

**British Standard: Aerospace Series**

**Specification for**

# 3% chromium-molybdenum steel castings (880 - 1080 MPa)

## 1. Special foundry approval

Manufacture of castings to this specification may be restricted to foundries specially approved in accordance with the requirements of British Standard HC 100, Section 1.

## 2. Inspection and testing procedure

This British Standard shall be used in conjunction with the relevant sections of British Standard HC 100 as follows:

Re-melting stock	Sections 1 and 2
Precision castings	Sections 1 and 3
Sand castings	Sections 1 and 4
Centrifugal castings	Sections 1 and 5

## 3. Chemical composition

The re-melting stock and the castings shall contain:

Element	%	
	min.	max.
Carbon	0.22	0.32
Silicon	0.3	0.75
Manganese	0.3	0.8
Phosphorus	—	0.025
Sulphur	—	0.025
Chromium	2.5	3.5
Copper	—	0.4
Molybdenum	0.4	0.7
Nickel	—	0.4
Tin	—	0.03
Vanadium	—	0.02

## 4. Condition

Castings shall be supplied finally heat treated.

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## 5. Heat treatment

The final heat treatment shall be as follows.

5.1 **Annealing.** Heat uniformly at a temperature between 880 °C and 950 °C.

5.2 **Hardening.** Heat uniformly at a temperature between 880 °C and 920 °C and quench in oil.

5.3 **Tempering.** Heat uniformly at a temperature between 560 °C and 660 °C.

## 6. Mechanical properties

6.1 **Tensile and impact.** The tensile and impact properties obtained from test pieces representing castings, selected, prepared and tested in accordance with the relevant requirements of British Standard HC 100, shall be:

0.2 % proof stress	Tensile strength		Elongation	Reduction of area	Izod impact
	min.	max.			
MPa (N/mm <sup>2</sup> )	MPa (N/mm <sup>2</sup> )	MPa (N/mm <sup>2</sup> )	%	%	ft lbf
700	880	1080	8	30	30

NOTE. Information on SI units is given in BS 3763, 'The International System of units (SI)', and BS 350, 'Conversion factors and tables'.

6.2 **Hardness.** The hardness of hardened and tempered castings and their representative test samples shall be:

	min.	max.
HB	262	321
HV	265	330
HRC	27	34

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The following BSI references relate to the work on this standard:  
Committee reference ACE/60 Draft for comment 72/35126 DC