SUBMITTAL PACKAGE

RamTough 250

Hot Fluid Applied Rubberized Asphalt Roofing & Waterproofing System

RamTough 250 Submittal Package

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What Makes Barrett the Best Value in Roofing and Waterproofing Systems?

Barrett has been serving the roofing and waterproofing industry since 1928 and specializing in hot fluid-applied rubberized asphalt since 1975. Decades of experience in the manufacturing, system design, and application of moisture protection systems allows Barrett to offer "World Class" specification and application support.

Barrett system designs and details do not compromise quality or long term performance for a competitive edge. Barrett is dedicated to the proven performance of polymer-modified asphalt technology and does not compromise its drive for excellence by offering less sustainable systems.

Roofing performance promises are easy to make, hard to deliver. Almost all roofing material manufacturers advertise and profess to offer the "best" or "ultimate" systems and to meet every need of every customer. But our systems and components often exceed industry standards and have developed a reputation for being "bulletproof." And with projects like the Lincoln and Jefferson Memorial, Fort Knox, the Martin Luther King, Jr. Memorial Library, Millenium Park, Terminal Tower, and more under our belt, it's easy to understand why.

Barrett's primary expertise in roofing and waterproofing technologies, combined with long-term relationships with suppliers of supplemental products, allow for single source designs and system warranties. Many years of "hands-on" installation experience has provided Barrett with the know-how to bring together roofing and waterproofing components into compatible system designs consistent with real-world workmanship to successfully complete unique projects.

Barrett offers a national network of approved contractors which have demonstrated their ability to install high-performance systems and a willingness to work cooperatively with others to meet overall project objectives. An RCI Registered Roof Consultant is on staff to service customers and lead the technical competencies of the company.

Unlike most of our direct competitors, Barrett products are "Made in the USA". Buying domestic products means improving our balance of trade, supporting our workforce, helping our economy, and sustaining environmental initiatives. Barrett products are available from distributors nationwide.

Ram-Tough 250

Rubberized Asphalt Membrane

The Uncompromising, Tough, Flexible Membrane That Delivers Design Flexibility, Durability and a Single-Source System Warranty

A Fluid-Applied Rubber Membrane

A thermoplastic material, Ram-Tough 250 is a rubberized asphalt membrane which forms a completely monolithic, waterproof system without seams or joints. It exhibits excellent adhesion characteristics to almost any sound horizontal or vertical surface. Water cannot get under or through it. Ram-Tough is a hot-applied rubber membrane that seals difficult flashing conditions, and remains flexible for its lifetime.

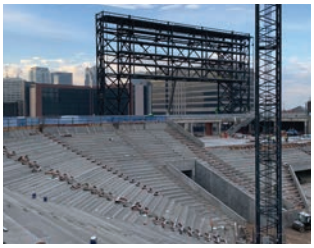
Ram-Tough 250 is composed of SBS rubber polymers, specially refined unoxidized asphalts and a mineral filler. It is melted on the jobsite, spread on the deck and walls in 90 mil thickness, reinforced with polyester fabric and overcoated with 125 mils of Ram-Tough 250, 215 mil total thickness. It instantly sets up to a custom-fit seamless, reinforced modified bitumen rubber sheet.

Ram-Tough 250 Advantages

- Hot jobsite application forms a monolithic, elastic, joint-free membrane with triple reinforced flashings.
- Retains low temperature elastic flexibility throughout its life.
- 215 mils of protection (180 mils with the SM system)— provides 300–600% greater material thickness than competitive elasto-plastics.
- Excellent self-healing cold flow properties under many conditions.
- 100% solids—no solvents, no urethanes, no mixing, no on-site cure failures and no shrinking.
- Can be applied in cold weather (to 0° F) on frost-free surface.
- Flexible—bridges cracks to 1/16".
- Tenacious adhesion eliminates water migration under the membrane.
- Fast, one coat application can be protected and open to other trades in minutes.
- Polyester reinforcement provides extra strength and security to membrane.
- Proven on thousands of applications.
- Odor mask formulation available.
- Vertical or horizontal application.
- Unaffected by rain, snow or frost immediately after application.
- No solvents—minimizes fire hazards and worker health hazards associated with rubber sheets.
- Applied only by Ram-Tough Approved Contractors.

1. **Lincoln Memorial, Washington, D.C.** Reroofed with RAM TOUGH 250 DM PMR plaza roof with slate pavers. One of the four venerable crown jewels of the capitol plaza, it was chosen as the NRCA Gold Circle Award winner. The RAM system was chosen for its advantages over alternate roofing systems and it's proven track record. Project Architects: Einhorn, Yaffee, Prescott, P.C.; Roofing Engineer: Seal Engineering, Inc.
2. **The Museum of Science and Industry in Chicago** is one of the nation's oldest, largest and most comprehensive museums of technology. It captivates more than two million visitors a year. RAM TOUGH 250 DM was used on the 1998 plaza expansion and parking deck structure adjacent to the original structure. Project Architects: A. Epstein & Sons International, Inc.
3. **United States Bullion Depository, Ft. Knox, Kentucky** was reroofed with RAM TOUGH 250 DM PMR protected membrane roof system. RAM TOUGH was chosen by the Department of the Treasury based upon the dependable and time-proven performance RAM TOUGH 250 has provided the government on hundreds of important projects. Architect: Bernard Johnson Young Inc.
4. **The White House, Washington, D.C.** required rehabilitation of the underground tunnel network's waterproofing. RAM TOUGH 250 was chosen for the high reliability, fast installation and low odor emissions. Architects: General Services Administration, White House Special Projects Office; Consultants: Sverdrup Corp. & Anadac.
5. **Jefferson Memorial, Washington, D.C.** reroofed with RAM TOUGH 250 DM PMR Plaza roof, is the third of the four capitol plaza crown jewels to be roofed with rubberized asphalt membrane. The RAM TOUGH system provides watertight integrity after two single ply failures and a worn out coal tar BUR system. Project Architects: Einhorn, Yaffee, Prescott, P.C.; Roofing Engineer: Seal Engineering, Inc.
6. **Hilton Paris Casino in Las Vega**s has a 200,000 ft.2 plaza over the main casino area. The RAM TOUGH 250 DM PMR waterproofing system assures leak-free performance over revenue producing gaming tables. Design Architects: Bergman, Walls & Youngblood, Ltd.; Executive Architect: Leidenfrost/Horowitz and Assoc.; Consulting Architects: MBH Architects; Waterproofing and Roofing Engineer: Seal Engineering, Inc.

Featured Projects | RamTough 250 Rubberized Asphalt



Protective Stadium, Birmingham, AL is the official name for the massive, 47,000 capacity stadium and future home for UAB Football. Barrett's RamTough 250DM PMR was selected for the split slab waterproofing of the long-awaited, nearly $180 million project, which will also host a variety of sporting events and concerts, and even the opening and closing ceremony of the 2022 World Games.

Project Architects: *Populous*
General Contractors: *Brasfield & Gorrie*

Mott Haven Campus, Bronx, NY was designed to accommodate four distinct schools on one densely packed brownfield site, clustered around a shared 600-seat performing arts space and sports field—All from a former railyard that sat 17-30 feet below grade. Lauded for its incredible use of space, the project also utilized more than 120,000 sq ft of RamTough 250 DM waterproofing.

Project Architects: *Perkins Eastman*
General Contractors: *DeMatteis*

Salesforce Transit Center, San Fransisco, CA serves as the primary bus terminal & future rail terminal for the San Francisco Bay Area. Under the FTA's "Buy America Act," the design by PCPA required an American-made system to be installed on the bus deck level under a protective concrete pad/roadway. As such, their first choice was Barrett's RamTough 250 waterproofing system.

Project Architects: *Pelli Clarke Pelli Architects.*
General Contractors: *Best Contracting Services*

Catalog at Willis Tower, Chicago, IL is the massive expanse that has emerged at the base of the former Sears Tower. When examining the requirements of the project's vast vegetative rooftop, the building contractors turned to Barrett's RamTough 250 with fabric reinforcement to help create an airtight waterproofing system that would guarantee protection for years to come.

Architects: *Gensler Architects*

Paramount Plaza, New York City, NY saw a major renovation program, conceived by none other than Der Scutt, that saw the need for a new roof. The 670 ft, 48-story skyscraper turned to Barrett's RAM system to get the job done. From the roof of 1633 Broadway, twelve other Barrett projects are visible, exemplifying the diversity and quality of Barrett RamTough roofing and waterproofing systems.

Project Architects: *Der Scutt*
Roofing Contractors: *C & W Roofing*

Fenimore Art Museum, Cooperstown, NY took a leap of faith in the 1990s by adding a 38,100 sq/ft green roof directly above a museum full of priceless art and artifacts. Luckily, the waterproofing envelope, protection, drainage and filter fabric for the earth-sheltered Museum are all part of the RamTough rubberized asphalt waterproofing system. Nearly 30 years later, it still remains watertight.

Architects: *Hardy, Holzman & Pfeiffer Associates*
General Contractors: *Charles T. Driscoll Mansonry Restoration Company, Inc.*

Ram Primer & Surface Conditioner

Asphalt Based Surface Conditioner

Description

Ram Primer & Surface Conditioner is a general utility asphaltic prime coat for porous and non-porous surface for application of RamTough 250 and RamTough KLB-100.

Uses

Prepares concrete, gypsum, brick, masonry, metal and aged asphalt roofing membrane to be coated with RamTough 250 and RamTough KLB-100.

Coverage

All surfaces to be primed with Ram Primer & Surface Conditioner must be clean, dry and free from moisture, rust, dust, dirt, oil, grease and any other foreign matter.

- Brush/Roller Application rate is 100-300 sq ft / gal.
- Spray Application rate is 300-500 sq ft /gal.

Note: Application rates due vary pending the porosity of substrate.

Properties

Description	Test Method	Value
Color		Black
Flash Point (ºF)	ASTM D-3278	>100°F (37.78°C)
Density @ 77ºF	ASTM D-1475	7.4lb/gal (7.89kg/3.785 L)
Solids by Weight	ASTM D-1644	47.8%
Asbestos Content	ASTM D-276	0

Packaging

5 gallon pails
42 lbs/pail
36 pails/pallet

RamTough 250

Hot Fluid Applied Rubberized Asphalt Roofing & Waterproofing Membrane

Description

A thermoplastic material, RamTough 250 Bitumen is a 100% solid polymer modified rubberized bitumen which forms a completely monolithic, waterproof barrier without seams or joints.

Uses

Ram Tough 250 is designed to be installed in new and restoration applications such as plaza deck waterproofing systems, protected membrane roofs (IRMA®)*, Green Roof Roofscapes®, Vertical waterproofing applications, parking decks, bridges, water treatment plants and between slab waterproofing membrane systems.

Coverage

First Coat:		Second Coat:
90 mils (0.565 lbs/sq ft)	+	125 mils (0.785 lbs/sq ft)

Finished Application:
215 mis (1.35 lbs/sq ft)

Approvals

Underwriters Laboratories

New York City (MEA)

Miami Dade

Packaging

30 lbs./carton
75 cartons per pallet
2,250 lbs./pallet

Heating Equipment & Guidelines

A double-jacketed, hot-air or oil bath melter with mechanical agitation, specifically designed for rubberized asphalt materials is required. Maintain oil-bath at approximately 500°F and material temperature at 375°F to 400°F, with constant agitation.

Do not overheat RamTough 250. Overheating will cause RamTough 250 to cross-link and line the walls of the melter, adversely affecting the equipment and the material performance properties.

It is also important not to hold RamTough 250 material at elevated temperatures for prolonged periods of time as this will also cause some polymer degradation. A target of not exceeding four hours at 400°F under heat should be adhered to.

Limitations

RamTough 250 should not be left exposed or subjected to unprotected construction traffic. Do not install this product over lightweight structural concrete of less than 3000 PSI (6.89 kN/m²) without prior written acceptance from Barrett. Lightweight insulating concrete and insulation boards are not acceptable substrates.

Properties

Description	Test Method	Test Requirement	Test Results	Comments
Color	NA	NONE	NA	Black
Softening Point	ASTM D2398	80ºC (176°F)	83ºC (181°F)	Pass
Solids Content	CGSB-37.50-M89	100%	100%	Pass
Ratio of Toughness to Peak Load	CGSB-37.50-M89	Min. 0.040	0.059	Pass
Low Temperature Crack Bridging Capacity	CGSB-37.50-M89	No cracking No Adhesion Loss No Splitting	No cracking No Adhesion Loss No Splitting	Pass
Toughness, J	CGSB-37.50-M89	Min. 5.5	11.7	Pass
Penetration 0.1 mm	CGSB-37.50-M89	Max 110 @ 25ºC (77ºF) Max 200 @ 50ºC (122ºF)	80 @ 25ºC 155 @ 50ºC	Pass
Flow, mm	CGSB-37.50-M89	Max 3 @ 60ºC (140ºF)	0.50 @ 60ºC	Pass
Flash Point	CGSB-37.50-M89 ASTM-D-92	Min. 260ºC (500ºF)	327ºC (620ºF)	Pass
Adhesion	CGSB-37.50-M89	Min. 1	1.2	Pass
Viscosity	CGSB-37.50-M89	Min. 2, Max 15	4 Sec.	Pass
Water Vapor Permeability	CGSB-37.50-M89	Max 1.7 0.35 g max gain	0.18 ng/Pa. m^2s	Pass
Water Absorption	CGSB-37.50-M89	Max 0.18 0.18 g max loss	0.22 g gain	Pass
Low Temperature Flexibility & Adhesion	CGSB-37.50-M89	No cracking No delamination No adhesion loss	No cracking No delamination No adhesion loss	Pass
Heat Stability	CGSB-37.50-M89	Aged samples No change in viscosity, penetration flow or low temp	Aged samples No change in viscosity, penetration flow or low temp	Pass

PolyFelt 125

Reinforcement Fabric

Description

PolyFelt 125 is a 16 mil lightweight thermally bonded spun laid non-woven fabric reinforcement.

Uses

RamTough 250 & KLB-100 - Is Installed as a reinforcement fabric between the first and second layers.

Coverage

1,073 sq ft per roll

Properties

Description	Measurement	Test Method
Color	Gray	
Thickness	16 (mils) (0.406 mm)	ASTM D-1777
Mat Weight	2.2 oz./ sq yd (62.4 g)	
Tensile Strength		
Warp (MD) lbs./in.	78 lbs./in (35.4kg)	ASTM D-5034
Fill (CMD) lbs./in.	85 lbs./in (38.6kg)	ASTM D-5034
Tensile Strength		
Warp (MD) lbs./in.	58 lbs./in (26.3kg)	ASTM D-5034
Fill (CMD) lbs./in.	54 lbs./in (24.5kg)	ASTM D-5034
Tensile Strength		
Warp (MD) lbs./in.	23.8 lbs./in (10.8kg)	ASTM D-1117
Fill (CMD) lbs./in.	24.9 lbs./in (11.3kg)	ASTM D-1117
Puncture Resistance	31 Lbs (14.1kg)	ASTM D-4830

Packaging

39.4”x327’
Roll Weight 22 lbs
25 rolls per pallet

RamFlash PMMA Primer

Two-part Polymethyl Methacrylate Primer

Description

RamFlash PMMA Primer is a two-part quick-curing primer for porous and non-porous substrates to prepare for the application of RamFlash PMMA Membrane.

Uses

RamFlash PMMA Primer is designed to prepare substates for the RamFlash PMMA Membrane system to be used in conjunction with RamTough 250 and/or Black Pearl Membranes.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 35°F (1.7°C) or above 80°F (27°C). Approximate shelf life 12 months with proper storage. RamFlash PMMA Catalyst Powder must be stored separately.

Catalyst Powder Requiements

Material Temp °F	Catalyst Powder (100g/bag)	Pot Life (min)	Completely Cured (min.)
35°F - 50°F	2 bags	20	45
50°F - 64°F	2 bags	20	30
65°F - 85°F	1 bag	15	30
>85°F	1/2 bag	10	15

Properties

Description	Measurement
Color	Transparent
Physical State	Cures to solid
VOC Contents	62 g/l
Usage Time*	15 minutes
Water Resistant After*	30 minutes
Cures After*	30 minutes
Apply Membrane/Coating After*	30 minutes

Packaging

5 kg units-Approximately 1-gallon units
Area 125 sq ft

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

NOTE: Prior to opening the containers of RamFlash Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Material Preparation

RamFlash PMMA Primer may be applied when the ambient temperature is between 35°F (2°C) and rising. The substrate temperature must be a minimum of 5 degrees above the dew point. RamFlash PMMA Membrane must be applied to primer within 48 hours of primer application. Primer exposed for more than 48 hours must be re-primed.

Provide and maintain positive airflow over freshly applied RamFlash materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.

Step 1: Mix RamFlash PMMA Primer with a spiral agitator, until the liquid is a uniform color, with no streaks present.

Step 2: Add the 100 g RamFlash PMMA Catalyst Powder to RamFlash PMMA Primer according to temperature table and mix with the same agitator for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the ambient temperature (see table).

NOTE: RamFlash PMMA Primer is extremely fast curing. Excessive mixing time reduces the available working time for the Primer.

Step 3: Apply RamFlash PMMA Primer with a nap roller or brush.

RamFlash PMMA Catalyst

Powder Use to Initiate Cure of RamFlash PMMA Membrane & Primer

Description

RamFlash PMMA Catalyst is an initiator agent based on 50% dibenzoyl peroxide to induce the cure of RamFlash PMMA Membrane and RamFlash PMMA Primer.

Uses

RamFlash PMMA Catalyst 300 g bag to be used with RamFlash PMMA Membrane and RamFlash PMMA Catalyst 100 g bag to be used with RamFlash PMMA Primer.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 35ºF (1.7ºC) or above 80ºF (27ºC). Approximate shelf life 36 months with proper storage. Store separately from the other products.

Application

Refer to RamFlash PMMA Primer and Membrane Installation Instructions.

Packaging

100 g plastic bag
300 g plastic bag

RamFlash PMMA Fleece

Polyester Reinforcement Fabric

Description

RamFlash PMMA Fleece is a non-woven, needle-punched polyester fabric to reinforcement the RamFlash PMMA Membrane cold liquid-applied reinforced PMMA waterproofing membrane systems.

Uses

RamFlash PMMA Fleece reinforcement the RamFlash PMMA Membrane to improve strength tear and puncture resistance while the membrane remains uniform.

Surface Preparation

RamFlash PMMA Fleece is to be kept clean and be embedded into the RamFlash PMMA Membrane immediately.

Storage

Store in cool and dry location. Store flat to avoid deforming rolls and creasing fabric.

Application

Refer to RamFlash PMMA Membrane Installation Instructions.

Properties

Description	Measurement		
	200	**165**	**120**
Color	White	White	White
Physical state	Solid	Solid	Solid
Thickness (165/200 fleece)	70 mils	50 mils	40 mils
Weight (g/m^2)	200	165	120
Tensile strength @ break	>2,200 lbs.	>1,775 lbs.	>1,550 lbs.
Elongation	>75%	>75%	>65%
Tear resistance	>885 lbs.	>665 lbs.	>530 lbs.
Puncture strength	>1,245 lbs.	>1,110 lbs.	>1,065 lbs.

Packaging

13.8" x 164' 3 per bag
20.7" x 164' 2 per bag
41.3" x 164' 1 per bag

RamFlash PMMA Membrane

Two-part Polymethyl Methacrylate Membrane

Description

RamFlash Membrane is a two-part quick-curing, UV-stable waterproof and roofing Polymethyl Methacrylate (PMMA) membrane.

Uses

RamFlash Membrane is designed to be used as a waterproof/ roofing flashing material in conjunction with RamTough 250 and/or Black Pearl Membranes. RamFlash PMMA Membrane is applied before the installation of RamTough 250 and/or Black Pearl. Do to it UV-stability it can be left exposed to the elements as a waterproof coating.

