Experimental† Products

DESIGNED PRODUCTS DEPARTMENT

DOW*

Technical Data

COMPOSITE ROOFING

Dow Chemical has developed a new and unique process utilizing styrene/butadiene latex to make a highly filled roofing felt. This product is referred to as "composite roofing felt."

The composite technology provides a less energy consuming, nonhazardous process for producing roofing felt on conventional papermaking equipment.

Composite roofing felt is made using the following materials: (1) Dow latex, (2) recycled corrugated fiber or other suitable fiber, (3) filler, usually finely ground calcium carbonate, and (4) flocculant.

Each raw material has a specific roll to play in the composite roofing felt process.

Material	Purpose
Dow Latex	The latex agglomerates the fiber and filler and effects overall strength.
Fiber	This is the backbone of the system upon which the latex and filler agglomerate is flocculated. It determines much of the wet and dry felt strength, and asphalt pick-up.
Filler	Determines final properties of felt, such as density, cost, color, and aging.
Flocculant	Precipitates latex and helps form processable flocculant structure.

The composite roofing process involves preparing a dispersion of fiber in a pulper to a consistency usually from 4 to 8%. A predetermined amount of a filler, usually calcium carbonate, is added to the pulper in repulpable bags, or in bulk. The filler is easily wettable and disperses quickly into the fiber furnish. Latex in liquid form, usually at about 48% solids, is then added to the slurry in the pulper. This prepared furnish is then stored in the appropriate chests. As this furnish flows to the felt machine, either cylinder or fourdrinier, sufficient flocculant is added in-line to precipitate the latex and form the proper flocculated structure. This furnish then forms a paper that is handled in the conventional manner from the wet end, through the dryer, to the roll-up. After the felt process the paper is saturated with asphalt, and granules applied as conventional organic saturated roofing felt or shingles.

—†See reverse side

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PLAINTIFF'S EXHIBIT

BIR-742

BIRD 013859

†Note: If products are described as "experimental":
(1) quality specs may not be fully determined;
(2) analysis of hazards and caution in handling and use is required;
(3) Dow reserves the right to change specifications and/or discontinue production.

Copies of OSHA Form No. 20, or its equivalent, as well as other pertinent information relative to safe use and disposal, should be obtained for each component from the supplier thereof and the appropriate precautions followed to promote health safety. No expressed data on flammability, nor expressed results of small scale flammability tests, are to be considered indicative of behavior in actual fire situations.

Composite roofing will provide excellence in the following areas:

1.) Pliability - Because of the latex and antioxidant, the pliability of composite roofing exceeds that of other compositions in aging tests.

2.) Long-Term Aging - The use of calcium carbonate in the system keeps the product alkaline rather than acid, making the paper less brittle and extending aging. Fibers retain their strength better in an alkaline calcium carbonate system. The asphalt aging is improved in the same manner coating grade asphalt is improved with $CaCO_3$.

In roofing, callulose degrades; composite contains less cellulose therefore degrades less.

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TESTS CONDUCTED

1. Tensile Tests (both in machine direction and cross direction)*
   ASTM D828

   a. As received condition
   b. After 25 cycles ICBO modified aging cycle
   c. After 25 cycles Canadian standard aging cycle-CGSB-70-GP-1A
      Standard aging cycle CGSB-70-GP-1A

2. Water Resistance Tests ASTM D799

   a. As received condition
   b. Will be tested after 25 cycles of ICBO and Canadian Standard Aging

3. Moisture Vapor Transmission ASTM E96 Procedure A

   a. As received condition
   b. After 25 cycles ICBO Modified Aging Cycle
   c. After 25 cycles Canadian Standard Aging Cycle CGSB-70-GP-1A

4. Pliability Tests CGSB-70-GP-1A

   a. As received condition
   b. After 25 cycles Canadian Standard Aging Cycle ICBO Modified
      Aging Cycle
   c. After 25 cycles Canadian Standard Aging Cycle CGSB-70-GP-1A

5. % Elongation

   Elongation determinations calculated using a cross-head speed of
   1"/Min. and a chart speed of 5"/Min., 6" Jaw GAP 1" sample width:

   a. As received condition
   b. After 25 cycles ICBO modified aging cycle
   c. After 25 cycles Canadian standard aging cycle CGSB-70-GP-1A

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* Tensile test are recorded as the average of 3 breaks using a cross head speed of 1" min. and a chart speed of 5" Min., 6" jaw gap 3" X 1" strip, 100 lb. full scale load.

—†See reverse side

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SAMPLE IDENTIFICATION

1.	Johns Mansville Organic Saturated Felt	117.7 grams/ft^2 1266.9 grams/M^2 124.7 lbs/480 ft^2 26.1 lbs/100 ft^2
2.	Weathershield Organic Saturated Felt	122.6 grams/ft^2 1321.0 grams/M^2 130.0 lbs/480 ft^2 27.0 lbs/100 ft^2
3.	Flintkote Organic Saturated Felt	113.7 grams/ft^2 1223.0 grams/M^2 120.7 lbs/480 ft^2 25.1 lbs/100 ft^2
4.	Globe Organic Saturated Felt	119.4 grams/ft^2 1285.4 grams/M^2 126.6 lbs/480 ft^2 26.4 lbs/100 ft^2
5.	Roofing Paper — Composite (1) 25.0% fiber 68.5% filler 6.5% latex	57.6 grams/ft^2 620.0 grams/M^2 61.1 lbs/480 ft^2 12.7 lbs/100 ft^2
6.	Composite Roofing Paper (2) 36.0% fiber 60.0% filler 4.0% latex	90.1 grams/ft^2 968.8 grams/M^2 95.8 lbs/480 ft^2 21.1 lbs/100 ft^2
7.	Composite Roofing Paper (3) 36.0% fiber 60.0% filler 4.0% latex	90.5 grams/ft^2 974.2 grams/M^2 101.7 lbs/480 ft^2 21.2 lbs/480 ft^2
8.	Johns Mansville Asbestos Saturated Felt	60.6 grams/ft^2 653.3 grams/M^2 64.3 lbs/480 ft^2 13.4 lbs/100 ft^2
9.	*Nicolet Asbestos Unsaturated	56.8 grams/ft^2 611.4 grams/M^2 60.2 lbs/480 ft^2 12.5 lbs/100 ft^2
10.	*Evans Asphalt Coated Fiberglass	68.7 grams/ft^2 739.5 grams/M^2 72.8 lbs/480 ft^2 15.2 lbs/100 ft^2

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