CLAIMS

What is claimed is:

1. An absorbent core having a longitudinal centerline and a lateral centerline that is transverse to the longitudinal centerline, the absorbent core comprising:

a first absorbent core construction, the first absorbent core construction comprising:

a plurality of laterally spaced-apart fibrous constructions, wherein each fibrous construction extends generally parallel to or coincident with the longitudinal centerline, and wherein each fibrous construction includes a layer of nonwoven;

a first nonwoven sheet positioned on a first side of the fibrous constructions;

a second nonwoven sheet positioned on a second side of the fibrous constructions, opposite the first side of the fibrous construction;

wherein the first nonwoven sheet is coupled with the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions; and

absorbent material disposed within a network of fibers of the nonwoven of each fibrous construction, the absorbent material positioned between the first and second nonwoven sheets.

2. The absorbent core of claim 1, further comprising channels at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet.

3. The absorbent core of claim 2, wherein each channel extends generally parallel to or coincident with the longitudinal centerline of the absorbent core.

4. The absorbent core of claim 2, wherein each channel is coincident with a fold line of the first nonwoven sheet.

5. The absorbent core of claim 2, wherein the channels are free of absorbent material.

6. The absorbent core of claim 1, wherein the first nonwoven sheet is adhered to the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions.

7. The absorbent core of claim 6, wherein the first nonwoven sheet is adhered to the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions via adhesive beads.

8. The absorbent core of claim 7, wherein the adhesive beads extend generally parallel to or coincident with the longitudinal centerline of the absorbent core.

9. The absorbent core of claim 7, wherein the adhesive beads are continuous adhesive beads that extend from a first longitudinal edge of the first absorbent core construction to a second longitudinal edge of the first absorbent core construction.

10. The absorbent core of claim 7, wherein the adhesive beads are coincident with channels that are at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet.

11. The absorbent core of claim 7, wherein the adhesive beads are coincident with fold lines of the first nonwoven sheet.

12. The absorbent core of claim 1, further comprising fold lines on first nonwoven sheet, wherein each fold line is positioned between two adjacent, laterally spaced-apart fibrous constructions, and wherein each fold line extends generally parallel to or coincident with the longitudinal centerline of the absorbent core.

13. The absorbent core of claim 12, wherein the absorbent core is at least partially foldable along the fold lines.

14. The absorbent core of claim 13, wherein the absorbent core has a first lateral extent prior to folding along the fold lines and a second lateral extend after folding along the fold lines, and wherein the first lateral extent is greater than the second lateral extent.

15. The absorbent core of claim 13, further comprising channels at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet, and wherein the channels are coincident with at least some of the fold lines.

16. The absorbent core of claim 15, wherein, when folded, the channels are sealed by the first nonwoven sheet, and wherein, when unfolded, the channels are open above the first nonwoven sheet.

17. The absorbent core of claim 13, wherein, when folded along the fold lines, the absorbent core has a generally W-shaped lateral cross-section.

18. The absorbent core of claim 13, wherein the W-shaped lateral cross-section is within a crotch region of the absorbent core.

19. The absorbent core of claim 13, wherein, when folded, the absorbent core has a generally hourglass shape when viewed in plan view.

20. The absorbent core of claim 13, wherein, when folded, two of the plurality of laterally spaced-apart fibrous constructions form laterally positioned wing sections of the absorbent core.

21. The absorbent core of claim 20, wherein the laterally positioned wing sections have a lateral width that is equal to about 20% to 40% of a total width of the absorbent core.

22. The absorbent core of claim 20, wherein the wing sections define lateral margins on opposite sides of the absorbent core.

23. The absorbent core of claim 20, wherein, when folded, at least two adjacent fibrous constructions of the plurality of laterally spaced-apart fibrous constructions are positioned at an angle relative to one another that is less than 180° and greater than 0°.

24. The absorbent core of claim 20, wherein the absorbent core includes at least three fold lines including a first fold line positioned between a first lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, a second fold line positioned between a second lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, and third fold line that is positioned between the first and the second fold lines.

25. The absorbent core of claim 24, wherein, when folded, the lateral side edges of the absorbent core and the third fold line are positioned above the first and second fold lines in a first direction, wherein the first direction is transverse to the longitudinal centerline and the lateral centerline.

26. The absorbent core of claim 25, wherein the third fold line is coincident with the longitudinal centerline of the absorbent core.

