The invention relates to a heat-resistant glove, in particular a fire department glove, comprising at least one protector, wherein the protector is located in the area of the back of the hand, the inner surface of the hand and/or the edge of the hand and has a convex or concave curvature and has a temperature resistance for at least 9 seconds at a temperature of at least 200 degrees Celsius.
HEAT-RESISTANT GLOVES

[0001] The present invention relates to a heat-resistant glove, in particular a fire department glove, with at least one protector according to the preamble of claim 1.

[0002] Gloves with protective panels on the back side of the hand are known from the prior art. In particular in the area of motor sports, such as for example motorcycle gloves, or other types of sport, such as for example ice hockey gloves, baseball gloves, etc., there are gloves with protective panels intended to provide protection from injury.

[0003] U.S. 2007/0245453 A1 discloses a fire department glove with a protective region on the back of the hand which consists of a semi-rigid material. U.S. Pat. No. 5,822,796 A describes a fire department glove with a thicker back side of the hand, which may likewise be made relatively rigid.

[0004] An actual embodiment of a glove with a protective panel on the back of the hand is also shown in U.S. Pat. No. 5,640,712 A. Furthermore, it is specified that the glove can be cleaned in a washing machine and consequently withstands corresponding temperatures.

[0005] U.S. Pat. No. 2,448,697 A discloses a special application area and shows a welding glove which comprises a fire- or spark-proof shield on the back side of the hand.

[0006] The object of the present invention is to provide a heat-resistant and heat-insulating glove, in particular a fire department glove, which has not only temperature resistance but also resistance to high mechanical stress.

[0007] Both functions of the glove, i.e. temperature resistance and resistance to high mechanical stress, are prerequisites for appropriate use of the glove by its wearer. The temperature resistance of the components and the insulating interaction thereof thereby provide thermal protection for the hand.

[0008] The resistance to high mechanical stress on the one hand allows improved protection of the wearer's hand. On the other hand, this has the effect of widening the range of uses and lending the glove tool-like functionality. It can thus also be used, for example, as a heating implement.

[0009] In some applications, loads which require both thermal and mechanical resistance occur. This is the case, for example, when forcing open doors in burning buildings or else due to frictional heat when abseiling or sliding over a road surface in the event of an accident. Thus, the range of applications of such heat-resistant gloves extends from motorcycle gloves through operational gloves for special military units to outright fire department gloves. Depending on the actual situation, thermal insulation or mechanical resistance are relevant to varying degrees.

[0010] Temperature resistance and thermal insulation are ensured by a coordinated construction of different materials that are themselves temperature-resistant, but in their interaction thermally insulating. In the simplest case, the glove may, however, also be made in its basic structure from a single temperature-resistant material such that thermal protection is only ensured for a short time by the thermal capacity of the otherwise homogeneous material. Advantageous, however, are layer-like structures of different materials, such as for example lining materials, inserts of membranes and/or outer materials, which in interaction provide increased protection for the hand from thermal loading.

[0011] The mechanical resistance is brought about by applying to the body of the glove structural elements that absorb and distribute the mechanical loading as so-called protectors. These protectors have the effect of keeping mechanical loads away from the hand or the surface of the skin, and consequently of providing protection for the hand. The dimensions and attachment location of the elements, usually in the form of shells, channels, panels or small plates, are dependent on the one hand on the typical loading zones and on the other hand on the requirements for the deformability of the glove.

[0012] The object of the present invention is achieved by a fire department glove as a heat-insulating glove, at least one protector being arranged in the region of the back of the hand, the inner surface of the hand and/or the edge of the hand and having a convex or concave curvature and a temperature resistance at at least 200°C for at least 9 seconds. It proves to be advantageous in this case that, for example, when fighting a fire in a burning house, the hands or arms can be used to open or force in doors that are already burning but not yet open, with the hands protected by the gloves provided with the protectors, or that the fire fighter can protect himself from collapsing beams or the like because the hands are on the one hand protected by the protectors from the high mechanical stress when beating and forcing in doors or remaining parts of doors or from collapsing structural parts and on the other hand the hands are protected from being excessively heated by the fire as a result of the temperature-resistant outer material of the fire department glove.

[0013] It also proves to be advantageous that the protector is formed as a hard shell, the hardness of the protector providing protection for the hand from mechanical stress, in particular when forcing or beating open a door or a window or pushing away burning materials, in particular also in the case of tunnel fires.

