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(54) **Tömítőszalag és eljárás ilyen tömítőszalag előállítására**

Description

The invention relates to a foam sealing tape for sealing a joint between two adjacent components, wherein the sealing tape has two opposite wide sides that can be applied to two opposite contact surfaces of the two components for sealing the joint and two narrow sides connecting the wide sides, wherein the sealing tape has a body of a soft foam material that is impregnated with an impregnating agent and has elastic recovery, and the sealing tape body can be height-profiled at least on a wide side via the body width whilst forming a high region extending in each case in the longitudinal direction of the sealing tape and a low region, wherein the narrow side of the body that faces the high region has a greater height than the narrow side of the body that faces the low region, when the sealing tape is in a completely freely relaxed state.

Generic sealing tapes are often impregnated in order to adapt the properties of the sealing tape to certain requirements, such as for example a delayed recovery behaviour during the recovery of a compressed packaged sealing tape, tightness against driving rain, diffusion resistance or the like. The impregnation may here mostly be a function of the selection of the foam material of the sealing tape. Further, generic sealing tapes often have a height profiling, for example so as to provide, in an installation situation in a joint, regions of different compression and thus of different water vapour diffusion (WVD) resistance, in particular with a water vapour diffusion resistance that is higher on the inside of a room than on the outside thereof. In the course of this, the compressed sealing tape is as a rule placed in the joint in its intended position, whilst the sealing tape is compressed to a height that is less than the width of the joint. Once the pressure is released, the sealing tape then elastically recovers so as to seal the joint. The recovery of the sealing tape occurs here in a non-uniform manner over the width of the sealing tape because the sealing tape has regions with different compression. This, however, also influences the amount of time between the release of the recovery of the sealing tape (for example by removing the compressive force maintaining the sealing tape compression) and the period of time for the sealing arrangement of the sealing tape in the joint, once the latter is in an equilibrium state in relation to the recovery and the sealing of the joint. However, this has on the other hand an effect for example on the period of time that remains after triggering the

recovery of the sealing tape for the installation of the latter, i.e. during which it is still thin enough so as to be reliably mounted in the joint.

It is further known, for example from DE 199 44 611 A1, to provide sealing tapes with a film cover so as to provide a recovery trigger on a sealing tape already mounted in a joint, so that the recovery trigger can be carried out at any desired point in time, in particular also irrespective of the preparation of the sealing tape for installation in the joint such as for example winding the compressed sealing tape off from a roll, thus releasing the recovery thereof. However, the application of a recovery prevention agent such as a film cover is complex.

On the other hand, the impregnation of the body has various effects such as on the recovery delay, the tightness against driving rain and the diffusion resistance of the sealing tape etc., and can be optimised only in respect of one of the sealing tape properties, to which end the impregnation strength of the body has to be correspondingly adjusted. Due to the height profile and the degree of sealing tape compression in an installation situation, the properties of the body in the respective body regions will then be achieved, however will not always be optimally adjusted, since e.g. in the installation situation of the sealing tape, there will also be an elevated content of impregnating agent in the high region due to the then increased compression.

EP 688382 A1 describes a joint sealing tape with reinforced edge impregnation, so that upon release of the recovery, a profile that rises towards a central longitudinal axis of the joint sealing tape will be obtained.

DE 202009011979 U1 describes a sealing element such as in particular a joint sealing tape, which contains at least one thermo-expandable substance to ensure that this substance includes particles that expand under the influence of temperature, i.e. occupy a greater volume.

DE 102011050497 A1 describes a method for producing sealing strips from a foam material, wherein the two narrow surfaces have an impregnation of different intensity, which impregnation is initially applied to a surface of the foam material and is partially displaced by means of mechanical pressure and/or fluid pressure, so that a different diffusion density occurs between the two lateral surfaces.

DE 10 2008 063 371 A1 describes a sealing tape impregnated to achieve a delayed recovery, which has a transverse profile with different heights on two lateral walls of the sealing tape.

The invention is generally based on the object of providing a height-profiled sealing tape or foam body for the latter, the properties of which, which are dependent on the height profile, such as for example the mounting time, the diffusion resistance or the tightness against driving rain, are reduced or reversed in relation to their dependency on the given height profile, and which is easy to produce. In particular, the invention is based on the object of providing a sealing tape with a foam material body, which at a given height profiling allows a longer mounting time after recovery has been triggered, and which is easy to produce.

This object is achieved by means of a foam sealing tape according to claim 1, wherein the sealing tape body has an inhomogeneous impregnation in such a way that the low region is more strongly impregnated than the high region. As a result of the stronger impregnation of the low region relative to the high region, i.e. as a result of a higher weight of impregnating agent per unit volume (e.g. 1 cm^3) of the body in the low region compared to the high region with a body that is completely freely expanded outside the joint, wherein within the context of the invention, the high region is generally also impregnated with the impregnating agent. This has the effect that the body, by comparison with a homogeneous impregnation of the body, will at least substantially uniformly recover starting from a compressed state over the width thereof.

The term "compression state" means here that the body is compressed when it is located between plane-parallel planes. The body may here be compressed for example to 20% or in particular 15% or especially 10% of its starting height in a state in which it is completely freely expanded outside the joint. In particular, the compression state is the packaging state of the sealing tape packaged for storage and/or for transport, which may for example be rolled onto a roll in a compressed state.

The "starting height" of the body completely freely expanded outside the joint is here always the maximum height thereof, i.e. the height of the high region.

Within the context of the invention, the term "body height of the low region" relates in each case to the height of the low region of the body in the case of a low region of the body that is completely freely recovered outside the joint, i.e. without any effect of force. This means that no forces are applied to the body here and it is completely relaxed. The same correspondingly applies to the body height of the high region.

In general, within the context of the invention, the "high region" of the body is the section in the region of a narrow side with a maximum height, and the "low region" of the body is the body section in the region of a narrow side with the lowest height. "In the region of a narrow side" is here adjacent to the narrow side or at a distance of up to 33% of the width of the body. Generally, the narrow side of the body facing the high region has as a rule a greater height than the narrow side facing the low region. This applies in each case to a completely freely relaxed sealing tape.

The term "inhomogeneous impregnation" of the sealing tape body in relation to different weights of impregnating agents per unit volume of the sealing tape body also relates to the completely freely relaxed state of the body, the same correspondingly applies also to the term "weaker" or "stronger" impregnation of the body. The "stronger impregnation" of the low region compared to that of the high region relates to the fact that the low region is impregnated on average more strongly over the height thereof than the high region is impregnated on average over the height thereof.

Reference will be made below to the sealing tape, under the proviso that the soft foam body substantially forms the sealing tape, if necessary with the exception of a fastening means such as a thin (self-) adhesive layer for fastening the body to a component. In case a sealing tape has other function layers, such as for example in the case of the packaged sealing tape layers that are not compressed under a compression force, or should have other function elements such as a film cover, the same applies in relation to the body.

Knowing the invention, the more uniform or uniform recovery behaviour over the body width of the sealing tape according to the invention can be explained by the

fact that it appears that in the low region, a thicker impregnating agent film is provided on the pore walls or the webs of the body foam material, and due to the cohesion forces of the impregnating agent, greater recovery delaying cohesion forces act between impregnating agent film regions of opposite walls or webs than between the comparatively thinner impregnating agent films of the weaker impregnated high region. This surprisingly leads to a stronger recovery delay of the low region, even if with a given compression of the sealing tape in the high region, opposite regions of pore walls or webs of the foam material also come to rest on or to cohere with the impregnating agent films, thus also with a delayed recovery of the high region. Surprisingly, as a result of the measure according to the invention, a more uniform recovery of the sealing tape body over the width thereof compared to a homogeneously impregnated body is effected, whilst the recovery of the low and high regions is delayed by the impregnation. This is in contrast to conventional height-profiled sealing tapes, wherein in the case of a homogeneous recovery impregnation, the low region usually opens up faster than the high region (i.e. by comparison with a homogeneously impregnated body with the same impregnating agent weight or the same average impregnation). As a result of the fact that in the case of the sealing tape according to the invention the body recovery occurs more uniformly, the sealing tape height that is still acceptable for a secure installation for integration of the sealing tape will not be reached until a later point in time, measured from the point of release of the recovery of the compressed sealing tape.

