**IJAIE Template on Paper for A4 Page Size, Write Paper Title Here**

**First Author†, Second Author‡ and Third Authorξ**

†First author’s Department, First-Author University, Address Including Country Name

‡Second author’s Department, Second Author University, Address Including Country Name

ξThird author’s Department, Third Author University, Address Including Country Name

Accepted xxx, Available online xxx, **Vol.x, No.x (xxx 2018)**

***Abstract***

*This document gives formatting instructions for authors preparing papers for publication in the International Journal of Advance Industrial Engineering. The authors must follow the instructions given in the document for the papers to be published. You can use this document as both an instruction set and as a template into which you can type your own text.*

***Keywords:*** *The author can include 5-7 words like Thermal Analysis, Pre-conditioner, In-mold, Inoculant’s efficiency.*

**1. Introduction**

This document is a template. An electronic copy can be downloaded from the INPRESSCO website. For questions on paper guidelines, please contact editor.ijaie @inpressco.com or the author can visit the website for the guidelines.

We use 10 point Cambria Font and the font size must not be changed. The authors are required to format their article according to this.

Please see the reference citing style i.e. how the references are to be written as described below.

INPRESSCO uses the reference style as: (author’s name *et al*, Year of publication). An example is give below.

A cooling curve is a plot of temperature as a function of time for a sample of an alloy poured into a standardized mould with a thermocouple usually positioned in the center (Warsinsk, 1975). Depending on the sampling rate of the data, the cooling curve can be represented and the first derivative can be accurately calculated (Backerud, *et al*, 1975). Invention and introduction of thermal analysis in casting production has brought a comprehensive evaluation of melt iron quality. Research has shown that the shape of the cooling curve measured by thermal couple mounted in the thermal analysis sample cup reflects the solidification process of iron melt in the cup (Zhu and Smith, 1995) .Measuring the shape of the cooling curve will give comprehensive information about the melting and treatments quality thereby the properties and microstructure could be predicted (Labrecque and Gagne, 1998), (Chisamera, *et al*, 2009) , (Riposan, *et al* 2003).

Thermal analysis can be used to determine inoculants performance, apart from the traditional usage of thermal analysis to determine the percentage of carbon equivalent liquidus, carbon and silicon levels, it can also be used to monitor metallurgical processes and identify potential problems areas such as low nodule count, under-cooled graphite and carbide/chill propensity (Udroiu, 2002), (Corneli, *et al*, 2004), (Seidu, 2008). It can be used to predict iron shrinkage tendency and help the foundry to control scrap.

**2. Placing the figures**

All the figures must be placed in the column wise, however the authors can use single column to place big figures provided that the template formatting must not change. The title of the figure is to be placed below the figures as shown.

Note: Please note the figures must be placed in in line with text mode, not in any other Wrap mode. Also, the figures must not be inserted into tables.



**Fig.1** Typical cooling curve and its first derivative

*2.1 Placing the graphs*

The graphs must be properly drawn in MS excel. Please note that all the legends should be drawn in the MS excel single file. They are not to be inserted in MS Word which will affect the formatting of the template. Care should also be taken to keep the font as Cambria. As the default font in Excel is Calibri. So the graphs by default take it. The authors are required to keep the font as Cambria. The graphs must be in line with text and are not be placed in any other wrap mode

*2.2 Using and placing the equations*

Please not that all the equations must be written in in Microsoft equation 3.0 or above versions. Click Insert and under Object you will find the Microsoft equation 3.0. Type all your equations here. Do not paste equations from any other file. Equations appearing as images will not be considered .Such equations are not clear when the paper is converted in pdf. An example of Microsoft equation 3.0 is given as under.

**** (1)

Please note that the properties of the equations must not be locked

**3. Placing the tables**

It should be noted that all the tables must be firstly drawn in Excel and after that they should be placed in your article. The heading of the table should be above the table. An example is given as under.

