film. In addition, the bleeding material may contaminate production equipment including cast rolls.

Citation List

Patent Documents

[0005]

Patent Document 1: JP 5586784 B2

Patent Document 2: JP 2018-538373 A

Patent Document 3: JP 2015-201616 A

Patent Document 4: WO 2016/043217

Summary

[0005a]

In a first aspect, the present disclosure refers to a multilayer polypropylene film for a capacitor comprising a base layer composed of a propylene polymer composition containing a propylene homopolymer (X) and 0.0001 to 0.05 mass% of a polymer-based α-crystal nucleating agent (C), and a front layer on one side of the base layer and a back layer on the other side of the base layer,

wherein the front layer and the back layer are composed of a propylene-based polymer (Y) that is a polymer-based α-crystal nucleating agent (C)-free polymer or is a propylene homopolymer having a content of the polymer-based α-crystal nucleating agent (C) being less than 0.00001

mass%, and

wherein the base layer, the front layer and the back layer are stretched.

Technical Problem

[0006]

An object of the present invention is to provide a film for a capacitor such that the film excels in high-temperature dielectric breakdown voltage (high-temperature BDV) and has blocking resistance, and bleeding-out of, for instance, a nucleating agent is suppressed even after long-term storage.

Solution to Problem

[0007]

The present invention pertains to a multilayer polypropylene film for a capacitor, the film including a base

composition containing the above propylene homopolymer (X) and 0.0001 to 0.05 mass% of a polymer-based α-crystal nucleating agent (C), and a front layer or a back layer composed of a propylene-based polymer (Y) on at least one surface of the base layer, wherein both of the base layer, and the front layer or the back layer are stretched.

[0090]

The multilayer polypropylene film for a capacitor according to the present invention preferably has a front layer on one side of the base layer and a back layer on the other side of the base layer.

The total thickness of the multilayer film is usually in the range of 1 to 20 μm, preferably in the range of 1.5 to 10 μm, and more preferably in the range of 2 to 5 μm, and the thickness ratio of the base layer to the front layer or the back layer of the multilayer film is usually in the range of 9 : 1 to 6 : 1, preferably in the range of 9 : 1 to 7 : 3, and more preferably in the range of 9 : 1 to 8 : 2.

[0091]

In the multilayer polypropylene film for a capacitor according to the present invention, the surface roughness Ra of the front layer or the back layer is preferably 0.2 μm or more and more preferably 0.3 μm or more. When the surface roughness Ra is 0.2 μm or more, the contact area between the

CLAIMS

1. A multilayer polypropylene film for a capacitor comprising a base layer composed of a propylene polymer composition containing a propylene homopolymer (X) and 0.0001 to 0.05 mass% of a polymer-based α-crystal nucleating agent (C), and a front layer on one side of the base layer and a back layer on the other side of the base layer,

wherein the front layer and the back layer are composed of a propylene-based polymer (Y) that is a polymer-based α-crystal nucleating agent (C)-free polymer or is a propylene homopolymer having a content of the polymer-based α-crystal nucleating agent (C) being less than 0.00001 mass%, and

wherein the base layer, the front layer and the back layer are stretched.

2. The multilayer polypropylene film for a capacitor according to claim 1, wherein the polymer-based α-crystal nucleating agent (C) is a polymer having a glass transition temperature and/or a melting point (Tm) of 280°C or higher.

3. The multilayer polypropylene film for a capacitor according to claim 1 or 2, wherein a surface roughness Ra of the front layer and of the back layer is 0.2 μm or more.

4. The multilayer polypropylene film for a capacitor according to any one of claims 1 to 3, wherein the propylene homopolymer (X) satisfies the following requirements (1) to (5):

(1) having a melt flow rate (MFR) (ASTM D1238, at 230°C, under a load of 2.16 kg) of in the range of 1 to 10 g/10 min,

(2) having a mmmm determined by ^{13}C-NMR of in the range of 0.930 to 0.999,

(3) having an ash content of 50 ppm by mass or less,

(4) having a chlorine content of 5 ppm by mass or less, and

(5) having a ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight (Mn) as measured by gel permeation chromatography (GPC) being in the range of 4.5 to 12.0.