[0014] It is provided that the hard shell comprises a thermoplastic elastomer, in particular a polyamide, whereby a hard shell can be produced with high strength, rigidity and toughness.

[0015] In a development it proves to be of advantage that the thermoplastic elastomer is high-temperature stabilized and has a melting temperature selected from a range with a lower limit of 200°C and an upper limit of 300°C, because as a result not only a high degree of hardness but also a high damping capacity and good flame-retardant properties are obtained.

[0016] The thermoplastic elastomer may be glass-fiber reinforced, carbon-fiber reinforced, mineral-filled and/or glass-bead-filled, whereby on the one hand the temperature resistance and the flame-retardant properties and on the other hand the mechanical resistance can be increased.

[0017] In particular, it proves to be of advantage here that the material of the hard shell has a notched impact strength selected from a range with a lower limit of 3 kJ/m² and an upper limit of 60 kJ/m², because as a result damage to the hard shell per se can be avoided under strong mechanical stress and the fire department gloves can be used repeatedly after such loading.

[0018] Furthermore, it proves to be of advantage that the material of the hard shell has a fracture stress selected from a range with a lower limit of 40 MPa and an upper limit of 230 MPa, whereby breaking of the hard shell or the protector under high mechanical stress can be prevented.

[0019] It is also advantageous that the material of the hard shell has a density selected from a range with a lower limit of 1.0 g/cm³ and an upper limit of 1.6 g/cm³ at room tempera-
ture, whereby a certain rigidity and hardness can be achieved, ensuring protection for the hands from mechanical stress.

Furthermore, it is found to be of advantage that the protector withstands heating of the material of the inner surface of the hand at a contact temperature of at least 250°C for a time period of at least 10 seconds, whereby it is ensured that, even if a glowing object is touched directly, the heat is shielded not only by the fire-resistant outer material of the fire department glove but also by the protector itself.

In a development it is provided that the at least one protector is arranged in the region of the back of the hand, the inner surface of the hand, the knuckles of the fingers and/or the shaft, whereby the parts that are subjected to high mechanical stress when the hands are used are particularly protected by the hard shell, and consequently injury to the hand can be avoided.

Furthermore, in a development it is provided that the hard shell is anatomically shaped, at least on that side that is facing the back of the hand or the palm of the hand, whereby the fit of the glove is not impaired by the hard shell and the ability to grip when wearing the fire department glove according to the invention is not impaired because the bending of the fingers or the knuckles of the fingers and the clenching of a fist continue to be possible.

Furthermore, it is provided that the back side of the hand or the inner surface of the hand comprises at least one layer of outer material and possibly at least one layer of lining or insert, for example a semipermeable membrane, and the protector is arranged on or between the outer material and the lining or is integrated in the outer material, whereby the protector, which itself already has a very high temperature resistance, is also protected from the heat of the fire by the outer material of the fire department glove. Moreover, the protector may also be covered by a covering material. This produces a synergistic effect of the heat-resistant outer material and the protector, whereby the individual effects thereof are significantly enhanced.

In an alternative configurational variant it is provided that the protector is arranged over the layer of the outer material on the outer side, whereby the fire-resistant layer of the outer material lying thereunder is protected from mechanical stress.

In a development it is provided that the protector is connected to the glove, in particular by sewing, adhesive bonding and/or insertion, whereby slipping of the protector with respect to the outer material can be prevented and the positioning is kept constant even under high mechanical stress or when the fingers are used.

Furthermore, a damping element may be arranged in the region of the at least one protector, preferably in the region of the base joints of the fingers, the edge of the hand and/or the inner surface of the hand, whereby on the one hand the impact effect and on the other hand the protective effect under mechanical stress can be increased.

The damping element in the region of the protector may be covered by a further protector or a covering, whereby the damping element does not come into contact directly with the wearer of the heat-resistant glove or the outer material. The damping element may be formed as a spring, in particular a spiral spring or as a pad, in particular comprising an elastomer, whereby on the one hand the impact force can be increased and on the other hand the protective effect for the wearer is improved.