The "uniform recovery behaviour" of the body within the context of the invention is to be understood to mean that the body, proceeding from its compression state, in which the body is located between plane-parallel planes and is compressed over the entire width thereof, initially recovers during the transition into its completely freely expanded state in such a way that the height-profiled wide side of the body is at least substantially plane and is preferably plane-parallel to the opposite, preferably unprofiled (plane) wide side of the body. The height-profiled wide side of the body remains in its at least substantially plane state over ≥ 20%, preferably ≥ 25% or ≥ 30%-35%, particularly preferably ≥ 40-45% or ≥ 50-60% of the recovery of the low region, if necessary ≥ 70-80% of the latter. The percentage value "over the recovery of the low region" means here a recovery by the indicated percentage of the height of the low region in the case of a completely freely relaxed body, proceeding from the compression state of the body, in

particular the packaging state thereof. Near the end of the complete recovery of the low region in the case of a free body (i.e. outside a joint) it can then be noticed that the high region is still recovered to a relatively clearly low degree, so that the high region is exposed to greater recovery forces and therefore recovers more rapidly than the (already almost completely recovered) low region. This relates here in each case to a free recovery, i.e. outside a joint and without any other force acting on the body. The "uniform recovery behaviour" of the body within the context of the invention is therefore present over at least part of the recovery process.

The "substantially plane arrangement" of the height-profiled wide side of the body during the recovery thereof means that by comparison with the body height of the low region in the respective recovery state thereof, the height differences of the recovering wide side of the body are comparatively low, for example ≤ 10-15% or in a particularly preferred embodiment ≤ 5% of the body height of the low region in the case of a completely freely relaxed body.

The at least substantially uniform recovery of the height-profiled wide side of the body is achieved in particular by the inhomogeneous impregnation, when the body or the low region has already recovered to a certain degree, i.e. for example after a recovery of ≥ 10-15% or ≥ 20-25% or preferably ≥ 30-35% or ≥ 40-50% of the height of the low region proceeding from the compression state of the body (degree of recovery), in particular in the packaged state of the latter. The indicated recovery degree relates here again to the height of the low region in the body recovered to the completely free state.

The indication "≥ x-y" (with x, y each being two different numbers), irrespective of the physical unit or % figure referred to, generally comprises in each case also the indications "≥ x" and "≥ y", independently of each other.

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Preferably, in the case of body regions with a changing impregnating agent content, the profile of the impregnating agent content continuously changes over

the width of the body, i.e. without any locally abrupt or stepped changes, which is preferably the case over the entire body width. This, too, allows a more uniform recovery behaviour of the body, since also in the case of discontinuous body profiles such as e.g. profiles with a steplike offset (rectangular steps), in the case of a compressed sealing tape, (if necessary narrow) transition zones of the degree of compression and thus also of the recovery force occur. This also applies in a case in which the body profile is formed with height offsets, because in this case, too, in the compression state of the sealing tape, a certain albeit partially smaller transition region of the compression between the high and the low region is present, in particular if the body has already slightly recovered, for example over ≥ 10-15% or ≥ 20-25% or ≥ 30-35% of the height of the low region. A continuous, constant change over the width of the body is advantageous also for other parameters varying with the impregnation content, such as the water vapour diffusion (WVD) resistance.

Preferably, the sealing tape is present, in a state packaged for transport and/or for storage, for example as a roll or reel, in such a way that the two wide sides of the body are formed to be at least substantially plane and are arranged parallel to each other.

Preferably, the wide side of the body that is opposite the height-profiled wide side of the body is, in a completely freely expanded body, formed to be at least substantially plane or plane.

Preferably, at least one or both wide sides of the sealing tape and the body extend parallel to each other or are congruent. Preferably, at least one or both narrow sides of the sealing tape and the body extend parallel to each other and are congruent.

The body is preferably completely made from an impregnated soft foam material with elastic recovery, in particular from PU foam. Preferably, the sealing tape has no non-compressible regions that extend only over part of the body width, non-compressible at least in relation to the compression pressure in the packaging state of the sealing tape.

Particularly preferably, the body is formed in such a way that the impregnating agent profile has changes to the impregnating agent content in the width region of the body, in which the height profile of the body has height changes. Differences in the recovery behaviour of the body due to height changes of the body can therefore be largely or virtually completely compensated by different impregnating agent contents in exactly these body regions with height changes.

If the height profile of the body has an absolute or local maximum, then the impregnating agent profile of the body preferably has an absolute or local minimum in this place.

If the height profile of the body has an absolute or local minimum in a given region, then the impregnating agent profile of the body preferably has an absolute or local minimum in this place.

If the height profile of the body has a transition region with a gradient or a slope in one region, then the impregnating agent profile preferably has a correspondingly opposite gradient in this place, i.e. a decreasing impregnating agent content in the region of an incline and an increasing impregnating agent content in the region of a decline of the height profile.

If the height profile of the body has a constant height in a region, the impregnating agent profile preferably also has a region of constant height in this place.

Particularly preferably, the sealing tape body has an impregnating agent content profile over the entire width thereof, which is formed in reverse to the height profile of the body. The above information regarding the position of absolute/relative minima and maxima and transition regions as well as regions with constant values therefore applies to the height and impregnating agent profile in combination with each other (in as far as these can be realised with the height profile of the body). The terms height and impregnating agent profile therefore each relate to the cross section of the body. The properties of regions of different compression of the body are therefore compensated by the different impregnating agent contents in these regions and the sealing tape properties, in particular in relation to recovery, are evened out.

The impregnating agent content profile is preferably formed to be inversely proportional relative to each other over the body width and the height profile of the body, i.e. are mirror-inverted under consideration of a given scaling with a scaling factor. The two profiles are thus at least substantially formed to compensate each other also in a quantitative respect, in particular in relation to the recovery behaviour of the body, as a result of which it is particularly uniform over the body width.

Preferably, in the case of a given height ratio between the high region and the low region of the body in the case of a completely freely relaxed sealing tape, the inhomogeneous impregnation is adjusted in such a way that a ratio of the impregnating agent content between the low region and the high region of the body is provided, so that the impregnating agent content ratio to the height ratio is in a range of 0.75 to 1.75, particularly preferably in a range of 0.85 to 1.65 or 0.95 to 1.55, in particular in a range of 1.05 to 1.45 or 1.15 to 1.35, for example approximately 1.25. It has been shown that in this case a particularly uniform recovery of the body can be achieved. This applies in particular if the height ratio between the high and the low regions is in a range of approximately 1.65 to 1.85 or 1.55 to 1.95, if necessary in a range of 1.4 to 2.1, especially approximately 1.75. At the same time, it can be achieved thereby that the tightness against driving rain of the body or of the sealing tape is higher in the low region than in the high region, in the case of a compression of the sealing tape to 25% of its starting height.

The indicated ratio may if needed also relate to other marked points of the body height profile relative to each other or to any points of the height profile relative to each other, for example to local intermediate minima or local intermediate maxima in relation to each other or in relation to local intermediate minima or local intermediate maxima to the high or low region of the body or in relation to a turning point of the height profile to the high and/or the low region. It has been shown that as a result of this ratio between the impregnating agent profile and the height profile of the body or of the resulting sealing tape, a very uniform recovery of the height-profiled wide side of the body altogether results, i.e. the different recovery forces of the body can be compensated by a different compression or by the correspondingly different impregnating agent contents of the various body regions.

