



Trumbull®

**HOT ASPHALT BUILT-UP ROOFING SYSTEMS
MORE LAYERS MEANS MORE PROTECTION**

INNOVATIONS FOR LIVING®



**ADVANCED TECHNOLOGY FROM
OWENS CORNING™ TRUMBULL® ASPHALT**

**TruLo® Lo Odor and TruLo® Max asphalt—
raising the roof on asphalt performance.**

TruLo Lo Odor is formulated with patent-pending technology to reduce odor; while TruLo Max uses dual-technology chemistries to reduce both fumes and odor. And because neither has to sacrifice performance in the process, you're guaranteed asphalt that's strong, durable and more technologically advanced than standard asphalt.

**ASPHALT DOESN'T HAVE TO BE
KNOWN FOR ITS ODOR**



Odor has always been a primary inconvenience when working with asphalt. Particularly when you're talking about sensitive jobs such as restaurants, schools or hospitals, where odors are especially unwelcome. As a result, those jobs need to be done off-hours to avoid complaints, leading to scheduling headaches and overtime pay.

That's why Trumbull® researchers worked to find ways to neutralize asphalt odor without compromising performance. From our high-performing PermaMop® modified roofing asphalt to our TruLo Lo Odor, every asphalt in the Trumbull® product line is now available with our exclusive low-fuming technology.

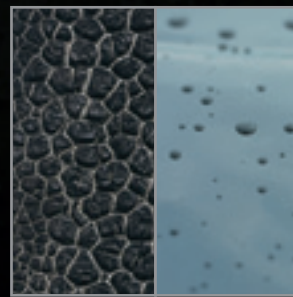
In fact, Trumbull® and the National Institute of Occupational Safety and Health (NIOSH) have measured up to 90% fume reduction at the kettle with the family of low-fuming asphalts from Trumbull®.

MEETING INDUSTRY STANDARDS

We've been manufacturing roofing asphalt for over 80 years—experience we've used to create high-quality asphalt products. We double-check our products for consistent quality, testing them at our on-site plant laboratories and at our Summit, Illinois, tech lab.

Our asphalt products meet ASTM D312 standards, including minimum softening points to help minimize the risk of slippage due to softening point fallback. We also use high-flash-point raw materials to provide added safety, and have widened the spread between EquiViscous Temperature (EVT) and flash point to support application, adhesion and water resistance.

THE OWENS CORNING™ TRUMBULL® PRODUCT LINE



Standard PermaMop®

PERMAMOP® MODIFIED ROOFING ASPHALT



Low-fuming PermaMop® modified roofing asphalt is specially engineered to provide exceptional durability. This makes it an ideal choice for projects in extreme weather areas—whether it's heat, cold or moisture.

PermaMop asphalt is also uniquely formulated so that it can be applied to any roof type, regardless of the slope. It has the softening

point of a Type IV asphalt but with a lower EVT than any standard Type IV. It stays where it's mopped, even on steep-sloped roofing in intense heat.

TRULO® MAX



When compared to other low-odor asphalts and additives, TruLo Max is 55% more effective at reducing odor-causing compounds, and able to reduce up to 90% of fumes at the kettle** by forming a fume-suppressing skim layer on the asphalt's surface. With TruLo Max, you get more science and less smell.

TRULO® LO ODOR



Welcome to the sweet smell of innovation. When compared to other low-odor asphalts and additives, TruLo Lo Odor is 45% more effective at reducing odor-causing compounds.

*PermaMop products should never be heated above 450°F. **NIOSH Study. Kettle temperatures for TruLo Standard Type I-IV asphalt should not exceed 500°F.

Single-ply roofs are more easily torn or penetrated.



BUR has multiple plies to prevent leaks.



Single-ply has only one layer to help prevent leaks.

BUILT-UP ROOFING VS. TRADITIONAL SINGLE-PLY

BUR

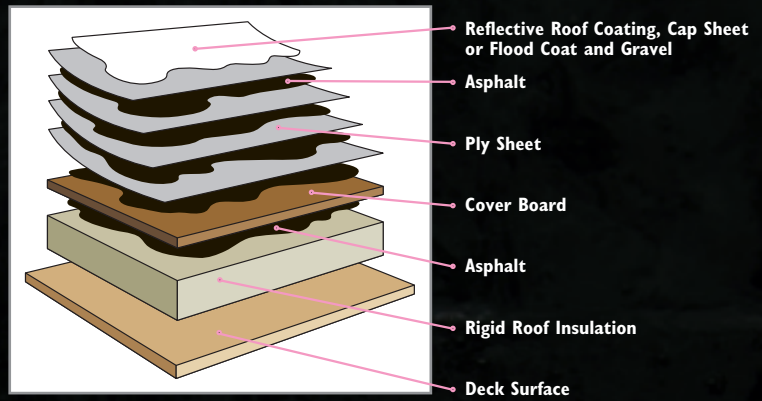
- Multiple layers and glass fiber reinforcement to help prevent leaks
- Multiple layers of hot-applied, water-resistant asphalt
- Difficult to puncture
- Sealed over entire roof area without fasteners
- Limits movement with high-tensile strength
- Easily repaired
- Holds up better in high-traffic areas

