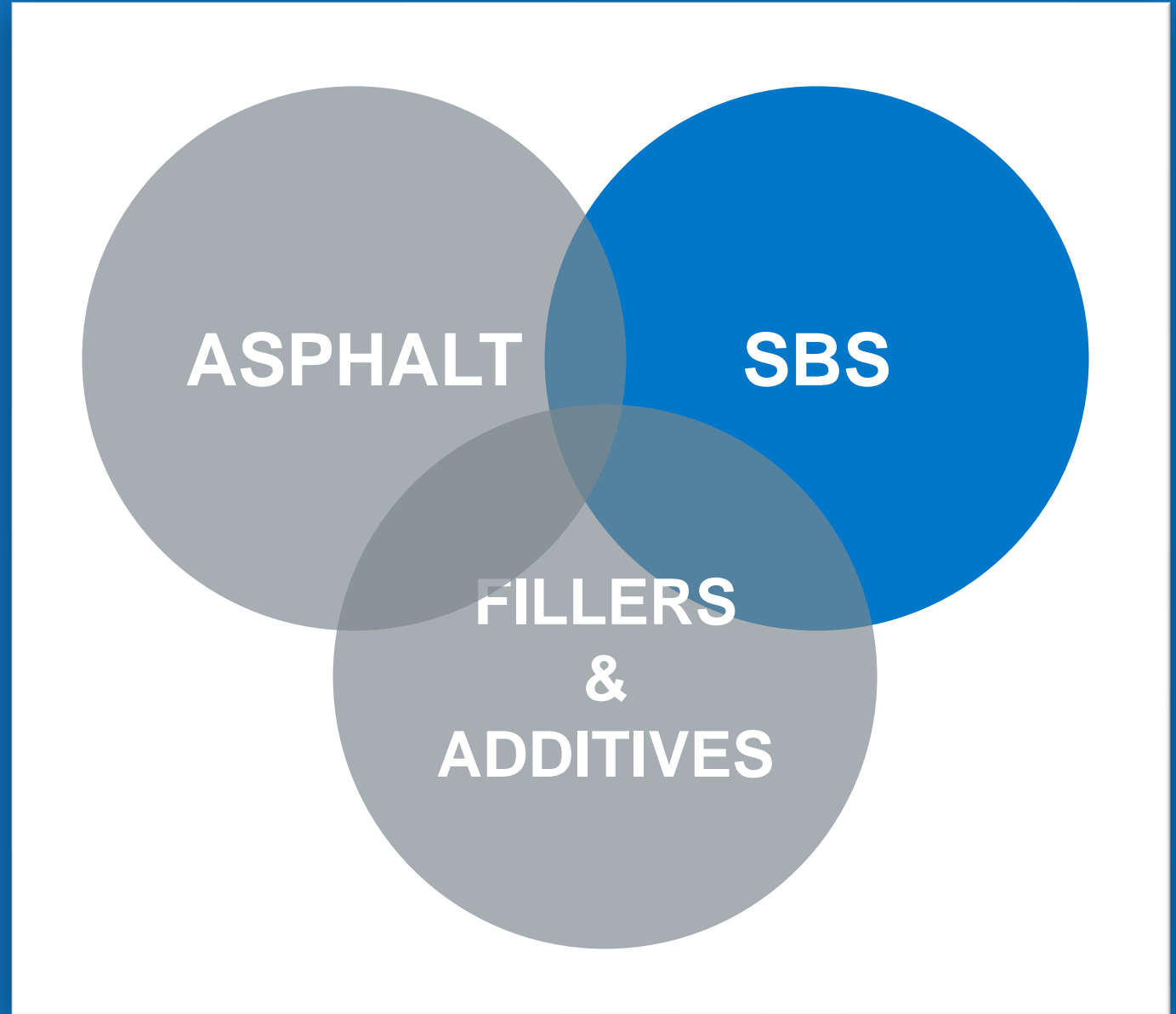


# Asphalt is the Key Ingredient

- Consistent and uniform asphalt sourcing is essential
  - *Chemistry counts!*
  - *Must be compatible with polymer type*