Preferably, in the case of a compression of the body to 10% of its starting height in a completely free relaxed state, the ratio of the bulk density of the respective body region to its degree of compression over the body width deviates by ≤ 10-15%, preferably by ≤ 5-7%, from the mean value of the mentioned ratio of high and low regions, and the height ratio of the high and low regions of the completely freely relaxed body is ≥ 1.25. The height ratio of the high and the low regions may here, for the above - also preferred - deviations also be ≥ 1.35 to 1.45 or ≥ 1.55 to 1.6, for example 1.75. The height ratio may for example be ≤ 1.9 to 2.0 or ≤ 2.15 to 2.25 or preferably ≤ 2.5 to 2.75. Also in the case of a marked or high height difference between the high and low regions, the ratio of the bulk density of the body (impregnated body) to the degree of compression of the respective body region is comparatively constant. This requires that due to the clear height difference in the installation situation of the body or of the sealing tape in a joint, a clear gradient of the water vapour diffusion (WVD) resistance (the increase in diffusion resistance due to the greater body height overcompensates the effect of the reduced impregnating agent content), but on the other hand a virtually uniform recovery behaviour over the body width or, due to the higher bulk density in the low region, a tightness against driving rain, which is increased there, is obtained.

Preferably, the body or the sealing tape is designed in such a way that it has, in the installation state in a joint between plane-parallel planes and compression to 25% of its starting height in the case of a completely freely relaxed body or sealing tape, a water vapour diffusion (WVD) resistance on the narrow side facing the high region that is higher than on the narrow side facing the low region, and generally within the context of the invention, the narrow side of the body facing the high region as a rule preferably has a greater height compared to the narrow side facing the low region. As a result, the sealing tape or the body may be provided with its high region for example towards the inner room side, so that a higher WVD resistance can be achieved on the inner room side of the sealing tape than on the outer room side of the latter. Thus, the WVD resistance of the body or sealing tape is substantially determined by the high profile of the body and only to a minor degree by the impregnating agent content of the body, so that on the one hand, due to the better visual noticeability of the height profile to the respective installer, the installation position of the sealing tape can be more easily detected (compared to the difficulty in detecting impregnations of different strengths in the various regions of the sealing tape), and on the other hand it may be easier to

carry out a quality check of the height profiling of the body or sealing tape, since it is easier to check the height profiling or to determine any deviations from the intended profile. The height profile of the body on the one hand and the impregnating agent profile on the other hand, with a stronger impregnation of the low region compared to the high region, therefore act in opposite directions in relation to the WVD resistance in the sealing tape in the installation state in a joint. According to the invention, the impregnation of the body is thus not adjusted to be so strong that, as described above, the water vapour diffusion resistance is predominantly predetermined by the height profile of the body. It has been shown that in the case of such an adjustment of the impregnation, the latter is sufficiently strong in order to allow an at least substantially uniform recovery of the sealing tape body over the width thereof. The WVD resistance in the case of a compression of the body to 25% of its starting height may be in a height range of ≥ 3-5% or ≥ 7-10% or ≥ 15-20% higher than in the low region, at 20°C and 50% relative humidity. The water vapour diffusion resistance (sd value) of the impregnated body may be in a range of 0.05-25 m, preferably in a range of 0.1 to 10 m, particularly preferably in a range of 0.1 to 10 m, at 20°C and 50% relative humidity, determined according to the standard DIN EN ISO 12572.

What is particularly preferred is further that the body has, in the installation state in a joint between plane-parallel planes and a compression to 25% of its starting height, in the case of a completely freely relaxed sealing tape, a greater tightness against driving rain on the narrow side facing the low region than on the narrow side facing the high region. For example, the tightness against driving rain may, on the narrow side facing the low region (or at the low region) have a tightness against driving rain of ≥ 600 Pa, wherein the high region has a tightness against driving rain of < 600 Pa. The tightness against driving rain may be determined according to DIN EN 1027 in particular within the context of the invention. The tightness against driving rain may in the low region be higher by ≥ 10% or ≥ 15-20% compared to the narrow side facing the high region, in relation to the inspection pressure at which penetration of water through the specimen is determined. In particular, the tightness against driving rain may, in the low region, be 450 Pa or higher and may be higher by at least one pressure step according to DIN EN 1027 (pressure step: 150 Pa) compared to the high region. The increase in tightness against driving rain of the low region compared to that of the high

region is here achieved as a result of the effect of the high impregnating agent content in the low region, and it has been shown that in relation to tightness against driving rain, the increased impregnating agent content has a greater effect than the compression of the low region, which in the installation position is smaller, compared to the high region. For determining the tightness against driving rain of the low or the high region, a body with the same material properties as the high and/or the low region of the respective body may be used, or the high and low regions of the body may be separated and may be examined separately from each other in relation to tightness against driving rain. It will be understood that the width of the sections of the high and low regions are here the same in each case.

In order to obtain an at least substantially uniform recovery of the body, it has been found to be preferable if the bulk density of the body in the low region is higher by ≥ 15-20% or ≥ 25-30% or ≥ 35-40% than the bulk density of the high region. The bulk density of the body in the low region may be higher by a factor of smaller than/equal to 2.5-3 or preferably of smaller than/equal to 2-2.25 or of smaller than/equal to 1.75-1.9 compared to that of the high region, for example by a factor of approximately 1.6. This applies in each case to the completely freely relaxed body. The difference in bulk density is caused by the different impregnating agent contents.

The raw foam weight of the (unimpregnated) body may be in a range of 15-50 kg/m^3, in particular in a range of 20-45 kg/m^3 or 20-40 kg/m^3, for example in a range of 25-35 kg/m^3.

It has proven to be preferable, in order to achieve a uniform recovery of the body or of the sealing tape, if the impregnating agent content of the low region is ≥ 20-25 wt.-% or ≥ 35-50 wt.-% higher than the impregnating agent content of the high region, for example ≥ 66%. The impregnating agent content of the low region may be higher by a factor of smaller than/equal to 3.5-4 or a factor of smaller than/equal to 3-3.25 compared to that of the high region, for example by a factor of smaller than/equal to 2.5 to 2.75. For example, the ratio between the impregnating agent contents from the low to the high region may be approximately 2.15.

Particularly preferably, the low region of the body has an impregnating agent content of ≥ 40-45 kg/m^3, preferably of ≥ 50-55 kg/m^3, for example of ≥ 60 kg/m^3. The impregnating agent content in the low region may be ≤ 90-100 kg/m^3, preferably ≤ 80-85 kg/m^3 or ≤ 70-75 kg/m^3, for example approximately 65 kg/m^3.

The impregnating agent content of the high region of the body may be ≥ 10-15 kg/m^3, preferably ≥ 20-25 kg/m^3, in order to effect a sufficient recovery delay, for example ≤ 75 kg/m^3 or ≤ 55-60 kg/m^3 or ≤ 45-50 kg/m^3, in particular ≤ 40-45 kg/m^3, for example approximately 30 kg/m^3. It has been shown that such an impregnation is sufficient in order to effect a sufficiently strong recovery delay, which also allows a uniform recovery.

It will be understood that within the context of the invention, the impregnating agent content always relates to the amount of impregnating agent (in unit of weight) per unit of volume, in particular in terms of g/cm^3 or kg/m^3, provided the detailed context doesn't specify anything else.

