



VIPER[®] CS

CRAWL SPACE VAPOR BARRIERS



VIPER CS

CRAWL SPACE VAPOR BARRIER

VERSION 20.0

CRAWL SPACE VAPOR BARRIER

DIVISION
070000

PRODUCT NAME

Viper® CS 6.5-mil Crawl Space Vapor Barrier

MANUFACTURER

ISI BUILDING PRODUCTS
401 Truck Haven Road
East Peoria, IL 61611
866.698.6562 / www.isibp.com

PRODUCT DESCRIPTION

BASIC USE

Viper CS 6.5-mil is a high performance crawl space vapor barrier designed to prevent moisture migration from the soil into the crawl space. Viper CS 6.5-mil helps guard against mold, mildew, allergens, fungus, radon gas, methane gas, heat loss due to damp insulation, wood rot and overall degradation of the crawl space.

COMPOSITION & MATERIALS

Viper CS 6.5-mil is a white, triple-ply, extrusion-coated, virgin polyethylene membrane. Viper CS 6.5-mil is manufactured using woven high-density fibers yielding the highest strength to weight ratio, tensile strength and puncture resistance of any product of its kind.

SIZE

Standard Sizes: 12' x 100'

WEIGHT

Approximately 25 lbs per 1,000 ft²

TECHNICAL DATA

APPLICABLE STANDARDS

ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

ASTM E 154 Standard Test Methods for Water Vapor Retarders used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

ASTM D 1709 Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method

ASTM D 5602 Standard Test Methods for Static Puncture Resistance of Roofing/Under-Slab Membrane Specimens

ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials

ASTM D 882 Standard Test Method for Tensile Properties of Thin Plastic Sheeting

ASTM D 751 Standard Test Method for Coated Fabrics

ASTM E 1643 Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

ASTM D 6241 Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

ASTM E 84-21 Standard Test Method for Surface Burning Characteristics of Building Materials

ENVIRONMENTAL CONSIDERATIONS

Viper CS 6.5-mil can aid in reducing soil gas and poisons, such as methane and radon.

PHYSICAL PROPERTIES

Viper CS 6.5-mil exceeds all ASTM E 1745 Class A, B and C requirements for under-slab vapor retarders.

INSTALLATION

PLACEMENT

If sump pump is present or is to be installed, slightly slope grade in the direction of the sump pit to allow for proper drainage. Tamp or roll subbase or granular base.

Unroll Viper CS 6.5-mil in correlation with the longest dimension of the crawl space area. Unfold to twelve-foot width.

Install Viper CS 6.5-mil by means of Viper Double Bond Tape, mechanical fasteners, termination bar and/or high-grade construction adhesive to the upper portion of the block/concrete wall. Leave at least a three-inch gap from the sill to the top of the Viper CS 6.5-mil for future termite inspection. Seal top edge of Viper CS 6.5-mil with urethane caulk.

Holes or openings through Viper CS 6.5-mil should be effectively sealed with all-weather Viper Vapor Tape, Viper VaporPatch and/or Viper VaporCheck Mastic to maintain the integrity of the vapor barrier. Overlap joints a minimum of six inches. Seal overlap together with all-weather Viper Vapor Tape.

PROTECTION

Proper care should be taken when installing Viper CS 6.5-mil. Carelessness during installation can damage even the most puncture resistant vapor retarders.

Viper CS 6.5-mil will help guard against possible punctures and tears present from rigorous construction traffic.

Avoid driving stakes through Viper CS 6.5-mil. If this cannot be avoided, each individual hole must be repaired.

These are very general installation instructions. Instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions can be obtained by calling our corporate office at 866.698.6562 or online at www.isibp.com.

WARRANTY

Warranty information can be obtained by calling the manufacturer at 866.698.6562 or visiting www.isibp.com.

MAINTENANCE

Requires no maintenance once installed.

TECHNICAL SERVICES

Technical information and detailed test results can be obtained by calling the manufacturer at 866.698.6562.

FILING SYSTEMS

Additional information can be obtained by calling the manufacturer at 866.698.6562 or visiting www.isibp.com.

