

Industrial Safety Glasses

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The invention relates to industrial safety glasses comprising a one-piece plastics sight piece and a top on the forehead side of comparatively soft plastics which is fixed to the sight piece and has a groove open toward the sight piece.

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Known industrial safety glasses of the generic type have an upper horizontal section extending toward a user's forehead and approximately conforming to the contour of the forehead. However, the inner edge of such a section can conform to the individual shape of a user's forehead only approximately so that clearances of different size remain between the glasses and the forehead, allowing splashes and particles, in particular dust, to enter.

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Attempts have been made to attain greater individualization by slip-on elements of rigid plastics being provided that extend over part of the upper side. This means a certain improvement, but does not help achieve a really flush covering of the upper side needed for dustproofing.

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Protective glasses of the generic type are known from WO 94/03831, in which the top consists of foamed material, the top being fixed by gluing and having a slit for it to be slipped on and held in place mechanically for instance by ribs. Comparable strips of foamed material are also known from U.S. patent 5,495,303.

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It is the object of the invention to embody protective glasses of the type mentioned at the outset in such a way that while offering high convenience of wearing, the glasses reliably protect the user's eyes against the penetration of dust, drops or the like, it being desirable that simple manufacture and reliable fixing of the top be ensured.

According to the invention, this object is attained by the top being injection-molded on the sight piece. The latter preferably consists of TPE or TPU. These are plastics which combine well with the sight-piece material or the coating of the sight-piece material.

The top on the forehead side may have a front frame element comprising a groove open toward the sight piece, the actual top extending plane from the frame element toward the user's forehead.

Thus it is possible to injection-mold the frame piece around the edge of the sight piece and possibly also around the upper and lateral pieces joined on.

The actual top of the upper side is comparatively thin, having for instance a thickness of approximately 1 mm. It consists of solid plastic material, i.e. not of foamed material, thereby ensuring that nothing can get into the user's eyes from the upper side. On the other hand the comparatively low thickness gives such a softness that good adapting to the configuration of the user's forehead is attainable. The smooth surface of the plastic material provides for good cleaning of the glasses. In this regard, the tops of foamed material conventionally used have considerable drawbacks. On the other

hand, the top according to the invention can be made so thin that the required softness is obtained in spite of the use of a solid plastic material.

In keeping with another embodiment of the invention it can be provided
5 that a preferably arc-shaped arresting section extending upward is molded on the inner edge of the piece that is joined to the sight piece and extends backward, this arresting section ensuring a good connection between the sight-piece material and the plastic material applied by injection-molding. To the same end, the upper and lateral pieces joined on may have openings,
10 into which the plastic material penetrates during the application of the plastic material by injection-molding.

Favorably, the sight-piece tops are produced by two-component injection-molding.
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In a preferred embodiment it is provided that a nose saddle and/or protector against scratching of the sight piece are applied to the nose portion of the sight piece by injection-molding; they can be formed in one piece with the top according to the invention and produced together with the latter in a
20 single injection-molding job.

As a result of the top according to the invention which bears particularly tightly against the user's forehead, it is of special importance that the sight piece has an anti-fogging layer. In this regard, provision is made for the
25 anti-fogging layer on the inside of the sight piece to comprise a combination of a hydrophilic polyurethane component, which has a water-absorbing effect, and a surface-active tenside, which prevents drop formation and causes the formation of a water film. The layer is produced in a one-pot

process, the polyurethane component as well as the tenside being correspondingly deposited in one operation as a single layer.

Details of the invention will become apparent from the ensuing description
5 of a preferred exemplary embodiment, taken in conjunction with the drawing, in which:

Fig. 1 is a perspective view, in the nature of an exploded view, of a sight
piece of a pair of industrial safety glasses according to the inven-
10 tion with an associated top on the forehead side seen from the front,

Fig. 2 is an illustration of the glasses or of the sight piece of Fig. 1 in the
condition of use, and
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Fig. 3 is an illustration corresponding to Fig. 2 of a modified embodiment.

A pair of industrial safety glasses seen in the drawing comprises a one-
20 piece plastics sight piece 1 with a front sight field 2 and a nose-piece portion 3, joined-on pieces 4 extending laterally backwards from the sight field 2 and having bearing studs 5 applied by injection-molding for side pieces (not shown). A piece joined on 7 that is horizontal in the condition of use extends along the upper edge 6 of the sight field 2, its inner edge 8 con-
25 forming about to the curvature of the user's forehead. Along the middle portion of the upper edge 6, an arc-shaped, joined-on arresting piece 9 extends vertically upwards from the edge 6.

A top 10 is injection-molded, forming a single piece of comparatively soft plastic material and comprising a horizontal plane element 11 and a frame element 12 running along the latter's front edge and having sections 13 that overlap the lateral pieces 4 joined on.

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The top 10 has a groove 14. However, when injection-molded, the top 10 is not realized in the isolated form seen in Fig. 1, because the comparatively soft plastic material constituting the top 10 is injection-molded around the sight piece in the mold. For a tight union to be obtained between this soft plastic material and the sight-piece material, the joined-on pieces 7 and 4
10 are provided with openings 15 and 16 so that the plastic material of the top 10 may penetrate them, the top thus being fixed by positive fit. Consequently, a finished product is created as illustrated in Fig. 2.

15 The embodiment according to Fig. 3 differs from that according to Fig. 1 and 2 in that a protector against scratching 17 is injection-molded on the frame 12 of the top 10, virtually extending parallel to the nose portion on the outside of the sight piece 1 and running into nose pieces 18.



Patent Claims

1. Industrial safety glasses comprising a one-piece plastics sight piece and a top of comparatively soft plastics on the forehead side which can be fixed
5 to the sight piece and has a groove open toward the sight piece characterized in that the top (10) is injection-molded on the sight piece (1).
2. Industrial safety glasses according to claim 1, characterized in that the
10 top (10) on the forehead side is made of TPE or TPU.
3. Industrial safety glasses according to claim 1, characterized in that the
top (10) on the forehead side comprises a front frame element (12) with a
groove (14) open toward the sight piece, the actual top (11) extending plane
from the frame element (12) toward the user's forehead.
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4. Industrial safety glasses according to claim 3, characterized in that the
frame element (12) is injection-molded around the joined-on pieces (4) or
(7), respectively.
- 20 5. Industrial safety glasses according to claim 3, characterized in that a preferably arc-shaped arresting section (9) extending upwards is injection-molded on the inner edge (8) of the piece (7) joined on the sight piece and extending backwards.
- 25 6. Industrial safety glasses according to claim 1, characterized in that
openings (15) or (16), respectively, are formed in the joined-on pieces (4)
or (7), respectively.



7. Industrial safety glasses according to claim 1, characterized in that a nose saddle (18) and/or protector against scratching (18) of the sight piece (1) is applied to the nose portion of the sight piece (1) by injection-molding.

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8. Industrial safety glasses according to claim 7, characterized in that the nose saddle (17) and/or protector against scratching (18) is injection-molded, forming one piece with the top (10).

10 9. Industrial safety glasses according to claim 1, characterized by an anti-fogging layer on the inside of the sight piece comprising a combination of a hydrophilic polyurethane component, which has a water-absorbing effect, and a surface-active tenside, which prevents drop formation and causes the formation of a water film.