SECTION 07 52 00

MODIFIED BITUMINOUS ROOFING

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

A. This specification includes hot asphalt as an adhesive for attaching a second layer of roof insulation – see Section 07 22 00, and attaching the first layer of modified bitumen sheet.

B. For Capital projects, refer to Division 01 for additional safety information.

C. For non-Capital projects, refer to EH&S department for additional requirements.

1.3 SECTION INCLUDES

A. Modified bituminous roof membrane.

B. Membrane flashings and accessories.

1.4 RELATED WORK

A. Section 06 10 00 – Rough Carpentry.

B. Section 07 22 16 – Roof Board Insulation.

C. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.5 REFERENCES

A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual; current edition.

B. Underwriters Laboratories (UL):

1. Roofing Materials and Systems Directory; current edition.
2. Fire Resistance Directory; current edition.

C. ASTM D41 - Asphalt Primer Used in Roofing; current edition.

D. ASTM D312 - Asphalt Used in Roofing. Use if hot asphalt is used in roof system; current edition.

E. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; current edition.

F. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements; current edition.

G. ASTM D6298 - Standard Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheet with a Factory Applied Metal Surface; current edition.

H. ASTM D2178 – Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; current edition.

I. ASTM D4601- Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; current edition.

J. ASTM D4897 - Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing; current edition.

K. ASTM D6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; current edition.

L. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements; current edition.

M. ASTM D6222 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements; current edition.

N. ASTM D6223 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; current edition.

O. ASTM D6509 Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements; current edition.

1.6 SUBMITTALS

A. Submit under provisions of SPECIAL CONDITIONS requirements and Division 01.

B. Prior to pre-roofing meeting, submit the following:

1. Manufacturer's Certification: Letter from manufacturer, on letterhead, and signed by authorized representative, stating:
   a). Materials and components conform to specification requirements and that materials furnished are compatible.
   b). Roof membrane system, membrane flashings, and roof insulation, qualifies for specified warranty.
   c). Installer is authorized to install manufacturer's warranty roof systems minimum 5 years prior to the Project NTP.
   d). Roof system meets specified regulatory requirements.
2. Sample manufacturer, and installer, warranties meeting Specification requirements.
3. Product Literature: Submit product literature on roof system and accessory components.
4. Manufacturer’s cold weather application recommendations.
5. Shop drawings.

C. Roof Protection Plan: Submit written roof protection plan for A/E and Owner approval that describes type and layout of roof protection during construction activities on or above roof area.

D. Pre-Roofing Meeting Notes: Submit Pre-Roofing Meeting Notes within 5 business days of meeting date.

E. Manufacturer's Field Reports: Submit copies of manufacturer's field reports to A/E during the Work, and at final completion.

F. Asphalt Fume Control Plan: Submit equipment data, and proposed loading and heating procedures to limit ground-level asphalt fumes.

G. Shop drawings: Submit shop drawings for approval prior to Pre-roofing Conference and start of work. Include the following Drawings:

1. Roof Plan(s):
   a). Prepare scaled roof plan locating roof details and penetrations.
   b). Include on roof plan tapered insulation locations at field, perimeter, and roof curbs. Indicate insulation thickness at high and low points, cricket pattern, and drain sumps.
   c). Outline roof dimensions, including all levels.
2. Location and type of penetrations. Illustrate perimeter flashings, equipment flashings and penetrations flashing. Scale details at ½” or larger. Manufacturer’s standard pre-printed details are not acceptable for shop drawings.
   a). Indicate deck type on each drawing.
3. Provide scaled insulation attachment plan for each roof area indicating perimeter and corner requirements to achieve specified wind uplift resistance. Provide insulation fastening pattern drawing for corner, perimeter, and field zones.
4. Indicate location of proposed staging areas and material storage on site plan.

H. Product Data:

1. Roofing membrane products: Submit manufacturer’s data sheets for each product being installed. Include manufacturer’s installation instructions.
2. Insulation products: Submit manufacturer’s data sheets for each component required including insulation boards, adhesives, fasteners, plates and bitumen or adhesive. Provide roofing system manufacturer’s written acceptance of proposed insulation board, adhesives, fasteners, and procedures for installation. Coordinate with Section 07 22 16.
3. Material Safety Data Sheets: Provide manufacturer’s MSDS information for all materials proposed for use.
4. Laboratory Testing: Provide evidence of specified fire and wind uplift ratings for proposed roof system.
5. ASTM Compliance Sheet: Submit product material list with corresponding ASTM standard(s) each product complies with. Include Specification paragraph reference number that relates to each product.

I. Roof Maintenance Data: Submit manufacturer’s complete recommended maintenance procedures for roofing system, including precautions and warnings to prevent damage and deterioration to the roofing system. Information shall include maintenance guidelines indicating materials and methods to be used for emergency and minor repairs.

1.7 QUALIFICATIONS

A. Installer: Company specializing in performing the work of this Section and approved by roof manufacturer for installation of specified roof system.
B. Minimum 5 years documented successful experience with modified bituminous roofing.

1.8 REGULATORY REQUIREMENTS
A. Fire Resistance:
1. UL Class A Fire Hazard Classification.
B. UL _____ Roof Ceiling Assembly Rating
C. Wind Uplift Resistance: Design and certify that modified bituminous roofing meets wind uplift loads as shown on Design Documents.

1.9 TOLERANCES
A. Comply with tolerances listed in this Section.
B. Where tolerances are not expressly stated in these Specifications, or by the manufacturer, perform work within tolerances specified in the NRCA Roofing and Waterproofing Manual.

1.10 PRE-ROOFING CONFERENCE
A. Schedule meeting to discuss roof work before start of work onsite. Notify attending parties prior to commencing work of this Section.
B. Pre-roofing conference attendees shall include Owner, A/E, A/E's roofing consultant, General Contractor representatives, roofing subcontractor project manager and superintendent/foreman, related subcontractors and roof manufacturer's technical representative.
C. Review Specifications, Submittals, installation procedures and coordination required with related Work. Agenda shall include:
1. Schedule of daily roofing operations and daily production anticipated.
2. Designation of key personnel and their respective responsibilities.
3. Review of staging and material storage locations.
4. Coordination of work with other trades.
5. Emergency rain protection procedures.
Protection of completed roofing and Roof Protection Plan.
6. Manufacturer's scheduled inspections and acceptance procedures.
7. Warranty period process for leak repairs and inspections.
8. Review Fume Control Plan.
9. Keep meeting notes and provide copies to those in attendance according to Submittal requirements.

1.11 DELIVERY, STORAGE, AND HANDLING
A. Deliver products in original containers, dry, undamaged, with seals and labels intact.
B. Deliver, store, and handle products according to manufacturer's recommendations.
C. Storage:
1. Roof-top storage of weather-sensitive material is not permitted. Material stored overnight on roof-top will be considered defective. *Note: Select **1** of the following statements. If the site conditions allow a storage trailer onsite, use the following:*
2. Store weather-sensitive products in enclosed storage trailers. *Or if the site conditions do not allow a storage trailer, use the following:*
3. Store weather-sensitive products on pallets, clear of ground, and cover with secure breathable canvas tarps. *Or if the site conditions do not allow for site storage, use the following:*
4. Store weather-sensitive products in an enclosed warehouse, or in storage trailers off-site. Deliver products in quantity that can be used each day, without roof-top storage. Products must be returned to warehouse, or storage trailer, each day.
5. Store rolled goods on end. Do not use rolls with damaged ends. Cut and remove portion of roll damaged, and use undamaged portion for strip-in ply, or completely remove roll from site.
D. Store related materials, within temperature ranges, recommended by the manufacturer(s) of each product.

1.12 ENVIRONMENTAL REQUIREMENTS
A. Comply with manufacturer's environmental requirements for storage and application of products.
B. Verify existing and forecasted weather conditions and determine when conditions are acceptable for roof Work within the guidelines as follows:
1. Do not proceed with work when ambient air temperature falls below 40° F.

2. Do not proceed with roof application when excessive moisture is present. Excessive moisture is that which may be detected by sight or touch, or that which results in visible foaming of hot asphalt.
3. Do not expose materials sensitive to water, or sunlight, damage in quantities greater than can be weatherproofed during each day.

1.13 COORDINATION

A. Coordinate Work with installation of associated metal flashings as the work of this Section proceeds.

1.14 INSPECTION BY MANUFACTURER

A. Coordinate inspection of the work, by an authorized technical representative of the roof system manufacturer.
   1. Manufacturer is required to inspect work a minimum of 3 visits per Project.
   2. Manufacturer's visits to consist of:
      a). Attendance at Pre-Roofing Meeting.
      b). One visit at Project commencement.
      c). Interim visits for each 10 work days of roof work, and one visit at Project completion.

B. Provide manufacturer's field inspection reports within 5 days of each site visit.

1.15 ROOF SYSTEM WARRANTY

A. Provide manufacturer's 20 year, no penal sum limit, roof system warranty.
B. Warranty shall include all material and labor costs.
C. Warranty shall include coverage for roof insulation, as specified in 07 22 16, either as part of original warranty language, or by attachment. Manufacturer's warranty shall include the full roofing system including membranes, flashings, insulation, fasteners/adhesives, rigid roof boards, accessories and all related roof system components.
D. Warranty shall be issued on the manufacturer's form as submitted by Contractor and reviewed by A/E.
E. If special maintenance of the roof is required by the manufacturer during the Warranty term(s), such requirements shall be provided to the Owner with the Warranty.

1.16 INSTALLER WARRANTY

A. Roof Installer Warranty: provide under provisions of Division 01.
B. Provide on Midwest Roofing Contractors Association Form 2002B - Roofing Contractor Workmanship Warranty. Warranty shall be issued on form submitted, and reviewed, prior to Work commencement.
C. Installer Warranty to be co-signed by General Contractor.

PART 2 – PRODUCTS

2.1 GENERAL

A. Roof System: _____ deck, insulation as specified in Section 07 22 16, one ply smooth-surfaced modified bitumen sheet set in hot asphalt, with 1-ply granular-surfaced modified bitumen sheet set in adhesive.
B. Provide roof membrane, and membrane base flashing materials from single manufacturer.
C. Obtain written approval from membrane manufacturer for use of products incorporated into roof system, which are not supplied by roof membrane manufacturer.
D. Substitutions:
   1. Where specific products are listed in this Specification, the referenced roofing manufacturer's systems are to establish a level of quality.
   2. Requests for substitutions to listed products shall be submitted during the bidding phase per requirements of Division 01.
   3. Considerations of requests for substitution is at sole discretion of the A/E and Owner, and approvals shall be issued in writing by the A/E with Owner concurrence.

2.1 ROOF MEMBRANE & BASE FLASHING

A. First Ply Modified Bitumen Sheet: ASTM D6164, Type II, Grade S, SBS modified bitumen, polyester reinforced, set in asphalt.
B. Second Ply Modified Bitumen Sheet: ASTM D 6164, Type II, Grade G, SBS modified bitumen, polyester

reinforced, fire-rated sheet for use in Class A assemblies, set in adhesive.

