

NASA TECH BRIEF



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Survey Made of Refractory Metals

The use of refractory materials for structural applications has required the development of unique processing and evaluation facilities incorporating high temperatures and protective or vacuum environments. Through a coordinated government-industry program, high quality sheet alloys of high strength are now available commercially and current laboratory research demonstrates that further improvements in properties will be realized in the future.

A survey has been made reviewing this progress and describing the fundamental characteristics of the most useful of the refractory metals, tungsten, molybdenum, tantalum, and columbium (eliminating those too scarce to be of practical use). These refractory metals' structural applications are reviewed and the special problems they present in manufacture, evaluation, and application are discussed. The unique facilities required for their processing and evaluation, a summary of accomplishments in achieving commercial products, and the present status of the most advanced refractory materials in research and development are presented.

Notes:

1. Complete details of this survey are contained in: *A Decade of Progress in Refractory Metals*, by G. Mervin Ault, 1965, Gillett Memorial Lecture, American Society for Testing and Materials. Copies of this survey are available from:

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2. Inquiries concerning this survey may be directed to:

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Reference: B68-10032

Patent status:

No patent action is contemplated by NASA.

Source: G. Mervin Ault
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