

The invention relates to a process for the production of a dual chamber pressure packing with an external body which surrounds a pressure-loadable internal space and has an opening with a curled rim, wherein an internal body of fold-forming or creasable material is inserted through the opening in the external body and is sealed against the external body in the opening region of the external body and wherein a cover with valve is placed in a sealing manner onto the curled rim of the external body.

Dual chamber pressure packings of this type are generally used nowadays as a substitute for the known pressure containers with propellant gas. The medium is discharged from the internal body by the pressure loading of the internal space in the external body. Therefore the medium to be discharged does not come into contact with this pressure medium but is expelled by changing the internal body with a valve.

This known dual chamber pressure packing is known, for example, from US-A 3 974 945 and consists essentially of three parts, namely the external body, for example an aluminium tube with a base, the internal body, for example a very thin aluminium tube, as well as a funnel which is placed onto the mouth rim of internal and external body and surrounds them in a sealing manner. The corresponding valve is then inserted centrally into this disc-shaped funnel.

The application of the funnel to the mouth rims of internal and external body demands considerable labour as it has to be carried out manually. The funnel is rolled or curled together with the mouth rims. Therefore, it requires a certain amount of space. As the valve itself also generally requires a diameter of 25 mm, the openings in current dual chamber pressure packings have to have a total diameter of about 40 to 65 mm. Dual chamber pressure packings with

graduated dimensions are found therebetween.

A dual chamber pressure packing is also known from US-A 4 308 973, in which the rim of the funnel is curled together with the mouth rim of the external body. The internal body or the mouth rim thereof is fixed close to the curled rim on the external body. There is a great risk of a leak occurring at this point as the internal body is merely stuck to the internal wall of the external body.

An external body is known from FR-A 2 310 287, which already has a curled opening rim. An annular flange of an internal body is placed onto this curled opening rim and is bent round this curled rim. Considerable sealing problems also arise here. Furthermore, this process is not suitable for an internal body of thin creasable material as this material cannot form an opening flange and tears when curled outwardly.

Similar problems also arise with a dual chamber pressure packing according to FR-A 2 342 222, according to which the opening rim of an internal body is also laid onto a pre-curved opening rim of an external body. The seal is formed only by the introduction of a sealing composition between the curled rim of the funnel and the curled opening rim of the external body.

In EP-A 0 017 147, the rim of an internal vessel is bent outwardly. The dimensions of the internal container are selected such that it rests on the internal wall of the casing of the external container or is at only a very small distance from it. The external container also has an outwardly bent rim on which the bent rim of the internal vessel rests. There is no connection between external container and internal container, the connection only being produced by a valve funnel.

Finally, FR-A 2 140 804, which is considered to be the closest prior art, discloses a dual chamber pressure packing in which an internal container fits closely onto an external container. The mouth opening is cylindrical in design, a valve funnel being butt-jointed on the mouth opening. Quite considerable problems concerning the seal are also feared here. Furthermore, it is very difficult to insert an internal container which fits closely against the external container with the selected contours.

The inventor has set himself the object of developing a process of the above-mentioned type with which it is unnecessary to apply an additional funnel, with which the internal space of the external body may be kept absolutely impermeable and in which dual chamber pressure packings with different opening diameters from 1 inch, i.e. from 25.4 mm, may be produced.

This object is achieved in that the external body and the internal body, which has a substantially cylindrical form, are connected to one another in a sealing manner in the opening region before curling or the like of the opening, before filling of the internal body and before application of the cover with valve and are then turned down together to form a curled rim of annular cross section.

This means that a leakage-free connection between internal body and external body is produced before the curled rim is produced and the pressure-loadable internal space is therefore kept absolutely impermeable.

The connection is preferably made by welding, adhesion, deformation or the like. A coating which is applied either to the external body or to the internal body or to both in the connecting region before insertion of the internal body

into the external body has proven most suitable here. This coating, for example a suitable adhesive, can then dry so that the internal body is inserted into the external body without changing the coating. After insertion, the dual chamber pressure packing preferably passes through an oven in which the coating is liquefied. A certain connection between internal body and external body is thus produced. However, as the internal body is generally at a certain distance from the external body so that it can be surrounded by sufficient pressure medium in use, it has proven advisable to introduce into the opening in the dual chamber pressure packing a tool by means of which the internal body is pressed against the external body in the corresponding connecting region. This tool may be heated so that the liquefaction of the coating takes place or is sustained by this heat.

After production of the connection between internal body and external body, the mouth rims are curled, preferably by rolling.

The internal space is now absolutely impermeable. If leakages unexpectedly occur in the region of the connection, additional sealing material may be introduced through the opening which also serves for the pressure loading of the internal space, the sealing material then flowing along the internal walls of the external body and thus completing the coating of the connecting region.

In the last operation, the dual chamber pressure packing merely needs to be filled with the medium to be discharged and to be provided with the valve by means of which the space in the internal body is now also sealed and also to have the propellant gas supplied via a hole in the base.

