FIBERQUANT ANALYTICAL SERVICES

Polarized Light Microscope (PLM) Analysis for Asbestos in Bulk Sample

JobNumber: 202507422

Client: PROGRESSIVE ROOFING INC

23 N 35TH AVE

PHOENIX, AZ 85009-0000

Office Phone: (602) 278-4900

FAX: (602) 278-6896

 # Samples: 3 PLM **Rec:** 8/5/2025 **Method:** EPA 600/R-93/116 The "New" Method; see below

Client Job: Kyrene Elem School De La Sierra **PO Number:**

Report Date: 8/5/2025 **Date Analyzed:** 8/5/2025 **Routing Number:** -

Method and Analysis Information: **Fiberquant Internal SOP:** PLMn

Each bulk sample is first dissected under a 7-30x magnification stereo-microscope. This examination is used to determine the general type of sample, how many and what type of layers it has, and initial estimates of fiber types and quantities. Second, liquid media mounts are made of each layer - such mounts may be of selected fibers (used solely for identification purposes) or may be representative of the layer as a whole (used for quantitation purposes). The mounts may be made in a synthetic Canadian balsam, one of several solvents, or in refractive index oils (media of known refractive index). Generally, a variety of different mounts are made: some optimized for fiber visibility, some optimized for fiber identification, and some optimized for fiber quantitation. The mounted slides are then examined at 50-400x magnification on a Nikon Labphot-pol microscope. Optical characteristics are used to identify each observed fiber type; the optical data are contained for each sample on its detail analysis sheet, attached.

Current EPA and NESHAP regulations designate a result of ≤1 % asbestos as "negative" or "non-regulated"and >1 % asbestos as "positive" or "regulated." Samples containing layers that have been determined to be "positive" may have to be handled differently during a renovation or demolition than samples whose layers have been determined to be "negative." OSHA under CFR 1926.1101 regulates work done involving any detectable concentration of asbestos.

The method of fiber identification and quantitation is the "Standard Operating Procedures for the Analysis of Asbestos in Bulk Samples using Polarized Light Microscopy", Chapter 7 of the Quality Assurance and Management Manual. This SOP and its associated reporting have been designed to satisfy all requirements in both EPA Method 600/M4-82-020 (The Interim Method) and EPA Method 600/R-93/116 (The New Method). The Interim Method is the required method for AHERA (US EPA 40 CFR Pt. 763), but this method calls for the reporting of composited results of multi-layered samples that is no longer an acceptable reporting practice in most circumstances. Current EPA rules, such as NESHAP (US EPA 40 CFR Pt. 61), as well as NVLAP accreditation policies, call for separate reporting for each layer of multi-layered samples. The New Method contains the same procedures for identification and quantification of asbestos as does the Interim Method, except that multi-layered samples are reported to comply with the latest US EPA rule. Fiberquant not only reports the asbestos content of each layer of multi-layered samples separately (satisfying current EPA and NVLAP reporting requirements), but Fiberquant also reports what percentage of the sample each layer comprises. Therefore, the results may be arithmetically composited to satisfy the reporting requirements of the Interim Method. The method of fiber quantitation is an estimation technique in which the analysts quantitation is routinely calibrated by reference quantitation standards, and which has been shown to be equivalent in precision and accuracy to point counting. Friability is estimated for the purposes of deciding when to point count. Friabilities determined in the field take precedence over those determined in the laboratory. Those sample layers which are friable and estimated by the analyst to contain <= 1% asbestos are point counted using 400 points. Such point counting is required by NESHAP (National Emission Standards for Hazardous Air Polutants, Nov. 1990) in order to rely on analytical results that are ≤ 1%. The coefficient of variation for the estimation quantitation technique is 100% in the range 0-5%. This means that PLM analysis is not capable of conclusively determining whether a layer containing close to 1% asbestos is actually "positive" or "negative". For this reason, Fiberquant refers to results where asbestos was detected but ≤ 1% as "borderline negative", and results where asbestos was >1 % but <= 2% as "borderline positive" to indicate the uncertainty in assigning a "positive" or "negative" label. In the sample summary, "ND" means that no asbestos was detected during the analysis. A "Tr" or "Trace" of asbestos reported is defined for our purposes as the detection of several asbestos fibers during the analysis; this level would be right at the limit of detection for the method. Trace is only reported on the analysis detail - in the summary a trace would be reported as <=1%. The limit of detection (the smallest % of asbestos that can be detected) varies greatly depending on the matrix in which the asbestos is found. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 1% stated in the method. During the analysis, the analyst, for Fiberquant identification purposes only, determines the "apparent sample type" and "apparent layer types." It must be emphasized that these types are only what is apparent. Often, different materials appear similar or identical after sampling, so the analyst may assign a type other than what was sampled.

Floor tiles present a special problem for PLM asbestos analysis. Floor tile can contain chrysotile fibers so thin that they cannot be resolved by optical methods. In such a case, we may observe a percentage of asbestos which is lower than the actual percentage, or not observe asbestos at all when some is present. For this reason, floor tiles reported as negative should be confirmed to be negative using transmission electron microscope (TEM) analysis. Likewise, vermiculite insulation materials containing traces of asbestiform asbestos present a problem for routine PLM analysis - the amphiboles are sometimes present in trace amounts inhomogeneously distributed. For this reason, loose vermiculite samples reported as negative should be confirmed to contain no amphibole using hydroseparation techniques.

The samples were analyzed under the following ongoing quality assurance program: Blank samples are routinely analyzed to maintain contamination-free materials. Each analyst has at least a bachelor's degree in physical science, and has also completed extensive training specific to asbestos analysis for 1-3 months before being allowed to analyze client samples. Qualitative reference samples are routinely analyzed to assure that analysts

can identify asbestos and asbestos-look-alike fibers. Quantitative reference samples are routinely analyzed to calibrate and characterize the estimation procedure. Microscope alignment is checked each day. Refractive index oils are calibrated at least quarterly. At least 10% of client samples are re-analyzed from scratch by a different analyst than the original, and any discrepancies are resolved for the sample and similar sample types before the results are reported. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. All analysts participate in interlab round robins and proficiency testing to assure competence. Fiberquant is accredited by NVLAP (Lab code #101031) for the analysis of bulk samples for asbestos using PLM. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