Furthermore, it is provided that at least one carabiner and/or eyelet comprising a thermoplastic material, in particular polyamide, is arranged on the glove and the at least one carabiner and/or eyelet has a temperature resistance of at least 200°C for at least 9 seconds, whereby the carabiners or eyelets produced from plastic are not excessively heated by direct contact with the fire, as may occur in the case of metal carabiners or metal eyelets known from the prior art, and thereby cause damage to the heat- or fire-resistant outer material of the fire department glove and, as a result, can prevent injury to the firefighter in action. Contact with the eyelets or carabiners according to the invention that is brought about by the firefighter himself is also not as dangerous as with the metal eyelets or carabiners known from the prior art.

The burning time of the glove according to the invention is <2 seconds, whereby the safety of the firefighter wearing the glove can once again be increased.

For better understanding of the invention, it is explained in more detail on the basis of the following figures, which each constitute a very schematically simplified representation and in which:

FIG. 1 shows a glove with protectors;
FIG. 2a shows a section through a protector in the region of an end joint of a finger;
FIG. 2b shows a section through an alternative embodiment of a protector in the region of the end joints of the fingers;
FIG. 3a shows a section through a protector in the region of a base joint of a finger;
FIG. 3b shows a section through an alternative embodiment of a protector in the region of the base joints of the fingers.

It should be stated at the outset that, in the embodiments variously described, the same parts are provided with the same reference signs or the same component designations, it being possible for the disclosures contained in the description as a whole to be transferred analogously to the same parts with the same reference signs or the same component designations. The position indications chosen in the description, such as for example upper, lower, to the side etc., also refer to the figure being described and depicted at the particular time and, if the position is changed, can be transferred analogously to the new position. Furthermore, individual features or combinations of features from the various exemplary embodiments shown and described may also represent in themselves solutions that are independent, inventive or according to the invention.

All indications of ranges of values in the present description should be understood as also including any and every subrange, for example the indication 1 to 10 should be understood as meaning that all subranges between the lower limit 1 and the upper limit 10 are also included, i.e. all subranges beginning with a lower limit of 1 or more and ending with an upper limit of 10 or less, for example 1 to 1.7, or 3.2 to 8.1 or 5.5 to 10.

FIG. 1 shows a glove 1 according to the invention with protectors 2 in the region of the back side of the hand. The protector 2 is preferably formed as a shell and has a temperature resistance of at least 200ºC. For at least 9 seconds.

Depending on the region where the at least one protector 2 is arranged, the convex or concave curvature for
forming the shell form may be approximately zero or have a greater value in accordance with the anatomical requirements.

[0040] Alternative embodiments, such as the arrangement of the at least one protector 2 in the region of the shaft, the edge of the hand and the inner surface of the hand, in particular in the region of the ulnar nerve and the base joint of the thumb, are not shown.

[0041] The protectors 2 according to the invention are preferably formed as a hard shell, providing not only the temperature resistance, and consequently the possibility of working with the glove in the region of a fire or extremely high temperatures, but also the possibility of using the gloves to clear or punch out a path blocked by burning objects by being able to beat obstacles out of the path with the protectors of the fire department gloves.

[0042] In an alternative embodiment, the protector 2 may also be formed by a soft shell.

[0043] The hard shell of the protector 2 is preferably produced from a thermoplastic elastomer, in particular polyamide. The thermoplastic elastomer is high-temperature stabilized and has a melting temperature selected from a range with a lower limit of 200°C and an upper limit of 350°C. In a development of the invention the thermoplastic elastomer may be glass-fiber-reinforced, carbon-fiber-reinforced, mineral-filled and/or glass-bead-filled.

[0044] Preferably, the thermoplastic elastomer of the hard shell of the protector 2 is carbon-fiber-reinforced, whereby a still higher temperature resistance can be achieved than by the elastomer itself, and moreover a greater hardness of the protector 2 can be achieved.

[0045] The material of the hard shell of the protector 2 has a notch impact strength selected from a range with a lower limit of 3 kJ/m² and an upper limit of 60 kJ/m². Furthermore, the material of the hard shell of the protector 2 has a fracture stress, selected from a range with a lower limit of 40 MPa and an upper limit of 230 MPa, or the density has a value selected from a range with a lower limit of 1 g/cm³ and an upper limit of 1.6 g/cm³ at room temperature. The notch impact strength is established in accordance with DIN EN ISO 179/1 eA. The fracture stress is determined in accordance with the standard DIN EN ISO 527-1/2.

[0046] The protector 2 according to the invention is also capable of withstanding heating of the material of the glove according to the invention under a contact temperature of at least 250°C. for a time period of at least 10 seconds.

