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TEST REPORT

American Tackle Company, Inc.
8 Fourth Street
Harwick, MA 02645

ET# 03A023
Date Received: 5/30/03
Date Completed: 7/03/03

Sample Description: Four (4) different types of fishing rod guides identified as:

BLVVG25 — FUJI
BSVHG25
HZSF25
HLGSF25

PAC BAY

Work Requested: Test compression strength of guides, measure Vickers hardness and examine surface/microstructure of ceramic rings.

COMPRESSION TESTING:

Samples from each of the four rod guide types were subjected to compression testing. The guides (with ceramic ring inserts) were compression loaded while held up-right on their sides in a fixture. The guides were held in such a manner that they were free to deform. Failure of the ceramic ring inserts during testing was accompanied by a dramatic reduction in compression load and thus the tests were terminated at that point. The maximum load obtained with each sample is listed below and the corresponding load/deflection curves are given in Figures 1 through 4.

<u>SAMPLE ID</u>	<u>MAXIMUM LOAD</u>
BLVVG25	228 lbs
BSVHG25	202 lbs
HZSF25	303 lbs
HLGSF25	257 lbs

FRAME THICKNESS MEASUREMENT:

The frame thickness was measured at a common point on un-deformed (as-received) samples from each of the four sample types. The frame thickness measurements obtained are given below.

<u>SAMPLE ID</u>	<u>FRAME THICKNESS</u>
BLVVG25	0.047" (1.2 mm)
BSVHG25	0.048" (1.2 mm)
HZSF25	0.046" (1.2 mm)
HLGSF25	0.048" (1.2 mm)


Michael Benton, Technical Director

*The test results presented in this report relate only to the samples evaluated.
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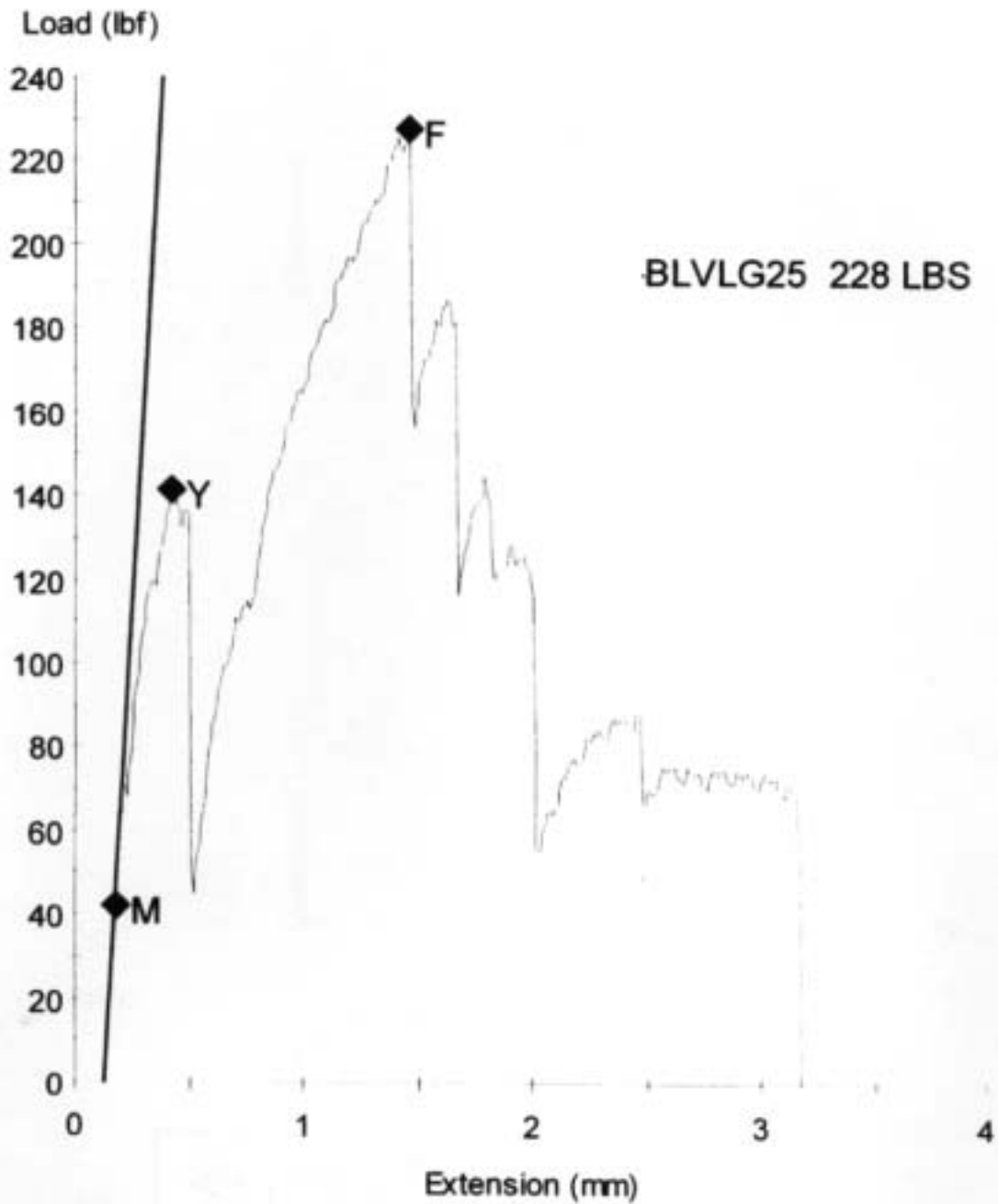


