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STANDARD

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Tool life testing in milling —

**Part 2 :
End milling**

*Essai de durée de vie des outils de fraisage —
Partie 2 : Fraisage combiné*



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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8668-2 was prepared by Technical Committee ISO/TC 29, *Small tools*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Tool life testing in milling —

Part 2 : End milling

0 Introduction

Procedures and conditions for tool-life testing with single-point turning tools are the subject of ISO 3685. Successful application of ISO 3685 resulted in requests for similar documents relating to other commonly used cutting methods.

This part of ISO 8688 has been developed on the initiative of the International Institution for Production Engineering Research (CIRP) and applies to end milling operations with high-speed steel tools, as illustrated in figures 1, 2 and 3, which represent a major manufacturing activity.

The recommendations contained in this part of ISO 8688 are applicable in both laboratories and factories. They are intended to unify procedures in order to increase the reliability and comparability of test results when making comparison of cutting tools, work materials, cutting parameters or cutting fluids. In order to achieve as far as possible these aims, recommended reference materials and conditions are included and should be used as far as is practical.

In addition, the recommendations can be used to assist in establishing recommendable cutting data, or to determine limiting factors and machining characteristics such as cutting forces, machined surface characteristics, chip form, etc. For these purposes in particular, certain parameters, which have been given recommended values, may have to be used as variables.

The test conditions recommended in this part of ISO 8688 have been designed for end milling tests using steel and cast iron workpieces of normal microstructure. However, with suitable modifications, this part of ISO 8688 can be applied to end milling tests on, for example, other work materials or with cutting tools developed for specific applications.

The specified accuracy given in these recommendations should be considered as a minimum requirement. Any deviation from the recommendations should be reported in detail in the test report.

NOTE — This part of ISO 8688 does not constitute acceptance tests and should not be used as such.

1 Scope and field of application

This part of ISO 8688 specifies recommended procedures for tool-life testing with high-speed steel tools used for end milling of steel and cast iron workpieces. It can be applied to laboratory as well as to production practice.

This part of ISO 8688 establishes specifications for three types of end milling tests as follows :

- a) slot milling (see figure 1);
- b) end milling in which the tool periphery is used predominantly (see figure 2);
- c) end milling in which the end teeth of the tool are used predominantly (see figure 3).

The cutting conditions in end milling may be considered under two categories as follows :

- a) conditions as a result of which tool deterioration is due predominantly to wear;
- b) conditions under which tool deterioration is due mainly to other phenomena such as edge fracture or plastic deformation.

This part of ISO 8688 considers only those recommendations concerned with testing which results predominantly in tool wear.

Testing for the second group of conditions given above is currently under study.

For each of these test types, recommendations are made concerning the following : workpiece, tool, cutting fluid, cutting conditions, equipment, assessment of tool deterioration and tool life, test procedures, recording, evaluation and presentation of results.