PROPERTIES TEST PROCEDURE (INDEPENDENT TEST FACILITY)	TEST METHOD APPLICABLE STANDARDS	RESULTS IP UNITS
THICKNESS (NOMINAL)	N/A	6.5-mil
WEIGHT (PER MSF)	N/A	25 lbs
CLASSIFICATION	ASTM E 1745	CLASS A, B, C
TENSILE STRENGTH (NEW MATERIAL)	ASTM E 154 SEC. 9	69 lbf/in (MD), 68 lbf/in (TD)
TENSILE STRENGTH (AFTER SOAKING)	ASTM E 154 SEC. 9	69 lbf/in (MD), 73 lbf/in (TD)
TEAR STRENGTH	ASTM D 751 (TONGUE)	35 lbs (WARP), 30 lbs (WEFT)
* GRAB TENSILE	ASTM D 751	117 lbf (DIRECTIONAL AVERAGE)
BURSTING STRENGTH	ASTM D 751 (MULLEN)	210 lbs
PUNCTURE RESISTANCE (MAX WEIGHT SUSTAINED)	ASTM D 1709	8,825 grams
PUNCTURE RESISTANCE	ASTM D 5602	60 lbs
CBR PUNCTURE	ASTM D 6241	255 lbf
MAXIMUM USE TEMPERATURE	N/A	180°F
MINIMUM USE TEMPERATURE	N/A	-70°F
FLAME SPREAD/SMOKE DEVELOPED	ASTM E 84 - 21	CLASS A
WATER VAPOR PERMEANCE	ASTM E 96 / 154 SEC. 7	.0095 perms .0035 grains/ft ² *HR

*Tests are an average of machines and transverse directions

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AN AFFILIATE OF MEYER ENTERPRISES, LLC
401 TRUCK HAVEN ROAD, EAST PEORIA, IL 61611
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Crawl Space Vapor Barrier Comparison

Viper CS 6.5-mil

vs

String Reinforced 8-mil



255 LBF

Puncture Resistance
ASTM D6241



240 LBF



117 LBF

Tear Resistance
ASTM D7004



84 LBF

34% Lighter



25 lbs/MSF

Weight

12' x 100' Roll



38 lbs/MSF



.0095 Perms

Permeance Rating
ASTM E96



.037 Perms



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PRODUCT NAME

Viper• CS 10-mil Crawl Space Vapor Barrier

MANUFACTURER

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401 Truck Haven Road
East Peoria, IL 61611
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PRODUCT DESCRIPTION

BASIC USE

Viper CS 10-mil is a high performance crawl space vapor barrier designed to prevent moisture migration from the soil into the crawl space. Viper CS 10 mil helps guard against mold, mildew, allergens, fungus, radon gas, methane gas, heat loss due to damp insulation, wood rot and overall degradation of the crawl space.

COMPOSITION & MATERIALS

Viper CS 10-mil white, triple-ply, extrusion coated, virgin polyethylene membrane. Viper CS 10-mil is manufactured using woven high-density fibers yielding the highest strength to weight ratio, tensile strength and puncture resistance of any product of its kind.

SIZE

Standard Sizes: 12' x 100', 4' x 200'

WEIGHT

Approximately 36 lbs per 1,000 ft²

TECHNICAL DATA

APPLICABLE STANDARDS

ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

ASTM E 154 Standard Test Methods for Water Vapor Retarders used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

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ASTM D 5602 Standard Test Methods for Static Puncture Resistance of Roofing/Under-Slab Membrane Specimens

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ASTM D 882 Standard Test Method for Tensile Properties of Thin Plastic Sheeting

ASTM D 751 Standard Test Method for Coated Fabrics

ASTM E 1643 Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

ASTM D 6241 Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

ASTM E 84-21 Standard Test Method for Surface Burning Characteristics of Building Materials

ENVIRONMENTAL CONSIDERATIONS

Viper CS 10-mil can aid in reducing soil gas and poisons, such as methane and radon.

PHYSICAL PROPERTIES

Viper CS 10-mil exceeds all ASTM E 1745 Class A, B and C requirements for under-slab vapor retarders.

INSTALLATION

PLACEMENT

If sump pump is present or is to be installed, slightly slope grade in the direction of the sump pit to allow for proper drainage. Tamp or roll subbase or granular base.

Unroll Viper CS 10-mil in correlation with the longest dimension of the crawl space area. Unfold to twelve-foot width.

Install Viper CS 10-mil by means of Viper Double Bond Tape, mechanical fasteners, termination bar and/or high-grade construction adhesive to the upper portion of the block/concrete wall. Leave at least a three-inch gap from the sill to the top of the Viper CS 10-mil for future termite inspection. Seal top edge of Viper CS 10-mil with urethane caulk.