Figure 1: Load deflection curve for sample BLVVG25.

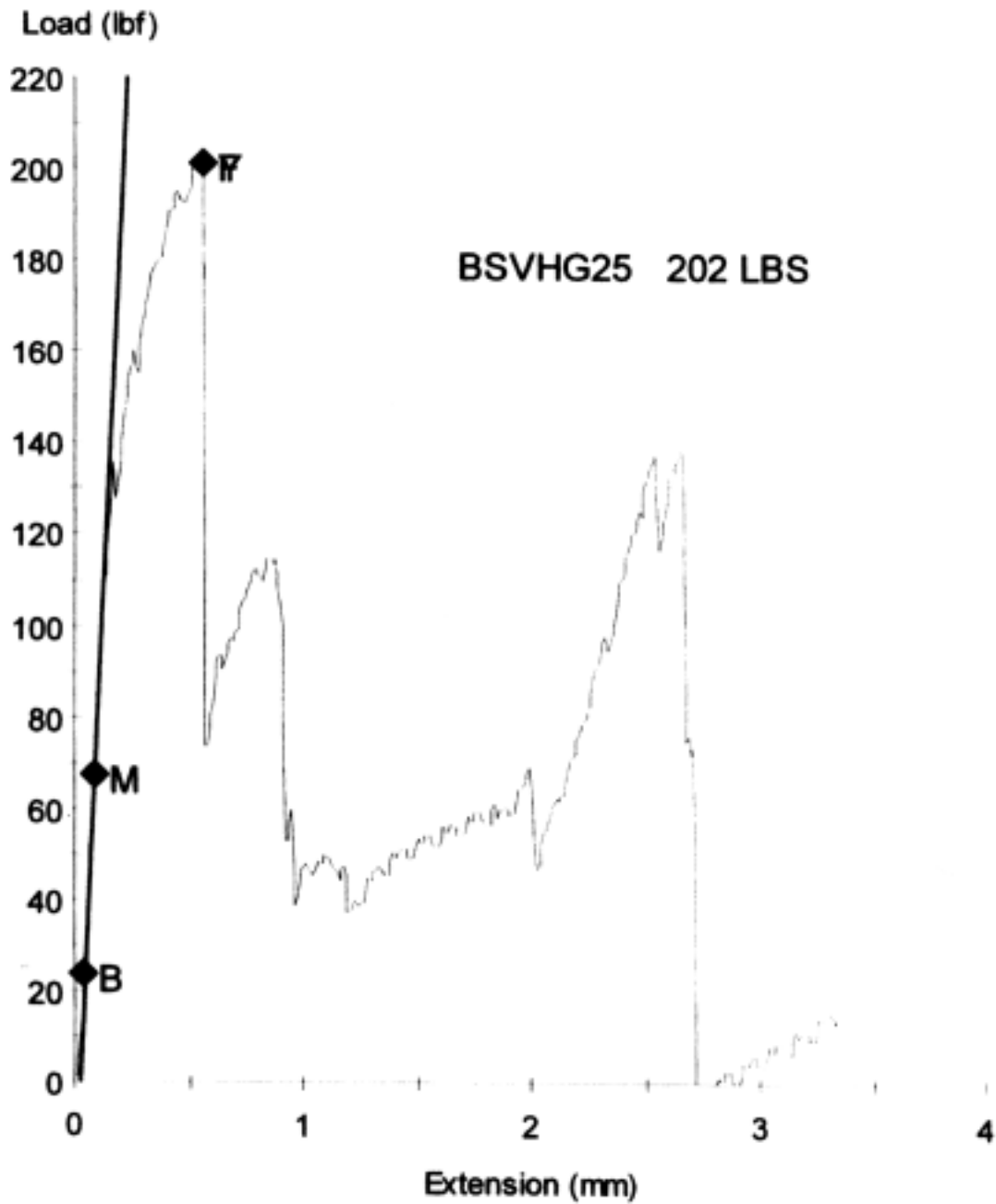


Figure 2: Load deflection curve for sample BSVHG25.