Color

Gray and White

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 35°F (1.7°C) or above 80°F (27°C). Approximate shelf life 12 months with proper storage. RamFlash PMMA Catalyst Powder must be stored separately.

Catalyst Powder Requiements

Material Temp °F	Catalyst Powder (300g/bag)	Pot Life (min)	Completely Cured (min.)
23°F - 35°F	2 bags	45	90
35°F - 50°F	2 bags	35	70
50°F - 70°F	1 1/2 bags	30	40
70°F - 85°F	1 bag	20	30
>85°F	1/2 bag	20	30

Properties

Description	Measurement	Testing
Color	Gray & White	
Physical State	Cures to Solid	
Thickness (120 Fleece)	90 mils	
VOC Content	32 g/l	
Peak Load @ 73 F, avg.	D5147 70 lbf/in	
Elongation	Min 30%	D5147
Tearing Strength	80 lbf	D5147
Dimensional stability	0.05%	D1204
Water absorption	0.05% (7 days)	D570
Impact Resistance	Shore A:75 +/- 5	D2240
Crack spanning	2 mm/0.08 inch	
Short-term temperature resistance	250 ºC/482 ºF	
Usage time*	20 minutes	
Rainproof after*	30 minutes	
Solid to walk on after*	30 minutes	
Apply coating after*	60 minutes	
Apply overburden after*	60 minutes	
Completely hardened*	6 hours	

Packaging

15 kg units-Approximately 5-gallon units
48 units per pallet

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

NOTE: Prior to opening the containers of RamFlash Membrane, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Material Preparation

RamFlash PMMA Membrane may be applied when the ambient temperature is between 35°F (2°C) and rising. The substrate temperature must be a minimum of 5 degrees above the dew point. RamFlash PMMA Membrane must be applied to primer within 48 hours of primer application. Primer exposed for more than 48 hours must be re-primed.

Provide and maintain positive airflow over freshly applied RamFlash PMMA materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.

Step 1: Allow RamFlash PMMA Primer to cure completely prior to application of the RamFlash PMMA Membrane.

Step 2: Mix RamFlash PMMA Membrane with a spiral agitator, until the liquid is a uniform color, with no streaks present.

Step 3: Add the 300 g RamFlash PMMA Catalyst Powder to RamFlash PMMA Membrane according to temperature table and mix with the same agitator for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the ambient temperature (see table).

NOTE: RamFlash PMMA Primer is extremely fast curing. Excessive mixing time reduces the available working time for the Primer.

Step 4: Apply RamFlash PMMA Membrane with a nap roller or brush apply 2/3 of the resin liberally and evenly onto the surface in even stroke. Covering one working area at a time, between 10 - 15 ft^2 (0.56-0.84 sq meters).

Step 5: Roll the RamFlash PMMA Fleece directly into the Resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up.

Step 6: Apply the remaining 1/3 of the resin to the top of RamFlash PMMA Fleece to complete the saturation. Rolling the final coat of RamFlash PMMA Membrane onto the RamFlash PMMA Fleece should result in a glossy appearance. The RamFlash PMMA Fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the RamFlash PMMA Fleece. The correct amount of RamFlash PMMA Membrane will completely saturate the RamFlash PMMA Fleece and no dry spots should be visible. Work wet RamFlash PMMA Membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full saturation.

Step 7: RamFlash PMMA Membrane must be fully cured and tack free before applying RamTough 250 or Black Pearl.

RamFlash 327 HDR

Uncured Neoprene Flashing

Description

RamFlash 327 HDR is a 60 mil heavy-duty uncured neoprene flashing material to be used in conjunction with RamTough 250 and RamTough KLB-100. It is designed to be flexible and conform to irregular surfaces and shapes, curing in place after installation.

Uses

RamTough 250 flashing assemblies
RamTough 250 expansion joint designs
Green Roof Roofscapes®

Application Precautions

- Do not apply to dusty, dirty, wet, damp or otherwise contaminated surfaces
- Do not expose to solvents or solvent based roofing products

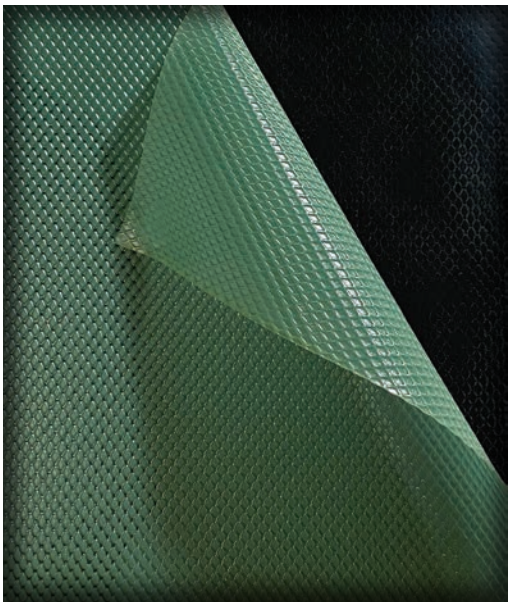
Packaging

Rolls = 100 ft.

Widths:
- 6”
- 9”
- 12”
- 18”
- 24”
- 36”

Properties

Description	Test Method	Value
Color		Black
Thickness	ASTM D-751	60 (mils) (1.524 mm)
Tensile Strength (psi, min)	ASTM D-412 (Die C)	1887 (13010.9 kPa)
Tensile Strength (psi, min) (70 hrs. @ 212°F) (100°C)	ASTM D-412 (Die C)	1340 (9239.3 kPa)
Elongation, Ultimate (min, %)	ASTM D-412 (Die C)	305
Elongation, Ultimate (min, %) (70 hrs. @ 212°F) (100°C)	ASTM D-412 (Die C)	250
Tear Resistance (lbs/in. min)	ASTM D-624 (Die C)	136 (23.8 kN/m)
Brittleness Point @ -40°F(-40°C)	ASTM D-2137	No Breaks
Ozone Resistance Condition after Exposure to 100 pphm Ozone in Air for 100 h at 104°F (60°C) (sample under 20% strain)	ASTM D-1149	No Cracks @ 7 X Magnification
Resistance to Water Change in Mass, max, after 7 Days Immersion at 158°F (70°C)	ASTM D-471	+8.5%



LIMITED WARRANTY: Barrett warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Barrett makes no other warranty, expressed or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to The Barrett Compnay, LLC. Barrett to replace or to refund the purchase price of the quantity of Barrett proven to be defective, and Barrett shall not be liable for any loss or damage.

Ram 203

Modified Bitumen Medium-Duty Protection Course

Description

Ram 203 is a SBS polymer-modified, fiberglass reinforced asphalt membrane with sanded surfaces, top and bottom to create a medium-duty protection course.

Coverage

159 sq ft

Uses

Ram 203 can be used as a medium-duty protection course for RamTough 250, RamTough KLB-100 and torch down applications.

Properties

Description	Measurement	Test Method
Thickness	2.2 mm/86 mils	
Reinforcement	Fiberglass	
Max. Load at 0±3.6°F (lbf/in)	91 (15.9 kN/m)	ASTM D-6163
Elongation at 0±3.6°F (%)	4.5	ASTM D-6163
Max. Load at 73.4±3.6°F (lbf/in)	41 (7.2 kN/m)	ASTM D-6163
Elongation at 73.4±3.6°F (%)	3.7	ASTM D-6163
Tear Strength at 73.4±3.6°F (lbf)	73 (12.8 kN/m)	ASTM D-6163
Low Temp. Flex 0°F Max.	-15 (26.1°C)	ASTM D-6163
Dimensional Stability (%) Max.	<0.1	ASTM D-6163
Compound Stability Temp (°F)	250 (121°C)	ASTM D-6163

Packaging

39”x49’
90 lbs. per roll
24 per pallet

Ram 306

Modified Bitumen UV Stable Protection Course

Description

Ram 306 is a SBS polymer-modified, polyester reinforced modified bitumen membrane with a ceramic granule surface protection. The granular surface creates a UV stable protection course.The high strength polyester reinforcement gives the composite membrane excellent tensile strength, toughness, puncture and tear resistance necessary to accommodate typical rooftop exposures.

Uses

Ram 306 is used for a UV or extremely heavy duty for the protection course to protect RamTough 250 and RamTough KLB-100.

Coverage

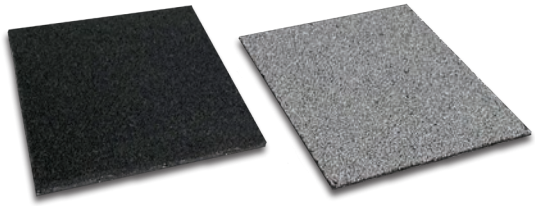
107 sq ft

Properties

Description	Measurement			
	INITIAL RESULTS		AFTER CONDITIONING*	
	MD**	XD**	MD**	XD**
Load Strain @ 77°F				
Maximum Load (lbs/in.)	93	63	98	70
Elongation @ Max. Load (%)	56	61	48	54
Strain Energy @ Max. Load (inch-lbs/in2)	40	29	36	28
Load Strain @ 0°F				
Maximum Load (Lbs/in.)	127	98	117	83
Elongation @ Max. Load (%)	34	29	29	22
Strain Energy @ Max. Load (inch-lbs/in2)	36	28	29	17
Low Temperature Flexibility				
Initial -low temperature cracking does not occur	-15°F	-15°F	-	-
After heat conditioning at (158°F for 90 days)	-	-	-5°F	-5°F
Thickness (mils) (average value)	160	-	-	-
Tensile Tear Strength @ 77°F(lbf)	120	87	-	-
Moisture Content (%)	0.6	-	-	-
Water Absorption (%)	0.6	-	-	-
Dimensional Stability (Absolute Dimensional Change) (%)	< -0.5	< -0.5	-	-
Compound Stability Temperature at which flow formation observed	250°F	-	-	-

*Meets or exceeds the requirements of ASTM D-6164 Type I Grade G Test Results per ASTM D-5147 *158°F for 90 days*

***MD = machine direction, XD = cross direction*



Packaging

39”x33’
98 lbs. per roll
25 per pallet

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: Ram Primer/Surface Conditioner

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

Recommended Use: A component part of commercial waterproofing and roofing systems

Restrictions on Use: Should only be used by a Barrett Approved Contractor

2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Flam. Liq. 3;H226	Flammable liquid and vapor.
STOT RE 1;H372 (central nervous system)	Causes damage to organs through prolonged or repeated exposure. Specific Target Organs:

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Danger

H226 Flammable liquid and vapor.
H372 Causes damage to organs through prolonged or repeated exposure.

Prevention:
P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.
P235 Keep cool.
P240 Ground / bond container and receiving equipment.
P241 Use explosion-proof electrical / ventilating / light / equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist / vapors / spray.
P262 Do not get in eyes, on skin, or on clothing.

P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves / eye protection / face protection.

Response:
P301+310 IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.
P303+361+353 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with mineral oil, water/shower.
P314 Get Medical advice / attention if you feel unwell.
P331 Do NOT induce vomiting.
P370+378 In case of fire: Use extinguishing media listed in section 5 of SDS for extinction.

Storage:
P403+233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:
P501 Dispose of contents / container in accordance with local / national regulations.

3: COMPOSITION INFORMATION ON INGREDIENTS

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	CAS Number:	Weight %	GHS Classification	Notes
Asphalt (petroleum)	0008052-42-4	50 - 75	Not Classified	[1][2]
Stoddard solvent	0008052-41-3	25 - 50	STOT RE 1;H372	[1][2]
Bitumen(containing aromatic oils)	0064742-93-4	10 - 25	Not Classified	[1]

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.
[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.
*The full texts of the phrases are shown in Section 16.

4: FIRST AID MEASURES

4.1. Description of first aid measures

General: In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Skin: Moderately irritating.
Ingestion: Abdominal irritation.
Inhalation: If enlivened by primer or heat, over exposure to fume could cause irritation, dizziness.

Inhalation: If respiratory discomfort occurs, remove to fresh air. If discomfort continues, administer oxygen and get medical attention.

Eyes: Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

Skin: If this product comes in contact with skin, remove material with mineral oil, then wash with soap and plenty of water.

Ingestion If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Overview: Pre-existing eye, skin, and respiratory disorders may be aggravated by exposure to these products. Exposure to high concentrations of fumes may have an anesthetic effect. Exposure to solvent vapor concentrations from the

component solvents in excess of the stated occupational exposure limits may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eyes may cause irritation and soreness with possible reversible damage. See section 2 for further details.

5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Class "B" dry chemical, carbon dioxide, or other suitable extinguishing material such as dry sand. Do not use halogenated agents. When flames have been eliminated, cover residue with dry extinguishing agent or dry sand and allow it to remain undisturbed until it has cooled. If fire appears to increase in intensity, stop using these agents. Apply Class "D" extinguishing agent or more dry, inert, granular material. Ring fire with extinguishing material and allow the fire to burn out.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Oxides of carbon, various hydrocarbon fragments
Keep away from heat / sparks / open flames / hot surfaces - No smoking.
Keep cool.
Ground / bond container and receiving equipment.
Use explosion-proof electrical / ventilating / light / equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe mist / vapors / spray.
Do not get in eyes, on skin, or on clothing.

5.3. Advice for fire-fighters

When heated above flash point, material will release flammable vapors which can burn or be explosive in confined spaces if ignited.
Do not mix with strong oxidants such as liquid chlorine or concentrated oxygen.
If the fire does not respond to above agents or they are not available, use foam or water FOG as a last resort. Water may also be used to cool exposed, but not burning, containers. These products may float and be re-ignited on top of water.

Closed containers may explode in a fire. Keep containers cool and remove to a safe location.
In a confined space, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full face-piece and protective clothing.
Persons without respiratory protection should leave area.

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6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.
Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Contain spill as quickly as possible. Keep flowing material away from heat, sparks, or open flames. Do not smoke near a spill. Use clay (Oil Dry™), sand, earth, etc. to absorb the spill. Put material into a suitable steel drum which can be closed securely.

7: HANDLING AND STORAGE

7.1. Precautions for safe handling

The requirements of the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations apply if the flashpoint is between 21°C and 32°C.
See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Store in cool, dry area, away from heat, sparks and naked flames.
Keep containers sealed when not in use.
Keep container closed when not in use. Store in a dry ventilated area. Maintain package labeling during storage.
Incompatible materials: Strong oxidizing agents
Vapors are heavier than air and may travel along the ground or be moved by ventilation to locations distant from the point of material handling. To prevent fumes from entering buildings or confined areas, close all air intake sources near the material handling or the work area. To prevent ignition, avoid smoking, keep away from heat, open flames and sources of static or electrical sparking. Use explosion proof motors and equipment. Tank trucks or other containers should be grounded and/or bonded when the material is transferred.
Avoid prolonged or repeated inhalation of vapors or spray mists. Avoid prolonged or repeated skin contact. Adhere to good hygienic practices. Avoid open flames. Use with adequate ventilation.
Store in a cool, dry place, out of direct sunlight and away from heat, sparks, and flame.
See section 2 for further details. - Storage:

7.3. Specific end use(s)

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1. **Control parameters**

Exposure

CAS No.	Ingredient	Source	Value
0008052-41-3	Stoddard solvent	OSHA	TWA 500 ppm (2900 mg/m3)
		ACGIH	WA: 290 mg/m3STEL: 580 mg/m3
		NIOSH	TWA 350 mg/m3 C 1800 mg/m3 [15-minute]
		Supplier	No Established Limit
0008052-42-4	Asphalt (petroleum)	OSHA	No Established Limit
		ACGIH	TWA: 0.5 mg/m32B
		NIOSH	Ca C 5 mg/m3 [15-minute]
		Supplier	No Established Limit
0064742-93-4	Bitumen (containing aromatic oils)	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0008052-41-3	Stoddard solvent	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No

0008052-42-4	Asphalt (petroleum)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No
0064742-93-4	Bitumen (containing aromatic oils)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: Yes; Group 2b: No; Group 3: No; Group 4: No

8.2. Exposure controls

Respiratory In case of burning material, use SCAB.

Eyes Safety glasses or face shield for liquid material.

Skin Protective clothing as necessary to prevent wetting of the skin. Solvent-resistant gloves.

Engineering Controls Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices Long sleeves and impervious clothing to protect against splashing. Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. – Prevention:

9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Dark Liquid
Odor	Mild Petroleum
Odor threshold	Not Measured
pH	Not Measured
Melting point / freezing point	NA
Initial boiling point and boiling range	300-350F
Flash Point	(PMCC): 104F min.
Evaporation rate (Ether = 1)	(Butyl Acetate=1)@77F: 0.2
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	
Lower Explosive Limit:	Not Measured
Upper Explosive Limit:	Not Measured
Vapor pressure (Pa)	3
Vapor Density	(Air=1): > 4
Specific Gravity	(H2O=1): 0.8 - 0.99
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10: STABILITY AND REACTIVITY

10.1. Reactivity
Hazardous Polymerization will not occur.

10.2. Chemical stability
Stable under normal circumstances.

10.3. Possibility of hazardous reactions
No data available.

10.4. Conditions to avoid
Excessive heat and open flame.

10.5. Incompatible materials
Strong oxidizing agents

10.6. Hazardous decomposition products
Oxides of carbon, various hydrocarbon fragments

11: TOXICOLOGICAL INFORMATION

Acute toxicity
Exposure to solvent vapor concentrations from the component solvents in excess of the stated occupational exposure limits may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eyes may cause irritation and soreness with possible reversible damage.

Ingredient	CAS No.	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Asphalt (petroleum)	(8052-42-4)	No data available	No data available	No data available	No data available	No data available
Stoddard solvent	(8052-41-3)	No data available	No data available	No data available	No data available	No data available
Bitumen(containing aromatic oils)	(64742-93-4)	5,000.00, Rat - Category: 5	2,000.00, Rabbit - Category: 4	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	1	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	---	Not Applicable

12: ECOLOGICAL INFORMATION

12.1. Toxicity
No additional information provided for this product. See Section 3 for chemical specific data.
Aquatic Ecotoxicity

Ingredient	CAS No.	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Asphalt (petroleum)	(8052-42-4)	Not Available	Not Available	Not Available
Stoddard solvent	(8052-41-3)	Not Available	Not Available	Not Available
Bitumen(containing aromatic oils)	(64742-93-4)	Not Available	Not Available	Not Available

12.2. Persistence and degradability
There is no data available on the preparation itself.

12.3. Bioaccumulative potential
Not Measured

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects
No data available.

13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Bury in an approved landfill according to federal, state, and local regulations. Empty containers that have been completely emptied and the residue allowed to dry are not considered hazardous waste.

14: TRANSPORTATION AND OSHA LABEL INFORMATION

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	UN1999	UN1999	UN1999
14.2. UN proper shipping name	Not regulated, non-bulk	Tars, liquid including road oils and cutback bitumens	Tars, liquid including road oils and cutback bitumens
14.3. Transport hazard class(es)		**IMDG:** 3	**Air Class:** 3
14.4. Packing group		III F-E, S-E	III
14.5. Environmental hazards		Marine Pollutant: No	
14.6. Special precautions for user		No further information	

15: REGULATORY INFORMATION

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	B3 D2A

US EPA Tier II Hazards	**Fire:**	Yes
	Sudden Release of Pressure:	No
	Reactive:	No
	Immediate (Acute):	No
	Delayed (Chronic):	Yes

EPCRA 311/312 Chemicals and RQs: To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous: To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals: To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):
Asphalt (petroleum)
Bitumen (containing aromatic oils)
Stoddard solvent

Pennsylvania RTK Substances (>1%):
Asphalt (petroleum)
Stoddard solvent

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:
H304 May be fatal if swallowed and enters airways.
H372 Causes damage to organs through prolonged or repeated exposure.