# What Ingredients go into a Modified Bitumen Blend?



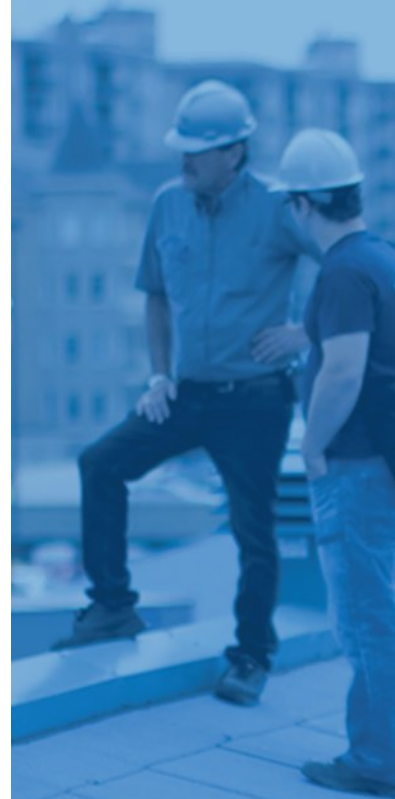
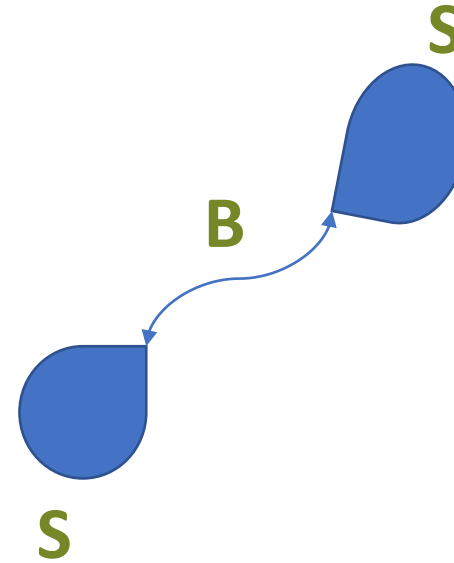
# The SBS Block Copolymer: Styrene-butadiene-styrene

