

## REFERENCES

1. Uthaisangsuk, V., 2009, **Microstructure Based Formability Modelling of Multiphase Steels**, Doctor of Engineering, Department of Ferrous Metallurgy, RWTH Aachen University, 175 p.
2. World Auto Steel, **Advanced High Strength Steel (AHSS) Application Guidelines Version 5.0**, [Online], Available:www.worldautosteel.org [2014, May].
3. Liewald, M., Held, C. and Schleich, R., 2009, “Characterisation of Sheet Metal Formability - A Review and New Approaches”, **Steel Research International**, Vol. 80(4), pp. 275-280.
4. Kim, S.N., 2011, **Evaluation of Constitutive Models for Formability of DP and TRIP Steel Sheets**, Master of Science Thesis, Department of Ferrous Technology, Graduate Institute of Ferrous Technology, Pohang University of Science and Technology, 80 p.
5. Von Mises, R., 1913, “Mechanik der festen Körper im plastisch-deformablen Zustand”, **Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch -Physikalische Klasse**, Vol. 1913, pp. 582–592.
6. Hill, R., 1948, “A Theory of the Yielding and Plastic Flow of Anisotropic Metals”, **Proceedings of Royal Society of London A, Series A**, Vol. 193, pp. 281–297.
7. Barlat, F., Brem, J.C., Yoon J.W., Chung, K.S., Dick, R.E., Choi S.H., Pourboghrat, F., Chu, E. and Lege, D.J., 2003, “Plane Stress Yield Function for Aluminium Alloy Sheets – Part 1: Theory”, **International Journal of Plasticity**, Vol. 19, pp. 297–319.
8. Swift, H.W., 1952, “Plastic Instability Under Plane Stress”, **Journal of the Mechanics and Physics of Solids**, Vol. 1, pp. 1-10.
9. Voce, E., 1948, “The Relationship between Stress and Strain for Homogeneous Deformation”, **Journal Institute of Metals**, Vol. 74, pp. 537-548.
10. Kim, J.H., Serpantie, A., Barlat, F., Pierron, F. and Lee, M.G., 2013, “Characterization of the Post-necking Strain Hardening Behaviour using the Virtual Field Method”, **International Journal of Solids and Structures**, Vol. 50, pp.3829-3842.
11. Hollomon, J.H., 1945, “Tensile Deformation”, **Trans AIME**, Vol. 12, pp. 1-10.
12. Butuc, M. C., 2004, **Forming Limit Diagrams, Definition of Plastic Instability Criteria**, Doctor of Philosophy thesis, Department of Mechanical Engineering, Faculty of Engineering, University of Porto, p.219
13. Xu, L., 2011, **Constitutive Modeling of High Strength Steel Sheets**, Doctor of Philosophy thesis, Department of Ferrous Technology, Graduate Institute of Ferrous Technology, Pohang University of Science and Technology, p.145

14. Marciniak, Z., 1984, "Assessment of material formability, in: Advanced Technology of plasticity", **Proceedings of the 2<sup>nd</sup> International Conference Technology Plasticity, ICTP1984**, Tokyo, Japan, pp. 685-694.
15. Banabic, Dorel., 2010, **Sheet Metal Forming, Constitutive Modelling and Numerical Simulation**, Springer-Verlag, Berlin Heidelberg, p.301
16. Mellor, P.B. and Parmar, A., 1978, "Plastic Analysis of Sheet Metal Forming", In **Proceedings of a Symposium on Mechanics of Sheet Metal Forming**, Warren, Michigan, 17-18 October, 1977.
17. Johnson, W. and Duncan, J.L., 1965, "The Use of the Biaxial Test Extensometer", **Sheet Metal Industry**, Vol. 42, pp. 271 -275.
18. ASM Handbook, Volume 14B, **Metalworking: Sheet Forming**. 2006.
19. Keeler, S.P., 1970, Understanding Sheet Metal Formability, **Metal Fabricating Institute**, Vol. 2, p. paper 350A.
20. Olsen, T.Y., 1920, "Machines for Ductility Testing", **Proceedings of the American Society for Testing and Materials**, Vol.20, pp.398–403.
