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 (Abatement of Asbestos-Containing Materials by Encapsulation)

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DIVISION 02 – EXISTING CONDITIONS
 SECTION 02 82 00 ASBESTOS REMEDIATION/ABATEMENT
 SECTION 02 82 13 ASBESTOS ABATEMENT – ENCAPSULATION¹

Sentinel BPE (Asbestos Bridging & Penetrating Encapsulant) for Bidding, Proposals, Applicator
 Training, and Basis of Project Design
 [B+A (Bid & Applicators) Specification]

PART 1 - ENCAPSULATION PROJECT ORGANIZATION & ADMINISTRATION²

1.00 GENERAL REQUIREMENTS

1.1 SECTION INCLUDES

A. GENERAL –

- a. Provide labor, equipment and materials to complete work involving long-term to permanent abatement of ACM (Asbestos-Containing Materials)³ via encapsulation. A properly planned and prepared encapsulation project can stabilize damaged ACM, prevent deterioration that creates future hazards, and satisfy government regulations for asbestos abatement.
- b. Work included requires management of fiber and particulate release from potentially asbestos-containing materials, and fiber clean-up as necessary.
- c. This specification for asbestos encapsulation is not inclusive of all requirements necessary on a particular abatement project.
- d. Not all components with ACM are suitable for any encapsulation process.
- e. The resulting encapsulation will be an opaque white, laminar film of sufficient build and cohesion that is no longer friable.⁴

B. GENERAL – Installer Expectations:

- a. Encapsulation shall be conducted by Installer in accord with mandatory work practices, licensing requirements, disposal permitting, and all other related regulatory responsibilities.
- b. Installer should abide by industry standard of care by, in all project phases, utilizing best work practice standards for abatement.

C. GENERAL - Encapsulation as Abatement for ACM in the United States:

- a. Encapsulation is: "Treatment of asbestos containing materials with a sealant material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers. A bridging encapsulant creates some membrane over the surface. A penetrating encapsulant penetrates the material and binds its components together."⁵



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- b. Encapsulation is consistent with ⁶U.S. federal and state regulations and administrative rules, as a method for abatement which when performed properly can be equally valid as Removal of ACM, or Enclosure of ACM.
- c. For abatement projects, typically it is required that verifying the completion of work is the responsibility of an assessor or inspector that is a third-party. Abatement contractors generally do not or cannot sign-off on their work.

1.02 RELATED SECTIONS, REFERENCES, NOTES TO SPECIFIER:

A. Specified elsewhere:

- a. Section 00 26 23 – Asbestos Assessment
- b. Section 02 82 00 – Asbestos Abatement

B. References

- a. ASTM - American Society for Testing and Materials
 - i. E 1494
 - ii. E 2356
 - iii. E 1368
 - iv. E 2394
- b. Asbestos References
 - i. Guidance for Controlling Asbestos-Containing Materials in Buildings. Office of Pesticides and Toxic Substances, EPA 560/5-85-024, June 1985, Washington, DC. (Commonly referred to as the EPA Purple Book)⁷
 - ii. A Coatings Compendium: Asbestos Encapsulation, by Cole Stanton. Restoration & Remediation, August 2014⁸

C. PUBLIC SECTOR SPECIFICATIONS – Integration Compatible⁹

- a. U.S. Army Corps of Engineers (USACE) Guide Specifications (CEGS 02080)
- b. USACE Asbestos Abatement Guideline Detail Sheets
- c. United Field Guide Specification (UFGS) 028200

D. NOTES TO USERS OF THIS DOCUMENT

- a. This is Sentinel's B+A (Bid & Applicators) specification: a version with the fundamentals for project review, submittals, training, routine oversight, etc. This is our most popular format, and useful to our applicators.
- b. There is a longer [Compendium](#) specification, mostly used by specifiers and architects, that contains the fullest set of instructions and contextual information.
- c. The specifier is not obligated to utilize this specification in entirety.
- d. At the end of this document are End Notes, which often include some commercial or sales information that many users find is helpful information.



