Simulating Recycled Polyethylene Terephthalate-Modified Warm Mix Asphalt

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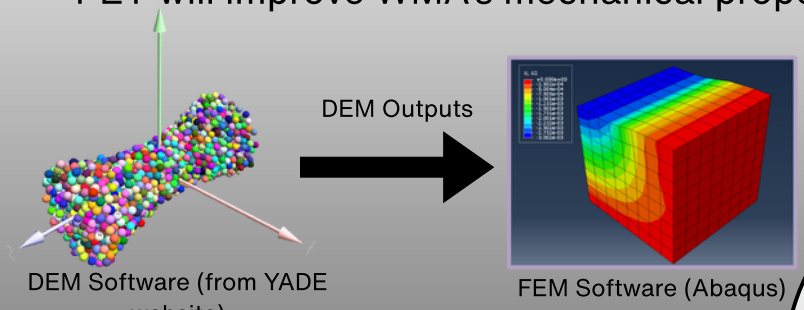
Research Question

How does simulating the incorporation of recycled PET into WMA affect its mechanical properties?

Hypothesis

PET will improve WMA's mechanical properties



DEM Software (from YADE website)

FEM Software (Abaqus)

Creating simulations to predict how PET modifications affect WMA

Control WMA Values

DEM

Effective Modulus - 841.838 ± 21.3 MPa

Poisson's Ratio - 0.34138 ± 0.0006

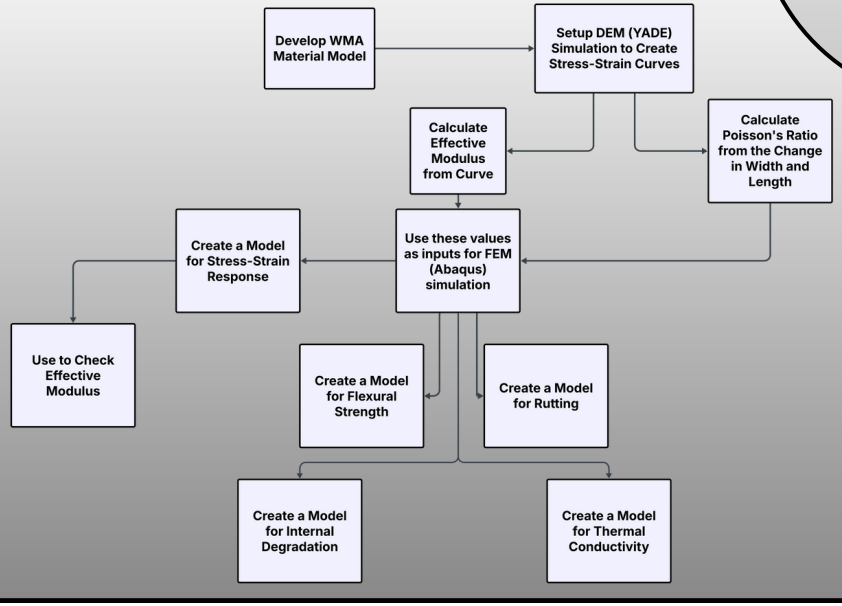
FEM

Effective Modulus - 877.8 MPa

Rutting Depth - 2.57 mm

Flexural Strength - 1.205 MPa

Methodology



Conclusion

- Control WMA FEM and DEM model is working correctly
- Control WMA performance meets the expectations
- Control WMA values will be used as a reference to compare with the different % of PET in the modified WMA