

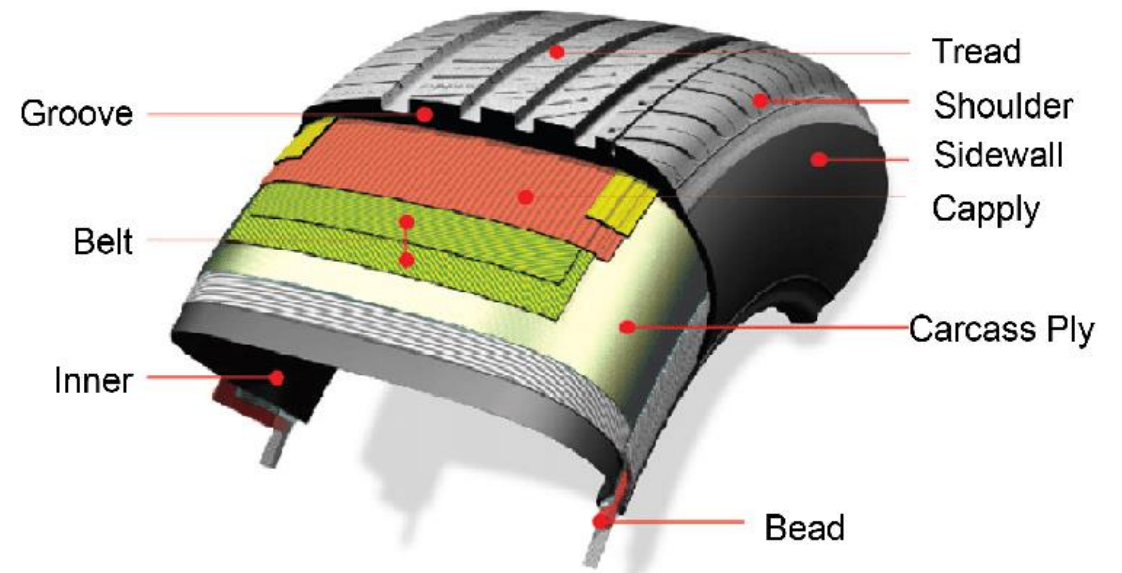
Tire structure and production

The tire is an assembly of numerous components that are built up on a drum and then cured in a press under heat and pressure. The top layer is the tread (*battistrada*), that with the road or the ground.

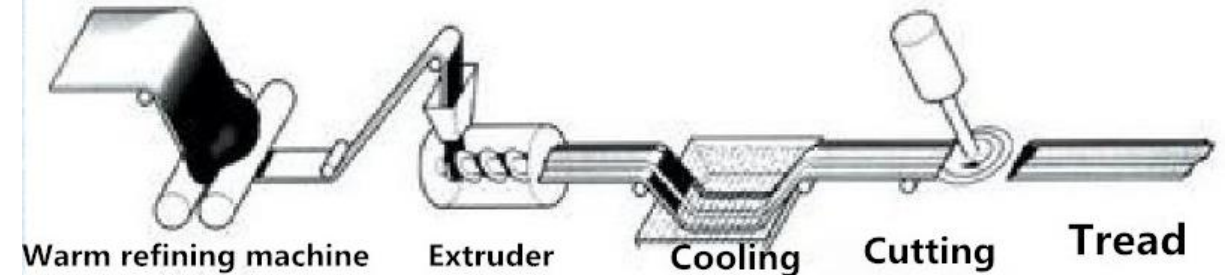
As tires are used, the tread is worn off, limiting its effectiveness in providing traction. Research is thus aiming at improving the tire production process, to improve durability of the tread and prolong the lifetime of the tire.

Useful read and video: [how tires are made](#)

TIRE STRUCTURE



EXTRUDING PROCESS



Process novelty and thesis goal



Current tread is made of a thermic barrier (yellow) to isolate the carcass ply from the tread, sidewalls (red), and a silica-based mix (blue) with conductive compound wire (black)



The new (patented) solution uses the silica-based mix (blue) plus material with higher adherence (green) to allow longer durability

- Issue: the extrusion process becomes extremely complex
- Require a volumetric control system to monitor product volumes

Thesis goal: correlate production process parameters (e.g., extrusion temperature, mix ageing, extrusion speed, etc.) to the geometry and the characteristics of the output product

- Evaluate impact of current process parameters
- Identify defects
- Improve production



Company presentation

- Michelin: French multinational tyre manufacturing company, the second largest tyre manufacturer in the world behind Bridgestone and larger than both Goodyear and Continental
- Cuneo plant: largest tire production site in Europe (Piazza Robert Daubree, 12100 Ronchi CN)
- 3 full days (8 hours) presence at the plant per week required
- Reimbursement of expenses
- Languages required: Italian and one between English, French and German

