PM
2-25-87
Pensacola, FL

Armstrong

DER
FEB 26 1987
BAQM

File Copy

February 24, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED - RECEIPT NO. 113899

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

This letter is in response to your questions of January 7, 1987 concerning our Application for Permit No. AC 17-128287.

1. Documentation of the stated 1.3% paint overspray comes from tests done at our Macon, Georgia plant on a similar paint spray application. This test measured total hourly paint flow to the spray guns and the amount of paint deposited on the spray booth filter. The amount collected on the filters was determined to be 1.2% of the total weight sprayed. We selected 1.3% for this new application.

   The 1.5 oz. of dust emission per 6'x4' board is a conservative estimate. Feeder stack particulate testing on similar equipment at our Marietta, Pennsylvania plant resulted in a 0.4 oz/board maximum emission measurement.

   The 0.0123 cu.ft./sq.ft. particulate emission rate for Crossgate board was derived by calculating the difference in volumes of a non-machined blank and a finished machined board. This difference was divided by the finished surface area. Enclosed are selected pages from our sales catalog which depict the deeply scored panels of Crossgate; for comparison purposes we have also included pictures depicting the more subtle patterns in the Minaboard product line.

2. The emission factor or rate for the feeder/machining cell was based on weight removed per square foot of surface area of a nominal 6'x4' blank board. The 5' dimension was used for the feeder because it is the maximum width we can process. The 2' width was used in the machining cell calculation because the product selected represents the highest possible source of emissions (i.e., highest dust loading).

3. The No. 4 and No. 5 paint lines have been in operation during the past five years. Enclosed as part of this submission are the annual production rates, maximum hourly rates, and emission rates for these operations.

While reviewing the previously submitted data, an error was discovered in Appendix C; Emission Calculations, first page, items I.A.2. and I.B. The 50 fpm used for generating Crossgate dust load to the baghouse should have been 50 pieces per minute of 2'x2' board or 100 fpm equivalent line speed. This oversight doubles the input dust load to the baghouse from the machining cell and affects several calculations on the first page of Appendix C; a new revised page is attached. The increase in the baghouse inlet loading concentration from 2.98 to 5.75 gr/scf is still in the low to moderate range of dust loading according to a recent discussion with baghouse manufacturers, and the assumed discharge concentration of 0.015 gr/scf is still achievable. Thus, the baghouse operating efficiency calculation shows a slight increase to 99.7%.

If you have any questions concerning this, please contact me at (904) 435-2252, or Howard McCabe at (717) 396-5487.

Very truly yours,

Peter A. Scaccia

Peter A. Scaccia, P.E.
Plant Engineering Manager

VMS

Enclosures

3. The No. 4 and No. 5 paint lines have been in operation during the past five years. Enclosed as part of this submission are the annual production rates, maximum hourly rates, and emission rates for these operations.

While reviewing the previously submitted data, an error was discovered in Appendix C; Emission Calculations, first page, items I.A.2. and I.B. The 50 fpm used for generating Crossgate dust load to the baghouse should have been 50 pieces per minute of 2'x2' board or 100 fpm equivalent line speed. This oversight doubles the input dust load to the baghouse from the machining cell and affects several calculations on the first page of Appendix C; a new revised page is attached. The increase in the baghouse inlet loading concentration from 2.98 to 5.75 gr/scf is still in the low to moderate range of dust loading according to a recent discussion with baghouse manufacturers, and the assumed discharge concentration of 0.015 gr/scf is still achievable. Thus, the baghouse operating efficiency calculation shows a slight increase to 99.7%.

If you have any questions concerning this, please contact me at (904) 435-2252, or Howard McCabe at (717) 396-5487.

