



Short Course on DEFECTS IN BILLETS, BLOOMS, AND SLABS

August 7 – 8, 2018

Metallon Headquarters, San Nicolas, Argentina

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Instructor:

Jorge Madias. Metallurgical Engineer, UTN – Buenos Aires Regional School. From 1973 to 1980 he worked for the foundry industry and for the recarburizers / carbon injectant industry. From 1980 to 2008 at the Instituto Argentino de Siderurgia (IAS), as Researcher in the Raw Materials Division, then at the Steelmaking Division, then Steelmaking Division Manager, finally Technical Director. Since 2008, **metallon** Director He has 196 publications in local and overseas journals and conferences, as wells as two book chapters. Member of the Editorial Board of Metallurgical Research and Technology (ex Revue de Métallurgie). He has lectured short courses on metallurgy, in Latin America and the Middle East. Member of ABM, AFS, AIST, ASM, IOM3, SAM and SEASIS.

Methodology:

Lectures; observation of videos; case studies; exchange of experiences; observation of samples

Public:

Personnel of continuos casting, metalurgy and rolling, in relation with the issue of defects. Suppliers of critical inputs for the obtention of defect-free semis.

Objective:

To know in detail the causes for the formation of surface, inner and shape defects in billets, blooms and slabs, in order to be able to take preventive measures and corrective actions.

Background:

This course was organized in 2015 at San Nicolas Plaza Hotel, San Nicolas, Argentina, and in 2016 at Plaza Real Suites Hotel, Rosario, Argentina, with attendance from slab casting and billet casting people, heavy plate and rebar/wire rod rolling mills, as well as casting and rolling consultants from Argentina and Brazil.

Duration:

16 hours

Outline:

1. Introduction

Aspects to be taken into account when operating the caster, in order to avoid defects in billets, blooms and slabs. Classification of the defects. Surface, inner and shape

defects. Defects specific to billets, blooms, slabs, thin slabs, beam blanks, rounds. Standards on defects. Books on defects.

2. Surface defects

For each defect type, the characterization at naked view and with metallographic tools is analyzed. As well as the basis of its formation, the evolution in downstream processes and possible solutions. A case study is presented.

Transverse cracks
Longitudinal corner cracks
Longitudinal face cracks
Crazy cracks or network cracks; star cracks
Longitudinal and transverse depressions
Pinholes
Cold drops
Bleeding
Cast powder / scum entrapment
Deep oscillation marks

3. Inner defects

For each defect type, the characterization at naked view and with metallographic tools is analyzed. As well as the basis of its formation, the evolution in downstream processes and possible solutions. A case study is presented.

Off corner cracks
Midway cracks
Central cracks
Macroinclusions
Blowholes
Central segregation and porosity

4. Shape defects

For each defect type, the characterization at naked view and with metallographic tools is analyzed. As well as the basis of its formation, the evolution in downstream processes and possible solutions. A case study is presented.

Bulging
Rhomboidicity (billets and blooms)
Ovalization (rounds)
Bending

Evaluation: At the end of the course, an evaluation based on ten questions with multiple choice answers is proposed. Seven right answers are necessary for receiving certificate of approval.

Venue & timing: metallon headquarters, 432 9 de Julio street, San Nicolas, Buenos Aires, Argentina. 8.30 am to 5 pm

Hotels:

San Nicolas Plaza Hotel, phone/fax 54 336 442 5800, reservas@snplazahotel.com ([ask for corporate fee](#))

De Los Arroyos Apart Hotel, phone/fax 54 336 445 6997, reservas@delosarroyosapart.com.ar

Hotel Yaguarón, Mitre 401, phone/fax 54 336 442 8979, reservas@hotelyaguaron.com, www.hotelyaguaron.com

Hotel Rio, phone/fax 54 336 4424752, hotelrio@arnet.biz.com.ar, www.hotelrio.com.ar

Transport:

From Ezeiza airport (250 km) and Rosario (60 km): rent a car or contact Manuel Tienda León, e-mail reservas@mtlrosario.com.ar

Registration fee: USD 690

Cancellations up to ten days before course start have 10% charge. After the deadline, there is no refunding but registration to another course. Change of attendants can be made until course start. If the course is postponed due to force majeure, the course organizers are not responsible for covering trip, hotel or other costs assumed by the attendant.

Registration includes colour-printed course notes with the course slides; a CD or pen drive is added, too, including the slides, spreadsheets, videos and simulations, further readings for each chapter and exercises. Coffee breaks, lunches and certificate of approval or attendance are included, too.

Additional information and off line registration: Phone/fax 54 336 442 1318; e-mail cursos@metallon.com.ar

Registration Form

Full name: _____

Company: _____

Job title: _____

Address: _____

City: _____ Zip Code: _____

State: _____ Country: _____

Phone: _____ Fax: _____

e-mail: _____

Payment

- Wire transfer: Ask for data to cursos@metallon.com.ar
- Check on the name of Jorge Madias; send to **metallon**, 9 de Julio 432, B2900HGJ San Nicolas, Buenos Aires, Argentina
- Cash: on-site, in the registration area