Note: Please note the tables must be placed in in line with text mode, not in any other Wrap mode. Also, the figures must not be inserted into tables

**Table 1** Experimental procedure parameters

|  |  |  |
| --- | --- | --- |
| S. No | Parameters | Values |
| 1 | Melting Changes | Acid lining coreless induction furnace,100kg, 2400Hz |
| 2 | Charges | 3.6%C, 1.22%Si, 0.02%P, 0.016%S, 0.04%Cr, 0.47%Mn, 0.005%As, 0.001%V, 0.001%Pb, 0.002%Ti. |
| 3 | Base Metal | 3.56%C, 2.78%Si, 0.47%Mn, 0.020%P, 0.008%S, 0.0384%Cr, 0.0384%Cr, 0.042%Mo, 0.023%Ni, |

**Conclusions**

The authors can write the conclusion as a whole in a paragraph or by making points. An example is given as under.

1. Derivatives of the cooling curve can be used to understand the small changes in the undercooling of the liquidus and solidus temperature.
2. Thermal analysis is a good technique to control carbides, shrinkage and micro-shrinkage formation.
3. It is visibly shown that there is significant reduction in undercooling degree on the alloys and the value of inoculation index was increased. Although the addition of Al,Ca,Zr-FeSi pre-conditioners gives no significant influence .
4. The use of relative performance makes a clear distinction of the alloys efficiency and could be concluded that Ca,RE,S,O-FeSi inoculated iron gave the most influence.
5. From the result obtained, it could be deduced comparatively that Ca,RE,S,O-FeSi inoculant give the best efficiency followed by Ca,Zr-FeSi and Ca,Ba-FeSi inoculants respectively.

**References**

The authors are required to follow the following reference style i.e. Authors names (Year of publication), Title of the Article, *Name of the journal in Italics,* Vol. No. Page No. The examples is given as under

J.B.Humphreys,(1961), Effect of composition on the liquidus and eutectic temperature and on the eutectic point of cast irons, *BCRIAJ*,19,609-621.

R.G.Warsinsk, (1975) Ford develops CE cooling curve computer, *Foundry M&T*,3,104-107

L.Backerud, K.Nilsson, N.Steen,(1975) The metallurgy of cast iron,*St.Saphorin,SwiitzerlandGenrgi publishing company*,pp.625-637.

P.Zhu, R.W.Smith, (1995) Thermal analysis of nodular graphite cast iron, *AFS Transaction*, 103,601-609

C.Labrecque, M.Gagne,(1998), Interpretation of cooling curves of cast iron: A literature review*, AFS Transaction*,106,pp.83-90

M. Chisamera, I.Riposan, S. Stan, D. White, (2009), Influence of Residual Aluminum on Solidification Pattern of Ductile iron, *International Journal of Cast metals research,* vol.22,no.6, pp. 401-410.

I.Riposan, M.Chisamera, S. Stan, C. Gadarautanu, T. Skaland, (2003), Analysis of Cooling and Contraction Curves to Identify the Influence of Inoculants on Shrinkage behavior of Ductile Irons, *Keith Millis Symposium on Ductile Cast Iron*, pp.125-135.

A.Udroiu,(2002), The use of Thermal Analysis for Process Control of Ductile Iron, *Seminarium Nova cast, Italy*.

J. corneli, V.Ettinger, W. Baumgart, (2004), Thermal analysis ,an Unique Fingerprint of a melt *,66th World Foundry Congress* 6-9 , pp. 743-756.

Seidu, S.O (2008). Influence of Inoculant’s type on thermal analysis parameters of ductile irons*, 4thinternaltion conference, Galati, Romania*, pp. 237-241.

M. Chisamera, S. Stan, I. Riposan, E. Stefan, G. Costache, (2007), Thermal analysis of Inoculated Grey Cast Irons, *UGALMAT,Galati,TechnologiisiMaterialeAvansate,University press*,Vol.1, pp.17-23.