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Springback of Coiled Springs

Takahiko KUNO*

Simple formulas are presented for the springback ratio of coiled springs for various types of combined load practically interested. For the analysis of deformation in the cold working process, the rigid, perfectly plastic theory under the combined loading is employed, and further, "proportional deformation" in the coiling process is assumed. The deformation in the springback process is, then, analysed under the assumption of the quasi-elastic behavior.

For the case of the coiling through pure bending, several experiments are performed. The experimental data are in good agreement with those predicted by the present theory, equally well as with laborious Gardiner's elastoplastic solution.

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