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- e. Section 2, Basis of Design, is intended to provide the specifier with performance criteria without identifying any specific product
- E. This specification does not include guidance for ACM encapsulation or abatement related to:
 - a. Floors/Horizontal traffic surfaces
 - i. Mastic should be removed insofar as possible before considering use as a lockdown for residual.¹⁰
 - b. Contaminated building contents
 - c. Air Conveyance Systems (ACS), aka Heating, Ventilation, Air Conditioning & Refrigeration (HVAC&R) systems
 - d. Flat and Very-Low Pitch ACM-containing Roofs

1.03 QUALITY ASSURANCE

- A. DOCUMENTS RELATING TO QUALITY OF WORK: See other cited documents also to be considered incorporated by reference, as listed at REFERENCES at 1.02.
- B. SUPERIORITY: Any federal, state, or local laws and regulations, supplant this document.
- C. THICKNESS OF ASBESTOS ENCAPSULATION (per EPA)
 - a. EPA and Minimum Coverage for ACM Encapsulation:
 - i. Asbestos Encapsulation coatings shall not be applied at a dry film thickness of less than 100 sq. ft./ gallon.
 - 1. Wet Film Thickness (WFT): 15-16 mils (381-406µm).
 - 2. Dry Film Thickness (DFT): 6 mils (152µm).
 - b. This coverage rate is required by this specification to concur with published guidance from the U.S. Environmental Protection Agency (EPA).
 - c. Wet mil film thickness should be measured throughout any encapsulation project. After the project, provide the thickness data to the Owner with other project documentation.
- D. WORKMANSHIP: Apply encapsulants consistent with workmanship that exceeds industry standard-of-care, and the following inadequate defects will not be tolerated:
 - a. Areas where coating film of bridging encapsulant is not contiguous and consistent in film-build (Thickness);
 - b. The generation of friable fibers from physical touch;
 - c. Post-application delamination or deterioration of the underlying ACM or loss of integrity of the ACM matrix from within itself.
- E. SAMPLING & MOCK-UP:



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- a. Pilot Application/Mock-Up: Upon request, it may be determined necessary to provide a mock-up for validation of performance expectations, and anticipated application workmanship.

F. RESPONSIBILITY FOR SURFACE PREPARATION

- a. If substrate preparation is the responsibility of another contractor, the installer shall notify the owner's agent of unsatisfactory preparation before proceeding.

1.04 SUBMITTALS:

- A. Provide URL for most recent encapsulation product literature including.
 - i. Technical data/performance testing
 - ii. Safety Data Sheet
 - iii. Warranty and
 - iv. Label.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver manufacturer's unopened containers to the work site.
- B. Storage & Handling of Materials:
 - 1. Store only acceptable project materials on site.
 - 2. Comply with health and fire regulations.
 - 3. For Professional Use Only
 - 4. Keep out of reach of children.
 - 5. Dispose of waste per requirements of AHJs (Authorities Having Jurisdiction).
 - 6. See Compendium version of specification for more information regarding storage and handling
- C. Handling:
 - a. Dispose of waste per AHJs.
 - b. Verify products are within acceptable shelf life.
- D. Extra Materials:
 - a. Furnish extra encapsulant materials for incidental repair.

1.06 JOB CONDITIONS

- A. Environmental requirements: Comply with manufacturer's recommendations
 - 1. Temperature: Surfaces to be coated and ambient air temperature shall be between 45° F (7.2° C) and 100° F (38° C), and remain within the



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manufacturer's acceptable range for no less than ten (10) days post-application.

a. Supply of air movement may be recommended to aid curing.

2. Humidity:

3. Ideal humidity for encapsulant application is 40-50% Relative Humidity (%RH).

a. Humidity in excess of 70% RH will slow drying. Do not apply when the RH is above 85% or when the Dew Point is closer than 3 degrees to air temperature.

4. Surface/Substrate Moisture:

a. Do not apply encapsulants to wet surfaces. Surfaces may be lightly damp to the touch.

B. Surface Protection/Prevention of Cross-Contamination:

1. Cover or otherwise protect finished work.

2. Do not apply where particulate matter is being generated.

3. Contaminants may bias clearance testing as well as introduce unwanted and potentially health-affecting substances.

A. Worker Safeguards: Utilize adequate ventilation, illumination, and engineering controls to ensure worker and occupant safety by satisfying requirements of regulations for relevant AHJs.

B. Contractor is to ensure and document provision with and training for use of all necessary Personal Protective Equipment (PPE).