21. Hecker, S.S., 1974, "A Cup Test for Assessing Stretchability", **Metals Engineering Quarterly**, Vol. 14, 30–36.
22. Drewes, E.J., Hennig, H., Rape, R. and Wrede, W., 1972, "Forming Limit Diagrams and Application to Actual Press Forming. **IDDRG Meeting Group 1**, Amsterdam. 12 p.
23. Ghosh, A.K., 1975, "The effect of lateral drawing-in on stretch formability", **Metals Engineering Quarterly**, Vol.15, pp. 53–64.
24. Swift, H.W., 1952, "Plastic instability under plane stress", **Journal of the Mechanics and Physics of Solids**, Vol. 1, pp. 1–18.
25. Hill, R., 1952, "On discontinuous plastic states with special reference to localized necking in thin sheets", **Journal of the Mechanics and Physics of Solids**, Vol. 1, pp.19–30.
26. Marciniak, Z. and Kuczynski, K., 1967, "Limit Strains in the Process of Stretch-Forming Sheet Metal", **International Journal of Mechanical Sciences**, Vol. 9, pp. 609–620.
27. Keeler, S.P. and Backofen, W.A., 1963, "Plastic Instability and Fracture in Sheets Stretched Over Rigid Punches", **Transactions of The ASM**, Vol. 56, pp. 25-48.
28. Goodwin, G.M., 1968, "Application of strain analysis to sheet metal forming problems in the press shop", **Society of Automotive Engineers**, No.680093, pp. 380–387.

29. Brozzo, P., De Luca B. and Rendina, R., 1972, "A new method for the prediction of the formability limits of metal sheets", **Proceedings of the 7<sup>th</sup> Biannual Congress of the IDDRG**, 9-13 October, Amsterdam, Netherland, pp. 25-32.
30. Nakazima, K., Kikuma, T. and Hasuka, K., 1971, "Study on the formability of steel sheets", **Yawata Technical Report**, Vol. 284, pp. 678–680.
31. Hora, P. and Tong, L., 1994, "Prediction methods for ductile sheet metal failure using FE-simulation", **Proceedings of the IDDRG Congress**, Porto, Portugal, pp. 363–375.
32. Storen, S. and Rice, J.R., 1975, "Localized necking in thin sheets", **Journal of the Mechanics and Physics of Solids**, Vol. 23, pp. 421–441.
33. Dudzinski, D. and Molinari, A., 1991, "Perturbation Analysis of Thermo viscoplastic Instabilities in Biaxial Loading", **International Journal of Solids and Structures**, Vol. 5, pp. 601–628.
34. Banabic, D., Bunge, H. J., Poehlandt, K. and Tekkaya, A. E., 2000, **Formability of Metallic Materials, Plastic Anisotropy, Formability Testing, Forming Limits**, Springer-Verlag, Berlin Heidelberg, 220 p.
35. Considère, M., 1885, "L'emploi du fer et Lacier dans Les Constructions", **Annales des Ponts et Chaussées**, Vol. 9, pp. 574–775.
36. Hosford, W. F. and Caddell, R.M., 2014, "**Metal Forming: Mechanics and Metallurgy**", 4<sup>th</sup> Ed., Cambridge University Press, New York, 344 p.
37. Stoughton, T.B., 2000, "A general forming limit criterion for sheet metal forming", **International Journal of Mechanical Science**, Vol. 42, pp.1-27.
38. Stoughton, T. B., 2001, "Stress-based forming limits in sheet-metal forming", **Journal of Engineering Material Technology**, Vol. 123, pp. 417-422.
39. Arrieux, R. and Boivin, M., 1987, "Determination of the forming limit stress curve for anisotropic sheets", **Proceeding of Annual meeting the CIRP**, Vol.36/1, pp. 195-198.
40. Arrieux, R., 1997, "Determination and use of the forming limit stress surface of the orthotropic sheets", **Journal of Material Processing Technology**, Vol. 64, pp. 25-32.
41. Panich, S., Barlat, F., Uthaisangsuk, V., Suranantchai, S. and Jirathearanat, S., 2013, "Experimental and theoretical formability analysis using strain and stress based forming limit diagram for advanced high strength steels", **Materials and Design**, Vol. 51, pp. 756-766.