SINGLE-PLY

- Single layer to prevent leaks, much of which is not reinforced
- No asphalt (EPDM, PVC, TPO)
- Easily torn or penetrated
- Often laid loose, requiring fasteners
- May allow movement, resulting in elongation
- Difficult to repair
- Not designed for high-traffic areas

WHY DO WE RECOMMEND HOT BUILT-UP ROOFING?

When you design a structure, you expect its roof to keep the interior spaces warm and dry. You expect it to resist exposure to the elements—the everyday and the severe. And you expect that protection to last 20 years. Hot Built-Up Roofing (BUR) using Trumbull® asphalt offers that performance, plus increased durability compared to single-ply roofing. That's why Owens Corning Roofing and Asphalt, LLC, recommends it as the best choice for commercial roofing applications.



THE BENEFITS OF BUILT-UP ROOFING

A Built-Up Roof is a multi-layer, low-slope roof consisting of a base deck of metal, plywood or concrete, followed by a layer of rigid roof insulation, and covered with alternating layers of roofing felt and hot-mopped asphalt. This outstanding combination of high-tensile strength felt and water-resistant asphalt roof system provides a strong, long-lasting barrier of protection for your roof.

When it comes to low-sloped roofs, BUR is by far the best choice:

- The strength to stand up to the elements
- The durability to stand up to the ultraviolet rays of the sun
- The proven, advanced technology of Owens Corning™ Trumbull® asphalt

LONGER SYSTEM LIFE

The Owens Corning™ BUR system contains multiple layers of glass fiber reinforcement—more reinforcement than is found in many single-ply systems. This greater reinforcement provides longer system life.

LIMITED ROOF MOVEMENT

All roofs expand and contract. Single-ply roofs respond with elongation. Over time, these systems lose their elasticity, resulting in buckling, ridges and splits. An Owens Corning™ Built-Up Roof limits movement with high-tensile strength—more than the recommended 200 lbs./sq. in. The increased strength means the potential for fracturing is basically eliminated.

SUPERIOR WATER RESISTANCE/LESS OPPORTUNITY FOR LEAKS

Single-ply membranes only offer one chance at preventing a leak. Owens Corning™ BUR systems offer multiple layers of reinforcement, providing multiple opportunities to keep moisture out. The multiple plies are fused together using hot-mopped asphalt to create a monolithic barrier.

Because traditional single-ply systems are laid loose, they require ballast or fasteners to stay in place. Ballast increase structural load and can be blown off by strong winds. Fasteners create stress points and additional opportunities for moisture penetration.

But with BUR, every inch is securely adhered over the entire roof area, eliminating the need for ballast or fasteners.



A PROVEN TRACK RECORD

Over the years, Built-Up Roofing has earned a great reputation with building owners, architects, engineers, roofing product manufacturers and roofing contractors. It's not without reason.

The National Roofing Contractors Association (NRCA) have conducted Project Pinpoint Surveys that show Built-Up Roofs have less defects than EPDM systems. And no lap defects, punctures or shrinkage problems were reported for BUR systems.

Built-Up Roofing contractors and their roofers are trained professionals, committed to the BUR industry. They have the experience and ability to build you the best and strongest roof possible, and they choose Owens Corning™ Trumbull® asphalt.

IF YOU'RE GOING TO INVEST IN A ROOF, INVEST IN ONE THAT WILL LAST

The cost of a Built-Up Roofing system is minimal when compared to the cost of potential damage from a poorly installed single-ply roof. Major companies across the country have come to understand that the roof above is critical to protecting the business below.

For more information about Built-Up Roofing and Owens Corning™ Trumbull® asphalt products, including Material Safety Data Sheets (MSDS), visit us online at www.trumbullasphalt.com. Or, contact one of many hot BUR system manufacturers through the Asphalt Roofing Manufacturers Association at www.asphaltroofing.org.

