List of reference signs

1 Pallet outer packaging device
2 Pallet
3 Pallet carrier
4 Packaged goods
5 Turntable
6 Outer packaging material
7 Pallet outer packaging paper
8 Pulp suspension
9 Reservoir
10 Wire
11 Forming section
12 Feed
13 Outlet opening
14 Paper web
15 Crêping device
16 Drying section
17 Clupak unit
18 Pre-drying section
19 Post-drying section

Claims

1. A pallet outer packaging paper, in particular for the outer packaging of homogeneous pallets, having an extensibility in accordance with ISO 1924-3:2005 of 8% to 15% in the machine direction and of 8% to 15% in the transverse direction, characterised in that it comprises at least 70 wt% cellulose fibres having a length-weighted mean fibre length in accordance with ISO 16065-2:2014 of 1.8 mm to 2.8 mm, that it has a lignin content in accordance with JAYME/KNOLLE/RAPP of 4 wt% to 12 wt%, and that it has a bending resistance in accordance with ISO 2493-1:2010, using a bending angle of 15° and a test bending length of 10 mm, of at most 35 mN in the machine direction and at most 30 mN in the transverse direction, and a bending resistance index of at most 100 Nm^6/kg^3 in the machine direction and at most 80 Nm^6/kg^3 in the transverse direction and a grammage of 50g/m^2 to 90 g/m^2.

2. The outer packaging paper according to Claim 1, characterised in that a ratio of the extensibility in accordance with ISO 1924-3:2005 in the machine direction to the extensibility in accordance with ISO 1924-3:2005 in the transverse direction is 1.0 to 1.4.

3. The outer packaging paper according to Claim 1 or 2, characterised in that a ratio of the bending resistance in accordance with ISO 2493-1:2010 in the machine direction to the bending resistance in accordance with ISO 2493-1:2010 in the transverse direction is 1.0 to 1.3.

4. The outer packaging paper according to any one of the preceding claims, characterised in that it has a tensile energy absorption index (TEA index) in accordance with ISO 1924-3:2005 of 5.0 J/g to 6.5 J/g in the machine direction and of 2.7 J/g to 3.7 J/g in the transverse direction.

5. The outer packaging paper according to any one of the preceding claims, characterised in that it has a tensile index in accordance with ISO 1924-3:2005 of at least 100 Nm/g in the machine direction.

6. The outer packaging paper according to any one of the preceding claims, characterised in that it has a wet tensile index in accordance with ISO 3781:2011 of at least 10 Nm/g.

7. The outer packaging paper according to any one of the preceding claims, characterised in that it has a Cobb 1800 value in accordance with ISO 535:2014 of at most 60 g/m^2.

8. The outer packaging paper according to any one of the preceding claims, characterised in that it has a tear index in accordance with ISO 1974:2012 of at least 10 mN·m²/g in the machine direction and of at least 15 mN·m²/g in the transverse direction.

9. The outer packaging paper according to any one of the preceding claims, characterised in that it has a burst index in accordance with ISO 2758:2014 of at least 7.0 kPa·m²/g.

10. The outer packaging paper according to any one of the preceding claims, characterised in that at least one surface has micro-crêping.

11. An outer packaging method for pallets, comprising the steps of
-providing a pallet, in particular a homogeneous pallet, consisting of a pallet carrier with packaged goods stacked thereon,
-positioning the pallet in an outer packaging device and wrapping the pallet with one or more layers of an outer packaging material,
characterised in that
a pallet outer packaging paper according to any one of Claims 1 to 10 is used as the outer packaging material.

12. A method for producing a pallet outer packaging paper, in particular for the outer packaging of homogeneous pallets, in particular for producing a pallet outer packaging paper according to any one of Claims 1 to 10, comprising the steps of
a) providing a pulp containing, in relation to 100 wt% pulp dry matter, at least 70 wt% cellulose fibres having a lignin content in accordance with JAYME/KNOLLE/RAPP of 4 wt% to 12 wt%, with a length-weighted mean fibre length in accordance with ISO 16065-2:2014 of 1.8 mm to 2.8 mm,
b) producing an aqueous suspension comprising the pulp with a water content of 97 wt% to 99.85 wt%,
c) applying the aqueous suspension by means of a head box to a rotating wire of a forming section to form a paper web, the wire being moved at a speed 1.5% to 6% higher or lower than an application rate of the aqueous suspension to the wire,
d) further processing the paper web from step c) to form the outer packaging paper with multi-stage drying of the paper web,
wherein the pallet outer packaging paper is given an extensibility in accordance with ISO 1924-3:2005 of 8% to 15% in the machine direction and of 8% to 15% in the transverse direction, a bending resistance in accordance with ISO 2493-1:2010, using a bending angle of 15° and a

test bending length of 10 mm, of at most 35 mN in the machine direction and at most 30 mN in the transverse direction, a bending resistance index of at most 100 Nm^6/kg^3 in the machine direction and at most 80 Nm^6/kg^3 in the transverse direction, and a grammage of 50 g/m^2 to 90 g/m^2.

13. The method according to Claim 12, characterised in that, in step a), the pulp is provided, in relation to 100 wt% pulp dry matter, with a content of 4 wt% to 12 wt% lignin in accordance with JAYME/KNOLLE/RAPP.

14. The method according to Claim 12 or 13, characterised in that, in a step a1), an aqueous suspension of the pulp from step a) is produced with a consistency of 25% to 40% and subjected to mechanical processing and refinement in a high-consistency refiner to a Schopper-Riegler value in accordance with ISO 5267-1:1999 of 10 °SR to 18 °SR.

15. The method according to any one of Claims 12 to 14, characterised in that, in a step a2), an aqueous suspension of the pulp from step a) or a1) is produced with a consistency of 3% to 5% and subjected to mechanical processing and refinement in one or more low-consistency refiner(s) to a Schopper-Riegler value in accordance with ISO 5267-1:1999 of 15 °SR to 30 °SR.

16. The method according to any one of Claims 12 to 15, characterised in that, in a step b1), 0.015 wt% to 0.04 wt% sizing agent, in relation to 100 wt% pulp dry matter, is added to the aqueous suspension.

17. The method according to any one of Claims 12 to 16, characterised in that, in a step b2), 0.7 wt% to 1.2 wt% starch, in relation to 100 wt% pulp dry matter, is added to the aqueous suspension.

18. The method according to any one of Claims 12 to 17, characterised in that, in a step b3), 0.05 wt% to 0.2 wt% of a dry strength agent, in relation to 100 wt% pulp dry matter, is added to the aqueous suspension.

19. The method according to any one of Claims 12 to 18, characterised in that micro-crêping is introduced into at least one surface of the paper web during step d).