[0047] The hard shell of the protector 2 is arranged in the region of the back of the hand. It is preferably arranged there in the region of the base joints of the fingers or in the region of the end joints of the fingers. Furthermore, the protector 2 may also be arranged in the region of the shaft 6 or in the region of the inner side of the hand, such as for example in the region of the ulnar nerve or the base joint of the thumb, and/or the edge of the hand.

[0048] The outer material and also the lining or insulating material of the glove may, for example, consist of the following base materials or mixtures thereof:

- [0049] (aromatic) polyamides with a high melting point, in particular meta- and para-amides, such as for example Kermel, Nomex, Kevlar, Technora, PBI, Aprell, Teijinconex or Twaron.
- [0050] Crystalline polymers, in particular PBO fibers, such as for example Zylon or Vectran.
- [0051] Viscose FR, for example Lenzing FR,
- [0052] Glass fiber,
- [0053] Flame-retardant leather or corresponding textiles or flexible backing materials, for example with coatings of silicone, polyurethane or silicone carbon.

[0054] In FIGS. 2a and 2b, a section A-A is respectively shown through a protector according to the invention in the region of one of the end joints of the fingers 5. FIG. 2a thereby shows a protector 2 comprising a hard shell, at least that side 7 that is facing the back of the hand being anatomically shaped, and that side 8 of the protector 2 that is facing away from the back of the hand likewise being shown parallel to the anatomical formation.

[0055] In FIG. 2b, an alternative embodiment of the protector 2 according to the invention is shown, only that side 7 that is facing the back of the hand being anatomically shaped and that side 8 of the protector 2 that is facing away from the back of the hand being able to have any desired form, for example that which can be produced most easily and inexpensively and can be shaped most easily during production.

[0056] In FIG. 3a, a protector 2 according to the invention is shown in the region of the base joints of the fingers 4. Here, the protector 2 is formed in accordance with the anatomy of the base joints of the fingers 4, with in each case four indentations corresponding to the four fingers of the human hand. Both that side 7 that is facing the back of the hand and that side 8 of the protector 2 that is facing away from the back of the hand are in this case anatomically formed.

[0057] In FIG. 3b, an alternative embodiment of the protector 2 according to the invention is shown in the region of the base joints of the fingers 4, only that side 7 that is facing the back of the hand being anatomically formed and it being possible in accordance with a simple production variant for that side 8 that is facing away from the back of the hand to be shaped as desired, for example straight.

[0058] In an alternative configuration variant that is not shown, the at least one protector 2 may also be formed by a number of elements arranged against one another, which are concavely and/or convexly curved at least in certain regions. The elements may be connected to one another over their full surface area or only partially, such as for example in the form of a ladder. In the case of a connection in the form of a ladder, a filling element which likewise has the heat-resistant properties of the glove according to the invention may be arranged in the spaces between the rungs. These filling elements may be connected individually or likewise to one another. The forming of such protectors is known, for example, from where they are used on goalkeeper gloves.

[0059] The arrangement of the projector 2 may be both directly on the outside of the outer material of the back side of the hand 3 or the inner side of the hand, or at least one projector 2 according to the invention may be covered with at least one layer of the outer material or a covering material in the region of the back side of the hand 3 or the inner side of the hand. In the direction of the hand, the protector may be covered at least by one layer of lining or insert, such as for example a semipermeable membrane. In alternative embodiments, it is also possible to integrate the protector 2 according to the invention between a number of layers of the outer material or lining of the back side of the hand 3 or the inner side of the hand.

[0060] The protector 2 may be connected to the glove 1, for example by sewing and/or adhesive bonding. Furthermore, the protector 2 may also, for example, not be connected to the glove 1 directly by a seam, but be sewn in such a way that it is
kept at a specific position in the region of the back side of the hand 3 of the glove 1 or can be placed or inserted into a recess, in particular a pocket-like recess. Furthermore, the protector 2 may also be connected to the glove 1 by means of clasps, press-studs or the like.

[0061] In a development of the invention it is possible to produce not only the protectors 2, which on the one hand have the high temperature stability and on the other hand also withstand high mechanical stresses, but also other component parts of a fire department glove, such as for example carabiners and/or eyelets or the like, from a thermoplastic elastomer, in particular polyamide, these carabiners and/or eyelets or the like having a temperature resistance at 200° C. for at least 9 seconds. The eyelets may be formed, for example, as D- or O-rings.