27. The absorbent core of claim 1, wherein the first nonwoven sheet has an undulating outer surface, the second nonwoven sheet has a flat outer surface, and the plurality of laterally spaced-apart fibrous constructions are positioned between the inner surfaces of the first and second nonwoven sheets.

28. The absorbent core of claim 1, wherein each laterally spaced-apart fibrous construction is sealed along the lateral side edges thereof.

29. The absorbent core of claim 1, wherein each laterally spaced-apart fibrous construction is adhered to the second nonwoven sheet.

30. The absorbent core of claim 1, wherein the plurality of laterally spaced-apart fibrous construction are not adhered to the first nonwoven sheet.

31. The absorbent core of claim 1, wherein the absorbent material comprises SAP.

32. The absorbent core of claim 1, wherein each laterally spaced-apart fibrous construction has a gradient distribution of SAP particle sizes in a z-direction, wherein z-direction is transverse to the longitudinal and lateral centerlines; and

wherein, within the SAP gradient distribution of SAP particle sizes, larger particle sizes of SAP are positioned closer to the first nonwoven sheet than the second nonwoven sheet, and

smaller SAP particle sizes of SAP are positioned closer to the second nonwoven sheet than the first nonwoven sheet.

33. The absorbent core of 32, wherein each fibrous construction has a gradient distribution of adhesive concentration in the z-direction; and

wherein, within the gradient distribution of adhesive concentration, a lower concentration of adhesive is positioned closer to the first nonwoven sheet than the second nonwoven sheet, and higher concentration of adhesive is positioned closer to the second nonwoven sheet than the first nonwoven sheet.

34. The absorbent core of claim 33, wherein each fibrous construction has a gradient density in the z-direction, wherein a density of the fibrous construction at a first surface of the fibrous construction that is positioned closer to the first nonwoven sheet is lower than a density of the fibrous construction at a second surface of the fibrous construction that is positioned closer to the second nonwoven sheet.

35. The absorbent core of claim 1, further comprising nonwoven capture sheets coupled with each section of fibrous construction, wherein each nonwoven capture sheet is positioned between one of the fibrous constructions and the second nonwoven sheet.

36. The absorbent core of claim 35, wherein the nonwoven capture sheet has a density that is higher than a density of the fibrous construction.

37. The absorbent core of claim 35, wherein absorbent material is positioned on the nonwoven capture sheet, within the nonwoven capture sheet, or combinations thereof.

38. The absorbent core of claim 37, wherein the absorbent material that is positioned on the nonwoven capture sheet, within the nonwoven capture sheet, or combinations thereof has a smaller particle size that the absorbent material that is on or within each fibrous construction.

39. The absorbent core of claim 1, wherein each fibrous construction comprises a bulky nonwoven, a creped spunbond, a bulkified nonwoven, or a bulkified bulky nonwoven.

40. The absorbent core of claim 1, wherein the fibrous constructions comprise bicomponent fibers.

41. The absorbent core of claim 40, wherein the bicomponent fibers have a sheath and core microstructure, wherein the sheath has a lower softening point than the core.

42. The absorbent core of claim 1, further comprising a second absorbent core construction, the second absorbent core construction coupled with the second nonwoven sheet.

43. The absorbent core of claim 42, wherein the second absorbent core construction comprises fluff or pulp on a third nonwoven sheet.

44. The absorbent core of claim 43, wherein SAP is mixed with the fluff or pulp.

45. The absorbent core of claim 44, wherein the SAP in the second absorbent core construction has a smaller particle size than SAP within the first absorbent core construction.

46. The absorbent core of claim 43, wherein the third nonwoven sheet is at least partially wrapped about the fluff or pulp.

47. The absorbent core of claim 46, wherein the third nonwoven sheet is wrapped about the fluff or pulp in a C-fold configuration.

48. The absorbent core of claim 43, wherein the third nonwoven sheet is adhered to the pulp or fluff and is adhered to the second nonwoven sheet.

49. The absorbent core of claim 42, wherein the second absorbent core construction is a flat or generally flat construction, and wherein the first absorbent construction has at least one undulating surface that is at least partially formed by the first nonwoven sheet.

50. The absorbent core of claim 42, wherein the second absorbent core construction has substantially the same footprint as the first absorbent core construction, and wherein the first absorbent core construction has a greater surface area than the second absorbent core construction.

51. The absorbent core of claim 43, further comprising a fourth nonwoven sheet coupled between the second nonwoven sheet and the fluff or pulp.

52. The absorbent core of claim 1, wherein the fibrous constructions comprise extruded nonwoven fibers entangled with SAP.

