1.1. Guide to the review literature

The literature on shock compression of solids has grown dramatically over the past twenty years and the lack of a single comprehensive reference source to this field presents a formidable barrier to entry. Even the review literature is difficult to follow since both the range of subjects covered and the degree of detail presented in the numerous reviews are highly variable. Because the field has changed in technical content, depth, and emphasis, most material in reviews more than ten years old is dated.

Our background study of prior reviews resulted in a summary and evaluation that may prove useful to the reader. This work is presented in three tables. Table 1.1 covers broad, general reviews,

Table 1.1
General review articles

Reference	No. of pages	No. of refs.	Topics covered: Technique	Eq. of state	Viscous	Transition	Strength	Fracture	Electrical	Residual	Remarks
Rice et al. [58R1]	63	41	×	×		×	×				Classic first, most widely cited, dated
Duvall [61D2]	37	78		×		×	×				General, dated
Duvall and Fowles [63D3]	82	145	×	×	×	×	×	×		×	Comprehensive
McQueen [64M1]	86	64	×	×	×	×	×	×		×	Author's own work
Al'tshuler [65A2]	39	169	×	×		×	×	×			Soviet literature
Doran and Linde [66D3]	61	237				×			×	×	Broad, uncritical
McQueen et al. [70M1]	124	52	×	×	×	×	×	×			Authors' work, thorough
Jones [72J3]	23	32			×		×	×		×	Elementary
Murri et al. [74M3]	163	527	×	×	×	×	×	×	×	×	Contemporary, comprehensive

while table 1.2 summarizes detailed reviews of specific topical areas. Table 1.3 summarizes articles in which various investigators have reviewed the status of their own work and lists proceedings of conferences devoted to shock compression of solids. There is no single textbook covering any appreciable fraction of the subject matter of the field. Chapters of interest in published volumes include Chapter XI of Zel'dovich and Raizer [66Z1] and Chapter VIII of Cristescu [67C4]. Other tutorial treatments are: [68D5, 73D6, 73T3, 73F1, 73J1, 73O2, 76H2, 77S2]. Popularized accounts of the subject have been published by Duvall [63D2] and Linde and Crewdson [69L1].

A very complete, recently updated, tabulation of high-pressure shock-compression data is given by van Thiel et al. [77V1] and data from the Los Alamos Scientific Laboratory have been tabulated by McQueen and coworkers [69G2, 70M1]. Keeler [72K3] has derived and tabulated isothermal compression curves using shock-compression data. Hugoniot elastic limit data have been tabulated by Jones and Graham [71J4], and data on shock-induced phase transitions are included in a review of the subject by Duvall and Graham [77D6].

Table 1.2
In-depth reviews of specific topical areas*

Geophysics
Ahrens et al. [69A1] (74, 67)
Ahrens [72A1] (30, 124)
Stöffler [72S4] (63, 256)
Grady [77G2] (50, 91)

Phase transitions
Dremin and Breusov [68D4] (11, 92)
Jones and Graham [71J4] (12, 102)
Hayes [77H3] (49, 28)
Duvall and Graham [77D6] (57, 405)
Al'tshuler [78A6] (10, 46)**

Equations of state
Knopoff [63K2, 63K3] (18, 30; 16, 35)
Al'tshuler and Bakanova [69A2] (12, 45)
Royce [71R1] (16, 44)
Royce [71R2] (11, 11)
Duvall [73D5] (32, 21)

Viscoplastic behavior
Hopkins [61H1] (14, 136)
Wilkins [64W1] (53, 17)
Herrmann [69H1] (54, 101)
Herrmann and Nunziato [73H2] (158, 81)
Herrmann [76H3] (26, 54)

Composites
Bedford et al. [76B4] (54, 83)

Viscoelastic behaviour
Nunziato et al. [74N4] (108, 217)

Metallurgical effects and metalworking
Dieter [62D2] (16, 100)
Appleton [65A3] (6, 59)
Zukas [66Z2] (19, 61)
Otto and Mikesell [67O1] (44, 65)
Crossland and Williams [70C2] (21, 95)
Leslie [73L1] (76, 100)

Technique
Deal [62D1] (26, 27)
Doran [63D1] (27, 57)
Keeler [71K1] (30, 45)
Fowles [73F2] (75, 60)
Grady [77G2] (50, 91)
Graham and Asay [78G5] (36, 218)

Numerical methods
Wilkins [64W1] (53, 17)
Herrmann and Hicks [73H1] (34, 32)

Spall fracture
Davison and Stevens [71D1] (88, 68)

Optical properties
Kormer [68K5] (25, 178)

Magnetic properties
Royce [71R3] (13, 40)

Electrical conductivity
Kormer [68K5] (25, 178)
Styris and Duvall [70S3] (22, 75)
Keeler [71K2] (20, 44)
Yakushev [78Y1] (16, 65) (Technique)

Shock-induced electrical polarizations
Mineev and Ivanov [76M4] (19, 148)

Chemical physics
Adadurov et al. [73A1] (12, 55)

* Numbers in parentheses indicate number of pages and number of references cited, respectively.
** *Added in proof.* We have been unable to cite this recent review elsewhere in the text.