

EXPERIMENTAL RESEARCH CONCERNING THE INFLUENCE OF THE COLD ROLLING PARAMETERS ON MECHANICAL PROPERTIES OF STEEL FOR DEEP DRAWING

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ABSTRACT

In this paper is presented an experimental research concerning the influence of the cold rolling parameters on mechanical properties of steel strip for deep drawing. The DC -04 steel grade is a steel used for cold plastic deformation, with a maximum of 0.08 % C for deep drawing, used in the automotive industries for vehicles body. The results reveal that the mechanical properties, strain-hardening and anisotropy coefficients are in limits.

KEYWORDS: cold rolling, strain-hardening and anisotropy coefficients

REFERENCES

- [1] <http://usa.arcelormittal.com/globalassets/arcelormittal-usa/publications-reports/2014-arcelormittalusa-factbook.pdf>
- [2] http://flateurpe.arcelormittal.com/repository2/About/EN_ArcelorMittal_Update_Magazine_Nov14.pdf
- [3] Panigrahi, B.K., *Processing of low carbon steel plate and hot strip—An overview*, Bulletin of Materials Science, vol. 24, issue 4, pp 361-371, 2001.
- [4] Ray, R.K., Jonas, J.J., Hook, R.E., *Cold rolling and annealing textures in low carbon and extra low carbon steels*, vol. 39, issue 4, pp. 129-172. 1994.
- [5] Martínez-de-Guerenu, A., Arizti, F., Díaz-Fuentes, M., Gutierrez, I., *Recovery during annealing in a cold rolled low carbon steel. Part I: Kinetics and microstructural characterization*, Acta Materialia, vol. 52, issue 12, pp. 3657–3664, 2004.
- [6] Yanga, K., Goua, H., Zhanga, B., Huang, R., Li, H., Lu, M., Zhang, X., Zhang, J., *Microstructures and fracture features of cold-rolled low carbon steel sheet after annealing and mechanical stress concurrently loaded*, Materials Science and Engineering A, vol. 502, pp. 126–130, 2009.
- [7] Raji, N., Oluwole, O., *Effect of Soaking Time on the Mechanical Properties of Annealed Cold-Drawn Low Carbon Steel*, Materials Sciences and Applications, vol. 3, pp. 513-518, 2012.
- [8] Ma, B., Tieu, A.K., Lu, C., Jiang, Z., *An experimental investigation of steel surface characteristic transfer by cold rolling*, Journal of Materials Processing Technology, vol. 125–126, pp. 657–663, 2002.
- [9] Usov, V.V., Shkatulyak, N.M., Bryukhanov, A.A., Fasmann, D., *Influence of the Rate and Degree of Deformation on the Texture, Structure and Mechanical Properties of Steel*, Journal of Metallurgy, vol. 2014, article ID 397279, 2014.
- [10] Xu, P., Yin, F., Nagai, K., *Plastic Anisotropy of Strip-Cast Low-Carbon Steels*, Materials Transactions, vol. 45, no. 2, pp. 447–456, 2004.