PLM Analysis Summary: **Job Number: 202507422** Kyrene Elem School De La Sierra

Sample Number / Layer	Color	Apparent Layer Type *	Lab Number / Asbestos Results	Apparent Sample Type *	Asbestos Detected Yes or No
Sample # 1			2025-07422- 1	Roofing	Asbestos Detected? No
Layer # 1	black	roofing roll/shingle	*no asbestos detected*		
Layer # 2	black	roof ply/bitumen	*no asbestos detected*		
Layer # 3	black	roof ply/bitumen	*no asbestos detected*		
Layer # 4	brown	bitumen sheeting	*no asbestos detected*		
Layer # 5	tan	fiber-board	*no asbestos detected*		
Layer # 6	various	membrane	*no asbestos detected*		
Layer # 7	yellow	foam	*no asbestos detected*		
Layer # 8	off-white	miscellaneous	*no asbestos detected*		
Sample # 2			2025-07422- 2	Roofing	Asbestos Detected? No
Layer # 1	black	roofing roll/shingle	*no asbestos detected*		
Layer # 2	black	roof ply/bitumen	*no asbestos detected*		
Layer # 3	black	roof ply/bitumen	*no asbestos detected*		
Layer # 4	brown	bitumen sheeting	*no asbestos detected*		
Layer # 5	tan	fiber-board	*no asbestos detected*		
Layer # 6	various	membrane	*no asbestos detected*		
Layer # 7	yellow	foam	*no asbestos detected*		
Layer # 8	off-white	miscellaneous	*no asbestos detected*		
Sample # 3			2025-07422- 3	Roofing	Asbestos Detected? No
Layer # 1	black	roofing roll/shingle	*no asbestos detected*		
Layer # 2	black	roof ply/bitumen	*no asbestos detected*		
Layer # 3	black	roof ply/bitumen	*no asbestos detected*		
Layer # 4	brown	bitumen sheeting	*no asbestos detected*		
Layer # 5	tan	fiber-board	*no asbestos detected*		
Layer # 6	various	membrane	*no asbestos detected*		
Layer # 7	yellow	foam	*no asbestos detected*		
Layer # 8	off-white	miscellaneous	*no asbestos detected*		

* Apparent Sample Types and Apparent Layer Types are as they appeared to the analyst. Since many types of materials appear similar after sampling damage, the apparent type of material may not be the actual type of material.

Sample 1 **Lab Number** 2025-07422- 1 **Sampled:** **Condition:** acceptable

Analyzed By GV 8/5/2025 **An?** OK **Apparent Smp Type** Roofing Fibrous Solid

Homogeneous No **# Layers** 8 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): bitumen, filler, rock

Layers

#	Layer Type	%	Color	Friability
1	roofing roll/shingle	12	black	1
2	roof ply/bitumen	10	black	1
3	roof ply/bitumen	10	black	1
4	bitumen sheeting	8	brown	1
5	fiber-board	23	tan	3
6	membrane	7	various	1
7	foam	28	yellow	3
8	miscellaneous	2	off-white	1
	Total %	100	**Overall %**	

Calibrated Visual Estimate of Percents of Each Fiber

Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
30-40%	5-10%	n.d.	-	-	-
20-30%	5-10%	n.d.	-	-	-
20-30%	5-10%	n.d.	-	-	-
80-90%	n.d.	n.d.	-	-	-
90-100%	n.d.	n.d.	-	-	-
n.d.	n.d.	30-40%	-	-	-
n.d.	n.d.	n.d.	-	-	-
n.d.	20-30%	n.d.	-	-	-
30-40%	2-5%	2-5%	-	-	-

Fiber Identification: cellulose fiber | glass fiber | synthetic fiber (extr

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	cellulose fiber	W	F	N	N	H	+	U
2	glass fiber	CL	D	Y				
3	synthetic fiber (extruded)	W	E	N	N	H	+	P
4								
5								
6								

Refractive Index Determinations

Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of bitumen matrix using solvent.

Sample 2 **Lab Number** 2025-07422- 2 **Sampled:** **Condition:** acceptable

Analyzed By GV 8/5/2025 **An?** OK **Apparent Smp Type** Roofing Fibrous Solid

Homogeneous No **# Layers** 8 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): bitumen, filler, rock

Layers

#	Layer Type	%	Color	Friability
1	roofing roll/shingle	12	black	1
2	roof ply/bitumen	10	black	1
3	roof ply/bitumen	10	black	1
4	bitumen sheeting	8	brown	1
5	fiber-board	23	tan	3
6	membrane	7	various	1
7	foam	28	yellow	3
8	miscellaneous	2	off-white	1
	Total %	100	**Overall %**	

Calibrated Visual Estimate of Percents of Each Fiber

Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
30-40%	5-10%	n.d.	-	-	-
20-30%	5-10%	n.d.	-	-	-
20-30%	5-10%	n.d.	-	-	-
80-90%	n.d.	n.d.	-	-	-
90-100%	n.d.	n.d.	-	-	-
n.d.	n.d.	30-40%	-	-	-
n.d.	n.d.	n.d.	-	-	-
n.d.	20-30%	n.d.	-	-	-
30-40%	2-5%	2-5%	-	-	-

Fiber Identification: cellulose fiber | glass fiber | synthetic fiber (extr

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	cellulose fiber	W	F	N	N	H	+	U
2	glass fiber	CL	D	Y				
3	synthetic fiber (extruded)	W	E	N	N	H	+	P
4								
5								
6								

Refractive Index Determinations

Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of bitumen matrix using solvent.

PLM Analysis Details **Job Number:** **202507422** Kyrene Elem School De La Sierra

Sample 3 **Lab Number** 2025-07422- 3 **Sampled:** **Condition:** acceptable

Analyzed By GV 8/5/2025 **An?** OK **Apparent Smp Type** Roofing Fibrous Solid

Homogeneous No **# Layers** 8 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): bitumen, filler, rock

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	roofing roll/shingle	12	black	1	30-40%	5-10%	n.d.	-	-	-
2	roof ply/bitumen	10	black	1	20-30%	5-10%	n.d.	-	-	-
3	roof ply/bitumen	10	black	1	20-30%	5-10%	n.d.	-	-	-
4	bitumen sheeting	8	brown	1	80-90%	n.d.	n.d.	-	-	-
5	fiber-board	23	tan	3	90-100%	n.d.	n.d.	-	-	-
6	membrane	7	various	1	n.d.	n.d.	30-40%	-	-	-
7	foam	28	yellow	3	n.d.	n.d.	n.d.	-	-	-
8	miscellaneous	2	off-white	1	n.d.	20-30%	n.d.	-	-	-
	Total %	100		**Overall %**	30-40%	2-5%	2-5%	-	-	-
				Fiber Identification:	cellulose fiber	glass fiber	synthetic fiber (extr			

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2	glass fiber	CL	D	Y									
3	synthetic fiber (extruded)	W	E	N	N	H	+	P					
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of bitumen matrix using solvent.

Fr=Friability: 1=very non-friable; 2= non-friable; 3=friable; 4=highly friable
Colors: B=black;BL=blue;BR=brown;CL=clear;G=Green;GY=gray;OR=orange;OW=off-white;PN=pink;PU=purple;R=red;TN=tan;W=white;Y=yellow;V=various
Fiber Morphology: A=fine fibers/bundles, white, sinewy, flexible; B=fine fibers/bundles, w-br, straight, broomed ends; C=fine fibers/bundles, blue, straight, broomed ends; D=fine to coarse fibers, CL-B, brittle; E=coarse fibers,CL or dyed, striated; F=coarse fibers or splinters, W-BR, ribbon-like; G=lath-like or shards, low aspect ratio, may taper
Iso=isotropism - may be yes or no; Pleo=pleochroism - may be yes or no; Bi=birefringence - may be None, Low, Medium or High
Elg=sign of elongation - may be +, - or B (both); Ext=extinction - may be Parallel, Oblique, None or Undulating; Oil=medium used to for dispersion staining
Col Par=dispersion staining colors parallel to the fiber (fiber/halo): b/w=black/white; dg/py=dark gray/pale yellow; vg/y=violet gray/yellow; db/ly=dark blue/lemon yellow; vb/g= vivid blue/gold; sb/o=sky blue/orange; pb/r=pale blue/red; gb/dr=gray blue/dark red; w/b=white/black. Col Perp=same only perpendicular to fiber.
RI Par=refractive index parallel to fiber; RI Perp=refractive index perpendicular to fiber

