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

GB/T 30470-2013

Superabrasive products - Diamond wire saw

超硬磨料制品 金刚石绳锯

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Foreword

GB/T 30470-2013 was issued on 31 December 2013 by the General Administration of Quality Supervision, Inspection and Quarantine and the Standardization Administration of the People's Republic of China, and has been in force since 1 September 2014.

The document is a recommended national standard: the /T in the designation marks it as recommended rather than compulsory.

1 Scope

China's national standard for diamond wire saws. A diamond wire is a steel cable carrying diamond abrasive on beads threaded along it, drawn through the workpiece in a continuous loop, and it cuts material that nothing else cuts economically: granite and marble in the quarry, reinforced concrete in demolition, and above all silicon. The transformation it produced in photovoltaics is worth stating - diamond wire replaced the slurry saws that used to slice silicon ingots into wafers, and because the wire is thinner it wastes far less

silicon as kerf, cuts faster and allows thinner wafers, which is a direct reduction in the cost of solar electricity. China both makes and consumes most of the world's diamond wire. The standard specifies the product classification and codes, the structural types and codes, the technical requirements, the test methods, the safe use requirements, the inspection rules, and the marking, packaging, transport and storage.

This standard specifies the product classification and codes, the structural types and codes, the technical requirements, the test methods, the safe use requirements, the inspection rules, and the marking, packaging, transport and storage of diamond wire saws.

This standard applies to diamond wire saws used for mine quarrying, stone processing, engineering construction and similar purposes, referred to below as wire saws.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 8358 Steel wire ropes - Determination of the actual breaking load

GB/T 23536 Superabrasives - Synthetic diamond varieties

JB/T 7989 Superabrasives - Technical specification of synthetic diamond

3 Product classification and codes

Wire saws are classified by application; the varieties and their codes are given in Table 1.

For mine quarrying: granite quarrying wire saw, code G/Q; marble quarrying wire saw, code M/Q.

For stone processing: granite profiling wire saw, code G/S; granite block squaring wire saw, code G/B; granite slab gang cutting wire saw, code G/M; marble profiling wire saw, code M/S; marble block squaring wire saw, code M/B.

For engineering construction: reinforced concrete cutting wire saw, code RC; wire saw for cutting steel and other materials, code S/O.

4.1 Structural types

4.1.1 A wire saw is composed principally of three parts: the steel wire rope, the diamond beads and the fixing material. The structural type of the wire saw is shown in Figure 1, in which 1 is the steel wire rope, 2 the diamond beads and 3 the fixing material.

4.1.2 A diamond bead is composed principally of two parts: the steel matrix and the abrasive layer. The structural type of the diamond bead is shown in Figure 2, in which 1 is

the steel matrix and 2 the abrasive layer.

4.2.1 Dimension codes

The dimension codes for the several parts of the wire saw are given in Table 2: wire saw length L; matrix length L1; abrasive layer length L2; bead outside diameter D; steel wire rope diameter d; matrix outside diameter d1; matrix inside diameter d2.

4.2.2 Dimension specifications

The product dimension specifications are given in Table 3, in millimetres.

Size 8.5: D 8.5, d1 6.2, d2 4.8, d 4.5 or 4.6. Size 9.0: D 9.0, d1 6.6. Size 10.5: D 10.5, d1 7.5. Size 11.0: D 11.0, d1 7.5. Size 11.5: D 11.5, d1 8.0. For sizes 9.0 to 11.5 the matrix inside diameter d2 is 5.1, 5.2 or 5.3 and the rope diameter d is 4.8 or 4.9. The matrix length L1 is 9.5, 10, 11 or 12; the abrasive layer length L2 is 5.0, 5.5, 6.0, 6.5 or 7.0; and the wire saw length L is determined according to the customer's requirement.

4.3.1 Methods of manufacture of the diamond beads and their codes

The methods of manufacture of the diamond beads and their codes are given in Table 4: brazing method, code B; electroplating method, code G; sintering method, code S.

4.3.2 Fixing materials of the diamond beads and their codes

The fixing materials of the diamond beads and their codes are given in Table 5: spring, code S; plastic, code P; rubber, code R; plastic and spring, code PS; rubber and spring, code RS.

4.4 Marking

The product shall be marked as follows.