United States Patent [19]

Shepherd

[11] **3,903,340**

[45] **Sept. 2, 1975**

[54] **SELF-SEALING ROOF SHINGLE AND METHOD OF PROVIDING ENHANCED SEPARATION OF SHINGLES FROM A STACK**

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[22] Filed: **Aug. 1, 1973**

[21] Appl. No.: **384,779**

[52] **U.S. Cl.** **428/77**; 52/420; 52/518; 156/289; 260/505; 427/208; 428/195; 428/343

[51] **Int. Cl.**[2] **B32B 4/02**; B32B 7/14; B32B 7/06; E04D 1/02

[58] **Field of Search** ..... 161/39, 167, 147; 117/68.5, 44, 4, 43; 260/505 C; 52/518, 420; 106/271; 156/289

[56] **References Cited**

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[57] **ABSTRACT**

A roof shingle of the self-sealing type which includes a self-sealing adhesive stripe on one surface is disclosed herein. The shingle also includes on its opposite surface, in alignment with the self-sealing adhesive stripe, an improved separating medium comprising sheet material, preferably polyester film, which is coated on its exposed surface with a predetermined amount of methyl naphthylene sodium sulfonate. When shingles of this type are positioned in an aligned stack or bundle, which is typical during shipment, the improved separating medium of one shingle covers the self-sealing adhesive stripe of an adjacent shingle for providing satisfactory separation of the shingles from the stack, especially at high ambient temperatures.