This process according to the invention also has the advantage that both external body and internal body may be

printed, lacquered or the like before curling. Moreover, all standard internal protective lacquers may be used, in contrast to the formerly conventional funnels. Curling may be carried out by an automaton, saving substantial labour costs.

Further advantages, features and details of the invention will emerge from the following description of preferred embodiments with reference to the drawings.

Figure 1 is a longitudinal section through a dual chamber pressure packing according to the invention in a preliminary stage of production.

Figure 2 is a further longitudinal section through the dual chamber pressure packing according to Figure 1 in a further stage of production.

A dual chamber pressure packing P according to the invention has a tubular external body 1 essentially consisting of a cylinder casing 2 and a base cover 3 in the present embodiment. This external body 1 may be produced from a circular aluminium blank, for example by extrusion or deep drawing. The base cover 3 has a hole 4 by means of which the internal space I may be subjected to pressure. The hole 4 may be closed after this procedure.

An internal body 6 is inserted into a cylinder opening 5 on the side remote from the base cover 3 of the external body 1. This internal body 6 also has a cylinder casing 7 and a closed base cover 8. Overall, this internal body 6 consists of a relatively thin aluminium so that it may be creased to form folds.

Cylinder casing 7 and base cover 8 surround a space R which, in use, receives a medium which is to be discharged.

In the present embodiment, the internal body 6 is at a distance a from the cylinder casing 2 of the external body 1 over large areas. However, the internal body 6 and its cylinder casing 7 is connected to the cylinder casing 2 in the region b toward the cylinder opening 5, i.e. in the mouth region of an external body 1 and internal body 6. The connection is produced, for example, by welding, adhesion, laser welding, deformation or the like.

This preliminary stage of a dual chamber pressure packing according to the invention is produced as follows:

The external body 1 is drawn from a circular aluminium blank. The hole 4 is introduced into the base cover 3 and the cylinder casing 2 is covered with an adhesive coating 9 over the region b or is welded.

The internal body 6 is then inserted, the coating 9 having solidified so that it does not obstruct insertion.

The dual chamber pressure packing P now passes through an oven in which the coating 9 is liquefied. A connection between cylinder casing 2 and cylinder casing 7 is thus already initiated. However, the proper connection is produced by a heated tool which is introduced through the cylinder opening 5 and presses the cylinder casing 7 against the cylinder casing 2 in the region b.

The next processing stage is shown in Figure 2. In this processing stage, the base cover 3 is deformed so that it can withstand an internal pressure in the internal space I without bulging.

On the other hand, cylinder casing 2 and cylinder casing 7 are curled outwardly in the region of the cylinder opening 5 to form a curled rim 10 of annular cross section. Cylinder

casing 2 and cylinder casing 7 are simultaneously drawn inwardly in a certain region.

In a further stage of production, the space R in the internal body 6 is filled with the substance to be discharged and the cylinder opening 5 is closed by a cover with valve (not shown). This cover seals the curled rim 10. The internal space I of the external body 1 is put under pressure through the hole 4, the hole 4 subsequently being closed. However, the internal body 6 is simultaneously put under pressure so that on actuation of the valve the medium is discharged from the space R in the internal body 6 through the valve while the internal body 6 yields to the same extent in the internal space of the external body 1 and crumples.

If it is found that leaks occur in the region of the coating 9 when the internal space I of the external body 1 is loaded with pressure, it is possible to introduce further sealing material through the hole 4 into the internal space I. This sealing material flows along the cylinder casing 2 to the coating 9 so that leaks may also be eliminated at a later stage.

CLAIMS

1. Process for the production of a dual chamber pressure packing with an external body which surrounds a pressure-loadable internal space and has an opening with a curled rim, wherein an internal body of fold-forming or creasable material is inserted through the opening in the external body and is sealed against the external body in the opening region of the external body and wherein a cover with valve is placed in a sealing manner onto the curled rim of the external body, characterised in that the external body and the internal body, which has a substantially cylindrical form, are connected to one another in a sealing manner in the opening region before curling or the like of the opening, before filling of the internal body and before application of the cover with valve and are then turned down together to form a curled rim of annular cross section.
2. Process according to claim 1, characterised in that the connection is made by welding, adhesion, deformation or the like.
3. Process according to claim 1 or 2, characterised in that the external body and/or the internal body are provided with a coating in the connecting region before insertion of the internal body.
4. Process according to claim 3, characterised in that, after insertion of the internal body but before curling, the dual chamber pressure packing passes through an oven in which the coating is liquefied.
5. Process according to claim 3 or 4, characterised in that a heated tool which presses the internal body against the external body in the connecting region is introduced into the opening in the dual chamber pressure packing.



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6. Process according to at least one of claims 1 to 5, characterised in that packing material is introduced into the internal space of the external body before or during the pressure loading of the internal space of the external body.

7. Process according to at least one of claims 1 to 6, characterised in that the curled region is produced by deformation.



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