Galina B. Volkova

Analyst: GALINA B. VOLKOVA

Printed: 05-Aug-25

Original Print Date: 05-Aug-25

Michael A. Breu, Approved Accreditation Signatory

URGENT

FIBERQUANT ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.: Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558; info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	PROGRESSIVE Roofing Inc.
Address	23 N. 35th Ave
City, State, Zip Code	Phoenix, Az 85009
Phone	602 278-4900
FAX	
Email	mark.farrell@progressiveus.com
Invoice to (Company)	Same
Address	
City, State, Zip Code	
Phone	602 750 1026
FAX	
Contact (print)	Mark Farrell
Sampled by (signature)	[signature]
Job Number or Project Name	Kyrene Elem School Dela Sierra
PO Number	

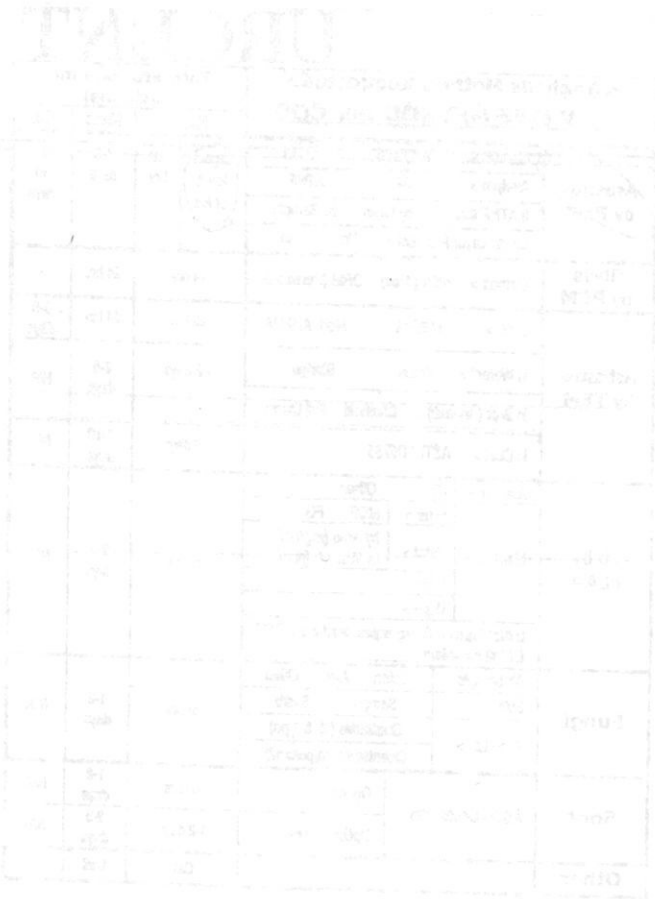
<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by PLM (circled)	Matrix > Bulk; Analyze > All / ATPF; If ATPF then > by Layer / by Sample; Single Layer Protocol > Yes / No		Urgent Rush <3 hrs (circled)	6 hrs	1-3 days	15-30 days
Fibers by PCM	Method > 7400 (Area) ORM (Personal)		<4 hrs		24 hrs	-
Asbestos by TEM	In Air > AHERA Mod. AHERA		<6 hrs		24 hrs	3-5 days
	In Water* > Water Sludge		1-2 days		3-5 days	N/A
	In Bulk (Annex2) > Chatfield Full Quant.					
	In Dust > ASTM D5755		3-5 days		5-10 days	N/A
Pb by FLAA	Analyte > Pb Other; Matrix > Filter > MCE FG; Paint > by Area (mg/cm²) by Weight (ppm); Soil >; Wipe >; Initial here certifying wipes used are ASTM E1792 compliant ____		<6 hrs		2-3 days	N/A
Fungi	Air Sample > Zefon Aller Other; Bulk > Sample Swab; Tape Lift > Qualitative (% & type) Quantitative (type/cm2)		<6 hrs		1-2 days	N/A
Soot	ASTM D6602-03b	Optical	<6 hrs		1-2 days	N/A
		Optical & TEM	1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)		Description/Location	Sample Date	Sample Time	Vol. or Area
1)	1	area 1			
2)	2	area 2			
3)	3	area 3			
4)					
5)					
6)		Rush (circled)			
7)					
8)					
9)					
10)					
11)					
12)					
13)					
14)					
15)					
16)					
17)					
18)					
19)					
20)					

1)Relinquished by: [signature]	Date:	Time:	3)Relinquished by:	Date:	Time:
2)Received by: [signature]	Date: 8/08/25	Time:	4)Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>	Page of	

Review of Analysis Request (Initials): ME

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.



TREMCO

15 YEAR QA PLUS WARRANTY FOR NEW ROOFS

WARRANTY NUMBER:	118255
OWNER:	Kyrene Elementary School District
ADDRESS:	8700 S. Kyrene Road, Tempe, AZ 85284
BUILDING DESCRIPTION:	Kyrene de la Sierra Main Building
ADDRESS:	1122 E. Liberty Lane, Phoenix, AZ 85048
ROOF AREA:	76,500 sq. ft.
DATE OF JOB COMPLETION:	April 4, 2007
INSTALLATION PRICE:	$730,198.12
ROOFING SYSTEM:	REPLACEMENT: BURmastic 100
INSTALLATION CONTRACTOR:	Reliable Roofing (WTI)
ADDRESS:	6730 West Belmont, Glendale, AZ 85303

Tremco Incorporated (hereinafter "Tremco") hereby warrants to the above-named Owner that, subject to the terms, conditions, and limitations stated herein, it will repair leaks and provide the following services to the Owner on the roofing system on the building (hereinafter "TRS") for a period of fifteen (15) years from the date of job completion. TRS shall be defined as the weatherproofing assembly and its components, which includes the following: membrane, insulation, flashings, all sheet metal-related details, and termination details as specified by Tremco. The services being offered by Tremco include the following:

A. INSPECTIONS, HOUSEKEEPING AND PREVENTIVE MAINTENANCE

In year two (2), year five (5), and year ten (10) of this warranty, Tremco shall provide roof inspections, preventive maintenance, and limited housekeeping services, except as excluded in Section C and Section D, on the TRS. (If a TremCare Service Agreement has been purchased for the TRS in addition to this warranty, these inspections and the related reporting will be carried out as part of the TremCare Service Agreement.)

