

## Introduction

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A plan for an informal workshop discussion session was organized during 1968 by The Joint Committee on Effect of Temperature on the Properties of Metals for the purpose of reviewing and clarifying differences in creep-rupture properties between the "regular" and the "H" grades of Types 304, 316, 321, and 347 austenitic stainless steels. The plan included consideration of the influence of carbon and nitrogen contents on the creep-rupture strengths plus preparation of a summary of short time elevated temperature properties.

As the plan developed, it became apparent that the paramount interest focussed on the nitrogen-bearing grades. The outcome was a jointly sponsored session held at the ASTM Annual Meeting at Atlantic City, N.J., June 1969, which presented a series of papers concerned with several aspects of the properties and uses of nitrogen-strengthened austenitic steels. Cosponsorship was contributed by The Metal Properties Council, The American Society for Testing and Materials and The American Society for Mechanical Engineers.

The session at the ASTM meeting was advertized as being restricted to informal verbal reporting and discussion of current data. At the completion of the session, however, it was apparent to all concerned that the presentations contained a sufficient wealth of excellent high temperature information to warrant publication. The Metal Properties Council, as a further means of fulfilling its function of service to the metals industry, undertook the task of inducing the speakers to prepare and submit for review written versions of their papers. This has been accomplished and the material is presented herewith.

The importance of the data contained in this Special Technical Publication lies in the needs of the design engineer which extend beyond the aids supplied by industry standards and codes. The basic function of the designer is to exercise an informed judgment in the selection of appropriate materials for safe design, which is achieved only through a thorough understanding of the behavior of metals under stress at elevated temperatures. The papers of this session offer a means of advancing this necessary understanding to an important degree now that they have been made available

by publication through the efforts of The Metal Properties Council and the American Society for Testing and Materials.

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*E. J. Rozic, Jr.*

The Babcock and Wilcox Co.  
Beaver Falls, Pa.