

MATERIAL TEST **i51**

Data processing function of Shimadzu Autograph Model AG in 3-point Bending Test on Alumina Ceramics

Ceramics, while drawing keen interest for their excellent strength and heat resistivity as a material for structural use on the one hand, sometimes also tend towards fractural behaviors, due to their internal critical defects of fragile grain boundaries, inclusions, pores, coarse crystal grains, and cracks.

Such being the characteristics of ceramics, reliable analysis of data is of vital importance for correctly evaluating their mechanical properties.

The Shimadzu Universal Testing machine, Model Autograph, with its computerized control and measurement, has the capacity to expand its testing versatility and data processing functions.

A strength test of alumina ceramics was conducted using the 3-point bending method, the most common method for testing the strength of ceramics. The results are given below.

3-point bending tests on alumina ceramics

A general view of the 3-point bending test attachment is shown in **Fig.1**, while stress-strain curves and the results of the test are shown in **Fig.3**.

Test conditions

3-point bending test attachment : In conformance with JIS R 1601

Loading rate : 0.5 mm/min

Load range : 50 kgf/full scale

Deviation among 20 specimens of same lot is shown graphically in **Fig.2**. Data differences among the specimens are clearly presented for each of the following: Bending load (kgf), bending elongation (mm), bending stress (kgf/mm²) and strain (%).

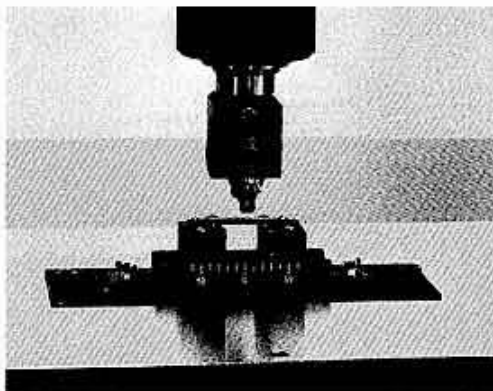


Fig.1 3-point Bending Test Attachment

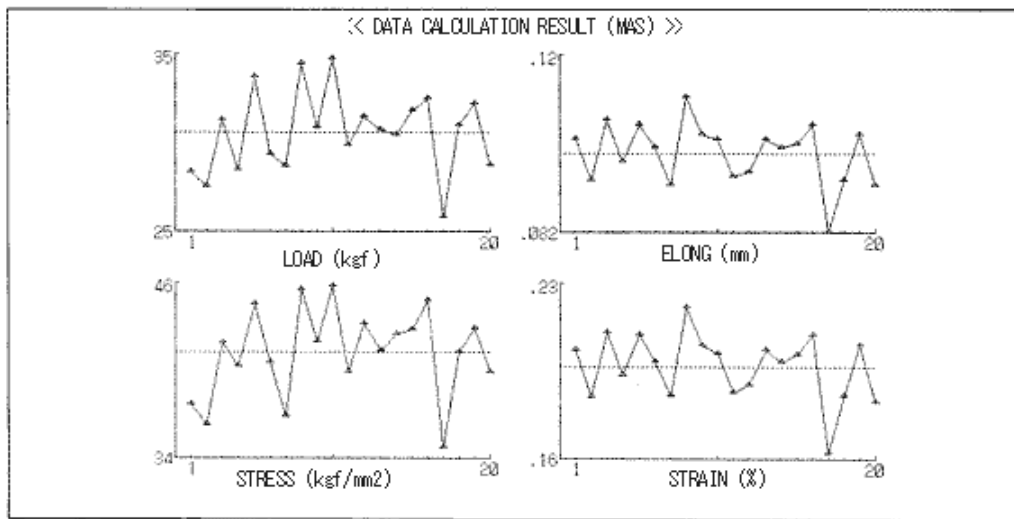
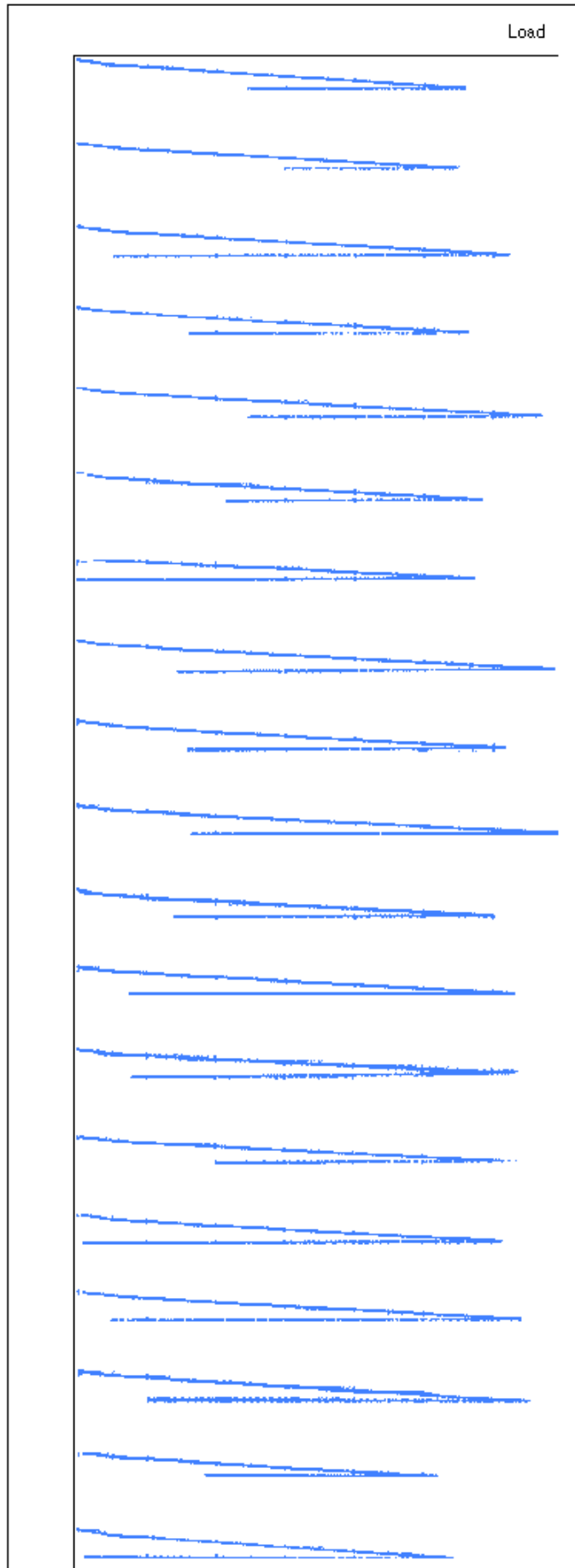


