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TITLE OF INVENTION

54	PACKAGING SYSTEM FOR DETERGENT BARS
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57 ABSTRACT (NOT MORE THAN 150 WORDS)

NUMBER OF SHEETS

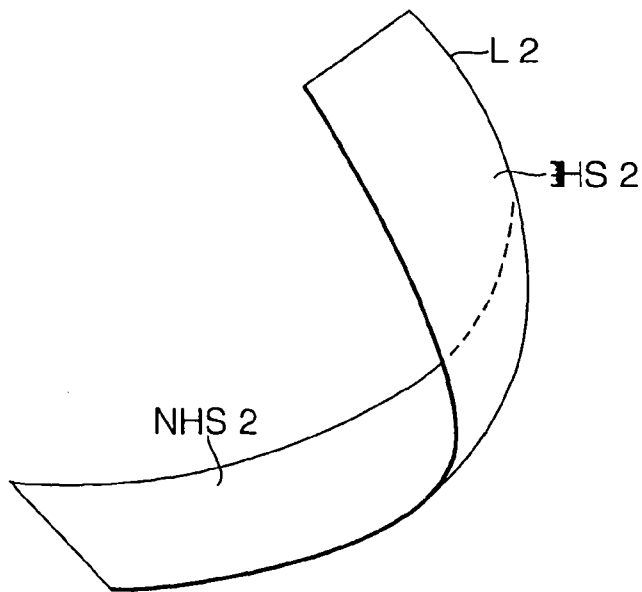
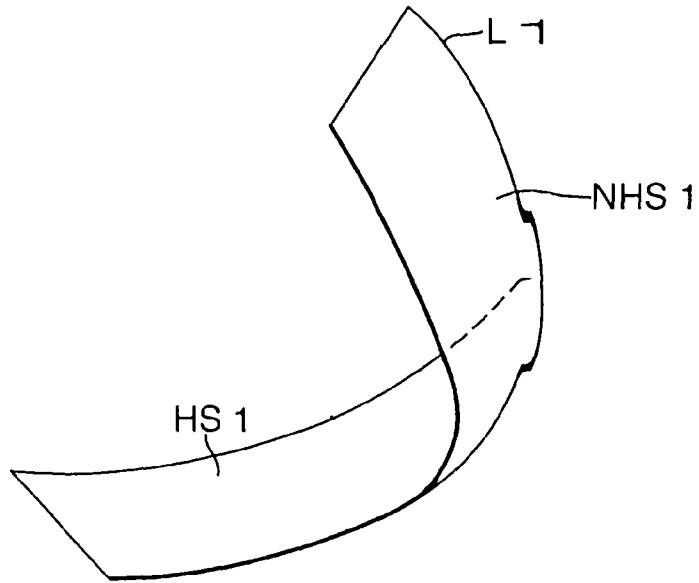
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If no classification is finished, Form P.9 should accompany this form.  
The figure of the drawing to which the abstract refers is attached.

## Abstract

The invention concerns a packaging system for shaped detergent products comprising: a first PET film having a heat sealable side and a non-heat sealable reverse thereof, a second PET film also having a heat sealable side and a non-heat sealable reverse thereof, said non-heat sealable sides of the first and second PET films adapted to be laminated together to provide a transparent Laminated structure wherein the detergent is packaged such that the central portions of the laminated structure define a lap seal with the inner side and the outer side of the laminate structure sealed together and the end seals are provided between the outer and inner sides of the laminate structure. A non-heat sealable side of the laminate structure may comprise printed matter thereon.

Fig.1.



**Field of the Invention**

5 The present invention relates to packaging of detergent bars and the like and in particular to a packaging system comprising transparent wrapper. Apart from enabling incorporation of printed matters, the transparent wrapper would add to the aesthetic outlook of the packaged  
10 detergent, is adapted to favour maintaining desired packaging characteristics for effective storage and transit of the detergent bar while maintaining its quality and characteristics under diverse transit and storage conditions.