53. The absorbent core of claim 1, wherein the fibrous constructions comprise elastomeric fibers, wetting agents, odor control agents, ion-exchange resins, cellulose fibers, or combinations thereof.

54. The absorbent core of claim 1, wherein the fibrous constructions comprise smart fibers.

55. The absorbent core of claim 1, at least two of the fibrous constructions contain different SAP compositions, different amounts of SAP, different SAP particle sizes, or combinations thereof.

56. The absorbent core of claim 1, at least two of the fibrous constructions contain SAP having different permeabilities.

57. The absorbent core of claim 1, wherein the absorbent core exhibits varied absorption capacity.

58. The absorbent core of claim 57, wherein the absorption capacity varies in the machine direction, the cross direction, or the z-direction, wherein the z-direction is transvers to the machine and cross directions.

59. The absorbent core of claim 1, wherein the plurality of laterally spaced-apart fibrous constructions include at least two fibrous constructions of different widths in the lateral direction.

60. The absorbent core of claim 1, wherein the plurality of laterally spaced-apart fibrous constructions include at least two fibrous constructions of different lengths in the longitudinal direction.

61. The absorbent core of claim 1, wherein the first absorbent core construction comprises at least two longitudinally spaced-apart fibrous constructions.

62. The absorbent core of claim 1, wherein the first absorbent core construction comprises at least one fibrous construction that extends at an oblique angle relative to the longitudinal and lateral centerlines.

63. The absorbent core of claim 1, wherein the first absorbent core construction comprises at least one fibrous construction having a curvilinear perimeter.

64. An absorbent article comprising:

an absorbent core;

a chassis, including a backsheet and a topsheet;

wherein the absorbent core is positioned between the topsheet and the backsheet and is coupled with the backsheet;

the absorbent core having a longitudinal centerline and a lateral centerline that is transverse to the longitudinal centerline, the absorbent core comprising:

a first absorbent core construction, the first absorbent core construction comprising:

a plurality of laterally spaced-apart fibrous constructions, wherein each fibrous construction extends generally parallel to or coincident with the longitudinal centerline, and wherein each fibrous construction includes a nonwoven layer having fibers;

a first nonwoven sheet positioned on a first side of the fibrous constructions;

a second nonwoven sheet positioned on a second side of the fibrous constructions, opposite the first side of the fibrous construction;

wherein the first nonwoven sheet is coupled with the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions; and

absorbent material disposed within a network of fibers of the nonwoven of each fibrous construction, the absorbent material positioned between the first and second nonwoven sheets.

65. The absorbent article of claim 64, further comprising channels at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet.

66. The absorbent article of claim 65, wherein each channel extends generally parallel to or coincident with the longitudinal centerline of the absorbent core.

67. The absorbent article of claim 65, wherein each channel is coincident with a fold line of the first nonwoven sheet.

68. The absorbent article of claim 65, wherein the channels are free of absorbent material.

69. The absorbent article of claim 64, wherein the first nonwoven sheet is adhered to the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions.

70. The absorbent article of claim 69, wherein the first nonwoven sheet is adhered to the second nonwoven sheet at locations between adjacent, laterally spaced-apart fibrous constructions via adhesive beads.

71. The absorbent article of claim 70, wherein the adhesive beads extend generally parallel to or coincident with the longitudinal centerline of the absorbent core.

72. The absorbent article of claim 70, wherein the adhesive beads are continuous adhesive beads that extend from a first longitudinal edge of the first absorbent core construction to a second longitudinal edge of the first absorbent core construction.

73. The absorbent article of claim 70, wherein the adhesive beads are coincident with channels that are at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet.

74. The absorbent article of claim 70, wherein the adhesive beads are coincident with fold lines of the first nonwoven sheet.

75. The absorbent article of claim 64, further comprising fold lines on first nonwoven sheet, wherein each fold line is positioned between two adjacent, laterally spaced-apart fibrous constructions, and wherein each fold line extends generally parallel to or coincident with the longitudinal centerline of the absorbent core.

76. The absorbent article of claim 75, wherein the absorbent core is at least partially foldable along the fold lines.

77. The absorbent article of claim 76, wherein the absorbent core has a first lateral extent prior to folding along the fold lines and a second lateral extend after folding along the fold lines, and wherein the first lateral extent is greater than the second lateral extent.