Roof inspection services shall include the following:

1. *Visual inspection of the roof membrane and roof surface conditions.*
2. *Inspection of the flashing systems including, but not limited to, the metal edge system, base flashings on equipment and adjoining walls, counterflashings and termination details, soil stacks and vents, and inspection of rooftop projections, and equipment including, but not limited to, pitch pans, HVAC equipment, sky lights, and access hatches.*

Roof inspection services do not include:

1. *Inspection for water damage or mold growth.*
2. *Detection or identification of mold.*

Preventive maintenance services shall include the following:

1. *Metal edge flashing components - tears, splits, and breaks in the membrane flashings will be repaired with appropriate repair mastics and membranes.*
2. *Tears and splits in the flashing membrane will be repaired with appropriate repair mastics and membranes. Open split flashing strip-ins will be repaired with appropriate repair mastics and membranes. Exposed fasteners will be sealed. Termination bar and counterflashings will be sealed.*
3. *Roof membrane maintenance repairs - tears, breaks, and splits in the roof membrane will be repaired with appropriate repair mastics and membranes. Splits and blisters which threaten the roof integrity will be cleaned, primed, and repaired with appropriate repair mastics and membranes. Metal projections (hoods and clamps) will be sealed. This warranty does not include recoating of roof membranes.*

Preventive maintenance services do not include:

1. *Repairs or maintenance of any building component other than the TRS.*
2. *Remediation or abatement of mold.*

General rooftop housekeeping services shall include the following: Removal of incidental debris. All debris will be disposed of at the Owner's approved on-site location.

B. ROOF INSPECTION REPORTS

Tremco will provide roof inspection reports to the Owner based upon the inspections as defined in paragraph A. The reports shall become part of the roof database maintained on the Tremco TRS. Tremco will be excused from performing under this warranty if prevented or delayed by events not within its control, including events such as floods, fires, accidents, riots, explosions, governmental order, acts or omissions of contractors or other third parties, inability to access the TRS, etc. Roof inspection reports will not address the presence of water damage to any building components other than the TRS or the presence of mold.

C. OWNER'S RESPONSIBILITIES

It is agreed by the parties that Tremco, by this warranty, does not assume possession or control of any part of the TRS. Control and ownership of the TRS and all parts of the building remains solely with the Owner. The Owner is solely responsible for all requirements imposed by any federal, state or local law, ordinance or regulation, and all repair, maintenance, and other work with respect to the TRS and the building, except as expressly stated by this warranty.

Housekeeping and general roof top preventive maintenance does not eliminate or replace the building Owner's responsibility for keeping effluent and debris from the roof surface. Customer production-related materials are excluded as part of the housekeeping services. If scheduled cleaning is insufficient to maintain the roof integrity, Owner must pay for additional cleaning/inspections or assume responsibility for such cleanings. Owner agrees that all debris on or removed from the roof is the sole property of Owner, and it is the sole responsibility of Owner to properly dispose of said debris.

The Owner shall, at all times, exercise reasonable care in the use and maintenance of the TRS.

In order to protect the investment this TRS represents, the building Owner must fulfill his responsibilities as outlined in the attached Owner's Manual. Lack of care and maintenance can have significantly damaging effects on the system's overall performance and is cause for cancellation of this warranty.

Care and maintenance guidelines include, but are not limited to:

- *Regular ongoing inspection by the Owner - This will allow for implementation of good housekeeping practices and early detection of problems such as any physical damage.*
- *Verification that no alterations or unauthorized repairs have been made to the roofing system.*

If alterations are being considered, the Owner must notify Tremco in order for the proper authorized follow-up to be completed.

The Owner shall report all leaks which occur in the TRS within the warranty period by contacting Tremco at 1-800-422-1195 and in writing to Tremco Incorporated at 3735 Green Road, Beachwood, Ohio 44122, as soon as possible (however, in no event more than thirty (30) days) after leakage is or should have been discovered. Immediate repair of leaks is critical to prevent water damage and mold growth. In no event is Tremco responsible for any repairs to any part of the building other than the TRS. The liability or expense for such repair is to be assumed and paid by the Owner. If the leak is not within the coverage of this warranty, Tremco shall advise the Owner, and the Owner shall have repairs performed within thirty (30) days according to Tremco specifications by a Tremco certified or approved applicator. The Owner agrees to provide Tremco with unrestricted ready access to the TRS and all areas of the building on which the TRS is located.

D. WARRANTY EXCLUSIONS

This warranty does not cover any leaks or damage or failure of the TRS or any part thereof as a result of:

1. *Natural or accidental disasters including, but not limited to, damage caused by lightning, hailstorms, floods, hurricane force winds (74 mph or greater), tornadoes, earthquakes, fire, vandalism, animals, penetration of the membrane, or chemical attack by outside agents.*

2. Use of materials not specified by Tremco, or unauthorized repairs to the TRS.
3. Any intentional or negligent act on the part of the Owner or any third party including, but not limited to, misuse, traffic, storage of or discharge of materials or effluent on the roof. Any repair of these items will be at Owner's expense.
4. Distortion, expansion or contraction of the TRS caused by faulty original construction or design of building components including parapet walls, copings, chimneys, skylights, vents or roof deck, or lack of positive, proper, or adequate drainage resulting in ponding water on the roof.

E. WARRANTY LIMITATIONS

Tremco shall have no responsibility and or liability under this warranty until all bills for installation, supplies, and services sold in connection with the TRS have been paid in full.

The Owner's rights under this warranty are specific to the Owner and are not transferrable.

Tremco's obligations under this warranty may be voided by Tremco based on any of the events described in Section D, change in usage of the building without the prior written approval of Tremco, repairs, alterations, penetrations of or attachments to the TRS without the prior written approval of Tremco, building settlement, deterioration, cracking or failure of the roof deck, coping and parapet walls, infiltration or condensation of moisture in, through or around walls, copings, underlying structure, hardware or equipment, or failure of the Owner to comply with its obligations described in this warranty.

F. OTHER TERMS

THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, OBLIGATIONS OR AGREEMENTS, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, AND ANY RIGHTS OR REMEDIES AGAINST ANY PERSON OR ENTITY UNDER THE UNIFORM COMMERCIAL CODE OR OTHERWISE WITH RESPECT TO THE SALE OF GOODS AND/OR SERVICES. THE REMEDIES AND OBLIGATIONS STATED IN THIS WARRANTY ARE THE SOLE AND EXCLUSIVE REMEDIES OF AND OBLIGATIONS TO THE OWNER FOR ANY AND ALL MATTERS ARISING WITH RESPECT TO OR IN ANY WAY CONNECTED WITH THE TRS, OR ITS COMPONENT PRODUCTS, OR ANY GOODS OR SERVICES RELATED THERETO, REGARDLESS OF THE SOURCE OR PROVIDER OF SUCH GOODS OR SERVICES. THE OWNER SHALL PROVIDE WAIVERS OF SUBROGATION UPON REQUEST. NO REPRESENTATIVE OF TREMCO INCORPORATED, OR ANY EMPLOYEE, AGENT OR AFFILIATED COMPANY ("AFFILIATE") HAS AUTHORITY TO VARY OR ALTER THESE TERMS. IN NO EVENT SHALL TREMCO INCORPORATED OR ANY AFFILIATE BE LIABLE FOR ANY DAMAGE TO THE BUILDING ITSELF (OTHER THAN THE TRS), THE CONTENTS OF THE BUILDING, OR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. THE TOTAL LIABILITY OF TREMCO INCORPORATED, AND ANY AFFILIATE OVER THE LIFE OF THE WARRANTY, SHALL NOT IN ANY EVENT EXCEED IN DOLLAR VALUE THE INSTALLED CONTRACT PRICE OF THE TRS AS IT APPEARS ABOVE, AND THIS TOTAL LIABILITY SHALL BE PRO-RATED ON A STRAIGHT LINE BASIS OVER THE LIFE OF THE WARRANTY, AND TREMCO'S LIABILITY SHALL NOT EXCEED SUCH PRO-RATED AMOUNT. NEITHER TREMCO INCORPORATED OR ANY AFFILIATE SHALL BE LIABLE FOR ANY DAMAGES WHICH ARE BASED UPON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY OTHER THAN THE EXCLUSIVE LIABILITY SET FORTH IN THIS WARRANTY.