15

**Background Art**

It is well known in the art to provide packaging papers such as surface printed Chromo, Maplitho or Poster Paper with  
20 extrusion coating with polyethylene or coating with hot melt lacquer. Surface printed chromo, maplitho or poster paper laminated with PET or BOPP on the printed surface and coated with hot melt lacquer on the other side of the paper is also known. Combinations of reverse printed PET or BOPP  
25 laminated to Chromo, Maplitho or Poster Paper and coated with hot melt lacquer on the other side or said reverse printed PET/BOPP laminated to metallized PET or metallized BOPP with further lamination to Chromo, Maplitho or Poster Paper and coated with hot melt lacquer on the other side or  
30 said reverse printed PET/BOPP laminated to BOPP, PET lamination to polyethylene are also well known. Furthermore, carton packing such as surface printed paper

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based carton pack with or without lamination with BOPP/PET on the printed surface or the reverse printed PET or BOPP laminated with paperboard carton pack is also well known.

5 It is also known to use packaging films such as multi-layer heat sealable packaging films for packaging of products. Biaxially oriented polyethylene terephthalate commonly referred to as "oriented polyester" "OPET" is a well-known packaging film.

10

US 4,765,999 discloses multiple layer non-oriented heat sealable films having a base substrate layer of poly(ethylene terephthalate) (polyester) or polyester copolymer and at least one heat sealable surface layer of a  
15 co-polyester. Such films are adapted to replace heat sealable OPET films for extremely demanding applications such as microwave popcorn bags. Importantly, it is suggested that the relatively amorphous nature of such non-oriented films provide for additional advantages compared to  
20 the relatively crystalline nature of the OPET films.

EP 1121305 B1 discloses bar of soap having wrapped laterally of the bar around at least a longitudinal extent of the bar, a stiffening member comprising a stiff sheet material having  
25 at least respective outer surfaces thereof each provided by a plastic material wherein at least a part of the stiffening material is transparent. This packaging was proposed based on a finding that if a bar or soap has wrapped around at least a longitudinal extent thereof, a stiffing member at  
30 least respective outer surface of which are each provided by

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a plastic material then mould growth on and within it can be entirely avoided.

5 EP 1183193 B1 discloses yet another soap bar packaged in a transparent package, said soap bar having a generally rectangular shape with two sides of a minor dimension and two sides of a major dimension, a first inner film substantially enveloping said soap bar and open on the two sides of a minor dimension, a second substantially  
10 transparent outer film overlying said first film and fully enveloping said soap bar characterized in that said inner film is substantially transparent and has a light transmission of more than 85% and a clarity of more than 90%, the thickness ratio of said first film to said second  
15 film being 2:1 to 5:1, the stiffness of said first film to said second film being 7:1 to 35:1 and said soap bar being a translucent soap bar. The first film is selectively provided as a stiffener to provide structural protection for the soap while the second film fully envelopes the soap bar and the  
20 first film.

It would be apparent from the above that while several varieties of packaging materials especially useful for packaging of detergent bars are available and made known to  
25 the art the varieties presently available are either found to involve complexities in manufacture, are cost-extensive, or fail to provide the desired mechanical strength and stiffness to facilitate the effective transport of packaged product. Moreover, in case of required transparent wrappers  
30 for detergents such problems turn more complex. Also, it is found that most of such known packaging also have problems

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or limitations in effectively protecting the odour of the product especially required to be safeguarded in case of perfumed products such as detergent bars and the like. In addition, it is also found that for some of the above-  
5 discussed packaging materials there is sometimes the additional problem of distortion/shrinkage of seals in case of high temperature heat sealing of the packaged detergents.

#### **Objects and summary of the invention**

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It is thus an object of the present invention to provide a packaging system for detergent bars and the like in the form of transparent detergent wrappers which have superior mechanical strength and stiffness and thus have better  
15 transport performance and required storage characteristics.

It is another object of the present invention to provide a packaging system having superior stiffness, better machinability and flexibility for better shape formation.

