CLAIMS

1. A heating element comprising:

(a) an exothermic layer containing an oxidizable metal, a water absorption agent and water; and

(b) a water-retention layer having a water absorption sheet,

wherein said exothermic layer and said water-retention layer are in layers,

wherein the mass ratio of the content of said water absorption agent is from 0.3 to 20 parts by mass for 100 parts by mass of the oxidizable metal,

wherein the mass ratio of the content of water to the content of said water absorption agent in said exothermic layer (water/water absorption agent) is from 0.8 to 13, and

wherein the content of water in said water-retention layer is from 10 to 45 mass% of the maximum water absorption of said water-retention layer.

2. The heating element according to claim 1, wherein said water absorption agent comprises a carbon component, and the content of said carbon component is equal to or higher than 90 mass% for the mass of said water absorption agent.

3. The heating element according to claim 1 or 2, wherein said water absorption agent comprises a carbon component, and wherein the mean particle diameter of said carbon component is from 10 to 200 μm.

4. The heating element according to any one of claims 1 to 3, wherein said exothermic layer further comprises a thickening agent.

5. The heating element according to any one of claims 1 to 4, wherein air resistance of said water-retention layer is equal to or lower than 500 seconds/100ml under a condition that an amount of water from 10 to 45 mass% of the maximum water absorption is absorbed.

6. The heating element according to any one of claims 1 to 5, wherein said water-retention layer is formed of a first water absorption sheet and a second water absorption sheet, and said exothermic layer is interposed between said first water absorption sheet and said second water absorption sheet.

7. A heating implement, comprising:

the heating element according to any one of claims 1 to 6; and

a bag which is at least partially air permeable and capable of containing said heating element.

8. The heating implement according to claim 7, wherein the implement is capable of creating water vapor as an occurrence of an oxidation of an oxidizable metal.

9. The heating element according to any one of claims 1 to 6,

wherein said exothermic layer comprises a thickening agent, and wherein the mass ratio of the content of the thickening agent is from 0.05 to 5 parts by mass for 100 parts by mass of the oxidizable metal.

10. The heating element according to any one of claims 1 to 6 or claim 9, wherein said exothermic layer comprises a thickening agent, and said thickening agent comprises a polysaccharide-based thickening agent having a molecular weight of equal to or higher than 1,000,000 and equal to or lower than 50,000,000.

CLAIMS

1. A heating element comprising:

(a) an exothermic layer containing an oxidizable metal, a water absorption agent and water; and

(b) a water-retention layer having a water absorption sheet,

wherein said exothermic layer and said water-retention layer are in layers,

wherein the mass ratio of the content of said water absorption agent is from 0.3 to 20 parts by mass for 100 parts by mass of the oxidizable metal,

wherein the mass ratio of the content of water to the content of said water absorption agent in said exothermic layer (water/water absorption agent) is from 0.8 to 13, and

wherein the content of water in said water-retention layer is from 10 to 45 mass% of the maximum water absorption of said water-retention layer.

2. The heating element according to claim 1, wherein said water absorption agent comprises one, two or more selected from carbon components, fiber materials, water-absorbing polymers and water-absorbing powder.

3. The heating element according to claim 1 or 2, wherein said water absorption agent comprises a carbon component, and the content of said carbon component is equal to or higher than 90 mass% for the mass of said water absorption agent.

4. The heating element according to any of claims 1 to 3, wherein said water absorption agent comprises a carbon component, and wherein the mean particle diameter of said carbon component is from 10 to 200 μm.

5. The heating element according to any one of claims 1 to 4 , wherein said exothermic layer further comprises a thickening agent.

6. The heating element according to any one of claims 1 to 5, wherein said water-retention layer comprises a fiber material.

7. The heating element according to any one of claims 1 to 6, wherein said water-retention layer comprises a water-absorbing polymer which is capable of absorbing and maintaining a significant amount of liquid that is 20 times its own weight.

8. The heating element according to claim 7, wherein the ratio of said water-absorbing polymer to said water-retention layer is from 10 to 70 mass% under the dried condition.

9. The heating element according to any one of claims 1 to 7, wherein the grammage of said water-retention layer is from 20 to 200 g/m^2 under the dried condition.

10. The heating element according to any one of claims 1 to 9, wherein air resistance of said water-retention layer is equal to or lower than

500 seconds/100ml under a condition that an amount of water from 10 to 45 mass% of the maximum water absorption is absorbed.

11. The heating element according to any one of claims 1 to 10, wherein said water-retention layer is formed of a first water absorption sheet and a second water absorption sheet, and
said exothermic layer is interposed between said first water absorption sheet and said second water absorption sheet.

12. The heating element according to any one of claims 1 to 11, wherein said exothermic layer comprises a thickening agent,
and the content of said thickening agent is from 0.05 to 5 parts by mass for 100 parts by mass of the oxidizable metal.

13. The heating element according to any one of claims 1 to 11, wherein said exothermic layer comprises a thickening agent,
and said thickening agent comprises a polysaccharide-based thickening agent having the molecular weight of equal to or higher than 1,000,000 and equal to or lower than 50,000,000.

14. A heating implement, comprising:
the heating element according to any one of claims 1 to 13; and
a bag which is at least partially air permeable and capable of containing said heating element.

15. The heating implement according to claim 14, wherein said bag is composed of a first bag sheet and a second bag sheet,

and the air resistance of said first bag sheet is from 1,000 to 50,000 seconds/100ml.

16. The heating implement according to claim 15, wherein the air resistance of said second bag sheet is from 5,000 to 150,000 seconds/100ml, as long as the air permeability of said second bag sheet is lower than the air permeability of said first bag sheet.

17. The heating implement according to any one of claims 14 to 16, wherein the implement is capable of creating water vapor as an occurrence of an oxidation of an oxidizable metal.