CLAIMS

What is claimed is:

1. An autonomous firefighting agent (10) made from a material having fire-extinguishing properties comprising microcapsules (2) filled with a fire-extinguishing composition and having a size from 2 to 100 μm, said microcapsules being a halocarbon enclosed in a polymeric shell of polyurea and/or polyurethane, and a binder (3), wherein the binder (3) is a composite material comprising a polymeric component and mineral fibers (5) and/or particles.

2. An autonomous firefighting agent (10) of claim 1, wherein the halocarbon is enclosed in a polymeric shell of polyurea and/or polyurethane on the basis of polyisocyanate prepolymer.

3. An autonomous firefighting agent (10) of claim 1 or claim 2, wherein the halocarbon is selected from one of the following first substances: (a) 1,1,2,2-tetrafluorodibromoethane; (b) 1,1,2-trifluorotrichloroethane; and (c) 2-iodo-1,1,1,2,3,3,3-heptafluoropropane, and/or a mixture thereof with other halocarbons.

4. An autonomous firefighting agent (10) of claim 3, wherein other halocarbons in the mixture contain one of the following second substances: (a) 1,1,2,2-tetrafluoroethane; (b) 1,1-difluoro-2,2,2-trichloroethane; (c) 1,2-difluorotrichloroethane; (d) 1,1-difluoro-1,2-dichloroethane; (e) 1,2-difluoro-1,1-dichloroethane; (f) 1,1-difluoro-1-chloroethane; (g) 1-fluoro-1,1-dichloroethane; (h) 1-fluoro-2-chloroethane; (i) pentafluorochloroethane; (j) 1,1,2,2-tetrafluorodichloroethane; (k) 1,1,1-trifluorotrichloroethane; (l) 1,1,2-trifluorotrichloroethane; (m) 1,1-difluorotetrachloroethane; and (n) 1,2-difluorotetrachloroethane.

5. An autonomous firefighting agent (10) of any one of claims 1 to 4, wherein the mineral fibers (5) contain at least one of the following materials: (a) glass fiber; (b) basalt fiber; (c) fiber of natural minerals; and (d) fiber of artificial minerals.

6. An autonomous firefighting agent (10) of any one of claims 1 to 5, wherein mineral particles contain at least one of the following materials: (a) calcite; (b) marble; (c) chalk; (d) natural minerals; and (e) artificial minerals.

7. An autonomous firefighting agent (10) of any one of claims 1 to 6, wherein the polymeric component comprises at least one of the following substances: (a) acrylic resin; (b) alkyd resin; (c) glyptal resin; (d) latex resin; (e) pentaphthalic resin; (f) epoxy resin; (g) polyurethane; (h) polyurea; (i) polyvinyl alcohol; and (j) polyvinyl acetate.

8. An autonomous firefighting agent (10) of any one of claims 1 to 7, that is shaped into a plate.

9. A method for manufacturing (100) an autonomous firefighting agent (10) of claim 8 combined with claim 2, comprising the steps of:

- preparing (101) a first mixture of a fire-extinguishing agent and polyisocyanate;
- obtaining (102) an emulsion of the first mixture in an aqueous solution of polyvinyl alcohol;
- adding (1020) the resulting emulsion to an aqueous solution of polyethylene

polyamine;

– producing (103) a suspension of microcapsules in water;
– preparing (104) a second mixture of the suspension and a binder;
– shaping (1040) the second mixture into plates;
– drying (105) the plates;
– applying (107) an adhesive layer (6) to one side of a plate;
– covering (108) the adhesive layer with a detachable protective film (7); and
– cutting up (106) the plates into pieces of desired size.

10. An object (11) and (12) using the autonomous firefighting agent (10) of any one of claims 1 to 8 to put out fire.

CLAIMS

What is claimed is:

1. An autonomous firefighting agent (10) made from a material having fire-extinguishing properties comprising microcapsules (2) filled with a fire-extinguishing composition and having a size from 2 to 100 μm, said microcapsules being a halocarbon enclosed in a polymeric shell of polyurea and/or polyurethane, and a binder (3), wherein the binder (3) is a composite material comprising a polymeric component and mineral fibers (5) and/or particles.

2. An autonomous firefighting agent (10) of claim 1, wherein the halocarbon is enclosed in a polymeric shell of polyurea and/or polyurethane on the basis of polyisocyanate prepolymer.

3. An autonomous firefighting agent (10) of claim 1 or claim 2, wherein the halocarbon is selected from one of the following first substances: (a) 1,1,2,2-tetrafluorodibromoethane; (b) 1,1,2-trifluorotrichloroethane; and (c) 2-iodo-1,1,1,2,3,3,3-heptafluoropropane, and/or a mixture thereof with other halocarbons.

4. An autonomous firefighting agent (10) of claim 3, wherein other halocarbons in the mixture contain one of the following second substances: (a) 1,1,2,2-tetrafluoroethane; (b) 1,1-difluoro-2,2,2-trichloroethane; (c) 1,2-difluorotrichloroethane; (d) 1,1-difluoro-1,2-dichloroethane; (e) 1,2-difluoro-1,1-dichloroethane; (f) 1,1-difluoro-1-chloroethane; (g) 1-fluoro-1,1-dichloroethane; (h) 1-fluoro-2-chloroethane; (i) pentafluorochloroethane; (j) 1,1,2,2-tetrafluorodichloroethane; (k) 1,1,1-trifluorotrichloroethane; (l) 1,1,2-trifluorotrichloroethane; (m) 1,1-difluorotetrachloroethane; and (n) 1,2-difluorotetrachloroethane.

5. An autonomous firefighting agent (10) of any one of claims 1 to 4, wherein the mineral fibers (5) contain at least one of the following materials: (a) glass fiber; (b) basalt fiber; (c) fiber of natural minerals; and (d) fiber of artificial minerals.

6. An autonomous firefighting agent (10) of any one of claims 1 to 5, wherein mineral particles contain at least one of the following materials: (a) calcite; (b) marble; (c) chalk; (d) natural minerals; and (e) artificial minerals.

7. An autonomous firefighting agent (10) of any one of claims 1 to 6, wherein the polymeric component comprises at least one of the following substances: (a) acrylic resin; (b) alkyd resin; (c) glyptal resin; (d) latex resin; (e) pentaphthalic resin; (f) epoxy resin; (g) polyurethane; (h) polyurea; (i) polyvinyl alcohol; and (j) polyvinyl acetate.

8. An autonomous firefighting agent (10) of any one of claims 1 to 7, that is shaped into a plate.

9. An object (11) and (12) using the autonomous firefighting agent (10) of any one of claims 1 to 8 to put out fire.