16: OTHER INFORMATION

Date Prepared: May 1, 2015

Disclaimer: The information and recommendations contained herein are to the best of Barrett Company's knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users' consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users' responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company's interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamTough 250

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300

DATE PREPARED: June 16, 2020

Recommended Use: A component part of commercial roofing and waterproofing systems

Restrictions on Use: Should only be used by a Barrett Approved Contractor

2: HAZARDS IDENTIFICATION

Physical Hazards: Not Classified
Health Hazards: Not Classified
Environmental Hazards: Not Classified
OSHA defined hazards: Not Classified
No hazards resulting from the material supplied.

Label elements

Hazard symbol	None
Signal word	Not applicable
Hazard statement	Not applicable
Prevention	Not applicable
Response	Not applicable
Storage	Not applicable
Disposal	Not applicable

Hazard(s) not otherwise classified (HNOC) None known.
Supplemental information None

3: COMPOSITION AND INFORMATION ON INGREDIENTS

Mixtures

Chemical Name	Common name and synonyms	CAS Number	% Vol
Asphalt		8052-42-4	40 - 70
Distillates (Petroleum) Hydrotreated Heavy Napthenic		64741-52-5	0 - 25
Other components below reportable levels			20 - 60

4: FIRST AID MEASURES

Inhalation: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention, if needed. Call a physician if symptoms develop or persist.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Thoroughly wash (or discard) clothing and shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. Do not induce vomiting. Do not use mouth-to-mouth method if victim ingested substance. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms/effects, acute and delayed: Not available.

Indication of immediate medical attention and special treatment needed: In case of ingestion, the decision of whether or not to induce vomiting should be made by the attending physician. Certain pre-existing conditions may make workers particularly susceptible to the effects of this chemical: asthma, allergies, impaired pulmonary function.

General information: If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Discard any shoes or clothing items that cannot be decontaminated.

5: FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water fog. Dry chemical powder. Carbon dioxide (CO2). Addition of water or foam to the fire may cause frothing.

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical: Fire may produce irritating, corrosive and/or toxic gasses. Development of hazardous combustion gasses or vapors possible in the event of a fire. The following may develop: Acrolein.

Special protective equipment and precautions for firefighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear full protective clothing including self-contained breathing apparatus. Structural fire fighters protective clothing will only provide limited protection.

Fire-fighting equipment/instructions: In case of fire and/or explosion do not breathe fumes. Fire fighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. In the event of fire, cool tanks with water spray. By fire, toxic gasses may be formed (Cox, NOx). Keep run-off water out of sewers and water sources. Dike for water control.

Specific methods: In the event of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Ventilate closed spaces before entering them. Do not touch or walk through spilled material.

Methods and materials for containment and cleaning up: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Dike far ahead of spill for later disposal. Following product recovery, flush area with water.

7: HANDLING AND STORAGE

Precautions for safe handling: The product is non-combustible. If heated, irritating vapors may be formed. Do not use in areas without adequate ventilation. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities: Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a well-ventilated place. Keep the container tightly closed and dry. Store in a closed container away from incompatible materials. Keep out of the reach of children.

8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY NAPHTHENIC (CAS 64742-52-5)	PEL	5mg/m3	Mist.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
ASPHALT (CAS 8052-42-4)	TWA	0.5mg/m3	Inhalable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
ASPHALT (CAS 8052-42-4)	Ceiling	5mg/m3	Fume.
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY NAPTHENIC (CAS 64742-52-5)	STEL	10mg/m3	Mist.
	TWA	5 mg/m3	Mist.

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls: Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded.

Individual Protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses; chemical goggles (if splashing is possible). Wear chemical goggles; face shield (if handling molten material).

Hand protection Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Other Wear suitable protective clothing and eye/face protection. Use an impervious apron is recommended.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Thermal hazards During product use, there is a risk of thermal burns.

General hygiene considerations When using do not smoke. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practices.

9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance Solid.

Physical State Solid.

Form Solid.

Color Black. Dark brown.

Odor Product is a black, semi-solid with a burnt tar odor.

Odor threshold Not available.

pH Not available.

Melting point/freezing point 150 -250°F (65.56 -121.11°C) ASTM D36 Softening Point

Initial boiling point and boiling range >800°F (>426.67°C)

Flash point >400°F (>204.4°C)

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or exposure limits

Flammability limit – lower (%) Not available.

Flammability limit – upper (%) Not available.

Explosive limit – lower (%) Not available.

Explosive limit – upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	>700°F (>371.11°C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	Not available.
Percent volatile	0%
Specific gravity	1 – 1.9

10: STABILITY AND REACTIVITY

Reactivity	Not available.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization will not occur.
Conditions to avoid	Strong oxidizing agents.
Incompatible materials	Incompatible with oxidizing agents.
Hazardous decomposition products	Upon decomposition, product emits acrid dense smoke with carbon dioxide, carbon monoxide, trace oxides of nitrogen and sulfur.

11: TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Ingestion: May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
Inhalation: May cause irritation to the respiratory system.
Skin contact: Irritating to skin.
Eye contact: Causes eye irritation. Molten material will produce thermal burns.

Symptoms related to the physical, chemical and toxicological characteristics: Not available.

Information on toxicological effects

Acute toxicity: Not available.
Skin corrosion/irritation: Defats the skin. Causes irritation.
Serious eye damage/eye irritation: Irritating to eyes.
Respiratory or skin sensitization

Respiratory sensitization: Not available.
Skin sensitization: Irritating to skin.

Germ cell mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not Listed

Reproductive toxicity: Contains no ingredient listed as toxic to reproduction.
Specific target organ toxicity – single exposure: Not available.
Specific target organ toxicity – repeated exposure: Not available.
Aspiration hazard: Not available.
Chronic effects: Prolonged inhalation may be harmful. May cause eczema-like skin disorders (dermatitis).

12: ECOLOGICAL INFORMATION

Ecotoxicity: This product has no known eco-toxicological effects. Not expected to be harmful to aquatic organisms.
Persistence and degradability: Not available.
Bioaccumulative potential: Not available.
Mobility in soil: Not available.
Other adverse effects: Not available.

13: DISPOSAL CONSIDERATIONS

Disposal instructions: Dispose of contents/container in accordance with local/regional/international regulations. When this product as supplied is to be discarded as waste, it does not meet the definition of a RCRA waste under 40 CFR 261.
Hazardous waste code: Not applicable.
Waste from residues/unused products: Dispose of in accordance with local regulations.
Contaminated packaging: Offer rinsed packaging material to local recycling facilities.

14: TRANSPORT INFORMATION

DOT
Not regulated as dangerous goods.
IATA
Not regulated as dangerous goods.
IMDG
Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Further Information: If the product is shipped at ambient temperature, not regulated for transport by ground, air or vessel. If shipped above 212 deg F: "UN3257, Elevated Temperature Liquid, n.o.s. (Asphalt mixture), 9, PG III"

15: REGULATORY INFORMATION

US federal regulations: All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not Listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not Listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard – No Delayed – No Fire Hazard – No Pressure Hazard – No Reactivity Hazard - No
SARA 302 extremely hazardous substance	Not Listed.
SARA 311/312 hazardous chemical	No
Hazardous Chemical	
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US State regulations WARNING: This product contains a chemical known to the State of California to cause cancer.

US. Massachusetts RTK – Substance List	Not regulated.
US. New Jersey Worker and Community Right-to-Know Act	Not regulated.
US. Pennsylvania RTK – Hazardous Substances	Not regulated.
US. Rhode Island RTK	Not regulated.
US. California Proposition 65	Not Listed.

International inventories:

Country(s) or region:	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16: OTHER INFORMATION

Date Prepared: 01/07/2015

References:
ACGIH
EPA: AQUIRE Database
NLM: Hazardous Substances Database
US. IARC Monographs on Occupational Exposures to Chemical Agents
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices.

Disclaimer: The information and recommendations contained herein are to the best of Barrett Company's knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users' consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users' responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company's interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: PolyFelt 125

MANUFACTURER:

BARRETT COMPANY
33 STONE HOUSE ROAD
MILLINGTON, NJ 07946-0421

EMERGENCY NUMBER: 800-424-9300
INFORMATION NUMBER: 800-647-0100
DATE PREPARED: May 6, 2020

GENERAL INFORMATION

SDS	Safety Data Sheets (SDS) are not required for the above named products. Please note the following regulator information:
OSHA Hazard Communication Standard	The above named products, supplied by Barrett Company are, to the best of our knowledge, legally deemed as “articles” and as such are exempt from the Code of Federal Regulations, Title 29, Chapter XVII, Part 1910. Subpart Z, Section 1910.1200 of the OSHA Hazard Communication Standard. Safety Data Sheets are not required of non-hazardous goods deemed as “articles”.
SARA 313 Information	To the best of our knowledge, the above named products contain no chemical subject to SARA Title III Section 313 supplier notification requirements.
Department of Transportation (DOT)	The above named products, supplied by Barrett Company are, to the best of our knowledge, not regulated by D.O.T. when shipped domestically by land.
Canadian WHMIS Information	None of the above named products are, to the best of our knowledge, a “Controlled Product” under WHMIS.
Canadian TDG Information	For guidance, the Transportation of Dangerous Goods Classification for this product is: Not Regulated.

DISCLAIMER

The information and recommendations contained herein are to the best of Barrett Company’s knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users’ consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users’ responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company’s interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamFlash PMMA - Primer

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

2 Hazard(s) identification

· **Classification of the substance or mixture:**

GHS02 Flame

Flammable Liquids - Category 2	H225 Highly flammable liquid and vapour.

GHS07

Skin Irritation - Category 2	H315 Causes skin irritation.
Eye Irritation - Category 2A	H319 Causes serious eye irritation.
Skin Sensitizer - Category 1	H317 May cause an allergic skin reaction.
Specific Target Organ Toxicity - Single Exposure - Category 3	H335 May cause respiratory irritation.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Signal word:** Danger

· **Hazard-determining components of labeling:**
methyl methacrylate
2-ethylhexyl acrylate
tetramethylene dimethacrylate

(Contd. on page 2)
CA

(Contd. of page 1)

· **Hazard statements:**
H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.

· **Precautionary statements:**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P242	Use non-sparking tools.
P243	Take actions to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a poison center/doctor if you feel unwell.
P321	Specific treatment (see on this label).
P362+P364	Take off contaminated clothing and wash it before reuse.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use for extinction: CO2, powder or water spray.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

· **NFPA ratings (scale 0 - 4):**

Health = 2
Fire = 3
Reactivity = 0

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description**
80-62-6 methyl methacrylate
· **Identification number(s)**
· **EC number:** 201-297-1
· **Index number:** 607-035-00-6
· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

(Contd. on page 3)

(Contd. of page 2)

· **Dangerous components:**

80-62-6	methyl methacrylate	60-100% w/w *
2082-81-7	tetramethylene dimethacrylate	≤10% w/w
3077-12-1	2,2'-[(4-methylphenyl)imino]bisethanol	1-5% w/w *
103-11-7	2-ethylhexyl acrylate	1-5% w/w *

* Actual concentration ranges are withheld as a trade secret.

4 First-aid measures

· **After inhalation:**
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
· **After skin contact:**
Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or a rash occurs: Get medical advice/attention.
· **After eye contact:**
Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
· **After swallowing:** Do not induce vomiting, Immediately call a poison center/ doctor.
· **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-fighting measures

· **Suitable extinguishing agents:** CO2, sand, extinguishing powder. Do not use water.
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **Special hazards arising from the substance or mixture:** No further relevant information available.
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
· **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

CA

(Contd. on page 4)

(Contd. of page 3)

7 Handling and storage

· **Handling**
· **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
· **Storage**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· **Specific end use(s):** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**	
80-62-6 methyl methacrylate	
EL (Canada)	Short-term value: 100 ppm Long-term value: 50 ppm S
EV (Canada)	Short-term value: 100 ppm Long-term value: 50 ppm
PEL (USA)	Long-term value: 410 mg/m³, 100 ppm
REL (USA)	Long-term value: 410 mg/m³, 100 ppm
TLV (USA)	Short-term value: 410 mg/m³, 100 ppm Long-term value: 205 mg/m³, 50 ppm DSEN

· **Additional information:** The lists that were valid during the creation were used as basis.
· **Personal protective equipment**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the skin.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· **Material of gloves:**
Nitrile rubber, NBR
Natural rubber, NR

(Contd. on page 5)

(Contd. of page 4)

· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties

· **Form:**	Liquid
· **Color:**	According to product specification
· **Odor:**	Acrid
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	-48 °C
Boiling point/Boiling range:	101 °C
· **Flash point:**	10 °C
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	430 °C
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product is not explosive. However, formation of explosive air/ vapor mixtures are possible.
· **Explosion limits**	
Lower:	2.1 Vol %
Upper:	12.5 Vol %
· **Vapor pressure at 20 °C:**	47 hPa
· **Density at 20 °C:**	0.944 g/cm³
· **Relative density:**	Not determined.
· **Vapor density:**	Not determined.
· **Evaporation rate:**	Not determined.
· **Solubility in / Miscibility with**	
Water at 20 °C:	1.6 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
VOC content:	54 g/l
· **Other information**	No further relevant information available.

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(Contd. on page 6)

(Contd. of page 5)

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
· **Possibility of hazardous reactions:** No dangerous reactions known.
· **Conditions to avoid:** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects:**
· **Acute toxicity**

· **LD/LC50 values that are relevant for classification:**		
80-62-6 methyl methacrylate		
Oral	LD50	7872 mg/kg (rat)

· **Specific symptoms in biological assay:** No further relevant information available.
· **Primary irritant effect**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** No irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
80-62-6	methyl methacrylate	3
103-11-7	2-ethylhexyl acrylate	3

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability:** No further relevant information available.
· **Behavior in environmental systems**
· **Bioaccumulative potential:** No further relevant information available.
· **Mobility in soil:** No further relevant information available.
· **Additional ecological information**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Other adverse effects:** No further relevant information available.

CA

(Contd. on page 7)

(Contd. of page 6)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings**
· **Recommendation:**
Place in a sealed container and label as waste. Place in a safe area, and comply with all federal, state, provincial and local regulations for disposal.

14 Transport information

· **UN-Number**	
· **DOT, TDG, IMDG, IATA**	UN1993
· **UN proper shipping name**	
· **DOT**	Flammable liquids, n.o.s. (Methyl methacrylate monomer, stabilized)
· **TDG**	1993 Flammable liquids, n.o.s. (Methyl methacrylate monomer, stabilized)
· **IMDG, IATA**	FLAMMABLE LIQUID, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED)
· **Transport hazard class(es)**	
· **DOT**	

· **Class**	3 Flammable liquids
· **Label**	3
· **TDG, IMDG, IATA**	

· **Class**	3 Flammable liquids
· **Label**	3
· **Packing group**	
· **DOT, TDG, IMDG, IATA**	II
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user:**	Warning: Flammable liquids
· **Danger code (Kemler):**	339
· **EMS Number:**	F-E,S-E
· **Stowage Category**	B

(Contd. on page 8)

(Contd. of page 7)

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
· **Hazardous substance:**	1000 lbs, 454 kg
· **TDG**	
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **UN "Model Regulation":**	UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED), 3, II

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

80-62-6	methyl methacrylate

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed or exempted

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Canadian substance listings**

· **Canadian Domestic Substances List (DSL/NDSL):**
All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%):**
None of the ingredients is listed.

(Contd. on page 9)

(Contd. of page 8)

· **Canadian Ingredient Disclosure list (limit 1%):**	
80-62-6	methyl methacrylate
2082-81-7	tetramethylene dimethacrylate
103-11-7	2-ethylhexyl acrylate

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02 GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**
methyl methacrylate
2-ethylhexyl acrylate
tetramethylene dimethacrylate
· **Hazard statements**
H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
· **Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P242	Use non-sparking tools.
P243	Take actions to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a poison center/doctor if you feel unwell.
P321	Specific treatment (see on this label).
P362+P364	Take off contaminated clothing and wash it before reuse.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use for extinction: CO2, powder or water spray.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

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P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

16 Other information

Date Prepared: 7/30/2015

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CA

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamFlash PMMA - Catalyst

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

2 Hazard(s) identification

· **Classification of the substance or mixture:**

GHS02 Flame

Organic Peroxides – Type D H242 Heating may cause a fire.

GHS08 Health hazard

Reproductive Toxicity - Category 2 H361 Suspected of damaging fertility or the unborn child.

GHS07

Eye Irritation - Category 2A H319 Causes serious eye irritation.
Skin Sensitizer - Category 1 H317 May cause an allergic skin reaction.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Signal word:** Danger

· **Hazard-determining components of labeling:**
dicyclohexyl phthalate

(Contd. on page 2)
CA

(Contd. of page 1)

dibenzoyl peroxide

· **Hazard statements:**
H242 Heating may cause a fire.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.

· **Precautionary statements:**

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234	Keep only in original packaging.
P240	Ground and bond container and receiving equipment.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	If on skin: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use for extinction: CO2, powder or water spray.
P403+P235	Store in a well-ventilated place. Keep cool.
P410	Protect from sunlight.
P411	Store at temperatures not exceeding 30°C.
P420	Store separately.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **NFPA ratings (scale 0 - 4):**

Health = 2
Fire = 3
Reactivity = 2

The substance possesses oxidizing properties.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
84-61-7	dicyclohexyl phthalate	30-60% w/w *
94-36-0	dibenzoyl peroxide	30-60% w/w *

* Actual concentration ranges are withheld as a trade secret.

CA

(Contd. on page 3)

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4 First-aid measures

· **After inhalation:**
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or a rash occurs: Get medical advice/attention.
· **After eye contact:**
Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
· **After swallowing:** Call a poison center/doctor if you feel unwell. Rinse mouth.
· **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-fighting measures

· **Suitable extinguishing agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **Special hazards arising from the substance or mixture:**
In certain fire conditions, traces of other toxic gases cannot be excluded.
· **Protective equipment:** Wear self-contained respiratory protective device.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**
Ensure adequate ventilation
Keep away from ignition sources
Wear protective clothing.
Wear protective equipment. Keep unprotected persons away.
Use respiratory protective device against the effects of fumes/dust/aerosol.
· **Environmental precautions:** Do not allow product to reach sewage system or any water course.
· **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:** No special precautions are necessary if used correctly.
· **Information about protection against explosions and fires:** No special measures required.
· **Storage**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Do not store together with oxidizing and acidic materials as well as heavy-metal compounds.
· **Further information about storage conditions:** Keep receptacle tightly sealed.

(Contd. on page 4)

(Contd. of page 3)

· **Specific end use(s):** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**	
94-36-0 dibenzoyl peroxide	
EL (Canada)	Long-term value: 5 mg/m³
EV (Canada)	Long-term value: 5 mg/m³
PEL (USA)	Long-term value: 5 mg/m³
REL (USA)	Long-term value: 5 mg/m³
TLV (USA)	Long-term value: 5 mg/m³

· **Additional information:** The lists that were valid during the creation were used as basis.
· **Personal protective equipment**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· **Material of gloves:**
Fluorocarbon rubber (Viton)
Nitrile rubber, NBR
Natural rubber, NR
· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties

· **Form:**	Powder
· **Color:**	White
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Not determined.

