A reinforced visor for a full-face helmet intended to be used by dragster pilots is disclosed. The reinforced visor is able to be removably attached on a full-face helmet provided with an opening defining the field of vision of the pilot wearing the full-face helmet and is able to be entirely covered by the reinforced visor in order to protect the face of the pilot. The reinforced visor has a main visor able to be removably and pivotingly attached on the full-face helmet and a secondary visor is fixed on the exterior surface of said main visor.
REINFORCED VISOR FOR COMPETITION PILOT HELMET

CROSS-REFERENCE


TECHNICAL FIELD

[0002] This invention relates to a reinforced visor for full-face helmets used by automobile racers driving cockpit cars without windscreen and more particularly for dragster pilots.

BACKGROUND

[0003] In races of cockpit cars without a windscreen, the pilots, which are subjected to many stresses due substantially to the speed, the proximity of the engine and the absence of a windscreen, must be correctly protected. That is why their full-face helmets in general and their visors in particular must be compliant with very strict certifications and/or standards. As such, visors must be manufactured in accordance with the criteria defined by the American standard SNELL SA2010 (SA for Special Applications). Visors in order to obtain the SNELL marking must in particular resist the two main tests provided for by said standard SNELL SA2010. This entails a test for the resistance to the impact of a lead ball launched at 500 km/h and a test for the resistance to a propane gas fire at 790°C for 45 seconds with self-extinguishing of 20 seconds.

[0004] Furthermore, the SNELL SA2010 standard imposes a mechanical locking device of the visor on the helmet and prohibits any friction device. This mechanical locking is conventionally carried out by fixing a pin on the helmet, said pin being able to cooperate with an orifice arranged on the visor in order to maintain said visor in a closed position. The unlocking of said visor is carried out by deforming the latter.

[0005] In order to resist the tests imposed by the SNELL SA2010 standard, most automobile helmet manufacturers use polycarbonate, because of the very good performance in fire, to manufacture the visors of their helmets. Conventionally these visors have a thickness of about 3 millimetres.

[0006] However, in dragster races, the risks of fire caused by engine explosions or accidents are more frequent. Indeed, in order to propel at a very high speed the dragsters in particular for the “Funny Car” and “Top Fuel” categories, a high explosive fuel is used such as, for example, a mixture of nitromethane (90%) and of methanol (10%). For this type of racing, it is therefore required to reinforce the resistance to fire of the equipment of the pilots and in particular of the visor of their helmet. Furthermore, in the “Funny Car” category, the engine is placed at the front of the vehicle and in front of the pilot. Consequently, in the event the engine explodes, the pilot who is attached by his harness in the cockpit without a windscreen of said vehicle can receive elements of said engine. It is therefore required to reinforce the mechanical resistance to impact of the visor of their helmet, inasmuch as the speeds of dragsters are higher than during traditional automobile races.

Finally, one of the purposes of dragster races is to start and to accelerate as quickly as possible. For this, dragsters are provided with specific clutches that generate a very large quantity of very fine dust. Visors must therefore also resist said dust.

[0007] All of these new stresses linked to dragster races do not allow for the use of already known visors made of polycarbonate 3 millimetres thick, as the latter do not guarantee a sufficient level of protection for pilots.

[0008] One of the solutions considered consists in adapting on the existing helmets a visor of which the thickness has been increased by changing, for example, from 3 to 6 millimetres in thickness. However, this solution is not satisfactory because a visor 6 millimetres thick lacks in flexibility which prohibits it from mechanically locking/unlocking. In addition, the multiple deformations of this thicker visor linked to the manufacturing process (in particular thermoforming) and mounting on existing helmets, designed for visors 3 millimetres thick, introduce optical deformations which disturb the vision of the pilot. Indeed, a visor 6 millimetres thick with a radius of curvature that is not constant then acts as a thick lens and the laws of refraction put forth by Snell and Descartes no longer apply as simply as that. Correcting these optical deformations would require designing a specific helmet adapted for visors 6 millimetres thick. However, the investments required would be disproportionate in relation to a commercial market for the least confidential.

