In view of this, a technique has been disclosed of obtaining a high-purity expanded graphite sheet that can reduce the content of impurities by subjecting an expanded graphite sheet to a refining process under a halogen gas atmosphere at 800°C or higher, and this material is also used for a semiconductor manufacturing process (see Patent Document 1 indicated below).

CITATION LIST

Patent Literature

[0005]

[Patent Document 1]

Japanese Published Unexamined Patent Application No. H04(1992)-021509 A

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0006]

However, when an expanded graphite sheet is refined, its flexibility is lowered although the ash content can be reduced. For this reason, cracks or chipping may occur when the expanded graphite sheet is molded in a desired shape to be used as a packing or a gasket as described above. This leads to problems such as degradation in the quality of the molded product and decrease in yield rate.

[0007]

Embodiments~~Accordingly, it is an object~~ of the present invention ~~to~~ provide an expanded graphite sheet that can remarkably improve the quality and yield rate by preventing cracks and chipping in molding the sheet into a desired shape by inhibiting degradation in the flexibility while reducing the ash content to a certain degree.

SOLUTION TO PROBLEM

[0008]

According to a first aspect, there is provided an expanded graphite sheet characterized by having a flexibility of 25 times or greater, an ash content of 300 ppm or lower and the content of sulfur is 1000 ppm or higher, the flexibility being defined as the number of times the expanded graphite sheet can be bent using a rotator to which one end of a plate-shaped expanded graphite sheet is fixed, a weight fixed to the other end of the expanded graphite sheet, and a bending position determining member for determining a bending position of the expanded graphite sheet when the rotator is rotated, wherein the expanded graphite sheet is set to have a width of 10 mm, a thickness of 0.42 mm, and a length of a drooping portion thereof from the rotator of 90 mm, the weight is set at 50 g, the swing angles of the rotator in lateral directions are set at 30 degrees with respect to a vertical direction, and an arrangement position of the bending position determining member is set at 20 mm from a lower end of the expanded graphite sheet.

~~In order to accomplish the foregoing object, the present invention provides an expanded graphite sheet characterized by having a flexibility of 25 times or greater and an ash content of 500 ppm or lower, the flexibility being determined by a flexibility test in which the flexibility is defined as the number of times the expanded graphite sheet can be bent using a flexibility testing device comprising a rotator to which one end of a plate-shaped expanded graphite sheet is fixed, a weight fixed to the other end of the expanded graphite sheet, and a bending position determining member for determining a bending position of the expanded graphite sheet when the rotator is rotated, wherein the expanded graphite sheet is set to have a width of 10 mm, a thickness of 0.42 mm, and a length of a drooping portion thereof from the rotator of 90 mm, the weight is set at 50 g, the swing angles of the rotator in lateral directions are set at 30 degrees with respect to a vertical direction, and an arrangement position of the bending position determining member is set at 20 mm from a lower end of the expanded graphite sheet.~~

The above-described configuration makes it possible to inhibit degradation in flexibility while reducing the ash content to a certain degree. As a result, cracks or chipping can be inhibited from occurring in molding the expanded graphite sheet in a desired shape, and therefore, the quality and yield rate of the molded product can be improved remarkably.

It should be noted that in the present specification, the term "ash" refers to metal components such as aluminum and iron, or impurities that derive from the metal components.

[0009]

Here, it is desirable that the content of sulfur be 500 ppm or higher, and it is especially desirable that the content of ash be 300 ppm or lower and the content of sulfur be 1000 ppm or higher.

Such a configuration makes it possible to obtain the above-described advantageous effects more significantly.

[0010]

According to a second aspect, there is provided a method of manufacturing an expanded graphite sheet, characterized by comprising: a step of preparing acid treated graphite by immersing a graphite material having an ash content of 0.01 weight % or lower in an acid treatment solution containing a sulfuric acid and stirring the graphite material with the acid treatment solution; a step of neutralizing the acid treated graphite; a step of performing an expansion process by heating the acid treated graphite having been neutralized, to prepare an expanded graphite; and a step of compressing the expanded graphite.

~~The present invention also provides a method of manufacturing an expanded graphite sheet, characterized by comprising: a step of preparing acid treated graphite by immersing a graphite material having an ash content of 0.1 weight % or lower in an acid treatment solution containing a sulfuric acid and stirring the graphite material with the acid treatment solution; a step of neutralizing the acid treated graphite; a step of performing an expansion process by heating the acid treated graphite having been neutralized, to prepare an expanded graphite; and a step of compressing the expanded graphite.~~

When an expanded graphite sheet is fabricated without a refining process using a halogen gas as in the just-described method, the flexibility of the expanded graphite sheet is improved because the sulfur component in the sulfuric acid is allowed to remain in the expanded graphite sheet. In addition, it is possible to obtain an expanded graphite sheet in which the ash content is reduced to a certain degree even without a refining process because the graphite material having an ash content of 0.1 weight % or lower is used.

ADVANTAGEOUS EFFECTS OF INVENTION

[0011]

Embodiments of the~~The~~ present invention enable~~s~~ an expanded graphite sheet to inhibit degradation in the flexibility while reducing the ash content to a certain degree. As a result, cracks or chipping can be inhibited from occurring in molding the expanded graphite sheet in a desired shape. Therefore, a significant advantageous effect can be exhibited that the quality and yield rate of the molded product can be improved remarkably.