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(54) Title: AN IMPACT RESISTANT RIGID VINYL CHLORIDE POLYMER COMPOSITION AND METHOD OF MAKING THE SAME

(57) Abstract: The instant invention is an impact resistant rigid vinyl chloride polymer composition, and method of making the same. The impact resistant rigid vinyl chloride polymer composition, according to instant invention, includes a vinyl chloride polymer, an impact modifier, and a lubricant system. The impact modifier includes a chlorinated olefin polymer, and an ethylene/alpha-olefin copolymer. The lubricant system includes a first component, a second component, and a third component. The first component is a carboxylic acid selected from the group consisting of stearic acid, lauric acid, myristic acid, palmitic acid, blends thereof, and combinations thereof. The second component is a hydrocarbon wax selected from the group consisting of a paraffin wax, polyolefin wax, blends thereof, and combinations thereof. The third component is a metal soap selected from the group consisting of calcium stearate, aluminum stearate, copper stearate, lithium stearate, magnesium stearate, sodium stearate, zinc stearate, blends thereof, and combinations thereof. The process for preparing the impact resistant rigid vinyl chloride polymer composition of the instant invention includes the following steps: (1) providing a vinyl chloride polymer; (2) providing an impact modifier as described above; (3) providing a lubricant system as described above; (4) blending the vinyl chloride polymer, the impact modifier, and the lubricant system thereby forming the impact resistant rigid vinyl chloride polymer composition.

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AMENDED CLAIMS**received by the International Bureau on 24 September 2007 (24.09.2007)**

1. An impact resistant rigid vinyl chloride polymer composition comprising:
 - a vinyl chloride polymer;
 - an impact modifier composition comprising:
 - a chlorinated olefin polymer; and
 - an ethylene/alpha-olefin copolymer; and
 - a lubricant composition comprising:
 - a carboxylic acid selected from the group consisting of stearic acid, lauric acid, myristic acid, palmitic acid, blends thereof, and combinations thereof;
 - a hydrocarbon wax selected from the group consisting of a paraffin wax, polyolefin wax, blends thereof, and combinations thereof; and
 - a metal soap selected from the group consisting of calcium stearate, aluminum stearate, copper stearate, lithium stearate, magnesium stearate, sodium stearate, zinc stearate, blends thereof, and combinations thereof.
2. The impact resistant rigid vinyl chloride polymer composition according to Claim 1, wherein said lubricant composition comprising 0.3 to 1.5 parts by weight of said metal soap based on 100 parts of said vinyl chloride polymer.
3. The impact resistant rigid vinyl chloride polymer composition according to Claim 2, wherein said lubricant system comprising 0.3 to 2.0 parts by weight of said hydrocarbon wax based on 100 parts of said vinyl chloride polymer.
4. The impact resistant rigid vinyl chloride polymer composition according to Claim 3, wherein said lubricant composition comprising 0.5 to 1.5 parts by weight of said carboxylic acid based on 100 parts of said vinyl chloride polymer.

5. The impact resistant rigid vinyl chloride polymer composition according to Claim 1, wherein said impact resistant rigid vinyl chloride polymer composition comprising 2 to 5 parts by weight of said impact modifier composition based on 100 parts of said vinyl chloride polymer.
6. The impact resistant rigid vinyl chloride polymer composition according to Claim 1, wherein said carboxylic acid being stearic acid, said hydrocarbon wax being a paraffin wax, and said metal soap being calcium stearate; and wherein said lubricant composition comprising 0.5 to 1.0 parts by weight of said carboxylic acid, 0.6 to 1.3 parts by weight of said hydrocarbon wax, and 0.5 to 1.5 parts by weight of said metal soap based on 100 parts of said vinyl chloride polymer composition.
7. A process for preparing an impact resistant rigid vinyl chloride polymer composition comprising
 - providing a vinyl chloride polymer;
 - providing an impact modifier composition comprising;
 - a chlorinated olefin polymer; and
 - an ethylene/alpha-olefin copolymer; and
 - providing a lubricant composition comprising;
 - a carboxylic acid selected from the group consisting of stearic acid, lauric acid, myristic acid, palmitic acid, blends thereof, and combinations thereof;
 - a hydrocarbon wax selected from the group consisting of a paraffin wax, polyolefin wax, blends thereof, and combinations thereof; and
 - a metal soap selected from the group consisting of calcium stearate, aluminum stearate, copper stearate, lithium stearate, magnesium stearate, sodium stearate, zinc stearate, blends thereof, and combinations thereof calcium stearate;
 - blending said vinyl chloride polymer, said impact modifier composition, and said lubricant composition thereby forming said impact resistant rigid PVC composition.

8. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 7, wherein said process further comprising the step of extruding said impact resistant rigid vinyl chloride polymer.

9. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 7, wherein said lubricant composition comprising 0.3 to 1.5 parts by weight of said metal soap based on 100 parts of said rigid vinyl chloride polymer.

10. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 9, wherein said lubricant composition comprising 0.3 to 2.0 parts by weight of said hydrocarbon wax based on 100 parts of said rigid vinyl chloride polymer.

11. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 10, wherein said lubricant composition comprising 0.5 to 1.5 parts by weight of said carboxylic acid based on 100 parts of said rigid vinyl chloride polymer.

12. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 7, wherein said impact resistant rigid vinyl chloride polymer composition comprising 2 to 5 parts by weight of said impact modifier composition based on 100 parts of said vinyl chloride polymer.

13. The process for preparing an impact resistant rigid vinyl chloride polymer composition according to Claim 7, wherein said carboxylic acid being stearic acid, said hydrocarbon wax being a paraffin wax, and said metal soap being calcium stearate; and wherein said lubricant composition comprising 0.5 to 1.0 parts by weight of said carboxylic acid, 0.6 to 1.3 parts by weight of said hydrocarbon wax, and 0.5 to 1.5 parts by weight of said metal soap based on 100 parts of said vinyl chloride polymer composition.

14. An article comprising:
an impact resistant rigid vinyl chloride polymer composition
comprising:
- a vinyl chloride polymer;
 - an impact modifier composition comprising:
 - a chlorinated olefin polymer; and
 - an ethylene/alpha-olefin copolymer; and
 - a lubricant composition comprising:
 - a carboxylic acid selected from the group consisting of stearic acid, lauric acid, myristic acid, palmitic acid, blends thereof, and combinations thereof;
 - a hydrocarbon wax selected from the group consisting of a paraffin wax, polyolefin wax, blends thereof, and combinations thereof;
 - and
 - a metal soap selected from the group consisting of calcium stearate, aluminum stearate, copper stearate, lithium stearate, magnesium stearate, sodium stearate, zinc stearate, blends thereof, and combinations thereof.