78. The absorbent article of claim 76, further comprising channels at least partially defined by the first nonwoven sheet, wherein each channel is positioned between two adjacent, laterally spaced-apart fibrous constructions and above the first nonwoven sheet, and wherein the channels are coincident with at least some of the fold lines.

79. The absorbent article of claim 78, wherein, when folded, the channels are sealed by the first nonwoven sheet, and wherein, when unfolded, the channels are open above the first nonwoven sheet.

80. The absorbent article of claim 76, wherein, when folded along the fold lines, the absorbent core has a generally W-shaped lateral cross-section.

81. The absorbent article of claim 76, wherein the W-shaped lateral cross-section is within a crotch region of the absorbent core.

82. The absorbent article of claim 76, wherein, when folded, the absorbent core has a generally hourglass shape when viewed in plan view.

83. The absorbent article of claim 76, wherein, when folded, two of the plurality of laterally spaced-apart fibrous constructions form laterally positioned wing sections of the absorbent core.

84. The absorbent article of claim 83, wherein the laterally positioned wing sections have a lateral width that is equal to about 20% to 40% of a total width of the absorbent core.

85. The absorbent article of claim 83, wherein the wing sections define lateral margins on opposite sides of the absorbent core.

86. The absorbent article of claim 83, wherein, when folded, at least two adjacent fibrous constructions of the plurality of laterally spaced-apart fibrous constructions are positioned at an angle relative to one another that is less than 180° and greater than 0°.

87. The absorbent article of claim 83, wherein the absorbent core includes at least three fold lines including a first fold line positioned between a first lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, a second fold line positioned between a second lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, and third fold line that is positioned between the first and the second fold lines.

88. The absorbent article of claim 87, wherein, when folded, the lateral side edges of the absorbent core and the third fold line are positioned above the first and second fold lines in a

first direction, wherein the first direction is transverse to the longitudinal centerline and the lateral centerline.

89. The absorbent article of claim 88, wherein the third fold line is coincident with the longitudinal centerline of the absorbent core.

90. The absorbent article of claim 64, wherein the first nonwoven sheet has an undulating outer surface, the second nonwoven sheet has a flat outer surface, and the plurality of laterally spaced-apart fibrous constructions are positioned between the inner surfaces of the first and second nonwoven sheets.

91. The absorbent article of claim 64, wherein each laterally spaced-apart fibrous construction is sealed along the lateral side edges thereof.

92. The absorbent article of claim 64, wherein each laterally spaced-apart fibrous construction is adhered to the second nonwoven sheet.

93. The absorbent article of claim 64, wherein the plurality of laterally spaced-apart fibrous construction are not adhered to the first nonwoven sheet.

94. The absorbent article of claim 64, wherein the absorbent material comprises SAP.

95. The absorbent article of claim 64, wherein each laterally spaced-apart fibrous construction has a gradient distribution of SAP particle sizes in a z-direction, wherein z-direction is transverse to the longitudinal and lateral centerlines; and

wherein, within the SAP gradient distribution of SAP particle sizes, larger particle sizes of SAP are positioned closer to the first nonwoven sheet than the second nonwoven sheet, and smaller SAP particle sizes of SAP are positioned closer to the second nonwoven sheet than the first nonwoven sheet.

96. The absorbent article of 95, wherein each fibrous construction has a gradient distribution of adhesive concentration in the z-direction; and

wherein, within the gradient distribution of adhesive concentration, a lower concentration of adhesive is positioned closer to the first nonwoven sheet than the second nonwoven sheet, and higher concentration of adhesive is positioned closer to the second nonwoven sheet than the first nonwoven sheet.

97. The absorbent article of claim 96, wherein each fibrous construction has a gradient density in the z-direction, wherein a density of the fibrous construction at a first surface of the fibrous construction that is positioned closer to the first nonwoven sheet is lower than a density of the fibrous construction at a second surface of the fibrous construction that is positioned closer to the second nonwoven sheet.

98. The absorbent article of claim 64, further comprising nonwoven capture sheets coupled with each section of fibrous construction, wherein each nonwoven capture sheet is positioned between one of the fibrous constructions and the second nonwoven sheet.

99. The absorbent article of claim 98, wherein the nonwoven capture sheet has a density that is higher than a density of the fibrous construction.

100. The absorbent article of claim 98, wherein absorbent material is positioned on the nonwoven capture sheet, within the nonwoven capture sheet, or combinations thereof.

101. The absorbent article of claim 100, wherein the absorbent material that is positioned on the nonwoven capture sheet, within the nonwoven capture sheet, or combinations thereof has a smaller particle size that the absorbent material that is on or within each fibrous construction.