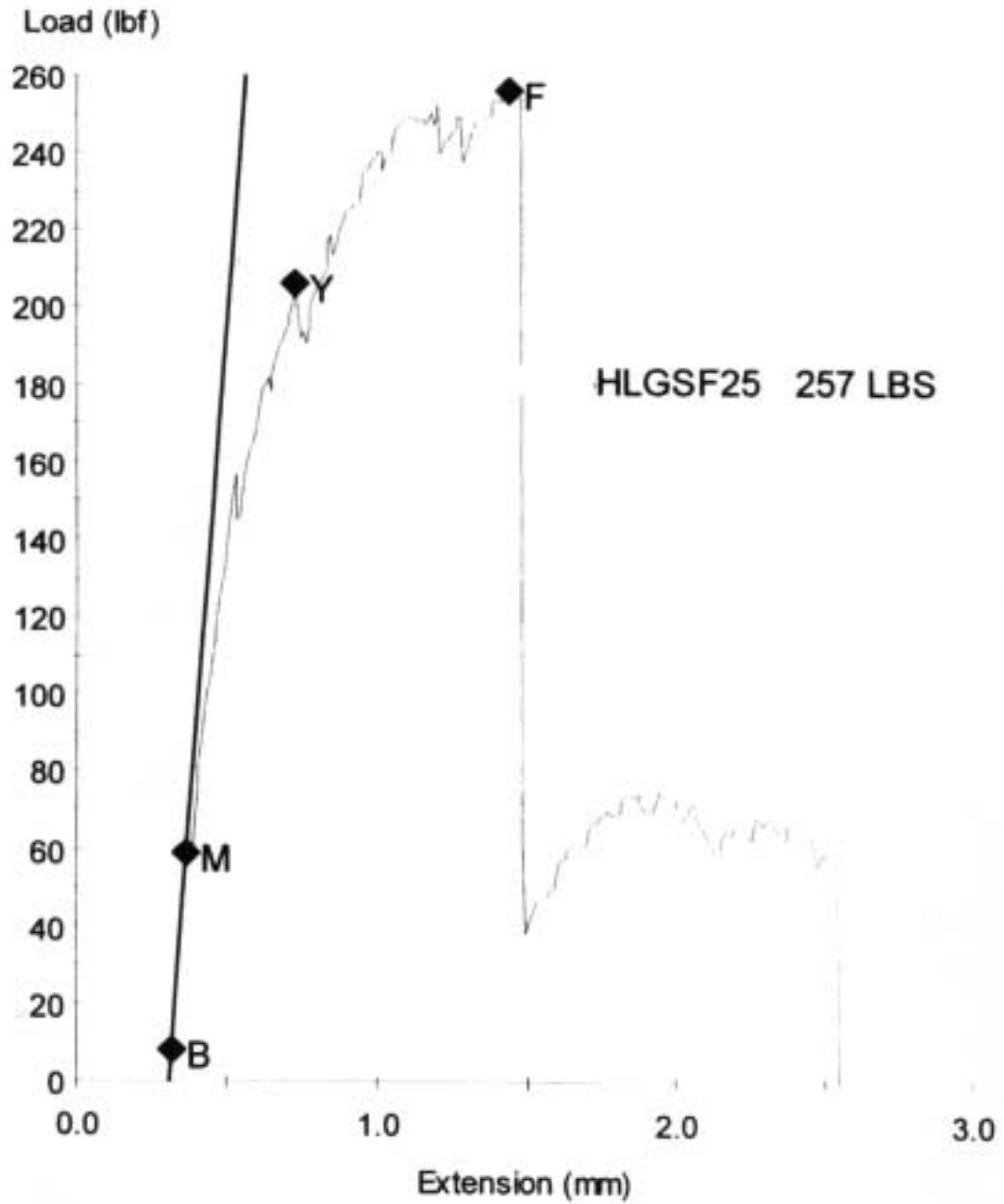


Figure 4: Load deflection curve for sample HLGSF25.

