U S A S T A N D A R D

GEAR SHAPER CUTTERS

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USA STANDARD

This USA Standard is one of nearly 3000 standards approved as American Standards by the American Standards Association. On August 24, 1966, the ASA was reconstituted as the United States of America Standards Institute. Standards approved as American Standards are now designated USA Standards. There is no change in their index indentification or technical content.

FOREWORD

In response to requests from both users and producers a project was initiated in December of 1961 to establish standards for gear cutting tools.

USA Standards Committee B5 approved this project at their annual meeting in 1961 and created technical committee TC-14 to prepare such standards.

In 1962 the USA Standards Committee B5 was divided and technical committees identified with the general area of "metal cutting" were transferred to a new USA Standards Committee B94.

The first meeting of TC-14, reporting to USA Standards Committee B94, was held in December 1962. It was at this time decided to divide the general subject into three areas; i.e., hobs, gear shaper cutters and shaving cutters. The initial activity was to prepare a proposal for a USA Standard on hobs, using the industry standards (MCTI) as the basis for consideration.

A proposal covering hobs was submitted to industry in September 1964 and on June 22, 1966, it was approved by the USA Standards Institute and designated B94.7-1966.

A proposal covering shaper cutters was submitted to industry in December 1966 for review and comments. All of the responses were considered in a meeting of TC-14 in November 1967 and they then approved a final proposal.

The B94 TC15 Editorial Committee reviewed the proposal and it was submitted in March 1968 to the USA Standards Committee B94 for letter ballot. Following approval by B94, the proposal was approved by the sponsor, ASME, on June 13, 1968. It was approved by the United States of America Standards Institute on August 5, 1968.

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USA STANDARD

GEAR SHAPER CUTTERS

1. Scope

1.1 This standard covers types, sizes, tolerances, marking and nomenclature for ground, finishing type gear shaper cutters for generating involute spur and helical gears, splines, and serrations. It also covers ground, finishing type involute herringbone gear shaper cutters for generating herringbone gears.

2. Purpose

2.1 The purpose of this standard is to provide information on standard types, sizes, tolerances, marking and nomenclature of gear shaper cutters to encourage uniformity in specifications.

3. Definition of a Gear Shaper Cutter

3.1 A gear cutting tool that is basically a gear, the teeth of which are relieved to provide cutting edges on the face which is presented to the work.

4. Description of Gear Shaper Cutter Types Covered

4.1 Gear shaper cutters for involute gears

The information given applies to gear shaper cutters for involute spur and helical gears.

4.2 Gear shaper cutters for involute splines

The information given applies to gear shaper cutters for cutting USA standard involute splines (USAS B5.15-1960).

4.3 Gear shaper cutters for involute serrations

The information given applies to gear shaper cutters for cutting USA standard involute serrations (USAS B5.15-1960).

4.4 Herringbone gear shaper cutters

The information given applies to herringbone gear shaper cutters for cutting herringbone or gap type double helical involute gears by the method where two matched cutters are used.

Where the two halves of herringbone or gap type helical gears are cut separately, matched sets of cutters are not required.

5. Marking of USA Standard Gear Shaper Cutters

All cutters shall have the minimum markings shown below, appropriate to the type.

	Marked
Spur Cutters	
Diametral Pitch	DP
Pressure Angle	PA
Base Diameter	BD
Number of Teeth	N
Whole Depth of Cut	WD
Helical Cutters	
Normal Diametral Pitch	NDP
Normal Pressure Angle	NPA
Number of Teeth	N
Whole Depth of Cut	WD
Helix Angle	HA
Lead	Lead
Herringbone Cutters	
Transverse Diametral Pitch	TDP
Transverse Pressure Angle	TPA
Number of Teeth	N
Whole Depth of Cut	WD
Helix Angle	HA
Lead	Lead

6. Gear Shaper Cutter Nomenclature

6.1 Gear Shaper Cutter

A gear cutting tool that is basically a gear, the teeth of which are relieved to provide