The Owner agrees that this warranty, and the services and remedies set forth herein, are exclusive, and there are no other warranties between the Owner and Tremco or any affiliate. Any unresolved issues under this warranty shall be submitted to the exclusive jurisdiction of the courts of Cuyahoga County, Ohio, and governed by Ohio law.

TREMCO INCORPORATED
ROOFING & BUILDING MAINTENANCE DIVISION

By: Julie Orlowski

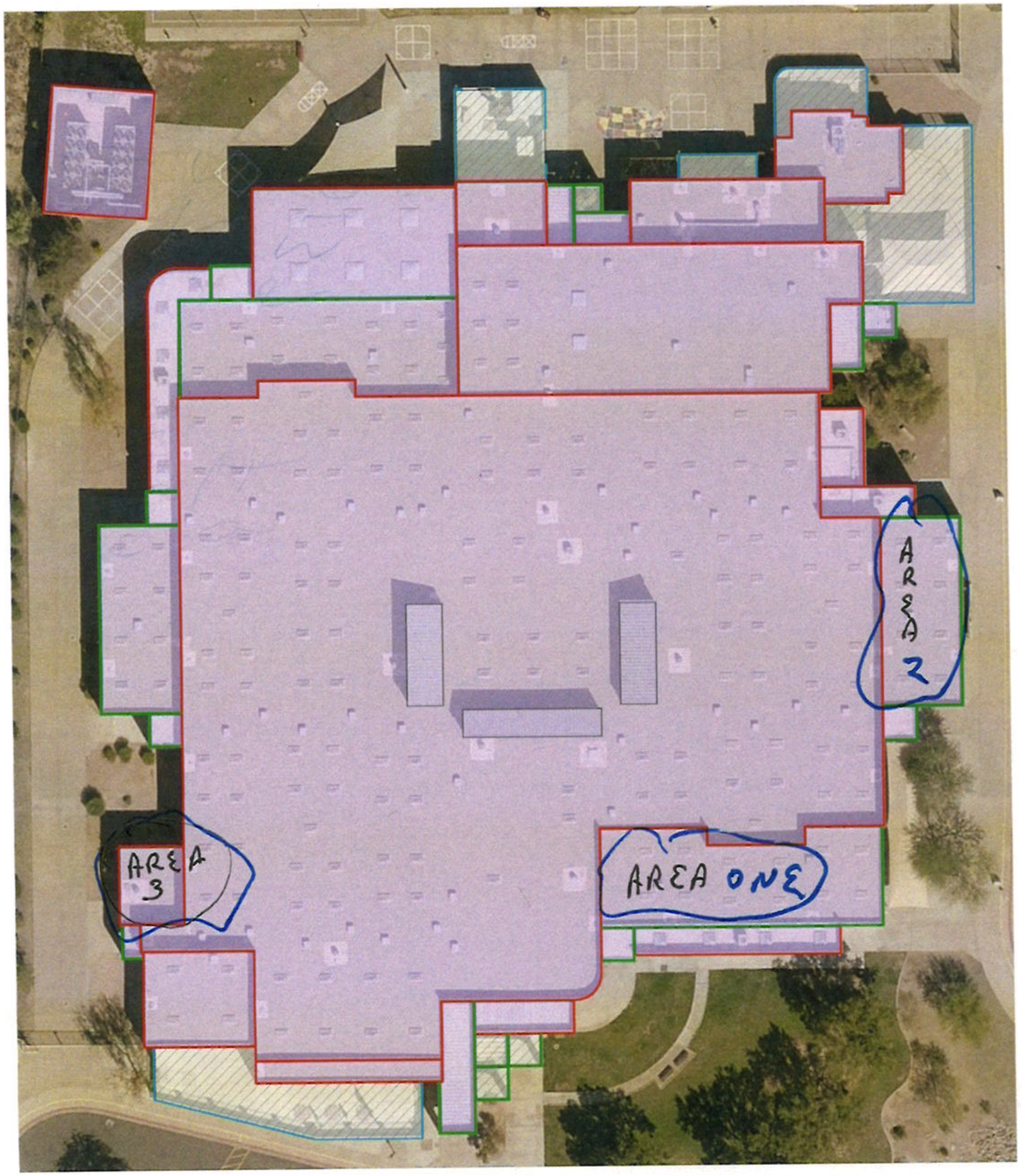
Title: Warranty Administrator

Date: April 23, 2007

08-21-20204

Kyrene de la Sierra Elementary
Phoenix, Arizona

Overall AREA



AREA (Overall Image)	824.0 Sqrs	<5900SF> newer additions
AREA (Ground N.I.C.)	66.0 Sqrs	
Wall, Coping Cap_8" F.V.	2670.0 FT	
Wall, Coping Cap_12" F.V.	990.0 FT	
Wall, Ground _8" F.V.	460.0 FT	

All gravel roof area 76500SF
Tremco 2007

602
276
6139

Moll:59
F9

BURmastic® Adhesive

Cold Applied Adhesive For Use With BURmastic Ply Sheets

FEATURES	BENEFITS
Cold-applied	• No flames, hot kettles, smoke, or fire risks • Reduces equipment needs and start-up time • Adhesion not temperature dependent
Low odor/asbestos free	• Can be readily used in restrictive areas, including schools and hospitals
High performance	• Welds ply sheets, adhesive forming monolithic membrane
Multi-ply	• Redundant levels of protection and waterproofing
Not classified as "DOT Flammable" red label	• Shipping, storage, and handling of adhesive can be completed with few restrictions at lower costs
Versatile/flexible	• Can be used in limited access areas

DESCRIPTION

BURmastic® Adhesive is an asbestos free fibrated cold process asphalt interply and surfacing adhesive.

BASIC USES

BURmastic Adhesive is designed for application as a cold process interply adhesive and protective flood coat adhesive with BURmastic Roofing Systems. BURmastic Adhesive can also be used to adhere aggregate to new hot applied built up roof systems. BURmastic Adhesive is also used as a surfacing to adhere new aggregate in the restoration of existing multi-ply asphalt roof systems.

Refer to UL Roofing Materials & Systems Directory and/or FM Approvals RoofNav® for applicable roof system configurations.

GRADE

Spray, Brush, Squeegee. Can be heated to facilitate application by using an oil-jacketed heat exchanger.

EQUIPMENT

SPRAY: Pump: Pneumatic or hydraulic pump with a minimum 2200 psi material output pressure. Output flow rate must be 3 GPM (gallons per minute) or greater for efficient production rates.
Spray tip/fluid hose: Reversible spray tip with 0.052" to 0.072" orifice and a 40° to 60° spray fan. Material fluid hose must be properly rated for the maximum working pressure of the pump being used.
SQUEEGEE: Triangular notched to provide 40-50 mil thick uniform application.