## Polystyrene

- Plastic component
  - Provides high-temperature properties

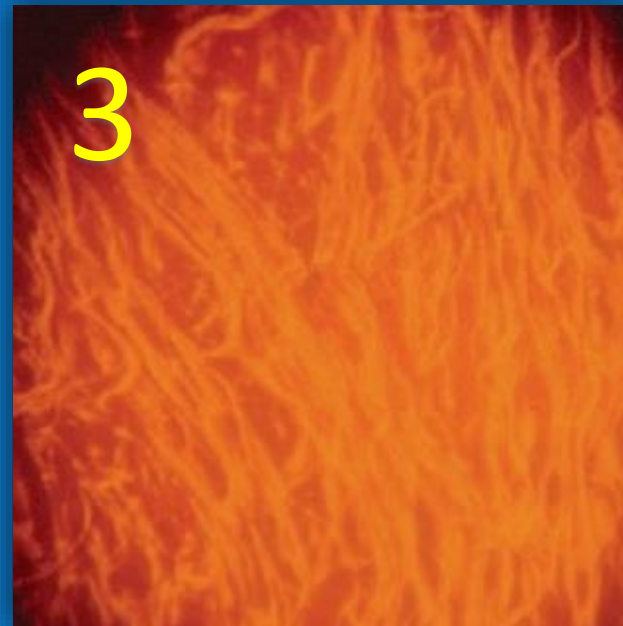
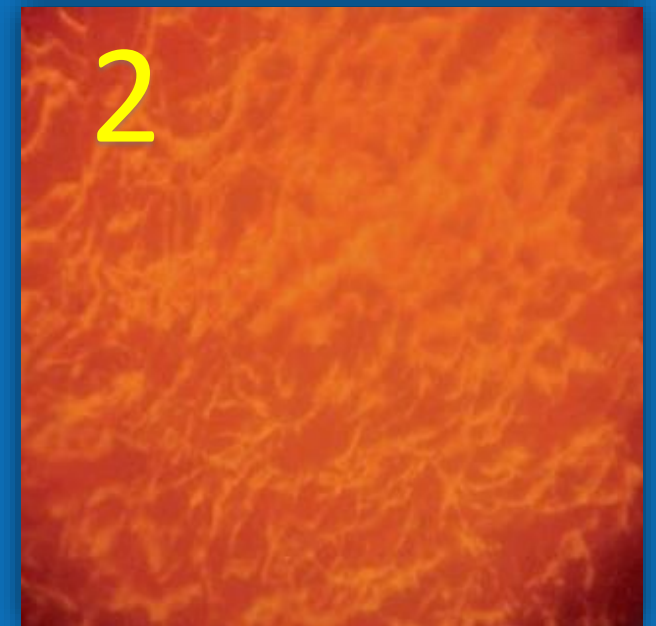
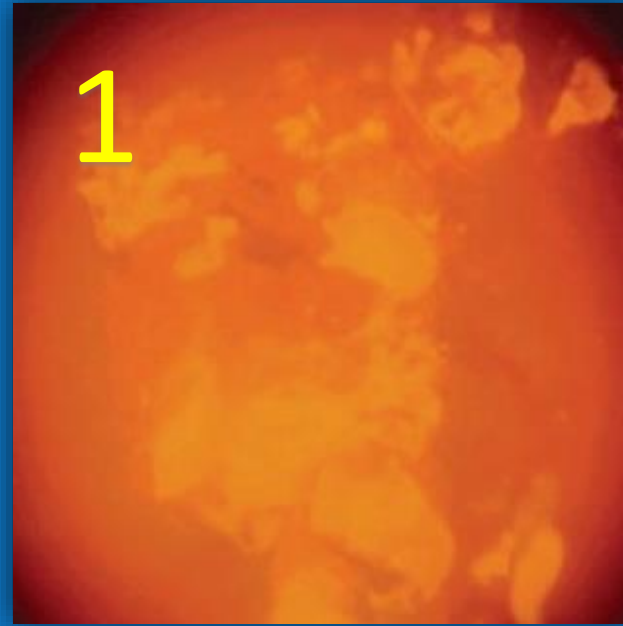
## Polybutadiene

- Rubber component
  - Provides flexibility at low temperature



# Phase Inversion: Asphalt + SBS

- Asphalt assumes the properties of the SBS
  - *“Acts” like rubber, not like the bitumen*
- The asphalt (bitumen) blend must be able to maintain the rubber properties
  - *Decades of life of the roof*