(Contd. on page 5)

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· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	May cause fire.
· **Decomposition temperature:**	60 °C (SADT)
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Not determined.
· **Explosion limits**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure at 20 °C:**	1 hPa
· **Density at 20 °C:**	1.23 g/cm³
· **Relative density:**	Not determined.
· **Vapor density:**	Not applicable.
· **Evaporation rate:**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Insoluble.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
To avoid thermal decomposition do not overheat.
· **Possibility of hazardous reactions:** Reacts with reducing agents.
· **Conditions to avoid:** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects:**
· **Acute toxicity**
· **Specific symptoms in biological assay:** No further relevant information available.
· **Primary irritant effect**
· **on the skin:** No irritant effect.
· **on the eye:** Irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

(Contd. on page 6)

(Contd. of page 5)

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
94-36-0	dibenzoyl peroxide	3

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability:** No further relevant information available.
· **Behavior in environmental systems**
· **Bioaccumulative potential:** No further relevant information available.
· **Mobility in soil:** No further relevant information available.
· **Other adverse effects:** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings**
· **Recommendation:**
Place in a sealed container and label as waste. Place in a safe area, and comply with all federal, state, provincial and local regulations for disposal.

14 Transport information

· **UN-Number**	
· **DOT, TDG, IMDG, IATA**	UN3106
· **UN proper shipping name**	
· **DOT**	Organic peroxide type D, solid
· **TDG**	3106 Organic peroxide type D, solid
· **IMDG**	ORGANIC PEROXIDE TYPE D, SOLID, MARINE POLLUTANT
· **IATA**	ORGANIC PEROXIDE TYPE D, SOLID

· **Transport hazard class(es)**

· **DOT**

· **Class**	5.2 Organic peroxides

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· **Label** 5.2
· **TDG, IMDG**

· **Class** 5.2 Organic peroxides
· **Label** 5.2

· **IATA**

· **Class** 5.2 Organic peroxides
· **Label** 5.2

· **Packing group**
· **DOT** II

· **Environmental hazards:**
· **Marine pollutant:** Yes
Symbol (fish and tree)
· **Special marking (TDG):** Symbol (fish and tree)

· **Special precautions for user:** Warning: Organic peroxides
· **EMS Number:** F-J,S-R
· **Stowage Category** D
· **Stowage Code** SW1 Protected from sources of heat.
· **Segregation Code** SG35 Stow "separated from" acids.
SG36 Stow "separated from" alkalis.

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.

· **Transport/Additional information:**

· **DOT**
· **Quantity limitations** On passenger aircraft/rail: 5 kg
On cargo aircraft only: 10 kg
· **Remarks:** Special marking with the symbol (fish and tree).

· **TDG**
· **Excepted quantities (EQ)** Code: E0
Not permitted as Excepted Quantity

· **IMDG**
· **Limited quantities (LQ)** 500 g
· **Excepted quantities (EQ)** Code: E0
Not permitted as Excepted Quantity

· **UN "Model Regulation":** UN 3106 ORGANIC PEROXIDE TYPE D, SOLID, 5.2

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15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

94-36-0	dibenzoyl peroxide

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed or exempted

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Canadian substance listings**

· **Canadian Domestic Substances List (DSL/NDSL):**
All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%):**
None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%):**

94-36-0	dibenzoyl peroxide

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02 GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
dicyclohexyl phthalate
dibenzoyl peroxide
· **Hazard statements**
H242 Heating may cause a fire.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.
· **Precautionary statements**
P201 Obtain special instructions before use.

(Contd. on page 9)

(Contd. of page 8)

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234	Keep only in original packaging.
P240	Ground and bond container and receiving equipment.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	If on skin: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use for extinction: CO2, powder or water spray.
P403+P235	Store in a well-ventilated place. Keep cool.
P410	Protect from sunlight.
P411	Store at temperatures not exceeding 30°C.
P420	Store separately.
P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

16 Other information

Date Prepared: 7/30/2015

Disclaimer: The information and recommendations contained herein are to the best of Barrett Company's knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users' consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users' responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company's interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

CA

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamFlash PMMA - Fleece

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

2 Hazard(s) identification

· **Classification of the substance or mixture:**
This product is not classified as hazardous according to the Globally Harmonized System (GHS).
· **Label elements**
· **GHS label elements** Not Available
· **Signal word:** Not Available
· **Hazard statements:** Not Available
· **NFPA ratings (scale 0 - 4):**

Health = 0
Fire = 0
Reactivity = 0

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description**
Nonhazardous material
· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

(Contd. on page 2)
CA

(Contd. of page 1)

· **Dangerous components:** Not Available

4 First-aid measures

· **General information:** No special measures required.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Generally the product does not irritate the skin.
· **After eye contact:** Rinse opened eye for several minutes under running water.
· **After swallowing:** If symptoms persist consult doctor.
· **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-fighting measures

· **Suitable extinguishing agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture:** No further relevant information available.
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:** Not required.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections:**
No dangerous substances are released.
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.
· **Specific end use(s):** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

(Contd. on page 3)

(Contd. of page 2)

· **Additional information:** The lists that were valid during the creation were used as basis.
· **Personal protective equipment**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:** Not required.
· **Protection of hands:** Not required.
· **Material of gloves:**
Protective gloves not normally required. People with sensitive skin may prefer to wear water-proof gloves, such as rubber or neoprene, to avoid skin contact.
· **Eye protection:** Not required.

9 Physical and chemical properties

· **Form:**	Solid
· **Color:**	White
· **Odor:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Not determined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density:**	Not determined.
· **Relative density:**	Not determined.
· **Vapor density:**	Not applicable.
· **Evaporation rate:**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Insoluble.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Solvent content:**	
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal

(Contd. on page 4)

(Contd. of page 3)

· **Other information** No further relevant information available.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
· **Possibility of hazardous reactions:** No dangerous reactions known.
· **Conditions to avoid:** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects:**
· **Acute toxicity**
· **Specific symptoms in biological assay:** No further relevant information available.
· **Primary irritant effect**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability:** No further relevant information available.
· **Behavior in environmental systems**
· **Bioaccumulative potential:** No further relevant information available.
· **Mobility in soil:** No further relevant information available.
· **Additional ecological information**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Other adverse effects:** No further relevant information available.

CA

(Contd. on page 5)

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13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Smaller quantities can be disposed of with household waste.

· **Uncleaned packagings**
· **Recommendation:**
Place in a sealed container and label as waste. Place in a safe area, and comply with all federal, state, provincial and local regulations for disposal.

14 Transport information

· **UN-Number** · **DOT, TDG, ADN, IMDG, IATA**	Not regulated
· **UN proper shipping name** · **DOT, TDG, ADN, IMDG, IATA**	Not regulated
· **Transport hazard class(es)** · **DOT, TDG, ADN, IMDG, IATA** · **Class**	Not regulated
· **Packing group** · **DOT, TDG, IMDG, IATA**	Not regulated
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user:**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**	Not applicable.
· **UN "Model Regulation":**	Not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed or exempted

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

(Contd. on page 6)

(Contd. of page 5)

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Canadian substance listings**

· **Canadian Domestic Substances List (DSL/NDSL):**
All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%):**
None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%):**
None of the ingredients is listed.

· **GHS label elements** Not Available
· **Hazard pictograms** Not Available
· **Signal word** Not Available
· **Hazard statements** Not Available

16 Other information

Date Prepared: 7/30/2015

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CA

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamFlash PMMA - Membrane

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

2 Hazard(s) identification

· **Classification of the substance or mixture:**

GHS02 Flame

Flammable Liquids - Category 2	H225 Highly flammable liquid and vapour.

GHS07

Skin Irritation - Category 2	H315 Causes skin irritation.
Skin Sensitizer - Category 1	H317 May cause an allergic skin reaction.
Specific Target Organ Toxicity - Single Exposure - Category 3	H335 May cause respiratory irritation.
Eye Irritation - Category 2B	H320 Causes eye irritation.

· **Label elements**

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Signal word:** Danger

· **Hazard-determining components of labeling:**
methyl methacrylate
2-ethylhexyl acrylate

(Contd. on page 2)

CA

(Contd. of page 1)

· **Hazard statements:**

H225 Highly flammable liquid and vapour.
H315+H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.

· **Precautionary statements:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P235 Keep cool.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
P243 Take actions to prevent static discharges.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P312 IF INHALED: Call a doctor if you feel unwell.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P370+P378 In case of fire: Use for extinction: CO2, sand, extinguishing powder.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **NFPA ratings (scale 0 - 4):**

Health = 1
Fire = 3
Reactivity = 0

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
80-62-6	methyl methacrylate	10-30% w/w *
103-11-7	2-ethylhexyl acrylate	10-30% w/w *
13463-67-7	Titanium Dioxide	10-13% w/w *
7328-22-5	Diethylene glycol butyl ether methacrylate	10-13% w/w *

* Actual concentration ranges are withheld as a trade secret.

CA

(Contd. on page 3)

(Contd. of page 2)

4 First-aid measures

· **After inhalation:**
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
· **After skin contact:**
If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a posion center or doctor if you feel unwell. If skin irritation or a rash occurs: Get medical advice/attention
· **After eye contact:**
Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
· **After swallowing:** If symptoms persist consult doctor.
· **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-fighting measures

· **Suitable extinguishing agents:** CO2, sand, extinguishing powder. Do not use water.
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **Special hazards arising from the substance or mixture:** No further relevant information available.
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
· **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

(Contd. on page 4)

(Contd. of page 3)

· **Storage**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· **Specific end use(s):** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**	
80-62-6 methyl methacrylate	
EL (Canada)	Short-term value: 100 ppm Long-term value: 50 ppm S
EV (Canada)	Short-term value: 100 ppm Long-term value: 50 ppm
PEL (USA)	Long-term value: 410 mg/m³, 100 ppm
REL (USA)	Long-term value: 410 mg/m³, 100 ppm
TLV (USA)	Short-term value: 410 mg/m³, 100 ppm Long-term value: 205 mg/m³, 50 ppm DSEN

· **Additional information:** The lists that were valid during the creation were used as basis.
· **Personal protective equipment**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the skin.
Avoid contact with the eyes and skin.
· **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**
Synthetic gloves


Protective gloves

· **Eye protection:**


Tightly sealed goggles

CA

(Contd. on page 5)

(Contd. of page 4)

9 Physical and chemical properties

· **Form:**	Liquid
· **Color:**	According to product specification
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	101 °C
· **Flash point:**	10 °C
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	245 °C
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product is not explosive. However, formation of explosive air/ vapor mixtures are possible.
· **Explosion limits**	
Lower:	0.8 Vol %
Upper:	12.5 Vol %
· **Vapor pressure at 20 °C:**	47 hPa
· **Density at 20 °C:**	1.23 g/cm³
· **Relative density:**	Not determined.
· **Vapor density:**	Not determined.
· **Evaporation rate:**	Not determined.
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic at 20 °C:	10338 mPas
Kinematic:	Not determined.
· **Solvent content:**	
VOC content:	32 g/l
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
· **Possibility of hazardous reactions:** No dangerous reactions known.
· **Conditions to avoid:** No further relevant information available.
· **Incompatible materials:** No further relevant information available.

(Contd. on page 6)

(Contd. of page 5)

· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects:**
· **Acute toxicity**
· **Specific symptoms in biological assay:** No further relevant information available.
· **Primary irritant effect**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** No irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
80-62-6	methyl methacrylate	3
103-11-7	2-ethylhexyl acrylate	3
13463-67-7	Titanium Dioxide	2B
128-37-0	Butylated hydroxytoluene	3
111-76-2	2-butoxyethanol	3

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability:** No further relevant information available.
· **Behavior in environmental systems**
· **Bioaccumulative potential:** No further relevant information available.
· **Mobility in soil:** No further relevant information available.
· **Additional ecological information**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Other adverse effects:** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

(Contd. on page 7)

(Contd. of page 6)

· **Uncleaned packagings**
· **Recommendation:**
Place in a sealed container and label as waste. Place in a safe area, and comply with all federal, state, provincial and local regulations for disposal.

14 Transport information

· **UN-Number**	
· **DOT, TDG, IMDG, IATA**	UN1993
· **UN proper shipping name**	
· **DOT**	Flammable liquids, n.o.s. (Methyl methacrylate monomer, stabilized)
· **TDG**	1993 Flammable liquids, n.o.s. (Methyl methacrylate monomer, stabilized)
· **IMDG, IATA**	FLAMMABLE LIQUID, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED)
· **Transport hazard class(es)**	
· **DOT**	
	
· **Class**	3 Flammable liquids
· **Label**	3
· **TDG, IMDG, IATA**	
	
· **Class**	3 Flammable liquids
· **Label**	3
· **Packing group**	
· **DOT, TDG, IMDG, IATA**	II
· **Environmental hazards:**	Not applicable.
· **Special precautions for user:**	Warning: Flammable liquids
· **Danger code (Kemler):**	-
· **EMS Number:**	F-E,S-E
· **Stowage Category**	A
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L

(Contd. on page 8)

(Contd. of page 7)

· **TDG**	
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED), 3, II

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

80-62-6	methyl methacrylate
111-76-2	2-butoxyethanol

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed or exempted

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Canadian substance listings**

· **Canadian Domestic Substances List (DSL/NDSL):**
All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%):**
None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%):**

80-62-6	methyl methacrylate
103-11-7	2-ethylhexyl acrylate
109-16-0	Triethylene glycol dimethacrylate

· **GHS label elements**
GHS label elements
The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 9)

(Contd. of page 8)

· **Hazard pictograms**

GHS02 GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**
methyl methacrylate
2-ethylhexyl acrylate

· **Hazard statements**

H225	Highly flammable liquid and vapour.
H315+H320	Causes skin and eye irritation.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.

· **Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P235	Keep cool.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P243	Take actions to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P312	IF INHALED: Call a doctor if you feel unwell.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use for extinction: CO2, sand, extinguishing powder.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

16 Other information

Date Prepared: 7/30/2015

Disclaimer: The information and recommendations contained herein are to the best of Barrett Company's knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users' consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users' responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company's interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

CA

SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: RamFlash 327 HDR

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

RECOMMENDED USE: A component part of commercial waterproofing and roofing systems

RESTRICTIONS ON USE: Should only be used by a Barrett Approved Contractor

2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS CLASSIFICATION: Possible Carcinogenicity Category 3

SIGNAL WORD: Warning

ROUTES OF ENTRY: inhalation. Ingestion. and skin/eye contact

POTENTIAL HEALTH EFFECTS

EYES: Mildly irritating. Excessive contact can cause drying of mucous membranes of eyes due to absorption of moisture and oils.

SKIN: Mildly irritating

INGESTION: Temporary discomfort to upper respiratory tract may occur due to mechanical irritation when exposures are above the occupational exposure limit. May result in cramps and diarrhea.

INHALATION: Nuisance dusts. Excessive contact can cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. This material can also cause nasal irritation and nosebleeds.

ACUTE HEALTH HAZARDS: This product can cause irritation to the eyes, respiratory tract and skin. May cause redness of the affected area.

CHRONIC HEALTH HAZARDS: Carbon Black - IARC listed: Group 2B (possibly carcinogenic to humans)

REPRODUCTIVE EFFECTS: N/A

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Persons with breathing problems or lung disease should not work in dusty areas unless a physician approves and certifies their fitness to wear respiratory protection. May aggravate an existing digestive condition, respiratory disorder, renal condition, nervous system condition, or blood system disorder. May aggravate skin conditions.

CARCINOGENICITY

OSHA: No

ACGIH: No

NTP: No

IARC: Group 2B (possibly carcinogenic to humans)

SECTION 2 NOTES: There are no known human carcinogenic effects related to PAH content of carbon blacks.

3: COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

POLYCHLOROPRENE RUBBER POLYMER:

The following potentially hazardous ingredient(s) are contained at levels below disclosure requirements and are provided for informational purposes only. The concentrations reported below in units of parts per million (ppm) or pans per billion (ppb) are maximum values.

Component/CAS NO.	ACGIH Limits	OSHA Limits
Styrene Butadiene Rubber (9003-55-8)	Not Established	Not Established
Ethylene-Propylene-Ethylidene-Norbornene Hydrocarbon Elastomer (EPDM: 25038-36-2)	Not Established	Not Established
Ethylidene Norbornene (ENB) (16219-75-3)	5 ppm STEL 25 mg/m3 STEL	Not Established
Ethylene Propylene Copolymer	3 mg/m3 TWA (Respirable Fraction)	15 mg/m3 TWA (Total Dust)
Particulates Not Other Classified (PNOC)	10 mg/m3 TWA (Total Dust)	5 mg/m3 TWA (Respirable Dust)
Carbon Black 1333-86-4 (NIOSH-Ca) (IARC-2B) (MAK-3B) (TLV-A4)	3.5 mg/m3 TWA	3.5 mg/m3 TWA
Heavy Napthenic (64742-52-5)	5 mg/m3 MA (Oil Mist) 10 mg/m3 STEL (Oil Mist)	5 mg/m3 TWA (Oil Mist)
Vulcanization System Vendor Trade Secret	Not Established	Not Established

* ACGIH@ believes that even biologically inert insoluble, or poorly soluble particles may have adverse effects and recommends that airborne concentrations be kept below the asterisk value.

R — Measured as respirable fraction of the silica

EPA-D: Not Classifiable as to Human Carcinogenicity: Inadequate human and animal evidence of carcinogenicity or no data are available.

IARC-3: Unclassifiable as to Carcinogenicity in Humans. This category is used most commonly for agents, mixtures, and exposure circumstances for which the evidence of carcinogenicity is inadequate in humans and inadequate or limited in experimental animals.
Exceptionally, agents (mixtures) for which the evidence of carcinogenicity is inadequate in humans but sufficient in experimental animals may be placed in this category when there is strong evidence that the mechanism of carcinogenicity in experimental animals does not operate in humans. Agents, mixtures, and exposure circumstances that do not fall into any other group are also placed in this category.

IARC-2B: Possibly Carcinogenic to Humans. The exposure circumstance entails exposures that are possibly carcinogenic to humans. This category is used for agents, mixtures, and exposure circumstances for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. It may also be used when there is inadequate evidence of carcinogenicity in humans but there is sufficient evidence of carcinogenicity in experimental animals. In some instances, an agent, mixture, or exposure circumstance for which there is inadequate evidence of carcinogenicity in humans but limited evidence of carcinogenicity in experimental animals together with supporting evidence from other relevant data may be placed in the group.

MAK-3B: Substances for which in vitro tests or animal studies have yielded evidence of carcinogenic effects that is not sufficient for classification of the substance in one of the other categories. Further studies are required before a final classification can be made. A MAK or BAT value can be established, provided no genotoxic effects have been detected.

NIOSH-Ca: Potential occupational carcinogen, with no further categorization.

TLV-A4: Not classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity, which are sufficient to classify the agent into one of the other categories.

NTP-R: Reasonably Anticipated To Be A Human Carcinogen (RAHC) — There is limited evidence of carcinogenicity from studies in humans, which indicates that causal interpretation is credible, but that alternative explanations, such as chance, bias or confounding factors, could not adequately be excluded.

SECTION 3 NOTES: These hazardous components are dispersed within the polymer bound matrix of the material which generally precludes the possibility of airborne dust of the component. It also eliminates the problems generally associated with the powder or liquid form of the component. Components are not expected to become airborne during normal use of this material as long as good industrial hygiene and safety procedures are practiced. Several of the ingredients contained within this material have not been evaluated to determine potential exposure hazards by OSHA or ACGIH.

4: FIRST AID MEASURES

EYES: In case of contact, flush eyes with large quantities of water for at least 15 minutes. If the victim is wearing contact lenses, remove them. The eyelids should be held apart during irrigation to ensure through flushing of all eye tissue. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Oils or ointments should not be used at this time. Get medical attention if irritation develops or persists. Continue flushing for an additional 15 minutes if a physician is not immediately available.

SKIN: Remove contaminated clothing and equipment. Wash all affected areas with plenty of soap and water for at least 15 minutes. DO NOT attempt to neutralize with chemical agents. Wash clothing and clean shoes before reuse. In case of skin contact, wash affected areas with soap and water. Get medical attention if irritation develops or persists.