Very truly yours,

Peter A. Scaccia

Peter A. Scaccia, P.E.
Plant Engineering Manager

VMS

Enclosures

FMS Process Line - Emission Calculations

I. Particulate Emissions from FMS Baghouse (Feeder/Machining Cell - Exhaust #74)

A. Input to baghouse:

1. Feeder

1.5 oz per 6´x 4´ board - assume all picked up by feeder

$1.5/(6x4) = 0.0625$ oz/ft^2 $= 0.003906$ lb/ft^2

Maximum emission case is with line speed = 100 fpm x 5 ft boards
= 500 ft^2/min

500 ft^2/min x 0.003906 lb/ft^2 x 60 = 117.2 lb/hr

2. Machining cell

Max dust generation (Crossgate product = 0.0123 ft^3 removed/ft^2 of board)

Density = 21.6 lb/ft^3

Crossgate - max 100 fpm x 2´ wide = 200 ft^2/min

Dust generated = 200 ft^2/min x 0.0123 ft^3/ft^2 x 60
= 147.6 ft^3/hr generated
= 147.6 ft^3/hr x 21.6 lb/ft^3 = 3,188.2 lb/hr

3. Total input to baghouse

117.2 + 3,188.2 lb/hr = 3,305.4 lb/hr

B. Baghouse emissions:

Grain loading method: 67,000 acfm @ 0.015 gr/acf

67,000 ft^3/min x 60 min/hr x 0.015 gr/ft^3 x lb/7,000 gr
= 8.61 lb/hr

Annual Emissions: 8.61 lb/hr x 8,064 hr/yr x ton/2,000 lb
= 34.72 tons/yr

Minimum baghouse efficiency = (3,305.4 - 8.61)/3,305.4 = 99.7%

ACTUAL ANNUAL PRODUCTION

Year	#4 Paint Line	#5 Paint Line	Total
1982	54500	8800	63300
1983	56000	9200	65200
1984	59200	9400	68600
1985	54000	9400	63400
1986	55200	13800	69000
Maximum Hourly Production Rate	14	6	
Actual Emissions	1.47 lb/hr	0.002 lb/hr	

Note: All figures above represent thousands of square feet of surface area except where noted.