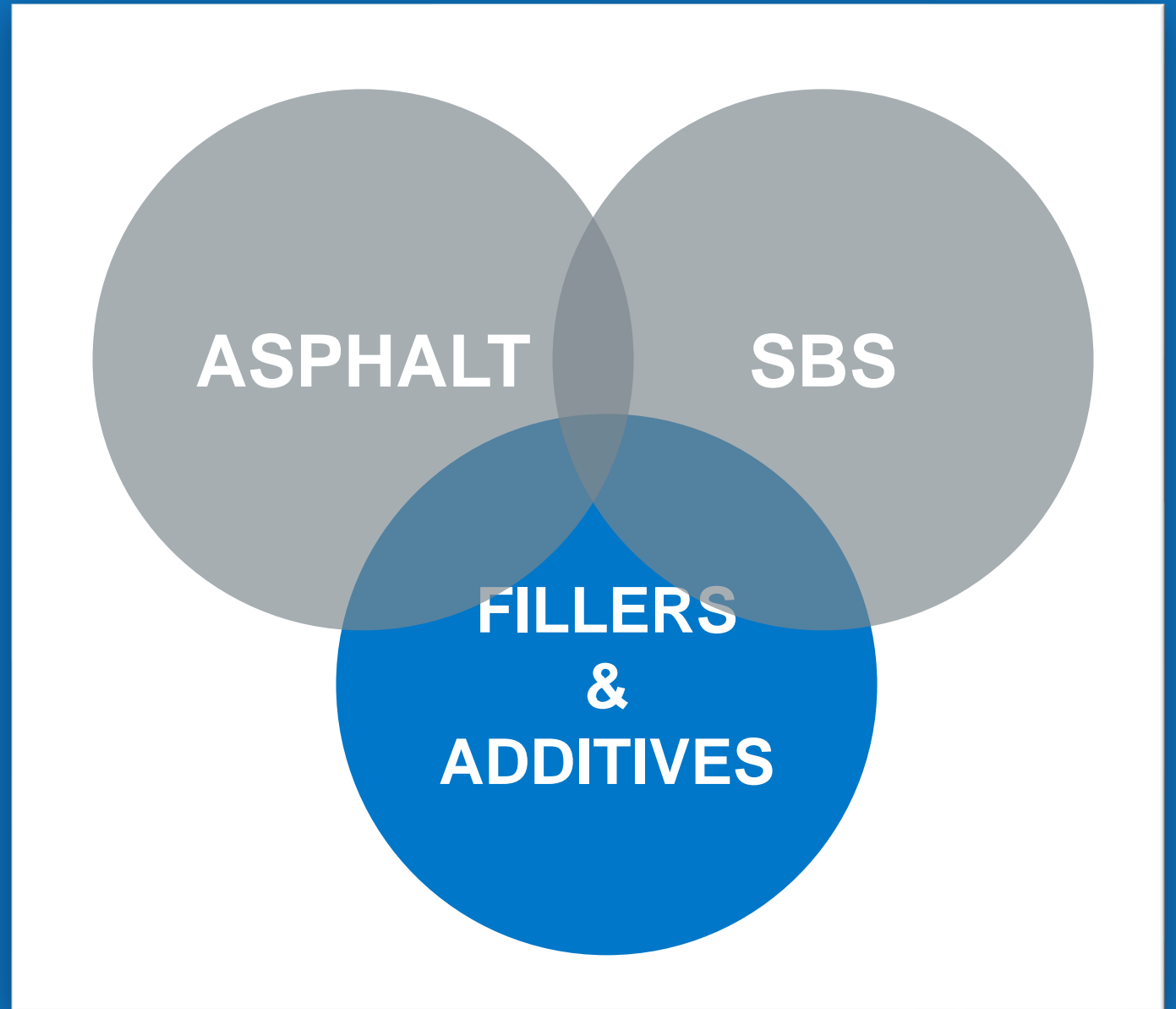


# Effects of Bitumen Modification with SBS

- High elongation
  - *Can stretch*
- Elasticity
  - *Recovery from both elongation & compression forces*
- Excellent temperature resistance & properties
  - *Flexibility in most all conditions*
  - *Enhanced high-temperature resistance*
- Improved long-term aging/durability
  - *Products that are historically proven to outlast their “warranty”*



# What Ingredients go into a Modified Bitumen Blend?

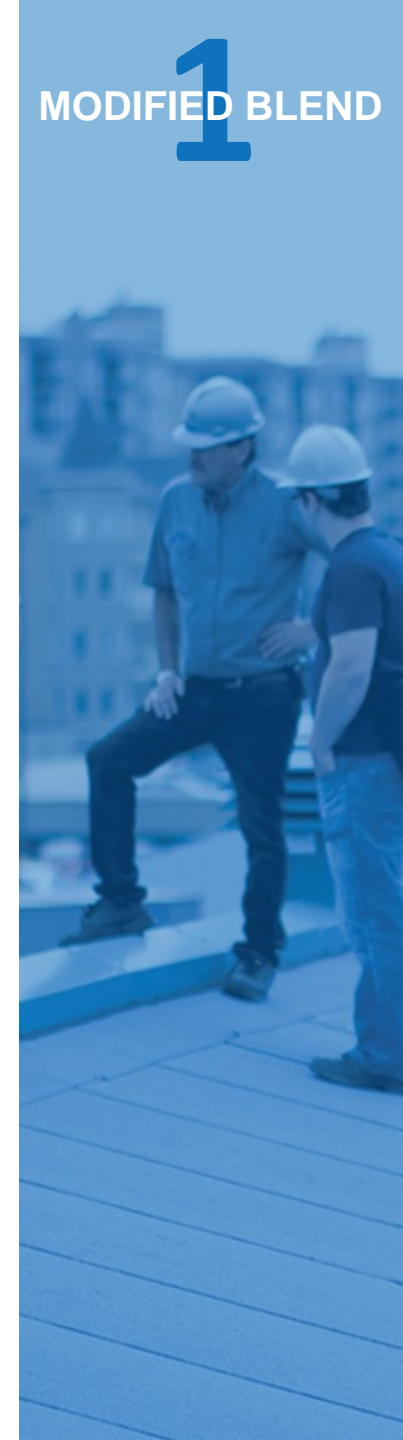


# Fillers & Additives

Must be inert, i.e., no negative impacts on the formulation.