42. Wolfgang, Bleck., 2009, **Materials Characterization, Text book for Students**, Verlag-Mainz, Wissenschaftsverlag, Aachen.

43. Hyun, D.I., Oak, S.M., Kang, S.S. and Moon, Y.H., 2002, "Estimation of hole flangeability for high strength steel plates", **Journal Material Processing Technology**, Vol. 130-131, pp. 9-13.
44. Takuda, H., Mori, K., Fujimoto, H. and Hatta, N., 1999, "Prediction of forming limit in bore-expanding of sheet metals using ductile fracture criterion", **Journal Material Processing Technology**, Vol. 92-93, pp. 433-438.
45. Chatterjee, S. and Bhadeshia, H. K. D. H., 2007, "Stretch-flangeability of strong multiphase steels", **Materials Science Technology**, Vol. 23, 5, pp. 606-609.
46. Lee, J.S., Ko, Y. K., Huh, H., Kim, H. K. and Park, S.H., 2007, "Evaluation of Hole flangeability of Steel Sheet with Respect to the Hole Processing Conditions", **Key Engineering Materials.**, Vol. 340-341, pp. 665-670.
47. McClintock, F.A., 1968, "A criterion of ductile fracture by the growth of holes", **Journal of Applied Mechanics**, Vol. 35, pp. 363-371.
48. Rice, J.R. and Tracey, D.M., 1969, "On the ductile enlargement of voids in triaxial stress fields", **Journal of Mechanics and Physics Solids**, Vol. 17, pp. 201-217.
49. Atkins, A.G., 1996, "Fracture in forming", **Journal of Materials Processing Technology**, Vol. 56, pp. 609-618.
50. Bao, Y. and Wierzbicki, T., 2004, "A comparative study on various ductile crack formation criteria", **Journal of Engineering Technology**, Vol. 26(3), pp. 314-320.
51. Hancock, J.W. and Mackenzie, A.C., 1976, "Mechanisms of ductile failure in high-strength steels subjected to multi-axial stress states", **Journal of Mechanics and Physics Solids**, Vol. 24(2-3), pp.147-160.
52. Li, Y. and Wierzbicki, T., 2010, "Prediction of plane strain fracture of AHSS sheets with post-initiation softening", **International Journal of Solid and Structure**, Vol. 47(17), pp. 2316-2327.
53. Angel, T., 1954, "Formation of martensite in austenitic stainless steels Effects of deformation, temperature, and composition", **Journal of Iron and Steel Institute**, Vol. 177, pp. 165-174.
54. Lacroisey, F. and Pineau, A., 1972, "Martensitic transformations induced by plastic deformation in the Fe-Ni-Cr-C system", **Metallurgical Transactions**, Vol. 3, pp. 391-400.
55. Huh, H., Kim, S.B., Song, J.H. and Lim, J.H., 2008, "Dynamic tensile characteristics of TRIP-type and DP-type steel sheets for an auto-body", **International Journal of Mechanical Science**, Vol. 50, pp. 918-931.
56. Uthaisangskuk, V., Prahl, U. and Bleck, W., 2011, "Modelling of damage and failure in multiphase high strength DP and TRIP steels", **Engineering Fracture Mechanics**, Vol. 78, pp. 469-486.

57. Lee, J.Y., 2011, **Evaluation of Constitutive Models for Springback Prediction in U-draw/bending of DP and TRIP Steel Sheets**, Master of Science Thesis, Department of Ferrous Technology, Graduate Institute of Ferrous Technology, Pohang University of Science and Technology, 72 p.
58. Young, R.F., Bird, J.E., Duncan, J.L., 1981, “An automated hydraulic bulge tester”, **Journal of Applied Metal Working**, Vol. 2, pp. 11-18.
59. Banabic, D., 2009, **Sheet metal forming processes: Constitutive modeling and numerical simulation**, Springer Heidelberg Dordrecht London, New York, 254 p.
60. Nakajima, K., Kikuma, T. and Hasuka, K., 1968, Study of the formability of steel sheets, **Technical Report No. 264**, 8517, Yawata.