INGESTION: Call a physician immediately. If vomiting occurs, keep head below hips to reduce the risk of aspirations. Never give anything by mouth to an unconscious person. If the victim is unconscious, monitor pulse, breathing and airway. If breathing stops, begin artificial respiration immediately. If the heart has stopped,

give cardiopulmonary resuscitation (CPR). Get medical attention immediately.

INHALATION: Can be mechanically irritating. Excessive inhalation of product vapors, especially during heating or processing, may be irritating to respiratory system. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Persons with pre-existing skin disease may be at an increased risk if exposed dermally to this material. No specific antidote is known. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical conditions.

SECTION 4 NOTES:

5: FIRE FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, (% BY VOLUME)

UPPER: Not Available

LOWER: Not Available

FLASH POINT: > 100°C

> 212 0 F

METHOD USED: SW 846 1010

BURN RATE SCREEN: Negative

EPA METHOD: SW 846 1030

NFPA HAZARD CLASSIFICATION

HEALTH: 0 **FLAMMABILITY:** 1 **REACTIVITY:** Not Available **OTHER:**

HMIS HAZARD CLASSIFICATION

HEALTH: 0 **FLAMMABILITY:** 1 **PHYSICAL HAZARD:** 0

PROTECTION: B

EXTINGUISHING MEDIA: Dry Chemical, C02, Foam

FIREFIGHTING PROCEDURE: Evacuate area and fight fire from safe distance. Wear pressure-demand self-contained breathing apparatus (MSHA/NIOSH-approved or equivalent) and full protective gear.

SPECIAL FIRE FIGHTING PROCEDURES: As with any fire, toxic gases, vapors, and fumes can be generated. Use pressure-demand self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear. Using water can cause frothing with increasing fire intensity.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not known

HAZARDOUS DECOMPOSITION PRODUCTS: Not known

6: ACCIDENTAL RELEASE INFORMATION

ACCIDENTAL RELEASE MEASURES: Recover spilled material and place in suitable containers for recycle or disposal. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations. Keep unnecessary personnel out of spill area. Emergency clean-up personnel should wear appropriate protection when entering the spill area for clean-up. Remove mechanically by method, which minimizes generation of airborne dust, and place in appropriately marked containers for disposal. Do not allow spilled or released material to enter ground water, waste water or soil.

SECTION 6 NOTES:

7: HANDLING AND STORAGE

HANDLING AND STORAGE: Skin and eye contact should be avoided as good industrial practice. Wearing of protective gloves and eye protection is recommended. Wash hands and contaminated skin area after handling. Follow all warnings and precautions even after container is emptied. Wash thoroughly after handling or at the end of the shift.

OTHER PRECAUTIONS: Store in cool dry place away from strong oxidizers and acids. Keep container tightly closed when not in use. All handling equipment should be properly grounded to prevent the build-up of electrostatic charges. Storage area should be equipped with sprinkler system. Handle in accordance with good industrial hygiene and safety practices.

SECTION 7 NOTES:
Containers should not be opened until ready for use. Use clean non-sparking equipment and tools when handling.

8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS: Use in a well-ventilated area.

VENTILATION: Local exhaust must always be provided to draw dust, fumes and vapors away from workers to prevent routine inhalation.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use a positive pressure air supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respiratory protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

EYE PROTECTION: Use safety glasses with side shields. Where contact with the eyes is likely, use chemical goggles. Use a face shield as needed.

SKIN PROTECTION: Use impervious gloves. use clean protective body-covering clothing as needed to minimize contact with clothing and skin

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear appropriate personal protection during cleanup, such as impervious gloves, boots and coveralls.

WORK HYGIENIC PRACTICES: Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees on the safe use and handling of this product.

EXPOSURE GUIDELINES: Keep spill contents out of sewers, storm drains, surface waters, and soils. Make sure all waste disposal methods are in accordance with local, state, and federal regulations.

SECTION 8 NOTES:

9: PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE: Black

ODOR: Mild

PHYSICAL STATE: Solid

DENSITY: 1.26 g/cm3

pH: AS SUPPLIED

pH (Other): Not Available

BOILING POINT: Not Available

MELTING POINT: Not Available

FREEZING POINT: Not Available

VAPOR PRESSURE (mmHg): Not Available

EVAPORATION RATE: Not Available

BASIS (=1): Not Available

SOLUBILITY IN WATER: Not Soluble

PERCENT SOLIDS BY WEIGHT: 75%

PERCENT VOLATILE BY WT/ BY VOL@ F: Not Available

VOLATILE ORGANIC COMPOUNDS (VOC): Not Available

WITH WATER: LBS/GAL

WITHOUT WATER: LBS/GAL

MOLECULAR WEIGHT: Not Available

VISCOSITY: Not Available

SECTION 9 NOTES:

10: STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY): Keep away from extreme heat, sparks or open flame and strong oxidizing conditions.

INCOMPATIBILITY (MATERIAL TO AVOID): Strong acids, Bases and oxidizing agents

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Products of incomplete combustion may include CO, C02, and dense smoke.

HAZARDOUS POLYMERIZATION: Not expected to occur.

CONDITIONS TO AVOID (POLYMERIZATION):

SECTION 10 NOTES:

11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: Any health or toxicological information included in Section 3 was based on data associated with the components used in manufacturing this product.

SECTION 11 NOTES:

12: ECOLOGICAL INFORMATION (none if blank)

ECOLOGICAL INFORMATION: Do not allow to enter soil, watetways, or wastewater.

SECTION 12 NOTES:

13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: It is the responsibility of the individual using this product to follow all local, State and Federal regulations for the proper disposal of this product and containers.

RCRA HAZARD CLASS: It is the responsibility of the user to determine if this material is a RCRA Hazardous Waste at the time of disposal.

SECTION 13 NOTES:

14: TRANSPORTATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: Not Regulated
HAZARD CLASS: Not Regulated
ID NUMBER: Not Regulated
PACKING GROUP: Not Regulated
LABEL STATEMENT: Not Regulated

WATER TRANSPORTATION

PROPER SHIPPING NAME: Not Regulated
HAZARD CLASS: Not Regulated
ID NUMBER: Not Regulated
PACKING GROUP: Not Regulated
LABEL STATEMENTS: Not Regulated

AIR TRANSPORTATION

PROPER SHIPPING NAME: Not Regulated
HAZARD CLASS: Not Regulated
ID NUMBER: Not Regulated
PACKING GROUP: Not Regulated
LABEL STATEMENTS: Not Regulated

OTHER AGENCIES: None

SECTION 14 NOTES:

15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT):

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

311/312 HAZARD CATEGORIES: No Hazard categories identified.

313 REPORTABLE INGREDIENTS: Zinc Compounds
Rubber Compound

DATE PREPARED: 07/30/2015

STATE REGULATIONS:

INTERNATIONAL REGULATIONS:

SECTION 15 NOTES:

16: OTHER INFORMATION

Date Prepared: 7/30/2015

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SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: Ram 200, 201, 203

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

Recommended Use: A component part of commercial waterproofing and roofing systems

Restrictions on Use: Should only be used by a Barrett Approved Professional Contractor strictly following Barrett and NRCA specifications and recommendations.

2: HAZARDS IDENTIFICATION

Bitumen membrane. Asphalt odor. Under normal use, this product is not expected to create any health or environmental hazard. Inhalation of dust or of asphalt fumes can cause a slight respiratory irritation and/or congestion.

NAME	CAS#	%WEIGHT	EXPOSURE LIMIT (ACGIH)	
			TLV-TWA	TLV-STEL
BITUMINOUS BLEND				
Bitumen	8052-42-4	30-70	0.5mg/m³ Asphalt fumes	Not established
Oxidized bitumen[1]	64742-93-4	0-20	0.5 mg/m³ Asphalt fumes	Not established
Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**[1]	64742-52-5	0-30	Not established	Not established
Calcium carbonate[1]	471-34-1	0-60	10 mg/m³	Not established
Styrene butadiene co-polymer[1]	9003-55-8	0-15	10 mg/m³	Not established
FR Products: **Calcium borate**[1]	1318-33-8	7-15	10 mg/m³	Not established
FR Plus products contain: **Fire retardant**[1]	Proprietary	1-5	2 mg/m³	Not established
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.				
Polyester mat[1]	N/A	1-7	Not established	Not established
Fiberglass mat[1]	N/A	1-7	Not established	Not established
Contains: **Fiberglass filament**[1]	65997-17-3	0,5-7	1f/cc	Not established
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.				
Silicone paper	N/A	6-20	Not established	Not established
Polypropylene film	N/A	2-10	Not established	Not established
Polyethylene film	9002-88-4	2-10	Not established	Not established
Aluminum, copper or stainless steel foil	N/A	4-15	Not established	Not established
Sand	N/A	7-13	0.1 mg/m³	Not established
Contains: Crystalline silica[2]	14808-60-7	7-13	0.0.25 mg/m³	Not established
Talc	14807-96-6	7-13	Not established	Not established
Colored granules	N/A	15-40	Not established	Not established
Contains: Crystalline silica[2]	14808-60-7	<12	0.025 mg/ m³	Not established

1. Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.

2. A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

EFFECTS OF SHORT TERM (ACUTE) EXPOSURE:

Skin Contact: The product can cause a mechanical irritation of the skin because of its rough surface. If the membrane is torch-applied, asphalt fumes can cause skin irritation. The asphalt fumes can cause an irritation of the skin. The contact with this product at high temperature can cause thermal burns.

Eye Contact: The product is not likely to cause effects to the eyes. It the membrane is torched-applied, asphalt fumes can be emitted and cause irritations, redness and conjunctivitis to the eyes. The contact with this product at high temperature can cause thermal burns.

Inhalation: The product is not likely to cause effects to the respiratory system. If the membrane is torch-applied, asphalt fumes can be emitted of the product and cause irritations to the nose, the throat and the respiratory tracts, tiredness, headaches, dizziness, nausea and insomnia.

Ingestion: Exposure is not likely to occur by this route of entry under normal use of the product.

LONG TERM (CHRONIC) EXPOSURE:

Skin Contact: The repeated or prolonged contact can cause irritation. If the membrane is torch-applied, asphalt fumes can be emitted. The long-term exposure to the asphalt fumes can cause changes of the pigmentation of the skin which can be worsened by sun exposure. (1)

Inhalation: If the membrane is torch-applied, asphalt fumes can be inhaled. There are no data on chronic effects of the exposure to asphalt fumes on the lungs.

Carcinogenicity: Due to the product form exposure to hazardous dusts or fumes is not expected to occur. Information on carcinogenicity is given for reference only. This product is not classifiable as a carcinogen.

Bitumen – According to the International Agency for Research on Cancer (IARC): is not classifiable as to its carcinogenicity to humans. Epidemiological studies on roofers have generally demonstrated an excess of lung cancer in these workers. However, it is unclear to what extent these cancers may be attributable to asphalt exposures during roofing operations, since in the past; roofers have been exposed to coal tar and asbestos, which are known human lung carcinogens. Trace amounts of poly-nuclear aromatic hydrocarbons (PAHs) may be present in asphalt and can be released upon excessive heating. Some of these PAHs have been identified as having the potential to induce carcinogenic and reproductive health effects. (2)

Oxidized bitumen: In its 2013 monograph (Volume 103), the International Agency for Research on Cancer (IARC) conducted a review of the potential carcinogenicity of bitumen (the European term for asphalt). One of its conclusions was "occupational exposures to oxidized bitumens and their emissions during roofing" are classified in IARC Group 2A, "probably carcinogenic to humans." However, due to the product form, exposure to such component is unlikely under normal conditions of use. (2)

Crystalline Silica – Breathable crystalline silica from sand is not expected to be released because the sand is adhered to the product. According to the IARC, crystalline silica is carcinogenic for human by inhalation. (3)

Fiberglass Filament – Fiberglass is not expected to be released. In 2001, the IARC classified fiberglass as Group 3 "not classifiable as to its carcinogenicity to humans". The American Conference of Governmental Industrial hygienists (ACGIH) and the National Toxicology Program (NTP) classify the product in Group 2B (possibly carcinogenic to humans) based on studies in which animals were injected with large quantities of fiberglass.

The other ingredients were not found to be carcinogenic or no information is available on that matter.

Teratogenicity, Embryotoxicity, Fetotoxicity: No information available.

Reproductive Toxicity: No information available. **Mutagenicity:** No information available.

Toxicologically Synergistic Materials: No information available. **Potential Accumulation:** No information available.

3: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS#	%WEIGHT
BITUMINOUS BLEND		
Bitumen	8052-42-4	30-70
Oxidized bitumen[1]	64742-93-4	0-20
Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**	64742-52-5	0-30
Calcium carbonate	471-34-1	0-60
Styrene butadiene co-polymer	9003-55-8	0-15
FR Products: **Calcium borate**[1] FR Plus products contain: **Fire retardant**[1]	1318-33-8 Proprietary	7-15 1-5
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.		
Polyester mat[1]	N/A	1-7
Fiberglass mat[1] Contains: **Fiberglass filament**	N/A 65997-17-3	1-7 0,5-7
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.		
Silicone paper	N/A	6-20
Polypropylene film	N/A	2-10
Polyethylene film	9002-88-4	2-10
Aluminum, copper or stainless steel foil	N/A	4-15
Sand Contains: Crystalline silica	N/A 14808-60-7	7-13 7-13
Talc	14807-96-6	7-13
Colored granules Contains: Crystalline silica	N/A 14808-60-7	15-40 <12

1. Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.
2. A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

4: FIRST AID MEASURES

Skin Contact – If there is presence of dust on the skin, wash gently with water and soap. In the event of contact with the product melted, do not try to remove the product off the affected area and rinse the area affected in cold water. Obtain immediate medical attention. At the end of each working day, clean all the parts of the body which came into contact with asphalt fumes. Clean the clothing contaminated by the asphalt fumes.

Eye Contact – Flush eyes with water for at least 15 minutes while holding eyelids open. Do not attempt to remove material from affected area without medical assistance. Obtain immediate medical attention.

Inhalation – Remove victim from contaminated place and restore breathing, if required.

Ingestion – The ingestion of this product is not very likely to occur.

5: FIRE FIGHTING MEASURES

Flammability – Not Applicable
Flash Point – Not Applicable
Flammability Limits in Air – (% in volume) Not Applicable

Explosion Data – Not Applicable
Auto-Ignition Temperature – Not Applicable

Fire and Explosion Hazards – Asphalt fumes are flammable. Torch, used to weld waterproofing membranes, can produce temperatures beyond 2000°F (1100°C). Avoid all contact with materials sensitive to these temperatures, as lead or plastic materials. Never work in an enclosed area where gas can accumulate. Shield air conditioning units and other protrusions on the roof with perlite panels or similar material. Never use torches:

- When substrate(s) have been recently covered by solvent-based products (wait until dry).
- Near any combustible materials.
- Close to containers containing flammable liquids or materials (keep open flame at least 3m [10'] away).
- Directly on combustible substrate or insulation.

Voids, holes or gaps in substrate or located nearby the welding zone must be protected against flame penetration. Particular precautions must be taken to keep combustible or heat sensitive insulation or other materials away from the torch flame. If wood fiber panels must be installed, use fireproof panels. Avoid presence of combustible materials near open flame. At all times and especially when leaving the job site, make sure that there is no smoldering or concealed fire. In that case, strictly follow the safety measures. Job planning must allow employee presence on the roof at least one hour after torch application. At the end of every day, use a heat detector gun to discover any unusually hot surface. Always have one ABC fire extinguisher on hand, filled and in perfect working order near each torch.

Combustion Products – burning of this material will produce thick black smoke. Irritating and/or toxic gases (including Hydrogen Sulphide and Sulphur Dioxide, Carbon Dioxide and Carbon Monoxide) and traces of metallic fumes may be generated by thermal decomposition or combustion.

Fire Fighting Instructions – Evacuate the area. Wear self-contained breathing apparatus and appropriate protective clothing that are in accordance with standards. Approach fire from upwind and fight it from maximum distance or use unmanned hose holders or monitor nozzles. Always stay away from the containers at the time of the fire considering the high risk of explosion. Move the rolls of membrane from fire area if it can be done without risk. Cool the rolls of membrane with flooding quantities of water until well after fire is out.

Extinguishing Media – Foam, CO_2, sand, chemical powder.

6: ACCIDENTAL RELEASE MEASURES

Release or Spill – If hot material is spilled, allow enough time to cool completely and remove to a container for disposal. Wear appropriate breathing apparatus (if applicable) and protective clothing. Notify appropriate environmental agencies. Wash spill area with soap and water. Dispose of the material according to local environmental regulations.

7: HANDLING AND STORAGE

Handling – Products must be applied by qualified applicators who have received an adequate training on prevention and protection (in particular for the use of the extinguishers) against accidents caused by use of combustible or flammable materials, of liquefied propane gas, open flame, and their material of installation. The present recommendations must be imperatively related to knowledge of the employees before the application of the products to the building site. Check the construction and the composition of the systems of roof and walls before welding. Ensure of the cleanliness of the places (debris).

Precautions of the use of the torch: Use only proper torching equipment in perfect working order (C.S.A certified). Never modify torching equipment. Use only proper hoses suited for propane gas of less than 15m (50'). Verify and tighten all the connections before the use of the equipment. Do not light the torch if a propane odor is present. Never seek a leak with a flame. Use a torch whose gas output is adjustable with stopping device. Follow the specifications, notices and documentations of the manufacturers.

Storage: Flashings must be stored in such a way to prevent any creasing, twisting, scratches and other damages of the roof. The materials must be protected adequately and stored permanently away from flames or welding sparks, protected from bad weather and any harmful substances. Store self-adhesive membranes away from the sun.

8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Bitumen membrane. Asphalt odor. Under normal use, this product is not expected to create any health or environmental hazard. Inhalation of dust or of asphalt fumes can cause a slight respiratory irritation and/or congestion.

NAME	CAS#	EXPOSURE LIMIT (ACGIH)	
		TLV-TWA	TLV-STEL
BITUMINOUS BLEND			
Bitumen	8052-42-4	0.5mg/m³ Asphalt fumes	Not established
Oxidized bitumen[1]	64742-93-4	0.5 mg/m³ Asphalt fumes	Not established

Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**[1]	64742-52-5	Not established	Not established
Calcium carbonate[1]	471-34-1	10 mg/m^3	Not established
Styrene butadiene co-polymer[1]	9003-55-8	10 mg/m^3	Not established
FR Products: **Calcium borate**[1] FR Plus products contain: **Fire retardant**[1]	1318-33-8 Proprietary	10 mg/m^3 2 mg/m^3	Not established Not established
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.			
Polyester mat[1]	N/A	Not established	Not established
Fiberglass mat[1] Contains: **Fiberglass filament**[1]	N/A 65997-17-3	Not established 1f/cc	Not established Not established
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.			
Silicone paper	N/A	Not established	Not established
Polypropylene film	N/A	Not established	Not established
Polyethylene film	9002-88-4	Not established	Not established
Aluminum, copper or stainless steel foil	N/A	Not established	Not established
Sand Contains: Crystalline silica[2]	N/A 14808-60-7	0.1 mg/m^3 0.0.25 mg/m^3	Not established Not established
Talc	14807-96-6	Not established	Not established
Colored granules Contains: Crystalline silica[2]	N/A 14808-60-7	Not established 0.025 mg/ m^3	Not established Not established

1. Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.
2. A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

Hands: Wear resistant gloves.

Respiratory: If the threshold limit value (TLV) for dust is exceeded and if use is performed in a poorly ventilated confined area, use an approved respirator that is in accordance with standards.

Eyes: Wear safety goggles that are in accordance with standards.