Limestone, dolomite, etc.:

- Absorbs excess oils from bitumen
  - Improves fire resistance
  - Lowers cost
- Graphite and proprietary minerals:
    - Increase fire performance

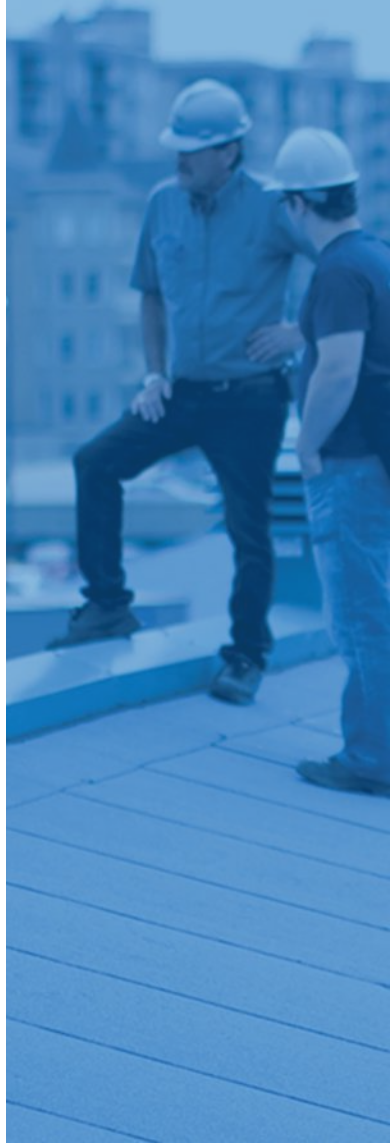




# Not All Blends & Products are the Same!

- Different asphalt sources and quality
- Different type and quantity of SBS polymer
- Different type and quantity of filler
- Blending time and temperature

**“Know how” and consistency is critical to long-term performance!**



# Components of SBS Membrane

**1**  
Modified  
Blend

**2**  
Reinforcement

**3**  
Surfacing

# Why Use Reinforcement?

## Purpose

- Carrier for the waterproofing component; SBS-modified bitumen
- Lends certain mechanical properties

## Benefits

- Dimensional stability
- Fastener retention
- Puncture resistance
- Tear strength
- Tensile strength
- Fire resistance



# Reinforcement Types

## ASTM 6163 – Fiberglass

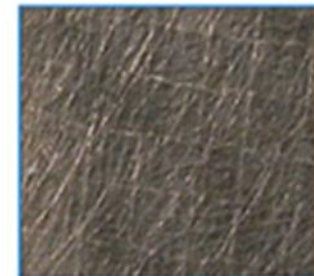
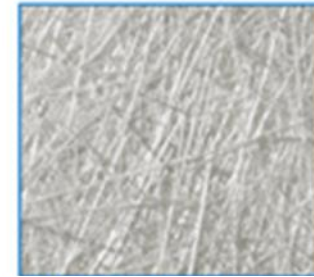
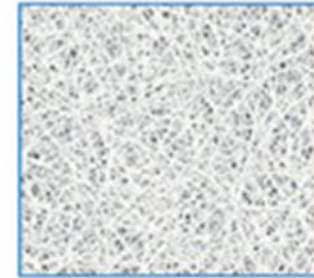
- Types I, II and III

