AFML-TDR-64-280
VOLUME I (REVISED 1970)

AD 713619

CRYOGENIC MATERIALS DATA HANDBOOK

VOLUME I

SECTIONS A, B, C

TECHNICAL DOCUMENTARY REPORT

AFML-TDR-64-280
(REVISED 1970)

JULY 1970

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AIR FORCE MATERIALS LABORATORY
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

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Technical Report ML-TDR-64-280, Revised 1970, supersedes ML-TDR-64-280, Aug 1964 AD-609-562 and its Supplements 1, 2, 3, and 4 - having AD Numbers AD-611-165, AD-618-065, AD-633-388, AD-679-087, respectively.

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AFML-TDR-64-280
VOLUME I (REVISED 1970)

CRYOGENIC MATERIALS DATA HANDBOOK

VOLUME I

SECTIONS A, B, C

F. R. SCHWARTZBERG, et al
MARTIN MARIETTA CORPORATION

COMPILER
M. KNIGHT
AIR FORCE MATERIALS LABORATORY

FOREWORD

This report is a compilation of several reports that were prepared by the Martin Marietta Corporation, Denver Division, Denver, Colorado, under several Air Force Contracts between 1964 and 1968. These contracts were initiated under Project 7381 "Materials Application", Task 738106 Engineering and Design Data". The contracts were administered under the Air Force Materials Laboratory, with Mr. Marvin Knight acting as Project Engineer. Mr. Knight also performed the compilation that resulted in this report.

Fred R. Schwartzberg was the Martin Marietta Program Manager, and Richard G. Herzog was Project Engineer. Other Martin Marietta personnel that assisted during the last contract were Samuel H. Osgood, responsible for data acquisition and presentation, and Mrs. Carol Bryant assisted with data acquisition.

This manuscript was released by Mr. Knight, July 1968 for publication as an RTD Technical Report.

This technical report has been reviewed and is approved.

A. Olevitch

A. OLEVITCH
Chief, Materials Engineering Branch
Materials Support Division
Air Force Materials Laboratory

ABSTRACT

The "Cryogenic Materials Data Handbook" contains mechanical and physical property data and information on 88 metallic and non-metallic materials, organized in eleven section The Handbook also contains Material, Property and Cumulative indices and a complete list of references.

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PROPERTY INDEX

a. Yield Strength (0.2% offset)
b. Tensile Strength
c. Elongation
d. Reduction of Area
e. Notch Tensile Strength
f. Fracture Toughness
g. Weld Tensile Strength
h. Stress-Strain Diagram
i. Modulus of Elasticity
j. Impact Strength
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l. Modulus of Rigidity
m. Compressive Strength
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o. Fatigue Strength
p. Shear Strength
q. Shear Modulus
r. Flexural Strength
s. Flexural Modulus
t. Thermal Expansion
u. Poisson's Ratio
v. Thermal Conductivity
w. Resistivity
x. Specific Heat

CUMULATIVE INDEX

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Volume I																								
A.1	1	1	1	2				1	1	1	1				1					1		5	4	
A.2	5	5	5	5	5	4	1	2	1	1					4	1				1		5		
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A.4	5	5	5	5	5			1	1	1	1				1					1		5	4	
A.5	5	5	5	5	5	4	5	2	1	1					4	2				1		5		
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A.10	4	4	4		4		4															5		
A.11	3	3	3	3	3		3															5		
A.12	5	5	5	5	5		5	2	1	1					4					1				
A.13	5	5	5	5	5		1	2	1	1	1				1	2				1				
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The letters and numbers in the left column denote the general group and specific material as listed in the index. The letters of the top row denote a property, and the numbers within the squares refer to the last progress report in which data represented by the coordinates was issued as follows: 1 - ML-TDR-64-280 (Basic Handbook); 2 = Supplement No. 1; 3 = Supplement No. 2; 4 = Supplement No. 3; and 5 = Supplement No. 4. (6-68)

INTRODUCTION

The revision of the Cryogenic Materials Data Handbook was prepared under Air Force Contract AF33(657)-9161. The original handbook of mechanical and physical properties of metallic and nonmetallic materials at cryogenic temperatures was prepared under the sponsorship of the Air Force Ballistic Missile Division by personnel of the Cryogenic Engineering Laboratories, National Bureau of Standards, Boulder, Colorado. During the performance of this work, the responsibility of the Handbook was transferred to the Aeronautical Systems Division. The eleventh quarterly report, dated 15 February 1962, was the final addition to the Handbook prepared by the National Bureau of Standards.

