

Ordnance Factory
Project
Mailaram : Medak.

I-2215B

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TY 14-1-2884-80

HOT-ROLLED GOOD QUALITY
STRUCTURAL AND SIZED STEEL
OF GRADE 50.

Specifications.

TY 14-1-2884-80

Date of introduction: 01.05.1980.



Translated: Pektherev/SS 24/7/87

Authenti-
cated:

ORDNANCE FACTORY PROJECT

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Uma
25.11.87

30 mm HI/I

The present specifications are extended to the supply of hot-rolled good quality and cold-hardened sized steel of grade 50 for manufacturing articles of important designation by a method of cold machining.

1. RANGE OF SIZES.

- 1.1. As to its shape, dimensions and limit deviations steel should comply with the following requirements: hot-rolled 26-35mm in diameter - as per GOST 2590-71 of conventional accuracy of rolling "B"; Sized steel - 25-33mm in diameter - as per GOST 7417-75, of 4th accuracy class.

2. TECHNICAL REQUIREMENTS.

- 2.1 Grade 50 steel's chemical composition should comply with GOST 1050-74. Content of sulphur and phosphorous should not exceed 0.022% of each.
- 2.2 Hot-rolled bars' surface quality should comply with the requirements of GOST 1050-74, subgroup "B" (for cold drawing).
- 2.3 Sized bars surface quality should comply with the requirements of GOST 1051-73, group "B".
- 2.4 Steel's macrostructure while checking on etched templates should not have shrinkage pipes, blowholes, cracks, separations, slag and non-metallic inclusions visible with an unaided eye. Center porosity, fine non-uniformity should not exceed grade 2, shrinkage segregation - grade 1. Square-shaped segregation grade 2 of GOST 10243-75. General spotted segregation, surface spotted segregation, ^{surface}subsequent blowholes and cracks are not allowed. The results of inspection of a square-shaped segregation are optional in 20 meltings.
- 2.5 Total ~~max~~ depth of the decarburized layer on hot-rolled and sized bars should not exceed 1.5% of their diameter.
- 2.6 The content in steel of non-metallic inclusions of each

nitrides type (sulphides) oxides OC and OT, silicates CX, CH and CN, *aluminium HA* should not exceed grade 3.5 (maximum grade) of GOST 1778-70. The results of inspection of non-metallic inclusions are optional in 20 meltings.

2.7 Widmanstatten pattern in hot-rolled bars should not exceed 2 numbers (amounts) of scale 4, GOST 5640-68. The standards are optional in 20 meltings.

2.8 Inspection of macrostructure, non-metallic inclusions, cracks and rolled blow holes is allowed to be carried out on ready articles.

2.9 All other requirements are in conformity with GOST B 10230-75.

3. ACCEPTANCE RULES

3.1 The steel is supplied in batches consisting of bars of the same melting and the same diameter.

3.2 Selection of samples for inspection of the chemical composition is provided in conformity with GOST 7565-78.

3.3 For inspection of steel quality, the following number of samples is selected from a batch-melting:-

a) for inspection of mechanical properties - one sample from 3 different bars;

b) for inspection of macrostructure - 1 template from 3d head and 2nd designated billet from marginal ingots of the same melting designated for the main order;

c) for inspection of non-metallic inclusions 6 samples from different bars ~~if~~ are taken;

d) for inspection of decarburized layer - 2 samples from different bars;

e) for inspection of Widmanstatten pattern - 2 samples from different bars;

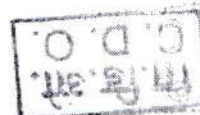
3.4 Inspection of macrostructure, non-metallic inclusions,

Widmanstatten pattern and grain size is carried out, in billets and hot-rolled bars. Results of the inspection are transferred into a certificate for sized steel.

- 3.5 Other acceptance requirements are in conformity with GOST 7566-69 and GOST B 10230-75.

4. TESTING METHODS.

- 4.1 Widmanstatten pattern is determined as per GOST 5640-68.
- 4.2 Inspection of macrostructure is carried out on etched templates as per GOST 10243-75.
- 4.3 Inspection of non-metallic inclusions is carried out in conformity with GOST 1778-70, method U/6.
- 4.4 After the sized metal supplier's introduction of ultrasonic control means, the inspection of macrostructure and non-metallic inclusions should be carried out with the aid of ultrasonics in conformity with the agreed methods and standards.
- 4.5 Inspection of surface quality of sized bars is carried out by an eddy current method in the amounts in consultation with the customer after introduction of additional capacities with reference to flaw detection, the sized steel supplier provides a 100% inspection of surface quality with the aid of the eddy-current method.
- 4.6 The metal consumer provides an additional 100% inspection of non-metallic inclusions and macrostructure by an ultrasonic method according to standards approved by the consumer and supplier of semi-finished rolled products and sized steel. The rejected metal is returned to the supplier of semi-finished rolled products for its substitution for the same good quality during a 2month period.
- 4.7 Other methods of testing are in conformity with GOST B



10230-75.

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5. MARKING AND PACKING

5.1 Marking, packing and drawing up the documentation should be done in conformity with GOST 7566-69, packing of sized steel - as per GOST 1051-73.

REMARK: Price list is given in Appendix 2.

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APPENDIX 1
to TY 14-1-2884-80
(Reference)

L I S T

of documents used ~~and~~ in the process of development of specifications for hot-rolled, good quality structural and sized steel of grade 50.

GOST B 10230-75

GOST 1050-74

Good-quality carbon structural steel.

GOST 1051-73

Good-quality sized steel.

GOST 2590-71

Hot-rolled round steel. Range of sizes.

GOST 7417-75

Sized round steel. Range of sizes.

GOST 10243-75

Steel. Method of testing and estimating the macrostructure.

GOST 1778-70

Steel. Metallographic method of determining the non-metallic inclusions.

GOST 5640-68

Steel. Metallographic method of estimating the microstructure of sheets and band.

GOST 7565-73

Steel and alloys. Method of sampling for determining the chemical composition.

GOST 7566-69

Steel. General rules of acceptance packing and marking and drawing up the documents.

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APPENDIX 2
to TY 14-1-2884-80

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WHOLESALE PRICES FOR HOT-ROLLED
AND SIZED STEEL.

Steel grade	Specifications	Steel type	Whole sale price in roubles per tonne of steel in mm		
			22-24	25-30	31-40
50	TY 14-1-2884-80	Hot rolled	159	158	156
50	-do-	sized	196	193	189

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APPENDIX 3
to TY 14-1-2884-80
(Compulsory)

Description of production
type as per forms and
records.

Production type code as per
all union production classifier

Hot-rolled good quality
structural steel and
sized steel of grade 50.

0	9
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5	0	0	0
---	---	---	---

Units as per
AUPC

Designation as per
forms and records.

Code as
per AUPC

of steel grades

50

3425

of sections

Hot-rolled
bars, GOST
2590-71

1111

of technical
requirements.

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80

5100

of forms of order
and supply condi-
tions.

Not specified

00

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APPENDIX - 3
to TY 14-1-2884-80

Description of production
type as per forms and
records.

Production type code as per
all-union production classifier

Hot-rolled good quality
structural steel and sized
steel of grade 50

1 1 . 4 1 00 0

Units as per
AUPC

Designation as per
forms and records.

Code as per
AUPC

Of steel grades

50

3425

Of sections

Bar, hot-rolled,
GOST 7417-75.

6006

Of technical
requirements.

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TY

5140

Of forms of order
and supply condi-
tions.

Unspecified

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HOT-ROLLED GOOD QUALITY
STRUCTURAL AND SIZED STEEL
OF GRADE 50.

S p e c i f i c a t i o n s .

TY 14-1-2884-80

Alteration No. 1

Date of Introduction: 21.11.80

The date of the results of inspection of
square-shaped segregation (clause 2.4), non-
metallic inclusions (clause 2.6), Widmanstatten
set for upto 01.01.81.

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HOT-ROLLED GOOD-QUALITY
STRUCTURAL AND SIZED STEEL
OF GRADE 50

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ALTERATION NO.2

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Clause 2.1 should be presented in the following wording:
" The chemical composition of grade 50 steel should conform to the standards specified in Table 1.

TABLE 1

Steel grade	Content of elements, percentage by weight							
	Car- bon	Manga- nese	Sili- con	Sul- phur	Phosph- orous.	Nick- el	Chro- mium	Cop- per
50	0.45-	0.45-	0.17-	0.030	0.030	0.25	0.30	
	0.52	0.75	0.37					

NOTE: The content of carbon in steel equal to 0.43% by weight of manganese - to 0.40 and 0.80% by weight is not objectionable.

Clause 2.5 should be given in the following wording:-
"... should not exceed 2.0 of their diameter".

Clause 2.6 should be given in the following wording:-
"... should not exceed grade 4.0 (maximum grade), of GOST 1778-70. The results of inspection of the sulphides are optional, but the number of grade is specified in the certificate.

Clause 2.7 should be excluded from the given wording of the specifications. Write down the following instead: "Clause 2.7 HB hardness in hot-rolled bars of steel of grade 50 is not more than 229. Inspection results are optional."

Registered on 05.02.81.