## ASTM 6164 – Polyester

- Types I, II and III

## ASTM 6162 - Combination/hybrid mats

- Types I, II and III



# Fiberglass vs. Polyester

## ■ Fiberglass

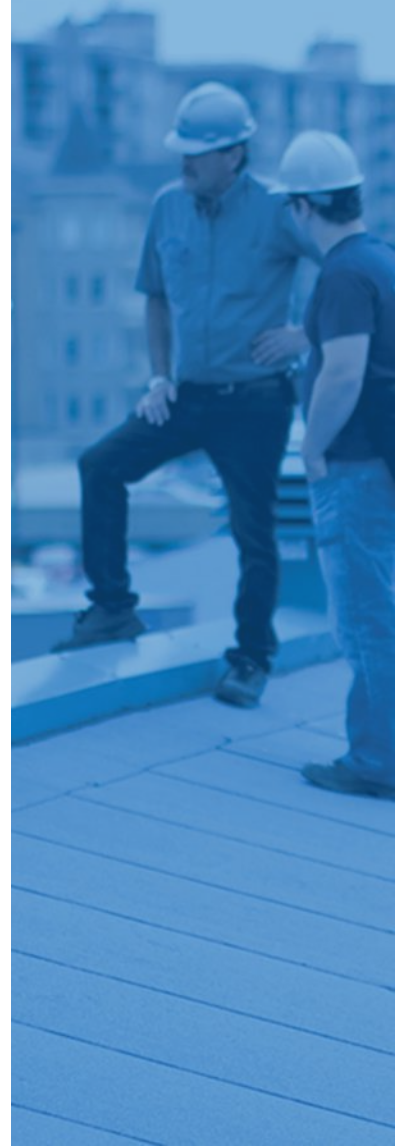
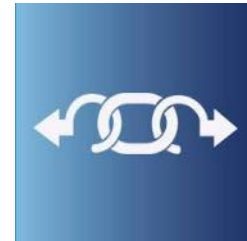
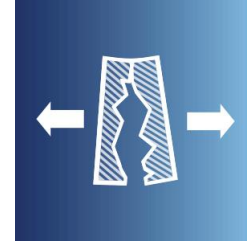
- *Relatively low elongation*
- *Inherently dimensionally stable*
- *Inherently fire resistant*

## ■ Polyester

- *Very tough and resilient*
- *High puncture, hail, and tear resistance*
- *Relatively high elongation*

## ■ Composite (glass+polyester)

- *Wide disparity in properties and construction*
- *Fully dependent on design of fabric*

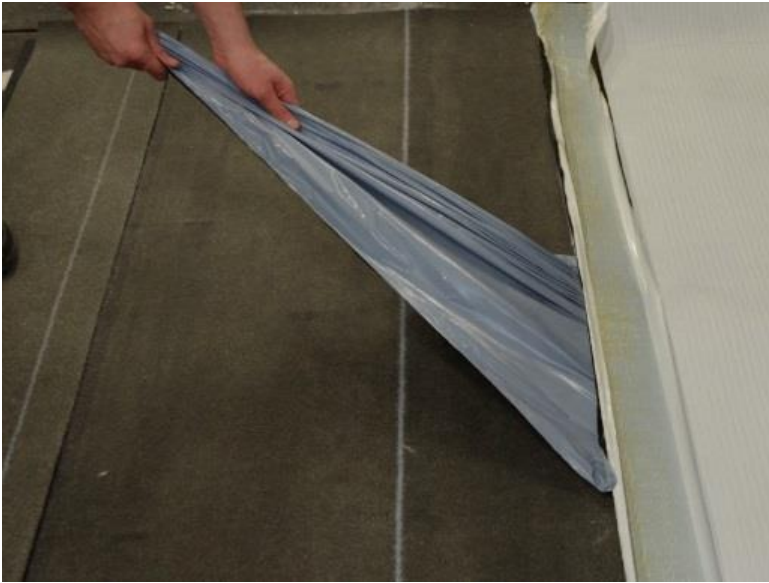


# Components of SBS Membrane

**1**  
Modified  
Blend

**2**  
Reinforcement

**3**  
Surfacing



## Top or Bottom Surfaces

- Silica or other mineral
- Polyolefin burn-off film
- Release film (self-adhesive)

