



BSI Standards Publication

## AEROSPACE SERIES

# Specification for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy wire: softened (nickel base, Cr 19.5, Co 1.8, Ti 2.5, Al 1.5)

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Committee reference ACE/61

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 4, an inside back cover and a back cover.

## Foreword

### Publishing information

This British Standard is published by BSI and came into effect on 30 November 2010. It was prepared by Panel ACE/61/-/48, *Heat resisting alloys*, under the authority of Technical Committee ACE/61, *Metallic materials for aerospace purposes*. A list of organizations represented on this committee can be obtained on request to its secretary.

### Supersession

This standard supersedes BS HR 506:1989, which is withdrawn.

### Information about this document

This standard is a full revision of BS HR 506. The principal change from the previous edition is that the requirements are stated in tabular format in accordance with the EN 4500-1 and EN 4500-3.

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It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

### Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its methods are expressed either as a set of instructions or in sentences in which the principal auxiliary verb is "shall".

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

### Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

## 1 Scope

This British Standard specifies requirements for softened nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy wire.

## 2 Normative references

The following referenced 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.

BS HR 100, *Procedure for inspection, testing and acceptance of wrought heat-resisting alloys*

## 3 Technical requirements

Material to this standard shall conform to Table 1.

*NOTE* The format and symbols used in Table 1 are derived from EN 4500-1 and EN 4500-3.

Table 1 Technical requirements for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy wire

1	Material designation		BS HR 506							
	2	Chemical composition %	Element	C	Si	Mn	S	Ag	Al	B
Min.			—	—	—	—	—	1.0	—	—
Max.			0.13	1.0	1.0	0.015	5 ppm	2.0	0.020	1 ppm
Element			Co	Cr	Cu	Fe	Pb	Ti	Zr	Ni
Min.			15.0	18.0	—	—	—	2.0	—	Base
Max.	21.0	21.0	0.2	1.5	20 ppm	3.0	0.15			
3	Method of melting		Induction melted, vacuum refined and cast in air or consumable electrode remelted.							
4.1	Form		Wire							
4.2	Method of production		Drawn							
4.3	Limit dimension(s)	mm	—							
5	Technical specification		Sections 1 and 7 of BS HR 100							

6.1	Delivery condition	$D \leq 1.6$ mm: Bright annealed	$D > 1.6$ mm: Annealed and descaled
	Heat treatment	$1\ 100\ ^\circ\text{C} \leq \theta \leq 1\ 150\ ^\circ\text{C}$ in protective atmosphere <sup>1)</sup>	$1\ 100\ ^\circ\text{C} \leq \theta \leq 1\ 150\ ^\circ\text{C}$ /WQ
6.2	Delivery condition code	U	
7	Use condition	Delivery condition	
	Heat treatment	—	

## Characteristics

8.1	Test sample(s)		—	
8.2	Test piece(s)		—	
8.3	Heat treatment		—	
9	Dimensions concerned	mm	—	
10	Thickness of cladding on each face	%	—	
11	Direction of test piece		—	
12	Temperature	$\theta$	$^\circ\text{C}$	—
13	T	Proof stress	$R_{p0.2}$	MPa —
14		Strength	$R_m$	MPa —
15		Elongation	A	% —
16		Reduction of area	Z	% —
17	Hardness		—	
18	Shear strength	—	MPa	—
19	Bending	—	—	—
20	Impact strength		—	
21	Temperature	$\theta$	$^\circ\text{C}$	—
22	Time		h	—
23	C	Stress	$\sigma_a$	MPa —
24		Elongation	a	% —
25		Rupture stress	$\sigma_R$	MPa —
26		Elongation at rupture	A	% —
27	Notes (see line 98)		1)	



## Bibliography

### Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 4500-1, *Metallic materials – Rules for the drafting and presentation of material standards – Part 1: General rules*<sup>1)</sup>

EN 4500-3, *Metallic materials – Rules for the drafting and presentation of material standards – Part 3: Specific rules for heat-resisting alloys*<sup>1)</sup>

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<sup>1)</sup> Published as ASD-STAN Prestandard at the date of publication of this standard.





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