

PyroCup

Product Design Document



Polyethylene (Plastic)

Aluminium

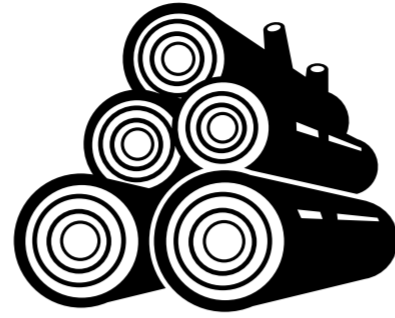
Paper

PyroCup

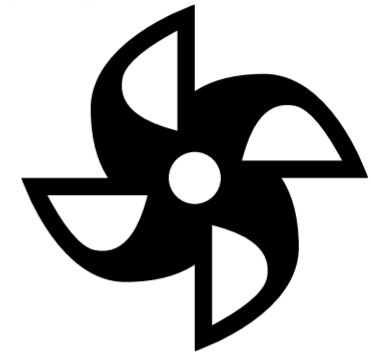
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Cup Creation

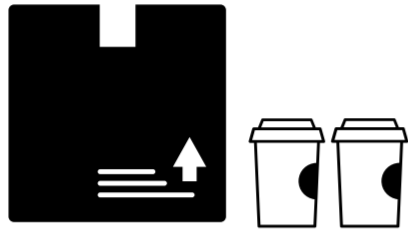
1. Harvest logs from sustainable woodlands.



2. Remove bark at Paper Mill and cut wood into small chippings.



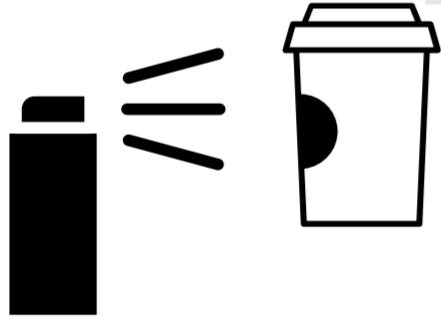
7. Once dry, cups can be packaged and distributed.



3. Boil at 160 degrees to retrieve chemical compound, Lignin and separate fibres.



6. Molten polythene is sprayed thrice over the brown fibres and once on the outer white/printed fibres. This acts as a protective layer.



4. Clean fibres and bleach a portion white. White fibres and original brown fibres are compounded forming two compressed layers.



5. The white outer-layer can be used for brand printing. (I.e. Starbucks or McDonalds logo)



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Pyrolysis Process

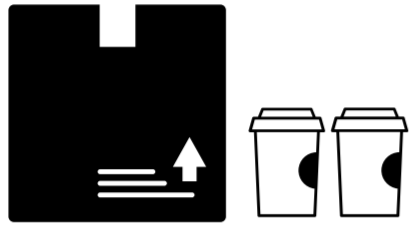
8. Cups used by retailers/ outlets are deposited into recycle bins by consumers.



9. Cups are transported to a recycling facility with a pulping chamber.



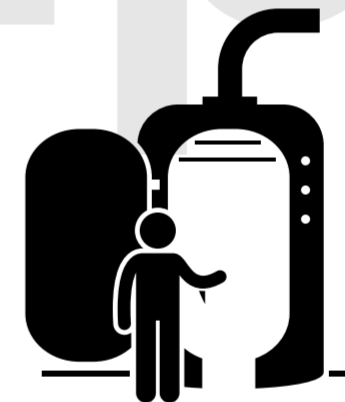
14. Un-oxidised aluminium is then recycled into the creation of new cups.*



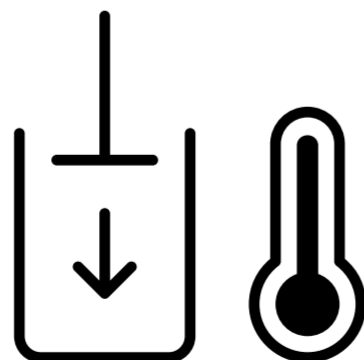
13. The plastic then evaporates from the aluminium, providing 10% of the energy needed to run the chamber.



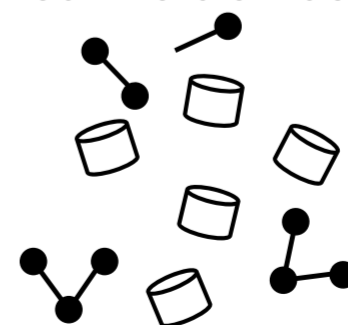
10. Cups enter a chamber which recovers the fibres through the process of de-pulping; like that of a washing machine.



12. The pyrolysis process then heats the biomass in a 400 degree, zero oxygen chamber.



11. The plastic/aluminium mixture is separated from paper fibres. This is then dried and separated into biomass.



* Aluminum can be recycled multiple times using 95% less energy to make a new cup.

Icons: Noun Project Attributions

- Tree Logs by Gan Khoon Lay from the Noun Project
- Pinwheel by b farias from the Noun Project
- chemical structure by lastspark from the Noun Project
- Flying page by CombineDesign from the Noun Project
- coffee cup by Kaleo from the Noun Project
- spray by Nociconist from the Noun Project
- Package by Ben Peetermans from the Noun Project
- recycling bin by b farias from the Noun Project
- Garbage Truck by A. Stone from the Noun Project
- Gas Chamber by Gan Khoon Lay from the Noun Project
- Plastic by Cono Studio Milano from the Noun Project
- Compression Chamber by Andrejs Kirma from the Noun Project
- breathable by Félicité LEFOULON from the Noun Project