CLAIMS

1. A composite sheet for package, comprising an outer layer, an intermediate layer, and an inner layer sequentially stacked in a first direction, wherein the inner layer comprises a first low-density polyethylene (LDPE) with melt flow index (MFI) of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg, and the first direction is a direction from an external atmosphere contact surface of the composite sheet toward a package content contact surface of the composite sheet.

2. The composite sheet for package according to claim 1, wherein the inner layer comprises two or more sublayers, and wherein at least one sublayer is a first sublayer comprising the first LDPE with MFI of 3.5-4.5 g/10 min as measured at 190°C and 2.16 kg.

3. The composite sheet for package according to claim 2, wherein the first sublayer comprises the first LDPE, and the first LDPE is a tubular LDPE or a first autoclave LDPE, or a combination of the tubular LDPE and the first autoclave LDPE, wherein the tubular LDPE and/or the first autoclave LDPE have an MFI of 3.5-4.5 g/10 min as measured at 190°C and 2.16 kg.

4. The composite sheet for package according to claim 3, wherein the tubular LDPE comprises 0-70 wt% of the combination, and the first autoclave LDPE comprises 30-100 wt% of the combination, based on a total weight of the combination.

5. The composite sheet for package according to claim 3, wherein the inner layer further comprises at least one second sublayer, the second sublayer comprises a second autoclave LDPE, and the second autoclave LDPE has an MFI of 3.5-4.5 g/10 min as measured at 190°C and 2.16 kg.

6. The composite sheet for package according to claim 2, wherein the inner layer comprises:

a first sublayer comprising the first LDPE, wherein the first LDPE have an MFI of 6.5-7.5 g/10 min as measured at 190°C and 2.16 kg, and

optionally a second sublayer comprising a blend of the first LDPE and a metallocene polyethylene.

7. The composite sheet for package according to claim 1, wherein the outer layer comprises a second LDPE with MFI of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg, wherein the second LDPE is a combination of a second tubular LDPE and a third autoclave LDPE, and wherein the second tubular LDPE and/or the third autoclave LDPE have an MFI of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg.

8. The composite sheet for package according to any one of previous claims, further comprising an odor barrier layer disposed between the intermediate layer and the inner layer, wherein a material of the odor barrier layer is selected from the group consisting of a high-density polyethylene (HDPE), a polyamide polymer, or any combination thereof.

9. The composite sheet for package according to any one of previous claims, further comprising an odor barrier layer disposed between the intermediate layer and the inner layer, wherein a material of the odor barrier layer is selected from the group consisting of a high-density polyethylene (HDPE), a polyamide polymer, a third LDPE, or any combination thereof, wherein the group further comprises a third LDPE, wherein preferably, the odor barrier layer comprises 65 wt% - 100 wt% of HDPE and 0 - 35 wt% of the third LDPE, wherein the third LDPE has an MFI of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg.

10. The composite sheet for package according to claim 8 or 9, further comprising a further barrier layer disposed between the intermediate layer and the inner layer, preferably between the odor barrier layer and the inner layer.

11. The composite sheet for package according to claim 10, wherein the further barrier layer comprises a polymer compound, wherein preferably the polymer compound is selected from

a group consisting of a polyvinylidene chloride (PVDC), PE, PP, PET, PA, PVOH, an ethylene vinyl alcohol (EVOH), PVC, polyvinyl alcohol (PVA), PLA, PHA, styrene acrylate and styrene butadiene, nanocellulose, cellulose nanocrystals, cellulose nanofibrils or any combination thereof, more preferably the polymer compound is selected from a group consisting of the EVOH, the PVA, or any combination thereof.

12. The composite sheet for package according to any one of claims 8-11, further comprising a further adhesive layer disposed between the intermediate layer and the inner layer, preferably between the intermediate layer and the odor barrier layer.

13. The composite sheet for package according to claim 12, wherein the further adhesive layer comprises a fourth LDPE with MFI of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg.

14. The composite sheet for package according to any one of claims 1-5 and 7, wherein the first LDPE has an MFI of 4.0 g/10 min as measured at 190°C and 2.16 kg, a density of 0.91-0.95 g/cm^3, and a melting point of 110-115°C.

15. The composite sheet for package according to any one of claims 1-13, wherein the composite sheet for package is free of a metal foil barrier layer.

16. A method for producing a composite sheet for package, the composite sheet comprising an outer layer, an intermediate layer, and an inner layer sequentially stacked in a first direction, wherein the inner layer comprises a first LDPE with MFI of 3.5-7.5 g/10 min as measured at 190°C and 2.16 kg, and the first direction is a direction from an external atmosphere contact surface of the composite sheet toward a package content contact surface of the composite sheet, and the method comprising:

adhering the outer layer, the intermediate layer, and the inner layer by sequential stacking, wherein the adhering the outer layer, the intermediate layer, and the inner layer by sequential stacking comprises:

forming the outer layer on a first surface of the intermediate layer; and

forming the inner layer on a second surface of the intermediate layer opposite to the first surface.

17. The method according to claim 16, further comprising:

forming an odor barrier layer on the second surface before forming the inner layer on the second surface, and then forming the inner layer on the odor barrier layer.

18. The method according to claim 16, further comprising:

forming an odor barrier layer on the second surface of the intermediate layer;

forming a further barrier layer on the odor barrier layer; and

forming the inner layer on the further barrier layer.

19. The method according to claim 16, further comprising:

forming a further adhesive layer on the second surface of the intermediate layer;

forming an odor barrier layer on the further adhesive layer;

forming a further barrier layer on the odor barrier layer; and

forming the inner layer on the further barrier layer.

20. A sleeve, obtained by longitudinal sealing of the composite sheet for package according to any one of claims 1-15, wherein the sleeve has two ends which are open in a top region and a bottom region.

21. A package container, obtained by folding and sealing of both of the ends of the sleeve according to claim 20.