

## COMMISSIONER'S DECISION

INCOMPLETE FINAL ACTION: Pertinent Prior Art Not Applied.

The citations fail to teach the construction of a laminated insulation board comprising a core of foamed thermoplastic resin with a surface film of the same material of higher density than the core. A proper decision on patentability cannot be made absent more pertinent prior art that should be considered.

FINAL ACTION: Reversed; Subject to Further Examination.

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This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated June 1, 1973 in the name of W.R. Grace & Co. and refers to a "Venting Roof Insulation Product." The Patent Appeal Board conducted a Hearing on April 3, 1974, at which Mr. W.N. Mace represented the applicant.

This application relates to an insulation board which is made by laminating to the surface of a body of foamed plastic resin, such as foamed polystyrene, a film of higher density foamed plastic resin such as foamed polystyrene. This insulated board is then used for built-up roof structures and the like.

In the prosecution terminated by the Final Action the examiner refused the subject matter of the application as being obvious in view of the following prior art:

United States Patents:

3,104,192	Sept. 17, 1963	Hacklander
3,094,447	June 18, 1963	Chamberlain

British Patent:

974,809	Nov. 11, 1964	Mora
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In the Final Action the examiner stated (in part):

The Hacklander patent disclosed a method of forming a composite sheet of expanded thermoplastic comprising a thin layer of expanded plastic bonded to a thicker layer of expanded plastic. The thin layer of expanded plastic may have on its exposed surface a predetermined embossed pattern.

The Chamberlain patent discloses a built up roof structure comprising a building support, a core of foamed thermoplastic resin, and a sheet of roofing felt above said core.

The Mora patent discloses blocks of expanded synthetic resinous material comprising two layers of said material differing from one another in respect of their cellular structure sizes.

This application is rejected as being obvious in view of the cited prior art patents. The considerations are as follows:

Composite sheets, comprising a layer of foamed thermoplastic resin and another layer of higher density foamed thermoplastic resin bonded together are known, as evidenced by the Hacklander patent, column 1, line 59, and the Mora patent on lines 27-29.

The use of composite sheets of foamed thermoplastic resin in the building art is known. Hacklander teaches in column 1, lines 38-40: "the invention further consists in slabs, sheets and other shapes treated by the above process and articles constructed therefrom", and in column 2, lines 7-8: "material treated in accordance with the invention is useful for producing upholstery, car linings, wall paneling...". In applicant's claim 2 "a building structure" is defined as comprising a laminated thermoplastic resin board, essentially as taught by Hacklander. In claim 1 the use of said board is specified as "a roof deck material". The use of an old structure in the same art in combination with structures not enumerated in the prior art does not constitute an invention.

The combination of foamed thermoplastic resin insulation boards with saturated roofing felt as in claim 1 or alternatively with some building support as in claim 2 is known in the art as e.g. taught by Chamberlain.

Applicant's substitution of two layers of foamed thermoplastic resin sheets, essentially as disclosed by Hacklander and Mora, in place of a single sheet of foamed thermoplastic sheet as has been taught by Chamberlain, in a known building structure comprising a sheet of saturated roofing felt above said thermoplastic sheet, or a building support under said thermoplastic sheet, as disclosed by Chamberlain, is but expected skill of a person skilled in the art.

The term "relatively rigid", relied on by the applicant to overcome the prior art adds no patentable subject matter to the application.

Specifying the foamed thermoplastic resin as polystyrene as in claims 3 and 4 adds no patentable subject matter to refused unpatentable independent claims 1 and 2.

The further definition of the exposed surface of the foamed thermoplastic film as having an embossed pattern similarly fails to give patentability to the rejected broad claims. Embossing the surface of the thermoplastic film is taught by Hacklander in column 1, lines 47-53.

The applicant in his response dated August 22, 1973 to the Final Action stated (in part):

The laminated board exhibits quite different physical properties from an unlaminated board. It is harder, more uniform surface, and a higher surface heat capacity. The higher heat capacity of the laminate makes thermal adhesion of subsequent materials (such as saturated felt roofing sheets) more practical than with the unlaminated board. The laminated surface is also more receptive to adhesive bonding of membranes of any type. Embossing produces attractive finishes. It also produces an unexpected improvement when heat is used to bond other materials to the embossed surface. Any heat bonding system used requires a controlled application of heat. The heat must be adequate to either activate a thermal set adhesive, to soften a thermoplastic adhesive or to fuse the foamed polystyrene if no other adhesive system is used. However, if too much heat is applied, the polystyrene surface will collapse. If the surface is embossed, the range of heat necessary to produce satisfactory adhesion is greatly broadened.