102. The absorbent article of claim 64, wherein each fibrous construction comprises a bulky nonwoven, a creped spunbond, a bulkified nonwoven, or a bulkified bulky nonwoven.

103. The absorbent article of claim 64, wherein the fibrous constructions comprise bicomponent fibers.

104. The absorbent article of claim 103, wherein the bicomponent fibers have a sheath and core microstructure, wherein the sheath has a lower softening point than the core.

105. The absorbent article of claim 64, further comprising a second absorbent core construction, the second absorbent article construction coupled with the second nonwoven sheet.

106. The absorbent article of claim 105, wherein the second absorbent core construction comprises fluff or pulp on a third nonwoven sheet.

107. The absorbent article of claim 106, wherein SAP is mixed with the fluff or pulp.

108. The absorbent article of claim 107, wherein the SAP in the second absorbent core construction has a smaller particle size than SAP within the first absorbent core construction.

109. The absorbent article of claim 108, wherein the third nonwoven sheet is at least partially wrapped about the fluff or pulp.

110. The absorbent article of claim 109, wherein the third nonwoven sheet is wrapped about the fluff or pulp in a C-fold configuration.

111. The absorbent article of claim 106, wherein the third nonwoven sheet is adhered to the pulp or fluff and is adhered to the second nonwoven sheet.

112. The absorbent article of claim 103, wherein the second absorbent core construction is a flat or generally flat construction, and wherein the first absorbent construction has at least one undulating surface that is at least partially formed by the first nonwoven sheet.

113. The absorbent article of claim 103, wherein the second absorbent core construction has substantially the same footprint as the first absorbent core construction, and wherein the first absorbent core construction has a greater surface area than the second absorbent core construction.

114. The absorbent article of claim 104, further comprising a fourth nonwoven sheet coupled between the second nonwoven sheet and the fluff or pulp.

115. The absorbent article of claim 64, wherein the fibrous constructions comprise extruded nonwoven fibers entangled with SAP.

116. The absorbent article of claim 64, wherein the fibrous constructions comprise elastomeric fibers, wetting agents, odor control agents, ion-exchange resins, cellulose fibers, or combinations thereof.

117. The absorbent article of claim 64, wherein the fibrous constructions comprise smart fibers.

118. The absorbent article of claim 64, at least two of the fibrous constructions contain different SAP compositions, different amounts of SAP, different SAP particle sizes, or combinations thereof.

119. The absorbent article of claim 64, at least two of the fibrous constructions contain SAP having different permeabilities.

120. The absorbent article of claim 64, wherein the absorbent core exhibits varied absorption capacity.

121. The absorbent article of claim 120, wherein the absorption capacity varies in the machine direction, the cross direction, or the z-direction, wherein the z-direction is transvers to the machine and cross directions.

122. The absorbent article of claim 64, wherein the plurality of laterally spaced-apart fibrous constructions include at least two fibrous constructions of different widths in the lateral direction.

123. The absorbent article of claim 64, wherein the plurality of laterally spaced-apart fibrous constructions include at least two fibrous constructions of different lengths in the longitudinal direction.

124. The absorbent article of claim 64, wherein the first absorbent core construction comprises at least two longitudinally spaced-apart fibrous constructions.

125. The absorbent article of claim 64, wherein the first absorbent core construction comprises at least one fibrous construction that extends at an oblique angle relative to the longitudinal and lateral centerlines.

126. The absorbent article of claim 64, wherein the first absorbent core construction comprises at least one fibrous construction having a curvilinear perimeter.

127. The absorbent article of claim 67, wherein the absorbent core is coupled with the backsheet at locations that are coincident with the channels and fold lines of the absorbent core.

128. The absorbent article of claim 89, wherein the absorbent core is adhered with the backsheet at at least some locations that are coincident with the channels and fold lines of the absorbent core, wherein the absorbent core is not adhered to the backsheet beneath the third fold line, and wherein when the absorbent core is folded the absorbent core pivots upwards away from the backsheet at the third fold line.

129. The absorbent article of claim 64, further comprising an acquisition distribution layer positioned between the topsheet and above the absorbent core.

130. The absorbent article of claim 64, wherein, when folded, lateral side edges of the absorbent core are angled towards the top sheet such that fluid flowing from the longitudinal centerline of the absorbent core towards the lateral side edges must flow against gravity.