20

It is yet another object of the present invention to provide a packaging system for detergent bars and the like which, apart from serving as a good protective cover for the product, also enables maintaining the desired aesthetic  
25 outlook of the packaged product in addition to serving as an effective odour barrier for better retention of perfume in the bar.

Yet a further object of the present invention is to provide  
30 a packaging system for detergent bars and the like which avoids the limitations of several conventional packaging

materials as regards distortion, shrinkage of seals at high sealing temperature.

5 Yet another object of the present invention is to provide a durable transparent packaging system for detergent bars and the like which allows a printed and/or transparent window configuration.

10 Another object of the present invention is to provide a process for packaging of detergent bars and the like which enables use of a wider heat seal temperature window while obtaining quality packaging in a cost effective way and with convenient machinability.

15 Thus, the invention provides a packaging system for detergent bars comprising two PET films, each having a heat sealable and a non-heat sealable side. The non-heat sealable sides are laminated together to provide a structure of laminated PET film which is used for packaging the detergent  
20 bar such that the overlap can be heat-sealed so as to provide a wrapping around the bar.

**Detailed description of the Invention**

25 Thus according to one aspect of the present invention there is provided a packaging system for shaped detergent products comprising:

- a first PET film having a heat sealable side and a non-heat sealable reverse thereof,
- a second PET film also having a heat sealable side and a  
30 non-heat sealable reverse thereof,



Said non-heat sealable sides of the first and second PET films adapted to be laminated together to provide a transparent laminated structure wherein the detergent bar is packaged such that the central portions of the laminated structure define a lap seal with the inner side and the outer side of the laminate structure sealed together and the end seals are provided between the outer and inner sides of the laminate structure.

The shaped detergent products referred to herein are well known in the art and particularly comprise detergent bars and tablets such as conventionally used for dish wash and laundry wash purposes and for personal wash. The latter are conventionally known as soap bars, although they may be made partly or entirely of other detergent surfactants than fatty acid soap. The phrase "detergent bar" is also used hereinafter to denote all such shaped detergent products.

In accordance with a preferred aspect of the present invention at least one of the non-heat sealable sides of the laminate structure has printed matter thereon. This printed matter is thus visible through the transparent films.

In accordance with a further preferred aspect of the present invention said non-heat sealable side of the first film of the laminate structure has printed matter thereon.

In the above disclosed packaging system of the invention the dual layer packaging of heat sealable PET with the non-heat sealable portions of the respective layers laminated enable providing of well protected printed matter on the packaging

to add to the aesthetic value of the product and on the other hand provide for a more rigid and superior mechanical strength and stiffness to the transparent package.

5 In accordance with further aspect of the present invention there is provided for a packaging system for detergent bars and the like comprising a transparent laminate structure comprising a first layer of heat sealable PET reverse printed on the non-heat sealable portion thereof, a second  
10 layer of heat sealable PET having its non-heat sealable reverse laminated with respect to the reverse printed non-heat sealable portion of the first layer, wherein the printing region includes an unprinted area or window to facilitate viewing of the product through the package.

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The above disclosed laminated structure according to the invention Thus makes it possible to on one hand maintain the desired mechanical strength and stiffness in transparent detergent wrappers and on the other hand provide for variety  
20 of printed region which on its own and/or in combination with the shape and configuration of the product to be packaged favours a better aesthetic outlook to the packaged product.

25 In accordance with a preferred aspect of the invention the detergent bars to be packaged of a substantially regular rectangular shape, the middle portion of all sides being flat or comprising recessed areas, but preferably no raised portion beyond the flat area and the corners to be either at  
30  $90^{\circ}$  or close to  $90^{\circ}$  or slightly rounded.

In the preferred embodiment the transparent laminate structure constituting the packaging system of the invention is thus comprised of the heat sealable PET reverse printed and laminated with the help of adhesive to another layer to heat sealable PET. In particular, the printing on the first heat sealable layer on its reverse is laminated to the non-heat sealable side of the second layer. As stated above, the printing design can have windows (unprinted area) so that the intended part of the detergent is visible to the consumers even in a packed bar. The bar would be envelope wrapped such that the belly seal is a lap seal (inner side of the laminate to be sealed with the outer side) and the end seals are preferably partly between the outer and outer and partly between the inner and outer sides of the laminate.

