

ICS 77.040.01
CCS H 49

YB

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

YB/T 153-2015

**Standard diagrams for macrostructure and defects in high
quality structural steel continuous casting blank**

优质结构钢连铸坯低倍组织缺陷评级图

(English Translation)

Issued on: June 4, 2008

Implemented on: November 1, 2008

**Issued by: National Development and Reform Commission of the
People's Republic of China**

Table of Contents

Foreword...	3
1 Scope...	4
2 Determination methods...	4
3 Test report...	9

1 Scope

This Standard specifies the principles, specimens, test equipment, test solutions, test conditions, test steps, and calculation of test results for the determination of oil content and moisture regain of steel wire ropes and rope cores (weight method and extraction evaporation method).

The weight method of this Standard is applicable to the determination of oil content and moisture regain of steel wire ropes and rope cores. The extraction distillation method is suitable for determining the oil content and moisture regain of rope cores.

2.1.1 Principle

Separate the strands and core of the steel wire rope and weigh them separately. Dry the moisture. Then soak them separately in suitable solvents to wash away the grease.

According to the weight of the strands and cores before and after removing water and grease. Calculate the oil content and moisture regain of the steel wire rope and core.

2.1.2 Reagents and equipment (all reagents used are analytically pure) a) N-heptane;

b) Filter paper;

c) Funnel and funnel holder;

d) Analytical balance with an accuracy of 0.001 g;

e) Blast drying oven;

f) Hydraulic cutters or wire cutters;

g) Weighing bottle.

2.1.3 Specimens

To ensure the accuracy of the measurement results, foreign objects should be avoided from adhering to the steel wire rope during the specimen preparation process. At the same time,

the grease on the steel wire rope should be avoided from being wiped off.

2.1.3.1

Wrap one end of the steel wire rope with a backing paper of known weight.

After holding it with your hand, use a hydraulic cutter or wire cutter to cut a specimen of about 100 mm in length (for steel wire ropes with relatively thick or particularly thin diameters, the sampling length can be adjusted appropriately).

2.1.3.2

Use wire pliers to remove the rope core. Use an analytical balance to weigh the weight of the rope and core separately, with an accuracy of 0.001 g (the same below).

When weighing the rope, the lining paper and rope should be weighed together, and then the weight of the lining paper should be subtracted. Record the weight of the rope as m_1 and the weight of the rope core as m_2 .

2.1.4 Determination steps

2.1.4.1

Use wire pliers to disassemble the strand rope and place it in a beaker. Pour in n-heptane. Immerse the steel wire. Cover up. Soak for more than 30 min and shake continuously. After the surface grease of the steel wire is cleaned, remove the steel wire.

After the surface of the steel wire is slightly dry, place it in an oven preheated to 100°C~105°C. After drying for 1h, place it in a dryer and cool it to room temperature.

Weigh the weight of the steel wire after removing grease in m_3 .

2.1.4.2

Disassemble the natural fiber core with a known weight and place it in a weighing bottle with a known weight. Then place the person in an oven preheated to

100°C~105°C for 2 h. Remove. Cool to room temperature in a dryer. Weigh the weight of the rope core after removing moisture using an analytical balance m_4 .

2.1.4.3

Place the dried natural fiber core or undried synthetic fiber core into a beaker.

Add solvent and immerse the rope core fibers. Cover and soak.

2.1.4.4

After soaking the rope core fiber in solvent for 24 h, pour the rope core fiber along with the solvent into a funnel lined with filter paper that has been dried to a constant weight for filtration. Spray and wash the rope core fibers and filter paper several times with solvent. Wash until the filtrate is colorless.

2.1.4.5

Transfer the rope core fiber along with the filter paper to a weighing bottle of known weight. Place in an oven preheated to 100°C~105°C. For natural fibers, dry for

2 h. For synthetic fibers, dry for 1 h. Remove Cool to room temperature in a dryer.

Weigh. Subtracting the weight of the known weighing bottle and the weight of the filter paper from this weight gives the weight of the dry rope core after removing water and oil, m_5 .

2.1.5.1 Calculation of moisture regain of rope core

The moisture regain of the rope core is calculated according to formula (1).

Steam the moisture of the specimen with an appropriate solvent (xylene or benzene distillate) Calculate the moisture regain of the rope core based on the moisture content and specimen weight. Extract the oil and fat from the specimen using appropriate solvents (such as chloroform) and a soxhlet extractor. Remove the solvent by steaming.

After drying, weigh the amount of residual oil. Calculate the oil content of the rope core.

2.2.2 Reagents and equipment (all reagents used are analytically pure) a) Xylene or appropriate benzene derivatives;

b) Trichloromethane;

c) Round bottom flask;

d) Condenser;

e) Analytical balance with an accuracy of 0.001 g;

f) Soxhlet extractor;

g) Blast drying oven;

h) Thermostatic water bath.

2.2.3 Specimens

Extract a rope core weighing at least 100 g from the specimen. Then cut two complete specimens from the middle. Specimen 1 weighs about 20 g~30 g and is used to determine the oil content of the rope core. Specimen 2 weighs approximately 50 g and is used to determine the moisture regain of the rope core.

2.2.4.1 Determination of moisture

Weigh specimen 2 and record it as m_2 , accurate to 0.001 g (the same below). Then place the specimen into the flask. Inject xylene or appropriate benzene derivatives. Connect the

experimental device properly. Heat the flask. Keep the solvent boiling. Steam until the amount of water in the receiver no longer increases, completely separate the water from xylene, and obtain the maximum weight of water in m3.

NOTE: Throughout the entire test, the laboratory should be well ventilated and no open flames are allowed.

2.2.4.2 Calculation of moisture regain of rope core

The moisture regain of the rope core is calculated according to formula (4).

.....