The height of the high region of the body may be ≥ 20-30% or ≥ 35-40% higher than that of the low region, preferably ≥ 45-55% of the latter. The height of the high region may be greater than the height of the low region by a factor of smaller than/equal to 3-4 or a factor of smaller than/equal to 2.5-2.75, preferably by a factor of smaller than/equal to 2.25-2.5 or smaller than/equal to 2, for example by a factor of approximately 1.75. As a result of this height difference between the low and the high regions, the sealing tape may have, in an installation situation in the joint, a sufficient compression difference between the high and low regions and thus also a sufficient difference between the water vapour diffusion resistances in the high and low regions, in order to ensure a directed water vapour dissipation from the region with a high water vapour diffusion resistance to the region with a low water vapour diffusion resistance, as a rule from the inner room side to the outer room side of the body or sealing tape.

The body is preferably formed in one piece over the entire body width, and in particular the body width as a whole may correspond to the width of the sealing area of the sealing tape or the width of the sealing tape. The low and high regions of the body are thus formed on the integral body, and different regions of the integral body have impregnations of different strengths, in particular, the low

region of one body is partially impregnated stronger than the high region of that same body part. As a result of the measure according to the invention, a more uniform recovery behaviour of an integral height-profiled body is thus made possible. If necessary, the body may also be provided on an additional substrate (which is not part of the body), in particular a foam support that may extend over the entire body width. The low region of the body is preferably uniform over the height thereof, i.e. is impregnated with a constant impregnating agent content. The high region of the body is preferably impregnated uniformly over the height thereof, i.e. with a constant impregnating agent content.

The height profile of the body or of the sealing tape may have at least one turning point, preferably exactly one turning point. The height profile may here constitute a curved profile. The profile described preferably extends over the entire width of the body profile, preferably under integral formation of the body. If necessary, the height profile may also have 2, 3 or more turning points. The height profile may also have one or more indentations, however, it is preferably formed without such indentations. The height profile is particularly preferably formed to be continuous, i.e. without any height offsets.

The body height profile is preferably formed in such a way that the high and/or low regions are formed as a plateau, i.e. extend at a constant height over a width region of the body. Preferably, the high region and/or the low region each extend independently of each other over ≥ 5-10% or ≥ 15-20% of the sealing tape width, preferably over ≤ 45-48% or ≤ 35-40 of the latter, for example ≤ 25-35% of the latter. Preferably, the high region and/or the low region directly join on to the respectively adjacent narrow side of the body, which may generally apply. As a result, a favourable geometry is created for the joint sealing so as to create on the one hand, in the region of the narrow sides, regions with the same degree of compression and thus good tightness against driving rain, and on the other hand to allow a directed diffusion towards the outer room side or towards the low region, and the turning point may be the inversion centre in relation to the height profile line.

According to an alternative embodiment, the body may have an integral base section of foam material that extends over the body width and a narrower separate height section, which is placed thereon and is connected to the base

section made from foam material, or may consist of these two sections. This means that the height section is formed by a foam strip of a smaller width that is separate from the base section. In this embodiment, too, the high region is impregnated less than the low region of the body. This may be achieved on account of the fact that the additional strip is impregnated weaker than the base strip in the region of the high region, i.e. in the region of the overlap with the additional strip, or the base strip is impregnated weaker in the area of the high region than the base strip in the area of the low region, and preferably the additional strip is impregnated weaker than the base strip in the area of the low region. In both cases, the additional strip is preferably impregnated, in particular to achieve a delayed recovery. Preferably, the base strip is impregnated uniformly, i.e. with a constant impregnating agent content, in the low region of the body over the height thereof (that of the base strip). Preferably, the base strip is impregnated preferably uniformly, i.e. with a constant impregnating agent content, in the high region of the body over the height thereof (that of the base strip).

The impregnating agent content of the additional strip may be at least substantially equal to that of the region of the base strip that is covered thereby, for example with a difference of ≤ ± 20-25% or ≤ ± 10-15% or preferably of ≤ ± 5% deviation from the overlap region of the base section.

The impregnating agent content of the additional strip may be ≥ 10-15 kg/m^3, preferably ≥ 20-25 kg/m^3, in order to effect a sufficient recovery delay, for example ≤ 75 kg/m^3 or ≤ 55-60 kg/m^3 or ≤ 45-50 kg/m^3, in particular ≤ 40-45 kg/m^3, for example approximately 30 kg/m^3. It has been shown that such an impregnation is preferred in order to achieve a delayed recovery also of the additional strip and a uniform recovery over the body width.

The impregnation of the base strip between the high and the low regions may have a certain transition region, and the impregnation strength may continuously change over the width of the transition region from the high region to the low region. The transition region may extend over ≥ 2-3% or ≥ 5-7%, preferably ≥ 10% of the body width, preferably with an extension of ≤ 15-20% or ≤ 8-10% of the body width.

In the embodiment of the body with a separate additional strip, the height profile may be formed in a stepwise manner, if necessary also continuously.

Particularly preferably, the sealing tape and thus also the body are packaged in the compressed state over the length thereof, and the compression of the high region of the body is higher by ≥ 20% compared to that of the low region of the body (reference value as compression of the low region equals 100%), for example by ≥ 25-30% or ≥ 35%, for example ≤ 50-55% or ≤ 75-85% of the latter. The compression of the two regions relates in each case to the starting height of the two regions in the case of a completely freely relaxed sealing tape or body. If for example the high region of the body is compressed to 10% of its starting height in the case of a completely freely relaxed body and the low region is compressed to 17% of its starting height in the case of a completely freely relaxed body, then the compression of the high region is carried out to a ratio of 10/17 of that of the lower region, i.e. to be higher by approximately 42% (1-10/17) compared to that of the low region. It has been found that in the case of such compression differences, the measures according to the invention for effecting a uniform recovery behaviour of the body are particularly effective.

It has been shown to be particularly preferable if the body in the packaged state of the sealing tape is compressed to ≤ 14.5-15% or ≤ 13.5 to 14% of the starting height of the body in the completely freely relaxed state, for example to 9-14.5% or 10-14%, particularly preferably to 10-13.5% or 10-12.5% of its starting height. With such a compression, which is stronger than is otherwise normal, a fine adjustment in relation to the uniformity of the recovery behaviour of the body can be achieved, because as a result of the extent of the compression, it appears that the cohesion forces of the impregnating agent applied to the pore walls or the webs of the body foam material can be adjusted. This is surprising and appears to be based on a memory effect, of which it is assumed that the impregnating agent films of the opposite pore walls are especially bonded together due to the high compression, since the strong compression effects a delay and a homogenisation of the recovery behaviour of the body, even if the latter has already recovered to a certain degree, for example to more than 15% of its starting height. The sealing tape is preferably packaged with a body of such compression.

The foam material of the body prior to the impregnation thereof may have an air permeability of 160-1000 l/m^{2}s, in particular 180-800 l/m^{2}s or 200-600 l/m^{2}s, preferably ≤ 400 l/m^{2}s. If necessary, the air permeability may also amount to ≤ 100-150 l/m^{2}s. Generally within the scope of the invention, the air permeability is determined under standard conditions, with a 10 mm thick foam piece (completely relaxed) at a measurement vacuum pressure of 0.5 mbar, testing surface 100 cm^2; Frank device 21443; DIN EM ISO 9237.

The body may, at 20°C/50% relative humidity and at a compression to approximately 10% of its starting volume, have a recovery time (up to the complete free recovery outside a joint) of 1 to 72 hours, for example 4 to 60 hours or 6 to 48 hours, for example approximately 8 to 24 hours.