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The Examiner in the Official Action has again implied that composite sheets comprising a layer of foamed thermoplastic resin and another layer of higher density foamed thermoplastic resin bonded together is evidenced by Hacklander in U.S. Patent 3,104,192. It is submitted that the Examiner has attempted to read more into Hacklander than is actually present in the teachings of such reference. Column 1, line 59 of U.S. Patent 3,104,192 refers to bonding a relatively thin layer of plastic to an untreated and perhaps thicker layer of thermoplastic expanded plastic or other suitable backing material. It is submitted that there is no teaching or any suggestion whatsoever in Hacklander of bonding a film of foamed thermoplastic resin having a density which is higher than the density of the foamed thermoplastic resin core to which the film is bonded. The concept of one material being thicker and another thinner does not imply a difference in density but is merely a linear measurement. The Examiner in the Official Action has attempted to employ the teachings of Mora in British Patent 974,809 to make up for the deficiencies and lack of teaching in Hacklander. It is submitted that Mora although relating to a composite made up of foams of different densities, such composite is for use as an abrasive cleansing pad and such would not be readily suggestable for use as a building insulating material. Mora is concerned with non-analogous art and for the Examiner to attempt to imply that the spongy cleansing block of Mora could be substituted and used by Hacklander is an application of hindsight which can only be arrived at after a reading of applicant's disclosure. It is submitted that applicant's relatively rigid laminated insulation board as defined by the claims is neither taught nor suggested by either Hacklander or Mora and that such claims should not be considered obvious in view of such attempted combination of references.

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The Examiner's suggestion that the foamed thermoplastic resin insulation board of applicants is well known and is suggested by Chamberlain in U.S. Patent 3,094,447 is completely untenable. It is submitted that there is no teaching in Chamberlain of employing as a roof deck material a relatively rigid laminated

insulation board comprising a core of foamed thermoplastic resin having bonded to at least one face, a film of foamed thermoplastic resin having a density which is higher than the density of the core. This is specifically called for in each of the claims on file, and thus the teachings of Chamberlain are not pertinent.

The Examiner's attempt to employ the teachings of Hacklander and Mora in view of Chamberlain that applicant's invention is but expected skill is most strenuously traversed. The Examiner has attempted to imply that the "two layers of foamed thermoplastic resin sheets, essentially as disclosed by Hacklander and Mora" is not understood/as the insulation board of applicants is not "essentially as disclosed by Hacklander and Mora" in view of the previous discussion above. It is submitted that there is absolutely no teaching or suggestion in Hacklander to the use of an insulation board composed of two layers of foamed thermoplastic resin each of which has a different density. As previously discussed with respect to Mora, such relates to a cleansing pad and is remote from applicant's intended use of the material as an insulating building structure. One would certainly not use the cleansing pad of Mora in place of the single sheet of foamed thermoplastic of Chamberlain and one would not arrive at such construction without a reading of applicant's disclosure.

The first consideration is a determination of the scope and content of the prior art cited.

The Hacklander reference, which was applied as the primary reference, discloses a composite resilient sheet of expanded thermoplastic comprising a thin layer of expanded plastic bonded to a backing layer of expanded plastic. Claim 1 of this patent, reads:

A process for manufacturing a composite sheet of resilient thermoplastic expanded plastic comprising superimposing a relatively thin layer of expanded plastic on a backing layer of expanded plastic/the adjacent surfaces of the layers being pre-heated to the plastic state, heating the exposed surface of the relatively thin layer and applying pressure to the exposed surface with a wiping action whereby the pores and gas holes are removed from the portion of the relatively thin layer adjacent the exposed surface and the relatively thin layer is simultaneously bonded to the backing layer.

The Chamberlain reference discloses a composite sheet comprising a first sheet of foamed polystyrene and a layer of roofing felt applied thereto with bituminous material of coal tar or other material of asphaltic origin as the adhesive.

The Mora patent discloses a spongy block comprising two spongy layers differing from each other in their cellular structure, to be used for cleaning and removing deposits.

The question to be decided is whether the applicant has made a patentable advance in the art. Claim 1 reads:

A built-up roof structure comprising:

(a) a roof deck material which comprises a building support and a relatively rigid laminated insulation board supported thereby, said board comprising a core of foamed thermoplastic resin having bonded to at least one face thereof a film of foamed thermoplastic resin film having a density which is higher than the density of said foamed thermoplastic resin core; and (b) a sheet of saturated roofing felt above said foamed thermoplastic film.

