

ORIGINAL

10 JAN 2014

00226 14

We Claim:

1. A sheetlike composite (3) comprising a layer configuration with the following layers:
  - o. optionally a layer of thermoplastic KS<sub>u</sub> (13);
  - i. a carrier layer (4);
  - ii. a first layer of thermoplastic KS<sub>v</sub> (35);
  - iii. a barrier layer (5);
  - iv. a second layer of thermoplastic KS<sub>a</sub> (6);
  - v. at least one further layer of thermoplastic KS<sub>w</sub> (7);

wherein the Vicat softening temperature of the layer of thermoplastic KS<sub>v</sub> (35) and the Vicat softening temperature of the layer of thermoplastic KS<sub>a</sub> (6) is in each case higher than the Vicat softening temperature of the layer of thermoplastic KS<sub>w</sub> (7).
2. The sheetlike composite (3) according to claim 1, wherein the Vicat softening temperature of the layer of thermoplastic KS<sub>v</sub> (35) and the Vicat softening temperature of the layer of thermoplastic KS<sub>a</sub> (6) is in each case higher than the Vicat softening temperature of the layer of thermoplastic KS<sub>w</sub> (7) by at least 4 K.
3. The sheetlike composite (3) according to one of the preceding claims, wherein the melting temperature of the layer of thermoplastic KS<sub>v</sub> (35) and the melting temperature of the layer of thermoplastic KS<sub>a</sub> (6) is in each case higher than the melting temperature of the layer of thermoplastic KS<sub>w</sub> (7).
4. The sheetlike composite (3) according to claim 3, wherein the melting temperature of the layer of thermoplastic KS<sub>v</sub> (35) and the melting temperature of the layer of thermoplastic KS<sub>a</sub> (6) is in each case higher than the melting temperature of the layer of thermoplastic KS<sub>w</sub> (7) by at least 3 K.

10 JAN 2014  
00926 14

5. The sheetlike composite (3) according to one of the preceding claims, wherein the modulus of the difference between the Vicat softening temperature of the layer of thermoplastic KSv (35) and the Vicat softening temperature of the layer of thermoplastic KSa (6) is in a range of from 0 to 10 K.

6. The sheetlike composite (3) according to one of the preceding claims, wherein the modulus of the difference between the melting temperature of the layer of thermoplastic KSv (35) and the melting temperature of the layer of thermoplastic KSa (6) is in a range of from 0 to 10 K.

7. The sheetlike composite (3) according to one of the preceding claims, wherein at least one of the layers of thermoplastic KSu (13), KSv (35), KSa (6) or KSw (7) is a plastics mixture of at least two plastics.

8. The sheetlike composite (3) according to one of the preceding claims, wherein at least one of the layers of thermoplastic KSu (13), KSv (35), KSa (6) or KSw (7) is made of a polyethylene or a polypropylene or a mixture of at least two of these.

9. The sheetlike composite (3) according to one of the preceding claims 7 or 8, wherein the plastics mixture of at least one layer of thermoplastic contains as one of at least two mixture components a polyolefin prepared by means of a metallocene.

10. The sheetlike composite (3) according to one of the preceding claims, wherein at least one of the layers of plastic KSu (13), KSv (35), KSa (6) or KSw (7) comprises at least one polyolefin with a mass density in a range of from 0.925 g/cm<sup>3</sup> to 0.980 g/cm<sup>3</sup> in a range of from 20 wt.% to 100 wt.%, in each case based on the total weight of the layer of plastic.

11. The sheetlike composite (3) according to one of the preceding claims, wherein the barrier layer (5) is chosen from

- a. a barrier layer of plastic, or
  - b. a metal layer
  - c. a metal oxide layer; or
  - d. a combination of at least two of a. to c.
12. The sheetlike composite (3) according to one of the preceding claims, wherein the carrier layer (4) has at least one hole (36) which is covered at least with the barrier layer (5) and at least with one of the layers of thermoplastic KSa (6) or KSw (7) as hole-covering layers.
13. A container (2) surrounding an interior (1), comprising at least one sheetlike composite (3) according to one of claims 1 to 12.
14. A process for the production of a container (2) surrounding an interior (1), comprising the process steps
  - a. provision of a sheetlike composite (3) comprising a layer configuration with the following layers:
    - o. optionally a layer of thermoplastic KSu (13) of a plastics composition KSum;
    - i. a carrier layer (4);
    - ii. a first layer of thermoplastic KSw (35) of a plastics composition KSvm;
    - iii. a barrier layer (5);
    - iv. a second layer of thermoplastic KSa (6) of a plastics composition KSam;
    - v. a further layer of thermoplastic KSw (7) of a plastics composition KSwm;wherein the Vicat softening temperature of the plastics composition KSvm and the Vicat softening temperature of the plastics