SUMMARY

[0009] The purpose of this invention is therefore to overcome the aforementioned disadvantages and to propose an alternative to the already known visors used on full-face competition helmets that can be used for dragster races, said alternative being compliant with the American standard SNELL SA2010 and reinforced in order to guarantee a sufficient level of protection for the pilots of said dragsters. With regards to the latter point, the reinforced visor according to the invention therefore has resistance to fire, impact and dust that is higher than that provided for by said standard SNELL SA2010. Finally, the reinforced visor has all of the advantages of a thicker visor without having the disadvantages of it, by being in particular able to be fixed on the existing full-face helmets compliant with the SNELL SA2010 standard.

[0010] In one aspect, a reinforced visor for full-face helmet intended to be used by dragster pilots is therefore proposed, said reinforced visor being able to be removably attached on a full-face helmet provided with an opening defining the field of vision of the pilot wearing said full-face helmet and being able to be entirely covered by said reinforced visor in order to protect the face of said pilot, said reinforced visor comprising a main visor able to be removably and pivotally attached on said full-face helmet and a secondary visor fixed on the exterior surface of said main visor.

[0011] In a further aspect, the secondary visor has dimensions that are less than those of the main visor wherein it is fixed, said secondary visor having at least the same dimensions as the opening of the full-face helmet.

[0012] In an additional aspect, the main visor comprises at least two first orifices allowing it to be removably attached and rotated in relation to the full-face helmet, two holes allowing its angular displacement to be limited, and at least two second orifices allowing for the mechanical locking of said main visor on said full-face helmet, with the first and second orifices and the two holes being located outside of the zone of the main visor covered by the secondary visor.

[0013] In a further aspect, the main visor is tinted or not and the secondary visor is not tinted.
[0014] In an additional aspect, the main and secondary visors are each 3 millimetres thick and are manufactured from polycarbonate.

[0015] In another aspect, the reinforced visor comprises fastening members, of the mechanical fastening metal member type, in order to fix the secondary visor on the main visor.

[0016] In an additional aspect, a seal is arranged between the main helmet 2 and the visors.

[0017] Embodiments of the present invention each have at least one of the above-mentioned aspects, but do not necessarily have all of them.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Other advantages and characteristics shall be better understood in the following description of an embodiment of a reinforced visor according to the invention in reference to the annexed figures wherein:

[0019] FIG. 1 is a perspective view of a reinforced visor according to the invention;

[0020] FIG. 2 is a detailed perspective view of the reinforced visor of FIG. 1;

[0021] FIG. 3 is a perspective view of a full-face helmet provided with the reinforced visor of FIG. 1.

DETAILED DESCRIPTION

[0022] FIGS. 1 to 3 show a reinforced visor 1 designed to be removably attached on a full-face helmet 2 provided with an opening 3 allowing for the vision of the pilot wearing said full-face helmet 2 and being able to be entirely covered by said reinforced visor 1 in order to protect the face of said pilot, said full-face helmet 2 being similar to already known full-face helmets. The reinforced visor 1 in accordance with the invention comprises a main visor 4 and a secondary visor 5 fixed on the exterior surface of said main visor 4 by fastening members 6 in such a way as to form a double protection shield.

[0023] Here, “exterior” designates the surface of an element arranged on the exterior side of the full-face helmet 2 and “interior” designates the surface of an element arranged on the interior side of said full-face helmet 2.

[0024] The main visor 4 is similar to already known visors and is manufactured from polycarbonate 3 millimetres thick in order to be able to adapt to the full-face helmet 2 which is of the type of known full-face helmets compliant with the SNELL SA2010 standard and designed for visors 3 millimetres thick. Furthermore, the main visor 4 is provided with all of the orifices required for mounting in on said full-face helmet 2. As such, the main visor 4 comprises at least two first orifices 7 allowing it to be removably attached and rotated in relation to the full-face helmet 2, two holes 8 making it possible to limit its angular displacement, two second orifices 9 allowing for the mechanical locking of said main visor 4 on said full-face helmet 2. With regards to the second orifices 9, the main visor 4, which has a thickness of 3 millimetres, retains all of its flexibility allowing for easy mechanical locking. Finally, according to the rate of sunshine, the main visor 4 can be more or less tinted. Carried out as such, the main visor 4 makes it possible, on the one hand, to use for its manufacture the same moulds as those used to manufacture known visors compliant with the SNELL SA2010 standard and, on the other hand, to retain the same mechanisms for opening, closing and locking implemented on the known full-face helmets.