PART 2 – MATERIALS AND MANUFACTURERS as Basis of Design

2.00 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer

- a. Sentinel Products, Inc., 8901 Wyoming Ave. N., Brooklyn Park, MN 55445
- b. PHONE: 763-571-0630
- c. FAX: 763-571-1819
- d. EMAIL: getinfo@senpro.com

B. Substitutions: Only with advance written consent of MIPS



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2.02 ACCEPTABLE BRIDGING & PENETRATING ENCAPSULANT [or equal]

- A. Basis of Design: Sentinel BPE™ Asbestos Bridging & Penetrating Encapsulant [or equal]
- B. Performance and Design Requirements/Key Attributes for Specifier
- a. Category Type: Multi-polymer, water-based emulsion of both natural and synthetic resins.
 - b. Physical State: Liquid, Paint-like, Thick
 - c. Solids Content
 - i. NV% (by wt.): 55.21%
 - ii. NV% (by vol.): 42.76%
 - d. Miscible (with water or other solvents): Yes. Clean, potable, ambient temperature water only. See 2.02 Mixing – as a penetrating encapsulant.
 - e. Color: See 2.03 and 2.04 for additional information
 - i. Wet (unapplied): White
 - ii. Dry film: White
 - f. Gloss (60°): Eggshell 17.5
 - g. HMIS Rating (Hazardous Material Identification System) Rating: 0
 - h. Hazardous or Degrading Constituents
 - i. Volatile Organic Content (VOC), ASTM D3960, g/l: 1.16
 - ii. Hazardous Air Pollutants (HAPS) none
 - iii. Solvents none
 - i. Flash Point: >199.4°F
 - j. Fire rating, ASTM E84 (standard flame spread and smoke development) and ASTM 2768 (Extended Duration Surface Burning 30m)
 - i. Flame Spread Index (FSI) 0-Class A
 - ii. Smoke Developed Index (SDI) 0-Class A
 - k. Odor: Slight acrylic
 - l. Changes Acoustical-Sound Deadening Properties: No
 - m. Dry Time @70 - 77°F, 50% RH:
 - i. Touch: 2 hours
 - ii. Recoat: 4 hours
 - n. Shelf Life: 36 months

2.03 COLORS

- A. White



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B. Custom: See 2.04

2.04 MIXING

A. GENERAL MIXING INSTRUCTIONS:

a. Colors Other Than Standard:

- i. Do not add more than two-ounces per gallon of universal liquid colorant when tinting any encapsulant to custom colors.
- ii. Field tinting of the encapsulant is not permitted, unless expressly instructed in writing in advance by the manufacturer.

B. FOR USE AS A PENETRATING ENCAPSULANT (see 3.03 below for additional information):

a. Dilute only with clean, potable, ambient temperature water.

- i. Dilution ratio will be project specific, however the following dilutions are common:

1. 1:1 (1 part coating + 1 part water)
2. 2:1 (2 parts water + 1 part coating)
3. 3:1 (3 parts coating + 1 part water)

b. Mix with paddle on electric drill or equal.

SPECIFICATION CONTINUES IN PART 3



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PART 3 – EXECUTION

3.01 EXAMINATION

A. PRE-WORK VISUAL INSPECTION

- a. Visually examine surfaces to be encapsulated. If the surface cannot be put into an acceptable condition, do not encapsulate. Notify conditions are unacceptable.

B. PRE-WORK SURFACE ASSESSMENTS:

- a. SUBSTRATE STABILITY (DEGREE OF DETERIORATION, SUITABILITY OF PURPOSE):
 - A. VISUAL INSPECTION: Installer should perform their own visual inspection to verify conditions.
 - B. PHYSICAL STABILITY: ACM surfaces may appear intact, but within the surface the bond between certain elements can be compromised. .
 1. For Sprayed-Fire Resistive Materials (SFRM, aka Fireproofing), all parties should agree to performing the “pull test” – the ASTM E 736 *Cohesion/Adhesion of Sprayed Fire-Resistive Materials*.¹¹
 - C. ENCAPSULANT PILOT TEST/MOCKUP: Described at 1.03 of this specification.
 - D. WATER-BREAK & pH TESTS: To check for unseen adhesion-preventing factors (such as hydrophobic (water repellent, oily contamination); and high or low pH), perform pH and water-break tests.

