second surface 22 may have irregularities. For example, the sheet 20 may be embossed.

[0029] The sheet 20 contains a matrix resin and an inorganic filler. The matrix resin is, for example, a thermoplastic resin or a thermosetting resin. The thermoplastic resin contained in the sheet 20 may be, for example, polystyrene, polyethylene, polypropylene, acrylonitrile butadiene styrene (ABS), acrylic, or polyamide, and the like. The thermoplastic resin contained in the sheet 20 may be at least one selected from the group consisting of polystyrene and polyethylene. The thermosetting resin contained in the sheet 20 may be, for example, a silicone resin, an epoxy resin, a phenolic resin, a melamine resin, or a polyurethane resin, and the like. The thermosetting resin contained in the sheet 20 may be, for example, a silicone resin.

[0030] For example, the inorganic filler contained in the sheet 20 is a high-dielectric filler. The relative dielectric constant of the high-dielectric filler may be, for example, 10 or more, and may be 100 or more, 1000 or more, or 5000 or more. When the relative dielectric constant is high, it is easy to adjust the relative dielectric constant of the sheet 20 with a small amount of filler. The relative dielectric constant of the high-dielectric filler may be 10 or less, and may be 5 or less.

[0031] Examples of the inorganic filler include a titanium-based filler, a zirconium-based filler, and an aluminum-based filler. Examples of the titanium-based filler include barium titanate, calcium titanate, strontium titanate, examples of the zirconium-based filler include zirconium oxide, and examples of the aluminum-based filler include aluminum oxide. The inorganic filler may be at least one selected from the group consisting of barium titanate, calcium titanate, strontium titanate, and titanium-strontium-zirconia-based materials.

[0032] For example, the particle size of the inorganic filler contained in the sheet 20 is 0.001 to 100 μm. The particle size of the inorganic filler may be 0.01 μm or more, 0.05 μm or more, 0.1 μm or more, 0.5 μm or more, 1 μm or more, or 5 μm or more. The particle size of the inorganic filler may be 50 μm or less, 20 μm or less, or 10 μm or less.

[0033] For example, the sheet 20 contains 1 to 90% by volume of the inorganic filler. The sheet 20 may contain the inorganic filler in an amount of 10% by volume or more, 20% by volume or more, 30% by volume or more, or 40% by volume or more. The sheet 20 may contain the inorganic filler in an amount of 80% by volume or less, 70% by volume or less, 60% by volume or less, or 50% by volume or less. The relative dielectric constant of the sheet 20 can be adjusted by the content of the inorganic filler. The content of the inorganic filler may be appropriately adjusted in accordance with the relative dielectric constant required for the sheet 20.

[0034] The sheet 20 may contain an epoxy resin and a barium titanate filler. In addition, the sheet 20 may contain a polystyrene resin and a barium titanate filler.

[0035] For example, the thickness of the sheet 20 (the distance from the sheet first surface 21 to the sheet second surface 22) is 100 to 200 μm. The relative dielectric constant of the sheet 20 can be adjusted by the thickness of the sheet 20. The thickness of the sheet 20 may be appropriately adjusted in accordance with the

that the intensity of the transmitted radio waves was higher than that in Comparative Example 2.

[0061] A radio wave intensity measurement test was performed for Examples 4 to 6 and Comparative Examples 3 and 4 in which the intensity of radio waves in a predetermined band transmitted through the sheet 20 and reaching the window 10 was measured. The measurement device used in Examples 4 to 6 and Comparative Examples 3 and 4 was the same as that mentioned above. Examples 4 to 6 and Comparative Examples 3 and 4 are as follows.

[0062] (Example 4)

Radio waves from the radio wave irradiator were transmitted from the sheet 20 side through the window structure 1, in which the sheet 20 was attached to the window 10, and the intensity of the radio waves transmitted through the window structure 1 was measured by the measuring instrument. Except that the radio waves were transmitted from the sheet 20 side, the procedure was the same as that in Example 1.

