

ISO 23838:2022-06 (E)

Metallic materials - High strain rate torsion test at room temperature

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and designations	2
5	Principle	4
6	Apparatus	5
6.1	Apparatus components	5
6.2	Loading device	6
6.3	Bar components	6
6.4	Data acquisition and recording system	7
7	Test piece	7
7.1	Dimensions of test piece	7
7.2	Measurement of test piece dimensions	9
8	Procedure	9
8.1	Calibration of the apparatus	9
8.2	Recording the temperature of the test environment	10
8.3	Checking the bar alignment	10
8.4	Mounting test piece	10
8.5	Loading	11
8.6	Measuring and recording	11
9	Data processing	11
9.1	Strain on bars	11
9.2	Waveform processing	11
9.2.1	Determination of waveform baseline	11
9.2.2	Determination of starting points of waves	11
9.2.3	Synchronization of waves	12
9.2.4	Determination of loading duration of stress wave	12
9.3	Engineering plastic shear strain rate	12
9.4	Engineering plastic shear strain	12
9.5	Engineering plastic shear stress	12
9.6	Engineering plastic shear stress-shear strain curve	12
9.7	Average engineering plastic shear strain rate	12
9.8	Test example	13
10	Evaluation of test result	13
11	Test report	13
Annex A (informative)	Torsional split Hopkinson bar	14

Annex B (informative) Data acquisition and recording system	28
Annex C (informative) Method for determining the starting points of waves	31
Annex D (informative) Example of torsional split Hopkinson bar method	32
Bibliography	36