

**FINAL YEAR REPORT
DIPLOMA IN MECHANICAL ENGINEERING
(MANUFACTURING)
SCHOOL OF ENGINEERING
MARA INSTITUTE OF TECHNOLOGY**

**DESIGN AND FABRICATION OF THE DEVICE TO
DEMONSTRATE THE FLUIDING OF
MOLTEN METAL AND ALLOYS**

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PREFACE

Sand casting offers the widest scope of all the casting processes as far as size and complexity of shape and range of alloy is concerned. When only small member of casting are required it is normally the only reasonably economical method of production. In weight, sand casting range from less than an ounce up to more than 100 tons and is size from an inch or less up to 70 feet or more in length.

Nearly all alloys can be sand cast, including relatively hot short materials. It is a very flexible process in that risers and runners can be located almost any where on a casting because of the ease of working of the moulding medium, whereas in die casting because runners and risers must be located on die parting lines or extraction is impossible. For very large casting, moulding in sand is the only practicable means of production. Good internal soundness can be obtained by this method.

1.0 INTRODUCTION

The pouring of the molten metal into the mould is one of the critical parts in founding. Since the behaviour of liquid and its subsequent solidification and cooling determine whether the cast shape will be properly formed internally sound and free from defect.

Since fluidity cannot be accessed from individual physical properties, empirical test have been devised to measure the overall characteristic. These are based on condition analogous to the casting of metals distance covered by molten metal in standardised system of enclosed channels before cessation of flow. A further parameter in such test is the flow time or fluid life.

2.0 PARAMETERS

2.1 Fluidity

The fluidity is influenced by composition and temperature and oxide formation etc. To a causes extent by properties and design of the mould including the nature of the moulding material and the gating technique use to introduce the metal into the mould cavity. Fluidity indicates the relative easy of metal flow and thereby easy and speed of filling the mould. The metal must remain edequately fluid until the mould is fed and the casting is properly fed.