MANUFACTURING SPECIFICATION	Colorbestos Sidewall Shingles	SPEC NO.	423-2.23
		PAGE NO.	1 of 1

Dover White - Cedargrain Texture, All Styles

CANCELLED

Formulas: "D" Type

	Formula No.	1	2	3	4	5	6	7
	6D20 Fibre *	300	300	300	300	300	300	300
X PS 1061	Type I Std. Portland Cement	470	470	470	470	470	470	470
PS 1281	J-M Spec. Silica Flour	300	300	300	300	300	300	300
	Shingle Scrap (Note 1)	500	475	450	425	400	375	350
	Minimum Batch Weight	1570	1545	1520	1495	1470	1445	1420
	Other Scraps (Note 2)	100	125	150	175	200	225	250

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to two parts of steam cured.

From 0 to 100# of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Greystone and Trancite Pipe Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: (a) Wet Machine Scrap, Corrugated Transite Scrap or Transite Pipe Scrap may be added to the formulas above up to the amounts shown.

(b) Up to 75# of material from the Dust Collectors and/or 75# of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas at any time. Violent shifts should not be made.

XX

PLAINTIFF'S EXHIBIT JM-2425

RETURN TO J-M RES... FILE !

Pld. In U.S.A.

Form 333-2

X — INDICATES CHANGE — REASON: X - Show correct nomenclature & add P.S. numbers
XX- Remove reference to GRAY-2403

AUTHORITY FOR CHANGE: X - Current Purch. Specs.
XX- L. L. Liggett's ltr. 10-9-57

SUPERSEDES: Page 1 of 423-2.[illegible] dtd. 6-30-56

MT-000207

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. ENG.	RES. & DEV.	Ind. Eng.	Insp. Supv.	Lab.	Foreman	DATE ISSUED	NOV 5 1959

MANUFACTURING SPECIFICATION	Colorbestos Sidewall Shingles Dover White, Cedargrain - All Styles	SPEC NO.	423-2.24
		PAGE NO.	1 of 1

Formulas: "B" Type

CANCELLED

	Formula No.	1	2	3	4
	6D20 Fibre	300	300	300	300
P.S. 1061	Type I Std. Portland Cement	501	501	501	501
P.S. 1281	J-M Spec. Silica Flour	333	333	333	333
	Shingle Scrap (Note 1, 2)	450	425	400	375
	Minimum Batch Weight	1584	1559	1534	1509
	Other Scrap (Note 3)	100	125	150	175

X

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to 2 parts steam cured.

From 0 to 100 lbs. of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Graystone and Transite Pipe Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: At Waukegan Plant, when Fiberizer is in operation, an additional 100# of Shingle Scrap may be added to the formulas above.

Note 3: (a) Wet Machine Scrap, Corrugated Transite or Transite Pipe Scrap may be added to the formulas above up to amounts shown.

(b) Up to 75# of material from the Dust Collectors and/or 75# of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas.

XX

RETURN TO J-M RE... FILE ...

X— INDICATES CHANGE	—REASON:	X - Show correct nomenclature & add P.S. numbers XX - Remove reference to 6DAX-2498 Fibre.
AUTHORITY FOR CHANGE		X - Current Purch. Specs. XX - L. L. Liggett's letter of 10-9-57

SUPERSEDES: Page 1 of 423-2.14 dated 6-30-58

MT-000175

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. ENG.	RES. & DEV.	Ind. Eng.	Insp. Supv.	Lab Foreman	DATE ISSUED
									NOV 5 1959

Form 333-2 Ptd. in U.S.A.

MANUFACTURING SPECIFICATION	Colonial Sidewall Shingles Cedar White, Cedargrain - Mill Styles	SPEC NO.	423-2.2A
		PAGE NO.	1 of 1.

Formulas: "B" Type

CANCELLED

	Formula No.	1	2	3	4
	6D20 Fibre	300	300	300	300
X P.S. 1061	Type I Std. Portland Cement	452	452	452	452
	J-M Bulk Silica Flour	382	382	382	382
	Shingle Scrap (Note 1, 2)	450	425	400	375
	Minimum Batch Weight	1584	1559	1534	1509
	Other Scrap (Note 3)	100	125	150	175

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to 2 parts steam cured.

