



**TENSILE IMPACT TEST**

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“ I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree.”

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## ABSTRACT

The objective of this project is to design and fabricate a fixture to conduct the tensile impact test. Tensile impact is the test in which a selected specimen is struck and broken by a single blow in a specially designed testing machine and the energy absorbed in breaking the specimen is measured. In this project, we fabricate a fixture, which the load is applied in tension.

There are several impact machines available at the laboratory such as Charpy impact machine, Izod impact testing machine and drop weight test machine. Ordinarily these tests are made on small-notched broken in flexure. In the Charpy test the specimen is supported as a simple beam, and in the Izod the specimen is supported as a cantilever at the fixture. It should be observed that these test do not and are not intended to, simulate shock loading in service. They simply give the resistance of the particular notched metal specimen to fracture under a particular type of blow. It has been found that the results indicate differences in condition of metal that are not indicated by other tests.

We fabricated a fixture which impact test in tension can be conducted for experimental purposes. The fixture is fixed at drop weight test machine ( Dynatup Model 8250 ) which affords opportunity to study the behavior of ductile materials under impact loading without the complications introduced by the use of the groove or notch. Furthermore the complications produced from other fixture can be avoided since only tension loading involve at the specimen being test. So the determination can be made precisely and easily at the specimen in studying a strength comparison between materials. At the same time, the characteristic of the specimen can be studied.

At the fixture, there must be provision for keeping the specimens from being displaced without restraining or fixing the ends. Also, it is necessary that the axes of the tup and the guides be vertical and in alignment and the supports and anvil be so placed that the blow delivered squarely to the specimen. Friction in the guides should be free from grease or rust. For the purpose in hand, detailed discussion of the fixture is confined in this project report.

In order to fabricate and design a new fixture, we have made some research and study about impact test. The studies include the impact test operation, dynamic loading, impact load theory, other type of impact test machine, impact testing machine Dynatup model 8250 and phase involving in designing a fixture. From that we get some ideas and knowledge toward design our fixture.

In designing and fabricating process, we followed the phases of design which begins with recognition of a need and a decision to do something about it. After much iteration, the process ends with the presentation of the plans for satisfying the need. It took much time to fabricate a fixture which is suitable with the Dynatup machine model 8250. We built four models of fixture and the fourth model is acceptable since several modifications had been made toward fabricating and designing the model.

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