CLEAN-UP

Mineral spirits.

PACKAGING

Available in 5 (19L) pails or 50 (189.2L) gallon plastic lined and unlined barrels..

STORAGE LIFE

One year in unopened containers.

APPLICATION

General Application Data: Roof replacement usually involves more complexities than new construction roofing. Often encountered are situations such as rusted/deteriorated decks, rotted wood components, rooftop equipment which cannot be moved or shut down, and numerous other conditions.

The following application information is designed to serve as a general guide. Your local Tremco Representative will prepare detailed specifications based upon your roof's conditions.
Structural Decks: Must be properly designed and structurally sound.
Drainage: Ponding conditions are unacceptable and will adversely affect performance of any roofing system. If positive drainage does not exist, water removal must be facilitated by lowering drains and/or installing additional drains, tapered insulation, or a Tremco approved cellular concrete slope system.
Insulation: Insulation must be dry and kept dry. No more insulation shall be installed than can be covered that day.
Acceptable Insulations:

TYPE	MINIMUM THICKNESS*	FACER
Wood Fiber	1/2" (13mm)	Treated
Gypsum board	1/4" (6mm)	Treated fiberglass or compressed surface

BURmastic® Adhesive

APPLICATION
CONTINUED

- Insulation board must be designated by the manufacturer as suitable for roofing application.
- Maximum size: 4' x 8' (1219mm x 2438mm)

** Minimum thickness for application of BURmastic Adhesive. Follow insulation manufacturer's instructions to obtain minimum thickness for spanning metal deck ribs.*

Installation Procedures: According to particular project specifications, prepare surface to be covered:

- Replace areas of wet insulation, deteriorated deck, and wood components.
- Install roof insulation or base sheet.

Plan placement of BURmastic Roofing System to ensure that water flows over or along, but not against exposed edges.

Starting a low point of roof, embed approved ply sheets in a uniform continuous application of BURmastic Adhesive. Ply shall never touch ply.

Acceptable Ply Sheets and Interply application rate:

FELT	GAL/100 FT²	L/M²
BURmastic Composite Ply HT	2.5	1.0
BURmastic Glass Ply	3	1.2
Approved ASTM D 4601 Type II glass base sheet (minimum 25 lb/SQ)	3	1.2

SURFACING OPTIONS

Gravel: Apply BURmastic Adhesive over new roof surface at 5 gal/100 ft² (2.0 L/m²). For restoration of existing roofs, coverage rate of BURmastic Adhesive is 7 gal/100 ft² (2.8 L/m²) minimum. Immediately broadcast 400-500 lb/100 ft² (19.4-24.4 kg/m²) of new, clean aggregate into adhesive. Aggregate shall conform to ASTM D 1863-93.

Smooth Surface: Consult with your local Tremco Representative for specific applications suitable for your geographic area.

LIMITATIONS

- Not intended to perform under ponding conditions. Positive drainage required.
- Not to be used as an insulation adhesive.
- Not to be exposed to solvents, oils, or other contaminants harmful to asphaltic materials.
- Not intended for use in adhering cold applied BUR systems directly to isocyanurate insulation; the use of an approved cover board over isocyanurate insulation is recommended.
- Not for use over EPS (expanded and extruded polystyrene) or EPS composite insulations installed in any configuration unless EPS is properly embedded within lightweight insulating cellular concrete.
- Not intended for use as smooth roof coating.
- Backnail felts on roofs with slopes 2:12 (2" per foot) or greater. Do not install on roofs with slopes greater than 4:12 (4" per foot).
- Not for use with ASTM D 2178 Type IV or Type VI ply sheets in BUR or MB roof systems.

PHYSICAL PROPERTIES

PROPERTY	TYPICAL VALUE	TEST METHOD
Asbestos content	None	EPA 600/R-93/11 6
Viscosity @ 77°F (25°C)	25,000-75,000 cP (25-75 Pa•s)	ASTM D 2196
Density @ 77°F (25°C)	7.2-7.6 lbs/gal	ASTM D 6511
Nonvolatile content	72%	ASTM D 6511
Asphalt content, min.	50%	ASTM D 6511
Flash point	>100°F	ASTM D 93
Uniformity	Pass	ASTM D 6511
VOC	250 g/L	ASTM D 6511

MAINTENANCE

Your local Tremco Roofing sales representative can provide you with effective maintenance procedures which may vary, depending upon specific conditions. Periodic inspections, early repairs and preventative maintenance are all part of a sound roof program.

BURmastic® Adhesive

PRECAUTIONS

Users must read container labels and Safety Data Sheets for health and safety precautions prior to use.

TECHNICAL SUPPORT

Your local Tremco Roofing sales representative, working with the Technical Service Staff, can help analyze conditions and needs to develop recommendations for special applications.

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0422

BURmastic® Glass Ply - 28 lb.

3 Square Roll Asphalt Coated Fiberglass Base/Ply Sheet

FEATURES	BENEFITS
Asphalt coated smooth surface	• Excellent adhesion of flood smooth surface coating • Waterproof.
Glass reinforced	• Non-rotting, strong.
Fully asphalt coated	• For use in BURmastic roof system or as hot/cold applied base sheet.

DESCRIPTION

BURmastic Glass Ply - 28 lb. is a high performance roofing ply consisting of a fiberglass membrane coated with waterproofing asphalts.

BASIC USES

BURmastic Glass Ply 28 lb. is designed for application as a ply sheet in cold applied built-up roof systems over preformed rigid insulation and/or base sheets. BURmastic Glass Ply 28 lb. can also be used as a hot or cold applied base sheet. BURmastic Glass Ply 28 lb. exceeds ASTM D 4601-91, Type II.

Refer to UL Roofing Materials and Systems Directory and/or FM Approvals RoofNav for applicable system configurations.

PACKAGING

Available in 3′ x 108′ (915 mm x 32.9m) rolls, 300 ft²/roll (27.9 m²/roll). Sold by the pallet (20 rolls/pallet).

APPLICATION

General Application Data: Roof replacement usually involves more complexities than new construction roofing. Often encountered are situations such as rusted/deteriorated decks, rotted wood components, rooftop equipment which cannot be moved or shut down, and numerous other conditions.

The following application information is designed to serve as a general guide. Your local Tremco Representative will prepare detailed specifications based upon your roof's conditions.

Structural Decks: Deck must be properly designed and structurally sound.

Drainage: Ponding conditions are unacceptable and will adversely affect performance of any roofing system. If positive drainage does not exist, water removal must be facilitated by lowering drains and/or installing additional drains, tapered insulation, or a cellular lightweight insulating concrete slope system.

Insulation: Insulation must be dry and kept dry. No more insulation shall be installed than can be covered in that day.

Installation procedures: According to particular job specification, prepare surface to be covered:

- Replace areas of wet insulation, deteriorated deck and wood components.
- Install roof insulation, protection course, or base sheet.

Plan placement of BURmastic Glass Ply 28 lb. to ensure that water will flow over or along, but not against, exposed edges.

Cold Process BUR: Cut plies in 18′ (5.5m) lengths maximum. Stack the cut plies and expose them to the sun. Do not stack more than 1″ in height.