3.02 PREPARATION OF SURFACES

- A. All surfaces to be encapsulated should be properly prepared so that all are clean, stable and dry at the time of application.
- B. ACM should be sufficiently intact and free of deterioration such that the barrier formed by the cured encapsulant is stable. RE: Stabilization - refer to the descriptions of penetrating encapsulation, as well as in encapsulation matrix in the following section. REMINDER – Not all ACM surfaces can be encapsulated.
- C. GENERAL CLEANING: Typical Recommended Practices (consider adjustments for every project)



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- . Initial general preparation is typically to HEPA-vacuum all surfaces. HEPA-vacuum may be the only step required for clean areas of the project.
- A. The second step in preparation, and only if necessary, is a damp, very-low moisture cleaning treatment by wiping with clean rags/towels and minimal moisture and detergent.¹²
- b. Avoid the following preparation methods:¹³
 - I. blowing with compressed/pressurized air,
 - II. pressure washing,
 - III. “shop vac” or other suction cleaning without filtration capable of capturing ACM fibers & particulate matter,
 - IV. Washing or other wet cleaning using more than slight amounts of topical moisture.

3.03 APPLICATION

C. VERIFICATION OF CONDITIONS AT APPLICATION START

- a. Apply encapsulant only after the surface has been examined, assessed, prepared, cleaned, and dried
- b. Installer is responsible for daily verification of jobsite environmental conditions when application is to commence. This quality control check should be documented.

D. PREPARATION AND UTILIZATION OF PENETRATING ENCAPSULANT

a. GENERAL INFORMATION RE: PENETRATING ENCAPSULATION

- i. A penetrating encapsulant will solidify unstable ACM into something that can be encapsulate. Penetrating Encapsulants provide ACM stabilization, that typically a lockdown or bridging encapsulant cannot supply.

b. PREPARATION AND UTILIZATION (The following section follows the instructions for use for the BPE product listed in the Basis of Design).

- i. Dilute only with clean, potable, ambient temperature water.
 - 1. Dilution ratio will be project specific, however the following dilutions are common:



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- a. 1:1 (1 part coating + 1 part water)
- b. 2:1 (2 parts water + 1 part coating)
- c. 3:1 (3 parts coating + 1 part water)

c. PENETRATING ENCAPSULATION - APPLICATION

- i. Penetrating encapsulations should not soak through all the way to the substrate.
- ii. Typical Application of Penetrating Encapsulation:
 1. Apply mixed penetrating encapsulant solution to the ACM by airless sprayer (or roller) until surface is visibly saturated.
 2. Multiple passes will be required. Full saturation is achieved when the ACM will not absorb any more of the encapsulant.
 3. Apply bridging encapsulant ideally when penetrating encapsulation has developed a slight tack to the touch by fingertip.

E. BRIDGING ENCAPSULATION - COVERAGE (aka SPREAD RATE, YIELD) for all (unless otherwise noted) BRIDGING ENCAPSULANTS for ACM, Asbestos Abatement

a. BRIDGING ENCAPSULATION: Dry-Film Thickness for Each Specific Project:

- i. Successful encapsulation is a contiguous film.
- ii. The dry film thickness will vary. All parties should determine and agree to the necessary dry film thickness.
- iii. Specifications, RFPs, Bid Proposals and Solicitations for encapsulation projects should clearly denote the:
 1. Gallons/Liters to be applied
 2. Wet film thickness of each application
 3. Dry film thickness of each application
 4. Coverage Rate per Gallon or Liter
 5. Volume Solids % of the encapsulation product in submittals

b. THICKNESS OF ASBESTOS ENCAPSULATION (per EPA)¹⁴

- i. Asbestos Encapsulation coatings shall not be applied at a dry film thickness of less than 100 sq. ft./ gallon.¹⁵
- ii. At these coverage rates, using Part 2 as Basis of Design:
 1. Wet Film Thickness (WFT): 15-16 mils (381-406µm).
 2. Dry Film Thickness (DFT): 6 mils (152µm).
 - a. Note that corrugation will seem to reduce coverage.



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- b. Overage from the product used as the basis of design is typically about 5% for brush or roller applications, and a minimum of 10% for applications via airless spray.
- c. Encapsulation overage, especially projects with narrow surface facings, can be 20-40%.¹⁶

F. Application of Bridging Encapsulation:

- a. For most ACM surfaces, apply bridging encapsulant at full strength to ACM by airless sprayer.
 - i. Adjust spray settings such that encapsulant coating is delivered to the surface with sufficient velocity to wet the ACM (overcome surface tension, if any), and create a contiguous film without high or low spots exposed.
 - ii. Other tools/methods: brush/roller (asbestos-containing paint), painter's mitt (TSI, Thermal Systems Insulation, pipe lagging, wrap), putty knife (window glazing), or squeegee (horizontal, floor surfaces).¹⁷



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G. APPLICATION – QUICK REFERENCE TABLE for TYPE of ACM SUBSTRATE

- a. This table includes examples of encapsulation on different types of ACM (using the BPE product as Basis of Design). This list is not definitive. Refer to the [Compendium](#) version of this document on Sentinel's website for valuable detailed guidance for project design, bidding, and applicator training.