From 0 to 100 lbs. of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Graystone and Transite Pipe Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: At Waukegan Plant, when Fiberizer is in operation, an additional 100# of Shingle Scrap may be added to the formulas above.

Note 3: (a) Wet Machine Scrap, Corrugated Transite or Transite Pipe Scrap may be added to the formulas above up to amounts shown.

(b) Up to 75# of material from the Dust Collectors and/or 75# of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas.

RETURN TO J-M RESEARCH FILE ROOM

MT-000174

Pat. In U.S.A.

Form 333-2

X— INDICATES CHANGE —REASON: X-Show Silica to Cement ratio 0.85
1X-Show use of bulk Silica Flour

AUTHORITY FOR CHANGE: X-PP-Res-423-86; Prod. Info. Chg. 041-34-60 enacted 10-24-60
1X-Correction

SUPERSEDES: Page 1 of same spec. issued 11-5-59

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. MGR.	Tech. Lab.	Prod. Chg.	Insp. Supv.	Lab Foreman	DATE ISSUED
									10-26-60

MANUFACTURING SPECIFICATION	Colorbestos Sidewall Shingles	SPEC NO.	423-2.23
		PAGE NO.	1 of 1

Dover White - Cedargrain Texture, All Styles CANCELLED

Formulas: "D" Type

		Formula No.	1	2	3	4	5	6	7
		6D20 Fibre *	300	300	300	300	300	300	300
X	PS 1061	Type I Std. Portland Cement	415	415	415	415	415	415	415
X		J-M Bulk Silica Flour	355	355	355	355	355	355	355
		Shingle Scrap (Note 1)	500	475	450	425	400	375	350
		Minimum Batch Weight	1570	1545	1520	1495	1470	1445	1420
		Other Scraps (Note 2)	100	125	150	175	200	225	250

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to two parts of steam cured.

From 0 to 100% of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Greystone and Transite Pipe Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: (a) Wet Machine Scrap, Corrugated Transite Scrap or Transite Pipe Scrap may be added to the formulas above up to the amounts shown.

(b) Up to 75% of material from the Dust Collectors and/or 75% of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas at any time. Violent shifts should not be made.

RETURN TO J-M RESEARCH FILE ROOM

X— INDICATES CHANGE —REASON X-Show Silica to Cement ratio 0.85
1X-Show bulk Silica Flour

AUTHORITY FOR CHANGE X-PP-Res 423-86; Prod. Line Chg. 041-34-60 enacted 10-24-60
1X-Correction

SUPERSEDES: Page 1 of same spec. Issued 11-5-59

MT-000206

10-26-60

Form 333-2 Printed in U.S.A.

Johns Manville MANUFACTURING SPECIFICATION	Dover White Sidewall Shingles New Colorbestos Process	Manville EP	
		SPEC NO.	RS-F-5
		PAGE NO.	1

PRODUCTS:

Dover White - Cedargrain, #105 and #109 Styles

BASE FORMULAS:

CANCELLED

"D" Type

	Formula No.	1	2	3	4	5	6	7
	6D20 Fibre	300#	300#	300#	300#	300#	300#	300#
X	Portland Cement	415	415	415	415	415	415	415
X	Silica Flour (Note A)	355	355	355	355	355	355	355
	Shingle Scrap (Note 1)	500	475	450	425	400	375	350
	Minimum Batch Weight	1570#	1545#	1520#	1495#	1470#	1445#	1420#
	Other Scraps (Note 2)	100	125	150	175	200	225	250

Note A: Use "I" Bldg. Silica Flour when available.

Note 1: From 0 to 100 lb. of the Shingle Scrap may be replaced within the scope of basic formulas by any one of the following approved Mineral Fillers: Mastic Sand, Limestone Dust, Limestone Aggregate, Ground Trap Rock or Mill Fines, Graystone, Reclaimed Granules, Rock Wool Shot or Transite Pipe Scrap ground to small size.

Note 2: (a) Wet Machine Scrap, Corrugated Transite Scrap, or Transite Pipe Scrap (large size) may be added to the formulas above up to the amounts shown.

(b) Up to 75 lb. of material from the Dust Collectors and/or 75 lb. of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas at any time. Violent shifts should not be made.

Note 3: 6D20 Fibre is considered to be standard. 6D28 Fibres may be substituted for 6D20 Fibre in whole or in part on a pound for pound basis. Munro 6 Grade Fibre may also be substituted in proportions up to 1/3 of the total fibre content of the base mix.

