AN AMERICAN NATIONAL STANDARD

Tool Life Testing With Single-Point Turning Tools

ANSI/ASME B94.55M - 1985

[REVISION OF ANSI B94.34-1946 (R1971) AND B94.36-1956 (R1971)]

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THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

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This Standard will be revised when the Society approves the issuance of a new edition. There will be no addenda or written interpretations of the requirements of this Standard issued to this Edition.

FOREWORD

(This Foreword is not part of ANSI/ASME B94.55M-1985.)

This Standard is a slightly modified version of ISO 3685-1977, Tool Life Testing With Single-Point Turning Tools. Only several small changes have been made, such as replacing referenced ISO materials specifications with ASTM and ANSI specifications. It was felt that U.S. users of the Standard would be more familiar with the ASTM and ANSI specifications and have easier access to them.

Following approval by the B94 Standards Committee and ASME, this Standard was submitted to ANSI and approved as an American National Standard on November 27, 1985.

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Standardization of Cutting Tools, Holders, Drivers, and Bushings

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TOOL LIFE TESTING WITH SINGLE-POINT TURNING TOOLS

0 INTRODUCTION

Tool life testing has been carried out for at least 75 years, in tremendously increasing volume, but under a variety of cutting conditions and methods having little in common with each other. Thus, a need exists for standardization of tool life testing conditions applicable not only in laboratories but also in production plants.

The test conditions have been specified in such a way that the different factors which affect the results of tool life testing will all be under a reasonable and practical degree of control.

This Standard has been so framed that it can be directly applied to industrial testing and in research. For research purposes, however, this Standard should be considered to be only a minimum set of conditions, since greater attention may have to be given to the factors which affect the variability of the tool life values. Although the test parameters are standardized, any one or more of them may become variables in any given test when they are the quantities being examined.

The limits of the specification of the reference materials are left rather wide for practical reasons. It should be understood that results may vary from batch to batch. If reproducibility is essential, special requirements should be discussed with the supplier of the work material.

The specifications for test conditions given in this Standard are primarily suited to testing on steel and cast iron work materials. However, with suitable modification they can also be made applicable to testing on other materials.

The specifications for test conditions are also mainly applicable to tool life testing in which the tool wears at a conventional rate and in a conventional manner. However, it is evident that they may also be applied to some types of accelerated tool life testing.

If, for some reason, it is necessary to deviate from the specifications given in this Standard, this shall be reported in detail.

NOTE: This Standard is not an acceptable test and it is not advisable to use it as such.

1 SCOPE AND FIELD OF APPLICATION

This Standard establishes specifications for the following factors of tool life testing with single-point turning tools: workpiece, tool, cutting fluid, cutting conditions, tool wear and tool life, equipment, test procedures, recording and reporting and presentation of results.

Further general information is given in Appendix A.

2 REFERENCES

The latest issues of the following documents form a part of this Standard to the extent specified herein.

American Society for Testing and Materials

ASTM A 159-83, Standard Specification for Automotive Gray Iron Castings (Grade G 3000)

ASTM A 576-81, Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality (Grade G 10450)

ASTM E 18-79, Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

ASTM E 92-82, Standard Test Method for Vickers Hardness of Metallic Materials

ASTM E 112-82, Standard Methods for Determining Average Grain Size