Above 55°F(13°C): 30 minutes minimum.
Below 55°F(13°C): 60 minutes minimum.

Starting at low point of roof, apply a uniform coating of BURmastic Adhesive at 3 gal/100 ft² (1.2m²/L).

Three ply membrane: Start and finish roof membrane along edges, terminations, and projections, use starting/finishing strips - 12, 24, and 36″ (305mm, 610mm, 915mm) wide plies.

Install BURmastic Glass Ply 28 lb. in shingle fashion. Overlap starter strips 26″ (660mm) with first ply, then overlap each succeeding ply 24-2/3″ (627mm).

BURmastic® Glass Ply - 28 lb.

APPLICATION
CONTINUED

Four ply membrane: Start and finish roof membrane along edges, terminations, and projections, use starting/finishing strips - 9, 18, 27, and 36" (229mm, 457mm, 686mm and 915mm) wide plies.

Install BURmastic Glass Ply 28 lb. in shingle fashion. Overlap starter strips 28" (711mm) with first ply, then overlap each succeeding ply 27 - 1/2" (698mm) .
Interply adhesive: Embed each ply in uniform and continuous application of BURmastic Adhesive.
Interply application: 3 gal/100 ft² (1.2m²/L) . Ply shall never touch ply.
Base Sheet: Nail or fully adhere a full width of BURmastic Glass Ply 28 lb. For adhered base sheets, use either a hot-melt adhesive or BURmastic Adhesive.
Side laps: 4" (100mm). End laps: 6" (150mm) minimum and staggered. Lightly broom or roll plies to assure complete contact. Extend all plies to top edges of all cants and cut off evenly. Overlap previous work 24" (610mm). Hot-melt interply application rate: 25 lb/100 ft² (1.25 kg/m²). Base sheet application rate of BURmastic: 3 gal/100 ft² (1.2m²/L).

Install flashings as specified.

SURFACING OPTIONS

Gravel and smooth surfacing options are available. Consult your local Tremco Representative for specific recommendations.

LIMITATIONS

- BURmastic Glass Ply 28 lb. is not intended to perform under ponding conditions. Positive drainage is required.
- BURmastic Glass Ply 28 lb. should not be exposed to solvents, oils or other contaminants harmful to asphaltic materials.

PHYSICAL PROPERTIES

PROPERTY	TYPICAL VALUE	TEST METHOD
Weight	28.0 lb/100 ft² (1.37 kg/m²)	ASTM D 228
Breaking Strength	90 lbf/in. MD, 70 lbf/in. XD	ASTM D 146
Pliability, 1/2 in. radius	No failures	ASTM D 146
Mass of desaturated glass mat, min	1.7 lb/100 ft² (83 g/m²)	ASTM D228
Surfacing & stabilizer, max	65%	ASTM D 4601
Ash (glass mat only)	70 - 88%	ASTM D 4601

MAINTENANCE

Your local Tremco Roofing sales representative can provide you with effective maintenance procedures which may vary, depending upon specific conditions. Periodic inspections, early repairs and preventative maintenance are all part of a sound roof program.

PRECAUTIONS

Users must read container labels and Safety Data Sheets for health and safety precautions prior to use.

TECHNICAL SUPPORT

Your local Tremco Roofing sales representative, working with the Technical Service Staff, can help analyze conditions and needs to develop recommendations for special applications.

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ELS™

LIMITATIONS

- Not recommended for use over the following:

Roof Decks: Cementitious wood fiber, metal, poured-in-place gypsum, structural lightweight or lightweight insulating concrete, and wood decks (includes plywood, tongue and groove, etc.).

Products/Systems: Coal tar gravel surfaced BUR systems, clay tile, corrugated or standing seam metal roof systems, expanded or extruded polystyrene insulation, fluoropolymer finished metal, silicone-based products, and tar-based products.

- Not for use under continuous immersion.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TEST VALUE
Asbestos Content	ASTM D276	None
Viscosity @ 77° F (25° C)	ASTM D2196	480,000-1,000,000 cP (480-1,000 Pa•s)
Density @ 77° F (25° C)	ASTM D1475	9.5 lbs/gal (1.15 kg/L)
Non-Volatile Matter	ASTM D4586	85%
Resistance to Sag	ASTM D4586	1/8 in. (3 mm)
VOC	ASTM D3960	< 250 g/L

CODES & APPROVALS

Florida Building Code

MIAMI-DADE COUNTY APPROVED

CLASSIFIED C UL US

MAINTENANCE

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0422

ELS™

Heavily fibrated asphalt roof cement

FEATURES	BENEFITS
Sag resistant	• Can be used on vertical repairs
Fibrated	• Increases durability and longevity
Plasticizing agents	• Readily troweled and formed

DESCRIPTION

ELS™ is an asphalt-based, heavily fibrated roof cement blended with penetrating oils and plasticizing agents. ELS is asbestos free and complies with ASTM D 4586, Type II, Class I, the Standard Specification for Asphalt Roof Cement, Asbestos-Free.

BASIC USES

ELS is used in the repair and restoration of flashings and asphalt built-up roofing defects including blisters, cracks, and punctures. It is also used for adhering new asphalt ply and modified bitumen membrane flashings. Added strength can be obtained by using reinforcing fabrics.

PACKAGING

ELS is available in 5 gallon and 2 gallon containers.

COLOR

Black

GRADE

Trowel

STORAGE LIFE

12 months shelf life in unopened containers when properly stored.

Recommended storage conditions is in a ventilated, dry area removed from heat, open flame, ignition sources, and direct sunlight. Storage temperatures should range from 60-70°F (15-21°C) and must not drop below 32°F (0°C) or exceed 110°F (43°C).

On the job site, materials should remain on the pallet until use and be stored in a shaded, ventilated area. Materials should be covered with a light-colored, reflective tarp for protection against the elements. Allow for adequate air flow inside the pallets.

Shelf life could be affected if the product is not stored properly.

APPLICATION

Remove loose gravel, dirt, dust, rotted felts, and foreign matter. Apply over clean, sound, dry base. Embed a reinforcing fabric or mesh, such as BURmesh, when using ELS to make roof repairs or to strip over the top of flashing laps.

COVERAGE

12 sq. ft./gal in a single troweled layer at approximately 1/8" (3 mm) thickness, or 25 ft² per 5 gallon pail in a 3 course (mastic, reinforcement, mastic) application. Rates will vary depending on ambient temperature and actual surface conditions.

ACCEPTABLE SUBSTRATES

Smooth BUR	Gravel BUR	Concrete	MB-Smooth	MB-Granule	Metal	Single Ply	SPUF	Walls
●	●	●	●	●				

TEMPERATURE RECOMMENDATIONS

Product temperature must be at 45°F or above at time of application.
- Do not apply when precipitation is imminent prior to cure of the product

CLEAN UP

Mineral Spirits, Xylene

Sheeting Bond™-White

An Elastomeric Adhesive for Tremco TRA Elastomeric Flashing Membranes

FEATURES	BENEFITS
Tenacious bond	• Provides immediate adhesion to bituminous surfaces. Can be used on vertical surfaces. • Bonds to Hypalon, roofing membranes, concrete and most construction materials.
Butyl elastomer	• Can be used on a variety of surfaces. • Outstanding elongation and recovery.
Compatible	• Can be used on asphaltic and single ply roofs.
One-part	• Simple application. Labor saving.