Fig.2 Graphical Presentation of Data Deviation Among 20 Specimens of Same Lot



* Please be advised that data obtained before the implementation of the current Weights and Measures Law may be presented in terms of gravimetric unit.



SHIMADZU CORPORATION International Marketing Division

3,Kanda-Nishikicho 1-chome, Chiyoda-ku,Tokyo 101-8448,
JapanPhone: 81(3)3219-5641 Fax: 81(3)3219-5710
Cable Add,;SHIMADZU TOKYO

SHIMADZU SCIENTIFIC INSTRUMENTS, INC.

7102, Riverwood Drive, Columbia, Maryland 21046, U.S.A.
Phone: 1(410)381-1227 Fax: 1(410)381-1222 Toll Free:1(800)477-1227

SHIMADZU DEUTSCHLAND GmbH

Albert-Hahn-Strasse 6-10, D-47269 Duisburg, F.R. Germany
Phone: 49(203)7687-0 Fax: 49(203)7666-25

SHIMADZU (ASIA PACIFIC) PTE LTD.

16 Science Park Drive #01-01,Singapore Science Park, Singapore 118227, Republic of Singapore
Phone: 65-778-6280 Fax: 65-779-2935

SHIMADZU SCIENTIFIC INSTRUMENTS(OCEANIA)PTY. LTD.

Rydalmere Business Park, Unit T, 10-16, South Street Rydalmere, N.S.W. 2116, Australia
Phone: 61(2)9684-4200 Fax: 61(2)9684-4055

SHIMADZU DO BRASIL COMERCIO LTDA.

Rua Cenzo Sbrighi, 25 CEP 05036-010 Agua Branca, Sao Paulo, BRAZIL
Phone: 55(11)3611-1688 Fax: 55(11)3611-2209

SHIMADZU (HONG KONG) LIMITED.

Suite 1028, Ocean Centre, Harbour City, Tsim Sha tsui, Kowloon, HONG KONG
Phone: 852(2375)4979 Fax: 852(2199)7438

Overseas Office

Istanbul,Beijing,Shanghai,Guangzhou,Shenyang,Chengdu,Moscow