

X

NPTEL

reviewer4@nptel.iitm.ac.in ▼

Courses » Welding of Advanced High Strength Steels for Automotive Applications

Announcements

Course

Ask a Question

Progress

FAQ



Unit 3 - Week 1

Course outline

How to access the portal

Pre-requisite Assignment

Week 1

- Introduction to the course, Introduction to physical metallurgy of steels
- Martensitic transformation, Introduction to modern automotive steels
- Introduction to modern automotive steels
- Introduction to advanced high strength steels
- Introduction to Dual Phase Steel and TRIP Steel Heat Treatments
- Quiz : Assignment 1
- Week 1 - Feedback - Welding of Advanced High Strength Steels for Automotive Applications

Week 2

Week 3

Week 4

Assignment 1

The due date for submitting this assignment has passed. **Due on 2018-09-12, 23:59 IST**
As per our records you have not submitted this assignment.

1) Silicon and aluminium additions in steels retard cementite formation **1 point**

- by precipitating of oxide inclusions
- due to low solubility of these elements in cementite
- migration of silicon and aluminium to untransformed austenite
- change in allotropic phase boundary

No, the answer is incorrect.

Score: 0

Accepted Answers:

due to low solubility of these elements in cementite

2) The strength of interstitial free steels is generally increased by **1 point**

- precipitation hardening
- the addition of micro-alloying elements
- formation of Lomer-Cottrell barriers
- grain coarsening

No, the answer is incorrect.

Score: 0

Accepted Answers:

*precipitation hardening
the addition of micro-alloying elements*

3) Compared to silicon, aluminium in steel is **1 point**

- strong oxide former
- poor solid solution strengthener
- good solid solution strengthener
- poor oxide former

No, the answer is incorrect.

Score: 0

Accepted Answers:

*strong oxide former
poor solid solution strengthener*

4) The enhanced ductility of dual phase steel is primarily due to **1 point**

- presence of martensite
- formation of mobile dislocations at the interface
- presence of retained austenite

LECTURE
MATERIALS

VIDEO
DOWNLOAD

- stress partitioning to ferrite during deformation

No, the answer is incorrect.

Score: 0

Accepted Answers:

*formation of mobile dislocations at the interface
stress partitioning to ferrite during deformation*

5) Boron increases the hardenability of steels because ?

1 point

- its suppresses ferrite nucleation
 solubility of boron in ferrite is low
 increases prior austenite grain size
 all of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*its suppresses ferrite nucleation
solubility of boron in ferrite is low*

6) Hot forming steels are deformed when the temperature is

1 point

- in inter-critical region
 close to melting point
 in fully austenitic region
 below Curie temperature

No, the answer is incorrect.

Score: 0

Accepted Answers:

in fully austenitic region

7) The enhanced uniform elongation in TRIP steel is due to

1 point

- tempering of martensite
 dynamic recrystallisation
 stress induced transformation of austenite to martensite
 adiabatic heat generation during deformation

No, the answer is incorrect.

Score: 0

Accepted Answers:

stress induced transformation of austenite to martensite

8) Austenite is retained in TRIP steel upon heat treatment by

1 point

- partitioning of silicon and aluminium to austenite
 carbon enrichment in austenite
 retardation of cementite precipitation
 incomplete austenite to bainite transformation

No, the answer is incorrect.

Score: 0

Accepted Answers:

*carbon enrichment in austenite
incomplete austenite to bainite transformation*

9) The microstructure of the components made of hot forming steel contains

1 point

- a fully bainitic microstructure
 fully martensitic microstructure
 mixture of bainite and martensite

- strain hardened grains

No, the answer is incorrect.

Score: 0

Accepted Answers:

fully martensitic microstructure

10 When undeformed austenite transforms to lower bainite,

1 point

- intra-lath precipitation of cementite occurs due to sluggish diffusion of carbon
- inter-lath precipitation of cementite occurs due to carbon partitioning to untransformed austenite
- dynamic recrystallisation occurs
- dynamic recovery occurs.

No, the answer is incorrect.

Score: 0

Accepted Answers:

intra-lath precipitation of cementite occurs due to sluggish diffusion of carbon



Previous Page

End

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -

A project of



In association with



Funded by

Government of India
Ministry of Human Resource Development

Powered by