DESCRIPTION

Sheeting Bond-White is a one part butyl based elastomeric formulated as a flashing membrane adhesive for a variety of roofing substrates. Sheeting Bond is asbestos free.

BASIC USES

Sheeting Bond is used to adhere roof flashing materials such as TPA Flashing Membrane to single ply, BUR, or modified bitumen roof sytems.

Vertical substrates are acceptable.

COLOR

White

PACKAGING

Available in 19L (5 gallon) containers.

GRADE

Trowel

STORAGE LIFE

One year in unopened container

APPLICATION

Remove embedded gravel, dirt, dust, rotted felts, and foreign matter. Apply over clean, sound, dry base.

Leave Sheeting Bond exposed 15 minutes minimum before applying membrane into adhesive. Adjust open time depending on ambient conditions.

White Sheeting Bond must be fully covered by flashing membranes. It remains tacky and will pickup dirt, darken, and discolor if left exposed.

COVERAGE RATE

0.5 m^2/L (20 ft^2/gal) using 3 mm (1/8") notched trowel. Rates will vary depend-ing on ambient temperature and actual surface conditions.

LIMITATIONS

- Not intended for use in ponded conditions.
- Not intended for exposure to UV. Will discolor/pickup dirt if left exposed.

PHYSICAL PROPERTIES

PROPERTY	TYPICAL VALUE	TEST METHOD
Asbestos content	None	ASTM D 276
Viscosity @ 25°C (77°F)	1,120-1760 Pa.s (1,1,120-1,760,000 cP)	ASTM D 2196
Density @ 25°C (77°F)	1534 kg/m^3, White, (12.8 lb/gal)	ASTM D 1475
Adhesion in peel, min	0.5 N/mm (3 lbf/in)	ASTM D 1876
Lap shear adhesion, min	124 kPa (18 psi)	ASTM D 816
VOC, less water, water less exempt solvent	250 g/L	ASTM D 3960

Sheeting Bond™-White

PRECAUTIONS

Users must read container labels and Safety Data Sheets for health and safety precautions prior to use.

MAINTENANCE

Your local Tremco Roofing representative can provide you with effective maintenance procedures, which may vary depending upon specific conditions. Periodic inspections, early repairs and preventive maintenance are all part of a sound roof program.

TECHNICAL SUPPORT

Your local Tremco Representative, working with the Technical Service Staff, can help analyze conditions and needs to develop recommendations for special applications. The services of the Tremco Research Center, which has earned a unique reputation in weatherproofing technology, complement and extend the service of the Tremco Service Staff.

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½" Retro-Fit™ Board

Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 2

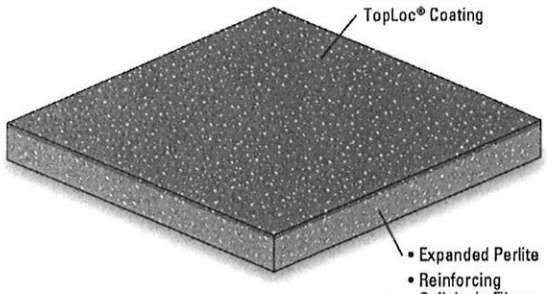
Features and Components

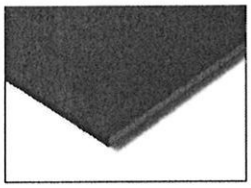
TopLoc® Coating: Top surface is sealed with this special coating to reduce excessive asphalt absorption in hot-asphalt applied roofing systems.

Expanded Perlite: Provides good dimensional stability, excellent insulation value with stable R-value and fire resistance.

Reinforcing Cellulosic Fibers: Consists of recycled newsprint to provide strength to the board as well as high recycled content. JM utilizes third party certification by UL environment to certify the recycled content and contributes to the LEED Materials and Resource (MR) credit 4.

Hot Asphalt Friendly: Utility board for use as a divorcing layer in re-roofing and in new construction as a top layer in multi-layer insulation systems proven to reduce the tendency for blistering in hot asphalt applications.





Component: **B** Cover Board — Multi-Ply

Type: **PL** Perlite; **LT** Low Thermal

System Compatibility

This product may be used as a component in the following systems. Please reference product application for specific installation methods and information.

Multi-Ply	BUR			APP			SBS				
	HA	CA	HW	HA	CA	HW	SA	MF			

Compatible with the selected multi-ply systems above

Single Ply	TPO				PVC				EPDM		
	MF	AD	SA	IW	MF	AD	IW	MF	AD	BA	

Do not use in single ply systems

Key: **HA** = Hot Applied **CA** = Cold Applied **HW** = Heat Weldable **SA** = Self Adhered **MF** = Mechanically Fastened **IW** = Induction Weld **BA** = Ballasted **AD** = Adhered

Energy and the Environment

LEED®	Recycled Content	Contains a minimum of 29% minimum recycled content.

UL ENVIRONMENTAL CLAIMS VALIDATION — ✓ 1/2" Retro-Fit™ Board contains a minimum of 29% recycled content.

Peak Advantage® Guarantee Information

Systems	Guarantee Term*
When used in most 2-5 ply BUR and SBS systems.	10,15 or 20 years

* Contact JM Technical Services for specific systems or terms over 20 years.

Codes and Approvals

cULus CLASSIFIED — FM APPROVED — MIAMI-DADE COUNTY APPROVED, Miami-Dade County Product Control Approved

Installation/Application

Refer to the Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Size	2' x 4' (0.61 m x 1.22 m)	4' x 4' (1.22 m x 1.22 m)	4' x 8' (1.22 m x 2.44 m)
Thickness	½" (1.27 cm)		
Board Weight (lbs)	4.4	8.9	17.2
Ft²/Pallet	1,536	1,536	3,072
Boards/Pallet	192	96	96
Pallet Weight (lbs)	850	850	1,650
Pallets per Truck*	48	48	24
Producing Location	Rockdale, IL		

* Assumes 48' flatbed truck.

½" Retro-Fit™ Board

Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 2

Typical Physical Properties

Test		ASTM	½" Retro-Fit Board
Strength	Board Density, pcf (kg/m³), *nom*	C 209	12 (192)
	Compressive Strength 5% Consolidation, psi (kPa), *nom*	C 165	35 (241)
	Laminar Tensile Strength, psi (kPa), *min*	C 209	6.0 (41)
	Flexural Strength, psi (kPa), *min*	C 203	60 (414)
Moisture	Water Absorption, % by vol, *max*	C 209	3.5
Installation	Linear Expansion, % *max*	C 209	0.5
	Flute Span, in. (thickness), *max*	E 661	<1
	Weight per ft², lbs, *nom*	NA	0.6

Thermal Performance

Thickness		Nominal R-Value (Resistance)	
in.	mm	(hr•ft²•°F)/BTU	m²•°C/W
½	13	1.1	0.20

Test	ASTM	½" Retro-Fit Board
Flame Spread	E 84	30
Smoke Developed	E 84	20

Technical specifications as shown in this literature are intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the web at www.jm.com/roofing. The physical and chemical properties of the product listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Check with the regional sales representative nearest you for current information.

RS-5047 3-24 (Replaces 9-23)