

# Influence of Specimen Size/Geometry on the Elastic/Plastic Fracture Properties

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## PROJECT OBJECTIVES:

- To evaluate the suitability of fracture toughness parameters developed for macro-specimens for characterizing micro-specimens.

## Motivation:

- Results from macro-specimens will be used to assess the influence of specimen geometry (including notch acuity).
- Correlation between macro- and micro-specimen needs to be determined to assess influence of specimen size.
- Assessing the usefulness of micro-specimens is the goal since they are ideal for providing localised measurements of fracture toughness.

## EXPECTED OUTCOMES:

- An assessment of elastic-plastic fracture parameters for characterizing the fracture toughness of micro-sized specimens.

## FEDERAL STAKEHOLDERS: CNSC

## WORK COMPLETED:

- Finite element modeling to evaluate the effect of specimen geometry/size on plastic zone size and fracture parameters
- Developed macro-scale CT specimens based on sensitivity analysis results and ASTM standards

## WORK COMPLETED:

- Development of macro-scale CT specimens and fixtures
- Machining of specimens and fixtures is ongoing

## CONTINUING WORK:

- Conduct fracture toughness tests on macro-scale specimen
- Develop, machine and test micro-scale specimens