# Top Surfacing

## Ceramic-Coated Granules

- Same granules as shingles
- Variety of color options

## SG Granules

- Highly reflective “cool roof” option
  - High SRI rating
  - Smaller, lighter aggregate
  - Proprietary 3M® technology

## ECO<sub>3</sub> Granules

- Smog Reducing Granules
  - Proprietary 3M® technology
  - **20,000 ft<sup>2</sup> = 120 trees of smog reducing equivalent**



WHITE



SG



ECO<sup>3</sup>



GREY



TAN



TV ALU



BLACK



BROWN



DARK TAN



SIENNA



LIGHT GREY



RED



GREEN



LIGHT BLUE



# APPLICATION METHODS

The image shows three construction workers on a flat roof. They are wearing hard hats and safety harnesses. The worker on the left is standing with hands on hips. The worker in the middle is leaning forward. The worker on the right is standing and looking towards the others. The roof has several vents and a low parapet wall. The background shows a cityscape with buildings. The entire image is overlaid with a semi-transparent blue filter.

# APPLICATION METHODS

HEAT-WELDED



COLD ADHESIVE



MECHANICALLY-FASTENED



SELF-ADHESIVE



# Heat Welded

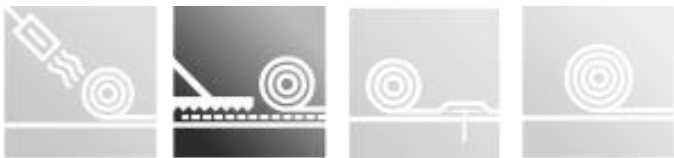
- North American experience since 1970s
- Theoretically impossible to improve inter-ply bond strength
  - *It is welded or fused together*



APPLICATION  
METHODS

# Cold Adhesive

- Bonding characteristics comparable to heat welding
- “Cutback” adhesives
  - *Asphalt cut with solvents*
- Ultra-Low VOC adhesives
  - *Moisture-cured elastomer*
  - *No solvents or isocyanates*
  - *Additional layer of elastomeric membrane*
  - *Install over any occupied space*
    - Schools, hospitals, offices, etc.



APPLICATION  
METHODS

# Mechanically Fastened

- Mechanically fastened into deck
  - *Fastened inside lap*
- Lap is heat welded or cold applied
- Faster installation
- Meets uplift requirements in all wind zones



APPLICATION  
METHODS



# Self-Adhesive

- Eliminates
  - *Exposure to open flames*
  - *Potential fume concerns*
- Specifically-formulated primer
  - *Essentially “contact” adhesives*
  - *Follow guidelines*
- Temperature dependent
  - *Solar heating is a plus at lower temperatures*
  - *Heat welded cap sheets allow SA base sheets in cool temps*