18 Claims, 3 Drawing Figures

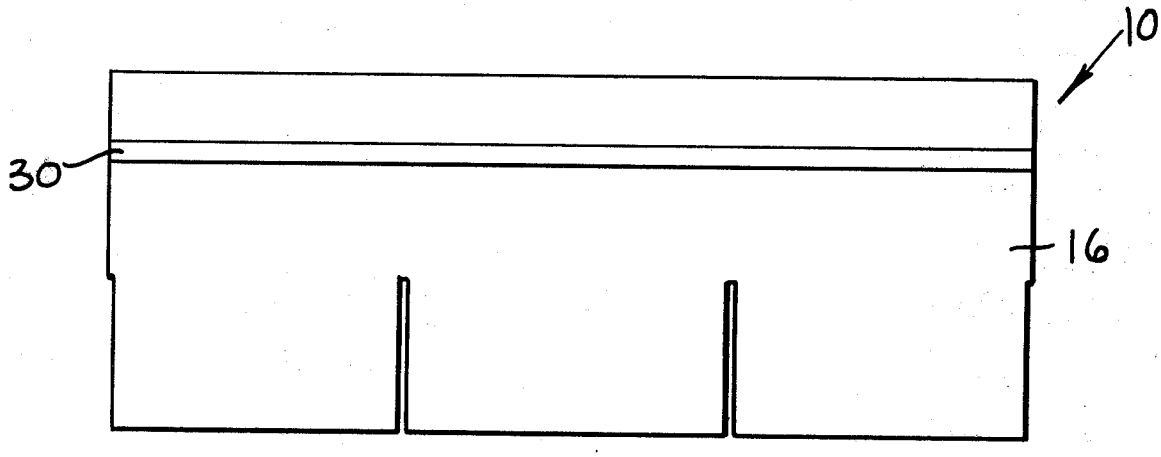


Fig. 1

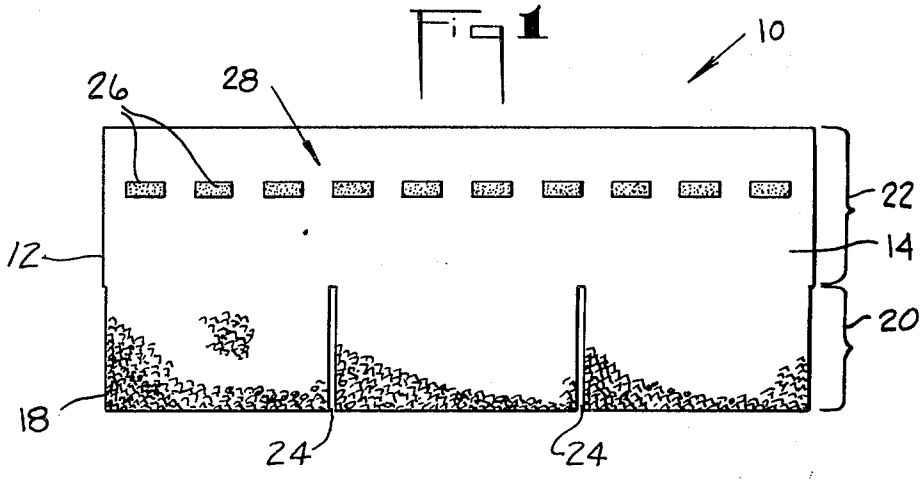


Fig. 2

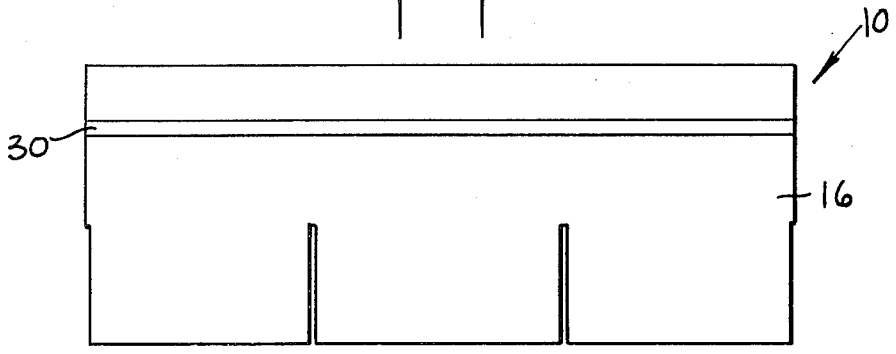
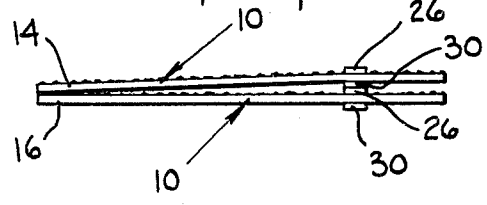


Fig. 3



SELF-SEALING ROOF SHINGLE AND METHOD OF PROVIDING ENHANCED SEPARATION OF SHINGLES FROM A STACK

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to self-sealing roof shingles and more particularly to an improved self-sealing roof shingle and method of providing enhanced separation of this type of shingle from an aligned stack.

2. Description of Prior Art

Today, the self-sealing roof shingle is of commercial significance in the roofing industry. As is well known, this type of shingle includes a resin adhesive self-sealing stripe in a predetermined location on one surface, i.e., usually the top surface, of the shingle. Hence, when shingles of this type are applied to a roof in typical overlapping relationship, the adhesive stripe on one shingle adheres to the surface of an adjacent shingle, especially in response to heated ambient surroundings and/or pressure, causing the shingles to seal together.

Typically, roof shingles including those of the self-sealing type are shipped to the field or job site in stacked bundles, i.e., with large numbers of the shingles aligned in a bundle. At the job site, these bundles are generally placed on the roofs to be covered and remain in bundle form throughout the roofing operation, the roofer taking one shingle at a time from the bundles.

A serious problem can result from shipping the self-sealing shingles in the aforedescribed bundles. Specifically, the self-sealing adhesive of one shingle tends to stick to the surface of an adjacent shingle. If the roofer goes to separate the shingles, some or all of the adhesive may be pulled off its associated shingle or the shingles may be inadvertently damaged in this process.

Many members of the roofing industry, recognizing the aforegoing problem, have called for the positioning of a separating medium of, for example, untreated polyester film between adjacent shingles in the bundle. The separating medium is preferably permanently attached to the shingle, usually on its back or underside surface. This method may allow for suitable separation of the shingles from their respective bundles without damaging the self-sealing adhesive or shingles themselves, if the bundles are only exposed to relatively low ambient temperatures. However, with the bundles being exposed to relatively higher ambient temperatures of, for example, 125°F, the separation of the shingles from the bundles have been found not to be completely satisfactory, possibly resulting, for example, in damage to the shingles and/or adhesive. To overcome this, members of the roofing industry have coated the polyester film with chemicals, particularly various types of soaps, in the hope of achieving satisfactory shingle separation at higher temperatures. Again, it has been found that shingles with the typically soap coated polyester film do not satisfactorily separate at temperatures of and above 125°F. In this regard, it should be kept in mind that bundles of roofing shingles are often subjected to these high temperatures when shipped to hot climates and especially when the shingles are left in bundle form on roofs in hot climates.

BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to provide a method of minimizing damage to the self-sealing adhesive on a self-sealing roof shingle and/or damage to the shingle itself upon separation of the shingle from another object to which the adhesive might stick prior to the shingles intended use on a roof.

Another object of the present invention is to provide a method of minimizing damage to the self-sealing adhesive on self-sealing roof shingles and/or minimizing damage to the roofing shingles themselves during separation of individual shingles initially aligned in a stack, especially after the stack has been exposed to high ambient temperatures.