Body: Wear adequate protective clothes. Do not wear synthetic fabric. Remove clothing contaminated with solvents.

Other: Eye bath and safety shower.

9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor and Appearance: Black membrane with asphalt odor.

Odor Threshold: Not available

Vapor pressure (20°C): Not applicable

Vapor Density (air=1): Not applicable

Evaporation Rate (Butyl acetate = 1): Not applicable

Boiling Point (760 mm Hg): Not applicable

Freezing Point: Not applicable

Specific Gravity (H2O=1): Variable

Solubility in Water (20°C): None

Volatile Organic Compound Content (V.O.C.): Not measurable

Viscosity: Not applicable

10: STABILITY AND REACTIVITY

Stability: This Material is Stable

Conditions of Reactivity: Avoid excessive heat.

Incompatibility: Acid and strong basis, organic solvents, and greasy substances.

Hazardous Decomposition Products: None identified.

Hazardous Polymerization: None

11: TOXICOLOGICAL INFORMATION

Toxological Data:
Natural graphite: (3)
LC50 (rat): > 64,400 mg/kg
LD50 (oral, rat): > 10,000 mg/kg

Decabromodiephenyl Oxide: (1)
LC50 (rat) : > 50 mg/kg
LD50 (oral, rat): > 5,000 mg/kg
LD50 (dermal, rat): > 2,000 mg/kg

No information is available on other products.

Effects of Short-Term (Acute) Exposure: No information available.

Effects of Long-Term (Chronic) Exposure:

Carcinogenicity:
Asphalt – data from experimental studies on animals and cultured mammalian cells indicate that laboratory- generated roofing asphalt fume condensates are genotoxic and cause skin tumors. (2)

Crystalline Silica – Several studies have shown an increased incidence of lung tumors on rats exposed to quartz by inhalation for up to 2 years. The IARC has determined that there is sufficient evidence that quartz in carcinogenic to experimental animals. (3)

The other ingredients were not found to be carcinogenic or no information is available on that matter

Reproductive Effects: No information available.

Teratogenicity, Embryotoxicity, Fetotoxicity: No information available.

Mutagenicity:
Crystalline Silica – None according to the information available.

No information available about the other ingredients.

Synergistic Materials: Tobacco smoke increases the effects of silica dust on respiratory system. Simultaneous exposure to known carcinogens as benzo (a), pyrene can increase the carcinogenicity of crystalline silica.

12: ECOLOGICAL INFORMATION

Environmental Effects: No data available.

Biodegradability: This product is not biodegradable. There is no possible bioaccumulation and unlikely bioconcentration in the food chain.

13: DISPOSAL CONSIDERATION

Waste Disposal: This product is not hazardous waste. Consult local, provincial, territory or state authorities to know disposal methods. This material is not listed by the EPA as hazardous waste according to the Resource Conservation and Recovery Act (RCRA) of the United States. No Environmental Protection Agency (EPA) waste numbers are applicable for this product.

14: TRANSPORT INFORMATION

This product is not regulated by the Department of Transportation (DOT) and Transportation Dangerous Goods (TDG).

15: REGULATORY INFORMATION

DSL: All constituents of this product are included in the Domestic Substances List (DLS) of Canada.

TSCA: All constituents of this product are listed on the Toxic Substances Control Act Inventory (TSCA - United States).

Prop. 65: This product contains chemicals known to the State of California to cause cancer or reproductive toxicity.

16: OTHER INFORMATION

Date Prepared: April 30, 2015 **Supersedes:** August 27, 2014 version
In this update: Oxidized bitumen added to Sections 2, 3 and 8.
GHS format

Glossary -
ACGIH: American Conference of Governmental Industrial Hygienists (United States)
ANSI: American National Standards Institute (United States)
ASTM: American Society for Testing and Materials (United States)
CAS: Chemical Abstract Services
CFR: Code of Federal Regulations (United States)
CSA: Canadian Standardization Association
DOT: Department of Transportation (United States)
DSL: Domestic Substances List (Canada)
EPA: Environmental Protection Agency (United States)
GHS Globally Harmonized System
IARC: International Agency for Research on Cancer
LD50/LC50: Less high lethal dose and lethal concentration published
NFPA: National Fire Protection Association (United States)
NIOSH: National Institute for Occupational Safety and Health (United States)
NTP: National Toxicology Program (United States)
OSHA: Occupational Safety & Health Administration (United States)
RCRA: Resource Conservation and Recovery Act (United States)
TDG: Transportation of Dangerous Goods (Canada)
TLV-TWA: Threshold Limit Value – Time-Weighted Average
TSCA: Toxic Substances Control Act (United States)

References:
(1) Safety Data Sheet from the supplier
(2) WHO (2013) Bitumens and bitumen emissions, and some N- and S- heterocyclic polycyclic aromatic hydrocarbons. Volume 103. IARC monographs on the evaluation of carcinogenic risks to humans.
(3) CHEMINFO (2015) Canadian Centre of Occupational Health and Safety, Hamilton (Ontario) Canada

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SAFETY DATA SHEET

IDENTIFICATION AND EMERGENCY INFORMATION

PRODUCT NAME: Ram 306

MANUFACTURER:

BARRETT COMPANY
2926 CHESTER AVE.
CLEVELAND, OH 44114

TOLL-FREE NUMBER: (877) 514-5336
MAIN NUMBER: (440) 605-1020
FAX NUMBER: (440) 605-1120
EMERGENCY NUMBER: (800) 424-9300
DATE PREPARED: June 16, 2020

Recommended Use: A component part of commercial waterproofing and roofing systems

Restrictions on Use: Should only be used by a Barrett Approved Professional Contractor strictly following Barrett and NRCA specifications and recommendations.

2: HAZARDS IDENTIFICATION

Bitumen membrane. Asphalt odor. Under normal use, this product is not expected to create any health or environmental hazard. Inhalation of dust or of asphalt fumes can cause a slight respiratory irritation and/or congestion.

NAME	CAS#	%WEIGHT	EXPOSURE LIMIT (ACGIH)	
			TLV-TWA	TLV-STEL
BITUMINOUS BLEND				
Bitumen	8052-42-4	30-70	0.5mg/m³ Asphalt fumes	Not established
Oxidized bitumen[1]	64742-93-4	0-20	0.5 mg/m³ Asphalt fumes	Not established
Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**[1]	64742-52-5	0-30	Not established	Not established
Calcium carbonate[1]	471-34-1	0-60	10 mg/m³	Not established
Styrene butadiene co-polymer[1]	9003-55-8	0-15	10 mg/m³	Not established
FR Products: **Calcium borate**[1]	1318-33-8	7-15	10 mg/m³	Not established
FR Plus products contain: **Fire retardant**[1]	Proprietary	1-5	2 mg/m³	Not established
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.				
Polyester mat[1]	N/A	1-7	Not established	Not established
Fiberglass mat[1]	N/A	1-7	Not established	Not established
Contains: **Fiberglass filament**[1]	65997-17-3	0,5-7	1f/cc	Not established
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.				
Silicone paper	N/A	6-20	Not established	Not established
Polypropylene film	N/A	2-10	Not established	Not established
Polyethylene film	9002-88-4	2-10	Not established	Not established
Aluminum, copper or stainless steel foil	N/A	4-15	Not established	Not established
Sand	N/A	7-13	0.1 mg/m³	Not established
Contains: Crystalline silica[2]	14808-60-7	7-13	0.0.25 mg/m³	Not established
Talc	14807-96-6	7-13	Not established	Not established
Colored granules	N/A	15-40	Not established	Not established
Contains: Crystalline silica[2]	14808-60-7	<12	0.025 mg/ m³	Not established

1. Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.

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Skin Contact: The product can cause a mechanical irritation of the skin because of its rough surface. If the membrane is torch-applied, asphalt fumes can cause skin irritation. The asphalt fumes can cause an irritation of the skin. The contact with this product at high temperature can cause thermal burns.

Eye Contact: The product is not likely to cause effects to the eyes. It the membrane is torched-applied, asphalt fumes can be emitted and cause irritations, redness and conjunctivitis to the eyes. The contact with this product at high temperature can cause thermal burns.

Inhalation: The product is not likely to cause effects to the respiratory system. If the membrane is torch-applied, asphalt fumes can be emitted of the product and cause irritations to the nose, the throat and the respiratory tracts, tiredness, headaches, dizziness, nausea and insomnia.

Ingestion: Exposure is not likely to occur by this route of entry under normal use of the product.

LONG TERM (CHRONIC) EXPOSURE:

Skin Contact: The repeated or prolonged contact can cause irritation. If the membrane is torch-applied, asphalt fumes can be emitted. The long-term exposure to the asphalt fumes can cause changes of the pigmentation of the skin which can be worsened by sun exposure. (1)

Inhalation: If the membrane is torch-applied, asphalt fumes can be inhaled. There are no data on chronic effects of the exposure to asphalt fumes on the lungs.

Carcinogenicity: Due to the product form exposure to hazardous dusts or fumes is not expected to occur. Information on carcinogenicity is given for reference only. This product is not classifiable as a carcinogen.

Bitumen – According to the International Agency for Research on Cancer (IARC): is not classifiable as to its carcinogenicity to humans. Epidemiological studies on roofers have generally demonstrated an excess of lung cancer in these workers. However, it is unclear to what extent these cancers may be attributable to asphalt exposures during roofing operations, since in the past; roofers have been exposed to coal tar and asbestos, which are known human lung carcinogens. Trace amounts of poly-nuclear aromatic hydrocarbons (PAHs) may be present in asphalt and can be released upon excessive heating. Some of these PAHs have been identified as having the potential to induce carcinogenic and reproductive health effects. (2)

Oxidized bitumen: In its 2013 monograph (Volume 103), the International Agency for Research on Cancer (IARC) conducted a review of the potential carcinogenicity of bitumen (the European term for asphalt). One of its conclusions was "occupational exposures to oxidized bitumens and their emissions during roofing" are classified in IARC Group 2A, "probably carcinogenic to humans." However, due to the product form, exposure to such component is unlikely under normal conditions of use. (2)

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Fiberglass Filament – Fiberglass is not expected to be released. In 2001, the IARC classified fiberglass as Group 3 "not classifiable as to its carcinogenicity to humans". The American Conference of Governmental Industrial hygienists (ACGIH) and the National Toxicology Program (NTP) classify the product in Group 2B (possibly carcinogenic to humans) based on studies in which animals were injected with large quantities of fiberglass.

The other ingredients were not found to be carcinogenic or no information is available on that matter.

Teratogenicity, Embryotoxicity, Fetotoxicity: No information available.

Reproductive Toxicity: No information available. **Mutagenicity:** No information available.

Toxicologically Synergistic Materials: No information available. **Potential Accumulation:** No information available.

3: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS#	%WEIGHT
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Oxidized bitumen[1]	64742-93-4	0-20
Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**	64742-52-5	0-30
Calcium carbonate	471-34-1	0-60
Styrene butadiene co-polymer	9003-55-8	0-15
FR Products: **Calcium borate**[1] FR Plus products contain: **Fire retardant**[1]	1318-33-8 Proprietary	7-15 1-5
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.		
Polyester mat[1]	N/A	1-7
Fiberglass mat[1] Contains: **Fiberglass filament**	N/A 65997-17-3	1-7 0,5-7
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.		
Silicone paper	N/A	6-20
Polypropylene film	N/A	2-10
Polyethylene film	9002-88-4	2-10
Aluminum, copper or stainless steel foil	N/A	4-15
Sand Contains: Crystalline silica	N/A 14808-60-7	7-13 7-13
Talc	14807-96-6	7-13
Colored granules Contains: Crystalline silica	N/A 14808-60-7	15-40 <12

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2. A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

4: FIRST AID MEASURES

Skin Contact – If there is presence of dust on the skin, wash gently with water and soap. In the event of contact with the product melted, do not try to remove the product off the affected area and rinse the area affected in cold water. Obtain immediate medical attention. At the end of each working day, clean all the parts of the body which came into contact with asphalt fumes. Clean the clothing contaminated by the asphalt fumes.

Eye Contact – Flush eyes with water for at least 15 minutes while holding eyelids open. Do not attempt to remove material from affected area without medical assistance. Obtain immediate medical attention.

Inhalation – Remove victim from contaminated place and restore breathing, if required.

Ingestion – The ingestion of this product is not very likely to occur.

5: FIRE FIGHTING MEASURES

Flammability – Not Applicable
Flash Point – Not Applicable
Flammability Limits in Air – (% in volume) Not Applicable

Explosion Data – Not Applicable
Auto-Ignition Temperature – Not Applicable

Fire and Explosion Hazards – Asphalt fumes are flammable. Torch, used to weld waterproofing membranes, can produce temperatures beyond 2000°F (1100°C). Avoid all contact with materials sensitive to these temperatures, as lead or plastic materials. Never work in an enclosed area where gas can accumulate. Shield air conditioning units and other protrusions on the roof with perlite panels or similar material. Never use torches:

- When substrate(s) have been recently covered by solvent-based products (wait until dry).
- Near any combustible materials.
- Close to containers containing flammable liquids or materials (keep open flame at least 3m [10'] away).
- Directly on combustible substrate or insulation.

Voids, holes or gaps in substrate or located nearby the welding zone must be protected against flame penetration. Particular precautions must be taken to keep combustible or heat sensitive insulation or other materials away from the torch flame. If wood fiber panels must be installed, use fireproof panels. Avoid presence of combustible materials near open flame. At all times and especially when leaving the job site, make sure that there is no smoldering or concealed fire. In that case, strictly follow the safety measures. Job planning must allow employee presence on the roof at least one hour after torch application. At the end of every day, use a heat detector gun to discover any unusually hot surface. Always have one ABC fire extinguisher on hand, filled and in perfect working order near each torch.

Combustion Products – burning of this material will produce thick black smoke. Irritating and/or toxic gases (including Hydrogen Sulphide and Sulphur Dioxide, Carbon Dioxide and Carbon Monoxide) and traces of metallic fumes may be generated by thermal decomposition or combustion.

Fire Fighting Instructions – Evacuate the area. Wear self-contained breathing apparatus and appropriate protective clothing that are in accordance with standards. Approach fire from upwind and fight it from maximum distance or use unmanned hose holders or monitor nozzles. Always stay away from the containers at the time of the fire considering the high risk of explosion. Move the rolls of membrane from fire area if it can be done without risk. Cool the rolls of membrane with flooding quantities of water until well after fire is out.

Extinguishing Media – Foam, CO_2, sand, chemical powder.

6: ACCIDENTAL RELEASE MEASURES

Release or Spill – If hot material is spilled, allow enough time to cool completely and remove to a container for disposal. Wear appropriate breathing apparatus (if applicable) and protective clothing. Notify appropriate environmental agencies. Wash spill area with soap and water. Dispose of the material according to local environmental regulations.

7: HANDLING AND STORAGE

Handling – Products must be applied by qualified applicators who have received an adequate training on prevention and protection (in particular for the use of the extinguishers) against accidents caused by use of combustible or flammable materials, of liquefied propane gas, open flame, and their material of installation. The present recommendations must be imperatively related to knowledge of the employees before the application of the products to the building site. Check the construction and the composition of the systems of roof and walls before welding. Ensure of the cleanliness of the places (debris).

Precautions of the use of the torch: Use only proper torching equipment in perfect working order (C.S.A certified). Never modify torching equipment. Use only proper hoses suited for propane gas of less than 15m (50'). Verify and tighten all the connections before the use of the equipment. Do not light the torch if a propane odor is present. Never seek a leak with a flame. Use a torch whose gas output is adjustable with stopping device. Follow the specifications, notices and documentations of the manufacturers.

Storage: Flashings must be stored in such a way to prevent any creasing, twisting, scratches and other damages of the roof. The materials must be protected adequately and stored permanently away from flames or welding sparks, protected from bad weather and any harmful substances. Store self-adhesive membranes away from the sun.

8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Bitumen membrane. Asphalt odor. Under normal use, this product is not expected to create any health or environmental hazard. Inhalation of dust or of asphalt fumes can cause a slight respiratory irritation and/or congestion.

NAME	CAS#	EXPOSURE LIMIT (ACGIH)	
		TLV-TWA	TLV-STEL
BITUMINOUS BLEND			
Bitumen	8052-42-4	0.5mg/m³ Asphalt fumes	Not established
Oxidized bitumen[1]	64742-93-4	0.5 mg/m³ Asphalt fumes	Not established

Self-adhesive membranes contain: **Highly hydrotreated naphthenic oil**[1]	64742-52-5	Not established	Not established
Calcium carbonate[1]	471-34-1	10 mg/m^3	Not established
Styrene butadiene co-polymer[1]	9003-55-8	10 mg/m^3	Not established
FR Products: **Calcium borate**[1] FR Plus products contain: **Fire retardant**[1]	1318-33-8 Proprietary	10 mg/m^3 2 mg/m^3	Not established Not established
REINFORCEMENT Some products may contain fiberglass, polyester or a mix of glass grid and polyester.			
Polyester mat[1]	N/A	Not established	Not established
Fiberglass mat[1] Contains: **Fiberglass filament**[1]	N/A 65997-17-3	Not established 1f/cc	Not established Not established
UNDERFACE AND SURFACE Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.			
Silicone paper	N/A	Not established	Not established
Polypropylene film	N/A	Not established	Not established
Polyethylene film	9002-88-4	Not established	Not established
Aluminum, copper or stainless steel foil	N/A	Not established	Not established
Sand Contains: Crystalline silica[2]	N/A 14808-60-7	0.1 mg/m^3 0.0.25 mg/m^3	Not established Not established
Talc	14807-96-6	Not established	Not established
Colored granules Contains: Crystalline silica[2]	N/A 14808-60-7	Not established 0.025 mg/ m^3	Not established Not established

1. Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.
2. A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

Hands: Wear resistant gloves.

Respiratory: If the threshold limit value (TLV) for dust is exceeded and if use is performed in a poorly ventilated confined area, use an approved respirator that is in accordance with standards.

Eyes: Wear safety goggles that are in accordance with standards.

Body: Wear adequate protective clothes. Do not wear synthetic fabric. Remove clothing contaminated with solvents.

Other: Eye bath and safety shower.

9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor Threshold: Not available

Vapor Density (air=1): Not applicable

Boiling Point (760 mm Hg): Not applicable

Specific Gravity (H2O=1): Variable

Volatile Organic Compound Content (V.O.C.): Not measurable

Odor and Appearance: Black membrane with asphalt odor.

Vapor pressure (20°C): Not applicable

Evaporation Rate (Butyl acetate = 1): Not applicable

Freezing Point: Not applicable

Solubility in Water (20°C): None

Viscosity: Not applicable

10: STABILITY AND REACTIVITY

Stability: This Material is Stable

Conditions of Reactivity: Avoid excessive heat.

Incompatibility: Acid and strong basis, organic solvents, and greasy substances.

Hazardous Decomposition Products: None identified.

Hazardous Polymerization: None

11: TOXICOLOGICAL INFORMATION

Toxological Data:
Natural graphite: (3)
LC50 (rat): > 64,400 mg/kg
LD50 (oral, rat): > 10,000 mg/kg

Decabromodiephenyl Oxide: (1)
LC50 (rat) : > 50 mg/kg
LD50 (oral, rat): > 5,000 mg/kg
LD50 (dermal, rat): > 2,000 mg/kg

No information is available on other products.

Effects of Short-Term (Acute) Exposure: No information available.

Effects of Long-Term (Chronic) Exposure:

Carcinogenicity:
Asphalt – data from experimental studies on animals and cultured mammalian cells indicate that laboratory- generated roofing asphalt fume condensates are genotoxic and cause skin tumors. (2)

Crystalline Silica – Several studies have shown an increased incidence of lung tumors on rats exposed to quartz by inhalation for up to 2 years. The IARC has determined that there is sufficient evidence that quartz in carcinogenic to experimental animals. (3)

The other ingredients were not found to be carcinogenic or no information is available on that matter

Reproductive Effects: No information available.

