Summary

On the base of the above considerations, one can draw the following most important conclusions regarding utilisation of formulae for properties reconstruction of elasto-plastic materials:

1. The formula derived by Bridgman for the flow curve determination demonstrates the worst results among all the classical formulae but it is still the most often used and disseminated especially in the English literature.
2. The formulae by Malinin–Petrosjan, Siebel–Davidenkov–Spiridonova and Szczepiński always characterise a greater accuracy compared to Bridgman. However, the smallest error among all the classical formulae generates the Malinin–Petrosjan formula. At small strains, the Szczepiński formula can be applied but at greater strains the Siebel–Davidenkov–Spiridonova should be used, because the curve determined from the Szczepiński formula begins to differ more from the real solution. However, the Siebel–Davidenkov–Spiridonova formula is still better in comparison with the results obtained from the Bridgman formula.
3. However, the most justified seems to be the application of the new formula which depends on two parameters. As it was presented, the new approximation always exhibits greater accuracy in comparison with the classical expressions.
4. If we are still interested in a formula taking into account only one parameter, it is worth taking advantage of the empirical formula (3.15) which reconstructs better the material properties. On the other hand, one may use the single-parameter formula (3.16) which reveals an acceptable accuracy but limits the real solution from below.
5. In the case of estimation of the flow curve of materials at small deformations and neck presence, it does not make sense to distinguish between the formulas because the difference for small strains is very small.

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