References

- [1] Merkle, J. G., Wallin, K., and McCabe, D. E., "Technical Basis for an ASTM Standard on Determining the Reference Temperature, T_o, for Ferritic Steels in the Transition Range," NUREG/CR-5504, Oak Ridge National Laboratory, Oak Ridge, TN, November 1998.
- [2] BS5762 "Methods for Crack Opening Displacement (COD) Testing: The British Standards Institution," 1979.
- [3] Rice, J. R., Paris, P. C., and Merkle, J. G., "Some Further Results of J-Integral Analysis," Progress in Flaw Growth and Fracture Toughness Testing, ASTM STP 536, ASTM International, West Conshohocken, PA, 1973, pp. 231–245.
- [4] ASTM Standard E 1152-95, "Standard Test Method for Determining J-R Curves," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1996.
- [5] ASTM Standard E 813-89 "Standard Test Method for J_{IC}, a Measure of Fracture Toughness," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1996.
- [6] ASTM Standard E 399-90, "Standard Test Method for Plane-Strain Fracture Toughness of Metallic Materials," Annual Book of ASTM Standards, Vol., 03.01, ASTM International, West Conshohocken, PA, 1998.
- [7] Welding Research Council, "PVRC Recommendations on Toughness Requirements for Ferritic Materials," WRC Bulletin 175, 1972.
- [8] ASTM Standard E 208-95, "Standard Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1998.
- [9] "Rules for Construction of Nuclear Power Plant Components," ASME Boiler and Pressure Vessel Code, Section III, Division 1, ASME NY, 2001.
- [10] "Rules for In-Service Inspection of Nuclear Power Plant Components," ASME Boiler and Pressure Vessel Code, Section XI, ASME NY, 2001.
- [11] "Alternative Reference Fracture Toughness for Development of P-T Limit Curves," ASME Boiler and Pressure Vessel Code, Code Case N640, Section XI, Division I, American Society of Mechanical Engineers, February 26, 1999.
- [12] Landes, J. D. and Shaffer, D. H., "Statistical Characterization of Fracture in the Transition Region," ASTM STP 700, ASTM International, West Conshohocken, PA, 1980, pp. 368–382.
- [13] Wallin, K., "Fracture Toughness Transition Curve Shape for Ferritic Structural Steels," Proceedings of the Joint FEFG/ICF International Conference on Fracture of Engineering Materials and Structures, 1991, pp. 83–88.
- [14] Irwin, G. R., "The Effect of Size Upon Fracturing," Effect of Temperature on the Brittle Behavior of Metals with Particular Reference to Low Temperatures, ASTM STP 158, ASTM International, West Conshohocken, PA, 1954, pp. 176–194.
- [15] Heerens, J., Read, D. T., Cornec, A., and Schwalbe, K. H., "Interpretation of Fracture Toughness in the Ductile to Brittle Transition Region by Fractographic Observations," ESIS/EGF9, 1991, pp. 659–678.
- [16] Landes, J. D. and McCabe, D. E., "Effect of Section Size on Transition Temperature Behavior of Structural Steel," ASTM STP 833, ASTM International, West Conshohocken, PA, 1984, pp. 378–392.
- [17] Wallin, K., "The Scatter in K_{ic} Results," Engineering Fracture Mechanics, Vol. 19, No. 6, 1984, pp. 1085–1093.