[0025] The secondary visor 5 which, according to one embodiment is also manufactured using polycarbonate 3 millimetres thick, is of dimensions that are less than the main visor 4 wherein it is fixed. Indeed, the secondary visor 5 has at least the same dimensions as the opening 3 of the full-face helmet 2 in order to guarantee the pilot a maximum field of vision which still guarantees the safety of the pilot and minimising the total mass of the reinforced visor 1 according to the invention. In addition, the first and second orifices 7, 9 and the two holes 8 are located outside of the zone of the main visor 4 covered by the secondary visor 5. This configuration makes it possible to retain for the reinforced visor 1, once the main 4 and secondary 5 visors are assembled, a flexibility allowing it to be raised and mechanically locked.

[0026] Furthermore, the secondary visor 5 shall, according to one embodiment, not be tinted in order to effectively mask the vision of the pilot in the event of sunlight but also in order to have only a single secondary visor 5 model and as such limit the number of commercial references. The tint of the reinforced visor 1 will then be obtained only by the more or less pronounced tint of the main visor 4.

[0027] The main 4 and secondary 5 visors, which are carried out using polycarbonate 3 millimetres thick, are perfectly adapted without excessive deformation to the full-face helmet 2 designed for a simple visor carried out using this same material. The reinforced visor 1 according to the invention therefore does not generate any optical deformation that can disturb the vision of the pilot.

[0028] In order to constitute the reinforced visor 1, the secondary visor 5 must therefore be assembled on the exterior surface of the main visor 4 with fastening members 6. For reasons of resistance to fire and heat, these fastening members 6 are mechanical fastening metal members such as for example screws embedded in the secondary visor 5.

[0029] Finally, when the main 4 and secondary 5 visors are assembled together, care will be taken to place a seal between the latter, not shown in the figures, so as to, on the one hand, prevent the fine particles generated in particular by the clutch of the dragster from penetrating into the main 4 and secondary 5 visors and as such disturb over time the vision of the pilot and, on the other hand, to guarantee a constant distance between said main 4 and secondary 5 visors. Said seal is arranged along the peripheral edge of the secondary visor.

[0030] It is well understood that the reinforced visor 1 according to the invention makes it possible to easily be adapted at least cost on a full-face helmet 2 of the type of existing helmets without having to modify the mechanisms for opening, closing and locking. Moreover, it is understood that this reinforced visor 1 is compliant with the SNELL SA2010 standard because the main visor 4 is similar to existing visors that satisfy said standard, but also that this main visor 4 has, due to the presence of the secondary visor 5, resistance to fire, impact and fine particles that are much higher than those required by said standard SNELL SA2010.

[0031] The reinforced visor 1 according to the invention is applied more particularly to the full-face helmets of dragster pilots, but it can also be used for any type of race of cockpit cars without a windscreen.

[0032] Finally, it goes without saying that the examples of reinforced visor 1 in accordance with the invention that have just been described are only particular illustrations, and in no way limit the invention.
What is claimed is:

1. A reinforced visor for full-face helmet intended to be used by dragster pilots, said reinforced visor being able to be removably attached on a full-face helmet provided with an opening defining the field of vision of the pilot wearing said full-face helmet and being able to be entirely covered by said reinforced visor in order to protect the face of said pilot, said reinforced visor comprising a main visor able to be removably and pivoting attached on said full-face helmet and a secondary visor fixed on the exterior surface of said main visor.

2. The reinforced visor according to claim 1, wherein the secondary visor has dimensions that are less than those of the main visor wherein it is fixed, said secondary visor having at least the same dimensions as the opening of the full-face helmet.

3. The reinforced visor according to claim 1, wherein the main visor comprises at least two first orifices allowing it to be removably attached and rotated in relation to full-face helmet, two holes making it possible to limit its angular displacement, and at least two second orifices allowing for the mechanical locking of said main visor on said full-face helmet, the first and second orifices and the two holes being located outside of the zone of the main visor covered by the secondary visor (5).

4. The reinforced visor according to claim 1, wherein the main visor is tinted or not and in that the secondary visor is not tinted.

5. The reinforced visor according to claim 1, wherein the main and secondary visors are each 3 millimetres thick.

6. The reinforced visor according to claim 1, wherein the main and secondary visors are manufactured from polycarbonate.

7. The reinforced visor according to claim 1, further comprising fastening members of the mechanical fastening metal member type in order to fix the secondary visor on the main visor.

8. The reinforced visor according to claim 1, further comprising a seal arranged between the main and secondary visors, along the peripheral edge of said secondary visor.

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