The contract for continuing the generation, assimilation, and presentation of data for the Handbook was awarded to the Martin Marietta Corporation, Denver Division, in June 1962. The twelfth, thirteenth, and fourteenth progress reports were issued by Martin Marietta on a semiannual basis.

The revised edition of the handbook, which supersedes all prior reports because of changes in format, materials, properties, and coding was issued in August 1964.

The materials and properties selected for the revised Handbook are listed in the appropriate index. In general, these materials were selected because of their current interest. Many of the included materials are being used in cryogenic aerospace systems; others are being considered for such applications. In several cases, materials not suitable for most cryogenic applications are also included in the Handbook. These data, which are normally more limited in nature, are presented for informational purposes. A review of the properties of these materials will illustrate why they are not considered suitable for cryogenic service.

NOTE: DATA CONTAINED IN THIS HANDBOOK REPRESENT TYPICAL PROPERTIES, NOT DESIGN DATA.

Manuscript for the revised handbook released by the authors, July 1964 for publication as an RTD Technical Documentary Report.

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The authors have carefully screened all material to select and use only the most reliable data available. In presenting property information, the data have been plotted as accurately as possible. Documentation of condition, form, size, direction, specimen, and similar variables has been included wherever possible. The numbers in parentheses identify the data source reference. Wherever possible, references that are readily available have been used. In many cases, data are contained in both government reports and technical journals and publications. Various sources for specific data are identified in most cases to simplify the user's task of locating original data. Smooth curves are drawn for most materials. However, when insufficient temperature points are available, the data are presented as (1) solid lines in the region of experimental data connected by a dashed line, or (2) a straight line with small open circles at the actual test temperatures.

Unless otherwise noted, properties are the commonly accepted standards. For example, yield strength is considered to be the 0.2 percent offset stress. The gage length for elongation measurement is considered to be 2 inches for sheet material or four times the reduced section diameter for bar stock. Where test conditions are not standardized, details of testing are given.

Elastic stress concentration factor $\left(K_t\right)$ can be calculated by several techniques. The three princiapl techniques are as follows:

1) $\sqrt{a/r}$

   where: a = one-half oi the distance between the notches,

   r = radius at the root of the notch;

2) Peterson's method;*

3) Neuber's concept.†

*R. E. Peterson: Stress Concentration Design Factors. John Wiley and Sons, 1953.

†H. Neuber: Theory of Notch Stresses. (English Translation), J. W. Edwards, Ann Arbor, 1946.

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Peterson's technique has been selected for use in the Handbook and all notch data presently have been converted, using Peterson's relationship.

For the convenience of the user, three indices, a Material Index, a Property Index, and a Cumulative Index, are included in the Handbook.

In Supplement No. 3 fracture toughness data for a variety of metals down to -423°F were first included in the Handbook. Since the concept of fracture mechanics is relatively new and not widely understood, a few comments regarding the subject are in order. However, a thorough treatment of fracture mechanics is beyond the scope of this introductory section. There are a number of books dealing with the subject of fracture. The handbook user is particularly referred to Fracture Toughness Testing and Its Applications, ASTM STP 381 and ASME Metals Engineering Design Handbook, 2nd Edition, for further information regarding fracture mechanics.