The impregnating agent may also substantially be an agent for adjusting the water vapour diffusion resistance of the body or an agent for adjusting the tightness against driving rain of the latter, which if necessary effects only a minor or virtually no recovery delay. By this means, too, a sealing tape may be produced, wherein the impregnating agent content has a non-consistent profile over the body width, i.e. it constitutes an inhomogeneous impregnation. This inhomogeneous impregnation is here also preferably the reverse or inversely proportional to the height profiling of the body. As a result of this, too, sealing tapes with an inhomogeneous impregnation may be produced, in particular by the method according to the invention as described below, so that the sealing tapes can be adapted to certain conditions in a simple manner. For example, a sealing tape may be produced thereby in a simple manner, which in the low region has a greater tightness against driving rain due to a stronger impregnation than in a high region, irrespective of a uniform recovery of the sealing tape, for example if the impregnating agent has no properties in relation to a recovery delay.

According to the invention, a sealing tape is thus also provided which at a given height profiling allows a longer installation time and has a greater tightness against driving rain on the lower narrow side than on the higher narrow side, and which is simple to produce.

Further, according to the invention, a method for producing such a height-profiled sealing tape or body for the latter is provided, which can be easily realised,

particularly preferably in respect of the modification of the sealing tape properties over different height regions of the height profile, and which will be described below.

A body for a sealing tape according to the invention can be produced in a particularly simple manner using a method wherein the already height-profiled foam body (i.e. height-profiled in the way in which it is to be present during the application in the sealing tape, i.e. without any further height profiling steps in relation to the starting state thereof), is impregnated preferably continuously (i.e. over the entire volume thereof) using an impregnating agent, and the body is subsequently passed through a squeezing gap of a squeezing device, wherein the gap width is adjusted in such a way that the body is passed through the squeezing device at least in the high region or over the entire width thereof, with any excess impregnating agent being squeezed out by the squeezing device, producing an impregnating agent profile that is preferably the reverse of the height profile of the foam body. Subsequently or immediately afterwards, the body is dried whilst maintaining the impregnating agent profile. The impregnation of the body in the first step is therefore carried out in the form of an over-impregnation so as to be able to subsequently squeeze out any excess impregnating agent. The impregnation can for example be carried out in an impregnating agent immersion bath using a compression device located below the impregnating agent level, for example in a roller mill. After the compression of the body, the latter is caused to expand below the impregnating agent level and thus absorbs (any excess) impregnating agent. The squeezing device, which may also be implemented as a roller mill with one or two counter-currently rotating roller pairs, is provided above the impregnating agent level or outside the impregnating agent bath. In particular, the width of the squeezing gap may be constant over the body width. Further, generally within the scope of the invention, the two squeezing tools defining the squeezing gap may have a rectilinear height line, the squeezing gap may thus have a consistent gap width over the entire body width. The squeezing tools may in particular be implemented as cylinder rollers having a constant diameter over the length thereof.

Thus, as a result of the method according to the invention, during the squeezing process, i.e. during the passage of the body through the squeezing device, the high region of the body is therefore compressed more strongly than the low

region, so that the high region is provided with a lower impregnating agent content per unit volume of the foam body than the low region. As a result of a subsequent drying of the body, during which the adjusted impregnating agent profile is fixed, the sealing tape body according to the invention can be obtained. It will be understood that instead of the individual height-profiled body, also a foam web with a multiple of the body width may be impregnated and may be passed through the squeezing device, and the height-profiled web is subsequently cut into individual bodies, with the longitudinal direction of the body/sealing tape corresponding to the longitudinal direction of the web. The height profiling may be carried out in a contour cutting method, in particular for producing sealing tapes with a constant height-profiled body, or by height profiling a base foam strip in the width of the sealing tape body and fixing an additional foam strip placed to overlap therewith, for example by gluing. If the body is formed in multiple pieces, under formation of a plurality of foam strips, then if necessary the various foam strips may be impregnated independently of each other and may subsequently be permanently bonded together, for example by gluing.

The method according to the invention is particularly advantageous in that as a result of the squeezing out of any excess impregnating agent in the squeezing device, due to the height profiling of the body, regions of different body heights are compressed to different degrees and are therefore provided with impregnating agent to different degrees, without any further measures to the respectively given height profiling of the body having to be specially adapted. The height profile is therefore basically a tool or a matrix for adjusting the impregnating agent profile. This is in contrast with conventional methods, in which the impregnation of a foam web with a rectangular cross section is carried out under homogeneous impregnation of the foam material in a completely freely recovered state and subsequent profiling of the dried, homogeneously impregnated foam material, for example by means of a contour cutting method or by connecting a plurality of homogenously impregnated strips to each other, as a result of which a homogeneously impregnated profiled body is obtained.

During the impregnation of the sealing tape body in an immersion bath, the body may be compressed to a height of 10-80% or 15-75% of the starting height thereof in the case of a completely freely expanded body, for example to approximately 20-60% of the latter, and the compression is adjusted in such a way that also the

low region is compressed. The compression height may correspond to the clear distance of a pair of rollers, through which the body is passed under compression. The compression or the gap width may vary over a wide range, as long as a continuous impregnation of the body is achieved.

During the squeezing process, the width of the squeezing gap may be adjusted to 5-40% of the height of the low region of the body, preferably to 7-30% or preferably to 10-25% or 12-20% of the height of the low region, for example to 15-18%. The size at the small end of the gap widths has to be limited so as to ensure that mechanical damage to the foam material, including damage to the pore walls of the foam material is avoided.

The height of the squeezing gap may in general have at least approximately the height of the body in the packaging state of the wt-% or ≤ 1-2 wt.-%, in relation to bound water (i.e. without any release of water by the decomposition of components of the body or of the impregnating agent, for example determined at 100°C).

The impregnating agent may in general be an impregnating agent that can be used for recovery impregnation of foam sealing tapes, or a hydrophobing agent etc., if a uniform recovery delay is not of the essence. The impregnating agent, in particular for recovery delay, may be an acrylate and/or a methacrylate dispersion, if necessary also with acrylate/methacrylate copolymers. The recovery delay is effected as a result of a sufficient adhesive force of the impregnating agent film on the pore walls of the foam material.

Thus, the invention also comprises a method for producing a body for a sealing tape according to any one of claims 1 to 22, which is characterised in that the height-profiled foam body is impregnated with an impregnating agent, and in that the sealing tape is subsequently passed through a squeezing gap of a squeezing device, wherein the gap width is adjusted in such a way that the body is passed through the squeezing device at least in the high region or over the entire width thereof, with any excess impregnating agent being squeezed out, producing an impregnating agent profile that is the reverse of the height profile of the body, and subsequent drying of the sealing tape. According to the method, the width of the squeezing gap may be constant over the width of the body.

According to one embodiment example or generally within the context of the invention, the dispersion used may have a weight proportion of polymer particles, in particular of acrylate/methacrylate particles, of 10-100% or 20-95%, related to the dry weight proportion of the dispersion, preferably 25-85% or 30-70%. The dry weight proportion of the dispersion may for example be in a range of 40-50 wt.-%. If necessary, the dispersion may also contain fillers, for example intumescent materials and other excipients such as dispersants, dyes, hydrophobing agents etc. The polymer of the dispersion that is used for recovery delay may have a glass transition temperature Tg in a range of -70°C to 20°C or in a range of -60°C to -10°C, for example in a range of approximately -45°C. The glass transition temperature may be determined using the ISO standard method marked by means of differential calorific scanning (DSC), in particular according to DIN EN ISO 11357-1 (determining using a heat flux differential calorimeter; simple calibration). The above may in particular apply to recovery impregnations.

All of the technical standards, like DIN standards, mentioned in relation to the present invention, respectively relate to the latest relevant version before the date of priority of the present application (26th March 2013).

The invention will be described below by way of example and by means of an embodiment example. In the drawings:

Figure 1 shows a cross section through a sealing tape according to the invention (Figure 1a), and in various states of recovery,

Figure 2, 3: show further embodiments of a sealing tape according to the invention in a cross sectional view,

Figure 4 shows a device for producing the sealing tape according to the invention.