Holes or openings through Viper CS 10-mil should be effectively sealed with all-weather Viper Vapor Tape, Viper VaporPatch and/or Viper VaporCheck Mastic to maintain the integrity of the vapor barrier. Overlap joints a minimum of six inches. Seal overlap together with all-weather Viper Vapor Tape.

PROTECTION

Proper care should be taken when installing Viper CS 10-mil. Carelessness during installation can damage even the most puncture resistant vapor retarders.

Viper CS 10-mil will help guard against possible punctures and tears present from rigorous construction traffic.

Avoid driving stakes through Viper CS 10-mil. If this cannot be avoided, each individual hole must be repaired.

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WARRANTY

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MAINTENANCE

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TECHNICAL SERVICES

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FILING SYSTEMS

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PROPERTIES TEST PROCEDURE (INDEPENDENT TEST FACILITY)	TEST METHOD APPLICABLE STANDARDS	RESULTS IP UNITS
THICKNESS (NOMINAL)	N/A	10-mil
WEIGHT (PER MSF)	N/A	36 lbs
CLASSIFICATION	ASTM E 1745	CLASS A, B, C
TENSILE STRENGTH (NEW MATERIAL)	ASTM E 154 SEC. 9	136 lbf/in (MD), 134 lbf/in (TD)
TENSILE STRENGTH (AFTER SOAKING)	ASTM E 154 SEC. 9	140 lbf/in (MD), 133 lbf/in (TD)
TEAR STRENGTH	ASTM D 751 (TONGUE)	54 lbs (WARP), 57 lbs (WEFT)
* GRAB TENSILE	ASTM D 751	138 lbf (DIRECTIONAL AVERAGE)
BURSTING STRENGTH	ASTM D 751 (MULLEN)	210 lbs
PUNCTURE RESISTANCE (MAX WEIGHT SUSTAINED)	ASTM D 1709	15,839 grams
PUNCTURE RESISTANCE	ASTM D 5602	76 lbs
CBR PUNCTURE	ASTM D 6241	626 lbf
MAXIMUM USE TEMPERATURE	N/A	180°F
MINIMUM USE TEMPERATURE	N/A	-70°F
FLAME SPREAD/SMOKE DEVELOPED	ASTM E 84 - 21	CLASS A
WATER VAPOR PERMEANCE WATER VAPOR TRANSMISSION RATE	ASTM E 96 / 154 SEC. 7	.0016 perms .0006 grains/ft ² *HR
RADON DIFFUSION COEFFICIENT	K/124/02/95	11 x 10 ⁻¹² M ² /S

*Tests are an average of machines and transverse directions

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Crawl Space Vapor Barrier Comparison

Viper CS 10-mil

vs

String Reinforced 12-mil



Puncture Resistance
ASTM D6241



626 LBF

290 LBF



Tear Resistance
ASTM D7004



138 LBF

100 LBF

39% Lighter



Weight

12' x 100' Roll



36 lbs/MSF

59 lbs/MSF



.0016 Perms

Permeance Rating
ASTM E96



.023 Perms





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PRODUCT NAME

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PRODUCT DESCRIPTION

BASIC USE

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COMPOSITION & MATERIALS

Viper CS 16-mil white, triple-ply, extrusion coated, virgin polyethylene membrane. Viper CS 16-mil is manufactured using woven high-density fibers yielding the highest strength to weight ratio, tensile strength and puncture resistance of any product of its kind.

SIZE

Standard Sizes: 12' x 100'

WEIGHT

Approximately 47 lbs per 1,000 ft²

TECHNICAL DATA

APPLICABLE STANDARDS

ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

ASTM E 154 Standard Test Methods for Water Vapor Retarders used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

ASTM D 1709 Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method

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ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials

ASTM D 882 Standard Test Method for Tensile Properties of Thin Plastic Sheeting

ASTM D 751 Standard Test Method for Coated Fabrics

ASTM E 1643 Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

ASTM D 6241 Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

ASTM E 84-21 Standard Test Method for Surface Burning Characteristics of Building Materials

ENVIRONMENTAL CONSIDERATIONS

Viper CS 16-mil can aid in reducing soil gas and poisons, such as methane and radon.

PHYSICAL PROPERTIES

Viper CS 16-mil exceeds all ASTM E 1745 Class A, B and C requirements for under-slab vapor retarders.