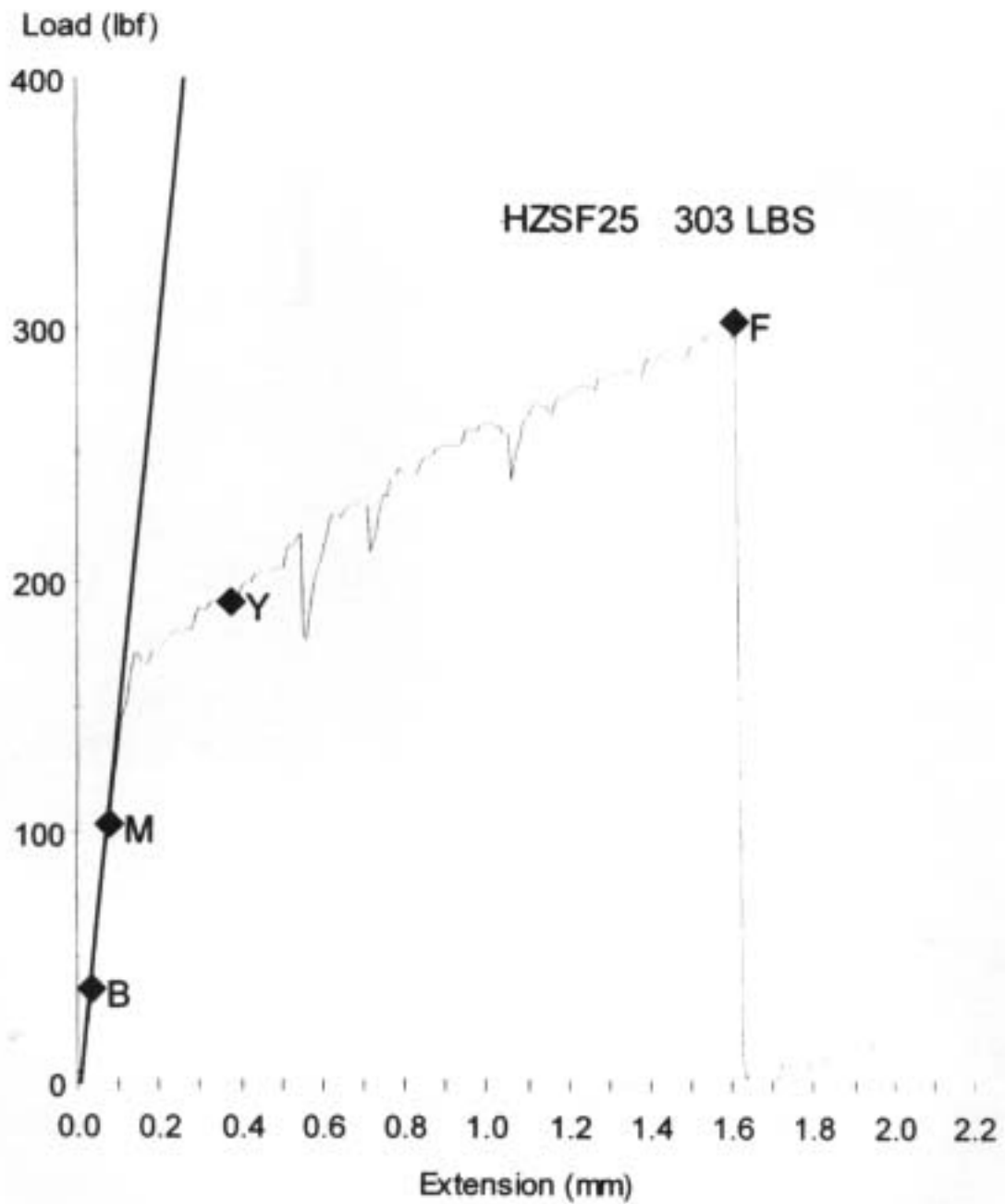


Figure 3: Load deflection curve for sample HZSF25.

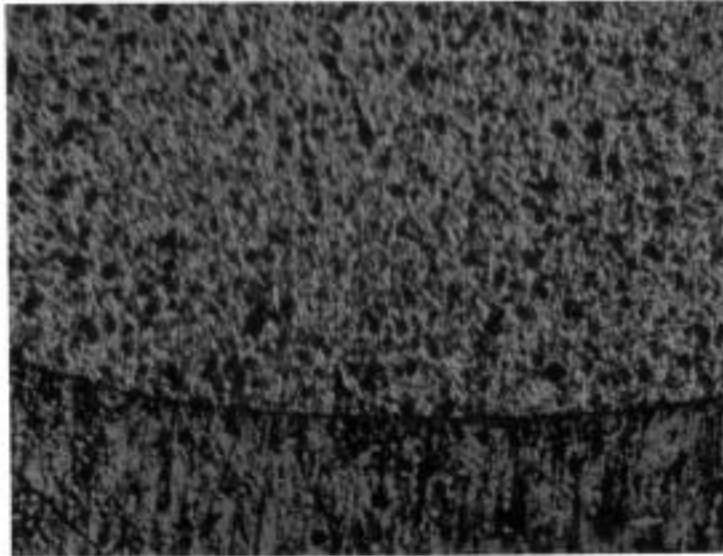


Figure 5: Photomicrograph of the surface profile in the line contact area of the ceramic ring on sample BLVVG25 – ceramic material at top (100X, unetched).