2-24-87
Armstrong
response

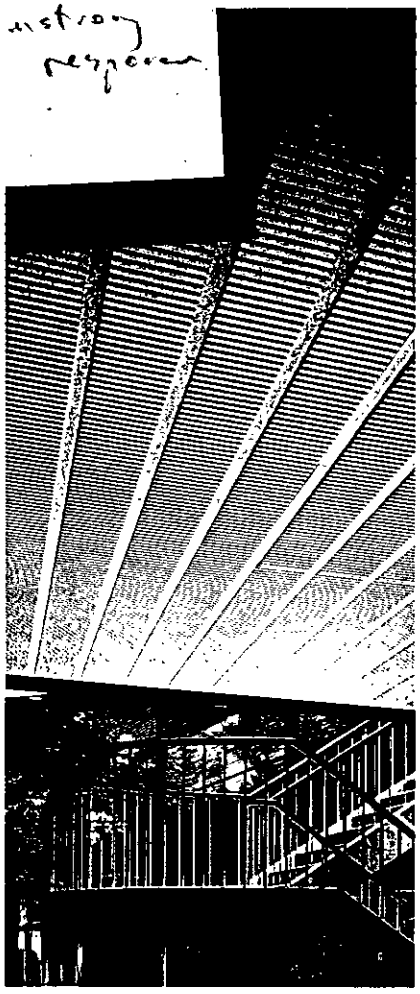
CROSSGATE†

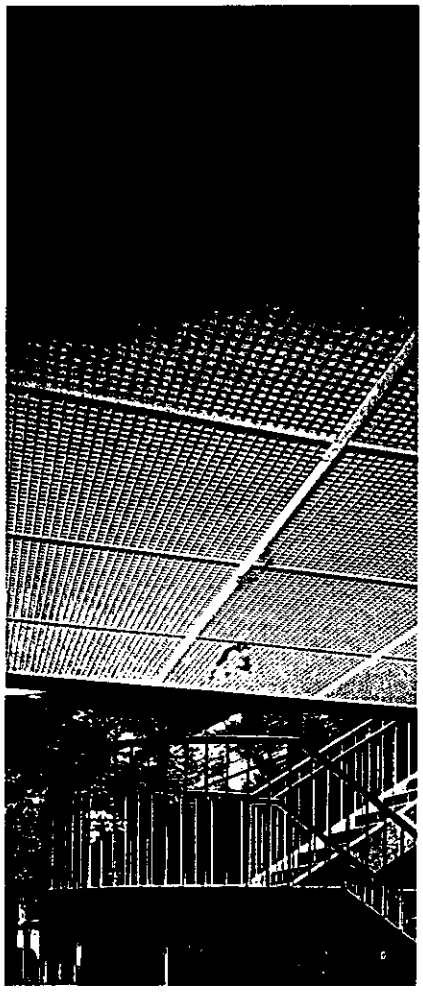
Rarely have designs be
bold, so dramatically diffe
from other commercial ce
The Crossgate Ceiling Collection adds emphasis to the most innovative design statements, combining deeply scored visuals with contemporary colors and acoustical efficiency.

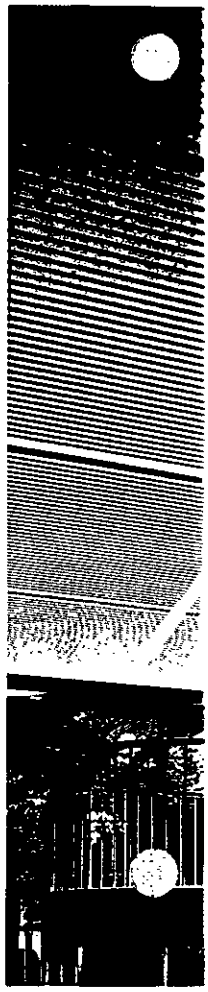
Our new patterns, Corrugated Crossgate (scored) and Corrugated Crossgate (unscored) provide two contemporary interpretations of the original Crossgate visual.

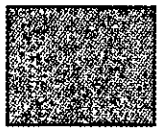
The original Crossgate design continues to spark the imagination of architects and designers with its distinctive award-winning cross-etched linear look. Crossgate-Linear and Crossgate-Grid are exciting refinements of this unique ceiling. Both are tegular-edged for increased dimensional effect. Crossgate-Linear offers a finely grooved linear look, while Crossgate-Grid projects small squares for a gracefully powerful visual.

Crossgate-Supratex adds a subtle texture to the original Crossgate design. Compatibility with Suprafine grid further enhances the sleek linear visual.



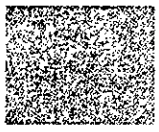




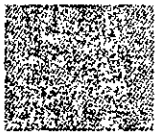


Adobe
2501 Crossgate
2515 Crossgate-Linear
2519 Crossgate-Grid
2540 Crossgate-Supratex
2530 Corrugated Crossgate (scored)
2534 Corrugated Crossgate (unscored)

Parchment
2502 Crossgate
2516 Crossgate-Linear
2520 Crossgate-Grid
2541 Crossgate-Supratex
2531 Corrugated Crossgate (scored)
2535 Corrugated Crossgate (unscored)

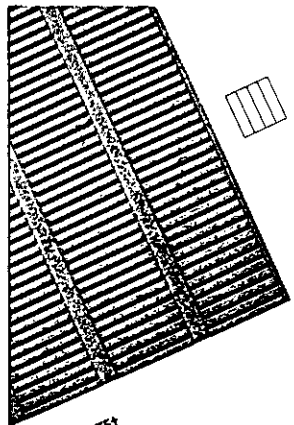


Tan
2503 Crossgate
2517 Crossgate-Linear
2521 Crossgate-Grid

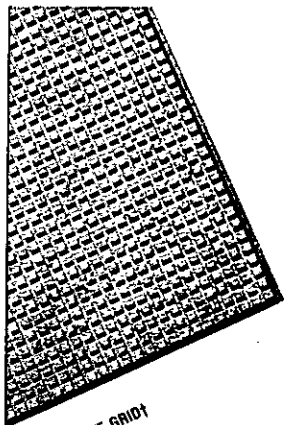


Platinum
2509 Crossgate
2523 Crossgate-Linear
2526 Crossgate-Grid
2542 Crossgate-Supratex
2533 Corrugated Crossgate (scored)
2537 Corrugated Crossgate (unscored)

