

1. Record Nr.	UNINA9910820951903321
Autore	Campbell John <1938->
Titolo	Castings : the new metallurgy of cast metals // John Campbell
Pubbl/distr/stampa	Burlington, Mass., : Butterworth Heinemann, 2003
ISBN	1-281-04943-3 9786611049430 0-08-048844-7
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (337 p.)
Disciplina	671.2
Soggetti	Founding Metal castings
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Rev. ed. of: Castings. 1991.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover -- Castings -- Copyright Page -- Contents -- Preface -- Dedication -- Introduction -- Chapter 1. The melt -- 1.1 Reactions of the melt with its environment -- 1.2 Transport of gases in melts -- 1.3 Surface film formation -- Chapter 2. Entrainment -- 2.1 Entrainment defects -- 2.2 Entrainment processes -- 2.3 Furling and unfurling -- 2.4 Deactivation of entrained films -- 2.5 Soluble, transient films -- 2.6 Detrainment -- 2.7 Evidence for bifilms -- 2.8 The significance of bifilms -- Chapter 3. Flow -- 3.1 Effect of surface films on filling -- 3.2 Effect of entrained films on filling -- 3.3 Fluidity (maximum fluidity length) L _f -- 3.4 Continuous fluidity -- 3.5 Glossary of symbols -- Chapter 4. The mould -- 4.1 Inert moulds -- 4.2 Aggregate moulds -- 4.3 Mould atmosphere -- 4.4 Mould surface reactions -- 4.5 Metal surface reactions -- Chapter 5. Solidification structure -- 5.1 Heat transfer -- 5.2 Development of matrix structure -- 5.3 Segregation -- 5.4 Aluminium alloys -- 5.5 Cast irons -- 5.6 Steels -- Chapter 6. Gas porosity -- 6.1 Nucleation of gas porosity -- 6.2 Subsurface porosity -- 6.3 Growth of gas pores -- 6.4 Blowholes -- Chapter 7. Solidification shrinkage -- 7.1 General shrinkage behaviour -- 7.2 Solidification shrinkage -- 7.3 Feeding criteria -- 7.4 Feeding - the five mechanisms -- 7.5 Initiation of shrinkage porosity -- 7.6 Growth of shrinkage pores -- 7.7 Final forms of shrinkage porosity -- Chapter 8.

Linear contraction -- 8.1 Uniform contraction -- 8.2 Non-uniform contraction (distortion) -- 8.3 Hot tearing -- 8.4 Cold cracking -- 8.5 Residual stress -- Chapter 9. Structure, defects and properties of the finished casting -- 9.1 Grain size -- 9.2 Dendrite arm spacing -- 9.3 Compact defects -- 9.4 Planar defects -- 9.5 Effects of defects on properties of castings -- 9.6 The statistics of failure.
Chapter 10. Processing -- 10.1 Impregnation -- 10.2 Hot isostatic pressing -- 10.3 Working (forging, rolling and extrusion) -- 10.4 Machining -- 10.5 Painting -- Chapter 11. Environmental interactions -- 11.1 Internal oxidation -- 11.2 Corrosion -- Postscript --
References -- Index.