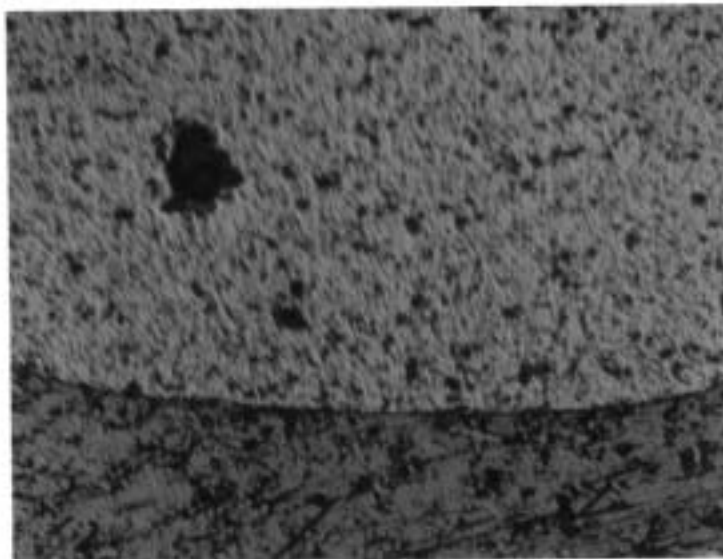


Figure 6: Photomicrograph of the surface profile in the line contact area of the ceramic ring on sample BSVHG25 – ceramic material at top (100X, unetched).

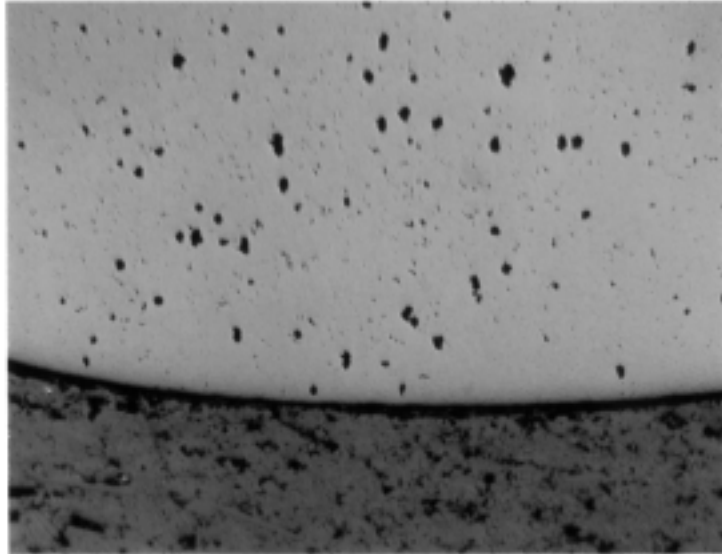


Figure 7: Photomicrograph of the surface profile in the line contact area of the ceramic ring on sample HZSF25 – ceramic material at top (100X, unetched).

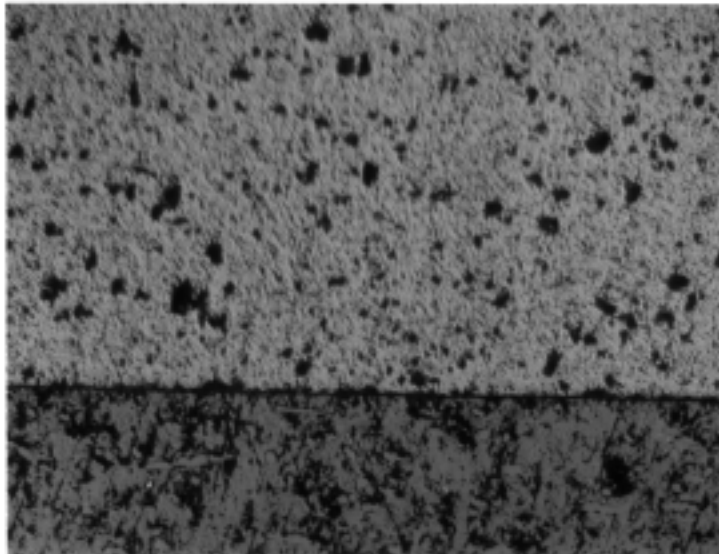


Figure 8: Photomicrograph of the surface profile in the line contact area of the ceramic ring on sample HLGSF25– ceramic material at top (100X, unetched).