ACM Material Type	Preparation, Applications	Consider
Acoustic Soundproofing, Unpainted Texture Finishes	HEPA clean min. Penetrating: 1:1 or 2:1 ¹⁸ Bridging Encapsulation (BPE): 1-2	<ul style="list-style-type: none"> • "Pull Test"¹⁹ • Corrugated (or Fluted, Cellular) will increase bridging required • Wet wiping will be difficult because inherently unstable friable matrix may come apart.
Cementitious Construction Board	HEPA clean min Penetrating: 1:1 Enhance adhesion for aging, chalking, spalling, deterioration Bridging Encapsulation (BPE): 1-2 Spray and backroll	<ul style="list-style-type: none"> • Ideal for cement asbestos sheet, millboard, hardiplank, galbestos, some sloped roofs. • Stain and rust -inhibiting primers may be required • Hard cementitious ACM can be wet cleaned (washed) using controlled and compliant processes.
Fireproofing, Lower Density inc "Cotton-Candy"	HEPA clean safely Penetrating: 2:1 or 3:1 (water to BPE) ²⁰ Bridging Encapsulation (BPE): 1-2	<ul style="list-style-type: none"> • "Pull Test"²¹ • Corrugated (or Fluted, Cellular) will increase bridging required • Wet wiping will be difficult
Fireproofing, Medium to High Density	HEPA clean min. Penetrating: 1:1 or 2:1 or even less water ²² Bridging Encapsulation (BPE): 1-2	<ul style="list-style-type: none"> • "Pull Test" is important but may not be practical for the cement-like, higher density fireproofing products. • Corrugated (or Fluted, Cellular) will increase bridging required
Floors, Floor Underlayments	After removal of tile and/or residual mastic, spread BPE over floor area, and let cure. Then install	<ul style="list-style-type: none"> • BPE can be used in the context of an interim control program, but cured encapsulant will need to be protected from impacts and traffic. • Monitoring and repair shall be required for use as



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	<p>manufacturer recommended impact-resistant protective finish, or new rigid/resilient flooring</p>	<p>an interim control</p> <ul style="list-style-type: none"> Do not attempt to encapsulate floor mastic without first removing as much as possible. Solvent-based mastics are known to present compatibility concerns including peeling, wicking and other failures of water-based encapsulant applications. Consult encapsulant manufacturer before proceeding
HVAC	<p>On external surfaces of HVAC system, use replacement lagging material if applicable and follow instructions for TSI.</p>	<ul style="list-style-type: none"> Airstream surfaces inside HVAC: Sentinel BPE meets NFPA 90A and 90B 25/50 requirements²³
<p>Painted Asbestos (i.e., Painted Soundproofing, Texture/ "Popcorn" Ceiling, Painted Stucco & Plaster,) and asbestos-containing paint</p>	<p>HEPA Clean and remove loose and flaking. Provide clean, dry, sound, and where needed, deglossed surfaces.</p> <p>Penetrating: N/A SBP (Stain-Blocking Primer) or DTM (Direct-To-Metal) primers should be considered.</p> <p>Bridging Encapsulation (BPE): 1-2</p>	<ul style="list-style-type: none"> In pre-1978 structures, determine if lead-based paint is also present, and use lead-safe work practices (EPA RRP) accordingly
Radiological Fixative	<p>BPE can be used in five central phases of radioactive D&D projects: Pre-Work Stabilization, Knockdown, Decommissioning Treatments, Pulldown, Transit</p>	<ul style="list-style-type: none"> Radioactivity or radionuclide fixatives are specialized polymer coatings used to "fix" material to surfaces Ability to dilute or use full strength is key. Contact manufacturer for more information.
SFRM (Sprayed Fire Resistive Materials)	<p>Including several formulations of Grace/GCP Monokote, Retro-Guard, Cafco, Blaze-Shield – Contact manufacturer for more information.</p>	<ul style="list-style-type: none"> See Fireproofing