APPLICATION  
METHODS





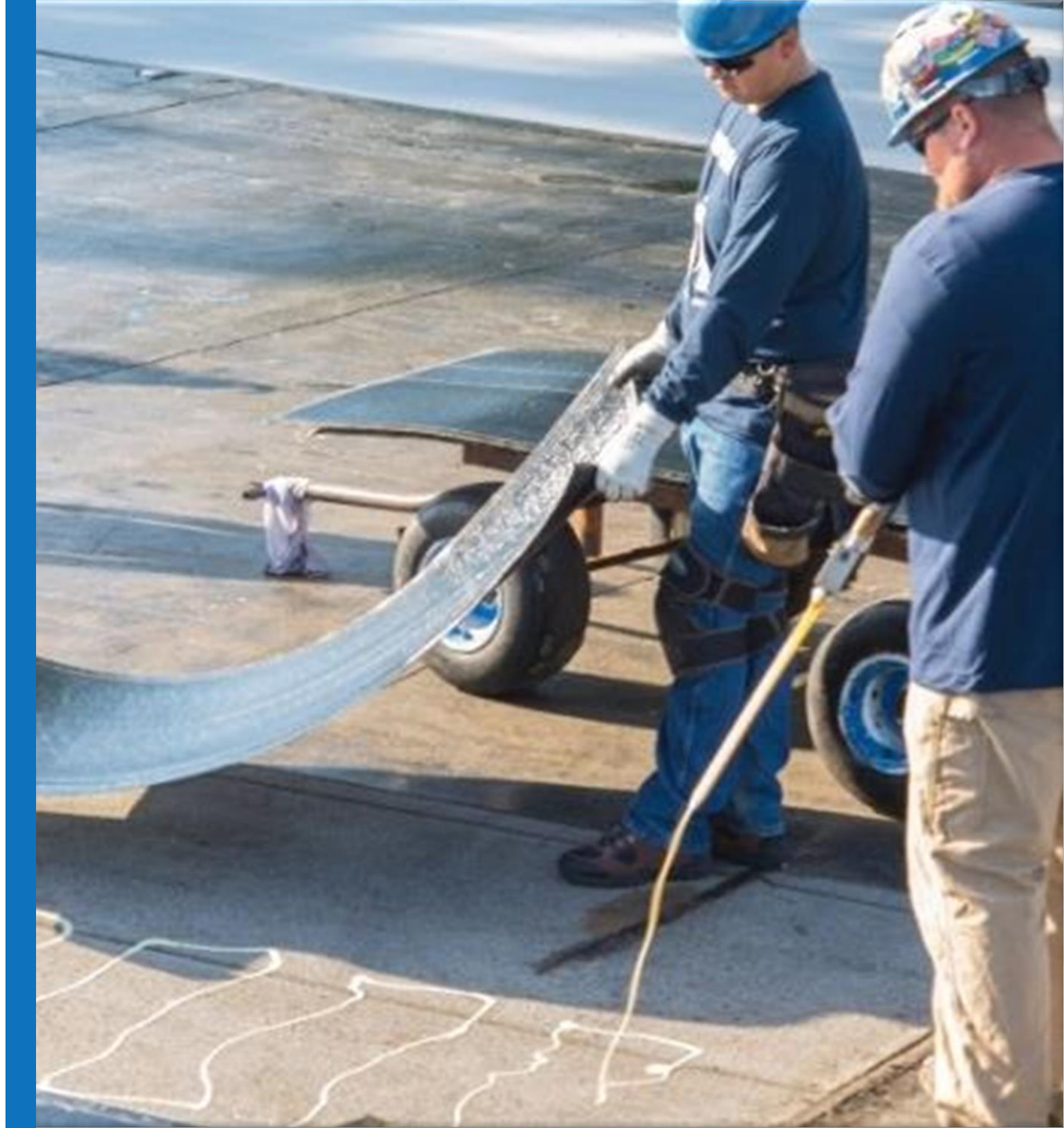
# RECENT ADVANCEMENTS IN SBS-MODIFIED BITUMEN

# Laminated Boards\*

Base sheet laminated to various cover boards

- Better QC
  - *Fully-bonded base layer*
- Labor savings estimated at 35%
- Partially self-adhered “flame blocking” side laps for flame safety during heat welding

\* Laminated boards - base sheet adhered to cover board (other options available)





# Ultra-Low VOC Colply EF Adhesives and Cements

May be applied to any  
occupied space\*

- No toxicity or odor



# NEO Membrane

Patented in 2002 & produced in Europe since 2009

- TPU (thermoplastic polyurethane) modified bitumen\*
  - *Produced with canola oil, displaces up to 75% of “bitumen”*
  - *Lighter weight than conventional SBS-modified membranes*
  - *Inherently resistant to UV*

\* TPU modified bitumen –  
(base and cap plies available)



# Review

- Long history of asphalt in waterproofing
  - *> 40 years*
- Building design and needs have evolved
  - *High R-value, low mass construction*
- SBS-Modified Bitumen
  - *Better able to withstand roofing conditions*
    - High elongation & elasticity
    - Broad service temperature range
    - Application options
    - Multi-ply PROTECTION

**All of this makes  
SBS membranes the  
“go-to” option for  
projects where  
longevity,  
redundancy and  
durability are  
critically important!**

# FEFPA's Roof System Needs?

Climates such as Florida, and conditions encountered on FEFPA roofs...

- High heat
- High rainfall
- High humidity
- High wind
- High foot traffic
- High abuse

... need roof systems that provide long-term **sustainable PROTECTION.**



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## ROOFING





**QUESTIONS?**