DESCRIPTION

Title of the Invention: MULTILAYER STRETCHED FILM

Technical Field

[0001]

The present invention relates to a multilayer stretched film, and more specifically to a multilayer stretched film having excellent recyclability, and excellent gloss, stiffness and strength with a good balance.

Background Art

[0002]

Films made from various resins are used as substrates for packaging materials, and characteristics necessary for ALL PE films include excellent gloss, stiffness and strength.

High-density polyethylene (HDPE) is suitable as the resin from the viewpoint of stiffness, but may be poor in vertical tear strength.

Summary

Technical Problem

[0003]

If HDPE having a low melt flow rate (MFR) (low-MFR HDPE) is used for increasing the vertical tear strength, gloss may become insufficient. If the density of a film used as a substrate is high, sagging may occur, leading to a poor appearance.

[0004]

The present disclosure has been made to address these problems, and is based on the findings that a film with multiple layers different in MFR (high-MFR HDPE layer/low-MFR HDPE layer), which is also provided with layers with a lower density to make the overall density (average density) low, gives a multilayer stretched film having an excellent balance of gloss, stiffness, vertical tear strength and sagging, which also has excellent recyclability.

Solution to Problem

[0005]

The subject matter of the present disclosure is as follows.

[0006]

[1]

A multilayer stretched film comprising, in the following order,

A laminate comprising a multilayer stretched film according to any one of [1] to [4].

[0011]

[6]

A packaging material comprising the laminate according to [5].

[0012]

[7]

A method for producing the multilayer stretched film according to any one of [1] to [4], comprising performing stretching during or after formation of an original film by melt coextrusion molding.

[0012a]

In an aspect of the present disclosure, there is provided a multilayer stretched film comprising, in the following order,

a layer (a1) containing, as a main component, an ethylene-based polymer (A1) having a melt flow rate (MFR, 190°C, 2.16 kg load) of 0.5 g/10 min or more and 10 g/10 min or less as measured according to JIS K 7210, and a density of 940 kg/m^3 or more as measured according to JIS K7112,

a layer (a2) containing, as a main component, an ethylene-based polymer (A2) having a melt flow rate (MFR, 190°C, 2.16 kg load) of 0.01 g/10 min or more and less than

0.5 g/10 min as measured according to JIS K 7210, and a density of 940 kg/m^3 or more as measured according to JIS K7112,

a layer (b) containing, as a main component, an ethylene-based polymer (B) having a melt flow rate (MFR, 190°C, 2.16 kg load) of 0.01 g/10 min or more and less than 50 g/10 min as measured according to JIS K 7210, and a density of lower than 940 kg/m^3 as measured according to JIS K7112,

a layer (a3) containing, as a main component, an ethylene-based polymer (A3) having a melt flow rate (MFR, 190°C, 2.16 kg load) of 0.01 g/10 min or more and less than 0.5 g/10 min as measured according to JIS K 7210, and a density of 940 kg/m^3 or more as measured according to JIS K7112, and

a layer (a4) containing, as a main component, an ethylene-based polymer (A4) having a melt flow rate (MFR, 190°C, 2.16 kg load) of 0.5 g/10 min or more and 10 g/10 min or less as measured according to JIS K 7210, and a density of 940 kg/m^3 or more as measured according to JIS K7112,

wherein an average density is 931 kg/m^3 or more and 948 kg/m^3 or less.

[0012b]

In another aspect of the present disclosure, there is provided a laminate comprising a multilayer stretched film as disclosed herein.

[0012c]

In a further aspect of the present disclosure, there is provided a packaging material comprising the laminate as disclosed herein.

[0012d]

In another aspect of the present disclosure, there is provided a method for producing the multilayer stretched film as disclosed herein, comprising performing stretching during or after formation of an original film by melt coextrusion molding.

Advantageous Effects of Invention

[0013]

According to the present invention, a multilayer stretched film having an excellent balance of gloss, stiffness, vertical tear strength and sagging, and excellent recyclability can be obtained.

Description of Embodiment

[0014]

Hereafter, a multilayer stretched film of the present invention will be described in more detail.