Summary

In a first aspect, there is provided a process for producing a plastics foam composite moulding, characterized in that one or more outer layers, comprising a thermoplastic material, a thermoplastic fibre composition, a prepreg, a metal or a combination made of one or more of these materials and a solid poly(meth)acrylimide copolymer are introduced into a mould and then the poly(meth)acrylimide copolymer is foamed and bonds to the outer layer(s).

In a second aspect, there is provided a plastics foam composite moulding obtainable as defined herein.

In a third aspect, there is provided the use of the plastics foam composite moulding as defined herein as component in spacecraft, aircraft, watercraft and land vehicles.

In a fourth aspect, there is provided the use of the plastics foam composite moulding as defined herein as energy-absorbing component in spacecraft, aircraft, watercraft and land vehicles.

In a fifth aspect, there is provided the use of the plastics foam composite moulding as defined herein as stabilizing component in spacecraft, aircraft, watercraft and land vehicles.

Achievement of object

The objects according to the invention are achieved as follows via a plastics foam composite moulding and via a process for producing the same:

Use of a solid, foamable plastic, such as poly(meth)acrylimide (PMI), polyvinyl chloride (PVC), polyurethane (PU), or poly(meth)acrylate, (PMMA) permits production of a plastics foam composite moulding which is in essence homogeneous and which, in the course of the foaming process, forms a stable mechanical bond with an outer layer or with a plurality of identical or different outer layers.

"Stable mechanical" hereinafter means that the force required to release the outer layer (test method: drum peel test according to DIN 53295) is greater than the peel forces typical of the material. For ROHACELL®, these are in the range from 10 to 80 Nmm/mm.

The outer layers

The outer layers of the plastics foam composite moulding can by way of example be composed of:

- thermoplastic materials with or without reinforcement materials, examples being various types of polyamide (PA, PA 66, PA 12), polypropylene (PP), polybutylene terephthalate (PBT), polyether ether ketone (PEEK) with optional reinforcement by, for example, glass fibres, aramid fibres, polymer fibres, natural fibres or carbon fibres, an example being PA 6 GF
- thermoplastic fibre composite materials or organopanels, for example continuous-fibre-reinforced PA 6