- [18] Van Der Sluys, W. A. and Miglin, M. T., "Results of MPC/JSPS Cooperative Testing Program in the Brittle-to-Ductile Transition Region," *Fracture Mechanics, ASTM STP* 1207, ASTM International, West Conshohocken, PA, 1994, pp. 308–324.
- [19] ASTM Standard E 1921-03, "Standard Test Method for Determination of Reference Temperature, T_o, for Ferritic Steels in the Transition Range," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1998.
- [20] Wallin, K., "Master Curve Analysis of Ductile to Brittle Transition Region Fracture Toughness Round Robin Data (The EURO Fracture Toughness Curve)," VTT Publications 367, Espoo Finland, 1998.
- [21] Saxena, A., "Nonlinear Fracture Mechanics for Engineers," CRC Press LLC, 1998.
- [22] Landes, J. D., "J Calculation from Front Face Displacement Measurements of a Compact Specimen," International Journal of Fracture, Vol. 16, R 183–86, 1980.
- [23] McAfee, W. J., Williams, P. T., Bass, B. R., and McCabe, D. E., "An Investigation of Shallow-Flaw Effects on the Master Curve Indexing Parameter (T_o) in RPV Material," ORNL/NRC/LTR-99/28, Oak Ridge National Laboratory, Oak Ridge, TN, April 2000.
- [24] ASTM Standard E 1820-01 "Test Method for Measurement of Fracture Toughness," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1998.
- [25] ASTM Standard E 647, "Test Method for Measurement of Fatigue Crack Growth Rates," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1998.
- [26] McCabe, D. E. and Sokolov, M. A., "Experimental Validation Work to Prove the Master Curve Concept," *Fracture, Fatigue, and Weld Residual Stress*, PVP, Vol. 393, ASME, August 1999, pp. 29–34.
- [27] Kirk, M. T. and Dodds, R. H., "J and CTOD Estimation Equations for Shallow Cracks in Single Edge Notch Bend Specimens," Nuclear Regulatory Commission, NUREG/CR 5969, UILU-ENG-91-2013, July 1993.
- [28] Burington, R. S., Handbook of Mathematical Tables and Formulas, 3rd ed., Handbook Publishers Inc., Sandusky, Ohio, 1949.
- [29] Wallin, K. "Recommendations for the Application of Fracture Toughness Data for Structural Integrity Assessments," Proceedings of the IAEA/CSNI Specialists Meeting on Fracture Mechanics Verification by Large Scale Testing, NUREG/CP 0131, Oak Ridge National Laboratory, Oak Ridge, TN, 1992.
- [30] ASTM Standard E 23-96, "Standard Test Methods for Notched Bar Impact Testing of Metallic Materials," Annual Book of ASTM Standards, Vol. 03.01, ASTM International, West Conshohocken, PA, 1998.
- [31] ASTM Standard E 812-97, "Standard Test Method for Crack Strength of Slow-Bend Pre-Cracked Charpy Specimens of High-Strength Metallic Materials," Annual Book ASTM Standards, Vol. 03.01, ASTM of International, West Conshohocken, PA, 2001.
- [32] Wallin, K., Nevassmaa, P., Laukkanen, A., and Planman, T., "Master Curve Analysis of Inhomogeneous Ferritic Steels," VTT Industrial System, 17th International Conference on Offshore Mechanics and Arctic Engineering, ASME, OMAE-98-2053.
- [33] McAfee, W. J., McCabe, D. E., and Bass, B. R., "A Linearized Least Squares Equation for Calculating T_o," ORNL/NRC/LTR-99/17, Oak Ridge National Laboratory, Oak Ridge, TN, April 2000.
- [34] Chaudi, R., "Fracture Toughness Measurements in the Transition Regime Using Small Size Specimens," Small Specimen Test Techniques, ASTM STP 1329, 1998, pp. 214–237.
- [35] Merkle, J. G., Sokolov, M. A., Nanstad, R. K., and McCabe, D. E., "Statistical Representation of Valid K_{IC} Data for Irradiated RPV Steels," ORNL/NRC/LTR-01/08, Oak Ridge National Laboratory, Oak Ridge, TN, August 2002.
- [36] "Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials," ASME Boiler and Pressure Vessel Code: An American National Standard, Code Case N-629, Section XI, Division 1, American Society of Mechanical Engineers, New York, May 7, 1999.

- [37] "Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials Other than Bolting for Class 1 Vessels," ASME Boiler and Pressure Vessel Code: An American National Standard, Code Case N-631, Section III, Division 1, American Society of Mechanical Engineers, New York, September 24, 1999.
- [38] Heerens, J. and Hellman, D., "The Determination of the EURO Fracture Toughness Dataset," submitted to *Engineering Fracture Mechanics*.
- [39] NTSB Investigation Team, "Collapse of U.S. 35 Highway Bridge, Point Pleasant, West Virginia, December 15, 1967," National Transportation Safety Board, Department of Transportation, Washington, DC 20591, October 4, 1968.
- [40] NTSB Investigation Team, "Highway Accident Report: Collapse of U.S. 35 Highway Bridge, Point Pleasant, West Virginia, December 15, 1967," Final Report, NTSB-HAR-71-1, National Transportation Safety Board, Department of Transportation, Washington, DC 20591, December 16, 1970.
- [41] Scheffey, C. F., "Pt. Pleasant Bridge Collapse," Civil Engineering, July 1971, pp. 41-45.
- [42] Kondo, T., Nakajima, H., and Nagasaki, R., "Metallographic Investigation of the Cladding Failure in the Pressure Vessel of a BWR," *Nuclear Engineering and Design*, Vol. 16, 1971, pp. 205–222.
- [43] "Vessel Head Cracking," Attachment #10, Minutes of ASME Section XI Working Group on Flaw Evaluation, Nashville, TN, May 15, 1990.
- [44] Ranganath, S., "Update on Vessel Head Cracking," Attachment #10, Minutes of ASME Section XI Working Group on Flaw Evaluation, Nashville, TN, May 15, 1990.