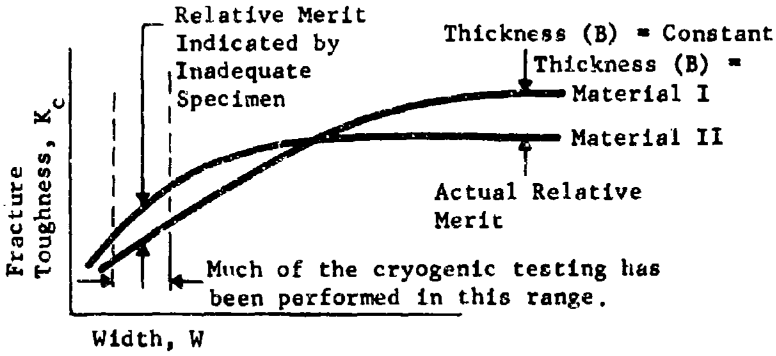
The fracture mechanics concept is a stress analysis approach to the problem of brittle fracture that involves the amount of strain energy available and released in initiating and maintaining fast fracture.

It is well known that fracture strength follows an inverse square root law, that is $\sigma = f\left(\frac{1}{\sqrt{a}}\right)$, where σ = stress and a = crack length. The theory of linear elastic fracture mechanics is an extension of Griffith's concept of crack propagation in brittle solids which states that a defect will propagate rapidly if the elastically stored energy of the system equals or exceeds the energy required to form the additional crack surface. The extension of this concept to account for plastic deformation in the formation of two new surfaces was achieved by Orowan and Irwin and are the basis for our current comprehension of fracture mechanics.

During the last half-dozen years, appreciable attention has been focused on sharp crack fracture mechanics. An ASTM Special Committee on Fracture Testing of High Strength Materials was formed in 1959 to evaluate techniques for determining the strength of metals in the presence of sharp defects. As a result of this effort, a number of recommendations for specimen designs, boundary conditions, and testing techniques have been established.

The bulk of the fracture toughness data generated to date deals with room temperature behavior of high-strength materials, such as heat-treated alloy steels and titanium alloys. The quantity of cryogenic data is quite limited. A considerable portion of the data was generated before the techniques for valid testing were established and are of questionable validity.

The problem is particularly acute for the materials of interest for cryogenic service. These are generally the medium strength, tough materials that exhibit a face-centered cubic structure. They are commonly used in thin sections. This combination of high toughness and small section size makes valid testing particularly difficult. The problem in plane stress fracture toughness testing of these thin gage materials has generally been that test specimens have been so narrow that the net fracture stress has been close to or above the yield strength. This gives a value that can be significantly lower than the value under semi-infinite plate width conditions. The major potential problem caused by using such data is that an erroneous relative ranking of materials can occ . The following schematic illustrates this problem.



Plane stress fracture toughness data were obtained by investigations under References 1, 46, and 179. However, these data were primarily for thin center notch specimens where the specimen width was generally 3 to 4 inches. As a result, the net fracture strength to yeild strength ratio was sufficiently high to permit excessive plastic deformation or the specimen was of insufficient width to obtain a valid plane stress toughness $\left(K_c\right)$ level. The data obtained in References 46 and 179 are for machined notches rather than fatigue extended notches. The effect of a notch less sharp

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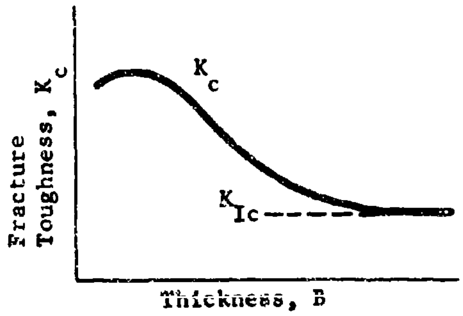
than a fatigue extended crack in absorbing energy during slow crack extension and the resultant effect on toughness are not clearly understood.

As a result of these circumstances, these data must be considered as "apparent fracture toughness." These data are therefore not included in the handbook. A review of the data shows that in many cases the net fracture/yield strength ratio exceeded a value of 0.8. For some materials, the 0.8 level was exceeded for all temperatures. Although this value of 0.8 is somewhat arbitrarily selected, it is a generally accepted upper boundary for the applicability of through-cracked specimens. Some of the data obtained under References 46 and 179 shows the effect of width on fracture toughness at 70 and -320°F. Evaluation of specimens up to 18 inches in width clearly shows that the 4-in. test specimens used for the bulk of the program were too narrow.