INSTALLATION

PLACEMENT

If sump pump is present or is to be installed, slightly slope grade in the direction of the sump pit to allow for proper drainage. Tamp or roll subbase or granular base.

Unroll Viper CS 16-mil in correlation with the longest dimension of the crawl space area. Unfold to twelve-foot width.

Install Viper CS 16-mil by means of Viper Double Bond Tape, mechanical fasteners, termination bar and/or high-grade construction adhesive to the upper portion of the block/concrete wall. Leave at least a three-inch gap from the sill to the top of the Viper CS 16-mil for future termite inspection. Seal top edge of Viper CS 16-mil with urethane caulk.

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PROTECTION

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WARRANTY

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MAINTENANCE

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TECHNICAL SERVICES

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FILING SYSTEMS

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PROPERTIES TEST PROCEDURE (INDEPENDENT TEST FACILITY)	TEST METHOD APPLICABLE STANDARDS	RESULTS IP UNITS
THICKNESS (NOMINAL)	N/A	16-mil
WEIGHT (PER MSF)	N/A	47 lbs
CLASSIFICATION	ASTM E 1745	CLASS A, B, C
TENSILE STRENGTH (NEW MATERIAL)	ASTM E 154 SEC. 9	167 lbf/in (MD), 158 lbf/in (TD)
TENSILE STRENGTH (AFTER SOAKING)	ASTM E 154 SEC. 9	165 lbf/in (MD), 163 lbf/in (TD)
TEAR STRENGTH	ASTM D 751 (TONGUE)	62 lbs (WARP), 60 lbs (WEFT)
* GRAB TENSILE	ASTM D 751	242 lbf (DIRECTIONAL AVERAGE)
BURSTING STRENGTH	ASTM D 751 (MULLEN)	371 lbs
PUNCTURE RESISTANCE (MAX WEIGHT SUSTAINED)	ASTM D 1709	25,335 grams
PUNCTURE RESISTANCE	ASTM D 5602	123 lbs
CBR PUNCTURE	ASTM D 6241	594 lbf
MAXIMUM USE TEMPERATURE	N/A	180°F
MINIMUM USE TEMPERATURE	N/A	-70°F
FLAME SPREAD/SMOKE DEVELOPED	ASTM E 84 - 21	CLASS A
WATER VAPOR PERMEANCE WATER VAPOR TRANSMISSION RATE	ASTM E 96 / 154 SEC. 7	.0015 perms .00055 grains/ft ² *HR

*Tests are an average of machines and transverse directions

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Crawl Space Vapor Barrier Comparison

Viper CS 16-mil

vs

String Reinforced 20-mil



594 LBF

Puncture Resistance
ASTM D6241



340 LBF



242 LBF

Tear Resistance
ASTM D7004



140 LBF

51% Lighter



47 lbs/MSF

Weight

12' x 100' Roll



97 lbs/MSF



.0015 Perms

Permeance Rating
ASTM E96



.019 Perms



VIPER CS

CRAWL SPACE VAPOR BARRIERS



BEFORE



AFTER



BEFORE



AFTER



BEFORE



AFTER



VIPER[®] CS

UNRIVALED MOISTURE PROTECTION • SUPERIOR PUNCTURE & TEAR RESISTANCE • STRONGER CRAWL SPACE VAPOR BARRIER

CRAWL SPACE LINER COMPARISON

	TEST METHOD	8-MIL STRING REINFORCED	VIPER CS 6.5	12-MIL STRING REINFORCED	VIPER CS 10	20-MIL STRING REINFORCED	VIPER CS 16
THICKNESS	N/A	8-MIL	6.5-MIL	12-MIL	10-MIL	20-MIL	16-MIL
ROLL SIZE	N/A	12' x 100'	12' x 100'	12' x 100'	12' x 100'	12' x 100'	12' x 100'
WEIGHT	N/A	38 LBS/MSF	25 LBS/MSF	59 LBS/MSF	36 LBS/MSF	97 LBS/MSF	47 LBS/MSF
TEAR RESISTANCE	ASTM D7004	84 LBF	117 LBF	100 LBF	138 LBF	140 LBF	242 LBF
PUNCTURE STRENGTH	ASTM D6241	240 LBF	255 LBF	290 LBF	626 LBF	340 LBF	594 LBF
PERM RATING	ASTM E96	.037 PERMS	.0095 PERMS	.023 PERMS	.0016 PERMS	.019 PERMS	.0015 PERMS