A further object of the present invention is to provide a self-sealing roof shingle including improved means for minimizing the aforestated damage to the self-sealing adhesive and/or shingle itself.

The foregoing objects are achieved in accordance with the present invention by providing sheet material, preferably polyester film, one surface of which is coated with a substance containing methyl naphthylene sodium sulfonate. The sheet material is suitably sized and positioned so as to cover the self-sealing adhesive on a self-sealing shingle, with the coated surface of the material facing and in contact with the adhesive. More specifically, when the self-sealing shingles are aligned in a stack, i.e., typical bundles, the self-sealing adhesive on the top surface of one shingle is covered with the coated sheet material so as not to stick to the back surface of an adjacent shingle. The coated sheet material is preferably connected with the back surface of the adjacent shingle. In accordance with the present invention, the sheet material coated with methyl naphthylene sodium sulfonate minimizes damage to the adhesive and/or shingles themselves upon separating the shingles from the bundle. This has been found to be true even where the bundles have been exposed to temperatures of, for example, 125°F or 135°F.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view illustrating the top surface of a self-sealing roof shingle constructed in accordance with the present invention.

FIG. **2** is a plan view illustrating the back or bottom side surface of the shingle of FIG. **1**.

FIG. **3** is a side elevational view of two shingles of the type illustrated in FIGS. **1** and **2** with the two shingles being aligned with one another in a stack.

DETAILED DESCRIPTION AND PREFERRED EMBODIMENTS

Turning now to the drawing, wherein like components are designated by like reference numerals throughout the three figures, a self-sealing roof shingle, constructed in accordance with the present invention, is illustrated in FIGS. **1** and **2** and generally designated by the reference numeral **10**. Shingle **10** includes a typically somewhat rectangular body **12** including a top surface **14** (FIG. **1**) and a back surface **16** (FIG. **2**). Body **12** is preferably typically constructed of a felted fibrous material such as asbestos, cellulosic or glass fibrous material which has been saturated and/or coated with a bituminous substance such as asphalt and provided with granules **18** on at least the top surface, all in a conventional fashion. As is the case generally with shingles, body **12** can be separated into two segments, a forward most butt segment **20** and a rearward most head segment **22**, each running the lateral extent of shingle body **12**. Butt segment **20** may be comprised of a plurality tabs, as illustrated in FIGS. **1** and **2** or the

slots **24** formed in the butt segment to provide the tabs may be omitted.

As illustrated in FIG. **1**, shingle **10** includes on its top surface **14** a plurality of interrupted segments of pressure and/or heat sensitive self-adhering resinous material **26** which are applied to top surface **14** in a known manner. The resinous material, which may be of differing types, is well known in the art. The segments are spaced across the lateral extent of surface **14** along the head segment **22** of shingle body **12** to form what is commonly referred in the roofing industry as a self-sealing adhesive stripe, generally indicated by the reference numeral **28.** While stripe **28** is shown as interrupted segments of self-adhering resinous material, it could readily take the form of a single continuous stripe. In any event, the self-sealing stripe provides self-sealing capabilities well known in the art when the shingle is applied on a roof.

Shingle **10** also includes a separating stripe **30** which, as indicated in FIG. **2**, is suitably attached to the back surface **16** of shingle body **12** directly behind, that is aligned with, self-sealing stripe **28.** Separating stripe **30** is constructed of sheet material, preferably plastic foil and particularly polyester film such as, for example, MYLAR (polyethylene terephthalate). As will be discussed in more detail hereinafter and in accordance with the present invention, the exposed surface of the separating stripe is coated with a predetermined amount of methyl naphthylene sodium sulfonate which substantially improves the ability to separate individual shingles from a stack of aligned shingles.

While separating stripe **30** is illustrated in FIG. **2** as a continuous segment along the back surface **16** of shingle body **12**, it could be comprised of interrupted segments in the same manner as self-sealing stripe **28.** In any event, it must cover a sufficiently large area so as to at least completely cover the self-sealing stripe **28** of a second similar shingle when the two shingles are aligned together in a stack such that the adhesive stripe of the second shingle is located therebetween.

As stated above, the exposed surface of separating stripe **30** is uniformly coated with methyl naphthylene sodium sulfonate, hereinafter referred to as "methyl". In accordance with an actual working embodiment of the present invention, the separating stripe is coated with between approximately 0.4 and 1.0 grams of methyl per square foot surface area. A lesser amount of this coating would most probably result in a separating stripe which is not completely suitable for its intended purpose, i.e., as a separating medium. The application of this coating in amounts much greater than the range specified would most probably result in the transfer of some of the methyl to the self-sealing stripe of an adjacent shingle during separation of the shingles in sufficient amounts to impede the adhesive characteristics of the self-sealing stripe. The exact amount of methyl will depend, in part, on the adhesive stripe used and, in any event, could be determined in view of the teaching herein.