10 JAN 2014  
ORIGIN 0022614

composition KSam is in each case higher than the Vicat softening temperature of the plastics composition KSwm;

- b. folding of the sheetlike composite (3) to form a fold (8) with at least two fold surfaces (9, 10) adjacent to one another, wherein layer v. faces the interior (1) of the container (2);
  - c. joining of in each case at least a part region (11) of the at least two fold surfaces (9, 10) to form a container region (12).
- 15. The process according to claim 14, wherein at least one of the layers of thermoplastic KSu (13), KSV (35), KSA (6) or KSW (7) in step b. is heated above the melting temperature of this layer of plastic.
- 16. The process according to claim 14, wherein at least one of the layers of thermoplastic KSu (13), KSV (35), KSA (6) or KSW (7) in step b. has a temperature which is below the melting temperature of this layer of plastic.
- 17. The process according to one of claims 14 to 16, wherein at least one of the layers of thermoplastic KSu (13), KSV (35), KSA (6) or KSW (7) has a melting temperature below the melting temperature of the barrier layer (5).
- 18. The process according to one of claims 14 to 17, wherein at least one of the layers of thermoplastic KSu (13), KSV (35), KSA (6) or KSW (7) is produced by extrusion of at least one polymer P1 (42) through a slot die (38) to obtain an emerging surface (F), at least one polymer P2 (43) which differs from polymer P1 (42) being provided on the flanks of the surface (F) of the at least one polymer P1 (42) emerging from the slot die (38).

10 JAN 2011  
00226 14

19. The process according to claim 18, wherein the surface (F) which has emerged is cooled to a temperature below the lowest melting temperature of the polymer P2 (43) provided in this surface or its flanks, and at least the flanks of the surface (F) are then separated off from this surface (F).
20. The process according to one of claims 14 to 19, wherein the fold surfaces (9, 10) form an angle  $\mu$  of less than  $90^\circ$ .
21. The process according to one of claims 14 to 20, wherein the joining according to step c. is carried out by sealing by means of at least one of the layers of thermoplastic KSu (13), KSa (6) or KSw (7).
22. The process according to one of claims 14 to 21, wherein at least one of the layers of thermoplastic KSu (13), KSa (6) or KSw (7) is heated above the melting temperature directly before step c.
23. The process according to one of claims 14 to 22, wherein the heating is carried out by irradiation, contact with a hot solid or hot gas or a combination thereof.
24. The process according to one of claims 14 to 22, wherein the heating is carried out by a mechanical vibration.
25. The process according to claim 24, wherein the heating is carried out by ultrasound.
26. The process according to one of claims 14 to 25, wherein the container (2) is filled with a foodstuff before step b. or after step c.
27. The process according to one of claims 14 to 26, wherein the sheetlike composite (3) has at least one score (14) and the fold (8) is effected along the score (14).

10 JAN 2014

00226 14

28. The process according to claim 27, wherein the score (14) demarcates the sheetlike composite (3) into a part (15) of large area and a part (16) of small area compared with the part (15) of large area.
29. The process according to one of claims 14 to 28, wherein a further folding follows step c. as step d., in the further folding in step d. at least one of the layers of thermoplastic KSu (13), KSv (35), KSa (6) or KSw (7) having a temperature which is below the melting temperature of this layer of plastic.
30. A container (2) obtainable by a process according to one of claims 14 to 29.
31. A use of a composite according to one of claims 1 to 12, or of a container according to claim 13 or 30 for storage of foodstuffs.

Dated this 10<sup>th</sup> Day of January, 2014

  
B. Naveen Kumar Varma  
IN/PA-873  
Agent for the Applicant