Haze
2510 Crossgate
2524 Crossgate-Linear
2525 Crossgate-Grid
2543 Crossgate-Supratex
2532 Corrugated Crossgate (scored)
2536 Corrugated Crossgate (unscored)



CROSSGATE†
Item No.
2501 (Adobe) 24"x24"x3/4"
Tegular 2 Sides, K2C2
2502 (Parchment) 24"x24"x3/4"
Tegular 2 Sides, K2C2
2503 (Tan) 24"x24"x3/4"
Tegular 2 Sides, K2C2
2509 (Platinum) 24"x24"x3/4"
Tegular 2 Sides, K2C2
2510 (Haze) 24"x24"x3/4"
Tegular 2 Sides, K2C2
NRC Range—.50–.60
STC Range—35–39* (continuous ceiling)
Light Reflectance (available upon request)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



CROSSGATE-GRID†
Item No.
2519 (Adobe) 24"x24"x3/4"
Tegular Lay-in
2520 (Parchment) 24"x24"x3/4"
Tegular Lay-in
2521 (Tan) 24"x24"x3/4"
Tegular Lay-in
2526 (Platinum) 24"x24"x3/4"
Tegular Lay-in
2525 (Haze) 24"x24"x3/4"
Tegular Lay-in
NRC Range—.50–.60
STC Range—35–39* (continuous ceiling)
Light Reflectance (available upon request)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

General Data

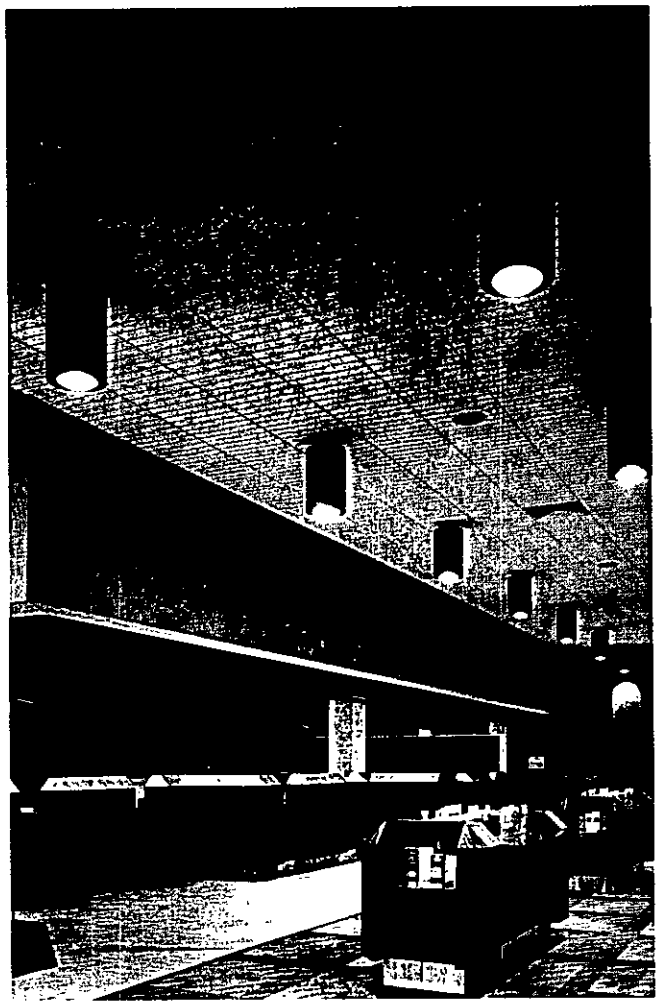
Insulation Value—
Average C factor (at 75 F) is .56. R factor is 1.8.