61. International Standard ISO 12004-2, 2008, “**Metallic materials - Sheet and strip – Determination of forming-limit curves. Part 2**”, Determination of forming-limit curves in the laboratory.
62. Dunand, M. and Mohr, D., 2010, “Hybrid experimental-numerical analysis of basic ductile fracture experiments for sheet metals”, **International Journal of Solid and Structure**, Vol. 47, pp. 1130–1143.
63. Brinnel, V., Doebereiner, B. and Muenstermann, S., 2014, “Characterizing ductile damage and failure: Application of the direct current potential drop method to uncracked tensile specimens”, **Procedia Materials Science**, Vol. 3, pp.1161-1166.
64. Lian, J., Sharaf, M., Archie, F. and Muenstermann, S., 2012, “A hybrid approach for modelling of plasticity and failure behaviour of advanced high strength steel sheets”, **International Journal of Damage Mechanic**, Vol. 22, pp.188-218.
65. Muenstermann, S., 2006, **Numerische Beschreibung des duktilen Versagens verhaltens von hochfesten Baustählen unter Berücksichtigung der Mikrostruktur**, PhD Thesis, RWTH-Aachen University, p.178
66. Bao, Y. and Wierzbicki, T., 2004, “On fracture locus in the equivalent strain and stress triaxiality space”, **International Journal of Plasticity**, Vol. 46 pp. 81–98.
67. Panich, S., Uthaisangsuk, V., Suranantchai, S. and Jirathearanat, S., 2014, “Investigation of anisotropic plastic deformation of advanced high strength steel”, **Journal of Materials Science and Engineering A.**, Vol. 592, pp. 207-220.
68. Toros, S., Polat, A. and Ozturk, F., 2012, “Formability and springback characterization of TRIP800 advanced high strength steel”, **Materials and Design**, Vol. 41, pp. 298-305.
69. Wang, W.R., He, C.W., Zhao, Z.H. and Wei, X.C., 2011, “The limit drawing ratio and formability prediction of advanced high strength dual-phase steels”, **Materials and Design**, Vol. 32, pp. 3320-3327.

70. Firat, M., 2012, 2012, "A finite element modeling and prediction of stamping formability of a dual-phase steel in cup drawing", **Materials and Design**, Vol. 34, pp. 32-39.
71. Chung, K.S., Ahn, K., Yoo, D., Chung, K., Seo, M. and Park, S., 2011, "Formability of TWIP (twinning induced plasticity) automotive sheets", **International Journal of Plasticity**, Vol. 27, pp. 52-81.
72. Chung, K.S., Ma, N., Park, T., Kim D., Yoo, D. and Kim, C., 2011, "A modified damage model for advanced high strength steel sheets", **International Journal of Plasticity**, Vol. 27, pp. 1485-1511.
73. Lou, Y., Lima, S., Huh, J. and Huh, H., 2011, Formability prediction of advanced high strength steel with a new ductile fracture criterion", **The 8th International Conference and Workshop on Numerical Simulation of 3D Sheet Metal Forming Process (NUMISHEET 2011)**, Seoul, Korea, pp. 498-505.
74. Lee, J.W., Kim, S.N, Ha, J.J., Lee, M.G, Kim, D.J. and Barlat, F., 2010, "Evaluation of non-quadratic anisotropic yield function characterized by uniaxial, in-plane biaxial, and plane strain experiments ", **Proceedings of the 10<sup>th</sup> KSTP fall annual meeting**, Jeju, Korea, pp. 512-520.
75. Bai, Y.L. and Wierzbicki, T., 2008, "A new model of metal plasticity and fracture with pressure and Lode-dependence", **International Journal of Plasticity**, Vol. 24, pp. 1071-1096.
76. Bassani, J.L., 1977, "Yield characterization of metals with transversely isotropic plastic properties", **International Journal of Mechanical Science**, Vol. 19, pp. 651-660.
77. Hosford, W.F., 1972, "A generalized isotropic yield criterion", **Journal of Applied Mechanics**, Vol. 39, pp. 607-609.
