VOLUME 4

Deutsche Gesellschaft für Metallkunde e.V.

W. Bunk

U. Wickert

Technische Universität Hamburg-Harburg, FRG

Edited by

September 10-14, 1984

Congress-Center, Munich, FRG

Fifth International Conference on Titanium

Proceedings of the

SCIENCE AND TECHNOLOGY

TITANIUM
<table>
<thead>
<tr>
<th>Material</th>
<th>Bending Fatigue Behavior of Glass by Short Period Durings (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The material's bending fatigue behavior is studied under various conditions to understand its performance. The table and diagram illustrate the relationship between applied stress and fatigue life.

**References**


**Fig. 5**

The diagram shows the distribution of fracture paths under different bending stresses. The surface of the glass is shown to exhibit complex fracture patterns, indicating the material's sensitivity to stress.

**Fig. 6**

The material structure is illustrated to demonstrate the heterogeneity and microcrack formation during bending fatigue. The microstructure analysis highlights the importance of material properties under bending stress conditions.
THE PRETENDING FATIGUE BEHAVIOUR OF THE TITANIUM ALLOY Ti-6AI-4V

Introduction

Fatigue is a phenomenon that can be detected in many practical applications, such as in structural components and in machine elements. The behavior of materials under cyclic loading is crucial for the design of components that are subjected to repeated loads. In this context, the investigation of the fatigue behavior of the titanium alloy Ti-6Al-4V is essential. The research conducted by F. J. Heinrich and A. H. Müller has contributed significantly to our understanding of the fatigue properties of this material.

References


Table 1: The chemical composition of the test material.

<table>
<thead>
<tr>
<th>Element</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ti</td>
<td>64.25%</td>
</tr>
<tr>
<td>Al</td>
<td>4.75%</td>
</tr>
<tr>
<td>O</td>
<td>4.50%</td>
</tr>
<tr>
<td>V</td>
<td>4.00%</td>
</tr>
<tr>
<td>Fe</td>
<td>0.02%</td>
</tr>
<tr>
<td>N</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

The high purity of the titanium alloy Ti-6Al-4V is evident from the chemical composition, which is critical for its mechanical properties. The low content of impurities such as iron and nitrogen ensures a high degree of resistance to fatigue.

Fig. 1: Turbine blade with damage at the blade root.

The fatigue behavior of the materials described here is essential for understanding the failure mechanisms and optimizing the design of components. By improving the fatigue life of materials, the reliability and safety of many engineering applications can be significantly enhanced.