

Shaocheng Ji

Qin Wang

Bin Xia

**HANDBOOK
OF
SEISMIC PROPERTIES
OF
MINERALS, ROCKS AND ORES**



**POLYTECHNIC
INTERNATIONAL PRESS**

Contents

Preface	ix
Part 1. Seismic properties of rock-forming minerals	1
Fig. 1.1. P- and S-wave properties of 53 common minerals	4
Table 1.1. Bulk (K) and shear (G) moduli of 22 monomineralic aggregates	32
References for Part 1	33
Part 2. Seismic properties of rocks, ores and mineral aggregates	37
Table 2.1. Glossary of symbols and abbreviations.....	39
Table 2.2. V_p and anisotropy of samples at 25 °C and confining pressures up to 200 MPa.....	41
Table 2.3. V_p and anisotropy of samples at 25 °C and confining pressures up to 600 MPa.....	93
Table 2.4. V_p and anisotropy of samples at 25 °C and confining pressures up to 1.0 GPa.....	215
Table 2.5. V_p and anisotropy of dry samples at confining pressures up to 2.0 GPa.....	326
Table 2.6. Mean V_p of dry samples at 25 °C and confining pressures up to 3.0 GPa.....	327
Table 2.7. V_p and anisotropy of rocks at temperatures up to 600 °C.....	329
Table 2.8. V_p and anisotropy of rocks at temperatures up to 1000 °C.....	363
Table 2.9. V_s and anisotropy of samples at 25 °C and confining pressures up to 200 MPa	369
Table 2.10. V_s and anisotropy of samples at 25 °C and confining pressures up to 600 MPa	407
Table 2.11. V_s and anisotropy of samples at 25 °C and confining pressures up to 1.0 GPa	483
Table 2.12. Mean V_s of dry samples at confining pressures up to 3.0 GPa.....	523
Table 2.13. V_s and anisotropy of rocks at temperatures up to 600 °C	525
Table 2.14. V_s and anisotropy of dry rocks at temperatures up to 900 °C.....	559
Table 2.15. Mineral modal composition of samples measured.....	563
Table 2.16. Chemical compositions of samples measured.....	597
Fig. 2.1 Mean V_p versus density at 600 MPa and room temperature	613
Fig. 2.2. Mean V_s versus density at 600 MPa and room temperature.....	614
Fig. 2.3. Seismic anisotropy of rocks at 600 MPa	615
Fig. 2.4. Mean anisotropy of V_p for igneous and metamorphic rocks at 600 MPa.....	616
Fig. 2.5. Mean Poisson's ratios of 23 main lithologic categories	617
Fig. 2.6. Variations of seismic properties due to mineral phase transition	618
References for Part 2.....	619