C. Membrane Base Flashing: strip-in ply is required, regardless of roof membrane manufacturer minimum requirements, with aluminum foil-faced SBS modified bitumen membrane top ply.
   1. Strip-In Ply: meet, or exceed, first ply modified bitumen sheet requirements.
   2. Second Ply: ASTM D 6298, Aluminum-clad, modified bitumen sheet.
   3. Metal Flashing Strip-In Ply: meet, or exceed, first ply modified requirements.

2.2 BITUMINOUS MATERIALS

A. Cold Adhesive: type supplied by, or specifically recommended by roof membrane manufacturer, meeting requirements of warranty.
B. Asphalt Bitumen: ASTM D312, Type IV, special steep, as supplied or specifically approved by membrane manufacturer.
C. Asphalt Primer: ASTM D41, as supplied or specifically approved by membrane manufacturer.
D. Plastic Cement: ASTM D4586, non-asbestos reinforced, as supplied and recommended by roof membrane manufacturer.

2.3 INSULATION

A. Board Insulation: Comply with requirements of Section 07 22 16.
B. Tapered Crickets:
   1. First course: ASTM C728, perlite tapered edge, minimum 12” wide, in thickness to match butt edge of tapered insulation, set in hot asphalt.
   2. Remaining courses: ASTM C728, perlite, ½” per foot tapered, set in hot asphalt.

2.4 TAPERED EDGE & CANTS

A. Tapered Edge: ASTM C728, perlite.
B. Cant Strip: ASTM C728, perlite minimum 3½” face.
C. Wood Cant: treated southern pine, cut to size, according to provisions of Section 06 10 00.

2.5 ACCESSORIES

A. Membrane Flashing Fasteners: hot-dipped galvanized Simplex cap nails, with minimum 15/16” wide head.
B. Sheet metal flashings: according to provisions of Section 07 62 00.
C. Membrane Edge Sealant: As required by membrane roof manufacturer.
D. Mineral Granules: as supplied by membrane manufacturer to match color of membrane cap sheet surface.
   1. Traffic Pad: as supplied by membrane manufacturer, and meeting their warranty requirements.

2.6 SPECIAL BITUMEN HEATING EQUIPMENT

A. Provide ground-level filtering, or after-burning asphalt fume system equipment.
B. Equip kettle with carton loader device.
C. Ensure positive seals at kettle lid, loader, and piping, to ensure containment of ground-level asphalt fumes.

PART 3 – EXECUTION

3.1 GENERAL

A. Work of this Section shall be performed in accordance with quality workmanship standards as defined by NRCA. Detailing shall be performed in accordance with standards as defined by NRCA and SMACNA.
B. The roof systems manufacturer’s technical specifications shall be considered a part of this specification and shall be used as a minimum standard in conjunction with this specification. If this Specification conflicts with, or exceeds manufacturer’s minimum requirements the more rigid standard shall apply and be enforced.

3.2 COORDINATION

A. Ensure proper sequencing of roofing and to allow installation of roof and flashings as detailed, without damage.
B. Coordinate activities to prevent damage to roof assemblies.

3.3 EXAMINATION & PREPARATION

A. Do not store, stage activities, or allow construction traffic over roof areas, unless protection plan is approved in advance by A/E.
B. Contractor is responsible for maintaining roof in good condition, and shall restore to manufacturer’s

warrantable state upon completion of activities.

C. Verify that surfaces and site conditions are ready to receive work. Verify that debris has been completely removed from roof area and broom clean the deck immediately prior to roofing application.
D. Verify deck is sound, smooth, and dry enough for covering with roofing. Report decking not serviceable for covering with roof system.
E. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and wood components are in place.
F. Install nailers and blocking immediately prior to application of roofing. Do not cut nailers in after membrane application.
G. Construct and install nailers and blocking under provisions of Section 06 10 00.

3.4 TEMPORARY WATERPROOFING

A. Provide water stops and temporary tie-ins daily to prevent moisture penetration into building interior or installed assemblies.
B. Seal roofing temporarily to the deck where leakage could penetrate installed assemblies. Remove upon resumption of Work.
C. Provide permanent, or temporary, counter flashing daily.

D. Install membrane assemblies complete with strip-in plies each day. Use mastic seals only in such a manner that mastic does not remain between finished modified bitumen plies at cant strips and membrane terminations. Provide seal at all terminations, both vertical and horizontal.
E. Provide temporary seals which do not soil finished work surfaces or contaminate surfaces intended to receive sealants.
F. Remove temporary seals from completed work.

3.5 CANT STRIP APPLICATION

A. Apply fiber cant strip into solid mopping of asphalt, and step-in completely.
B. Install wood cant at through-wall scupper intersections and to support vertical “L” nailers.
C. Securely fasten wood cant to substrate. Ensure smooth transitions with fiber cant.
D. Make straight, neat cuts and miter corners without perceptible gaps or open joints.
E. Cut, shave, modify and combine various sized tapered materials to provide smooth, uniform transitions.

3.6 BITUMEN HEATING

A. Comply with manufacturer’s requirements for heating, and applying bitumen.
B. Heat asphalt bitumen to achieve EVT at point of application, as stamped on asphalt carton, plus or minus 25° F.
C. Use insulated tubing and luggers during cold weather, to maintain correct temperature, at the point of application.
D. Verify accurate temperature readings at point of application to ensure compliance. Establish proper temperature at kettle, hold time on roof, and substrate type and temperature to achieve proper application temperature.
E. Measure temperature periodically, minimum one reading every 2 hours or when conditions change. Contractor to provide accurate temperature measuring device for verification.
F. Adjust temperature, equipment, or procedure to maintain proper application temperature.
G. Do not heat bitumen above finished blowing temperature for more than 3 hours, unless bitumen is under continuous use.
H. Provide fume control equipment to minimize asphalt fumes during the work. Comply with fume control requirements of this Specification and submitted Fume Control Plan.

3.7 APPLICATION IN COLD WEATHER

A. Comply with manufacturer's special recommendations for membrane application during cold weather.
B. Discontinue installation if asphalt temperature cannot be maintained at EVT at point of application.
C. Pre-heat adhesive and store to allow proper application temperatures.

3.8 ROOF INSULATION APPLICATION

A. Comply with requirements of Section 07 22 16.
B. Only install insulation that can be covered with watertight roof membrane the same day.
C. Protect installed insulation from damage, and moisture.

3.9 TAPERED CRICKET APPLICATION

A. Commence cricket installation at edge of drain and scupper sumps.
B. Establish straight, uniform, cricket valley.
C. Set tapered edge strip along valley line, in full bed of hot asphalt.
D. Butt first layer of tapered insulation to thick edge of tapered edge, and set in full bed of hot asphalt.
E. Install remaining layers of tapered and fill insulation to achieve uniform, positive slope.
F. Step-in each board, while asphalt is still molten, to ensure good embedment.

3.10 ROOF DRAIN INSTALLATION

A. Ensure tapered insulation sump is in place, prior to drain flashing application.
B. Clean and prime drain bowl roof flange.
C. Extend first ply membrane onto drain flange.
D. Clean and prime both sides of lead flashing sheet.
E. Set metal flashing in solid bed of membrane adhesive. Form metal flashing into drain bowl flashing. Form to contours of sump, and extend into roof drain bowl, trim excess to allow complete drainage.
F. Strip-in metal flashing with minimum 12” wide sheet, set in cold adhesive.
G. Install top ply sheet into drain bowl, and extend up sump slope 18”.
H. Prime 6” wide top edge of membrane flashing, and overlap with top ply roofing membrane, to achieve shingle-fashion application.

3.11 APPLICATION OF FIRST MEMBRANE PLY

A. Apply into solid asphalt moppings, not to exceed 25 lbs. per square.
B. Install at cants and transitions according to manufacturer's recommendations.
C. Apply sheet in lengths less than 5’ long, where parallel to cants. Ensure continuous apply in accordance with manufacturer's recommendations.
D. Use roof manufacturer's approved sidelap and endlap measurements.
E. Apply sheet in lengths less than 5’ long, where parallel to cants. Ensure continuous embedment, free of voids. Broom ply if necessary.
F. Complete application of first ply and strip-in plies, before application of granular-surfaced sheet, if allowed by membrane manufacturer.
G. Install metal flashings under provisions of Section 07 62 00.
H. Repair voids, wrinkles, and other defects, daily to prevent water from entering roof system.

3.12 APPLICATION OF SECOND PLY MEMBRANE SHEET

A. Apply sheet according to manufacturer's cold adhesive application recommendations.
B. Stagger end laps minimum 3’.
C. Do not allow back-water laps.
D. Broom sheet to provide finished membrane assembly free of voids or wrinkles.
E. Repair voids, wrinkles, and other membrane defects using full width sheet to provide finished appearance.
F. Embed mineral granules into adhesive bleed-out while still tacky.
G. Apply sealant to seal edges of membrane where membrane terminates on horizontal surfaces (if required by manufacturer).
H. Do not allow foot traffic over finished roof until adhesive has set-up to prevent tracking.

3.13 APPLICATION OF MEMBRANE FLASHING

A. Apply in accordance with manufacturer's recommendations.
B. Install base sheet over nailable surfaces. Fasten base sheet according to manufacturer’s recommendations.
C. Prime roof and masonry surfaces to receive flashing sheet, allow primer to dry completely.
D. Comply with manufacture’s high base flashing application instructions and materials where base flashing exceeds maximum standard height recommended by manufacturer.
E. Apply first ply membrane flashing sheets in maximum 5’ lengths, set in cold adhesive or hot asphalt. Ensure full embedment of membrane flashing.
F. Heat weld second ply, ensuring good embedment. Install in width of sheet with selvage edge. Cut, remove, and repair voids and other defects.
G. Cut, miter, and wrap around corners with no loose tails or large flaps.
H. Fasten top edge according to manufacturer's recommendations.

I. Apply neatly and provide uniform, symmetrical appearance.
J. Fasten top edge minimum 8" on center with nails, or screws, driven through minimum 1" diameter metal caps, or cap nails.

3.14 INSTALLATION OF SOIL PIPE FLASHINGS

A. Clean roof flange and apply asphalt primer to topside and underside, and allow to dry.
B. Embed roof flange in solid bed plastic cement over fiberglass roof membrane, apply strip-in ply. Fold flashing into top of pipe.
C. Strip-in roof flange with strip-in ply set in hot asphalt.
D. Neatly trim granular-surfaced sheet at pipe. Cover exposed cuts with a granular surfaced sheet target.

3.15 INSTALLATION OF ROOF PADS

A. Install roof walk pads according to recommendations of membrane manufacturer.
B. Install around roof-mounted equipment that is greater than 3' wide, and at foot and top of roof access ladder(s) and roof hatch(s).
C. Install roof pads underneath lightning protection cable over roof membrane.

3.16 CLEANING

A. Clean roof surfaces, metal flashings, walls, windows, walks, etc. which become soiled or discolored due to the work of this Section.
B. Utilize cleaning agents and procedures which are approved by manufacturer.

