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# Certificate of Grant of Patent

Patent Number: GB2516947  
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*This is to Certify that, in accordance with the Patents Act 1977,*

a Patent has been granted to the proprietor(s) for an invention entitled  
**"Reflective Surface Marking"** disclosed in an application filed **8  
August 2013**.

Dated 6 January 2016

**John Alty**

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Intellectual Property Office

The attention of the Proprietor(s) is drawn to the important notes overleaf.

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(56) Documents Cited:  
**GB 2483750 A** **GB 2339711 A**  
**GB 0952258 A** **EP 1489439 A2**  
**WO 2001/042823 A1**

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Fig 1

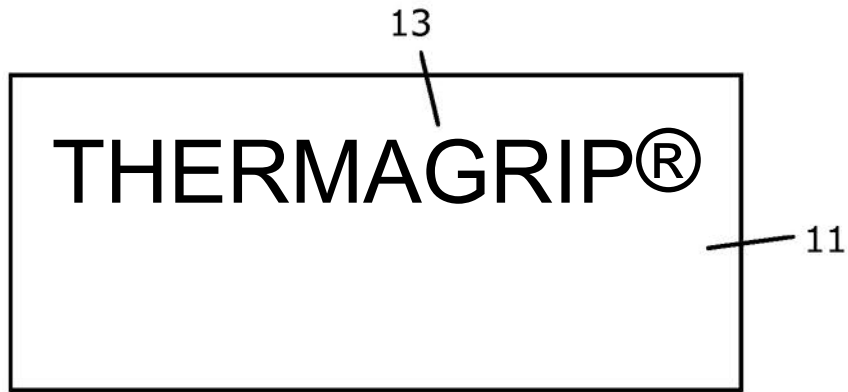


Fig 2

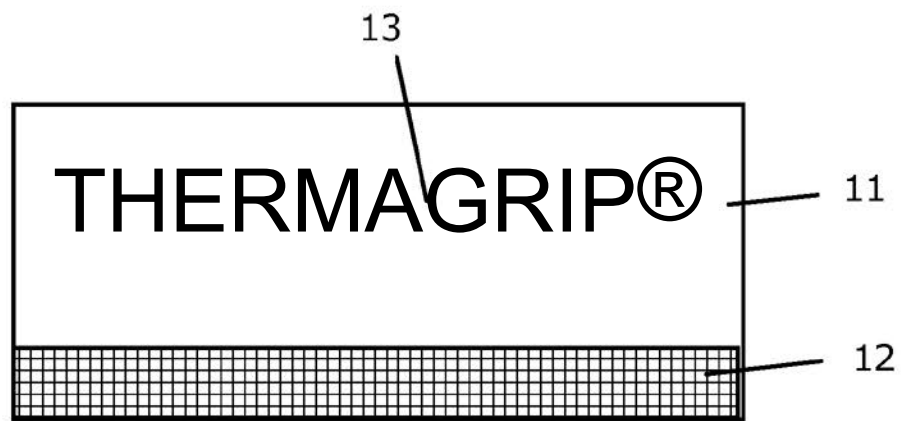


Fig 3

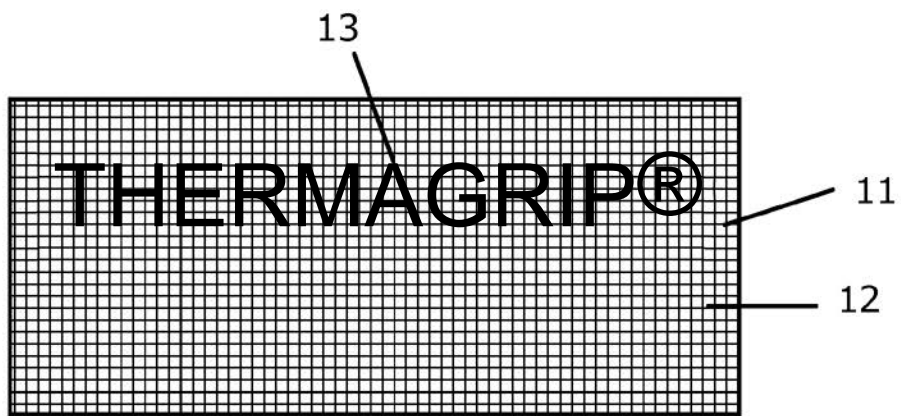


Fig 4

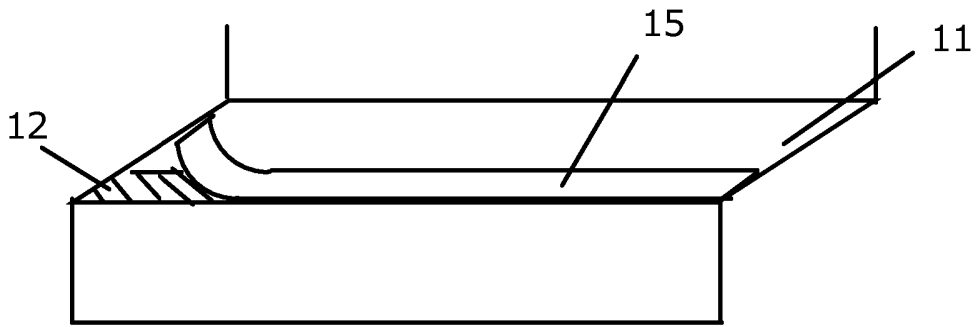


Fig 5

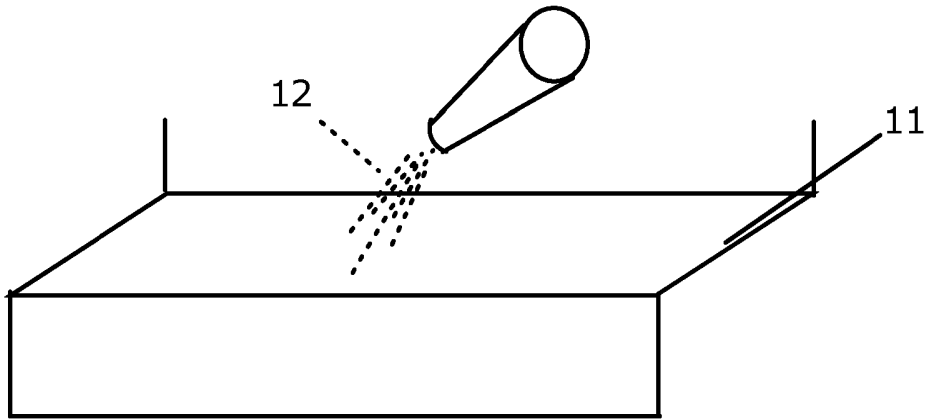
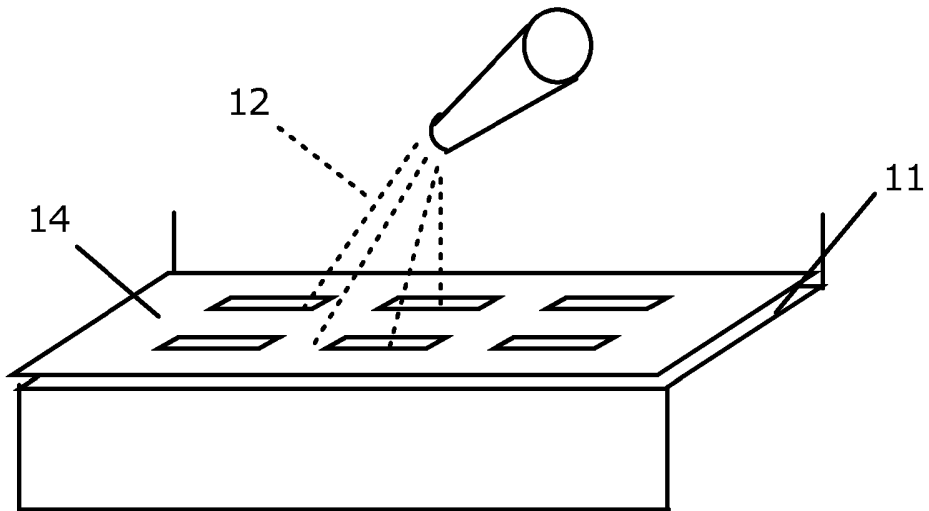


Fig 6



## Reflective Surface Marking

5 This invention relates to reflective surface marking.

Surface marking is usually effected by painting, and it is known to provide reflective surface marking by incorporating reflective glass microbeads into a paint, which is usually transparent. The microbeads may be microspheres or microprisms and may be of  
10 the order of 100 microns across. They are presented as a free flowing powder.

Surface marking is also effected by heat bonding plastic sheet or strip to a surface, the heat bonding being effected usually by a gas torch, which melts the sheet. Anti-slip properties are afforded by addition of grit particles to the sheet or strip. While grit may  
15 be incorporated at point of manufacture, and is apparent on the surface before heat bonding, it tends to sink into the plastic when it melts and is therefore ineffective, and indeed may be omitted from the manufacturing step altogether. Further grit must be applied to the surface while it has cooled to the extent that it is soft enough for the grit to be  
20 absorbed into the surface but not to sink below it - the time to apply the further grit is determined from experience of particular grit and plastic combinations, but is of the order of a few seconds after the torch has been played over the surface.

