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Construction of Strain Distribution Profiles of EDD Steel at Elevated Temperatures

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Abstract : In the present work forming limit diagrams and strain distribution profile diagrams for extra deep drawing steel at room and elevated temperatures have been determined experimentally by conducting stretch forming experiments by using designed and fabricated warm stretchforming tooling setup. With the help of forming Limit Diagrams (FLDs) and strain distribution profile diagrams the formability of Extra Deep Drawing steel has been analyzed and co-related with mechanical properties like strain hardening COEFFICIENT (n) and normal anisotropy (r−).Mechanical properties of EDD steel from room temperature to 4500C were determined and discussed the impact of temperature on the properties like work hardening exponent (n) anisotropy(r-) and strength coefficient of the material. Also the fractured surfaces after stretching have undergone the some metallurgical investigations and attempt has been made to co-relate with the formability of EDD steel sheets. They are co-related and good agreement with FLDs at various temperatures.

Keywords : FLD, microhardness, strain distribution profile, stretch forming
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