CLAIMS

1. An inorganic fiber, containing:

at least one kind of alkali metal compound selected from the group consisting of Na, K, and Li, and a sulfur compound,

wherein a total amount A (% by mass) of alkali metal oxides expressed by Na_2O, K_2O, and Li_2O and a weight S (% by mass) of a sulfur oxide expressed by SO_3 in terms of oxides satisfy the following Expression (1) or (2),

$S \geq -0.38A + 2.4$ ($A < 5\%$ by mass) (1)

$S \geq 0.5$ ($A \geq 5\%$ by mass) (2)

and wherein the inorganic fiber has a composition containing:

25% by mass to 45% by mass of SiO_2;

5% by mass to 25% by mass of Al_2O_3;

15% by mass to 50% by mass of CaO;

3% by mass to 20% by mass of MgO;

0.1% by mass to 5% by mass of transition metal compound;

0.5% by mass to 5% by mass of SO_3; and

1% by mass to 13% by mass of Na_2O, K_2O, and Li_2O.

2. The inorganic fiber according to claim 1,

wherein the transition metal compound is at least one kind of compound selected from the group consisting of Fe, Mn, Cu, Ni, Co, Zr, V, Nb, Mo, W, and Y.

3. The inorganic fiber according to any one of claims 1 and 2,

wherein the inorganic fiber is at least one or more kinds selected from the group consisting of rock wool, stone

wool, slag wool, mineral wool, glass wool, and mineral glass wool.

4. An inorganic fiber product, comprising:

the inorganic fiber according to any one of claims 1 to 3.

5. The inorganic fiber product according to claim 4,

wherein the inorganic fiber product is a heat insulating material or a refractory material.

6. A method of manufacturing an inorganic fiber product, comprising:

molding the inorganic fiber according to any one of claims 1 to 3.

7. A composition for manufacturing an inorganic fiber, containing:

at least one kind of alkali metal compound selected from the group consisting of Na, K, and Li, and a sulfur compound,

wherein a total amount A (% by mass) of alkali metal oxides expressed by Na_2O, K_2O, and Li_2O and a weight S (% by mass) of a sulfur oxide expressed by SO_3 in terms of oxides satisfy the following Expression (1) or (2),

$S \geq -0.38A + 2.4$ ($A < 5\%$ by mass) (1)

$S \geq 0.5$ ($A \geq 5\%$ by mass) (2)

and wherein the inorganic fiber has a composition containing:

25% by mass to 45% by mass of SiO_2;

5% by mass to 25% by mass of Al_2O_3;

15% by mass to 50% by mass of CaO;

3% by mass to 20% by mass of MgO;

0.1% by mass to 5% by mass of transition metal compound;

0.5% by mass to 5% by mass of SO_3; and

1% by mass to 13% by mass of Na_2O, K_2O, and Li_2O.

8. A method of manufacturing an inorganic fiber, comprising:

melting the composition for manufacturing an inorganic fiber according to claim 7; and

making the resultant melt into a fiber to obtain an inorganic fiber.

9. An inorganic fiber, containing:

at least one kind of alkali metal compound selected from the group consisting of Na, K, and Li, and a sulfur compound,

wherein a total amount A (% by mass) of alkali metal oxides expressed by Na_2O, K_2O, and Li_2O and a weight S (% by mass) of a sulfur oxide expressed by SO_3 in terms of oxides satisfy the following Expression (1) or (2),

$S \geq -0.38A + 2.4$ ($A < 5\%$ by mass) (1)

$S \geq 0.5$ ($A < 5\%$ by mass) (2)

and wherein the inorganic fiber has a composition containing SiO_2, Al_2O_3, CaO and MgO, and a molar basicity P expressed by a molar ratio (mol% (CaO + MgO)/mol% (SiO_2 + Al_2O_3)) of the sum of CaO and MgO to the sum of SiO_2 and Al_2O_3 is 0.5 to 1.7.

10. The inorganic fiber as claimed in claim 9, further containing:

0.1% by mass to 5% by mass of transition metal compound.

11. The inorganic fiber as claimed in claim 10,

wherein the transition metal compound is at least one kind of compound selected from the group consisting of Fe, Mn, Cu, Ni, Co, Zr, V, Nb, Mo, W, and Y.

12. The inorganic fiber as claimed in any one of claims 9 to 11, the inorganic fiber having a composition containing:

25% by mass to 45% by mass of SiO_2;

5% by mass to 25% by mass of Al_2O_3;

15% by mass to 50% by mass of CaO;

3% by mass to 20% by mass of MgO;

0.1% by mass to 5% by mass of transition metal compound;

0.5% by mass to 5% by mass of SO_3; and

1% by mass to 13% by mass of Na_2O, K_2O, and Li_2O.

13. The inorganic fiber as claimed in any one of claims 9 to 12,

wherein the inorganic fiber is at least one or more kinds selected from the group consisting of rock wool, stone wool, slag wool, mineral wool, glass wool, and mineral glass wool.

14. An inorganic fiber product, comprising:

the inorganic fiber as claimed in any one of claims 9 to 13.

15. The inorganic fiber product as claimed in claim 14,

wherein the inorganic fiber product is a heat insulating material or a refractory material.

16. A method of manufacturing an inorganic fiber product, comprising:

molding the inorganic fiber as claimed in any one of claims 9 to 13.

17. A composition for manufacturing an inorganic fiber, containing:

at least one kind of alkali metal compound selected from the group consisting of Na, K, and Li, and a sulfur compound,

wherein a total amount A (% by mass) of alkali metal oxides expressed by Na2O, K2O, and Li2O and a weight S (% by mass) of a sulfur oxide expressed by SO3 in terms of oxides satisfy the following Expression (1) or (2),

$S \geq -0.38A + 2.4$ (A < 5% by mass) (1)

$S \geq 0.5$ (A < 5% by mass) (2)

and wherein the inorganic fiber has a composition containing SiO_2, Al_2O_3, CaO and MgO, and a molar basicity P expressed by a molar ratio (mol% (CaO + MgO)/mol% (SiO_2 + Al_2O_3)) of the sum of CaO and MgO to the sum of SiO_2 and Al_2O_3 is 0.5 to 1.7.

18. A method of manufacturing an inorganic fiber, comprising:

melting the composition for manufacturing an inorganic fiber as claimed in claim 17; and

making the resultant melt into a fiber to obtain an inorganic fiber.