The amount of plane stress data that meet the requirements of low fracture strength, freedom from width effects, and contain fatigue extended cracks is reduced markedly with elimination of the data from References 46 and 179. Data for two alloys from Reference 177 meet the above criteria and are presented in the Handbook.

As thickness increases the fracture (ductile) mode for notched specimens changes from a predominant y slant fracture to a square (brittle) fracture. The effects of increasing thickness are to reduce the critical fracture toughness to a lower limiting value, which is known as the plane strain fracture toughness K_{Ic}. The following schematic illustrates the concept of the effect of thickness on fracture toughness.



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Notched round bar data for aluminum alloys have been obtained from several sources. In some cases, the notched cross sectional area (similar to the effect of width for sheet samples) was not sufficient to give a low net fracture strength/yield strength ratios. Under these conditions a conservative value of toughness is obtained. Where such data are plotted, an arrow pointing upward is used to denote "lower bound value."

It is common to also present fracture toughness data in terms of the energy-release rate $\left(G_c \text{ or } G_{Ic}\right)$. Graphs have been plotted in terms of K_c or K_{Ic} only because K and G cannot be conveniently plotted on the same graph when temperature is a variable. The reason for this is that the relationship between K and G involves the modulus of elasticity (E), which is temperature dependent. If it is desired to use the plotted data in terms of energy release rate (G), the following relationships can be used:

$$G_c = \frac{K_c^2}{E}$$

$$G_{Ic} = \frac{\left(1 - \mu^2\right) K_{Ic}^2}{E}$$

where

μ = Poisson's ratio;

E = modulus of elasticity.

A review of fracture toughness testing methods is contained in the TESTING METHODS section, Part V.

Also, in Supplement No. 3, a new section entitled, TYPICAL PROPERTIES, was introduced. This section includes graphical presentations of ultimate tensile strength, yield strength, and elongation for 23 material and temper combinations. The materials selected for this section are those of current interest for which sufficient data has been generated to permit typical curves to be constructed. In addition to the property versus temperature presentations for each material, handy bar graphs in the form of both strength and strength/density are presented. The bar graphs summarize the behavior of key materials on a single sheet.

In addition to the usual updating of data on materials already included in the Handbook, this supplement (No. 4) introduces four relatively new materials, namely: the aluminum alloys X2021 and X7007; an austenitic stainless steel designated as 21-6-9; and the titanium alloy Ti6Al-6V-2Sn.

The MATERIALS GUIDE Section is being supplemented by the addition of subsection entitled SOURCES OF CRYOGENIC MATERIALS PROPERTY DATA. This subsection identifies some sources for cryogenic data that are not included in this Handbook. There are brief descriptions of appropriate Data Centers, their locations, normal activities, and the services available. Pertinent cryogenic data reference works are also described in this subsection.

Section I, MISCELLANEOUS NONMETALLICS, is also included in this supplement. The use of nonmetallic materials as seals and gaskets in cryogenic systems is disucssed in this section. The discussion is supplemented by a bibliography.

With the release of this supplement (No. 4) the Handbook is divided into two volumes. Volume I will contain Sections A thru C; Volume II, Sections D thru I plus REFERENCES, TESTING BIBLIOGRAPHY, AND MATERIALS GUIDE.

Supplement No. 4 is the final progress report under Air Force Contract F33615-67C-1794. No further effort on maintaining this document will be performed by the Martin Marietta Corporation after the issue date (8-68). A program for maintenance of the Handbook will probably be initiated in the future and for it to be successful the Air Force must maintain a complete file of cryogenic data. Users of the Handbook are urged to send data to the established Data Centers. Refer to Section MG for the addresses and resumes of the activities of the various Data Centers.

NOTE: DATA CONTAINED IN THIS HANDBOOK REPRESENT TYPICAL PROPERTIES, NOT DESIGN DATA.