78. Barlat, F. and Lian, J., 1989, "Plastic behavior and stretchability of sheet metals. Part I: A yield function for orthotropic sheets under plane stress conditions", **International Journal of Plasticity**, Vol. 5, pp. 51-66.
79. Barlat, F., Aretz, H., Yoon, J.W., Karabin, M.E., Brem, J.C. and Dick, R.E., 2003, "Linear transformation-based anisotropic yield functions", **International Journal of Plasticity**, Vol. 21, pp.1009-1039.
80. Dasappa, P., Inal, K. and Mishra, R., 2012, "The effects of anisotropic yield functions and their material parameters", **International Journal of Solid and Structure**, Vol. 49, pp. 3528-3550.
81. Ahn, D.C., Yoon, J.W. and Kim, K.Y., 2009, "Modeling of anisotropic plastic behavior of ferritic stainless steel sheet", **International Journal of Mechanical Science**, Vol. 51, pp. 718-725.

82. Yoon, J.H, Cazacu, O., Yoon, J.W., and Dick, R.E., 2010, “Earing predictions for strongly textured aluminum sheets”, **International Journal of Mechanical Science**, Vol. 52, pp.1563-1578.
83. Yoon, J.W., Dick, R.E. and Barlat, F., 2008, “Analytical approach to predict anisotropic material properties from cup drawings”, **International Journal of Material Forming**, Supp.1, pp. 301-304.
84. Lee, J.W., Kim, S.N., Lee, M.G. and Barlat, F., 2011, “Evaluation of anisotropic yield functions characterized by uniaxial and biaxial experiments for formability of DP590 sheet steel”, **Proceedings of the 14<sup>th</sup> International ESAFORM Conference on Materials Forming (ESAFORM 2011)**, Northern Ireland, United of Kingdom, 27–29 April, pp. 1458-1463.
85. Kuwabara, T., Hashimoto, K., Iizukac, E. and Yoon, J.W., 2011, “Effect of anisotropic yield functions on the accuracy of hole expansion simulations”. **Journal of Material Proceeding Technology**, Vol. 211, pp. 475-481.
86. Toros, S., Polat, A. and Ozturk, F., 2012 “Formability and springback characterization of TRIP800 advanced highstrength steel”, **Material and Design**, Vol. 41, pp. 298–305.
87. Papaefthymiou, S., Prah, U., Bleck, W., Sietsma, J. and Van der Zwaag, S., 2006, “Experimental observations on the correlation between microstructure and fracture of multiphase steels”, **International Journal of Material Research**, Vol.12, 12 p.
88. Panich, S., Uthaisangsk, V., Suranuntchai, S. and Jirathearanat, S., 2012, “Anisotropic plastic behavior of TRIP780 steel sheet in hole expansion test”, **Key Engineering Materials**, Vol. 504-506, pp.89-94.
89. Ahmadi, S., Eivani, A.R. and Akbarzadeh, A., 2009, “An experimental and theoretical study on the prediction of forming limit diagrams using new BBC yield criteria and M-K analysis”, **Computational Materials Science**, Vol. 44, pp.1272-1280.
90. Uthaisangsk, V., Prah, U. and Bleck, W., 2007, “Stress based failure criterion for formability characterization of metastable steels”, **Computational Materials Science**, Vol. 39, pp.43-48.
91. Butuc, M.C., Gracio, J.J. and Da Rocha, A.B., 2006, “An experimental and theoretical analysis on the application of stress-based forming limit criterion”, **International Journal of Mechanical Science**, Vol.48, pp.414-29.
92. Arrieux, R., Bedrin, C. and Boivin, M., 1982, **Proceedings of the 12<sup>th</sup> biennial congress of the IDDRG**, Santa Margherita Ligure, Italy, pp.61-71.
93. Barlat, F. and Lian, J., 1989, “Plastic behavior and stretchability of sheet metals. Part I: A yield function for orthotropic sheets under plane stress conditions”, **International Journal of Plasticity**, Vol. 5, pp. 51–66.

94. Barlat, F., Lege, D.J. and Brem, J.C., 1991, "Asix component yield function for anisotropic materials", **International Journal of Plasticity**, Vol. 7, 693–712
95. Karafillis, A.P. and Boyce, M.C.,1993, "A general anisotropic yield criterion using bound sand a transformation weighting tensor", "**Journal of Mechanic Physic Solids**", Vol. 41, pp.1859-1886.