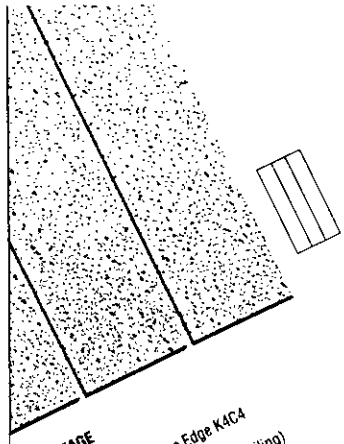
Surface Finish—
Factory-applied washable vinyl latex paint finish.

Color Palette

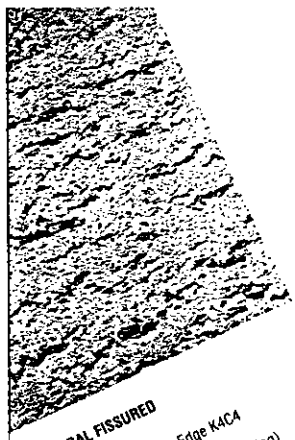
Color-coordinated with Armstrong Low-Gloss Grid and other available grid systems.

The Crossgate Collection is available in a palette of subtle neutral colors, color-coordinated with Armstrong Low-Gloss Grid.

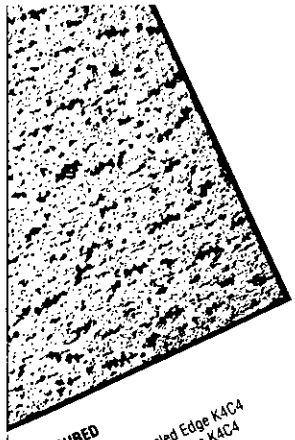




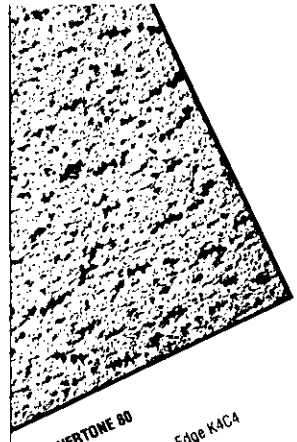
LINEAGE
Item No.
569 12"x24"x¾" Square Edge K4C4
NRC Range—.65–.75
STC Range—30–34* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



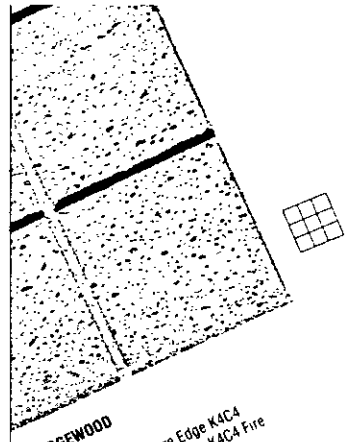
NATURAL FISSURED
Item No.
550 12"x12"x¾" Square Edge K4C4
NRC Range— .70–.80
STC Range—30–34* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



FISSURED
Item No.
552 12"x12"x¾" Beveled Edge K4C4
554 12"x12"x¾" Square Edge K4C4
564 12"x24"x¾" Square Edge K4C4
536A 24"x24"x¾" Lay-in
507A 24"x24"x¾" Tegular Lay-in
521 12"x12"x¾" Square Edge K4C4 Fire
Guard (UL Label)
537B 24"x24"x¾" Tegular Lay-in Fire
Guard (UL Label)
NRC Range— .60–.70
STC Range—30–34* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



TRAVERTONE 80
Item No.
553 12"x12"x¾" Square Edge K4C4
Fissured Design Overpunched
NRC Range—.75–.85
STC Range—25–29 (continuous ceiling)
(35–39 available with a reduction in NRC
to .75)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



RIDGEWOOD
Item No.
595 12"x12"x¾" Square Edge K4C4
596 12"x12"x¾" Square Edge K4C4 Fire
Guard (UL Label)
NRC Range—.65–.75
STC Range—30–34* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

