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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39522-2020

Metric series wires for the pitch diameters of screw threads

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to modify and adopt ISO 16239.2013 "Metric series measuring needles for measuring threads".

Compared with ISO 16239.2013, this standard has structural changes, adding 6.4 and 6.6, Chapter 10, Appendix A and references.

The main technical differences between this standard and ISO 16239.2013 and the reasons are as follows.

--- Regarding normative references, this standard has been adjusted with technical differences to adapt to my country's technical conditions. Adjustment situation is concentrated

Reflected in Chapter 2 "Normative Reference Documents", the specific adjustments are as follows.

* Replace ISO 1 with GB/T 19765 which is equivalent to adopting international standards;

* Replace ISO 5408 with GB/T 14791, which is equivalent to the international standard.

--- This standard has increased the standard reference measuring force requirements to clarify the measurement conditions of the diameter of the thread gauge in my country (see Chapter 4).

--- This standard has increased the packaging requirements for measuring needles, which has a certain auxiliary effect on ensuring product quality and convenient use (see Chapter 10).

This standard also made the following editorial changes.

---Modify the standard name to "Thread Pitch Diameter Metric Series Measuring Needle".

--- This standard writes the contents of the footnotes of International Standard Table 2 into the standard body at the same time, so that users can find the measuring needle series of 60° sealed pipe thread (see Chapter 1 and 6.4).

--- This standard adds a series of summary tables for the nominal diameter of the measuring needle to facilitate users to understand the overall distribution of the nominal diameter of the measuring needle (see 6.6 and Appendix A).

--- This standard deletes the note of the International Standard 8.1. Our standard does not introduce the large force measurement conditions of other individual countries.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard was proposed by the National Thread Standardization Technical Committee (SAC/TC108).

This standard is under the joint jurisdiction of the National Standardization Technical Committee for Threads (SAC/TC108) and the National Standardization Technical Committee for Measuring Instruments (SAC/TC132).

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1 Scope

This standard specifies the material, surface hardness and roughness, metric series of nominal diameters, diameter tolerances, diameter detection methods, marking and packaging of threaded pitch measuring needles.

This standard applies to ordinary threads (M), unified threads (UN), 55° pipe threads (G, R), and 55° pipe threads with standard pitches with a lift angle of less than 5°.

60° sealed pipe thread (NPT, NPSC, NPTF) and trapezoidal thread (Tr) pitch diameter measurement. The measuring needle is mainly used to calibrate the pitch diameter of the thread plug gauge.

Note. Refer to GB/T 28703 or GB/T 32534 for the measurement method of thread pitch diameter.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 14791 Thread Terminology (GB/T 14791-2013, ISO 5408.2009, IDT)

GB/T 19765 Product Geometrical Technical Specification (GPS) Product Geometrical Technical Specification and Standard Reference Temperature for Inspection

(GB/T 19765-2005, ISO 1.2002, IDT)

3 Terms and definitions

The following terms and definitions defined in GB/T 14791 apply to this document.

3.1

Optimal measuring needle

The measuring needle is in contact with the imaginary thread with a zero lift angle at the position of the pitch cylinder.

Note. The optimal measuring needle diameter for symmetrical threads is equal to $P/(2\cos\alpha/2)$. Among them. P is the pitch and $\alpha/2$ is the flank angle.

4 Testing conditions

According to GB/T 19765, the measuring needle size should be relative to the standard reference temperature of 20 degrees C.

The standard reference measuring force is zero.

5 Material, surface hardness and roughness

The measuring needle should be made of alloy tool steel and be stabilized. The measuring needle should be free of cracks and other damage defects.

The hardness of the working surface measured by the measuring needle should be (760 $\pm$ 50)HV5.

The roughness R_z value of the working surface measured by the measuring needle should not be greater than 0.4 μ m.

6.1 Common thread (M) pitch measuring needle

The nominal diameter of the optimal measuring needle and its corresponding pitch should meet the requirements of Table 1.

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