3.17 PROTECTION

A. Comply with submitted Roof Protection Plan.
B. Protect roof system from damage. Repair or remove and replace damaged roof membrane according to methods approved by roof manufacturer and A/E. A/E and Owner's decision on corrective procedure will be final.
C. Repair minor scars, cuts, scraps, tears, using methods approved by manufacturer. Severe roof damage to be corrected by removal and replacement with new roof membrane and insulation.
D. Ensure roof warranty is not voided due to membrane damage.

3.18 ROOF SIGNS

A. Provide a 30" x 30" metal sign notifying maintenance, and service personnel of the guaranteed roof system. Coordinate placement of signs with Owner.
B. Professionally letter sign using 2 coats of high quality exterior enamel with black lettering on white background; containing the following information:

NOTICE: GUARANTEED ROOF SYSTEM

DO NOT INSTALL NEW EQUIPMENT ON, OR THROUGH THIS ROOF,

WITHOUT SPECIFIC AUTHORIZATION.

REPORT CHANGES OR DAMAGE IMMEDIATELY TO OWNER.

Owner -_____Phone:_____

Contractor:_____Phone:_____

Manufacturer:_____Phone:_____

END OF SECTION

ROOFING SYSTEM CONTRACTOR PACKAGE

CONTACT INFORMATION

OVERVIEW OF WORK

Building Name/Number:		**Area of Roof:**	Field
Roof Area:		**Index Number (Optional):**	
Created In RoofNav:	May 18, 2016	**Assembly #:**	16646-49272-0
Type of Work:	New Roof	**Min 3ft (1 m) Continuous Parapet:**	

ROOF AREA CLASSIFICATIONS

Roof Area Properties	Site Properties	Fire / Hail	Wind Uplift Ratings
Dimensions:	**Surface Roughness:**	**Internal Fire:**	**Field:**
Height:	**Wind Speed:**	**Exterior Fire:**	**Perimeter:**
Slope:	**Wind Borne Debris Risk:**	**Hail:**	**Corner:**

RATINGS FOR FM APPROVED ASSEMBLY#:

Internal/Exterior Fire:	Max Slope:	Hail:	*Wind Uplift Rating:
1/A	0.5000 in 12 (2.4°)	SH	90 psf

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1-31.

ASSEMBLY DETAIL COMMENTS

SIGNATURES

Signature of Installing Contractor: _____

Title: _____ **Date:** _____

Signature of Designer/Observer: _____

Title: _____ **Date:** _____

Signature of Client/Property Owner: _____

Title: _____ **Date:** _____

ROOFING SYSTEM CONTRACTOR PACKAGE

1.Cap Ply

Comments: none

Cover, Multi-ply (Cap Ply)

Company:	Siplast Inc
Trade Name:	Paradiene 30 FR TG
Backing:	(none)
Width:	39.4000 in
Material:	modified bitumen, SBS
Reinforcement:	glass fiber
Surface Type:	granules
Comments:	none

Securement (Sheet Lap)

Comments: none

Weld (Torched)

Company:	Generic
Trade Name:	torched
Comments:	Minimum 3 in. (75 mm) wide side and 3 in. (75 mm) wide end laps.

2.Securement from 1.Cap Ply to 3.Base Ply

Comments: none

Weld (Torched)

Company:	Generic
Trade Name:	torched
Comments:	none

3.Base Ply

Comments: none

Cover, Multi-ply (Base Ply)

Company:	Siplast Inc
Trade Name:	Paradiene 20
Backing:	(none)
Width:	39.4000 in
Material:	modified bitumen, SBS
Reinforcement:	glass fiber
Comments:	none

Securement (Sheet Lap)

Comments: Laps constructed according to manufacturer's specifications.

Adhesive (Full Application)

Company:	Generic
Trade Name:	hot asphalt
Material:	asphalt, hot
Substrate Primer Rate Wet:	0.0000 gal/square
Type:	liquid/semi-solid
Over Substrate Rate Wet:	0.0000 gal/square
Underside Rate Wet:	0.0000 gal/square
Substrate Primer Rate Dry:	0.0000 lb/square
Over Substrate Rate Dry:	20.0000 lb/square
Underside Rate Dry:	0.0000 lb/square
Comments:	Maximum rate = 25 lb/sq (1.2 kg/m2).

4.Securement (Cover) from 3.Base Ply to 5.Cover Board

Comments: none

Adhesive (Full Application)

Company:	Generic
Trade Name:	hot asphalt
Material:	asphalt, hot
Substrate Primer Rate Wet:	0.0000 gal/square
Type:	liquid/semi-solid
Over Substrate Rate Wet:	0.0000 gal/square
Underside Rate Wet:	0.0000 gal/square
Substrate Primer Rate Dry:	0.0000 lb/square
Over Substrate Rate Dry:	20.0000 lb/square
Underside Rate Dry:	0.0000 lb/square
Comments:	Maximum Rate = 25 lb/sq (1.2 kg/m2)

5.Cover Board

Comments: none

Cover Board

Company:	Johns Manville Corp, Roofing Systems Group
Trade Name:	Fesco Board (homogeneous)
Material:	perlite
Min Board Size:	48.00 x 24.00 in
Board Profile:	flat
Min Thickness:	0.7500 in
Max Thickness:	1.5000 in
Min Density:	0.0000 lb/ft3
Comments:	none

6.Securement (Board Stock) from 5.Cover Board to 7.Insulation (Board Stock)

Comments: none

Adhesive (Full Application)

Company:	Generic
Trade Name:	hot asphalt
Material:	asphalt, hot
Substrate Primer Rate Wet:	0.0000 gal/square
Type:	liquid/semi-solid
Over Substrate Rate Wet:	0.0000 gal/square
Underside Rate Wet:	0.0000 gal/square
Substrate Primer Rate Dry:	0.0000 lb/square
Over Substrate Rate Dry:	20.0000 lb/square
Underside Rate Dry:	0.0000 lb/square
Comments:	Maximum rate = 25 lb/sq (1.2 kg/m2).

7.Insulation (Board Stock)

Comments: none

Insulation (Board Stock)

Company:	Johns Manville Corp, Roofing Systems Group
Trade Name:	ENRGY 3
Material:	polyisocyanurate/polyurethane
Min Board Size:	48.00 x 48.00 in
Board Profile:	flat
Min Thickness:	1.5000 in
Max Thickness:	12.0000 in
Min Density:	0.0000 lb/ft3
Comments:	none

8.Securement (Board Stock) from 7.Insulation (Board Stock) to 9.(Deck) Steel

Comments: none

Fastening System (Stress Plate)

System: SSSP15513

Company	TradeName
Siplast Inc	Parafast Roofing Fastener
Siplast Inc	Parafast 125 Tri Rib Plate

System Comments none
Row Spacing: 0.0000 in
On Center: 0.0000 in
Fasteners per Plate/Clip: 1
Field Rows: No
Field Row on Center: 0.0000 in
Number of Field Rows: 0
Application Method: n/a
Contributory Area: 2.0000 ft2
Embedment: 0.0000 in
Comments: none

9.(Deck) Steel

Comments: none

Deck (Steel)

Company: See Separate Steel Deck Manufacturer Listing
Trade Name: steel deck, 22 to 16 ga., (<=90 psf)
Acoustical: No
Design Thickness: 0.0295 in
Rib Type: (see approved steel deck listing)
Max Span: 72.0000 in
Min Depth: 1.5000 in
Min Grade: 33.0000 ksi
Max Depth: 4.5000 in
Min Thickness: 0.0281 in
Min Width: 24.0000 in
Max Width: 36.0000 in
Comments: none

10.Structure

Structure Type:	steel
Max Spacing:	0.0000 in
Min Thickness:	0.0000 in
Min Strength:	0.0000 ksi
Comments:	none

Fastener Placement

Now that the configuration is complete for the field of the roof, you must select the required fastener placement from the Fastener Placement Figures 3–6 in FM Global Property Loss Prevention Data Sheet 1-29.

Corner/Perimeter Enhancements

Now that you have selected a fastener placement, you must select enhancements for the corners and perimeters. Refer to FM Global Property Loss Prevention Data Sheet 1-29.

> If you have sufficient detail about the roof assembly, you can select enhancements that have been approved for roofs with your specifications from Table 1A: Recommended Rating of Field, Perimeter and Corner Areas (Zones 1, 2 and 3) for Enclosed Buildings.
>
> Otherwise, you can select the appropriate prescriptive enhancements from section 2.2.1.5.1.

Also, the deck must be secured per the requirements in Data Sheet 1-29. For a steel deck, see section 2.2.1.5.6. For installation instructions, see section 2.2.13.2.

Perimeter Flashing

Now that you have selected enhancements for the corners and perimeters, you must select an FM Approved perimeter flashing that meets a Class X rating, where X is the Wind Uplift rating for your roof. For more information, see FM Global Property Loss Prevention Data Sheet 1-49.

You can find FM Approved perimeter flashings in RoofNav. To do so, click Products. On the Product Search page, select Other for the Category and Perimeter Flashing for the Subcategory. Specify any other criteria as needed and then click Search.

FESCO® BOARD

Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 1

Features and Components

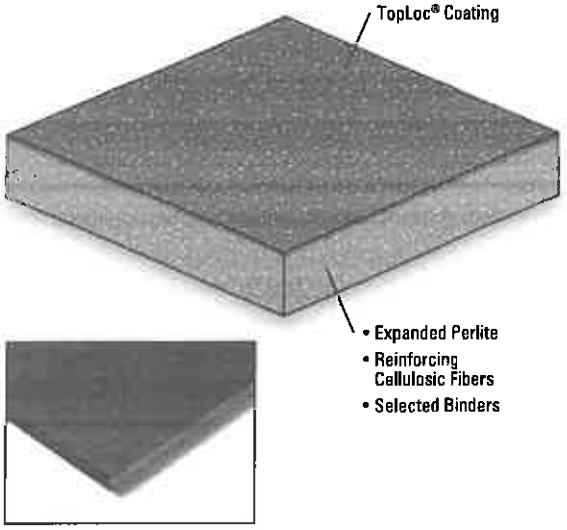
TopLoc® Coating: Top surface is sealed with this special coating to reduce excessive asphalt absorption in hot-asphalt applied roofing systems.

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

Low Thermal Insulation Board: Composed of expanded perlite, reinforcing cellulosic fibers and selected binders.

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

Hot Asphalt Friendly: Protective cover board or low thermal insulation board proven to reduce the tendency for blistering in hot asphalt applications.



Component: B Cover Board

Multi-Ply

Type: PL Perlite; LT Low Thermal

System Compatibility

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

Multi-Ply		Single Ply
BUR: HA	SBS: HA	
Compatible with the selected Multi-Ply systems above		*Do not use with Single Ply systems*

Key: **HA** = Hot Applied **CA** = Cold Applied **HW** = Heat Weldable **SA** = Self Adhered **MF** = Mechanically Fastened **FA** = Fully Adhered **BA** = Ballasted

Energy and the Environment

LEED®	Recycled Content	34% average For post and pre-consumer recycled content percentages, visit the Fesco Board product page on the JM roofing Web site.

