PRODUCTION PROCESS FOR CARDBOARD CORES
Spiral Cores

- The spiral winding consists in forming a board tube from board reels. For this purpose, a certain number of equipments is necessary.

- The products made of cardboard:
  - spiral cores (tubes)
  - corner boards
1. Raw Materials

- Raw material is manufactured from used papers and cardboards
2. Raw Material Stock

- This place must be able to receive trucks of 24 tonnes, which will be discharged with a forklift. It will have all the raw materials, which are necessary for the spiral winding.
3. Reels returning machine

This machine will place the reels from the horizontal position to the vertical position. The reels are, then, brought closed to the rolling stand of the spiral machine.
4. Preparation of the glue

- The glue is prepared inside the factory in tanks of big capacity and by mixing powder and water. The glue is, then, brought to the machine with a network of pipes.
- The glue is based on water ingredient and is not polluting at all.
- This glue is not aggressive and can be deluded in water to put it in the sewage pipes.
5. Spiral Winding

The spiral winding is composed of different elements:

- The **roll stand**: it is made to position the reels on an axis in order to dereel them.
5. Spiral Winding

- The **gluing**: the different board bands arrive to one other on the others and are glued at the level of the gluing tank of the machine.
5. Spiral Winding

- The **spiral knot**: it is used to press the bands, when they are glued with the mean of a belt, which is put around a spiral mandrel made in steel.
- This belt has a determined angle, which is given by the diameter of the tubes and the size of the band put on the roll stand.

![Image of spiral winding process](www.jpg.com)
5. Spiral Winding

- The **tube cutter**: the core is made on the continuous basis behind the belt and is cut with a predetermined length with a cutter placed in the alignment of the spiral mandrel.
5. Spiral Winding

- The **palletization**: the tubes, after cut at the right length, falls from the machine and are placed on pallets either manually, or with a palletizer, when needed.
6. Drying room

- The cores must be dried in big oven (size of the truck) in order to reach the requested humidity factor for the core.

- This drying room is run by clean system, which does not give any type of pollution.
7. Storage of finished products

- The cores, which have been dried, are placed in a stock area before the expedition.
8. Environmental matters

- The whole production process of cores by Abzac does not generate any smoke, nor pollution in any aspect of the process, specially water sewage and odours.
# 8. ABZAC’s range of cores

<table>
<thead>
<tr>
<th>Product Reference</th>
<th>Inside Ø</th>
<th>Wall</th>
<th>Width</th>
<th>Properties</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPIRAL CORES</strong></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>AZ</td>
<td>10 to 1000 mm&lt;br&gt;0.393”&lt;br&gt;to&lt;br&gt;39.37”&lt;br&gt;1 to 20 mm according to Ø&lt;br&gt;0.024” to 1,000” according to Ø</td>
<td>5 mm to 10 m&lt;br&gt;0.196” to 30”</td>
<td>Resistance, straightness, tolerance, in accordance with specifications</td>
<td>Winding of paper, board, plastic film floor covering</td>
<td></td>
</tr>
<tr>
<td><strong>AZ HR</strong>&lt;br&gt;High resistance</td>
<td></td>
<td></td>
<td></td>
<td>Flat crush Dynamic load E-module</td>
<td>Winding, unwinding, printing at high speed. Heavy weight rolls of high density products.</td>
</tr>
<tr>
<td><strong>AZ S</strong>&lt;br&gt;Smooth Surface</td>
<td>Specific products, please consult our sales representative</td>
<td></td>
<td></td>
<td>Smooth surface low waviness and roughness</td>
<td>Winding of thin, fragile costly films and fine papers.</td>
</tr>
<tr>
<td><strong>AZ RC</strong>&lt;br&gt;Radial Compression</td>
<td></td>
<td></td>
<td></td>
<td>Resistant to the high pressure of film on the core</td>
<td>Stretch films</td>
</tr>
<tr>
<td><strong>CONVOLUTE CORE</strong></td>
<td>28 to 80 mm&lt;br&gt;or 225 to 600 mm&lt;br&gt;1.102” to 4,000”&lt;br&gt;or 8,858”&lt;br&gt;to 23,522”&lt;br&gt;2 to 10 mm according to Ø or 3 to 30 mm&lt;br&gt;0,078” to 0.393” according to Ø or 0.118” to 1.181”&lt;br&gt;up to 2050 mm&lt;br&gt;up to 80,500”</td>
<td></td>
<td></td>
<td>Bending resistant</td>
<td>Textile and Metallic foils</td>
</tr>
</tbody>
</table>

Spiral tubes options: specific finish, printing, etc...