

Utilization of a Rubber-Like Polymer for Producing Roof Sealing Strips

Introduction

This invention relates to the use of a rubber-like polymer for the production of roof sealing strips and to roof sealing strips containing this rubber-like polymer.

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Prior Art

Roof sealing strips are used in the building industry for sealing flat roofs and also at joins between individual structural elements. They are thus exposed to extreme weather conditions with the result that the materials used are expected to meet stringent requirements. They are required to be resistant to large variations in temperature and to moisture, UV radiation and strong winds or hail and snow. The roof sealing strips normally used are based on PVC and may contain an additional plasticizer and various stabilizers and fillers. Roof sealing strips known from the prior art are problematical in terms of their processability at low temperatures and particularly in terms of their weathering resistance.

The complex problem addressed by the invention was to develop roof sealing strips from those known from the prior art which would have a distinctly higher weathering resistance and, at the same time, could be readily processed at various temperatures.

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Description of the Invention

Accordingly, the present invention relates to the use of a rubber-like polymer consisting of the structural units

- 25 (a) butyl acrylate,
(b) at least one member from the group consisting of methyl methacrylate,

ethyl methacrylate, methyl acrylate and ethyl acrylate,

- (c) acrylonitrile,
 - (d) styrene,
 - (e) a semiester maleate soap and
 - 5 (f) a crosslinking agent
- for the production of roof sealing strips and to roof sealing strips containing this polymer.

It has now surprisingly been found that, by using the above-mentioned polymer in roof sealing strips, their weathering resistance can
10 be distinctly improved and, at the same time, ready processability, particularly at low temperatures, is achieved. The roof sealing strips according to the invention have high elasticity and flexibility, even after prolonged weathering. At the same time, they are distinguished by their high chemical resistance, particularly to oils and solvents. Improved
15 plasticizer retention has also been observed so that the useful life of the roof sealing strips is distinctly increased.

Besides the rubber-like polymer, the roof sealing strips according to the invention preferably contain PVC although, basically, any materials known from the prior art for sealing strips are suitable - plasticizers and
20 stabilizers, fillers and other materials known from the prior art which are typically used in roof sealing strips.

Rubber-like polymer

The rubber-like polymer to be used in accordance with the invention
25 may be produced as described in **EP 0 619 328**. It is preferably composed of (a) 40 to 80% by weight, preferably 50 to 80% by weight and more preferably 55 to 75% by weight butyl acrylate or optionally a mixture of butyl acrylate and 2-ethylhexyl acrylate containing up to 40% by weight of 2-ethylhexyl acrylate, (b) 5 to 35% by weight and preferably 5 to 20% by
30 weight of at least one substance selected from the group consisting of

methacrylate, ethyl methacrylate, methyl acrylate or ethyl acrylate, (c) 4 to 30% by weight, preferably 6 to 30% by weight and more preferably 10 to 25% by weight acrylonitrile, (d) 3 to 25% by weight, preferably 5 to 18% by weight and more preferably 8 to 14% by weight styrene, (e) 0.5 to 8% by weight, preferably 1 to 5% by weight and more preferably 2 to 4% by weight of a maleate semiester soap and 0.25 to 8% by weight, preferably 0.5 to 4% by weight and more preferably 1 to 3% by weight of a crosslinking agent.

A particularly preferred embodiment is characterized by the use of the rubber-like polymer marketed by Goodyear under the name of Sunigum®. The polymer is used in the roof sealing strips according to the invention in quantities of 1 to 30% by weight, preferably in quantities of 5 to 20% by weight and more preferably in quantities of 8 to 15% by weight.

15 Polyvinyl chloride

According to the invention, roof sealing strips of PVC with a PVC content of preferably 20 to 70% by weight and more particularly 30 to 55% by weight are preferably used.

20 Plasticizers

Any of the usual PVC-compatible plasticizers known from the prior art may be used as plasticizers. Typical plasticizers are, for example, derivatives of syvinic acid or acetic acid derivatives, such as - for example - cumyl phenyl acetate, derivatives of adipic acid, such as benzyl octyl adipate, dibutyl adipate, diisobutyl adipate, di-(2-ethylhexyl)-adipate, diisononyl adipate, derivatives of azelaic acid, benzoic acid derivatives, polyphenyl derivatives, citric acid derivatives, epoxidized fatty derivatives, glycol derivatives and the other plasticizers mentioned on pages 5 and 6 of EP-B1 0 619 328.

Particularly preferred plasticizers are adipic acid polyesters, more

particularly in admixture with epoxidized triglycerides, preferably epoxidized soybean oil.

Plasticizers are normally present in the roof sealing strips in quantities of 15 to 65% by weight, preferably 20 to 45% by weight.

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Stabilizers

In order to increase their thermal stability, the roof sealing strips may additionally contain heat stabilizers known from the prior art, such as - for example - Pb stabilizers and/or Ba/Zn stabilizers, preferably Ca/Zn stabilizers. UV stabilizers, for example oxalanilides, amides, titanium dioxide, carbon black, more particularly Tinovin® and/or Chimasorp®, may also be present. Each stabilizer is present in a quantity of normally 0.01 to 10% by weight and preferably 0.1 to 5% by weight. The total quantity of stabilizers normally does not exceed 20% by weight of the mixture.

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Fillers

The roof sealing strips may contain the usual fillers known from the prior art, for example chalk, talcum or silicas, although kaolin is particularly preferred as the filler. The quantity of fillers is 0.5 to 15% by weight and preferably 1 to 10% by weight.

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The roof sealing strips may additionally contain other typical ingredients, such as - for example - lubricants, preferably Ca stearate, processing aids, gelling aids, UV converters and biocides, such as - for example - thiazoline derivatives, tributyl tin, chloroisothiazoline or oxy-bis-phenoxyarsene, isothiazoline derivatives being particularly preferred.

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CLAIMS

1. A rubber-like polymer consisting of the structural units
 - (a) butyl acrylate,
 - (b) at least one member from the group consisting of methyl methacrylate,
5 ethyl methacrylate, methyl acrylate and ethyl acrylate,
 - (c) acrylonitrile,
 - (d) styrene,
 - (e) a semiester maleate soap and
 - (f) a crosslinking agent
- 10 for the production of roof sealing strips.
2. The use claimed in claim 1, characterized in that the roof sealing strips additionally contain polyvinyl chloride and a plasticizer.
3. The use claimed in claims 1 and 2, characterized in that the roof
15 sealing strips additionally contain a UV stabilizer, a heat stabilizer and a filler.
4. Roof sealing strips consisting of (A) a rubber-like polymer according to claim 1, (B) polyvinyl chloride, (C) a plasticizer, (D) a filler and (E) stabilizers.