Teratogenicity, Embryotoxicity, Fetotoxicity: No information available.

Mutagenicity:
Crystalline Silica – None according to the information available.

No information available about the other ingredients.

Synergistic Materials: Tobacco smoke increases the effects of silica dust on respiratory system. Simultaneous exposure to known carcinogens as benzo (a), pyrene can increase the carcinogenicity of crystalline silica.

12: ECOLOGICAL INFORMATION

Environmental Effects: No data available.

Biodegradability: This product is not biodegradable. There is no possible bioaccumulation and unlikely bioconcentration in the food chain.

13: DISPOSAL CONSIDERATION

Waste Disposal: This product is not hazardous waste. Consult local, provincial, territory or state authorities to know disposal methods. This material is not listed by the EPA as hazardous waste according to the Resource Conservation and Recovery Act (RCRA) of the United States. No Environmental Protection Agency (EPA) waste numbers are applicable for this product.

14: TRANSPORT INFORMATION

This product is not regulated by the Department of Transportation (DOT) and Transportation Dangerous Goods (TDG).

15: REGULATORY INFORMATION

DSL: All constituents of this product are included in the Domestic Substances List (DLS) of Canada.

TSCA: All constituents of this product are listed on the Toxic Substances Control Act Inventory (TSCA - United States).

Prop. 65: This product contains chemicals known to the State of California to cause cancer or reproductive toxicity.

16: OTHER INFORMATION

Date Prepared: April 30, 2015 **Supersedes:** August 27, 2014 version
In this update: Oxidized bitumen added to Sections 2, 3 and 8.
GHS format

Glossary -
ACGIH: American Conference of Governmental Industrial Hygienists (United States)
ANSI: American National Standards Institute (United States)
ASTM: American Society for Testing and Materials (United States)
CAS: Chemical Abstract Services
CFR: Code of Federal Regulations (United States)
CSA: Canadian Standardization Association
DOT: Department of Transportation (United States)
DSL: Domestic Substances List (Canada)
EPA: Environmental Protection Agency (United States)
GHS Globally Harmonized System
IARC: International Agency for Research on Cancer
LD50/LC50: Less high lethal dose and lethal concentration published
NFPA: National Fire Protection Association (United States)
NIOSH: National Institute for Occupational Safety and Health (United States)
NTP: National Toxicology Program (United States)
OSHA: Occupational Safety & Health Administration (United States)
RCRA: Resource Conservation and Recovery Act (United States)
TDG: Transportation of Dangerous Goods (Canada)
TLV-TWA: Threshold Limit Value – Time-Weighted Average
TSCA: Toxic Substances Control Act (United States)

References:
(1) Safety Data Sheet from the supplier
(2) WHO (2013) Bitumens and bitumen emissions, and some N- and S- heterocyclic polycyclic aromatic hydrocarbons. Volume 103. IARC monographs on the evaluation of carcinogenic risks to humans.
(3) CHEMINFO (2015) Canadian Centre of Occupational Health and Safety, Hamilton (Ontario) Canada

Disclaimer: The information and recommendations contained herein are to the best of Barrett Company's knowledge and belief, accurate and reliable as of the date issued. Barrett Company does not warrant or guarantee their accuracy or reliability, and Barrett Company shall not be liable for any loss or damage arising out of the use thereof. The information and recommendations are offered for the users' consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. It is also the users' responsibility to make certain that it is relying upon the most recent, updated, information and recommendations available from Barrett Company. The Environmental Information included above as well as the Hazardous Material Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Barrett Company in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Barrett Company's interpretation of the available data. We make no warranty as to the results to be obtained in using any material and, since conditions and methods of use are not under our control, we must necessarily disclaim all warranties of merchantability or fitness for any particular use as well as all liability resulting directly or indirectly from the use of any materials supplied by us.

RamTough 250
WATERPROOFING
LIMITED WARRANTY

WARRANTY: THE BARRETT COMPANY, LLC. (Barrett), does hereby warrant to the building owner (Owner) that subject to the terms, conditions and limitations stated herein, its Barrett **Ram-Tough** Membrane Components (the Product), which has been installed by a Barrett authorized applicator, will remain in a watertight condition for a period of Twenty (20) years from the date of completion indicated hereinafter.

In the event of failure of the Product to function as warranted, whether caused by the Approved Applicator's workmanship or defective product, Barrett will make or cause to be made such repairs and maintenance necessary to enable the Product to perform as herein warranted, including the removal and replacement of any materials covering the herein membrane purchased from The Barrett Company. Barrett's repair obligations over the life of this warranty are limited to the Owner's original cost of the product.

CONDITIONS OF THE WARRANTY: Barrett's obligations to repair and maintain the Product under this warranty shall not be in force or effect unless a) Barrett is notified promptly and confirmation, in writing, is sent by registered or certified mail, of any failure of the Product covered by this warranty within thirty (30) days following notice of such failure, actual or constructive, b) the Product is installed in accordance with Barrett's written specifications by a Barrett authorized applicator, c) the Applicator and material suppliers have been paid in full for all bills for installation, product and services; d) no alteration or repairs are made without prior written approval of Barrett and acceptance of the work; and e) if a warranty claim is filed and investigation determines the claim is not valid or covered under this warranty, all costs of investigation shall be the responsibility of the Owner.

LIABILITIES EXCLUDED FROM COVERAGE OF WARRANTY:

A. Barrett assumes no liability for damage to 1) the deck or other base over which the Product is installed, 2) the building structure or the interior contents, 3) any other property or person 4) nor any incidental or consequential damages including but not limited to mold, bacterial and all other toxicity or pollution claims, 5) structural calculations or dew point calculations.

B. Barrett assumes no liability for any failure of the Product resulting from 1) natural disasters and acts of God, including, without limitation, floods, lightning, hurricanes, winds in excess of 70 mph, earthquakes, earth tremors, tornados, gales, hail and fire of any origin or causes, 2) structural defects of the building on which the Product is installed, 3) improper application or failure of any component underlying the Product or associated metal work, 4) changes in the original principal usage to which the building is put, unless approved in advance, in writing by Barrett, 5) the erection or construction of any additional installation in or through the Product prior to or after the completion date, unless done in the manner prescribed and accepted by Barrett, 6) failure of Owner or lessee to use reasonable care in maintaining the Product, including acts of negligence, vandalism, abuse or misuse; and 7) chemical attack from industrial or environmental contaminants which have not been first approved and accepted, in writing, from Barrett, 8) base flashings of less than eight inches in height or in excess of 18 inches in height, 9) water entry from pitch pans, adjoining materials or surfaces which are not waterproofed with Barrett products, 10) any damage or loss due to animal, microbial, mold, algae, mildew, spores, mycotoxins, virus or other invasive forces, 11) deterioration of flashings where water has been allowed to enter behind flashing from sources other than thru the Product or base flashing; and 12) the Design of the end use.

C. SPECIAL CONDITIONS:

ACCESS: During the term of this warranty, Barrett, its agents, or employees shall have free access to the installation area during regular business hours.

WAIVER: Barrett's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provisions.

Barrett shall have the sole and exclusive right of good faith determination of warranty applicability.

ASSIGNABILITY: This warranty shall accrue only to the Owner named herein.

CONVERSION: Should the Owner fail to properly execute and return a signed copy of this document within ninety (90) days of issuance date this warranty offer shall expire and will be superseded with Barrett's Standard FIVE (5) year "Materials Only" warranty which also includes the warranty provision.

NO OTHER WARRANTY: BARRETT MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY EXCEPT AS PROVIDED HEREIN. BARRETT WILL NOT BE LIABLE OR OBLIGATED FOR ANY LOSS OR DAMAGE, CONSEQUENTIAL OR INCIDENTAL, OR OTHER DAMAGE ARISING DIRECTLY OR INDIRECTLY IN RESPECT TO BARRETT MATERIALS OR THE USE OR FAILURE THEREOF, WHERE BASED ON BREACH OF WARRANTY OR CONTRACT, OR NEGLIGENCE. BOTH PARTIES CONSENT TO THE CONTRACT LANGUAGE HEREIN AND NEITHER PARTY SHALL BE PREJUDICED BY ANY LANGUAGE AMBIGUITY DUE TO AUTHORSHIP. THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF THE OWNER.

NO REPRESENTATIVE OF BARRETT HAS AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISES EXCEPT AS STATED HEREIN.

Name of Building:

Address of Building:

Project#:

Owner's Name:
Owner's Address:

Name of Approved Applicator:
Address of Approved Applicator:

DESCRIPTION OF ROOF WARRANTED

Date Work Began:

Date Work Completed:

Warranty Expiration Date:

Type of Deck:

Slope of Roof:

Area of Roof Under Warranty:

Specification No.:

Insulation Manufacturer, Type:

Thickness and psi of Insulation:

Type of Covering:

Weight per Square Foot:

Use of Roof:

Building Use Below Roof:

IN WITNESS WHEREOF, THE BARRETT COMPANY, LLC. HAS CAUSED THIS DOCUMENT TO BE EXECUTED BY THEIR AUTHORIZED REPRESENTATIVE THIS _____ DAY OF_____ , 20___.

BUILDING OWNER ACKNOWLEDGEMENT
AND ACCEPTANCE

BARRETT COMPANY, LLC
2926 CHESTER AVENUE
CLEVELAND, OH 44114

By: _____

Printed Name: _____

Title: _____

Date: _____, 20___

By: _____
Division Manager

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786)315-2590 F (786) 31525-99
www.miamidade.gov/economy

DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

The Barrett Company, LLC
2926 Chester Ave.
Cleveland, OH 44114

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: RamTough 250 Waterproofing System

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA consists of pages 1 through 13.

The submitted documentation was reviewed by Jorge L. Acebo.

MIAMI-DADE COUNTY APPROVED

ROOFING SYSTEM APPROVAL

Category:	Roofing
Sub–Category:	Waterproofing
Deck Type:	Concrete
Material:	Rubberized Asphalt
Maximum Design Pressure:	-462.5 psf

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT

TABLE 1

Product	Dimensions	Test Specification	Product Description
RamTough 250 Membrane	30 lbs. carton	CGSB-37.50-GP-50	A polymer modified rubberized bitumen hot fluid applied waterproofing membrane.
Ram 203	39" x 49' rolls	ASTM D6163	An SBS polymer-modified, fiberglass reinforced asphalt membrane protection course.
Ram 306	39" x 33' rolls	ASTM D6164	An SBS polymer-modified, polyester reinforced modified bitumen membrane with a ceramic granule surface protection Cap sheet.
Polyfelt 125 VP	39.4" x 327' rolls	Proprietary	A lightweight thermally bonded spun laid non-woven fabric polyester reinforcement.
Ram Tough Primer/Conditioner	5-gallon (42 lbs.) pails	ASTM D41	A general utility asphaltic primer/conditioner.
Ram 327 HDR	6", 9", 12", 18", 24" and 36" x 100' rolls	Proprietary	A heavy-duty uncured neoprene flashing material.

PRODUCTS MANUFACTURED BY OTHERS:

TABLE 2

Product	Dimensions	Test Specification	Product Description	Manufacturer
STYROFOAM PLAZAMATE	Various, Min. 60 psi	ASTM C578 Type VII	Extruded polystyrene insulation (XPS)	DuPont de Nemours, Inc.
Concrete Paver	Min. 12" x 12" Min. 1½" thick Min. 7500 psi		Premanufactured concrete pavers for use as overburden surfacing	Generic
Thin-Set Mortar	50 lb. bags	ANSI A118.4	Thin-Set mortar	Generic
Portland Cement	94 lb. bags	ASTM C220	Type I Portland cement	Generic

EVIDENCE SUBMITTED

Test Agency	Test Identifier	Test Specification	Date
Nemo-ETC, LLC.	4w-ERD-20-SSASP-01.A	CAN/CGSB-37.50-M89	06/29/20
	4q-SOP-20-SSMBB-01.D	ASTM D6164/TAS 110	11/05/20
	4q-SOP-20-SSMBB-01.A	ASTM D6163	11/05/20
	4p-SOP-21-SSLAP-04.A	ASTM D41	06/22/22
	4a-ERD-22-LWSUW-09.A.R1	TAS 114(D)	03/16/23
	4i-ERD-23-SSCRT-01.A	TAS 114(H)	01/25/23

APPROVED ASSEMBLIES

Deck Type 3: Concrete Decks, Non-Insulated

Deck Description: Min. 2500 psi, structural concrete or concrete plank, with or without topping slab.

System Type F(1): Hot Fluid Applied Waterproofing Reinforced Membrane

Surface Condition: All surfaces shall be dry, smooth, free of depressions, voids, and protrusions, and clean and free of unapproved curing compounds, form release agents, and other surface contaminants. Substrate shall be smooth, free of voids, surface spalls, laitance, honeycombs, and sharp or irregular protrusions. All honeycombs, voids, cracks, and pockmarks shall be patched with non-shrink grout, applied with a bonding agent. Corroded steel reinforcing shall be treated prior to concrete repair. Concrete surface preparation shall conform with ASTM D5295. Concrete around drains shall be depressed and sloped to promote positive water drainage.

All metal flashings shall be in place, securely attached and accurately fitted. Metal shall be cleaned of all process oils with a solvent cleaner. Metal shall be free of rust and contaminants. Wire brush surface prior to priming.

The substrate shall be cleaned to remove loose debris. The horizontal deck surface shall be cleaned with a power blower or filtered air compressor just prior to applying Ram Tough Primer/Conditioner. The use of power blowers or compressed air for cleaning shall comply with current OSHA and local regulations. Apply the Ram Tough Primer/Conditioner to the surfaces using a handheld sprayer evenly at a rate 400 SF/gallon (9.81 m^2/L) depending on surface texture and porosity. Surface shall be tan to light brown when fully applied and dry. Mask all adjacent surfaces and avoid overspray. Fill all small voids and cracks with Ram Tough Primer/Conditioner and RamTough 250 prior to full application. Ram Tough Primer/Conditioner shall be allowed to dry tack-free before applying the RamTough 250. Drying time will vary depending on the temperature, wind, and sunlight. Ram Tough Primer/Conditioner shall present a tan to non-uniform, mottled brown appearance. Do not prime more area than will be covered with RamTough 250 in the same day. Pre-prime all areas which have been contaminated by dust or debris.

Membrane Flashing: Install a one-inch cant of RamTough 250 at exposed metal projections to extend from the primed metal out twelve-inches on to the deck. Allow the hot RamTough 250 to slightly cool and tool with a trowel. Install two-piece Ram 327 HDR Flashing Sheet, base portion first, or primed sheet metal sleeve flashing per published and current RamTough details.

At all curbs, projections, walls and other changes in plane, hot rubberized asphalt bitumen and reinforced flashings shall be installed prior to the field of the deck installation. Install base flashings in accordance with applicable RamTough flashing details and installation requirements. Install a flashing of RamTough 250 and Ram 327 HDR elastomeric sheeting wherever there is a vertical surface transition or change in plane.

Membrane Flashing: (continued)

The minimum required flashing height is eight-inches, with a maximum of 30-inches. Prime the area to the specified height and continue onto the deck. Allow the Ram Tough Primer/Conditioner to dry tack-free prior to application of RamTough 250. Use masking paper to avoid staining adjacent surfaces. Take precautions to avoid wind-carried overspray from damaging adjacent surfaces. Bond laps in the flashing sheet a minimum of three-inches in width with 1/8-inch thickness of hot RamTough 250. Apply 125-mils of RamTough 250 a minimum of four-inches wide to the horizontal plane and eight-inches up the vertical plane of the flashing, and immediately lay the neoprene sheet into the hot material on the horizontal surface, embed tight into the cove, following up the vertical surfaces. Sheeting shall be fully adhered a minimum of seven-inches on the vertical and free of any wrinkles or fish-mouths. Using a hot roller or squeegee, apply a minimum 125-mils of RamTough 250 over the entire assembly. The neoprene shall be tightly pressed into the cover area. Neoprene flashing with void space below it is unacceptable and shall be cut out and re-flashed. Install a termination bar with appropriate fasteners eight-inch on center. Seal the top edge of all flashings before the end of the day and provide metal counterflashing to protect the top termination of the installed system.

As soon as the Ram Tough Primer/Conditioner has fully dried, dress cracks. Where cracks are equal or less than 1/16-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate, six-inches on either side of the crack. Where cracks range from 1/16-inch to ¼-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate and embed a minimum six-inch wide Ram 327 HDR neoprene sheeting into hot RamTough 250. The sheet shall extend three-inches to either side of crack and be free of fish-mouths. Lap separate lengths of Ram 327 HDR sheeting a minimum of three-inches and adhere with 90-mil thick surfacing of hot RamTough 250.

At cold joints and construction joints, remove any existing pre-molded joint filler to a minimum depth of ½-inch. Prime both sides of the joint and allow to dry tack-free. Apply 125 mil thickness of RamTough 250 to each side of the primed joint, a minimum nine inches in width. Immediately embed one half of a six-inch width of Ram 327 HDR while RamTough 250 material is hot. Embed the other half of the sheet likewise on the other side of the joint. The sheet shall be fully adhered and free of wrinkles and fish-mouths.

Expansion joints shall be raised or in plane expansion joints. Install in compliance with RamTough and project approved details.

Base Coat:

Apply RamTough 250 bitumen starting at the low point of the deck, pour the bitumen into place and spread evenly, to a thickness of not less than 90-mils (approximately 60 lbs. per square), in an application width of approximately 44-inches with a straight blade squeegee. To help assure the proper application rate, a chalk line grid system is suggested to confirm the proper coverage. Assure that proper bitumen application is achieved with a regular quality assurance protocol.

Reinforcement:	While the bitumen is still hot, install one layer of Polyfelt 125 VP reinforcing fabric into the RamTough 250. Standing off to the side and using a broom or squeegee, press fabric into the hot bitumen using care not to create wrinkles or fish-mouths. All end laps shall be overlapped a minimum of six inches. Ensure there is a solid coat of bitumen between all laps. All laps shall be laid in a shingle fashion, so no laps buck water. Follow-up with successive RamTough 250 and reinforcing layer, working up slope. As an option for a double reinforced system, after the first run of fabric has been installed, return to the same starting point, and install a second run of bitumen and reinforcement, overlapping the first course by 3-inches. All end laps shall be overlapped a minimum of six inches. Ensure there is a solid coat of bitumen between all laps. **In no place shall fabric touch fabric.**
Top Coat:	Apply a top coat of RamTough 250 at a continuous thickness of not less than 125-mils, which equates to approximately 80 lbs. per square. While the surface coat is still hot, apply the specified protection course and press into place.
Protection Course:	The RamTough 250 system shall receive a protection course of the Ram 306 cap sheet while the RamTough 250 is still hot. Overlap adjoining short edges (dry) a minimum of three inches to ensure complete coverage. Press into place. Ram 306 may be exposed for the life of the assembly.
Integrity Test:	An ASTM D5957 Integrity Test shall be carried out by an approved laboratory for 24 – 48 hours prior to the application of any overburden. A written test report shall be generated detailing the test method and the test results.
Inspection:	Contractor and system manufacturer shall inspect the fully installed system and provide a punch list in writing for correction and shall be completed by the contractor.
Optional Surfacing:	Structural concrete slab, minimum 2500 psi shall be designed to comply with applicable Building Code requirements.
Maximum Design Pressure:	-301.5 psf. (See General Limitation #9) without structural concrete surfacing. MDP Rating is N/A with structural concrete surfacing

Deck Type 3: Concrete Decks, Non-Insulated

Deck Description: Min. 2500 psi, structural concrete or concrete plank.