*40–44 STC available

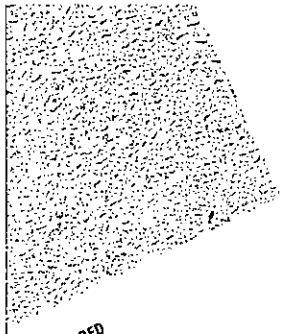
MINABOARD

Minaboard is an economical easy-to-install lay-in ceiling. It is made of acoustically efficient noncombustible mineral fiber. Minaboard panels are available in a variety of sizes and surface designs including the handsomely textured Designer Minaboard. All provide attractive ceilings for many commercial interiors.

General Data

Insulation Value—
Average C factor (at 75 F) is .63. R factor is 1.6.

Surface Finish—
Factory-applied washable white vinyl latex paint finish. Fissured, Classic, and Cortega are also available with a scrubbable vinyl-plastic finish.

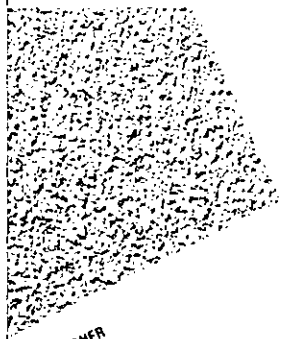


FISSURED
Item No.
756A 24"x24"x5/8" Lay-in
755B 24"x48"x5/8" Lay-in
762A 24"x60"x5/8" Lay-in
771 20"x60"x5/8" Lay-in
767B 24"x48"x5/8" Lay-in, Plastic Coating
NRC Range—50–60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

CLASSIC
Item No.
751A 24"x24"x5/8" Lay-in
758B 24"x48"x5/8" Lay-in, Plastic Coating
765B 24"x48"x5/8" Lay-in
NRC Range—50–60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

CORTEGA
Item No.
770 24"x24"x5/8" Lay-in
769A 24"x48"x5/8" Lay-in
772 24"x60"x5/8" Lay-in
773 20"x60"x5/8" Lay-in, Plastic Coating
761 24"x48"x5/8" Lay-in
NRC Range—50–60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

GEORGIAN
Item No.
764A 24"x24"x5/8" Lay-in
763B 24"x48"x5/8" Lay-in
NRC Range—50–60
STC Range—35–39 (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



DESIGNER
Item No.
734 24"x48"x5/8" Lay-in
735 24"x24"x5/8" Lay-in
NRC Range—50–60
STC Range—30–34**
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

*40–44 STC available
**35–39 STC available

MINATONE

Minatone is a versatile ceiling product appropriate for a wide variety of commercial interiors. It consists of a noncombustible mineral-fiber material in tile and tegular lay-in panel form. It is easy to install and features a large selection of attractive surface designs, sizes, thicknesses, and edge details.

New Designer Minatone provides a more upscale, textured option within the Minatone family.

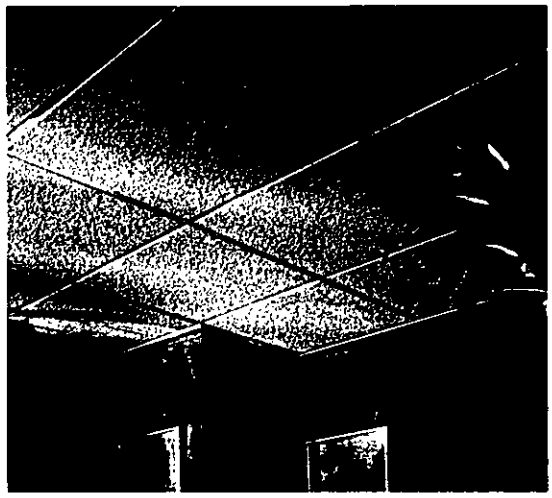
General Data

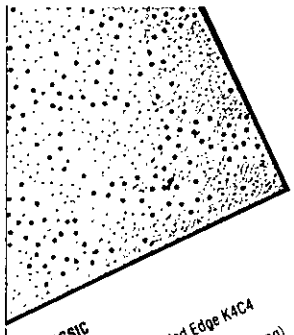
Insulation Value—

Average C factor (at 75 F) is .64. R factor is 1.6.