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Silica, Reduction of particulate "shedding"	Follow BPE instructions for low or medium high-density fireproofing	<ul style="list-style-type: none"> Used as "encapsulation" treatment to prevent silica particulates in new construction. Applied identical to BPE onto dust-prone cementitious fireproofing
Soil Encapsulation	<p>Penetrating: 10-40 sq. ft./gallon. Penetrating mixture will not involve much water in this application.</p> <p>Bridging: 1-3+ Variability factors are numerous – difficult to estimate.</p>	<ul style="list-style-type: none"> Only certain situations are suitable. Indoor applications, primarily in crawlspaces where there is no traffic, or seldom entry (e.g., annual maintenance personnel). For hard packed soils, the dilution rate may need to be increased to improve penetration. High sand or gravel content (very porous), may require more penetrating product per square foot, or multiple applications. Contact manufacturer.
Thermal Systems Insulation	<p>Patch ends and deep voids. Penetrating: not typically. New lagging acts as preparation.</p> <p>Bridging: 1-2</p> <p>Using stub paint brush or painters/palm mitt, apply BPE encapsulant until evenly applied around entire circumference of TSI. Coating film should extend continuously over all seams and ridges.</p>	<ul style="list-style-type: none"> High solids, viscosity and sag resistance are preferable in order to build film with minimum drippage, even on underside. To estimate the surface area of a pipe without the ends, use the formula: Surface Area = $2\pi rh$ where "r" is the radius of the pipe and "h" is the length of the pipe. You need to know the radius (half of the diameter) of the pipe and its length to use this formula.
Window Glazing	<p>Remove and replace failed glazing</p> <p>Using paint edger and small brush or thin putty knife, apply BPE</p>	<ul style="list-style-type: none"> Spread 2 coats to achieve DFT of 6-10 mils min

H. APPLICATION METHODS AND EQUIPMENT

- a. This subsection provides additional information to complement application guidance provided elsewhere in this specification.



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- b. Airless Spray: Encapsulants can be successfully applied with most major brands of airless spray equipment. Consult with manufacturer for spray instructions. Settings are included below as an example.
 - i. Spray Settings for Encapsulant listed in Section 2 Basis of Design (Using Titan Impact 440X Sprayer fitted with an RX-80 3600 PSI Spray Gun with a low pressure HEA TR1 517 tip.):
 1. Recommended High-Pressure Tip Size: .017
 2. Recommended P.S.I.: 2500 - 3000 P.S.I.
 3. Recommended Low-Pressure Tip Size: .017
 4. Recommended P.S.I.: 1200 - 1500 P.S.I.

3.04 POST APPLICATION (SITE CLEANING, PROTECTION)

- A. All products in this specification are best cleaned up while still wet (up to 2 hours) with a mixture of warm water and mild soap or detergent.
- B. Remove debris promptly from work area and dispose of it properly.
- C. Remove cured encapsulant using Sentinel 206 Peroxystrip Paint & Coatings Remover.

3.05 FINISH SCHEDULE

- A. Decorative & Protective Topcoats: use water based paints, preferably 100% acrylics with a high binder content to topcoat the BPE encapsulant cured film.
- B. Product will accept full range of gloss from flat to high gloss.
- C. For protective coatings (e.g. against abrasion), avoid if possible products with harsh solvents that could soften or delaminate BPE.
- D. To apply a topcoat over an eggshell paint finish, but it's important to lightly sand the surface first to ensure proper adhesion; a water-based polyurethane or a clear varnish are common choices for topcoats over eggshell paint.

3.06 WARRANTY

- A. Due to the variable nature of asbestos containing materials (ACM), any warranty must be determined on a project-specific basis, and owner should not have any expectation of warranty from installer or manufacturer without analysis and consensus prior to bid solicitation.
- B. Unpaid invoices void all warranties.



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- C. Seller makes no warranty, expressed or implied, nor accepts any responsibility for any direct or consequential damages beyond the purchase price because seller cannot control users handling and use, or any consequential effect of that use.