Importantly, the above disclosed packaging system in the form of transparent detergent wrappers provides a packaging structure for shaped detergent products and the like having superior mechanical strength, better transport performance as well as stiffness. Importantly, the combination of the two layers of PET film with the heat-sealable sides at the outsides of the structure enables better processability and machinability and better shape formation. In particular, the combination enables high temperature sealing of the package free of distortion or shrinkage of seals and therefore provide for wider flexibility in use and application of such packaging systems.

Moreover, the dual layer packaging proposed apart from giving the desired stiffness and mechanical support to the

structure also favours maintaining the desired print in the packaging free of distortions or erasure during transport and storage. Moreover, the dual packaging facilitates maintaining a desired barrier for any loss of perfume from the packaged products.

The PET films used in the packaging system can be made heat-sealable by any process known in the art making heat-sealable films. A well known process comprises addition of a co-polymer in one of the skin layers during the manufacturing of the film to constitute the heat sealable side of the packaging.

Although any wrapping process for the detergent product may be used, a preferred process comprises envelope wrapping in which the belly seal is a lap seal and the end seals are between outer to outer and inner to outer sides of the laminate.

The details of invention are further elucidated in the figures, which show examples of film and laminate and its use in wrapping.

Figure 1 shows the two layers of heat sealable PET film used in the packaging system of the invention. Both said layers (L1, L2) each have a heat sealable side (HS1, HS2) and a reverse side, which is a non-heat sealable side (NHS1, NHS2).

Figure 2 illustrates the provision of a printed portion on the non-heat sealable side of the first film layer of the

packaging system. As would be apparent from Figures 1 and 2, the printing is proposed on the non-heat sealable (NHS1) reverse of the first layer

- 5 Figure 3 shows the lamination obtained there between the first layer, in particular its printed non-heat sealable reverse with the non-heat sealable side of the second layer to constitute the laminated structure according to the invention.
- 10 Figure 4 illustrates the packaged detergent, which is packaged in a sheet of the dual layer transparent laminate structure. As is evident from Figures 4 the detergent bar is preferably envelope wrapped such that the belly seal is a lap seal LS (inner side of the laminate to be sealed with
- 15 the outer side) and end seals ES are partly between outer to outer and partly between inner to outer sides of the laminate.

**Claims**

1. A packaging system for shaped detergent products comprising:  
5 (a) a first PET film having a heat sealable side and a non-heat sealable reverse thereof,  
(b) a second PET film also having a heat sealable side and a non-heat sealable reverse thereof,  
said non-heat sealable sides of the first and second  
10 PET films adapted to be laminated together to provide a transparent laminated structure wherein the detergent is packaged such that the central portions of the laminated structure define a lap seal with the inner side and the outer side of the laminate structure  
15 sealed together and the end seals are provided between the outer and inner sides of the laminate structure .
  
2. A packaging system for detergent products as claimed in claim 1 wherein at least one of the non-heat sealable  
20 sides of the laminate structure has printed matter thereon .
  
3. A packaging system for detergent products as claimed in claim 2 wherein the non-heat sealable side of the first  
25 film of the laminate structure has printed matter thereon .
  
4. A packaging system for detergent products as claimed in claim 3 , wherein the printing region includes an  
30 unprinted area to facilitate viewing of the product through the package.

5. A packaging system for detergent products as claimed in any preceding claim wherein the detergent product has a substantially rectangular shape with the corners either at or close to 90<sup>0</sup> degrees or slightly rounded.
6. A packaging system for detergent products as claimed in any preceding claim wherein the detergent product has the middle portion of all sides to be either flat or comprising recessed areas, but no raised portion beyond the flat area.
7. A packaging system for detergent products as claimed in any preceding claim comprising an envelope wrapping system wherein the belly seal is a lap seal and the end seals are partly between the outer and outer and partly between inner and outer sides of the laminate.
8. A packaging system substantially as herein described and illustrated.