ENVIRONMENTAL CLAIMS VALIDATION — Fesco® Board contains an average of 34% recycled content

Peak Advantage® Guarantee Information

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

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

Codes and Approvals

CLASSIFIED C UL US

FM APPROVED

MIAMI-DADE COUNTY APPROVED — Miami-Dade County Product Control Approved

Installation/Application

Hot Asphalt | Cold Applied | Urethane Adhesive | Mechanically Fastened

Refer to the Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Size	2' x 4' (0.61 m x 1.22 m)				
Thickness*	¾" (1.91 cm)	1" (2.54 cm)	1½" (3.81 cm)	2" (5.08 cm)	3" (7.62 cm)
Board Weight (lb)	6	7	12	15	22
Ft²/Bundle	96	80	48	40	24
Boards/Bundle	12	10	6	5	3
Bundles/Pallet	10	10	10	10	10
Pallet Weight (lb)	715	740	715	740	650
Pallets per Truck*	48				

Size	4' x 4' (1.22 m x 1.22 m)			
Thickness*	¾" (1.91 cm)	1" (2.54 cm)	1½" (3.81 cm)	2" (5.08 cm)
Board Weight (lb)	12	15	24	30
Ft²/Pallet	960	800	480	400
Boards/Pallet	60	50	30	25
Pallet Weight (lb)	715	735	715	735
Pallets per Truck**	48			
Producing Location	Rockdale, IL			

* ¾", 1", and 1½" thicknesses are homogenous, 2" and 3" thicknesses are laminated
** Assumes 48' flatbed truck.

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

FESCO® BOARD

Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 1

Typical Physical Properties

	Test	ASTM	Fesco Board
Strength	Board Density, pcf (kg/m³), *min*	C 209	8 (128)
	Compressive Strength 5% Consolidation, psi (kPa), *nom*	C 165	30 (207)
	Laminar Tensile Strength, psi (kPa), *nom*	C 209	8 (55)
	Flexural Strength, psi (kPa), *nom*	C 203	65 (448)
	Break Load, lbs, *nom*	C 203	9 (¾ in.), 13 (1 in.), 23 (1½ in.)
Moisture	Moisture Content, wt%, *nom*	N/A	1.5
	Water Absorption, % by vol, *max*	C 209	1.5
Installation	Linear Expansion, %, *max*	C 209	0.5
	Flute Span, in. (thickness), *max*	E 661	1 (¾ in.), 1.75 (1 in.), 2.5 (1½ in.)
	Weight per ft², lbs (thickness), *nom*	NA	0.8 (¾"), 1 (1"), 1.5 (1½"), 1.9 (2"), 2.7 (3")

Thermal Performance

Thickness		R-Value (Resistance)	
in.	mm	(hr•ft²•°F)/BTU	m²•°C/W
¾	19	2.0	0.35
1	25	2.7	0.48
1½	38	4.1	0.72
2	51	5.4	0.95
3	76	8.1	1.47

Test	ASTM	Fesco Board
Flame Spread	E 84	25
Smoke Developed	E 84	10

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

TYPICAL PHYSICAL PROPERTY DATA CHART PER ASTM C 1289 – *POLYISO FOAM CORE ONLY*

PROPERTY	TEST METHOD	VALUE
Compressive Strength	ASTM D 1621	20 psi* (138kPa, Grade 2)
Dimensional Stability	ASTM D 2126	2% linear change (7 days)
Moisture Vapor Transmission	ASTM E 96	< 1 perm (57.5ng/(Pa•s•m²))
Water Absorption	ASTM C 209	< 1% volume
Flame Spread**	ASTM E 84	< 75
Smoke Developed**	ASTM E 84	< 450
Service Temperature	-	-100° to 250° F (-73°C to 122°C)

*Also available in 25 psi, Grade 3
**Meets the requirements of the IBC code

WARNINGS AND LIMITATIONS

Insulation must be protected from open flame and kept dry at all times. Install only as much insulation as can be covered the same day by completed roof covering material. Hunter Panels will not be responsible for specific building and roof design by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site or for improper storage and handling. Technical specifications shown in this literature are intended to be used as general guidelines only and are subject to change without notice. For more information refer to the Storage and Handling Technical Bulletin at www.hpanels.com, or refer to PIMA Technical Bulletin No. 109: *Storage & Handling Recommendations for Polyiso Roof Insulation* at www.polyiso.org.

INSTALLATION

Single-Ply Systems

Ballasted Single-Ply Systems

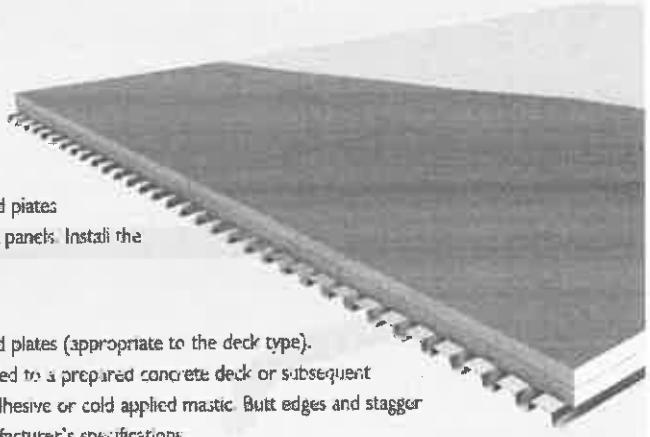
Each H-Shield panel is loosely laid on the roof deck. Butt edges and stagger joints of adjacent panels. Install the roof covering according to the manufacturer's specifications.

Mechanically Attached Single-Ply Systems

Each H-Shield panel must be secured to the roof deck with fasteners and plates (appropriate to the deck type). Butt edges and stagger joints of adjacent panels. Install the roof covering according to the manufacturer's specifications.

Fully Adhered Single-Ply

Each H-Shield panel must be secured to the roof deck with fasteners and plates (appropriate to the deck type). Maximum 4'x4'(1220mm x 1220mm) panels of H-Shield may be adhered to a prepared concrete deck or subsequent layers of insulation with a full mopping of hot steep asphalt, insulation adhesive or cold applied mastic. Butt edges and stagger joints of adjacent panels. Install the roof covering according to the manufacturer's specifications.



R-30.0, two layers of 2.6" H-Shield with Single-Ply membrane

Built Up, Coal Tar And Modified Bitumen Systems

Each H-Shield panel must be secured to the roof deck with fasteners and plates (appropriate to the deck type). Maximum 4'x4' (1220mm x 1220mm) panels of H-Shield may be adhered to a prepared concrete deck or subsequent layers of insulation with a full mopping of hot steep asphalt, insulation adhesive or cold applied mastic. Butt edges and stagger joints of adjacent panels. Install the roof covering according to the manufacturer's specifications.

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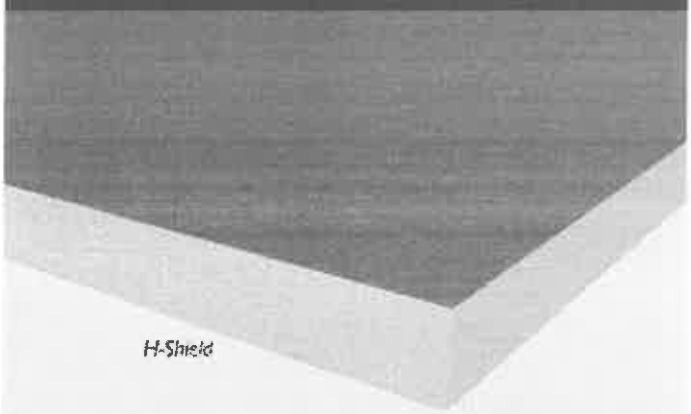
H-SHIELD *Flat Polyisocyanurate Insulation*



H-Shield

H-SHIELD THERMAL VALUES

THICKNESS (INCHES)	(MM)	LTTR R VALUE*	FLUTE SPANABILITY
1.00	25	5.7	2 5/8"
1.50	38	8.6	4 3/8"
1.80	46	10.3	4 3/8"
2.00	51	11.4	4 3/8"
2.50	64	14.4	4 3/8"
2.60	66	15.0	4 3/8"
3.00	76	17.4	4 3/8"
3.50	89	20.5	4 3/8"
3.80	97	22.3	4 3/8"
4.00	102	23.6	4 3/8"
4.30	109	25.5	4 3/8"
4.50	114	26.8	4 3/8"

*NEW Long Term Thermal Resistance Values are based on ASTM C 1289, effective 1/1/2014, which provides updated 15 year time weighted averages

PRODUCT DESCRIPTION

H-Shield is a rigid roof insulation panel composed of a closed cell polyisocyanurate foam core manufactured on-line to fiber reinforced facers on each side.

FEATURES AND BENEFITS

- Manufactured with NexGen Chemistry. Contains no CFCs, HCFCs, is Zero ODP, EPA Compliant, and has virtually no GWP
- Approved for direct application to steel decks
- Approved under all major roof covering systems – BUR, Modified and Single-Ply

PANEL CHARACTERISTICS

- Available in two grades of compressive strengths per ASTM C1289 Type II, Class 1 Grade 2 (20 psi) or Grade 3 (25 psi)
- Available in 4'x4' (1220mm x 1220mm) and 4'x8' (1220mm x 2440mm) panels in thicknesses of 1" (25mm) to 4.5" (114mm)

APPLICATIONS

- Constructions requiring FM Class 1 and UL Class A ratings
- Single-Ply Roof Systems (Ballasted, Mechanically Attached, Fully Adhered)
- Standing Seam Metal Roof Systems
- Modified Bitumen Systems
- Built-Up Roofing: Asphalt and Coal Tar

Codes and Compliances

- ASTM C 1289 Type II, Class 1 Grade 2 (20 psi) or Grade 3 (25 psi)
- International Building Code (IBC) Chapter 26
- State of Florida Product Approval Number FL 5968
- Miami Dade County Product Control Approved

Underwriters Laboratories Inc Classifications

- UL 1256
- Insulated Metal Deck Construction Assemblies – No. 120, 123, 292
- UL 790
- UL 263 Hourly Rated P Series Roof Assemblies

UL Classified for use in Canada

- Refer to UL Directory of Products Certified for Canada for more details
- CCMC 13460-L
- UL Certified for Canada, CAN/ULC-S126, CAN/ULC-S101, CAN/ULC-S107
- CAN/ULC-S704 Type 2, Class 3 (20 psi) or Type 3, Class 3 (25 psi)

Factory Mutual Approvals

- FM 4450, FM 4470
- Approved for Class 1 insulated steel deck constructions for 1-60 to 1-270. Refer to FM Approval's RoofNav for details on specific systems

LEED Potential Credits for Polyiso Use (PRE LEED V4)

For current LEED V4 contribution information go to www.PIMA.org or www.hpanels.com

Energy and Atmosphere

- Optimize Energy Performance
- Measurement & Verification

Materials & Resources

- Material Reuse
- Construction Waste Management
- Recycled Content
- Local and Regional Materials

VERAL ALUMINUM

siplast®

Commercial Product Data Sheet

Product Description

Veral Aluminum is a high performance, foil clad, modified bitumen finish ply designed for use in multi-layer modified bitumen roof systems. Veral Aluminum consists of a fiberglass scrim/fiberglass mat composite impregnated and coated with high quality styrene-butadiene-styrene (SBS) modified bitumen and surfaced with a protective aluminum foil facing.