END OF SECTION

- The effective encapsulation of any abatement project is contingent upon the competence of the applicator.
- If encapsulated surfaces are damaged, repair and re-encapsulate immediately to prevent exposure to potential hazards. HUD, EPA and state governments recommend periodic and/or annual examination of all encapsulated surfaces for damage.
- This specification does not fully describe all the limitations, warnings and precautions related to the products described herein.
- Reference should be made to the Technical Product Data Sheets, in conjunction with Product Labels, for complete technical information on all products manufactured by Sentinel. Technical Bulletins may also be available.
- Safety Data Sheets (SDS) should be referred to for health and safety information. SDS sheets can be obtained by visiting our website at <https://www.senpro.com/technical-resources/safety-data-sheets/>

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END NOTES FROM WITHIN SPECIFICATION TEXT:

¹ See BPE Compendium type specification for our most complete detail document, including a more exhaustive citation of the construction specifications that this document can interface with easily, can inform “boilerplate” spec frameworks, and /or building project workplans that this manufacturer (Sentinel) has prior experience.

² This specification is in U.S. English. Partial translations may be available. Please contact your Sentinel representative for more information.

³ ACM (Asbestos-Containing Materials)

⁴ From which fibers cannot become airborne, nor are fibers generated by incidental physical contact. Whether a penetrating pre-treatment is necessary will be reviewed in Part 3 – Execution.

⁵ State of Minnesota

⁶ This specification has been prepared for projects governed by the laws of the United States; however, the content is broadly applicable worldwide. Projects encapsulated in Canada, Australia, NZ and the UK will be able to use this document with minor adjustments. Contact Sentinel’s technical team for more information at:

Sentinel Products, Inc., 8901 Wyoming Ave. N., Brooklyn Park, MN 55445

PHONE: 763-571-0630

EMAIL: getinfo@senpro.com



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- ⁷ [EPA Guidance for Controlling Asbestos-Containing Materials in Buildings](#)
- ⁸ [Asbestos Encapsulation. 2014. Restoration & Remediation Magazine. Stanton, Cole](#)
- ⁹ Contact Sentinel for project-specific integration assistance with public sector specifications.
- ¹⁰ See table in Section 3 (on page 25) for more information regarding mastic applications
- ¹¹ Contact Sentinel for more information on how to properly perform a pull test.
- ¹² Consideration for wet cleaning. Where extensive soot (industrial smoke, automobile-diesel residue) is present wiping media may be premoistened with a mild alkaline detergent solution or [Sentinel 317 Multi-Purpose Cleaner & Degreaser](#).
- ¹³ Avoid the following preparation methods unless authorized by the project's MIPs (including possibly local code enforcement), and installer is provided with written authorization (variance).
- ¹⁴ The 100 sq. ft. / gallon is in accord with EPA publications. In the EPA's Guidance for Controlling Asbestos-Containing Materials in Buildings, the primary instruction regarding dry film thickness states that when encapsulating ACM, the coating is to be applied "*considerably thicker than recommended for painting*" and at no more than 100 sq. Ft./gallon.
- ¹⁵ Thicker application is acceptable.
- ¹⁶ ACM is often found on beams and pillars as fireproofing to thermally protect those structural elements from rapid collapse in the fire event. Even the most skilled airless spray applicators will "lose" product due to "blow-by". Switching to a smaller fan size, and use of a paint edger board can reduce overage Reducing overage is also known as improving Transfer Efficiency. Two websites (neither affiliated with Sentinel) that offer more detailed discussion of overage/wastage/transfer efficiency are [Increase Transfer Efficiency in Your Paint Finishing Process \(chreed.com\)](#) and [Paint Coverage Rates Demystified: Your Expert Guide \(horizonpainting.ca\)](#).
- ¹⁷ Contact Sentinel for technical guidance re: when BPE has a role in the interim control or in-place management of ACM Floor situations.
- ¹⁸ A penetrating encapsulant is a surface preparation technique, not abatement of ACM. A lockdown encapsulant is not to be used as a penetrating encapsulant.
- ¹⁹ ASTM E 736 *Cohesion/Adhesion of Sprayed Fire-Resistive Materials*
- ²⁰ A penetrating encapsulant is a surface preparation technique, not abatement of ACM. A lockdown encapsulant is not to be used as a penetrating encapsulant. See 3.03 for details.
- ²¹ ASTM E 736 *Cohesion/Adhesion of Sprayed Fire-Resistive Materials*
- ²² A penetrating encapsulant is a surface preparation technique, not abatement of ACM. A lockdown encapsulant is not to be used as a penetrating encapsulant.
- ²³ Testing required by IBC (International Building Code) for use inside HVAC