In accordance with an actual working embodiment of the present invention, the methyl naphthylene sodium sulfonate is coated onto the MYLAR or other such stripe while in solution form, that is, combined with a liquid, preferably water. The actual coating operation may be carried out by brushing the solution onto the surface of the separating material, by utilizing a rotating wheel or any other suitable manner, thereafter removing the water from the applied solution by suitable means as the application of heat or allowing the water to evaporate. In order to apply the desired amount of methyl to the surface of stripe **30** in accordance with the working embodiment, it has been found that a solution comprising approximately 90 to 99 parts water and ½ to 10 parts methyl naphthylene sodium sulfonate may be used. In the actual working embodiment, a solution of 48 to 52 parts water and 48 to 52 parts methyl is first provided with one part of this solution is then combined with water to reach the final solution.

Having described self-sealing roofing shingle **10,** attention is now directed to FIG. **3** which shows two such shingles aligned together in a stack or bundle. For purposes of illustration, the thickness of the shingles and particularly the thickness of self-sealing stripe **28** and separating stripe **30** have been exaggerated. As indicated in FIG. **3,** the separating stripe **30** located on the bottom surface of the top shingle completely covers and is in contact with the self-sealing stripe **28** on the top surface of the lower shingle. In this manner, the self-sealing stripe is prevented from sticking to other portions of the adjacent shingle and possibly being damaged or causing damage to either of the shingles during separation of the two. The separating stripe is sufficently permanently attached to surface **16** of shingle **10** such that it remains affixed thereto upon shingle separation otherwise, the separation stripe might adhere to the self-sealing stripe and destroy its ultimate function. It should be apparent that the same type of protection would exist with the positioning of additional shingles in the stack shown in FIG. **3.**

As stated above, the purpose for the separating stripes **30** is to minimize damage to the self-sealing adhesive stripes and/or to the shingles themselves during separation of the shingles from typically provided bundles, especially where the bundles are subjected to relatively high ambient temperatures, for example, in the range of 125° to 135°F. Also as stated above, this type of damage is minimized to the point of acceptability when, in accordance with the present invention, the separating stripe is coated with the proper amount of methyl naphthylene sodium sulfonate, as set forth hereinabove. In this regard, a test was run comparing the separation characteristics of self-sealing shingle stripes adhered to an untreated MYLAR separating stripe, a MYLAR separating stripe coated with calicum palmitate (a soap typically used heretofore) and a MYLAR separating stripe coated in accordance with the present invention, i.e., coated with the required amount of methyl naphthylene sodium sulfonate.

Each of these MYLAR stripes was adhered to a typical self-sealing adhesive stripe 12 inches long and ¾ inch wide, thereby simulating what happens when shingles are stacked in the foregoing manner. The first group including all three MYLAR stripes was subjected to an ambient temperature of 125°F for approximately 2 hours. A second group, omitting the untreated MYLAR stripe, was subjected to an ambient temperature of 135°F for approximately 2 hours. In addition, as a third test, the combination methyl coated stripe — adhesive stripe was subjected to an ambient temperature of 145°F for approximately 2 hours. After being subjected to these temperatures, the MYLAR stripes were separated from the self-sealing adhesive stripes and the percentage of adhesive transferring from each self-sealing stripe to a corresponding MYLAR stripe

during this separation was calculated. In this regard, it has been determined that so long as at most approximately 10% of the adhesive transfers from the self-sealing stripe to the MYLAR stripe, the separating stripe is satisfactory, that is, the amount of damage caused during separation is minimal and, in any case, is acceptable for commercial use.

The results of the aforedescribed comparative tests is as follows:

Temperature	Percent Transfer
At 125°F	
Untreated MYLAR stripe	23%
Calcium palmitate coated stripe	18%
Methyl coated stripe	3%
At 135°F	
Calcium palmitate coated stripe	33%
Methyl coated stripe	8%
At 145°F	
Methyl coated stripe	13%

From the foregoing, it should be apparent that substantially more than 10% adhesive transfers during separation of the untreated MYLAR stripe and the MYLAR stripe treated with calcium palmitate at 125°F and that this is the case for the calcium palmitate treated stripe at 135°F. On the other hand, only 3% and 8% of the adhesive respectively transfers during separation of the MYLAR stripes treated with methyl naphthylene sodium sulfonate at temperatures of 125°F and 135°F. At only 145°F did more than 10% of the adhesive transfer to the MYLAR stripe of the present invention.