Product Uses

Veral Aluminum is the finish ply of the Siplast Veral Roof System, and is lapped 3 inches (7.6 cm) side and end. The Siplast Veral System is preferably applied by torching but can be applied in approved Type IV asphalt subject to Siplast specifications and requirements. Siplast Veral Roof Systems are used over most roof decks with drainage.

Veral Aluminum is the standard flashing sheet in all guaranteed Siplast Roof Systems. Veral Aluminum flashing sheets are cut to size off the end of the roll and applied vertically, always working to a selvage edge. Contact Siplast for specific approval on other product uses.

Product Approvals

Veral Aluminum is approved by FM Approvals (FM Standard 4470) for use in Veral Class 1 insulated steel deck constructions and insulated and non-insulated concrete roof deck constructions, subject to FM conditions and limitations.

Veral Aluminum is classified by Underwriters Laboratories for use in $_{c}UL_{us}$ Classified Siplast Veral Roof Systems. Siplast Veral Roof Systems have been classified by Underwriters Laboratories as Class A roofing systems over non-combustible, insulated non-combustible, combustible, and insulated combustible decks.

Veral meets or exceeds the requirements of ASTM D 6298 for SBS-modified bituminous sheet materials using foil facing.

Siplast Roof Systems also have received the approval of many regional and local authorities. Please contact Siplast for specific information as required.

COMMERCIAL PRODUCT INFORMATION

Unit:	Roll		
Coverage:	1.0 Square		(9.3 m²)
Coverage Weight Per Square:	Min:	96 lb	(4.6 kg/m²)
Roll Length:	Min:	33.5 ft	(10.21 m)
Roll Width:	Avg:	3.28 ft	(1.00 m)
Thickness:	Avg:	150 mils	(3.8 mm)
	Min:	146 mils	(3.7 mm)
Selvage Surfacing:	Release Tape		
Top Surfacing:	Continuous Aluminum Foil		
Back Surfacing:	Silica Parting Agent		

Packaging: Rolls are wound onto a compressed paper tube. The rolls are placed upright on the selvage edge on pallets cushioned with corrugated cardboard and are adhered with adhesive at the labels. The top of the palleted rolls is covered with foilized Kraft paper. The palleted material is protected by a heat shrink polyethylene shroud.

Pallet: 41 in X 48 in (104 cm X 122 cm) wooden pallet
Number Rolls Per Pallet: 23
Number Pallets Per Truckload: 18
Minimum Roll Weight: 96 lb (43.5 kg)

Storage and Handling: All Siplast roll roofing products should be stored on end on a clean flat surface. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All roofing should be stored in a dry place, out of direct exposure to the elements, and should not be double stacked. Material should be handled in such a manner as to ensure that it remains dry prior to and during installation.

Rev 7/2014

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

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In Canada: 201 Bewicke Ave., Suite 210 • North Vancouver, BC V7M 3M7 • Toll Free 1-877-233-2338
Customer Service in North America: Toll Free 1-800-922-8800

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VERAL ALUMINUM

Physical and Mechanical Properties

Property (as Manufactured)	Values/Units	Test Method
Thickness (minimum)	146 mils (3.7 mm)	ASTM D 5147 section 6
Thickness (average)	150 mils (3.8 mm)	ASTM D 5147 section 6
[1]Peak Load @ 73°F (average)	85 lbf/inch (15.0 kN/m)	ASTM D 5147 section 7
[1]Peak Load @ 0°F (average)	180 lbf/inch (31.7 kN/m)	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 73°F (average)	5%	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 0°F (average)	4%	ASTM D 5147 section 7
[1]Ultimate Elongation @ 73°F (average)	45%	ASTM D 5147 section 7
[1]Tear Strength (average)	120 lbf (0.54 kN)	ASTM D 5147 section 8
Water Absorption (maximum)	1%	ASTM D 5147 section 10
Dimensional Stability (maximum)	0.2%	ASTM D 5147 section 11
Low Temperature Flexibility (maximum)	0°F (-18°C)	ASTM D 5147 section 12
Compound Stability (minimum)	225°F (107°C)	ASTM D 5147 section 16
Coating Thickness - Back Surface	≥ 40 mils (1 mm)	ASTM D 5147 section 17
[2]Thermal Shock Resistance (maximum)	0.2%	ASTM D 6298

1. The value reported is the lower of either MD or XD.
2. This test is specifically designed for metal foil-clad materials. These materials include three different components: metal foil, glass scrim, and SBS-modified bitumen. Each of these materials has a different coefficient of expansion, and it is imperative that these individual components function harmoniously to avoid severe dimensional problems that can result in foil delamination, "creep", wrinkling, or even disbonding of the sheet from the substrate.

SFT CEMENT

Commercial Product Data Sheet

Product Description

Siplast SFT Cement is a unique high strength adhesive designed for use with Veral Aluminum, Paradiene 40 FR, and Parafor flashing sheets. SFT Cement is single-component, non-toxic, and solvent-free. It is a blend of proprietary polymers and modifiers engineered to cure completely in a variety of ambient conditions over various substrates.

Product Uses

SFT Cement is intended specifically for use as a flashing cement, but may also be used as a multi-purpose adhesive in approved applications. SFT Cement may be used as an alternative to PA-1021 as a mastic for setting metal flanges and lead flashings. Contact Siplast for other specific product uses and application instructions.

SFT Cement can be applied using a 4¼-inch square notched trowel, supplied by Siplast, or with a standard V-notched trowel. To ensure proper adhesion, SFT Cement is applied to the back of the flashing sheet and to the substrate. Applications over irregular or porous substrates may require a total of 2½, or more, gallons per square (1¼ gallons per square applied to the sheet, and 1¼ applied to the substrate). Interply applications typically require a total of 2 to 2½ gallons per square (1 to 1¼ gallons per square applied to the sheet, and 1 to 1¼ applied to the substrate). Usage rate should be doubled over granule surfaces.

Temperature Considerations and Limitations

In ambient temperatures below 40°F (4°C), materials should be stored in a warm environment in order to obtain the minimum desired material temperature of 70°F (21°C) at the point of application. Membrane materials should be stored in a warm place prior to application in order to facilitate proper installation and avoid wrinkling and buckling. Additionally, rolls may be unrolled and relaxed and/or precut.

Product Approvals

Contact Siplast for specific product approvals.

SFT Cement meets all roofing adhesive VOC regulations.

SFT Cement is patent pending.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 9/08

COMMERCIAL PRODUCT INFORMATION

Unit: 3.5-Gallon Pail (13.2 liters)
3.5 gallons (13.2 liters) net content

Coverage		
Interply:	2 - 2½ gal/sq	(0.8 - 1.0 L/m²)
Irregular substrates:	2 - 3 gal/sq	(0.8 - 1.2 L/m²)
Thickness @ 2 gal/sq:	32 mils	(0.8 mm)
Thickness @ 3 gal/sq:	48 mils	(1.2 mm)
	wet film gauge	wet film gauge
Coverage Weight		
@ 2 gal/sq coverage:	26 lb/square	(1.3 kg/m²)
@ 3 gal/sq coverage:	39 lb/square	(1.9 kg/m²)
	wet film weight	wet film weight

Flash Point, Cleveland Open Cup: >400°F min. (232°C)

Recommended minimum adhesive temperature for application: 70°F (21°C).

Packaging: The pails are stacked three high on pallets and stretch wrapped.

Pallet: 44 in X 48 in (112 cm X 122 cm) wooden pallet
Number Pails Per Pallet: 60
Weight Per Pail: 27 lb (12.2 kg)
Weight Per Pallet: 1660 lb (753 kg)
Number Pallets Per Truckload: 36

Shipping Classification: Class 55

Storage and Handling: All containers of SFT Cement should be stored upright on a clean, flat surface. Care should be taken that containers are not dropped and container seals are not broken prior to use. All containers should be stored in a dry place, out of direct exposure to the elements, and should be kept away from excessive heat, fire or open flames.

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PRO FLEECE

siplast®

Commercial Product Data Sheet

Product Description
Pro Fleece is a non-woven, needle-punched polyester fabric reinforcement specially designed for compatibility with Parapro and Terapro resin products.

Product Uses
Pro Fleece is used as a fabric reinforcement in Parapro Flashing Systems, Parapro Roof Membrane Systems, Terapro Waterproofing and Surfacing Systems, and Terapro VTS Waterproofing and Surfacing Systems.

Packaging
Pro Fleece is packaged in the Parapro Component Pack in a roll 12 in (305 mm) wide x 16.5 ft (5 meter) long. Pro Fleece is also available in the following roll dimensions:

WIDTH	LENGTH
12 in (305 mm)	82 ft (25 meter)
12 in (305 mm)	164 ft (50 meter)
25 in (630 mm)	164 ft (50 meter)
41 in (1050 mm)	164 ft (50 meter)

Color and Identification Markings
Pro Fleece is a white non-woven fabric.

- The 41 in x 164 ft (1050 mm x 50 m) (1050 mm) fleece has red logo printing and side lap lines.
- The 25 in x 164 ft (630 mm x 50 m) fleece has red logo printing.
- The 12 in x 164 feet (305 mm x 50 m) fleece has red logo printing.
- The 12 in x 82 ft (305 mm x 25 m) has no logo or other printed marking.

Storage
Always store in cool and dry location. Store flat to avoid deforming rolls and creasing fabric. Shelf life is indefinite with proper storage.

Fleece Properties

Physical & Mechanical Properties	Pro Fleece (unsaturated)
Color	White
Nominal Thickness	40 mils
Weight (g/m²)	110
Water Absorption	<1%

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 4/2012

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PRO CATALYST

Commercial Product Data Sheet

Product Description
Pro Catalyst is a reactive agent used to induce curing of Parapro, Terapro, and Pro resins. Pro Catalyst is supplied as a white granular powder in pre-measured packets.

Packaging
Pro Catalyst is available in a specifically designed vented box containing 10 pre-measured 0.1-kg (100 grams) (3.2 oz) plastic bags (1 kg total). A 1-tablespoon measuring scoop is included in each box. One (1) tablespoon equals approximately 0.01 kg of Pro Catalyst.

Storage
Pro Catalyst should be stored in its box at all times until just prior to use. Always store in a cool and dry location. Do not store in direct sunlight or in temperatures below 32°F (0°C) or above 77°F (25°C).

Materials stored on the project site during application should be kept on a pallet in a shaded well-ventilated area. In unshaded areas, materials should be covered with a white, reflective tarp in a manner that allows for air circulation beneath the tarp.

Pro Catalyst is stable if stored and used in accordance with Siplast guidelines. Pro Catalyst is heat sensitive and should be stored under controlled conditions to ensure that the reactivity/effectiveness is not compromised as well as for safety reasons. Pro Catalyst should not be exposed to temperatures in excess of 122ºF (50ºC). Product exposed to temperatures in excess of 122ºF (50ºC) may experience hazardous self-accelerating decomposition. Self-accelerated decomposition is signaled by the presence of bright white smoke and the process can generate high temperatures, depending on the environmental conditions and quantity of product.

The shelf life of Pro Catalyst is 6 months from the ship date. The date of shipment is listed on each box. Shelf life is reduced if product is stored at temperatures exceeding 77ºF (25ºC). Pro Catalyst should not be used if the shelf life is expired. Contact Siplast for disposal requirements of expired material.

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes before each use, and prior to pouring off resin into a second container if batch mixing. Add pre-measured catalyst to the resin component, and stir for 2 minutes using a slow-speed mechanical agitator or mixing stick.

The amount of Pro Catalyst added to Parapro and Terapro Resins is based on the weight of the resin used and varies with ambient temperature. Refer to individual resin product data sheets for specific recommendations and requirements for the resin being used. Catalyze only the amount of material that can be used within the resin's pot life.

Handling
Do not smoke. Keep away from open fire, flame or any ignition source. Avoid skin and eye contact with this material. Avoid breathing dust. Do not eat, drink or smoke in the application area.

Consult the Safety Data Sheet (SDS) for additional information pertaining to this product.

Personal Protection Equipment (PPE)
Workers must use only butyl rubber or nitrile gloves when mixing g this product. Safety goggles are required for eye protection.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 5/2015

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PARAPRO FLASHING RESIN

Commercial Product Data Sheet

Product Description
Parapro Flashing Resin is a high performance, multi-component, flexible PMMA resin for use in the Parapro 123 Flashing System.

Product Uses
Parapro Flashing Resin, when catalyzed, is combined with polyester fleece to form a monolithic, reinforced flashing membrane used with a variety of Siplast roofing and waterproofing systems for flashing and repairs.

Color
Parapro Flashing Resin is supplied in light gray (7035) and white (9010) colors.

Packaging
Parapro Flashing Resin is supplied in and 10-kg (22-lb) resealable drums with locking rings.

Coverage Rate
Smooth surfaces
Minimum total consumption: 0.31 kg/sf (3.3 kg/m²)
Base coat (minimum consumption): 0.19 kg/sf (2.0 kg/m²)
Top coat (minimum consumption): 0.12 kg/sf (1.3 kg/m²)

Granule surfaces
Minimum total consumption: 0.4 kg/sf (4.3 kg/m²)
Base coat (minimum consumption): 0.28 kg/sf (3.0 kg/m²)
Top coat (minimum consumption): 0.12 kg/sf (1.3 kg/m²)

See recommendations for specific applications. Yields will vary depending upon the system selected and the smoothness and absorbency of the substrate.

Application Conditions
Parapro Flashing Resin is available in summer and winter grades. Care should be taken to ensure that the correct formulation is used for the application based upon the ambient temperature.

Summer Grade
Summer Grade Parapro Flashing Resin can be applied when the ambient temperature is between 59°F (15°C) and 104°F (40°C) *and* the substrate temperature is between 59°F (15°C) and 122°F (50°C). Discontinue resin application when the ambient or substrate temperature is outside the ranges listed above. Provide adequate shade over the substrate area both prior to and during application as necessary to maintain substrate surface temperatures below 122°F (50°C)

Winter Grade
Winter Grade Parapro Flashing Resin can be applied when the ambient temperature is between 23°F (-5°C) and 68°F (20°C) *and* the substrate temperature is between 23°F (-5°C) and 77°F (25°C). Discontinue resin application when the ambient or substrate temperature is outside the ranges listed above.

Storage
Product shelf life is 6 months from ship date. Shelf life will be reduced if product is stored at temperatures above 77°F (25°C). Store indoors in a closed container in a well-ventilated, cool, dry area away from heat, open fire, any ignition source, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Do not store in temperatures below 32°F (0°C). Product may auto-polymerize at temperatures greater than 140°F (60°C). Materials stored on the job site during application should be kept on a pallet in a shaded, well-ventilated area. In unshaded areas, materials should be covered with a white, reflective tarp in a manner that allows air circulation underneath the tarp.

Mixing & Catalyzing
If batch mixing, thoroughly mix the entire drum of resin for 2-3 minutes prior to pouring resin into a second container. Catalyze only the amount of resin that can be used within the anticipated pot life. Add pre-measured catalyst to the resin, stir for 2 minutes using a slow-speed mechanical agitator or mixing stick, and apply to the substrate. The amount of catalyst needed is based on the weight of the resin used, and varies with the ambient temperature as shown in the chart on the back of this sheet.

Pot Life
Parapro Flashing Resin pot life is approximately 15 minutes at 68°F (20°C). Pot life will be reduced if the resin is at higher temperatures. Pot life can be maximized by storing product under controlled conditions and ensuring that the resin is at the low range of minimum storage temperature during/following the addition of catalyst and prior to application.

Set (Cure) Times
Minimum set (cure) times noted below are approximate, and may vary. The information provided is based on laboratory conditions, and is intended for use as a guideline only. Actual set (cure) times should be established in the field, based on actual field conditions.

Rain Proof at 68°F (20°C): Approximately 30 minutes
Ready for Next Coat at 68°F (20°C): Approximately 45 minutes
Ready for Foot Traffic at 68°F (20°C): Approximately 2 hours

Tool Cleaning
When work is interrupted or completed, reusable tools must be thoroughly cleaned with Pro Prep before any catalyzed resin on the tools hardens.

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PARAPRO FLASHING RESIN

Handling

Do not smoke. Keep away from open fire, flame or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink, or smoke in the application area.

Consult the Safety Data Sheet (SDS) for additional information pertaining to this product.

Personal Protection Equipment (PPE)

Workers must wear a long sleeved shirt with long pants and work boots. Workers must use only butyl rubber or nitrile gloves when mixing or applying this product. Safety goggles are required for eye protection.

Use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, becomes irritating, or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. Specific type of respirator will depend on the airborne concentration. A filtering face piece or dust mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Parapro Flashing Resin - Summer Grade Pro Catalyst Mixing Chart

The amount of Pro Catalyst used with Parapro Flashing Resin varies from a minimum of 2% to 4% maximum by weight, depending upon the ambient temperatures as indicated in the following table:

Resin Quantity	Summer Grade 2% Catalyst 68°F to 104°F (20°C to 40°C)				Summer Grade 4% Catalyst 59°F to 68°F (15°C to 20°C)			
	g	kg	Tblsp.	0.1-kg Bag	g	kg	Tblsp.	0.1-kg Bag
1.0 kg (0.72 liter)	20	.02	2	n/a	40	.04	4	n/a
5.0 kg (3.6 liter)	100	0.1	10	1	200	0.2	20	2
10.0 kg (7.2 liter)	200	0.2	20	2	400	0.4	40	4

Parapro Flashing Resin - Winter Grade Pro Catalyst Mixing Chart

The amount of Pro Catalyst used with Winter Grade Parapro Flashing Resin varies from a minimum of 2% to 6% maximum by weight, depending upon the ambient temperatures as indicated in the following table:

Resin Quantity	Winter Grade 2% Catalyst 59°F to 68°F (15°C to 20°C)				Winter Grade 4% Catalyst 41°F to 59°F (5°C to 15°C)				Winter Grade 6% Catalyst 23°F to 41°F (-5°C to 5°C)			
	g	kg	Tblsp.	0.1-kg Bags	g	kg	Tblsp.	0.1-kg Bags	g	kg	Tblsp.	0.1-kg Bags
1.0 kg (0.72 liter)	20	0.02	2	n/a	40	0.04	4	n/a	60	0.06	6	n/a
5.0 kg (3.6 liter)	100	0.1	10	1	200	0.2	20	2	300	0.3	30	3
10.0 kg (7.2 liter)	200	0.2	20	2	400	0.4	40	4	600	0.6	60	6
20.0 kg (14.3 liter)	400	0.4	40	4	800	0.8	80	8	1200	1.2	120	12

Substrate temperature range for application of Winter Grade Parapro Flashing Resin is 23°F to 77°F (-5°C to 25°C).

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

PARATREAD

Commercial Product Data Sheet

Product Description

Paratread is a modified bitumen sheet material designed to be used as a protective course in roof areas with anticipated high pedestrian traffic or mechanical abuse potential. It is composed of an asphalt impregnated, puncture resistant polyester fabric core, coated with a polymer modified bitumen and topped with a ceramic-coated granule wearing surface.

Product Uses

Paratread is supplied in roll form. Prior to application, the material should be cut in maximum five-foot lengths and allowed to relax until flat. A straight edge or chalk line should be used to ensure straight, square cuts. Never cut material directly on the roof surface.

Paratread should be positioned so as to leave minimum 2-inch (5.0 cm) gaps between panels, allowing for proper drainage.

Paratread is adhered to Siplast roofing membranes using PA-1021 Plastic Cement. Cement is applied to the back of the product in spots approximately 5 inches (12.7 cm) square. Use a notched trowel to keep the cement approximately 3/8-inch (0.97-cm) thick.

Walk-in each panel to ensure complete contact with the membrane surface.

Paratread must be applied to a clean, dry surface. Substrates must be of sufficient density and strength to handle anticipated loads without deflection or deformation.

The design stiffness of Paratread may make it difficult to unroll at low temperatures. The material must be stored in a warm area prior to use at temperatures below 40°F. Gentle heating of the product with a torch can facilitate the relaxation process at cold temperatures.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

COMMERCIAL PRODUCT INFORMATION

Unit:	Roll	
Coverage:	**50 ft²**	**(4.7 m²)**
Weight Per Sq. Ft.:	1.4 lb	(6.8 kg/m²)
Roll Length:	20 ft	(6.10 m)
Roll Width:	30 in	(76 cm)
Thickness:	217 mils	(5.5 mm)

Top Surfacing: Stone Gray #701, a combination of different shades of grey and brown ceramic granules.

Back Surfacing: Perforated plastic film

Packaging: The rolls are wound onto a compressed paper tube. The rolls are placed upright on ends on corrugated cardboard and are bound with adhesive at the labels. The top of the palleted rolls is covered with foilized Kraft paper. The palleted material is protected by a heat shrink polyethylene shroud.

Pallet: 39 inch X 39 inch (99 cm X 99 cm) wooden pallet
Number Rolls Per Pallet: 20
Number Pallets Per Truckload: 40
Roll Weight: 72 lb (32.6 kg)

Storage and Handling: All Siplast rolled products should be stored on end on a clean flat surface. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All materials should be stored in a dry place, out of direct exposure to the elements, and should be handled in such a manner as to ensure that the materials remain dry prior to and during installation.

