organohydrogenpolysiloxane having 2 or more hydrogen atoms bonded to silicon atoms per molecule; a platinum-based catalyst; and a thermally conductive filler.

Prior Art Documents

Patent Documents

[0003] Patent Document 1: JP 2008-184549 A

Patent Document 2: JP 2008-160126 A

Patent Document 3: JP 4993611 B2

Disclosure

Problem to be Solved

[0004] However, the conventional thermally conductive silicone gel composition still often causes oil bleeding.

[0005] To solve the above conventional problems, the present disclosure provides a thermally conductive silicone gel composition that can reduce oil bleeding, even though the composition is a gel cured product.

Means for Solving Problem

[0006] A thermally conductive silicone gel composition of the present disclosure includes the following A to F:

A. an organopolysiloxane having two alkenyl groups per molecule;

B. an organohydrogenpolysiloxane having two Si-H groups per molecule;

C. an organohydrogenpolysiloxane having three or more Si-H groups per molecule;

D. at least one compound selected from the group consisting of D1 and D2:

D1. an organopolysiloxane having one alkenyl group per molecule and

D2. an organohydrogenpolysiloxane having one Si-H group per molecule;

E. a platinum catalyst; and

F. a thermally conductive filler in an amount of 100 to 600 vol% with respect to 100 vol% of a total amount of the A to E, wherein components A to F are cured.

[0006a] In an aspect, there is provided a thermally conductive silicone gel composition comprising the following components A to F:

A. an organopolysiloxane having two alkenyl groups per molecule;

B. an organohydrogenpolysiloxane having two Si-H groups per molecule;

C. an organohydrogenpolysiloxane having three or more Si-H groups per molecule;

D. at least one compound selected from the group consisting of D1 and D2:

D1. an organopolysiloxane having one alkenyl group per molecule and

D2. an organohydrogenpolysiloxane having one Si-H group per molecule;

E. a platinum catalyst in an amount required for curing; and

F. a thermally conductive filler in an amount of 100 to 600 vol% with respect to 100 vol% of a total amount of the A to E,

wherein the components A to F are cured,

wherein the thermally conductive silicone gel composition comprises 1 to 300 parts by weight of the component B, 0.1 to 20 parts by weight of the component C, and 0.1 to 50 parts by weight of the component D with respect to 100 parts by weight of the component A, where a ratio of the Si-H group to the alkenyl group (Si-H group / alkenyl group) in all the components A to D is 0.5 to 2.0, and

wherein an oil bleeding rate of the thermally conductive silicone gel composition is 0.5 wt% or less, which is measured in such a manner that the thermally conductive silicone gel composition is formed into a molded product with a width of 25 mm, a length of 25 mm, and a thickness of 3.0 mm, and then the molded product is sandwiched between polytetrafluoroethylene (PTFE) filter papers, compressed to a thickness of 1.8 mm, and allowed to stand for 24 hours in an atmosphere of 80°C.

Effects of the Disclosure

[0007] The thermally conductive silicone gel composition of the present disclosure is obtained by curing the components A to F and thus can reduce oil bleeding, even though the composition is a gel cured product.

Brief Description of Drawings

[0008] [FIG. 1] FIGS. 1A to 1B are diagrams illustrating a method for measuring a thermal conductivity of a sample in an example of the present invention.

Description of the Invention

[0009] In the present invention, at least one compound selected from an organopolysiloxane having one alkenyl group per molecule and an organohydrogenpolysiloxane having one Si-H group per molecule is used as a molecular weight modifier. The use of the molecular weight modifier allows the composition to be cured into a gel, although the unreacted alkenyl group and Si-H group are eliminated as much as possible. This also helps to reduce oil bleeding in the silicone gel cured product. Therefore, a heat dissipating silicone gel with low oil bleeding can be achieved. The occurrence of oil bleeding from the cured product may result in contamination of the surrounding members. As a result, the surrounding members may have defects. The heat dissipating silicone gel can solve these problems because of its low oil bleeding.

[0010] More specifically, the heat dissipating silicone gel is a thermally conductive silicone gel composition obtained by curing the following components A to F:

A. an organopolysiloxane having two alkenyl groups per molecule;

B. an organohydrogenpolysiloxane having two Si-H groups per molecule;

C. an organohydrogenpolysiloxane having three or more Si-H groups per molecule;

D. at least one compound selected from the group consisting of D1 and D2:

D1. an organopolysiloxane having one alkenyl group per molecule and

D2. an organohydrogenpolysiloxane having one Si-H group per molecule;

E. a platinum catalyst; and

F. a thermally conductive filler in an amount of 100 to 600 vol% with respect to 100 vol% of the total amount of the A to E.

[0011] The addition of the component D can reduce the molecular weight of the silicone gel after the curing reaction. The component D has only one reactive site. If two components D