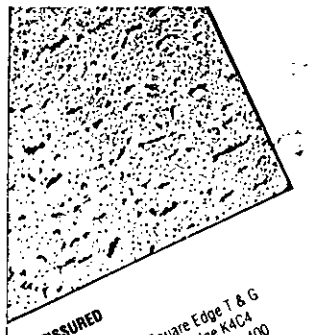
Surface Finish—

Factory-applied washable white latex paint finish. Also available with scrubbable vinyl-plastic finish on special-order basis.



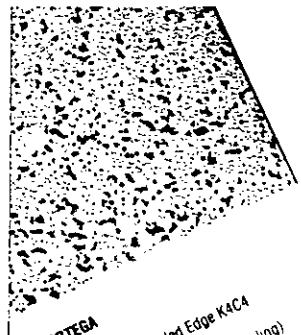


CLASSIC
Item No.
728B 12"x12"x⅝" Beveled Edge K4C4
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



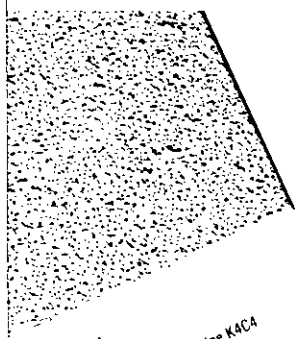
FISSURED
Item No.
715A 12"x12"x½" Square Edge T & G
744 12"x12"x⅝" Beveled Edge K4C4
NRC Range— 50– 60(⅝") Mtg. E-400
55– 65(½") Mtg. D-20
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)

705A 24"x24"x⅝" Tegular Lay-in
779A 24"x48"x⅝" Tegular Lay-in
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



CORTEGA
Item No.
745 12"x12"x⅝" Beveled Edge K4C4
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)

703 24"x48"x⅝" Tegular Lay-in
704A 24"x24"x⅝" Tegular Lay-in
2195 24"x24"x⅝" Tegular Lay-in
for Supraline grid
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)



GEORGIAN
Item No.
730B 12"x12"x⅝" Beveled Edge K4C4
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

DESIGNER
Item No.
737 24"x24"x⅝" Tegular Lay-in
NRC Range— 50– 60
STC Range—35–39* (continuous ceiling)
Light Reflectance LR-1 (75% or over)
Flame Spread
0–25 (ASTM E 84)
Class A (Fed. Spec. SS-S-118B)
25 or under (UL Label)

*40–44 STC available

Jill

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

January 7, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. D. Herr
Production Manager
Armstrong World Industries, Inc.
Post Office Box 1991
Pensacola, Florida 32589

Dear Mr. Herr:

The referred application (Permit No. AC 17-128287) has been received at the Bureau of Air Quality Management office in for processing.

The application has been determined incomplete. Processing of the application will resume when the questions below have answered.

1. Provide documentation for the stated 1.3% paint overspray rate, the 1.5 oz. per 6' x 4' board feeder emission rate and the 0.123 ft^3 per ft^2 of board crossgate product.

2. The emission calculations from the feeder/machining cell were based on board width of 5 feet and 2 feet respectively, while the emission factor was based on 6' x 4' board. Please explain.

3. Have the number 4 and 5 paint lines (which are being shut down) actually been in operation in the past five years? If so, what was the production capacity (i.e., actual annual production). What was the actual maximum hourly production rate during this time? What were actual emissions at that production rate?

If you have any questions, please write to me at the above address or call Maher Tanbouz, Review Engineer, at (904)488-1344.

Sincerely,

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/MT/s

cc: J. Preece

P 408 530 595

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. R. D. Herr	
Street and No.	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 1/7/87	

PS Form 3800, Feb. 1982