Figure 1a shows a foam sealing tape 1 according to the invention for sealing a joint between adjacent components, wherein the sealing tape has two opposite wide sides 2a, 2b that can be placed against two opposite contact faces of the two components so as to seal the joint. The wide side 2a of the sealing tape is formed

to be plane and is provided with a fastening means such as a self-adhesive layer 3 (with a covering layer). The wide sides 2a, 2b are connected to each other by narrow sides 4a, 4b. The sealing tape includes a body 5 of a soft foam material with elastic recovery that is impregnated with an impregnating agent. The wide sides 2a, 2b and the narrow sides 4a, 4b of the sealing tape form here at the same time wide sides and narrow sides of the foam body 5. The sealing tape body is height-profiled on a wide side 2b over the width thereof and forms a high region 5a which in each case extends in the longitudinal direction of the sealing tape, and a low region 5b, the body and the sealing tape are shown in Figure 1a in a completely freely expanded state. According to the invention, the sealing tape body has an inhomogeneous impregnation, and the low region 5b is impregnated more strongly than the high region 5a, so that a more uniform or in particular substantially uniform recovery behaviour of the body is obtained, in relation to an otherwise normal homogeneous impregnation of the body. This uniform/more uniform recovery behaviour may in particular be present at least over the recovery height up to the sealing of a joint, and the joint width may be assumed to be approximately 60% of the height of the low region.

Figure 1 also shows the profile of the impregnating agent content over the body width in a schematic view (profile line IG), which relates to the body in its starting condition. The profile IG is here shown to be constant, in particular in regions with a height modification of the body profile. In particular, the impregnating agent content profile over the width of the body is shown to be the reverse of the height profile of the body. The high region 5a of the body has a low impregnating agent content, the low region 5b of the body has a high impregnating agent content. In the region of the falling height profile (transition region 5c) with a turning point W, there is a region of increasing impregnating agent content. If the height profile has plateaus 5e, 5f, here in the low region and the high region, then this is also the case in the impregnating agent profile. By means of the impregnating agent profile adjusted in the body it is achieved that the body has an at least substantially uniform recovery over the width thereof.

According to the example, the body has a width of 66 mm, a height in the low region of 22 mm and a height in the high region of 38 mm. This means that the height in the high region in the starting state of the body is greater by a factor of approximately 1.75 (38/22) compared to the height of the low region, in relation to

the height of the low region. The high region and the low region extend in each case independently of each other over approximately 25 to 30% of the body width and are here both formed to be plateau-shaped with a constant height. The high and low regions immediately join on to these two adjacent narrow regions.

In the packaged state, the body is compressed to approximately 10% of its starting height in the completely freely relaxed state. The high region is thus compressed to 10% of its starting height of the freely expanded sealing tape height, the low region to 17% of its starting height, the compressed sealing tape thus has a height of approximately 3.8 mm, with parallel wide sides.

The bulk density of the impregnated body of the sealing tape in the low region amounts to approximately 95 kg/m^3, in the high region to approximately 60 kg/m^3, with a raw foam weight of the body material of approximately 30 kg/m^3. The weight of the impregnating agent (corresponding to the content per unit volume) of the body in the low region thus amounts to approximately 65 kg/m^3, that of the high region to approximately 30 kg/m^3. The bulk density of the body in the low region is thus higher by a factor of approximately 1.58 compared to that of the low region. The impregnating agent content of the low region is thus higher by a factor of approximately 2.15 compared to that of the high region. This relates in each case to the completely freely recovered body in the starting state. The base strip in the low region of the body and the base strip in the high region of the body are in each case uniform over the height thereof (that of the base strip), i.e. impregnated with a constant impregnating agent content.

In particular, the body has here a recovery that is uniform in height, proceeding from the compressed packaging state thereof, for example at a compression of approximately 10% of its starting height with completely free recovery. The uniform recovery is obtained also on account of a compression of the sealing tape to 15% of the starting height thereof, in both cases up to the recovery of the low region to 50% of its starting height. In the region of this recovery, the associated joint will usually be at least largely or even already completely sealed by the sealing tape or the body. The deviation of the profiled wide side from a level during the recovery of the body amounts to approximately 5% of the starting height of the low region in the case of a completely freely recovered body.

In the case of a completely freely relaxed sealing tape or body, there is an inhomogeneous impregnation, at which the ratio of the impregnating agent content between the low region and the high region of the sealing tape amounts to 65 kg/m^3 : 30 kg/m^3, i.e. the impregnating agent content ratio to the height ratio (38 mm:22 mm) is approximately 2.17/1.73 = 1.25.

In the case of a compression of the body to 10% of its starting height in a completely freely relaxed state, the volume weight of the low region is 95 kg/m^3, its degree of compression in relation to the starting height thereof is 17%, the ratio between the bulk density and the degree of compression is therefore 95/17 = 5.59. The bulk density of the high region is 60 kg/m^3, its degree of compression in relation to its starting height is 10%, the ratio between the bulk density and the degree of compression is therefore 60/10 = 6. The deviation of the ratios therefore amounts to approximately 3% from the mean value of 5.8 ((5.59 + 6)/2), which means it is approximately constant. By contrast, the ratio of the heights of the high and low regions is 38 mm/22 mm = 1.73, i.e. much higher. Despite great height changes in the profile height of the body, a virtually uniform recovery behaviour over the body width is thus achieved, at least up to a recovery of the body to approximately 50-60% of its starting height, i.e. until the joint is filled, in fact virtually up to a complete recovery of the low region.

The body or the sealing tape, in the installation state in a joint between plane-parallel planes and a compression to 30% of its starting height in the case of a completely freely relaxed sealing tape, has a higher water vapour diffusion resistance on the narrow side facing the high region than on the narrow side of the sealing tape facing the low region, which is for example higher by at least 3 to 5%. Further, under the conditions mentioned, the tightness against driving rain is greater on the narrow side facing the low region than on the narrow side facing the high region, namely higher than 600 Pa or lower than 600 Pa.

The body according to Figure 1, in particular over the entire width of the height profile, is integrally formed from a foam material. The profile is curved and has a turning point.

Figure 1b shows a cross section through the sealing tape body 5 in the packaging state 5' (10%) and recovered to 20% (5'') and 40% (5''') of its starting height, as well as completely recovered (5).

Figure 2 shows an example of a body with a different height profile, here with an indentation S in the central body region and two turning points W. A modification to the examples of Figures 1 and 2 may consist in the fact that the high region drops down towards the adjacent narrow side and/or the low region rises up towards its narrow side.

Figure 3 shows an alternative embodiment of the body 10 in a two-piece embodiment, wherein the height profile of the body has an integral base strip 11 of a foam material, which extends over the body width, and a separate narrower additional strip 12 of foam material, which is placed on the latter and is connected with the base strip, as a height section for height profiling. The two strips are connected to each other by a (self-) adhesive layer 13. The body is impregnated in the two-part form shown using the method according to the invention. The impregnated additional foam strip 12 has here a lower impregnating agent content than the base strip, at least in relation to section 11a of the base strip at the level of the additional strip. The base strip 11 is here impregnated to different strengths over its width, with a lower impregnating agent content in the base strip region 11a with an overlap of an additional strip compared to the base strip region 11b without an overlap by the additional strip. In both cases, the additional strip is preferably impregnated, in particular impregnated for a delayed recovery. The base strip in the low region of the body and the base strip in the high region of the body are each uniform over the height thereof (that of the base strip), i.e. are impregnated with a constant impregnating agent content.

The impregnating agent profile IG with bulk densities RG of the impregnated body is also schematically shown in Figures 2 and 3. Apart from that, reference is made to the entire scope of what was said with regard to Figure 1. According to Figure 3, the impregnating agent profile, in the region of the height step due to the additional strip 12, forms a certain but very narrow transition zone.

