Closing the loop
Re-use of worn-out car tires for new tires

Centre of Expertise HTSM Oost

Some re-use possibilities:

- Using Ground Tire Rubber for playingfields (decreasing)
- Re-use for low noise road pavement (limited)
- Incineration in cement kilns, destroys valuable resources.

Devulcanization and re-using for new car tires is under development.

Current & expected trends in Tire Developments

- Include environmental aspects in the tire design and production
- Use NR from alternative sources (dandelions)
- Use organic source plasticizer replacing mineral ones
- Minimize the amount of ZnO
- Increase amount of silica.

Aim of the research:

- Upscaling of a small scale batch process for devulcanization of GTR into a continuous extruder process
- Finetuning of the continuous process to obtain optimized material properties
- Investigation of the influence of devulcanized material on the compound properties
- Determination of the technical and economical feasibility of the overall process

Items to investigate

- How to blend with virgin rubber and evaluate the rubber properties.
- The impact of granulate instead of fine powder
- Develop a method to reach a homogenous concentration of the processing aids throughout the rubber particles.
- Investigate the effect of the distribution in size of the granulate particles on the blending of the processing aids and the homogeneity of the devulcanization
- Determine the devulcanization parameters for the continuous process
- Determine the compatibility with the virgin rubbers and the impact on blend qualities
- In depth study of the morphology of the devulcanizate and mechanical- and dynamical properties

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