96. Barlat, F., Becker, R.C., Hayashida, Y., Maeda, Y., Yanagawa, M. and Chung, K., 1997, "Yielding description for solution strengthened aluminum alloys", **International Journal of Plasticity**, 1997, Vol. 13, pp. 385–401.
97. Barlat F, Maeda, Y., Chung, K., Yanagawa, M., Brem J.C., Hayashida, and Y., 1977, "Yield function development for aluminum alloy sheets", **Journal of Mechanical Physic Solids**, Vol. 45, pp. 1727–1763.
98. Xu, L., Chen, L., De Cooman, B.C., Steglich, D. and Barlat, F., 2010, "Hole expansion of advanced high strength steel sheet sample", **International Journal of Material Forming**, Vol.3, pp.247-250.
99. Lee, J.Y., Lee, J.W., Lee, M.G. and Barlat, F., 2012, "An application of homogeneous anisotropic hardening to springback prediction in pre-strained U draw/bending", **International Journal of Solid and Structure**, Vol. 49, pp. 3562-3572.
100. Uthaisangasuk, V., Prah, U., Mueunstermann, S. and Bleck, W., 2008, "Experimental and numerical failure criterion for formability prediction in sheet metal forming", **Computational Materials Science**, Vol. 43, pp. 43–50.
101. Butuc, M.C., Gracio, J.J. and Da Rocha, A.B., 2003, "A theoretical study on forming limit diagram s prediction", **International Journal of Material Processing Technology**, Vol. 142, pp. 714–724.
102. Butuc, M.C., Vincze, G.T., Gracio, J.J. and Da Rocha, A.B., 2005, "A comparative study between strain and stress based forming limit analysis by applying several phenomenological yield criteria", "**Proceedings of the 6<sup>th</sup> international conference on numerical methods in industrial processes NUMISHEET 2005**", Michigan, USA., pp. 472–477.
103. Paraiianu, L., Comsa, D.S., Nicodim, I., Ciobanu., I. and Banabic, D., 2012, "Effect of the constitutive law on the accuracy of prediction of the forming limit curves", **Key Engineering Materials**,2012;504–506:77–82.
104. Lian, J., Jia, X., Muenstermann, S. and Bleck, W., 2014, "A generalized damage model accounting for instability and ductile fracture for sheet metals", **Key Engineering Materials**, Vol. 611-612, pp. 106-110.
105. Muenstermann, S., Lian, J. and Vajragupta, N., 2014, "Modeling the cold formability of dual phase steels on different length scales", **Procedia Materials Science**. Vol. 3, pp. 1050-1055.

106. Hancock, J.W. and Brown, D.K., 1983, "On the role of strain and stress state in ductile failure", **Journal of Mechanic and Physic Solid**, Vol. 31(1), pp.1–24.
107. Keeler, S.P., 1965, "Determination of forming limits in automotive stampings", **Sheet Metal industries**, Vol. 42 (461), pp. 683–691.
108. Tasan, C.C., Hoefnagels, J.P.M., ten Horn, C.H.L.J. and Geers, M.G.D., 2009, "Experimental analysis of strain path dependent ductile damage mechanics and forming limits", **Mechanic of Materials**, Vol. 41, Vol. 1264-1276.
109. Li, Y., Luo, M., Gerlach, J. and Wierzbicki, T., 2010, "Prediction of shear-induced fracture in sheet metal forming", **Journal of Material Processing Technology**, Vol. 210, pp. 1858-1869.
110. Li, Y., and Wierzbicki, T., 2010, "Prediction of plane strain fracture of AHSS sheets with post–initiation softening", **International Journal of Solids and Structure**, Vol. 47(17), pp. 2316–2327.
111. Kim, S.N., Lee, J.W., Barlat, F. and Lee, M.G., 2013, "Formability prediction of advanced high strength steels using constitutive models characterized by uniaxial and biaxial experiments", **Journal of Materials Processing Technology**, Vol. 213, pp.1929-1942.