

Claims:

1. An internal lubricant composition suitable for use in a polyester polymer matrix composition comprises a mixture of two or more esters in which each individual ester has a carbon chain length of between 20 and 44.
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2. An internal lubricant composition according to claim 1 comprising a mixture of two or more esters in which each individual ester has a carbon chain length between 28 and 34.
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3. An internal lubricant composition according to claim 1 or 2 comprising two or more esters selected from the group comprising myristyl myristate, myristyl palmitate, palmityl myristate, palmityl palmitate, palmityl stearate, stearyl myristate, stearyl palmitate, stearyl stearate, stearyl arachidate and stearyl behenate.
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4. An internal lubricant composition according to any preceding claim comprising two or more esters selected from the group comprising myristyl myristate, myristyl palmitate, palmityl myristate, palmityl palmitate, stearyl myristate and stearyl palmitate.
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5. An internal lubricant composition according to claim 3 or 4, wherein the composition comprises between four and ten esters selected from said group.
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6. An internal lubricant composition according to any preceding claim, wherein each individual ester component may be present in an amount of 0.5% to 95% by weight (wt) of the total internal lubricant composition
- 30 7. An internal lubricant composition according to any preceding claim, wherein each individual ester component may be present in an amount of 0.5% to 45% by weight (wt) of the total internal lubricant composition.
- 35 8. An internal lubricant composition according to any preceding claim, wherein said composition comprises <1% to 17% myristyl myristate, 0.5% to 38%

myristyl palmitate, 4% to 45% palmityl myristate, 4% to 45% palmityl palmitate, 2% to 20% stearyl myristate, 4% to 45% stearyl palmitate, <1% to 4% palmityl stearate, <1% to 4% stearyl stearate, <1% to 3% stearyl arachidate, and <1% to 4% stearyl behenate, by weight.

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9. An internal lubricant composition according to any one of claims 1 to 7, wherein said composition comprises 10% to 17% myristyl myristate, 2% to 28% myristyl palmitate, 15% to 42% palmityl myristate, 8% to 42% palmityl palmitate, 4% to 18% stearyl myristate and 6% to 12% stearyl palmitate, by weight.

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10. A polyester polymer matrix comprising a polyester polymer and an internal lubricant composition in accordance with anyone of claims 1 to 9.

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11. A polyester polymer matrix according to claim 10, where in the polyester polymer is selected from the group comprising poly(butylene terephthalate), poly(cyclohexanedimethylene terephthalate), poly(ethylene isophthalate), poly(ethylene 2,6-naphthalenedicarboxylate), poly(ethylene phthalate), poly(ethylene terephthalate), PETg (polyethylene terephthalate glycol), polycarbonates, polylactic acid (PLA), polyhydroxyalkanoates (PHA), and copolymers thereof.

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12. A polyester polymer matrix according to claim 10, wherein the polyester polymer comprises poly(ethylene terephthalate) or polylactic acid (PLA).

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13. A polyester polymer matrix according to any one of claims 10 to 12, wherein the polymer matrix composition comprises said internal lubricant composition in an amount of between 0.05 wt% to 1.0 wt%.

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14. A polyester polymer matrix according to claim 13, wherein the polymer matrix composition comprises said internal lubricant composition in an amount of between 0.1 wt% to 0.75 wt%.

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15. A polyester polymer matrix according to any one of claims 10 to 14, further comprising one or more additional polymer additives.

16. Use of an internal lubricant composition according to any one of claims 1 to 9 in a polyester polymer matrix in a process to produce a final polyester product.
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17. Use of the internal lubricant in accordance with claim 16, to allow processing of the polyester polymer matrix to be carried out at a lower process temperature and/or pressure and/or mechanical stress, than would be possible in the absence of said internal lubricant.
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18. Use of the internal lubricant in accordance with claim 16 or 17, in any of the following processes, thermoforming, injection moulding, extrusion, cast film extrusion, extrusion blow moulding, injection stretch blow moulding, stretch blow moulding and biaxial film orientation.
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19. Use of the internal lubricant in accordance with claim 16 or 17 to produce a final polyester product in the form of a container or film.
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20. Use of the internal lubricant in accordance with claim 19 to produce a bottle.
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21. A method of internally lubricating a polyester polymer matrix by incorporating an internal lubricant composition according to any one of claims 1 to 9.
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22. A method of internally lubricating a polyester polymer matrix in accordance with claim 21, wherein incorporation of the internal lubricant is achieved by adding directly to the polymer matrix by melt dosing at the point of polymer resin extrusion, by conventional master batch addition or by incorporation using liquid colour systems.
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