SURFACE VEHICLE STANDARD

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Tool and Die Steels

RATIONALE

The technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

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1. ***Scope—***This standard covers the identification, classification, and chemical composition of tool and die steels for use by engineers, metallurgists, tool designers, tool room supervisors, heat treaters, and tool makers.

2. ***References—***There are no referenced publications specified herein.

3. ***Definitions—***Tool and die steels are defined as certain carbon or alloy steels, capable of being hardened and tempered. They are usually melted in electric furnaces and produced to meet special requirements. They may be used in certain hand tools, precision gages, or in mechanical fixtures for cutting, shaping, forming, and blanking of materials at either cold or elevated temperatures.

   This definition is not intended to include that type of tonnage production open hearth steel used in the manufacture of ordinary mechanics' hand tols, nor steel used in the manufacture of such products as hammers, picks, files, hollow drill steel, mining bits and cutters, large rolling mill rolls, and low alloy medium carbon forging die blocks. These exceptions are stated as a matter of guidance only and are not inclusive.

4. ***Identification and Classification of Tool Steels—***This method of identification and classification of tools steels was designed to follow the most commonly used and generally accepted terminology of tool steel types of classes. It includes such basic principles as method of quenching, applications, special characteristic, and steels for particular industries. The method is believed to be as simplified as possible and aims to avoid complications in details composition or metallurgical specifications. The method provides appropriate symbols for generaly accepted types of tool steel. It also provides for the addition of new products as they may be developed. See Table 1.

   The present commonly used tool steels have been grouped into 6 major headings and each commonly accepted group of tool steels under these headings has been assigned an alphabetical letter symbol. Each major group identified by a letter symbol may contain a number of individual types of tool steels. These types are identified by a suffix number which follows the letter symbol. For water hardening tool steels this number suffix consists of three digits, the last two digits representing the approximate mean of the carbon content in tenths of one percent. To the above may be added after a dash (-) a suffix to further designate the grade and hardenability of W1 steels. (Examples: W110-2R would indicate a Grade 2 with regular hardenability. W110-3 would indicate a Grade 3 not controlled for hardenability.)