[0062] It proves to be of advantage, moreover, that the burning time of the outer material of the glove 1 and the protector 2 of the glove 1 is less than or a maximum of 2 seconds. As already mentioned, possible materials for producing the protector 2 according to the invention are thermoplastic elastomers, such as for example polyamides, as are sold under the trade names Ultramid® from the company BASF, the designation Bergamid® from the company PolyOne and the designation Alcom® from the company Albis Plastic GmbH.

[0063] The composition for the hard shell of the protector 2 may also be prepared from a mixture of a number of commercially available polyamides, such as for example from Alcom® and Ultramid®, for example from 5% Alcom and 95% Ultramid, or else from other components that increase the temperature resistance.

[0064] The heat-resistant gloves according to the invention, in particular fire department gloves, with the protectors 2 conform not only to the European fire department standard EN 659 but also to the Australian fire department standard AS 2161.10 and the American fire department standard NFPA 1971. Furthermore, the gloves 1 according to the invention also conform to the Rescue Standard NFPA 1951 and other globally known standards, such as for example EN 407 (thermal hazards), standard against heat and flames, etc.

[0065] The gloves 1 according to the invention consequently meet the requirements for a fire department glove, the burning time following a flame impingement time of between 3 and 15 seconds being less than 2 seconds and the afterglow time being less than 5 seconds. The distance between the tip of the flame and the lowest point of the glove exposed to the flame is between 10 and 30 mm. The glove may be exposed to a flame vertically or horizontally. The material used here for the glove neither drips nor melts when impinged by the flame and/or the place impinged by the flame is not perforated.

[0066] Furthermore, the time period of the rise in temperature when the glove is in contact with flames at the place not impinged by the flame of 24° C. is less than 13 seconds.

[0067] In the case of a heat flux density of 40 kW/m², the time period until the temperature rise of 24° C. occurs at the place not impinged by the flame of the material removed from the back of the hand is not less than 11 seconds. In the case of a contact temperature of at least 250° C., the material of the inner hand construction withstands the heat for a period of at least 10 seconds before second-degree burning occurs. Moreover, the lining material must not melt, drip or ignite at a minimum temperature of 180° C. The shrinking of the glove at a minimum temperature of 180° C. for a period of 5 minutes is not more than 5%.

[0068] In a development, the heat-resistant glove may have in the region of the protectors 2 damping or resilient elements, which on the one hand increase the impact effect of the protectors 2 but on the other hand reduce the force that acts on the wearer, for example, as a result of pushing a door open. The damping or resilient elements may be formed as springs, such as for example helical springs/spiral springs, torsion springs, annular springs, elastomer springs or elastomer pads. The damping or resilient elements in the region of the protectors 2 are preferably arranged in the region of the base joints of the fingers 4 on the back side of the hand 3. It goes without saying that the damping or resilient element may also be arranged in the region of the edge of the hand, the inner surface of the hand, the end joints of the fingers 5 and the shaft 6. The damping or resilient elements may also be covered by the outer material, a covering panel and/or a further protector 2.

[0069] In the case of the glove described according to the invention, the back of the hand or the inner side/palm of the hand comprises the region from the tips of the fingers or the tip of the thumb to the end of the shaft.

[0070] Therefore, the glove 1 according to the invention with the protectors 2 can be used both for rescue operations and for firefighting operations.

[0071] The exemplary embodiments show possible configurational variants of the glove 1, it being noted at this point that the invention is not restricted to the configurational variants of the same that are specifically shown, but that, rather, various combinations of the individual configurational variants with one another are also possible and this possibility for variation on the basis of the teaching for technical action that is provided by the present invention is within the ability of a person skilled in the art engaged in this technical area.

[0072] Therefore, all conceivable configurational variants that are possible by combinations of individual details of the configurational variant that is shown and described are also covered by the scope of protection.

[0073] In FIGS. 3a and 3b, further embodiments of the protector(s) 2, possibly in themselves independent, are shown, once again the same reference signs or component designations being used for the same parts as in the previous FIGS. 1, 2a and 2b. To avoid unnecessary repetition, reference is made to the detailed description in the previous FIG. 1.

[0074] As a matter of form, it should finally be pointed out that, for better understanding of the construction of the glove 1 and the protector 2, these or the component parts thereof have in some cases not been shown to scale and/or shown enlarged and/or reduced in size.

[0075] The object underlying the independent inventive solutions can be taken from the description.

