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

DZ/T 0276.28-2015

**Regulation for testing the physical and mechanical properties
of rock. Part 28: Test for determining the strength of rock mass
(Direct shear test)**

岩石物理力学性质试验规程 第28部分：岩体强度试验（直剪试验） 清晰版
(English Translation)

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Foreword

DZ/T 0276 "Testing Procedures for Physical and Mechanical Properties of Rocks" is divided into 31 parts.

- Part 1. General and general provisions;
- Part 2. Rock moisture test;
- Part 3. Rock particle density test;
- Part 4. Rock density test;
- Part 5. Rock water absorption test;
- Part 6. Rock hardness test;
- Part 7. Rock gloss test;
- Part 8. Rock antifreeze test;
- Part 9. Rock resistance to disintegration test;
- Part 10. Rock expansion test;
- Part 11. Rock erosion test;
- Part 12. Rock acid and alkali resistance test;
- Part 13. Rock specific heat test;
- Part 14. Rock thermal conductivity test;
- Part 15. Rock breakdown voltage and breakdown strength test;
- Part 16. Rock volume resistivity and surface resistivity test;
- Part 17. Rock radioactivity specific activity test;

- Part 18. Rock uniaxial compressive strength test;
- Part 19. Rock uniaxial compression deformation test;
- Part 20. Rock triaxial compression strength test;
- Part 21. Rock tensile strength test;
- Part 22. Rock flexural strength test;
- Part 23. Rock point load strength test;
- Part 24. Rock acoustic wave velocity test;
- Part 25. Rock shear strength test;
- Part 26. Rock mass deformation test (bearing plate method);
- Part 27. Rock mass deformation test (drilling deformation method);
- Part 28. Rock mass strength test (direct shear test);
- Part 29. Rock mass strength test (bearing plate method);
- Part 30. Rock bolt load test;
- Part 31. Rock sound wave velocity test.

This part is part 28 of DZ/T 0276.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part is proposed by the Ministry of Land and Resources of the People's Republic of China.

This part is under the jurisdiction of the National Land Resources Standardization Technical Committee (SAC/TC93).

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Rock physics and mechanics properties test procedures Part 28. Rock mass strength test (direct shear test)

1 Scope

This part of DZ/T 0276 specifies the direct shear method for determining rock mass strength.

This section applies to rock mass strength tests in rock physical and mechanical properties tests.

2 Principle

A set of specimens of the same type of rock mass are sheared under different normal loads until they are destroyed, and the shear strength of the rock mass is obtained, according to the rock.

The Coulomb expression of the body structure plane determines the corresponding shear strength parameters. The direct shear method can be divided into a straight push test and a straight push test.

3 Basic requirements

3.1

The number of test groups in each group should not be less than 5.

3.2

Excavation of the test section shall reduce disturbance and damage to the structural plane of the rock mass.

3.3

The test piece shall be machined into a square at a predetermined test site. Processing requirements are as follows.

a) For the size of the flat push method, the bottom shear area should not be less than 0.25m^2 , and the minimum side length should not be less than 50cm.

Less than 1/2 of the minimum side length. The sample spacing should be greater than 1.5 times the minimum side length. The thrust direction should be parallel to the shear plane during the test the intended direction. The rock surface around the specimen should be repaired and leveled. Reinforced concrete should be set for the fractured rock mass, weak rock mass or structural interview piece.

The earth protection cover has a 0.5cm~2cm shear seam reserved at the bottom of the cover.

b) For the oblique pushing method, the inclined surface can be made by applying the shear load, and the inclination angle is $120^\circ\sim 170^\circ$, which can also be pushed in the test body.

A 120~170 steel or reinforced concrete variable angle block is placed on the force surface, and the relevant requirements of the sheared area and height are the same as the flattening method.

Test body.

c) The test body should be of suitable size. For intact hard rock mass, the test piece size is 50cmx50cmx50cm; for non-intact Hard rock mass, the sample size is 70cm x 70cm x 35cm.

d) The prepared shear surface has a fluctuation of no more than 1% to 2% of the shear direction.

3.4

For the test piece to be poured, the bottom of the protective cover shall reach the upper edge of the predetermined shear joint. The width of the shear joint should be the thrust side 5% of the length of the test piece.

3.5

The specimen can be sheared under shear in the natural water state and in the state of artificial water immersion.

3.6

The geological description shall include the following.

- a) Excavation of the test site, methods of preparation of the test body and the occurrence of the test.
- b) Rock name, type, structure and main mineral composition.
- c) Type, occurrence, width, continuity, elongation, density, filling properties and relationship with the direction of stress of the rock mass structure.
- d) The integrity of the rock mass, the degree of weathering and the groundwater conditions in the test section.
- e) Engineering geological sketch, test display or photograph of the test site.

4.1 Main equipment

4.1.1

Hydraulic jacks and hydraulic pillows.