131. The absorbent article of claim 89, wherein the absorbent core is pre-folded into a W-shape via adhesion of the core to the backsheet along the first and second fold lines; wherein, when in a flat configuration prior to attachment to the backsheet, the first and second fold lines are spaced apart by a first distance; wherein after attachment to the backsheet, the first and second fold lines are spaced part by a second distance; and wherein the first distance is greater than the second distance.

132. The absorbent article of claim 89, wherein the absorbent core is pre-folded into a W-shape via adhesion of the core to the backsheet along the first and second fold lines.

133. The absorbent article of claim 132, wherein the absorbent core is free of the backsheet along the third fold line.

134. The absorbent article of claim 133, wherein an airflow channel is formed between the absorbent core and the backsheet, between the first and second fold lines beneath the third fold line.

135. The absorbent article of claim 64, wherein the absorbent article is a disposable diaper.

136. The absorbent article of claim 134, wherein the absorbent core is only adhered to the backsheet along the first sand second fold lines.

137. The absorbent article of claim 132, wherein an entirety of the outer surface of the second nonwoven sheet of the absorbent core is contiguously adhered with the backsheet.

138. The absorbent article of claim 134, wherein lateral side edges of the absorbent core are free of the backsheet and raised above the backsheet by a distance.

139. The absorbent article of claim 133, wherein the absorbent core is free of the backsheet between the first and second fold lines.

140. The absorbent article of claim 139, wherein the topsheet is adhered to the absorbent core.

141. The absorbent article of claim 140, wherein the topsheet is adhered to the first nonwoven sheet.

142. The absorbent article of claim 141, wherein the topsheet is partially wrapped about the absorbent core and is adhered to a bottom surface of the absorbent core.

143. The absorbent article of claim 64, wherein the absorbent article comprises leg cuffs.

144. The absorbent article of claim 64, wherein the absorbent article comprises leg gatherers.

145. A method of making a fibrous construction that includes a composite of absorbent material and a nonwoven, the method comprising:

providing a nonwoven having a first surface and a second surface; and

passing a forced airstream containing absorbent material onto and through the nonwoven, wherein at least some of the absorbent material is captured within the nonwoven, between the first surface and the second surface; and

wherein said passing includes filtering at least some of the absorbent material at least partially through the nonwoven such that a gradient distribution of particle sizes of the absorbent material is formed within the nonwoven, between the first surface and the second surface.

146. The method of claim 145, further comprising tackifying the nonwoven.

147. The method of claim 145, wherein tackifying includes heating the nonwoven prior to or simultaneous with passing of the forced airstream onto and through the nonwoven.

148. The method of claim 147, wherein the nonwoven has an increased bulk fiber density after the heating.

149. The method of claim 147, wherein the nonwoven includes bicomponent fibers, including a sheath and a core, wherein the sheath has a lower softening temperature than the core, wherein the heating softens the sheath of the bicomponent fibers, and wherein at least some of the absorbent material adheres to the softened sheath when the forced airstream passes onto and through the nonwoven.

150. The method of claim 146, wherein tackifying includes incorporating adhesive within the nonwoven.

151. The method of claim 150, wherein the adhesive is incorporated via spraying the adhesive onto and at least partially through the nonwoven.

152. The method of claim 151, wherein the adhesive is sprayed onto the second surface of the nonwoven.

153. The method of claim 152, wherein the adhesive is sprayed onto the second surface of the nonwoven simultaneously with the passing of the forced airstream onto and through the nonwoven.

154. The method of claim 152, wherein the adhesive is sprayed onto the second surface of the nonwoven prior to the passing of the forced airstream onto and through the nonwoven.

155. The method of claim 151, wherein the adhesive is contained within the forced airstream.

156. The method of claim 152, wherein the adhesive is dispersed within the nonwoven in gradient concentration such that a greater concentration of adhesive is positioned closer to the second surface than the first surface of the nonwoven.

157. The method of claim 145, wherein the gradient distribution of particle sizes of the absorbent within the nonwoven is such that absorbent material of larger particle size is positioned closer to the first surface and absorbent material of smaller particle size is positioned closer to the second surface.

158. The method of claim 145, wherein the nonwoven has a gradient density such that a density of the nonwoven at the first surface is lower than a density of the nonwoven at the second surface.

159. The method of claim 145, further comprising coupling a nonwoven capture sheet onto the second surface of the nonwoven, wherein the nonwoven capture sheet has a density that is greater than a density of the nonwoven, and wherein at least some of the absorbent material is captured within the nonwoven capture sheet.