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PARAFAST ROOFING FASTENER

siplast®

Commercial Product Data Sheet

Product Description and Product Uses

The Parafast Roofing Fastener is a standard duty roofing screw which is precoated with CR-10 corrosion resistant coating. CR-10 coating exceeds FM Approval Standard 4470. The Parafast Roofing Fastener, in conjunction with the Parafast 3-inch metal plate, is designed to secure roof insulation and substrate panels, and base sheets in approved assemblies, to standard steel (18 ga. - 24 ga.), wood, and plywood roof decks. It is available in lengths from 1 5/8" to 8". The Parafast Roofing Fastener is Factory Mutual Approved and meets the code compliance requirements for Miami-Dade County, Florida.

Product Application

The Parafast Roofing Fastener must penetrate steel decks a minimum of 3/4", and wood plank decks a minimum of 1". The fastener must completely penetrate plywood decks and extend a minimum 1/2" beyond the underside of the plywood. Using a screw gun recommended for roofing fasteners, drive the fastener until a slight depression is seen around the plate. When fastening through stiff, high-density rigid insulation boards, watch for the plate to dimple.

Note: Care must be taken to not overdrive the fastener and fracture the surface skin or facer of the panel. The fastener must be tight enough so that the plate doesn't turn.

For steel deck construction, Factory Mutual requires that the fastener penetrate the deck panel through the top flanges.

To speed installation, the Parafast Roofing Fastener is also available as a pre-assembled, labor saving screw and plate. See Siplast Parafast PA Roofing Fastener Commercial Product Data Sheet for more information.

Physical Data

Thread Diameter: .220
Head Diameter: .435
Head Style: #3 Phillips Truss Head
Drive Bit: #3 Phillips bit drive included in each carton.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

COMMERCIAL PRODUCT INFORMATION

Product No.	Length	Thread Length	Units/Pail	Pail Weight
SF158	1 5/8"	Full	1000	12 lb
SF214	2 1/4"	Full	1000	16 lb
STD-300	3"	Full	1000	25 lb
STD-400	4"	3"	1000	29 lb
SF500	5"	4"	1000	35 lb
SF600	6"	4"	1000	42 lb
SF700	7"	4"	1000	48 lb
SF800	8"	4"	1000	55 lb

Packaging: Plastic Pails
2 gal pails for sizes 1 5/8" - 4"
4 gal pails for sizes 5" - 8"
Pallet: 40 in X 44 in (102 cm X 112 cm) wooden pallet
No. Pails/Pallet: 64 pails for sizes 1 5/8" - 4"
48 pails for sizes 5" - 8"
No. Pallets/TL: 24

Note: Sizing selection procedure is located on the back side of this page.

Rev 7/2014

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PARAFAST ROOFING FASTENER

PARAFAST ROOFING FASTENER LENGTH SELECTION PROCEDURE

1. If applicable, determine thickness of existing roofing material.
2. Add thickness of new insulation.
3. Add 3/4" minimum fastener penetration.
4. If odd size requirement, always size up in length, not down. See example.

Example	
Existing Roofing	1 3/4"
New Insulation	1/2"
Min. Embedment	3/4"
Total Fastening Range	3"

Existing Roofing	_____
New Insulation	_____
Min. Embedment	3/4"
Total Fastening Range	_____

Use this form to calculate your correct fastener size.

The proper fastener length for this example is 3 1/4".

NO. 11 ROOFING GRANULES

siplast®

Commercial Product Data Sheet

Product Description

Siplast No. 11 Roofing Granules are the same high quality mineral granules used on Siplast mineral-surfaced elastomeric asphalt products. No. 11 Roofing Granules are composed of a granite like mineral permanently coated with various pigments using a ceramic coating process.

Product Uses

No. 11 Roofing Granules should be used wherever hot mopping asphalt or PA-311 Adhesive extends onto the finished roof surface. No. 11 Roofing Granules should be applied while asphalt is hot or the PA-311 Adhesive is still "wet," and should be pressed into the asphalt surface to insure proper adhesion.

COMMERCIAL PRODUCT INFORMATION

Unit: 5 Gallon Pail (19 liters)

Size: 3M - No. 11

100% - 8 Mesh Tyler (2.36 mm) Sieve
98% + 35 Mesh Tyler (425) Sieve

Bulk Density: 90 - 115 lbs/ft³ (1,441 kg/m³)

Standard Colors:	Bone White #93 Cinnamon Brown #65
Special Colors:	Beige #65 Beige #68 Ebony Black #51 Earth Brown #46 Charcoal Gray #55 Light Gray #76 Spanish Tile Red #22 Chocolate Brown #41 Forest Green #37 Slate Gray #71 Olive Green #12 Pacific Blue #84

Packaging: The pails are stacked three high on pallets and stretched wrapped.

Pallet: 36 in X 48 in (91 cm X 122 cm) wooden pallet
Number Pails Per Pallet: 36
Number Pallets Per Truckload: 22
Shipping Weight Per Pail: 65 lb (29.5 kg)

Storage and Handling: All containers of Siplast No. 11 Roofing Granules should be stored upright on a clean, flat surface. Care should be taken that containers are not dropped and container seals are not broken prior to use. All containers should be stored in a dry place, out of direct exposure to the elements.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 9/08

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PARADIENE 20

Commercial Product Data Sheet

Product Description

Paradiene 20 is a high performance modified bitumen base ply designed for use in homogeneous multi-layer modified bitumen roof membrane systems. Paradiene 20 consists of a lightweight random fibrous glass mat impregnated and coated with high quality styrene-butadiene-styrene (SBS) modified bitumen.

Paradiene 20 is available with Siplast RoofTag RFID roof asset technology on a Special-Made-To-Order basis. See RoofTag Commercial Product Data Sheet for more information.

Product Uses

Paradiene 20 is the first ply of all standard Siplast Paradiene 20/30 Systems, and is lapped 3 inches (7.6 cm) side and end. Paradiene 20 can be applied in approved Type IV asphalt, PA-1000 Polymer Asphalt, Siplast PA-311 (M) Adhesives, or SFT Adhesive. Contact Siplast for specific approval on other product uses.

Product Approvals

Paradiene 20 is approved by FM Approvals (FM Standard 4470) for use in Siplast Paradiene 20/30, Paradiene 20/30 FR, and Paradiene 20/20 PR Class 1 insulated steel roof deck constructions and insulated and non-insulated concrete roof deck constructions, subject to FM conditions and limitations.

Contact Siplast for specific information regarding FM Class 1 windstorm resistance classifications.

Paradiene 20 is classified by Underwriters Laboratories for use in $_{c}UL_{us}$ Classified Siplast Paradiene 20/30, Paradiene 20/30 FR, and Paradiene 20/20 PR Roof Systems. Siplast Paradiene 20/30 FR has been classified by Underwriters Laboratories as a Class A roofing system over non-combustible, insulated non-combustible, and insulated combustible decks, and as a Class B roofing system over combustible decks. Siplast Paradiene 20/20 PR has been classified by Underwriters Laboratories as a Class A roofing system over non-combustible and insulated non-combustible decks when surfaced with roofing gravel. Siplast Paradiene 20/30 has been classified as a Class C roofing system over combustible, non-combustible, and insulated combustible decks.

Paradiene 20 meets or exceeds the requirements of ASTM D 6163 Type I, Grade S, for SBS-modified bituminous sheet materials using glass fiber reinforcements.

Siplast Roof Systems have also received the approval of many regional and local code authorities. Contact Siplast for more information.

COMMERCIAL PRODUCT INFORMATION

Unit:	Roll		
Coverage:	1.5 Squares		(13.9 m²)
Coverage Weight Per Square:	Min:	62 lb	(3.0 kg/m²)
Roll Length:	Min:	50 ft	(15.24 m)
Roll Width:	Avg:	3.28 ft	(1.00 m)
Thickness:	Avg:	91 mils	(2.3 mm)
	Min:	87 mils	(2.2 mm)
Selvage Width:	N/A		
Selvage Surfacing:	N/A		
Top Surfacing:	Silica Parting Agent		
Back Surfacing:	Silica Parting Agent		

Lines: Two laying lines are placed 3 in (7.6 cm) and 4 in (10.2 cm) from each edge of the material. The line color for this material is white.

Packaging: Rolls are wound onto a compressed paper tube. The rolls are placed upright on pallets cushioned with corrugated cardboard and are adhered with adhesive at the labels. The top of the palleted rolls is covered with foilized Kraft paper. The palleted material is protected by a heat shrink polyethylene shroud.

Pallet: 41 in X 48 in (104 cm X 122 cm) wooden pallet
Number Rolls Per Pallet: 25
Number Pallets Per Truckload: 18
Minimum Roll Weight: 93 lb (42.2 kg)

Storage and Handling: All Siplast roll roofing products should be stored on end on a clean flat surface. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All roofing should be stored in a dry place, out of direct exposure to the elements, and should not be double stacked. Material should be handled in such a manner as to ensure that it remains dry prior to and during installation.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 3/2014

PARADIENE 20

Physical and Mechanical Properties

Property (as Manufactured)	Values/Units	Test Method
Thickness (minimum)	87 mils (2.2 mm)	ASTM D 5147 section 6
Thickness (average)	91 mils (2.3 mm)	ASTM D 5147 section 6
[1]Peak Load @ 73°F (average)	30 lbf/inch (5.3 kN/m)	ASTM D 5147 section 7
[1]Peak Load @ 0°F (average)	70 lbf/inch (12.3 kN/m)	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 73°F (average)	3%	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 0°F (average)	3%	ASTM D 5147 section 7
[1]Ultimate Elongation @ 73°F (average)	50%	ASTM D 5147 section 7
[1]Tear Strength (average)	40 lbf (0.18 kN)	ASTM D 5147 section 8
Water Absorption (maximum)	1%	ASTM D 5147 section 10
Dimensional Stability (maximum)	0.1%	ASTM D 5147 section 11
Low Temperature Flexibility (maximum)	-15°F (-26°C)	ASTM D 5147 section 12
Compound Stability (minimum)	250°F (121°C)	ASTM D 5147 section 16
Cyclic Fatigue	Paradiene 20, bonded to an acceptable Paradiene 30, Paradiene 40 FR, or Parafor 50 LT cap sheet with an approved method of attachment, passes ASTM D 5849 both as-manufactured and after heat conditioning according to ASTM D 5147.	

1. The value reported is the lower of either MD or XD.

PARADIENE 30 FR

Commercial Product Data Sheet

Product Description

Paradiene 30 FR is a high performance, modified bitumen finish ply designed for use in homogeneous multi-layer modified bitumen roof membrane systems. Paradiene 30 FR consists of a lightweight random fibrous glass mat impregnated and coated with high quality styrene-butadiene-styrene (SBS) modified bitumen, and surfaced with ceramic granules.

Paradiene 30 FR is available with Siplast RoofTag RFID roof asset technology on a Special-Made-To-Order basis. See RoofTag Commercial Product Data Sheet for more information.