MT-000185

X— INDICATES CHANGE —REASON:	Increase Silica-Cement Ratio to .85	RETURN TO
AUTHORITY FOR CHANGE	Product Proposal Research 423-86	J-M RESEARCH
SUPERSEDES:	Page 1 of same Spec. Issued 2/19/59	FILE ROOM

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. FIN.	RES. LAB.	Ind. Eng.			DATE ISSUED 10/27/60

Form 333-2 Pd. in U.S.A.

MANUFACTURING SPECIFICATION	Colonnade Fibrewall Shingles	SPEC NO.	423-2.25
		PAGE NO.	1 of 1

Dover White - Cedargrain Texture, All Styles

by 423-2.21 pv

Formulas: "W" Type

Formula No.	1	2	3	4	5	6	7
6D20 Fibre	300	300	300	300	300	300	300
X Type II Std. Portland Cement	415	415	415	415	415	415	415
J-M Bulk Silica Flour	355	355	355	355	355	355	355
Shingle Scrap (Note 1)	500	475	450	425	400	375	350
Minimum Batch Weight	1570	1545	1520	1495	1470	1445	1420
Other Scraps (Note 2)	100	125	150	175	200	225	250

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to two parts of steam cured.

From 0 to 100% of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Greystone and Granite Pips Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: (a) Wet Machine Scrap, Corrugated Granite Scrap or Granite Pips Scrap may be added to the formulas shown up to the amounts shown.

(b) Up to 75% of material from the Dust Collectors and/or 75% of Machine Drop from the saws or other machines producing similar scrap may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas at any time. Violent shifts should not be made.

MT-000205

X — INDICATES CHANGE	REASON: Show Type IX Cement
AUTHORITY FOR CHANGE	Liggett's letter 11-10-60; Enact. Bulletin 11-15-60
SUPERSEDES:	Page 1 of Same Spec. issued 10-26-60

RETURN TO J-M RESEARCH FILE ROOM

O.K.	INIT.	CONT.	LOG.	ENG.	DATE: 11-17-60

Form 233-2 Rd. in U.S.A.

MANUFACTURING SPECIFICATION	Colorbestos Sidewall Shingles Dover White, Cedargrain - All Styles	SPEC NO.	423-2.24
		PAGE NO.	1 of 1

Formulas: "B" Type

423-2.21

Formula No.	1	2	3	4
6D20 Fibre	300	300	300	300
X Type II Std. Portland Cement	452	452	452	452
J-M Bulk Silica Flour	382	382	382	382
Shingle Scrap (Note 1, 2)	450	425	400	375
Minimum Batch Weight	1584	1559	1534	1509
Other Scrap (Note 3)	100	125	150	175

Note 1: (a) Shingle Scrap should be blended 1 part normal cured to 2 parts steam cured.

From 0 to 100 lbs. of the Shingle Scrap may be replaced by any of the following approved Mineral Fillers: Mastic Filler, Limestone Dust, Limestone Aggregate, Ground Trap Rock, Graystone and Transite Pipe Scrap and Rock Wool Shot.

(b) Rock Wool Shot must be introduced at the Shingle Scrap grinders and must be evenly distributed throughout the scrap.

Note 2: At Waukegan Plant, when Fiberizer is in operation, an additional 100# of Shingle Scrap may be added to the formulas above.

Note 3: (a) Wet Machine Scrap, Corrugated Transite or Transite Pipe Scrap may be added to the formulas above up to amounts shown.

(b) Up to 75# of material from the Dust Collectors and/or 75# of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas.

MT-000173

X— INDICATES CHANGE —REASON Show Type II Cement

AUTHORITY FOR CHANGE Liggett's letter 11-10-60; Enact. Bulletin 11-15-60

SUPERSEDES: Page 1 of same spec. issued 10-26-60

RETURN TO J-M RESEARCH FILE ROOM

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. FIN.	FES. LAB.	Ind. Eng.	Insp. Supv.	Lab Foreman	DATE ISSUED	11-17-60

Form 333-2 Ptd. In U.S.A.