Where the appearance of the marking is important, and particularly its colour, the grit is usually of glass or flint so as to give rise to no colour change when applied. This is  
25 important in surface markings for school playgrounds, for example, and step edges, particularly branded step edges bearing the name or logo of a sponsor, for example, of a football club.

Particularly with step edges, an additional safety feature would be providing a high  
30 visibility finish to the whole of the step or at least its edge. We have found that this can be done using reflective, particularly retroreflective microbeads.

The invention comprises a method for effecting a high visibility, reflective appearance to a heat bonded plastic surface covering sheet or strip, comprising applying to the surface  
35 of the sheet or strip reflective microbeads when the sheet or strip is still tacky following a heating operation in which the microbeads are applied in a strip along the edge, say, of a step, by applying a backing strip, to which the microbeads are releasably adhered, to the tacky surface, allowing the plastic to cool further so as to grip the microbeads, and  
40 removing the backing strip.

Where coarser grit is applied for anti-slip purposes, the microbeads may be applied after the coarser grit.

Retroreflective microbeads can be provided either totally transparent or half silvered.  
45 The totally transparent microbeads are preferred for the purposes of the invention.

We also describe how the microbeads may be applied over a large area, such as a whole step cover, by sprinkling microbeads onto the tacky surface. We also describe how the microbeads may be applied selectively by sprinkling through a stencil. The backing strip may itself be figured so as to apply the microbeads in a pattern.

5

Methods for effecting a high visibility, reflective appearance to a heat bonded plastic surface covering sheet or strip according to the invention will now be described with reference to the accompanying drawings, in which:

10 Figure 1 is a view of a step surface with a heat bonded plastic surface covering;

Figure 2 is a view of the step surface of Figure 1 with a reflective strip;

Figure 3 is a view of the step surface of Figure 1 rendered totally reflective;

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Figure 4 is a view of the reflective strip of Figure 2 being emplaced;

Figure 5 is a view of the application of a totally reflective surface as shown in Figure 3; and

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Figure 6 is a view of reflective beads being applied through a stencil.

The drawings illustrate methods for effecting a high visibility, reflective appearance to a heat bonded plastic surface covering sheet or strip 11, comprising applying to the surface of the sheet or strip 11 reflective microbeads 12 when the sheet or strip is still tacky following a heating operation.

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The drawings all show the application of an anti-slip surface to a step comprising the strip or sheet 11 which contains surface-embedded grit, which may be stone, flint or glass particles, flint or glass being preferred where colour is important. The steps as shown in Figures 1, 2 and 3 have embedded signage 13.

30

The sheet or strip 11 is applied as described in GB2483750 and WO2013/021152 by being melted on to the step surface and anti-slip grit applied while the surface is soft after being heated.

35

The retroreflective microbeads are applied after the coarser anti-slip grit.

Retroreflective microbeads can be provided either totally transparent or half silvered.

40

The totally transparent microbeads are preferred for the purposes of the invention, with microprisms offering a higher reflectivity than microspheres.

Microbeads are applied over a large area, such as a whole step cover, as shown in Figure 3, by sprinkling microbeads, as shown in Figure 5, onto the tacky surface. The microbeads may be applied selectively by sprinkling through a stencil 14 as shown in Figure 6. Or they may be applied in a strip along the edge of a step, as shown in Figure

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2, by applying a backing strip 15 as shown in Figure 4, to which the microbeads 12 are releasably adhered, to the tacky step surface, allowing the plastic 11 to cool further so as to grip the microbeads 12, and removing the backing strip 15. The backing strip 15 may itself be figured so as to apply the microbeads 12 in a pattern.

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## Claims:

- 1 A method for effecting a high visibility, reflective appearance to a heat bonded  
plastic surface covering sheet or strip, comprising applying to the surface of the sheet or  
5 strip reflective microbeads when the sheet or strip is still tacky following a heating  
operation in which the microbeads are applied in a strip along the edge, say, of a step, by  
applying a backing strip, to which the microbeads are releasably adhered, to the tacky  
surface, allowing the plastic to cool further so as to grip the microbeads, and removing the  
backing strip.  
10
- 2 A method according to claim 1, in which, where coarser grit is applied for anti-slip  
purposes, the microbeads are applied after the coarser grit.
- 3 A method according to claim 1 or claim 2, in which the reflective microbeads are  
15 retroreflective microspheres or microprisms.
- 4 A method according to any one of claims 1 to 3, in which the microbeads are totally  
transparent.
- 20 5. A method according to any preceding claim, in which the backing strip itself  
figured so as to apply the microbeads in a pattern.
6. A method according to any preceding claim and substantially as hereinbefore  
describe with reference to any one of Figs. 1 to 4.