Product Uses

Paradiene 30 FR is the finish ply of the Siplast Paradiene 20/30 FR System, and is lapped 3 inches (7.6 cm) side and end. Paradiene 30 FR can be applied in approved Type IV asphalt, Siplast PA-311 Adhesive or SFT Adhesive. Contact Siplast for specific approval on other product uses.

Product Approvals

Paradiene 30 FR is approved by FM Approvals (FM Standard 4470) for use in Siplast Paradiene 20/30 FR Class 1 insulated steel roof deck constructions and insulated and non-insulated concrete roof deck constructions, subject to FM conditions and limitations.

Paradiene 30 FR is classified by Underwriters Laboratories for use in $_{c}UL_{us}$ Classified Siplast Paradiene 20/30 FR Roof Systems. Siplast Paradiene 20/30 FR has been classified by Underwriters Laboratories as a Class A roofing system over non-combustible, insulated non-combustible, and insulated combustible decks, and as a Class B roofing system over combustible decks.

Paradiene 30 FR meets or exceeds the requirements of ASTM D 6163 Type I, Grade G, for SBS-modified bituminous sheet materials using glass fiber reinforcements.

Siplast Roof Systems also have received the approval of many regional and local authorities. Please contact Siplast for specific information as required.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

COMMERCIAL PRODUCT INFORMATION

Unit:	Roll		
Coverage:	1.0 Square		(9.3 m²)
Coverage Weight Per Square:	Min:	90 lb	(4.4 kg/m²)
Roll Length:	Min:	33.5 ft	(10.21 m)
Roll Width:	Avg:	3.28 ft	(1.00 m)
Thickness:	Avg:	130 mils	(3.3 mm)
Thickness at Selvage:	Avg:	98 mils	(2.5 mm)
	Min:	94 mils	(2.4 mm)

Selvage Surfacing: Silica parting agent

Top Surfacing: No. 11 ceramic granules, standard color finishes are #93 Bone White and #65 Cinnamon Brown. Contact Siplast for other available colors.

Back Surfacing: Silica Parting Agent

Lines: A laying line is placed 3 in (7.6 cm) from selvage edge of the material. The line color for this material is orange.

Packaging: Rolls are wound onto a compressed paper tube. The rolls are placed upright on ends opposite the selvage on pallets cushioned with corrugated cardboard and are adhered with adhesive at the labels. The top of the palleted rolls is covered with foilized Kraft paper. The palleted material is protected by a heat shrink polyethylene shroud.

Pallet: 41 in X 48 in (104 cm X 122 cm) wooden pallet
Number Rolls Per Pallet: 25
Number Pallets Per Truckload: 18
Minimum Roll Weight: 90 lb (40.8 kg)

Storage and Handling: All Siplast roll roofing products should be stored on end on a clean flat surface. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All roofing should be stored in a dry place, out of direct exposure to the elements, and should not be double stacked. Material should be handled in such a manner as to ensure that it remains dry prior to and during installation.

Rev 7/2014

PARADIENE 30 FR

Physical and Mechanical Properties

Property (as Manufactured)	Values/Units	Test Method
Thickness (average)	130 mils (3.3 mm)	ASTM D 5147 section 6
[1]Thickness at selvage (minimum) (average)	94 mils (2.4 mm) 98 mils (2.5 mm)	ASTM D 5147 section 6
[2]Peak Load @ 73°F (average)	30 lbf/inch (5.3 kN/m)	ASTM D 5147 section 7
[2]Peak Load @ 0°F (average)	75 lbf/inch (13.2 kN/m)	ASTM D 5147 section 7
[2]Elongation @ Peak Load, 73°F (average)	3%	ASTM D 5147 section 7
[2]Elongation @ Peak Load, 0°F (average)	3%	ASTM D 5147 section 7
[2]Ultimate Elongation @ 73°F (average)	55%	ASTM D 5147 section 7
[2]Tear Strength (average)	40 lbf (0.18 kN)	ASTM D 5147 section 8
Water Absorption (maximum)	1%	ASTM D 5147 section 10
Dimensional Stability (maximum)	0.1%	ASTM D 5147 section 11
Low Temperature Flexibility (maximum)	-15°F (-26°C)	ASTM D 5147 section 12
Granule Embedment Max. avg. loss Max. individual loss	1.5 grams per sample 2.0 grams per sample	ASTM D 5147 section 15
Compound Stability (minimum)	250°F (121°C)	ASTM D 5147 section 16
Cyclic Fatigue	Paradiene 30 FR, bonded to an acceptable Paradiene 20 base ply with an approved method of attachment, passes ASTM D 5849 both as-manufactured and after heat conditioning according to ASTM D 5147.	

1. Measured on the selvage edge excluding the granule surfacing.
2. The value reported is the lower of either MD or XD.

PA-1125 PRIMER

Commercial Product Data Sheet

Product Description

PA-1125 Primer is an asphalt solvent blend designed as a primary coating for metal and masonry surfaces prior to application of Siplast Roofing and Flashing Systems.

Product Uses

PA-1125 Primer is applied to all metal flanges and concrete and masonry surfaces; the primer should be allowed to dry thoroughly prior to application of Siplast Roofing and Flashing Systems. PA-1125 Primer can be applied by brush or spray. Diluting PA-1125 using petroleum solvents will affect its bonding and drying characteristics.

Product Approvals

PA-1125 meets or exceeds the requirements for Federal Specification SSA-701B and ASTM D 41 for asphalt primer used in roofing.

COMMERCIAL PRODUCT INFORMATION

Unit: 5-Gallon Pail
4.7 gallons (17.8 liters) net content

Coverage: Coverage is dependent on the condition of the surface receiving the primer. The coverage ranges from 100 square feet per gallon (0.4 liter per 1/m²) on very rough, porous surfaces to 400 square feet per gallon (1.6 1/m²) on smooth, low-absorptive surfaces.

Flash Point, Pensky-Martens Closed Cup: 100°F (38°C)

Packaging: The pails are stacked three high on pallets and stretch wrapped.

Pallet: 45 in X 48 in (114 cm X 122 cm) wooden pallet
Number Pails Per Pallet: 42
Number Pallets Per Truckload: 22
Weight Per Pail: 37 lb (16.8 kg)

Shipping Classifications: White Label (combustible)

Storage and Handling: All containers of PA-1125 Primer should be stored upright on a clean, flat surface. Care should be taken that containers are not dropped and container seals are not broken prior to use. All containers should be stored in a dry place, out of direct exposure to the elements, and should be kept away from excessive heat, fire or open flames.

Current copies of all Siplast Commercial Product Data Sheets are posted on the Siplast Web site at www.Siplast.com.

Rev 10/2010

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An Icopal Group Company

IREX 40

Commercial Product Data Sheet

Product Description

Irex 40 is a high performance, heavy duty base sheet or base ply designed for use with Veral and other torchable roof membrane systems. Irex 40 consists of a lightweight random fibrous glass mat impregnated and coated with a specially formulated, flexible, modified asphalt.

Irex 40 is available with Siplast RoofTag RFID roof asset technology on a Special-Made-To-Order basis. See RoofTag Commercial Product Data Sheet for more information.

Product Uses

Irex 40 is used as a ply sheet or base sheet depending on specification requirements for Siplast Veral and other Siplast Roof Systems. Irex 40 is lapped 3 inches (7.6 cm) side and end when applied in approved Type IV asphalt or by torching. In nailable applications, Irex 40 is lapped 4 inches (10.2 cm) side and end, and is mechanically fastened according to Siplast requirements. Contact Siplast for specific approval on other product uses.

Product Approvals

Irex 40 is approved by FM Approvals (FM Standard 4470) for use in Veral Class 1 insulated steel roof deck constructions and insulated and non-insulated concrete roof deck constructions, subject to FM conditions and limitations.

Irex 40 has been classified by Underwriters Laboratories as a UL Rated G2 Base Sheet. Irex 40 is approved by Underwriters Laboratories for use in $_{c}UL_{us}$ Classified Siplast Veral Roof Systems. Veral has been classified by Underwriters Laboratories as a Class A roofing system over non-combustible, insulated non-combustible, insulated combustible, and combustible decks.

Siplast Roof Systems also have received the approval of many regional and local authorities. Please contact Siplast for specific information as required.

COMMERCIAL PRODUCT INFORMATION

Unit:	Roll		
Coverage:	1.0 Square		(9.3 m²)
Coverage Weight Per Square:	Min:	85 lb	(4.1 kg/m²)
Roll Length:	Min:	34 ft	(10.36 m)
Roll Width:	Avg:	3.28 ft	(1.0 m)
Thickness:	Avg:	110 mils	(2.8 mm)
	Min:	106 mils	(2.7 mm)
Selvage Width:	N/A		
Selvage Surfacing:	N/A		
Top Surfacing:	Silica Parting Agent		
Back Surfacing:	Silica Parting Agent		

Lines: Two laying lines are placed 3 in (7.6 cm) and 4 in (10.2 cm) from each edge of the material. The line color for this material is blue.

Packaging: Rolls are wound onto a compressed paper tube. The rolls are placed upright on pallets cushioned with corrugated cardboard and are adhered with adhesive at the labels. The top of the palleted rolls is covered with foilized Kraft paper. The palleted material is protected by a heat shrink polyethylene shroud.

Pallet: 41 in X 48 in (104 cm X 122 cm) wooden pallet
Number Rolls Per Pallet: 25
Number Pallets Per Truckload: 18
Minimum Roll Weight: 85 lb (38.6 kg)

Storage and Handling: All Siplast roll roofing products should be stored on end on a clean flat surface. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All roofing should be stored in a dry place, out of direct exposure to the elements, and should not be double stacked. Material should be handled in such a manner as to ensure that it remains dry prior to and during installation.

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Rev 7/2014

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IREX 40

Physical and Mechanical Properties

Property (as Manufactured)	Values/Units	Test Method
Thickness (minimum)	106 mils (2.7 mm)	ASTM D 5147 section 6
Thickness (average)	110 mils (2.8 mm)	ASTM D 5147 section 6
[1]Peak Load @ 73°F (average)	45 lbf/inch (7.9 kN/m)	ASTM D 5147 section 7
[1]Peak Load @ 0°F (average)	80 lbf/inch (14.1 kN/m)	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 73°F (average)	3%	ASTM D 5147 section 7
[1]Elongation @ Peak Load, 0°F (average)	2%	ASTM D 5147 section 7
[1]Tear Strength (average)	60 lbf (0.27 kN)	ASTM D 5147 section 8
Water Absorption (maximum)	1%	ASTM D 5147 section 10
Dimensional Stability (maximum)	0.1%	ASTM D 5147 section 11
Low Temperature Flexibility (maximum)	0°F (-18°C)	ASTM D 5147 section 12
Compound Stability (minimum)	215°F (102°C)	ASTM D 5147 section 16
Coating Thickness - Back Surface	≥ 40 mils (1 mm)	ASTM D 5147 section 17

1. The value reported is the lower of either MD or XD.