TRUMBULL® ASPHALT FEATURES AND BENEFITS

FEATURES	BENEFITS
Meets ASTM D312	Each shipment meets the physical requirements of the specified roofing grade asphalt
Consistent high flash material	Proper temperature range needed to apply product safely at the EVT; flash points typically 50°F to 75°F higher than the 500°F minimum
Testing in each plant and at Summit, Illinois, laboratory	All Owens Corning™ Trumbull® products are assured to meet ASTM requirements
Experienced staff of degreed chemists	Able to develop custom asphalt blends for special use
Nationwide manufacturing facilities	Convenient, accessible availability from coast to coast
Typical EVT shown on each carton and bill of lading for bulk shipments	Assures proper adhesion, water resistance and application rate
Printed cartons	Clearly identify manufacturer, type, flash point, typical EVT range, production location and production date



TYPICAL BUILT-UP ROOFING SPECIFICATION

FOUR-PLY, GRAVEL-SURFACED FIBER GLASS BUILT-UP ROOF

The following specification is for use over any type of approved non-nailable structural deck and approved non-nailable rigid roof insulation that offers a suitable surface to receive the roof. Poured and pre-cast concrete decks require priming prior to application of hot asphalt.

This specification should not be used directly over poured or pre-cast gypsum or lightweight insulating concrete fills. Decks and/or substrate must be designed and installed to allow proper drainage to prevent water damage.

Trumbull® asphalt is always recommended and will be used as supplied, with the following information accompanying each palette of cartons[†] (or bill of lading for bulk asphalt):

- ASTM type asphalt
- Typical flash point
- Manufacturing plant
- Typical EVT range at 125 cps and 75 cps
- Manufacturing date

This material will comply with ASTM D312 specification for Built-Up Roofing asphalt. Selection of asphalt types should follow the guidelines found in ASTM 6510.

Materials per 100 sq. ft. of roof area

FELTS

Fiber glass felts 4 plies

ASPHALT (INTERPLY): TRUMBULL® LOW-FUMING ASPHALT

INCLINE PER FOOT	ASPHALT	MINIMUM WEIGHT
¼"–6" (7 to 152 mm)	200°F, Type III, Steep or 220°F, Type IV, Special Steep	92 lbs. (42 kg)
¼"–6" (7 to 152 mm)	PermaMop®	92 lbs. (42 kg)

SURFACING

Flood Coat of Asphalt 60 lbs. (27 kg)

Gravel 400 lbs. (181 kg)

Slag 300 lbs. (136 kg)

[†]Always refer to the system manufacturer's recommended type of asphalt to be used for any given application.

PHYSICAL REQUIREMENTS—ASTM D312

	TYPE I		TYPE II		TYPE III		TYPE IV		TEST Methods
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Softening Point (°F)	135	151	158	176	185	205	215	225	ASTM D36
Flash Point (°F)	500	—	500	—	500	—	500	—	ASTM D92
Penetration Units:									
@ 32°F	3	—	6	—	6	—	6	—	ASTM D5
@ 77°F	18	60	18	40	15	35	12	25	
@ 115°F	90	180	—	100	—	90	—	75	
Ductility @ 77°F (cm)	10.0	—	3.0	—	2.5	—	1.5	—	ASTM D113
Solubility in Trichloroethylene %	99	—	99	—	99	—	99	—	ASTM D2042

Asphalts shall be homogenous and free of water and shall conform to these physical properties.

TYPICAL PHYSICAL CHARACTERISTICS FOR TRUMBULL® ASPHALT

	TYPE I		TYPE II		TYPE III		TYPE IV		PermaMop®	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Softening Point (°F)	140	145	165	175	195	205	210	225	215	235
Penetration Units:										
@ 32°F	15	—	12	—	10	—	8	—	12	—
@ 77°F	20	35	18	30	16	24	13	22	18	—
Flash Point (°F)										
minimum	525	—	525	—	525	—	525	—	525	—
typical	575	—	575	—	575	—	575	—	575	—
Ductility @ 77°F (cm)	13.0	—	4.0	—	3.0	—	2.0	—	7.0	—
Solubility in Trichloroethylene %	99.8	—	99.8	—	99.8	—	99.8	—	97.5	—
Typical Application Temperature for Hand Mopping EVT @ 125 CPS ± 25°F [†]										
	350	—	375	—	420	—	445	—	375	—
For Machine Spreader EVT @ 75 CPS ± 25°F*										
	370	—	395	—	450	—	475	—	395	—

PermaMop is FM and UL approved.

[†]Trumbull® asphalt typically has EVTs in the following range for this product. For specific EVTs for a product from a particular Trumbull® Plant, check our Web site at www.trumbullasphalt.com or call 1-800-GET-PINK®



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