DATED THIS 11<sup>TH</sup> DAY OF JANUARY 2005



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Fig. 1.

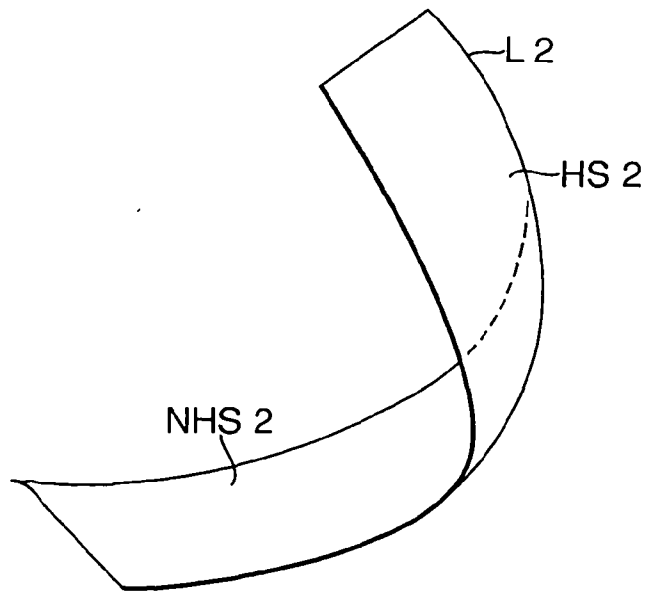
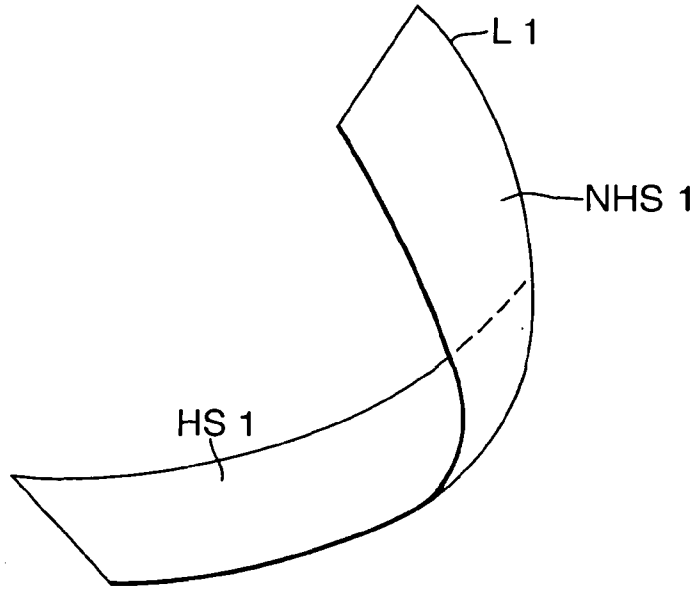




Fig.2.

