

STAIN RESISTANT ARTICLE WITH OLEFIN BLOCK COPOLYMER AND PROCESS

FIELD

[0001] The present disclosure is directed to food contact articles composed of neat olefin block copolymer and the food contact articles exhibit stain resistance.

BACKGROUND

[0002] The use of plastics in housewares continues to grow. In food contact applications, food stain imparted on plastic articles is problematic. Staining is unsightly and detracts from the appearance of the article. The poor appearance of a food stained plastic article oftentimes compels the consumer to throw away the article pre-maturely. Conventional approaches to resist staining have drawbacks. Adding a stain resistant layer to an article adds complexity to production and increases the cost of the article. It is known to increase the crystallinity of a polymer to increase its stain resistance. However, increasing polymer crystallinity simultaneously decreases polymer flexibility and decreases polymer softness.

[0003] The art therefore recognizes the need for polymers that exhibit improved stain resistance. In particular, a need exists for polymeric food contact articles with improved stain resistance.

SUMMARY

[0004] The present disclosure is directed to food contact articles resistant to food staining.

[0005] In an embodiment, a food contact article is provided. The food contact article includes a polymeric composition composed of a neat olefin block copolymer. The food contact article exhibits a total color change value, ΔE , of less than 20. The polymeric composition provides an article that is suitable for food contact applications, the article also having a balance of softness and stain resistance.

[0005a] In one aspect, the disclosure provides a food contact article comprising: a polymeric composition comprising a neat ethylene/octene multiblock copolymer having less than 1 wt% oil, the ethylene/octene multiblock copolymer comprising hard segments and soft segments joined in a linear fashion and comprising from 10 mol% to 20 mol% units derived from octene in the soft segment; and the article having a total color change value, ΔE , of less than 20, wherein $\Delta E = \sqrt{\Delta L^2 + \Delta a^2 + \Delta b^2}$, wherein ΔL is the difference in lightness between the stained and unstained article, Δa is the difference in green to red scale between the stained

and unstained article, and Δb is the difference in blue to yellow scale between the stained and unstained article.

[0006] The present disclosure provides a process. In an embodiment, the process includes providing a food contact article. The food contact article includes the neat olefin block copolymer. The process includes contacting the food contact article with a staining comestible and removing the staining comestible from the food contact article. The process further includes exhibiting, with the food contact article, a total color change, ΔE , of less than 20.

[0006a] In another aspect, the disclosure provides a process for contacting a comestible comprising: providing a food contact article comprising a neat ethylene/octene multiblock copolymer having less than 1 wt% oil, the ethylene/octene multiblock copolymer comprising hard segments and soft segments joined in a linear fashion and comprising from 10 mol% to 20 mol% units derived from octene in the soft segment; and contacting the food contact article with a staining comestible; removing the staining comestible from the food contact article; and exhibiting, with the food contact article, a total color change, ΔE , of less than 20, wherein $\Delta E = \sqrt{\Delta L^2 + \Delta a^2 + \Delta b^2}$, wherein ΔL is the difference in lightness between the stained and unstained article, Δa is the difference in green to red scale between the stained and unstained article, and Δb is the difference in blue to yellow scale between the stained and unstained article.