160. The method of claim 145, wherein the absorbent material comprises SAP, the method further comprising providing a chamber and conveying the nonwoven so as to intersect the chamber, wherein said passing includes generating a forced air steam through the chamber and passing the air steam containing absorbent particles through the chamber and onto and through the nonwoven.

161. The method of claim 150, wherein the adhesive comprises hot melt adhesive.

162. The method of claim 145, further comprising filtering absorbent material fines through the nonwoven.

163. The method of claim 162, further comprising collecting the fines, combining the fines with pulp or fluff.

164. The method of claim 145, further comprising bulkyfying the nonwoven, at least at the first surface, prior to or simultaneously with the passing of the forced airstream through the nonwoven.

165. The method of claim 164, wherein the bulkyfying includes brushing the nonwoven, heating the nonwoven, or combinations thereof.

166. The method of claim 145, further comprising densifying the second surface of the nonwoven.

167. The method of claim 166, wherein densifying includes irradiating the second surface of the nonwoven.

168. The method of claim 159, wherein the nonwoven capture sheet prevents the passage of any absorbent material therethrough.

169. The method of claim 145, wherein the forced airstream is recycled through the nonwoven through a recycle loop, such that the forced air stream and any absorbent material that passes through the second surface of the nonwoven flows back onto and through the first surface of the nonwoven.

170. The method of claim 145, wherein the nonwoven intersects a chamber through which the forced airstream passes.

171. A system for introducing absorbent material into a nonwoven, the system comprising:

a nonwoven conveyer;

a chamber including an input and an output, wherein the nonwoven conveyer intersects the chamber between the input and the output;

a forced airstream generator positioned generate a force air stream through the chamber; and

an absorbent material source positioned to provide absorbent material into the chamber.

172. The system of claim 171, further comprising a recycle loop in fluid communication with the input and output of the chamber.

173. The system of claim 171, further comprising a fines diverter positioned to collect absorbent material fines downstream of the nonwoven conveyer and divert the fines to another process.

174. A method of making an absorbent core having a longitudinal centerline and a lateral centerline that is transverse to the longitudinal centerline, the method comprising:

combining a nonwoven with absorbent material to form a fibrous construction; including a network of fibers of the nonwoven retaining the absorbent material:

separating the fibrous construction into multiple fibrous constructions;

coupling a first nonwoven sheet onto a first surface of the fibrous constructions, wherein the multiple fibrous constructions are laterally spaced-apart;

positioning a second nonwoven sheet onto a second surface of the fibrous constructions, opposite the first surface; and

coupling the first nonwoven sheet with the second nonwoven sheet along adhesion lines that extend between adjacent, laterally spaced-apart fibrous constructions, forming a first absorbent core construction.

175. The method of claim 174, wherein combining the nonwoven with the absorbent material includes extruding nonwoven forming fibers onto the absorbent material.

176. The method of claim 174, wherein combining the nonwoven with the absorbent material includes passing a forced airstream containing absorbent material onto and through a first surface of the nonwoven, wherein at least some of the absorbent material is captured within the nonwoven, between the first surface and the second surface, and filtering at least some of the absorbent material at least partially through the nonwoven such that a gradient distribution of particle sizes of the absorbent material is formed within the nonwoven, between the first surface and the second surface.

177. The method of claim 176, wherein the passing of the forced airstream onto and through the nonwoven is performed an accordance with any of claims 146 through 170.

178. The method of claim 174, wherein coupling the second nonwoven sheet with the first nonwoven sheet includes passing the first nonwoven sheet, the fibrous constructions, and the second nonwoven sheet through a grooved roller, wherein grooves of the grooved roller facilitate formation of tubes of the first nonwoven sheet positioned about the fibrous constructions, and wherein peaks of the roller between the grooves facilitate coupling of the second and first nonwoven sheets.

179. The method of claim 174, further comprising forming a pulp-SAP layer by combining pulp with SAP, and adhering the pulp-SAP layer with the first absorbent core construction.

180. The method of claim 179, wherein combining the nonwoven with the absorbent material includes passing a forced airstream containing absorbent material onto and through a first surface of the nonwoven, wherein at least some of the absorbent material is captured within the nonwoven, between the first surface and the second surface, and filtering at least some of the absorbent material at least partially through the nonwoven such that a gradient distribution of particle sizes of the absorbent material is formed within the nonwoven, between the first surface and the second surface; and

wherein absorbent material fines filter through the nonwoven and combined with the pulp to form the pulp-SAP.