TYPICAL PROPERTIES

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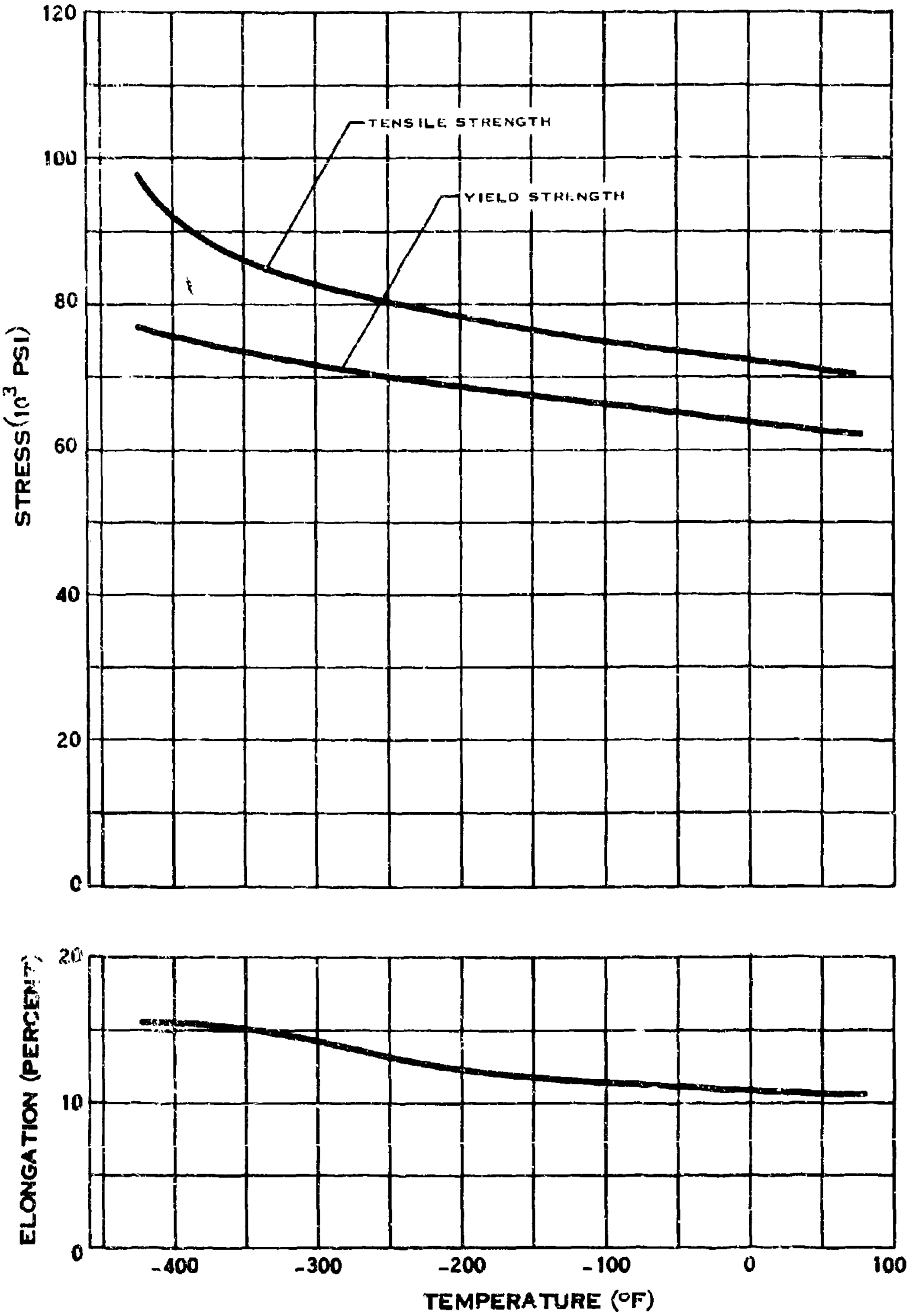
A.2