Essentially the subject matter of claim 1 comprises a built up roof structure using a relatively rigid laminated insulation board comprising a core of foamed plastic resin having bonded to at least one face thereof a film of foamed thermoplastic resin film, the film having a density which is higher than the density of the core.

The object of the invention in Hacklander is to prevent tear etc. in expanded plastics, as stated in column 1 of page 1: "...to provide a process for treating thermo-plastic expanded plastics to render them ~~from~~ tear-resistant...." Furthermore, starting at line 59 page 1: "The product of the process may be likened to a leather, in which the treated surface resembles the "grain" while the uncompressed part of the material resembles the "flesh" of the leather, and the surface becomes less "clinging" and more slippery for (sic: for) the clothes and the like. The leather-like effect may also be produced by bonding a relatively thin layer of plastic treated in accordance with the invention to an untreated

and perhaps thicker layer of thermo-plastic expanded plastic, or other suitable backing material, by adhesives or by surface melting and applying pressure." (underlining added) Also, on page 1, column 2 at line 7, the use of the material is stated as: "Material treated in accordance with the invention is useful for producing upholstery, car linings, wall panelling, carpeting, floor rugs, travelling bags, picnic bags and handbags, foot-wear, belts and so on.

It is apparent that the object of the present invention and the problems facing the applicant are quite different from that in the Hacklander reference. The applicant is concerned with a relative rigid board of foamed thermo-plastic, to withstand high heat and have better thermal adhesive capability, as opposed to a resilient (note claim 1) material of expanded thermo-plastic having "a leather-like effect," as disclosed in the reference.

There is no teaching in the Hacklander reference that the film or outer layer is of higher density than the core. The Hacklander reference merely states that: "...a sheet of material used need not be of the finest quality and may have relatively small gas holes therein..." Furthermore the backing material can be of an inferior quality or even be constituted from chips, granules and waste material from other processes." In the circumstances, therefore, this reference must fail as a primary reference.

The Mora reference, which relates to a "cleansing pad" and teaches the construction of this pad utilizing two layers which differ one from the other in respect to their cellular structure size. While this reference might indicate that it is common knowledge to fabricate a laminated structure of two layers having different materials, in our view fails to show anything of value of how to overcome the problem facing the applicant.

The Chamberlain patent appears as the most pertinent reference, disclosing a built-up roof structure comprising a core of foamed thermoplastic resin and a sheet of roofing felt secured thereto using such material as tar for the adhesive bond. But there is no teaching of a laminated structure using the same materials for the core and the outer film, where the outer film has a higher density than the core. The applicant also claims (claim 1) that a sheet of saturated roofing felt is added to the plastic film. It is observed that Chamberlain adds the roofing felt directly to the polystyrene core.

In the disclosure, page 1 starting at line 28, the applicant states the advantage of his laminated structure: "...The higher heat capacity of the laminate makes thermal adhesion of subsequent materials (such as saturated felt roofing sheets) more practical than with the unlaminated board. The laminated surface is also more receptive to adhesive bonding of membranes of any type."

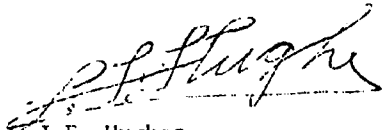
With the above considerations in view, the Board was not satisfied that the most pertinent art was applied. On investigation a number of pertinent disclosures were found, of which the following are typical:

Canadian Patent - 626,454, of a laminated structure comprising a polyurethane foam covered with a dense skin of the same material.

Canadian Patent - 734,901, of a building module comprising a polyurethane foam bonded with a plastic material.

Canadian Patent - 564,009, of a sound-absorbing structure comprising a plurality of plastic foam mats of different porosity or elasticity bonded together in the form of a composite unit.

Since, in our view, the above prior art is deciding, it serves no purpose to consider further the merits of the present subject matter in view of the art of record only. In the circumstances, therefore, the Board recommends that the application be returned to the examiner for prosecution in view of the pertinent art which should be considered.



J.F. Hughes,  
Assistant Chairman,  
Patent Appeal Board.

I concur with the findings of the Patent Appeal Board. Accordingly,  
I am returning the application to the examiner for further prosecution.

Decision accordingly,



A.M. Laidlaw,  
Commissioner of Patents.

Dated at Hull, Quebec  
this 6th day of May  
1974.

Agent for Applicant

Gowling & Henderson,  
Ottawa, Ontario.