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Incremental constitutive description of SAE 5120 steel deformed under hot-working conditions

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PII: S0020-7403(17)31463-7  
DOI: [10.1016/j.ijmecsci.2017.09.026](https://doi.org/10.1016/j.ijmecsci.2017.09.026)  
Reference: MS 3937



To appear in: *International Journal of Mechanical Sciences*

Received date: 31 May 2017  
Revised date: 28 August 2017  
Accepted date: 14 September 2017

Please cite this article as: E.S. Puchi-Cabrera , J.D. Guérin , J.G. La Barbera-Sosa , M. Dubar , L. Dubar , Incremental constitutive description of SAE 5120 steel deformed under hot-working conditions, *International Journal of Mechanical Sciences* (2017), doi: [10.1016/j.ijmecsci.2017.09.026](https://doi.org/10.1016/j.ijmecsci.2017.09.026)

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**Highlights**

- A new incremental constitutive formulation is proposed
- A single apparent activation energy is employed for describing the parameters involved
- Yield, saturation and steady-state stresses, and  $t_{0.5}$  are given in terms of  $T$  and  $\dot{\epsilon}$
- Three incremental equations are employed in the constitutive description
- Experimental sharp and ramped transient loading schedules are analyzed with the new model

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