(Example 5)

Radio waves from the radio wave irradiator were transmitted from the sheet 20 side through the window structure 1, in which the sheet 20 was attached to the window 10, and the intensity of the radio waves transmitted through the window structure 1 was measured by the measuring instrument. Except that the radio waves were transmitted from the sheet 20 side, the procedure was the same as that in Example 2.

(Example 6)

Radio waves from the radio wave irradiator were transmitted from the sheet 20 side through the window structure 1, in which the sheet 20 was attached to the window 10, and the intensity of the radio waves transmitted through the window structure 1 was measured by the measuring instrument. Except that the radio waves were transmitted from the sheet 20 side, the procedure was the same as that in Example 3.

(Comparative Example 3)

In Comparative Example 3, the intensity of the radio waves was measured under the same conditions as in Comparative Example 1.

(Comparative Example 4)

In Comparative Example 4, the intensity of the radio waves was measured under the same conditions as in Comparative Example 2.

[0063] Regarding the results of Examples 4 to 6 and Comparative Examples 3 and 4, when the radio-wave band was 27.5 (GHz), the radio wave intensity in Comparative Example 3 was -31.3 (dB), and the radio wave intensity in Comparative Example 4 was -36.0 (dB). In contrast, the radio wave intensity was -32.7 (dB) in

CLAIMS

[Claim 1]

A window structure comprising:

a window having a first surface and a second surface opposite the first surface; and

a sheet attached to at least one of the first surface and the second surface of the window, the sheet comprising a matrix resin and an inorganic filler,

wherein at least one of the reflection intensity of radio waves in a predetermined band transmitted through the window and reaching the sheet, and the reflection intensity of radio waves in the predetermined band transmitted through the sheet and reaching the window, is lower than the reflection intensity of radio waves in the predetermined band transmitted through the window when either the first surface or the second surface, or both the first surface and the second surface, are in contact with air, and

the matrix resin is a thermoplastic resin or a thermosetting resin.

[Claim 2]

The window structure according to claim 1, wherein:

the matrix resin comprises at least one of polystyrene and polyethylene.

[Claim 3]

The window structure according to claim 1 or 2, wherein:

the sheet comprises 1 to 90% by volume of the inorganic filler.

[Claim 4]

The window structure according to any one of claims 1 to 3, wherein:

the inorganic filler is at least one selected from the group consisting of barium titanate, calcium titanate, strontium titanate, and a titanium-strontium-zirconia-based material.

[Claim 5]

The window structure according to any one of claims 1 to 4, wherein:

the inorganic filler has a particle size of 0.001 to 100 μm.

[Claim 6]

The window structure according to any one of claims 1 to 5, comprising:

a double window having two of the windows, and the sheet attached to at least one of the first surface and the second surface of the two windows.

[Claim 7]

The window structure according to claim 6, wherein:

the double window comprises a laminated glass interlayer.

[Claim 8]

The window structure according to claim 6 or 7, wherein:
the double window comprises a heat-shielding layer.

[Claim 9]

The window structure according to any one of claims 1 to 8, wherein:
the periphery of the sheet is fixed to the window by a tape; and
the sheet is in close contact with the window.

[Claim 10]

The window structure according to any one of claims 1 to 9, wherein:
the sheet comprises at least one of a pressure-sensitive adhesive layer and an adhesive layer.

[Claim 11]

The window structure according to any one of claims 1 to 10, wherein:
the sheet is embossed.

[Claim 12]

A sheet attached to at least one of a first surface and a second surface opposite the first surface of a window, wherein:
the sheet comprises a matrix resin and an inorganic filler; and
at least one of the reflection intensity of radio waves in a predetermined band transmitted through the window and reaching the sheet, and the reflection intensity of radio waves in the predetermined band transmitted through the sheet and reaching the window, is lower than the reflection intensity of radio waves in the predetermined band transmitted through the window when either the first surface or the second surface, or both the first surface and the second surface, are in contact with air.