Johns-Manville MANUFACTURING SPECIFICATION	PRODUCT: Colorbestos Sidewall Shingles Dover White	PLANT & DIV.	Asbestos B.P.
		SPEC NO.	~~RS-S-1~~ 423:1 ✓
		PAGE NO.	1 on 3

Dover White Sidewall Shingles - #109 (Straight butt) only.

I. FORMULA:

1. Base Mix - See Spec. RS - 2
2. Silicone Water Repellant Solution - See Spec. RS - 6

II. INSTRUCTIONS FOR GRAIN ROLL MACHINE OPERATIONS:

1. Apply warm water (130-160° F) to the machine belt, together with a light coating of sand to prevent sticking of stock to the belt.
2. Drop mixed stock on to the moving belt, adjusting the picker roll so that the weight of 15 slabs at the take-off will weigh 56 lbs. (± 2 lbs).
3. Pass stock under magnet, then through series of perforated rolls and the smooth forming roll (gauge at 20 psi).
4. Apply sufficient warm water from water boxes to properly wet the stock.
5. Pass the wetted stock through smooth press rolls immediately before slitting and cutting the stock to slabs.

FORMULA: DOVER WHITE VENEER:

P. S. No.	Ingredients	Batch	%
-	7F04 Asbestos Fiber	140#	6.8
CA 1001	White Portland Cement	525	25.4
63386	#10 Dry Ground Whiting	770	37.3
CA 1281	J.M. Special Silica Flour	420	20.3
CA 3126	Titanox "A" - 168	70	3.4
CA 1272	80 Mesh Sand	140	6.8
		2065 lbs.	100.0%

RETURN TO J-M RESEARCH FILE ROOM

Veneer Mixing Instructions:

Add materials in the order shown to the top mixer of the veneer mixing system and mix for 15 - 20 minutes.
Drop the batch into bottom mixer and feed continuously through the Rietz Disintegrator, from which point the mixed veneer is screw-conveyed to the feed elevator above the Selectro Screen.

6. Apply the veneer (as above) to slabs, adjusting the rate of feed through the Selectro Screen so that a uniform coverage of between 22.5 to 24.3 lb per 100 sq. ft. of base sheet area will result.
For control purposes this will be between 7-1/4 to 7-3/4 ozs per 2 sq. ft.

MT-000188

Pd. in U.S.A.

Form 333-2

X— INDICATES CHANGE	—REASON: All Smoothgrain Type Shingles and #105 Type obsoleted.
AUTHORITY FOR CHANGE	Tel. - G.A.H. to H.C.L. of 11/7/60.
SUPERSEDES:	Page 1 (3/13/57) & Page 2 (6/17/59) of Spec. RS-S-1 (Cedargrain Design)

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. FIN.	RES. LAB. ✓	I.E.	Dept	G.P.L.	DATE ISSUED	January 20, 1961

Johns-Manville MANUFACTURING SPECIFICATION	Dover White Sidewall Shingles New Colorbestos Process	PLANT & DIV.	Manville BP
		SPEC NO.	RS-P-5
		PAGE NO.	1

PRODUCTS: Dover White - Cedargrain, #105 and #109 Styles

BASE FORMULAS: "D" Type

Formula No.	1	2	3	4	5	6	7	8
X 7R06 Fibre	--	--	--	--	--	--	--	300#
6D20 Fibre	300#	300#	300#	300#	300#	300#	300#	200
Portland Cement	415	415	415	415	415	415	415	464
Silica Flour-(Note A)	355	355	355	355	355	355	355	396
Shingle Scrap-(Note 1)	500	475	450	425	400	375	350	640
Minimum Batch Wt.	1570#	1545#	1520#	1495#	1470#	1445#	1420#	2000#
Other Scrap (Note 2)	100	125	150	175	200	225	250	

Note A: Use "I" Bldg. Silica Flour when available

Note 1: From 0 to 100 lb. of the Shingle Scrap may be replaced within the scope of basic formulas by any one of the following approved Mineral Fillers: Mastic Sand, Limestone Dust, Limestone Aggregate, Ground Trap Rock or Mill Fines, Graystone, Reclaimed Granules, Rock Wool Shot or Transite Pipe Scrap ground to small size.

Note 2: (a) Wet Machine Scrap, Corrugated Transite Scrap, or Transite Pipe Scrap (large size) may be added to the formulas above up to the amounts shown.

(b) Up to 75 lb. of material from the Dust Collectors and/or 75 lb. of Machine Drop from the same or other machines producing similar stock may be added to the above formulas.