Figure 4 shows a device 50 for producing the body according to the invention or for carrying out a method according to the invention. In the method for producing a

sealing tape according to the invention, the foam body 5, which has already been height-profiled for use in the sealing tape, is impregnated with an impregnating agent by passing it through an impregnating agent immersion bath 51 with compression in a compression device 52 such as a roller mill. As a result of the recovery of the body in the immersion bath, i.e. after passing through the compression device, the body absorbs impregnating agent to saturation, up to continuous impregnation, i.e. with an excess. Subsequently, the body is passed through a squeezing gap of a squeezing device 53, which is provided outside of the immersion bath, and the gap width is adjusted in such a way that the sealing tape is passed through the squeezing device, at least in the high region or over the entire width thereof, with any excess impregnating agent being squeezed out, producing an impregnating agent profile that is the reverse of the height profile of the sealing tape. In the sealing tape according to Figure 1, the gap width is approximately 3.5 to 4 mm, i.e. the compression corresponds at least approximately to the compression of the body in the packaging state of the sealing tape. Subsequently, the body is dried in an oven 54, so that the impregnating agent profile of the body generated in the squeezing device is fixed. The width of the squeezing gap in the squeezing device is constant over the width of the sealing tape. As a squeezing tool, two cylinder rollers orientated to be parallel, i.e. non-profiled rollers, are used.

The impregnating agent is here an acrylate dispersion for recovery delay.

The sealing tape with body according to the invention may in particular be used for sealing building joints between two components, for example between two wall components or between a frame component such as a window or doorframe and a wall soffit.

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TÖMÍTŐSZALAG ÉS ELJÁRÁS ILYEN TÖMÍTŐSZALAG ELŐÁLLÍTÁSÁRA

SZABADALMI IGÉNYPONTOK

1. Habanyag tömítőszalag szomszédos szerkezeti elemek közötti fuga tömítésére, amely tömítőszalagnál a tömítőszalagnak van két átellenes széles oldala (2a, 2b), amik a fugát tömítve a két szerkezeti elem átellenes felfekvő felületeire fektethetőek, és van két keskeny oldala (4a, 4b), amik a széles oldalakat összekötik, amely tömítőszalagnál a tömítőszalag impregnálószerrel impregnált, visszaállásra képes lágy habanyagból lévő korpusszal (5) rendelkezik, és a tömítőszalag-korpusz legalább az egyik széles oldalon a tömítőszalag szélessége mentén rendre a tömítőszalag hosszirányában futó magas részt és alacsony részt képezve magasságban profilozva van, és amely tömítőszalagnál a tömítőszalag teljesen szabad, feszültségmentes állapotában a magas rész felé nézó keskeny korpuszoldal magassága nagyobb, mint az alacsony rész felé nézó keskeny korpuszoldal, **azzal jellemezve**, hogy a tömítőszalag-korpusz inhomogén impregnálással rendelkezik, éspedig úgy, hogy amikor a korpusz a fugán kívül teljesen szabad, expandált állapotban van, akkor az alacsony rész erősebben van impregnálva, mint a magas rész.

2. Az 1. igénypont szerinti tömítőszalag, **azzal jellemezve**, hogy változó impregnálószer-tartalmú és/vagy korpuszmagasságban változó korpuszrészeknél az impregnálószer-tartalom profilja a korpuszszélesség mentén folytonos menetű.

3. Az 1. vagy 2. igénypont szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusz impregnálószer-tartalma a korpuszszélesség mentén olyan impregnálószertartalom-profilt képez, amely a korpuszszélesség mentén a korpusz magasságprofiljának fordítottjára van kialakítva.

4. Az 1–3. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusz alacsony részének és magas részének az impregnálása különbözőre van beállítva akképpen, hogy a korpusz a szélessége mentén legalábbis lényegében egyenletes visszaállással rendelkezik, legalábbis a visszaállási folyamat egy része alatt.

5. A 4. igénypont szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusz magasságban egyenletes visszaállása a korpusz összenyomott kiszerelési állapotából kiindulva vagy a korpusznak a teljesen szabad, feszültségmentes állapotban mérhető kiindulási magassága 15 %-

ára való összenyomásából kiindulva az alacsony korpuszrésznek a kiindulási magassága 50 %-ára való visszaállásáig egyenletesen történik.

6. Az 1–5. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusznak a magas rész alacsony részhez viszonyított, teljesen szabad, feszültségmentes állapotában mérhető adott magasságarányánál az inhomogén impregnálás olyan módon van beállítva, hogy az impregnálószer-tartalomnak a korpusz alacsony része és magas része közötti aránya akkora, hogy az impregnálószer-tartalmi arány a magasságarányhoz képest 0,75–1,75 tartományban van.

7. Az 1–6. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a fugába plánparalel síkok közé behelyezett és a korpusz teljesen szabad, feszültségmentes állapotban mérhető kiindulási magassága 30 %-ára összenyomott állapotban a korpusz a magas rész felé néző keskeny oldalon nagyobb vízpára-diffúzióval szembeni ellenállással rendelkezik, mint korpusznak az alacsony rész felé néző keskeny oldalán.

8. Az 1–7. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a fugába plánparalel síkok közé behelyezett és a korpusz teljesen szabad, feszültségmentes állapotban mérhető kiindulási magassága 30 %-ára összenyomott állapotban a korpusz az alacsony rész felé néző keskeny oldalon nagyobb csapóesővel szembeni tömítettséggel rendelkezik, mint a magas rész felé néző keskeny oldalon.

9. Az 1–8. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy (I) az impregnált korpusz térfogatsúlya az alacsony részen ≥ 15 %-kal nagyobb, mint a korpusz magas részének a térfogatsúlya, és/vagy hogy (II) az alacsony korpuszrész impregnálószer-tartalma ≥ 35 %-kal nagyobb, mint a magas korpuszrész impregnálószer-tartalma.

10. Az 1–9. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusztérfogatra vonatkoztatva a korpusz alacsony része ≥ 30 kg/m^3, előnyösen ≥ 40 kg/m^3 impregnálószer-tartalommal rendelkezik.

11. Az 1–10. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusztérfogatra vonatkoztatva a korpusz magas része ≤ 60 kg/m^3, előnyösen ≤ 45 kg/m^3 impregnálószer-hányaddal rendelkezik.

12. Az 1–11. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusznál a magas rész magasságára vonatkoztatva a magas rész magassága ≥ 20 %-kal nagyobb, mint az alacsony rész magassága.

13. Az 1–12. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a tömítőszalag kiszerelt állapotában a korpusz a teljesen szabad, feszültségmentes állapotban mérhető kiindulási korpuszmagasság ≤ 14,5 %-ára van összenyomva.

14. Az 1–13. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusz legalább egy inflexiós ponttal bíró görbe profillal rendelkezik, előnyösen úgy, hogy a habanyag a korpusz magasságprofiljának egész szélességi kiterjedése mentén egy darabként van kialakítva.

15. Az 1–14. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a korpusz magasságprofilja magában foglal egy habanyagból lévő és a korpuszszélességre kiterjedő alapcsíkot, és a magasságprofilozás magas szakaszaként egy habanyagból lévő keskenyebb külön rátétcsíkot, ami az alapcsíkra rá van helyezve, és azzal össze van kapcsolva.

16. A 15. igénypont szerinti tömítőszalag, **azzal jellemezve**, hogy a habanyag rátétcsík kisebb impregnálószer-tartalommal rendelkezik, mint az alapcsík, legalábbis az alapcsíknak a rátétcsík alatti szakaszához képest.