181. A method of making an absorbent article, the method comprising:

making an absorbent core in accordance with any of claims 174 through 180;

positioning the absorbent core within a chassis, between a backsheet and a topsheet of the chassis, including coupling the absorbent core with the backsheet.

182. The method of claim 181, wherein the absorbent article is in accordance with any of claims 64 to 144.

183. The method of claim 181, wherein the absorbent core includes at least three fold lines including a first fold line positioned between a first lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, a second fold line positioned between a second lateral side edge of the absorbent core and the longitudinal centerline of the absorbent core, and third fold line that is positioned between the first and the second fold lines; and wherein coupling the absorbent core with the backsheet includes adhering the absorbent core along the first and second fold lines with the backsheet, and wherein a remainder of the absorbent core is free of the backsheet.

184. A roller for forming an undulated topsheet of an absorbent core, the roller comprising:

a body;

a roller surface; and

grooves formed on the roller surface.

185. The absorbent core of claim 1, wherein the plurality of laterally spaced-apart fibrous constructions includes four laterally spaced-apart fibrous constructions, the absorbent core including three channels, wherein each channel is posited between two adjacent fibrous constructions, the absorbent core including three fold lines coincident with the channels, and wherein each channel and fold line extends generally parallel to or coincident with the longitudinal centerline.

186. The absorbent core of claim 2, wherein the channels are generally void of absorbent material.

187. The absorbent core of claim 1, wherein a thickness of each fibrous construction is between 2 and 10 mm.

188. The absorbent article of claim 65, wherein said channels extend generally longitudinally from a front waist region to a rear waist region of the article.

189. A system for making an absorbent core, the system comprising:

a nonwoven conveyer;

a chamber including an input and an output, wherein the nonwoven conveyer intersects the chamber between the input and the output;

a forced airstream generator positioned generate a force air stream through the chamber;

an absorbent material source positioned to provide absorbent material into the chamber;

a top nonwoven sheet conveyer positioned to convey a top nonwoven sheet;

a combining roller positioned to receive a top nonwoven sheet from the top nonwoven sheet conveyer and a nonwoven from the nonwoven conveyer, and arranged to combined a nonwoven with a top nonwoven sheet.

190. The system of claim 189, further comprising a recycle loop in fluid communication with the input and output of the chamber.

191. The system of claim 190, further comprising a fines diverter positioned to collect absorbent material fines downstream of the nonwoven conveyer and divert the fines to a second process.

192. The system of claim 190, wherein the second process is a pulp-SAP layer construction process.

193. The system of claim 189, wherein the combining roller includes a body, a roller surface, and grooves formed on the roller surface.

194. The system of claim 189, further comprising a fiber treatment apparatus positioned upstream of the forced airstream generator.

195. The system of claim 194, wherein the fiber treatment apparatus includes a fiber tackifier, fiber bulkifier, fiber densifer, or combinations thereof.

196. The system of claim 194, wherein the fiber treatment apparatus includes an oven, an adhesive spray gun positioned to spray adhesive on a fibrous construction from an opposite surface where a forced airstream impacts the fibrous construction, a IR irradiation apparatus, a mechanical brush, or combinations thereof.

197. The system of claim 194, wherein the forced airstream is heated.

198. The system of claim 194, further comprising a fiber separator position to cut and separate a fibrous construction into multiple longitudinal sections.

199. The system of claim 189, further comprising a nonwoven capture sheet applicator positioned to couple a nonwoven capture sheet to a bottom surface of a fibrous construction prior to deposition of SAP thereon.

200. The system of claim 189, further comprising a bottom sheet applicator positioned to couple a bottom nonwoven sheet to a bottom surface of a fibrous construction after separation of the fibrous construction into multiple longitudinal section.

201. The system of claim 189, further comprising a pulp-SAP layer production apparatus.

202. The system of claim 201, wherein the pulp-SAP layer production apparatus includes a lower nonwoven conveyer, a core former, a hammermill positioned to provide a stream of pulp to a lower nonwoven layer, wherein the SAP fines diverter is positioned to provide stream of SAP fines to the stream pf pulp, and a core former positioned to combine the pulp and SAP with a lower nonwoven layer.

203. The system of claim 202, further comprising a combining roll positioned to combine a pulp-SAP layer with a fibrous construction.

204. The system of claim 189, further comprising a spool positioned to receive absorbent cores after assembly thereof.