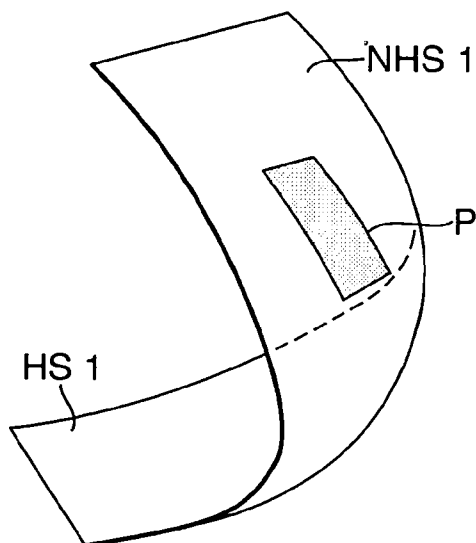
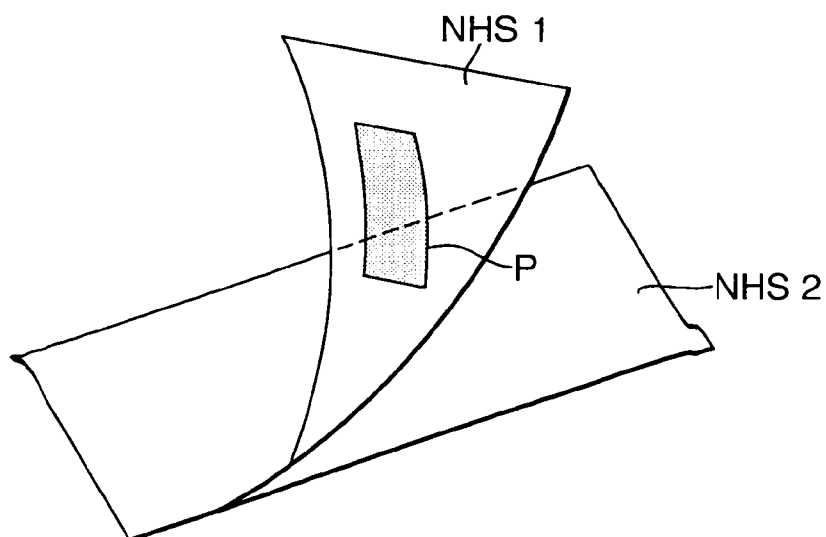
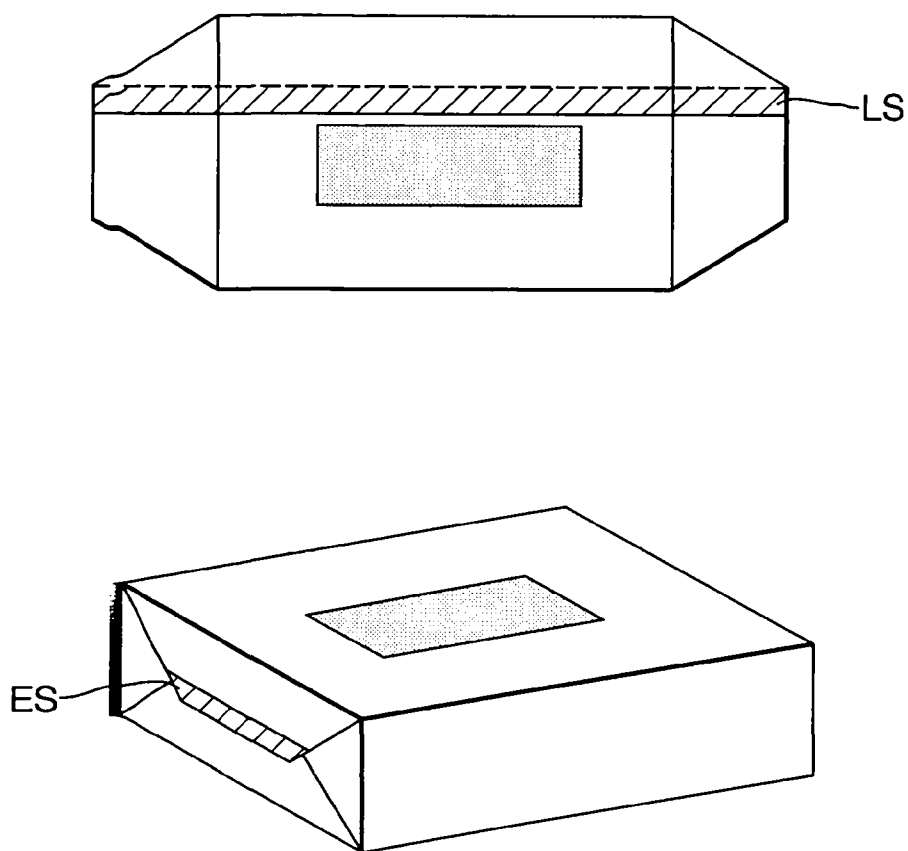


Fig.3.



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Fig.4.



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