17. Az 1–16. igénypont egyike szerinti tömítőszalag, **azzal jellemezve**, hogy a tömítőszalag korpusza összenyomott állapotban található, amely tömítőszalagnál az összenyomott állapot a kiszerelési állapota a tárolásra és/vagy szállításra kiszerelt tömítőszalagnak, ami például összenyomva fel lehet tekercselve egy hengerre.

18. Eljárás az 1–17. igénypont egyike szerinti tömítőszalaghoz való korpusz előállítására, **azzal jellemezve**, hogy az eljárás értelmében a magasságban profilozott habanyag korpuszt impregnálószerrel impregnáljuk, és hogy utána a tömítőszalagot átvezetjük egy facsarószerkezet facsarórésén, amely eljárásnál a résnagyságot úgy állítjuk be, hogy a korpuszt a facsarószerkezeten a fölös impregnálószert legalábbis a magas részen vagy a korpusz teljes szélességében kifacsarva vezetjük át, miközben a korpusz magasságprofiljára fordított impregnálószer-profilt hozunk létre, és utána a tömítőszalagot szárítjuk.

19. A 18. igénypont szerinti eljárás, **azzal jellemezve**, hogy az eljárás értelmében a facsarórés nagysága a korpuszszélesség mentén állandó.

A meghatalmazott:

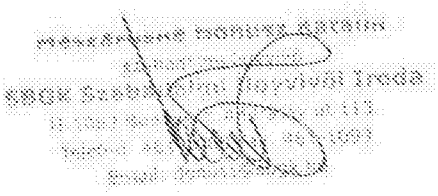


FIG 1a

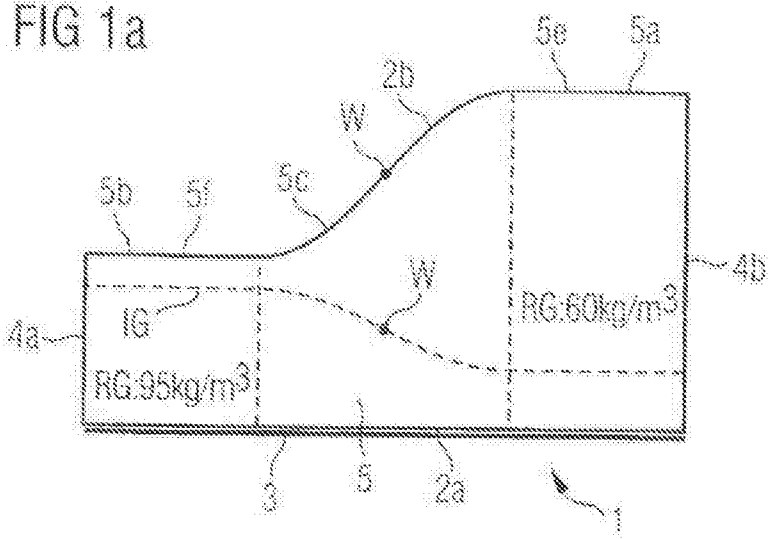


FIG 1b

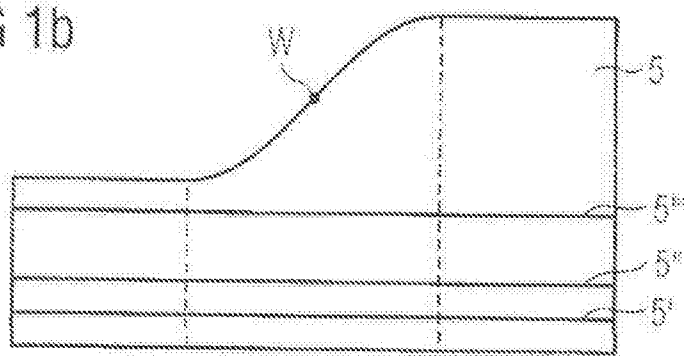


FIG 2

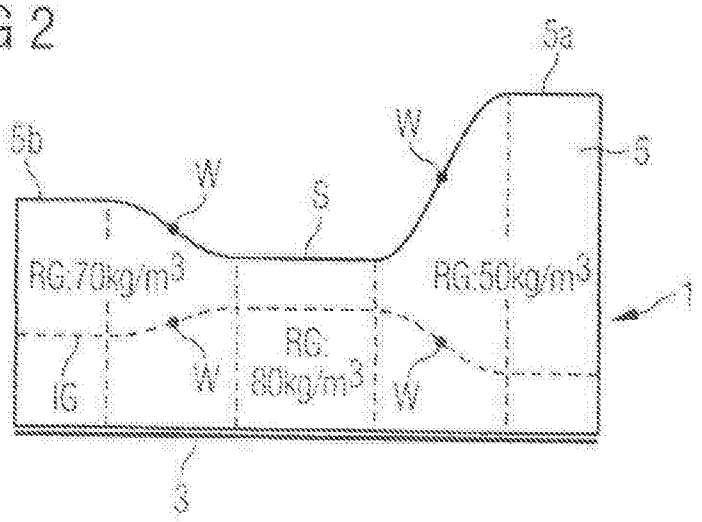


FIG 3

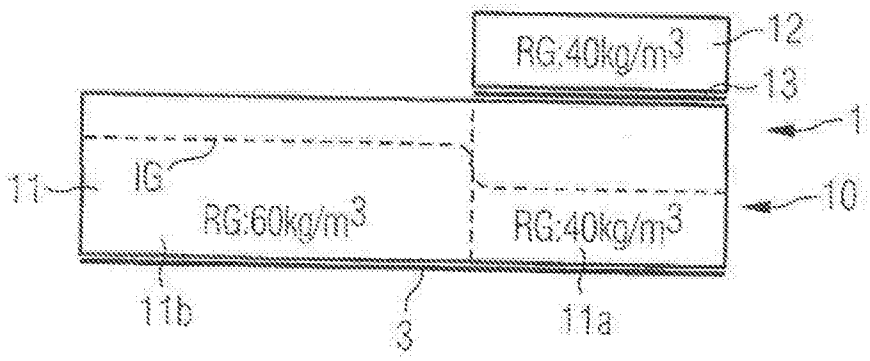
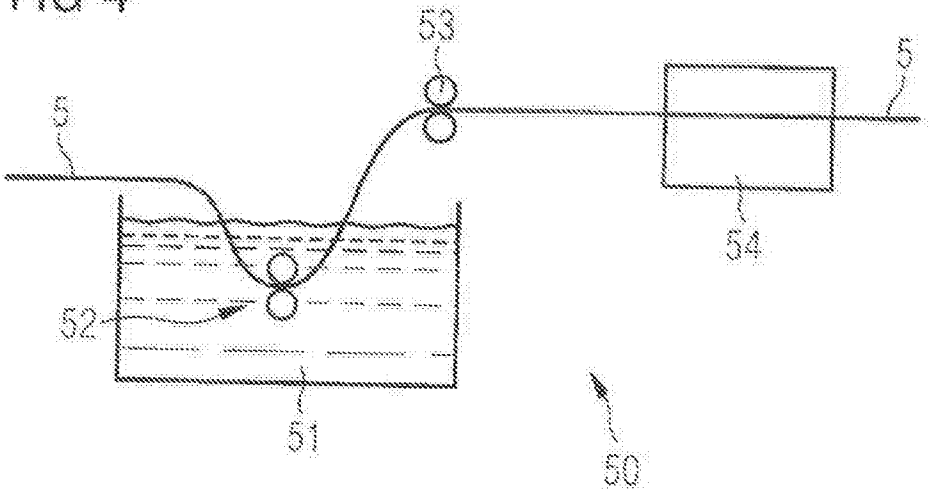

RG:40kg/m3
12
13
1
IG
11
RG:60kg/m3
RG:40kg/m3
10
11b
3
11a

FIG 4


53
5
5
52
54
51
50