[0076] In particular, the individual configurations shown in FIGS. 2a, 2b and 3a, 3b can form the subject matter of independent solutions according to the invention. The relevant objects according to the invention and solutions achieving them according to the invention can be taken from the detailed descriptions of these figures.

1-20. (canceled)

21. A heat-resistant fire department glove, comprising: at least one protector with a fire-resistant outer material, wherein the at least one protector is arranged in the region of the back of the hand, the inner surface of the hand and/or the edge of the hand and has a convex or
concave curvature and a temperature resistance of at least 200°C for at least 9 seconds.

22. The heat-resistant glove as claimed in claim 21, wherein the outer material and the protector are formed and arranged such that heat is shielded not only by the fire-resistant outer material of the fire department glove but also by the protector itself.

23. The heat-resistant glove as claimed in claim 21, wherein the protector is arranged on the outer side of the outer material.

24. The heat-resistant glove as claimed in claim 21, wherein the back side of the hand or the inner surface of the hand comprises at least one layer of the outer material and at least one layer of lining, and the protector is arranged between the outer material and the lining or is integrated in the outer material.

25. The heat-resistant glove as claimed in any one of claims 21, wherein the protector is formed as a hard shell.

26. The heat-resistant glove as claimed in claim 25, wherein the hard shell comprises one of a thermoplastic elastomer and polyamide.

27. The heat-resistant glove as claimed in claim 26, wherein the thermoplastic elastomer is high-temperature stabilized and has a melting temperature selected from a range with a lower limit of 250°C and an upper limit of 350°C.

28. The heat-resistant glove as claimed in any one of claims 26, wherein the thermoplastic elastomer is glass-fiber-reinforced, carbon-fiber-reinforced, mineral-filled and/or glass-bead-filled.

29. The heat-resistant glove as claimed in claim 25, wherein the material of the hard shell has a notched impact strength selected from a range with a lower limit of 3 KJ/m² and an upper limit of 60 KJ/m².

30. The heat-resistant glove as claimed in claim 5, wherein the material of the hard shell has a fracture stress selected from a range with a lower limit of 40 MPa and an upper limit of 230 MPa.

31. The heat-resistant glove as claimed in claim 25, wherein the material of the hard shell has a density selected from a range with a lower limit of 1.00 g/cm³ and an upper limit of 1.6 g/cm³.

32. The heat-resistant glove as claimed in claim 25, wherein the hard shell is anatomically shaped, at least on that side that is facing the back side of the hand or the inner surface of the hand.

33. The heat-resistant glove as claimed in claim 20, wherein the protector withstands heating of the material of the outer and inner hand at a contact temperature of at least 250°C for at least 10 seconds.

34. The heat-resistant glove as claimed in claim 20, wherein the protector is arranged in the region of the back of the hand, the base joints of the fingers, the end joints of the fingers and/or the shaft of the back side of the hand and/or in the region of the ulnar nerve or the base joint of the thumb of the inner surface of the hand.

35. The heat-resistant glove as claimed in claim 20, wherein the protector is connected to the glove by sewing, adhesive bonding and/or insertion.

36. The heat-resistant glove as claimed in claim 20, wherein a damping or resilient element is arranged in the region of the at least one protector in the region of the base joints of the fingers, the edge of the hand and/or the inner surface of the hand.

37. The heat-resistant glove as claimed in claim 36, wherein the damping or resilient element is arranged in the region of the protector and is covered by a further protector or a covering.

38. The heat-resistant glove as claimed in claim 36, wherein the damping or resilient element is formed as a spring or as a pad.

39. The heat-resistant glove as claimed in claim 36, wherein the damping or resilient element is formed as a helical spring or as a pad comprising an elastomer.

40. The heat-resistant glove as claimed in claim 20, wherein at least one carabiner and/or eyelet comprising a thermoplastic elastomer, in particular polyamide, is/are arranged on the glove and the at least one carabiner and/or eyelet has/have a temperature resistance of at least 200°C for at least 9 seconds.

41. The heat-resistant glove as claimed in claim 20, wherein at least one carabiner and/or eyelet comprising polyamide is/are arranged on the glove and the at least one carabiner and/or eyelet has/have a temperature resistance of at least 200°C for at least 9 seconds.

42. The heat-resistant glove as claimed in claim 20, wherein the burning time of the outer material and the protector is less than 2 seconds.

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