Microstructural and Texture Development in Two Austenitic Steels with High-Manganese Content - DTU Orbit (08/11/2017)

Microstructural and Texture Development in Two Austenitic Steels with High-Manganese Content
Two austenitic steels, Fe-21.3Mn-3.44Si-3.74Al-0.5C and Fe-29.8Mn-2.96Si-2.73Al-0.52C, were subjected to cold rolling with 30 to 80 pct reduction with an increment of 10 pct and subsequently the development of their microstructures and textures were studied. The overall texture after 80 pct cold reduction was Brass type. A weak Copper component {112}⟨111⟩ was present at the early stage of deformation, which disappeared completely after 60 pct cold reduction. Extensive shear banding took place in both the steels, right from rather low cold rolling levels, which became more prominent at higher amounts of cold rolling. Formation of twin bands, along with cellular dislocation network, was observed in Steel A after 30 pct cold rolling. In case of Steel B, denser twin bands and dislocation cellular network were observed in early stage of deformation. After 80 pct cold reduction, the development of a strong brass-type texture in both the steels could be attributed predominantly to the formation of shear banding, possibly with some partial contribution coming from micro twinning.

General information
State: Published
Organisations: Department of Wind Energy, Materials science and characterization, Risø National Laboratory for Sustainable Energy, Indian Institute of Engineering, Science & Technology, Tata Steel Ltd.
Authors: Bhattacharya, B. (Ekstern), Ray, R. K. (Ekstern), Leffers, T. (Intern)
Number of pages: 12
Pages: 5296-5307
Publication date: 2015
Main Research Area: Technical/natural sciences

Publication information
Journal: Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science
Volume: 46
Issue number: 11
ISSN (Print): 1073-5623
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 1.91 SJR 1.179 SNIP 1.179
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.231 SNIP 1.332 CiteScore 1.78
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.671 SNIP 1.877 CiteScore 2.06
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.481 SNIP 1.63 CiteScore 1.9
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.419 SNIP 1.706 CiteScore 1.76
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.508 SNIP 1.703 CiteScore 1.78
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.688 SNIP 1.802
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.608 SNIP 1.53

Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.505 SNIP 1.536
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.314 SNIP 1.544
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.397 SNIP 1.653
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.183 SNIP 1.414
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.078 SNIP 1.607
Scopus rating (2003): SJR 1.108 SNIP 1.699
Scopus rating (2002): SJR 2.057 SNIP 1.992
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.878 SNIP 1.784
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.844 SNIP 1.809
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 2.028 SNIP 1.905
Original language: English
Aluminum, Austenite, Austenitic steel, Brass, Deformation, Manganese, Brass type texture, Cellular network, Cold reduction, Copper components, Dislocation networks, High manganese, Micro-structural, Texture development, Cold rolling
DOIs:
10.1007/s11661-015-3097-8
Source: FindIt
Source-ID: 276184615
Publication: Research - peer-review › Journal article – Annual report year: 2015