GLASS ARTICLE WITH REDUCED THICKNESS VARIATION, METHOD FOR MAKING AND APPARATUS THEREFOR

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority under 35 U.S.C. § 119(e) of U.S. Provisional Application Serial No. 62/464,722 filed on February 28, 2017.

BACKGROUND

FIELD

[0002] The present disclosure relates generally to an apparatus for forming a glass article, such as a glass sheet, and in particular for minimizing thickness variations across a width of the glass article.

Technical Background

[0003] The manufacture of optical quality glass articles, such as glass sheets used in a variety of applications, including lighting panels, or liquid crystal or other forms of visual displays, typically involves drawing molten glass in ribbon form. The ribbon may be separated into singular glass sheets, or in some instances wound in long lengths on a suitable spool. Advances in display technology continue to increase pixel density, and thereby the resolution, of display panels. Accordingly, requirements on the glass sheets incorporated into such panels are expected to increase. For example, thickness deviation limits needed to facilitate TFT deposition processes are expected to be further reduced. To meet this challenge, a precise temperature field must be maintained across the ribbon as the ribbon is drawn from the forming body.

SUMMARY

[0003a] According to an aspect of the present invention, there is provided a glass platter blank, comprising:

a first major surface, a second major surface opposite the first major surface, and a thickness T defined therebetween,

wherein a total thickness variation TTV across a diameter of the glass platter blank is equal to or less than 0.5 μm,

wherein the first and second major surfaces are unpolished.

[0004] In accordance with the present disclosure, a glass article is described comprising a length equal to or greater than about 880 millimeters, a width orthogonal to the length and equal to or greater than about 680 millimeters, a first major surface, a second major surface opposing the first major surface, a thickness T defined between the first and second major surfaces, and wherein a total thickness variation TTV across the width of the glass article equal to or less than about 4 μm.

[0005] In some embodiments, TTV is equal to or less than about 2 μm. In still other embodiments, TTV is equal to or less than about 1 μm. In still further embodiments, TTV is

What is claimed is:

1. A glass platter blank, comprising:

a first major surface, a second major surface opposite the first major surface, and a thickness T defined therebetween,

wherein a total thickness variation TTV across a diameter of the glass platter blank is equal to or less than 0.5 μm,

wherein the first and second major surfaces are unpolished.

2. The glass platter blank according to claim 1, wherein the TTV is equal to or less than 0.25 μm.

3. The glass platter blank according to claim 1, wherein a maximum sliding interval range MSIR obtained from a predetermined sliding interval moved in 5 mm increments across a diameter of the glass platter blank is equal to or less than 0.5 μm.

4. The glass platter blank according to claim 3, wherein the predetermined sliding interval is 25 mm.

5. The glass platter blank according to claim 1, wherein an average surface roughness Ra of one or both of the first and second major surfaces is equal to or less than 0.50 nm.

6. The glass platter blank according to claim 5, wherein the Ra is equal to or less than 0.25 nm.