In the foregoing comparisons, it is to be noted that the stripes of the present invention were coated with an amount of methyl within the aforestated range. In this regard, it is to be understood that the foregoing comparisons are for exemplary purposes and are not intended to limit the present invention.

What is claimed is:

1. A method of minimizing damage to a roofing shingle of the self-sealing type which includes a self-sealing adhesive on one surface, comprising:

a. providing sheet material which is of sufficient size to cover said self-sealing adhesive;

b. coating one surface of said material with a substance containing methyl naphthylene sodium sulfonate, and

c. covering said adhesive on said shingle with said material with the coated surface of said material facing and in contact with said adhesive.

2. A method according to claim **1** wherein said sheet material is plastic foil.

3. A method according to claim **2** wherein said plastic foil is polyester film.

4. A method according to claim **1** wherein said coating step includes:

a. preparing a solution of 90 to 99½ parts water and ½ to 10 parts of said methyl naphthylene sodium sulfonate;

b. applying said solution to said one surface of said sheet material; and

c. removing the water from said applied solution.

5. A meethod of minimizing damage to a first roofing shingle of the self-sealing type which includes a self-sealing adhesive on one surface during separation of said first shingle from the surface of a second shingle of this type when the two shingles are aligned in a stack with the adhesive of said first shingle therebetween, comprising:

a. providing sheet material which is of sufficient size to cover the self-scaling adhesive on said first shingle;

b. coating one surface of said material with a substance containing methyl naphthylene sodium sulfonate; and

c. locating said coated sheet material in a fixed position relative to one of said shingles such that, when said shingles are aligned in said stack, the coated material is positioned therebetween and the coated surface of said sheet material faces and covers the adhesive on said first shingle.

6. A method according to claim **5** wherein said locating step includes attaching said coated sheet material to the surface of said second shingle which would face the adhesive of said first shingle if said shingles were aligned in said stack.

7. A method according to claim **6** wherein said coated sheet material is sufficiently permanently attached to said second shingle such that, upon separating said shingles from said stack, said coated sheet material remains fixed to said second shingle.

8. A method according to claim **7** including attaching coated sheet material similar to said coated sheet material to the surface of said first shingle opposite the surface of said first shingle which includes said adhesive.

9. A method according to claim **8** wherein said sheet material is plastic foil.

10. A method according to claim **9** wherein said plastic foil is polyester film.

11. A method according to claim **5** wherein said coating step includes:

a. preparing a solution of 90 to 99½ parts water and ½ to 10 parts of said methyl naphthylene sodium sulfonate;

b. applying said solution to said one surface of said sheet material; and

c. removing the water from said applied solution.

12. A roofing shingle of the self-sealing type, comprising:

a. a shingle body having opposite first and second surfaces;

b. a self-sealing adhesive applied to the first surface of said shingle body at a specific position on said first surface;

c. a separating medium comprising sheet material which is sufficiently large to cover said adhesive and which is coated on one surface with methyl naphthylene sodium sulfonate; and

d. said separating medium being attached with the second surface of said shingle body with its coated surface facing away from said second surface, said separating medium being attached at a specific position on said second surface such that its coated surface is adapted to cover the self-sealing adhesive on a second similar roofing shingle if said roofing shingle and said second similar roofing shingle were aligned in a stack with the adhesive of the second shingle therebetween.

13. A roofing shingle according to claim **12** wherein said separating medium is plastic foil.

14. A roofing shingle according to claim **13** wherein said plastic foil is polyester film.

15. A roofing shingle according to claim 12 wherein said shingle is a bituminous shingle.

16. A roofing shingle according to claim 12 wherein:

a. said self-sealing adhesive comprises a plurality of interrupted sections of adhesive which together extend across the first surface of said shingle body; and

b. said separating medium comprises a stripe of said sheet material extending across the second surface of said shingle body in alignment with said interrupted sections of adhesive.

17. A roofing shingle according to claim 16 wherein said stripe of sheet material comprises polyester film.

18. A roofing shingle according to claim 12 wherein approximately 0.4 to 1.0 grams of said methyl naphthylene sodium sulfonate is on said one surface of said separating medium per square foot surface area.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,903,340
DATED : September 2, 1975
INVENTOR(S) : Philip B. Shepherd

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 25, "film" has been left out, should follow after --(polyethylene terephthalate film)--

Column 4, line 2, "such" has been left out, should follow after --suitable means such--

Column 4, line 6, "99" should read --99 1/2--

Column 4, line 10, "with" should read --and--

Column 5, line 64, "meethod" should read --method--

Signed and Sealed this

sixth Day of *January 1976*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks