

ISO 683-6:2023-11 (E)

Heat-treatable steels, alloy steels and free-cutting steels - Part 6: Hot-rolled steels for quenched and tempered springs

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Classification and designation	2
4.1	Classification	2
4.2	Designation	2
5	Information to be supplied by the purchaser	3
5.1	Mandatory information	3
5.2	Supplementary or special requirements	3
5.3	Ordering example	3
6	Manufacturing process	4
6.1	General	4
6.2	Deoxidation	4
6.3	Heat-treatment condition at delivery	4
6.3.1	Normal delivery condition	4
6.3.2	Particular heat treatment condition	4
6.3.3	Particular surface condition	4
6.4	Traceability of the cast	4
7	Requirements	4
7.1	General	4
7.2	Chemical composition	4
7.3	Mechanical properties	5
7.4	Shearability	5
7.5	Surface quality	5
7.6	Grain size	5
7.7	Non-metallic inclusions	5
7.7.1	Microscopic inclusions	5
7.7.2	Macroscopic inclusions	6
7.8	Internal soundness	6
7.9	Surface decarburization	6
7.10	Spheroidization of carbides	6
7.11	Dimensions, tolerances and shape	6
8	Inspection	6
8.1	Testing procedures and type of documents	6
8.2	Specific inspection	7
8.2.1	Verification of the hardenability and hardness	7
8.2.2	Summary of inspection and frequency of testing	7
8.3	Sampling	8
8.3.1	Selection and preparation of samples for the product analysis	8
8.3.2	Sampling for the hardenability and hardness test	8
9	Test methods	9

9.1	Chemical analysis	9
9.2	Hardness test and hardenability test	9
9.2.1	Hardness in treatment conditions +A, +S or +AC	9
9.2.2	Verification of hardenability	9
9.3	Retest	9
10	Marking	9
Annex A (normative) Supplementary or special requirements		23
Annex B (informative) Maximum dimensions for flats and rounds based on the 100% hardenability scatterband		25
Annex C (informative) Guidance values for the mechanical properties of quenched and tempered test pieces		26
Annex D (informative) Designation of steels given in this document and of comparable grades covered in various designation systems		27
Bibliography		28