Caution: The use of scrap should be planned so that it will not be necessary to shift more than two successive formulas at any time. Violent shifts should not be made.

Note 3: 6D20 Fibre is considered to be standard. 6D28 Fibres may be substituted for 6D20 Fibre in whole or in part on a pound for pound basis. Munro 6 Grade Fibre may also be substituted in proportions up to 1/3 of the total fibre content of the base mix.

MT-000184

RETURN TO J-M RESEARCH FILE ROOM #139

X— INDICATES CHANGE —REASON: Show formula with 7R06 Fibre Substitution

AUTHORITY FOR CHANGE: L. L. Liggett's letter to W. F. Fischer 5/16/61 also Bulletin

SUPERSEDES: Page 1 of same Spec. issued 10/27/60

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. FIN.	RES. LAB.	Ind. Eng.			DATE ISSUED 6/9/61

Form 333-2 Ptd. in U.S.A.

Johns-Manville MANUFACTURING SPECIFICATION	PRODUCT: Colorbestos Sidewall Shingles Dover White	PLANT & DIV.	Asbestos B.P.
		SPEC NO.	423.1 (3)
		PAGE NO.	1 on 3

Dover White Sidewall Shingles - #109 (Straight butt) - Standard.
#105 (Wavy Butt) - When specially ordered.

I. FORMULA:

1. Base Mix - See Spec. 423 (RS-2)
2. Silicone Water Repellent Solution - See Spec. 423.0 (RS-6)

II. GENERAL INSTRUCTIONS FOR MACHINE OPERATION:

1. Apply warm water (130-160° F) to the machine belt, together with a light coating of sand to prevent sticking of stock to the belt.
2. Drop mixed stock on to the moving belt, adjusting the picker roll so that the weight of 15 slabs at the take-off will weigh 56 lbs. (± 2 lbs).
3. Pass stock under magnet, then through series of perforated rolls and the smooth forming roll (Gauge pressure of the smooth roll at 2 - 5 psi).
4. Apply sufficient warm water from the water boxes to properly wet th stock.
5. Pass the dampened stock through the smooth press roll immediately before slitting and cutting the stock to slabs.

FORMULA: DOVER WHITE VENEER:

P. S. No.	Ingredients	Batch	%
-	7F04 Asbestos Fiber	140 lbs.	6.8
CA 1001	White Portland Cement	525	25.4
63386	#10 Dry Ground Whiting	770	37.3
CA 1281	JM. Special Silica Flour	420	20.3
CA 3126	Titanox "A" - 168	70	3.4
CA 1272	80 mesh sand	140	6.8
		2065 lbs.	100.0%

RETURN TO J-M RESEARCH FILE ROOM

X NOTE: The above veneer is used on Permatone "Shasta White" and "Sunglo", and on Rock Shake "SnoWhite" and "Jonquil", with the exception that 7F05 fiber is substituted for the 7F04.

Veneer Mixing Instructions:

Add materials in the order shown to the top mixer of the veneer mixing system and mix for 15 - 20 minutes. Drop the batch into the bottom mixer and feed continuously through the Rietz disintegrator, from which point the mixed veneer is screw-conveyed to the feed elevator above the Selectro Screen.

7. Adjust the rate of feed through the Selectro screen so that a uniform coverage of between 22.5 to 24.3 per 100 sq. ft. of base sheet will result. For control purposes this will be between 7-1/4 to 7-3/4 ozs. per 2 sq. ft.

MT-000187

Pld. in U.S.A.

X— INDICATES CHANGE	—REASON: X. To show veneer used on Permatone & Rock Shake light colours.
AUTHORITY FOR CHANGE	X. Plant Management (On Rigid Shingle Developments)
SUPERSEDES:	Page #1 dated 1/20/[illegible], and Deviation Notice #542 dated January 14, 1963

DIR. Q.C.	MGR. Q.C.	SUPR. Q.C.	PROD. SUPT.	PLNT. FIN.	[illegible] Dept.	I.E.	G.P.L.	DATE ISSUED	January 24, 1963

Form 333-2

COPY FORM	INITIALS	DATE
		12/3/2000

BOX NUMBER	SEGMENT NO.	REQUESTING PARTY
P-458		Baron & Budd

NOTES