System Type F(2): Hot Fluid Applied Waterproofing Reinforced Membrane with Concrete (Paver) Overburden

Surface Condition: All surfaces shall be dry, smooth, free of depressions, voids, and protrusions, and clean and free of unapproved curing compounds, form release agents, and other surface contaminants. Substrate shall be smooth, free of voids, surface spalls, laitance, honeycombs, and sharp or irregular protrusions. All honeycombs, voids, cracks, and pockmarks shall be patched with non-shrink grout, applied with a bonding agent. Corroded steel reinforcing shall be treated prior to concrete repair. Concrete surface preparation shall conform with ASTM D5295. Concrete around drains shall be depressed and sloped to promote positive water drainage.

All metal flashings shall be in place, securely attached and accurately fitted. Metal shall be cleaned of all process oils with a solvent cleaner. Metal shall be free of rust contaminants. Wire brush surface prior to priming.

The substrate shall be cleaned to remove loose debris. The horizontal deck surface shall be cleaned with a power blower or filtered air compressor just prior to applying Ram Tough Primer/Conditioner. The use of power blowers or compressed air for cleaning shall comply with current OSHA and local regulations. Apply the Ram Tough Primer/Conditioner to the surfaces using a handheld sprayer evenly at a rate 400 SF/gallon (9.81 m^2/L) depending on surface texture and porosity. Surface shall be tan to light brown when fully applied and dry. Mask all adjacent surfaces and avoid overspray. Fill all small voids and cracks with Ram Tough Primer/Conditioner and RamTough 250 prior to full application. Ram Tough Primer/Conditioner shall be allowed to dry tack-free before applying the RamTough 250. Drying time will vary depending on the temperature, wind, and sunlight. Ram Tough Primer/Conditioner shall present a tan to non-uniform, mottled brown appearance. Do not prime more area than will be covered with RamTough 250 in the same day. Pre-prime all areas which have been contaminated by dust or debris.

Membrane Flashing: Install a one-inch cant of RamTough 250 at exposed metal projections to extend from the primed metal out twelve-inches on to the deck. Allow the hot RamTough 250 to slightly cool and tool with a trowel. Install two-piece Ram 327 HDR Flashing Sheet, base portion first, or primed sheet metal sleeve flashing per published and current RamTough details.

At all curbs, projections, walls and other changes in plane, hot rubberized asphalt bitumen and reinforced flashings shall be installed prior to the field of the deck installation. Install base flashings in accordance with applicable RamTough flashing details and installation requirements. Install a flashing of RamTough 250 and Ram 327 HDR elastomeric sheeting wherever there is a vertical surface transition or a change in plane. The minimum required flashing height is eight-inches, with a maximum of 30-inches.

Membrane Flashing: (continued)

Prime the area to the specified height and continue onto the deck. Allow the Ram Tough Primer/Conditioner to dry tack-free prior to application of RamTough 250. Use masking paper to avoid staining adjacent surfaces. Take precautions to avoid wind-carried overspray from damaging adjacent surfaces. Bond laps in the flashing sheet a minimum of three-inches in width with 1/8-inch thickness of hot RamTough 250. Apply 125-mils of RamTough 250 a minimum of four-inches wide to the horizontal plane and eight-inches up the vertical plane of the flashing, and immediately lay the neoprene sheet into the hot material on the horizontal surface, embed tight into the cove, following up the vertical surfaces. Sheeting shall be fully adhered a minimum of seven-inches on the vertical and free of any wrinkles or fish-mouths. Using a hot roller or squeegee, apply a minimum 125-mils of RamTough 250 over the entire assembly. The neoprene shall be tightly pressed into the cover area. Neoprene flashing with void space below it is unacceptable and shall be cut out and re-flashed. Install a termination bar with appropriate fasteners eight-inch on center. Seal the top edge of all flashings before the end of the day and provide metal counterflashing to protect the top termination of the installed system.

As soon as the Ram Tough Primer/Conditioner has dried, dress cracks. Where cracks are equal or less than 1/16-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate, six-inches on either side of the crack. Where cracks range from 1/16-inch to ¼-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate and embed a minimum six-inch wide Ram 327 HDR neoprene sheeting into hot RamTough 250. The sheet shall extend three-inches to either side of crack and be free of fish-mouths. Lap separate lengths of Ram 327 HDR sheeting a minimum of three-inches and adhere with 90-mil thick surfacing of hot RamTough 250.

At cold joints and construction joints, remove any existing pre-molded joint filler to a minimum depth of ½-inch. Prime both sides of the joint and allow to dry tack-free. Apply 125 mil thickness of RamTough 250 to each side of the primed joint, a minimum nine inches in width. Immediately embed one half of a six-inch width of Ram 327 HDR while RamTough 250 material is hot. Embed the other half of the sheet likewise on the other side of the joint. The sheet shall be fully adhered and free of wrinkles and fish-mouths.

Expansion joints shall be raised or in plane expansion joints. Install in compliance with RamTough and project approved details.

Base Coat:

RamTough 250 shall be applied starting at the low point of the deck, pour the bitumen into place and spread evenly, to a thickness of not less than 90-mils (approximately 60 lbs. per square), in an application width of approximately 44-inches with a straight blade squeegee. To help assure the proper application rate, a chalk line grid system is suggested to confirm the proper coverage. Assure that proper bitumen application is achieved with a regular quality assurance protocol.

Reinforcement: While the bitumen is still hot, install one layer of Polyfelt 125 VP reinforcing fabric into the RamTough 250. Standing off to side and using a broom or squeegee, press fabric into the hot bitumen using care not to create wrinkles or fish-mouths. All end laps shall be overlapped a minimum of six inches. Ensure there is a solid coat of bitumen between all laps. All laps shall be laid in a shingle fashion, so no laps buck water. Follow up with successive RamTough 250 and reinforcing layer, working up the slope.

As an option for a double reinforced system, after the first run of fabric has been installed, return to the same starting point, and install a second run of bitumen and reinforcement, overlapping the first course by 3 inches. All end laps shall be overlapped a minimum of six inches. Ensure there is a solid coat of bitumen between all laps. **In no place shall fabric touch fabric.**

Top Coat: Apply a topcoat of RamTough 250 at a continuous thickness of not less than 125-mils, which equates to approximately 80 lbs. per square. While the surface coat is still hot, apply the specified protection course and press into place to create a continuous bond.

Protection Course: RamTough 250 shall receive a protection course of Ram 306 cap sheet while still hot. Overlap adjoining short edges (dry) a minimum of three inches to ensure complete coverage, pressing the protection course into place.

Integrity Test: An ASTM D5957 Integrity Test shall be carried out by an approved laboratory for 24 – 48 hours prior to the application of any overburden. A written test report shall be generated detailing the test method and the test results.

Inspection: Contractor and system manufacturer shall inspect the fully installed system and provide a punch list in writing for correction and shall be completed by the contractor.

Overburden: Concrete pavers, having minimum 7500 psi compressive strength and 12" x 12" x 1 ½" dimensions, installed in either a Portland Cement or Thin-Set mortar bed applied with a ¼" x ¼" square notched trowel over the Ram 306 granulated surfaced membrane.

Maximum Design Pressure: -462.5 psf. (See General Limitation #9)

Deck Type 3: Concrete Decks, Insulated

Deck Description: Min. 2500 psi, structural concrete or concrete plank.

System Type F(3): Hot Fluid Applied Waterproofing Reinforced Membrane with Insulation

Surface Condition: All surfaces shall be dry, smooth, free of depressions, voids, and protrusions, and clean and free of unapproved curing compounds, form release agents, and other surface contaminants. Substrate shall be smooth, free of voids, surface spalls, laitance, honeycombs, and sharp or irregular protrusions. All honeycombs, voids, cracks, and pockmarks shall be patched with non-shrink grout, applied with a bonding agent. Corroded steel reinforcing shall be treated prior to concrete repair. Concrete surface preparation shall conform with ASTM D5295. Concrete around drains shall be depressed and sloped to promote positive water drainage.

All metal flashings shall be in place, securely attached and accurately fitted. Metal shall be cleaned of all process oils with a solvent cleaner. Metal shall be free of rust and contaminants. Wire brush surface prior to priming.

The substrate shall be cleaned to remove loose debris. The horizontal deck surface shall be cleaned with a power blower or filtered air compressor just prior to applying Ram Tough Primer/Conditioner. The use of power blowers or compressed air for cleaning shall comply with current OSHA and local regulations. Apply the Ram Tough Primer/Conditioner to the surfaces using a handheld sprayer evenly at a rate 400 SF/gallon (9.81 m^2/L) depending on surface texture and porosity. Surface shall be tan to light brown when fully applied and dry. Mask all adjacent surfaces and avoid overspray. Fill all small voids and cracks with Ram Tough Primer/Conditioner and RamTough 250 prior to full application. Ram Tough Primer/Conditioner shall be allowed to dry tack-free before applying the RamTough 250. Drying time will vary depending on the temperature, wind, and sunlight. Ram Tough Primer/Conditioner shall present a tan to non-uniform, mottled brown appearance. Do not prime more area than will be covered with RamTough 250 in the same day. Pre-prime all areas which have been contaminated by dust or debris.

Membrane Flashing: Install a one-inch cant of RamTough 250 at exposed metal projections to extend from the primed metal out twelve-inches on to the deck. Allow the hot RamTough 250 to slightly cool and tool with a trowel. Install two-piece Ram 327 HDR Flashing Sheet, base portion first, or primed sheet metal sleeve flashing per published and current RamTough details.

At all curbs, projections, walls and other changes in plane, hot rubberized asphalt bitumen and reinforced flashings shall be installed prior to the field of the deck installation. Install base flashings in accordance with applicable RamTough flashing details and installation requirements. Install a flashing of RamTough 250 and Ram 327 HDR elastomeric sheeting wherever there is a vertical surface or change in plane exists. The minimum required flashing height is eight-inches, with a maximum of 30-inches. Prime the area to the specified height and continue onto the deck.

Membrane Flashing: (continued)

Allow the Ram Tough Primer/Conditioner to dry tack-free prior to application of RamTough 250. Use masking paper to avoid staining adjacent surfaces. Take precautions to avoid wind-carried overspray from damaging adjacent surfaces. Bond laps in the flashing sheet a minimum of three-inches in width with 1/8-inch thickness of hot RamTough 250. Apply 125-mils of RamTough 250 a minimum of four-inches wide to the horizontal plane and eight-inches up the vertical plane of the flashing, and immediately lay the neoprene sheet into the hot material on the horizontal surface, embed tight into the cove, following up the vertical surfaces. Sheeting shall be fully adhered a minimum of seven-inches on the vertical and free of any wrinkles or fish-mouths. Using a hot roller or squeegee, apply a minimum 125-mils of RamTough 250 over the entire assembly. The neoprene shall be tightly pressed into the cover area. Neoprene flashing with void space below it is unacceptable and shall be cut out and re-flashed. Install a termination bar with appropriate fasteners eight-inch on center. Seal the top edge of all flashings before the end of the day and provide metal counterflashing to protect the top termination of the installed system.

As soon as the Ram Tough Primer/Conditioner has dried, dress cracks. Where cracks are equal or less than 1/16-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate, six-inches on either side of the crack. Where cracks range from 1/16-inch to ¼-inch in width apply a 125-mil thick layer of RamTough 250 over a primed substrate and embed a minimum six-inch wide Ram 327 HDR neoprene sheeting into hot RamTough 250. The sheet shall extend three-inches to either side of crack and be free of fish-mouths. Lap separate lengths of Ram 327 HDR sheeting a minimum of three-inches and adhere with 90-mil thick surfacing of hot RamTough 250.

At cold joints and construction joints, remove any existing pre-molded joint filler to a minimum depth of ½-inch. Prime both sides of the joint and allow to dry tack-free. Apply 125 mil thickness of RamTough 250 to each side of the primed joint, a minimum nine inches in width. Immediately embed one half of a six-inch width of Ram 327 HDR while RamTough 250 material is hot. Embed the other half of the sheet likewise on the other side of the joint. The sheet shall be fully adhered and free of wrinkles and fish-mouths.

Expansion joints shall be raised or in plane expansion joints. Install in compliance with RamTough and project approved details.

Base Coat:

RamTough 250 shall be applied starting at the low point of the deck, pour the bitumen into place and spread evenly, to a thickness of not less than 90-mils (approximately 60 lbs. per square), in an application width of approximately 44-inches with a straight blade squeegee. To help assure the proper application rate, a chalk line grid system is suggested to confirm the proper coverage. Assure that proper bitumen application is achieved with a regular quality assurance protocol.

Reinforcement: While the bitumen is still hot, install one layer of Polyfelt 125 VP reinforcing fabric into the RamTough 250. Standing off to the side and using a broom or squeegee, press fabric into the hot bitumen using care not to create wrinkles or fish-mouths. all end laps shall be overlapped a minimum of six inches. Ensure there is a solid coat of bitumen between all laps. All laps shall be laid in a shingle fashion, so no laps buck water. Follow-up with successive RamTough 250 and reinforcing layer, working up the slope.

As an option for a double reinforced system, after the first run of fabric has been installed, return to the same starting point, and install a second run of bitumen and reinforcement, overlapping the first course by 3-inches. All end laps shall be overlapped a minimum of six-inches. Ensure there is a solid coat of bitumen between all laps. **In no place shall fabric touch fabric.**

Top Coat: Apply a topcoat of RamTough 250 at a continuous thickness of not less than 125-mils, which equates to approximately 80 lbs. per square. While the surface coat is still hot, apply the specified protection course and press into place to create a continuous bond.

Protection Course: RamTough 250 shall receive a protection course of Ram 203 or 306 cap sheet while still hot. Overlap adjoining short edges (dry) a minimum of three inches to ensure complete coverage. Press into place.

Integrity Test: An ASTM D5957 Integrity Test shall be carried out by an approved laboratory for 24 – 48 hours prior to the application of any overburden. A written test report shall be generated detailing the test method and the test results.

Inspection: Contractor and system manufacturer shall inspect the fully installed system and provide a punch list in writing for correction and shall be completed by the contractor.

Insulation: Loose laid over protection course, a minimum 2" thickness, STYROFOAM PLAZAMATE Insulation, minimum 60 psi compressive strength.

Surfacing: Structural concrete slab, minimum 2,500 psi shall be designed to comply with applicable Building Code Requirements.

Maximum Design Pressure: N/A

GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance, refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. All standard panel sizes are acceptable for mechanical attachment. When applied in approved asphalt and/or adhesives, panel size shall be 4-foot by 4-foot maximum.
3. A coverboard and/or recovery board insulation panel is required on all applications over closed cell foam insulations. Asphalt application of either panel shall be at a minimum rate of 20 lbs./square.
4. Contractor shall submit to the Building Official for review the system specifications and details. Submission of these documents, as well as the proper application and installation of all materials shall be the sole responsibility of the contractor.
5. Flashings shall be installed according to the manufacturers published standard details, specific details, approved by The Barrett Company, LLC, and shall be submitted to the Building Official for review.
6. All work shall be performed by a Contractor licensed to do roofing/ waterproofing and be a Manufacturer Trained 'Qualified Applicator' approved by The Barrett Company, LLC. The Barrett Company, LLC shall supply a list of approved applicators to the authority having jurisdiction.
7. Perimeter and corner areas shall comply with the enhanced uplift pressure requirements of these areas. Fastener densities shall be increased for both insulation and base sheet as calculated in compliance with Roofing Application Standard RAS 117. Calculations prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant **(When this limitation is specifically referred within this NOA, General Limitation #9 will not be applicable.)**
8. A non-skid surfacing is required for all pedestrian areas, plaza decks or balconies.
9. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners). **(When this limitation is specifically referred within this NOA, General Limitation #7 will not be applicable.)**
10. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.

END OF THIS ACCEPTANCE

Greenroof-Roofscapes®

Recycled Content

Many products supplied by Barrett in its Greenroof-Roofscapes® vegetated roof assembly contain recycled materials which can be considered recyclable thereafter. This information is offered as a quick reference guide to recycled content. For practical reasons some products will not perform to their optimum using recycled materials. Some products require components which are not available in a recycled form. Barrett does everything possible to include recycled materials in its products from manufacturing to packaging, provided they do not compromise the quality and long-term performance of the material.

RamTough 250
Manufactured in Allentown, PA

7% Recycled tire rubber crumb by weight, pre-mixed, >25% post-mix; Post-Consumer; >25% asphalt by weight, Post-Industrial; 20% Regionally Extracted

Origin of Raw Material:
- Asphalt - Warren, PA
- Process Oil - Vicksburg, MS
- Polymer - Baytown, TX & Brownsville, TX
- Calcium Carbonate - Hummelstown, PA
- Recycled tire rubber crumb – Trainer, PA

PolyFelt 125VP
Manufactured in Enka, NC

10% Recycled Content by weight; Post-Consumer

Origin of Raw Material:
- Enka, North Carolina

RamFlash 327 HDR
Manufactured in Wayne, NJ

10% Recycled Content by weight; Post-Consumer

Origin of Raw Material:
- Wayne, NJ

RamDrain 1241
Manufactured in Monroe, NC

66% Pre-Consumer Recycled Content by weight

Origin of Raw Material:
- Monroe, NC

RamDrain 2451
Manufactured in Monroe, NC

75% Pre-Consumer Recycled Content by weight

Origin of Raw Material:
- Monroe, NC

Please Note: *All items listed above contain 0% regionally extracted content by weight. All materials are obtained offsite and brought to the facility for manufacturing.*

RamDrain EN 36R
Manufactured in Cleveland, OH

31% Post-Industrial Recycled Content by weight

Origin of Raw Material:
- Cleveland, OH

RamDrain DD-025
Manufactured in Schenectady, NY

80% Post-Industrial Recycled Content by weight

Origin of Raw Material:
- Cleveland, OH

RamDrain DD-050
Manufactured in Schenectady, NY

80% Post-Industrial Recycled Content by weight

Origin of Raw Material:
- Cleveland, OH

PolyFelt 3.5
Manufactured in Athens, GA

0% Recycled Content

Origin of Raw Material:
- Athens, GA

Ram RB20, RB30, RB40
Manufactured in Cleveland, OH

34.7% Post-Industrial Recycled Content

Origin of Raw Material:
- Cleveland, OH

Ram Coco Erosion Control Blanket
Manufactured in Bernville, PA

0% Recycled Asphalt Content

Origin of Raw Material:
- Coir - SE Asia
- Netting & Thread - North Carolina

PMMA
- Bio-Based Material 0%
- Recycled Content Pre/Post (0%)
- Location: Germany

Ram Primer & Surface Conditioner
Manufactured in Westfield, NJ

>50% Recycled Asphalt Content, Pre-Consumer

Origin of Raw Material:
- Perth Amboy, NJ

Ram Mastic
Manufactured in Westfield, NJ

>50% Recycled Asphalt Content

Origin of Raw Material:
- Perth Amboy, NJ

Barrett Neoprene Pipe Boots
Manufactured in Bensenville, IL

0% Recycled Content

Origin of Raw Material:
- Bensenville, IL

GR Edging & Drain Access Box
Assembled in Evanston, Des Plaines, & Wauconda, IL

Aluminum; 41% Recycled Content by weight
Stainless Steel; 80% Recycled Content by weight

Origin of Raw Material:
- Oswego, NY

Ram 200, 201, 203, 306
Manufactured in Wadsworth, OH

>50% Recycled Asphalt Content; 20% Regionally Extracted. 203: 27% Pre-Consumer;
306: 17% Pre-Consumer

Origin of Raw Material:
- Wadsworth, OH
- Vancouver, BC, Canada

Ram 100 TC
Manufactured in Bernville, OH

0% Recycled Content

Extruded Polystyrene Insulation:
- Styrofoam™ by DuPont
- Foamular™ by Owens Corning