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TYPICAL PROPERTIES OF 2014-T6 ALUMINUM

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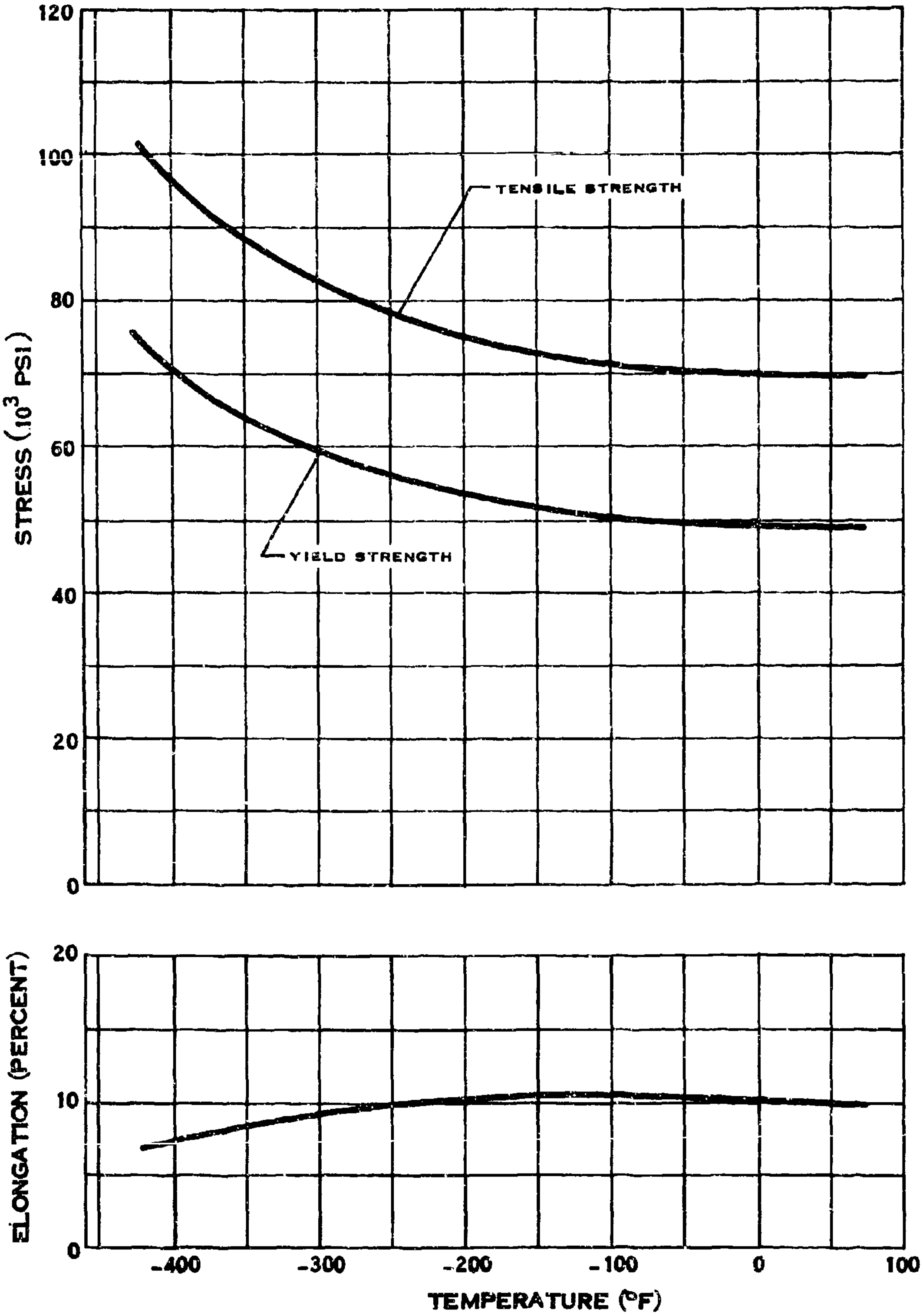
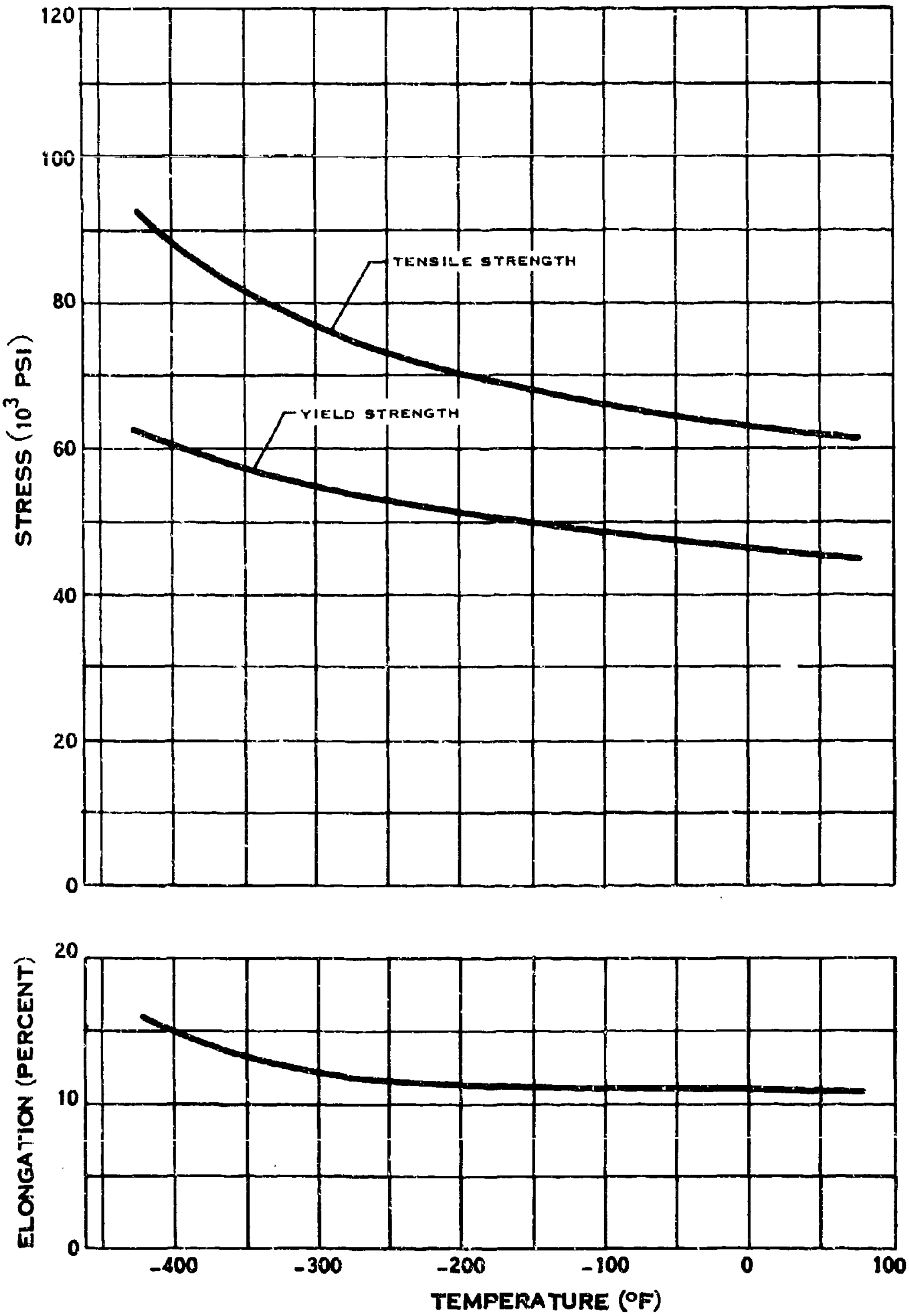
A.4



(3-64)

TYPICAL PROPERTIES OF 2024-T4 ALUMINUM

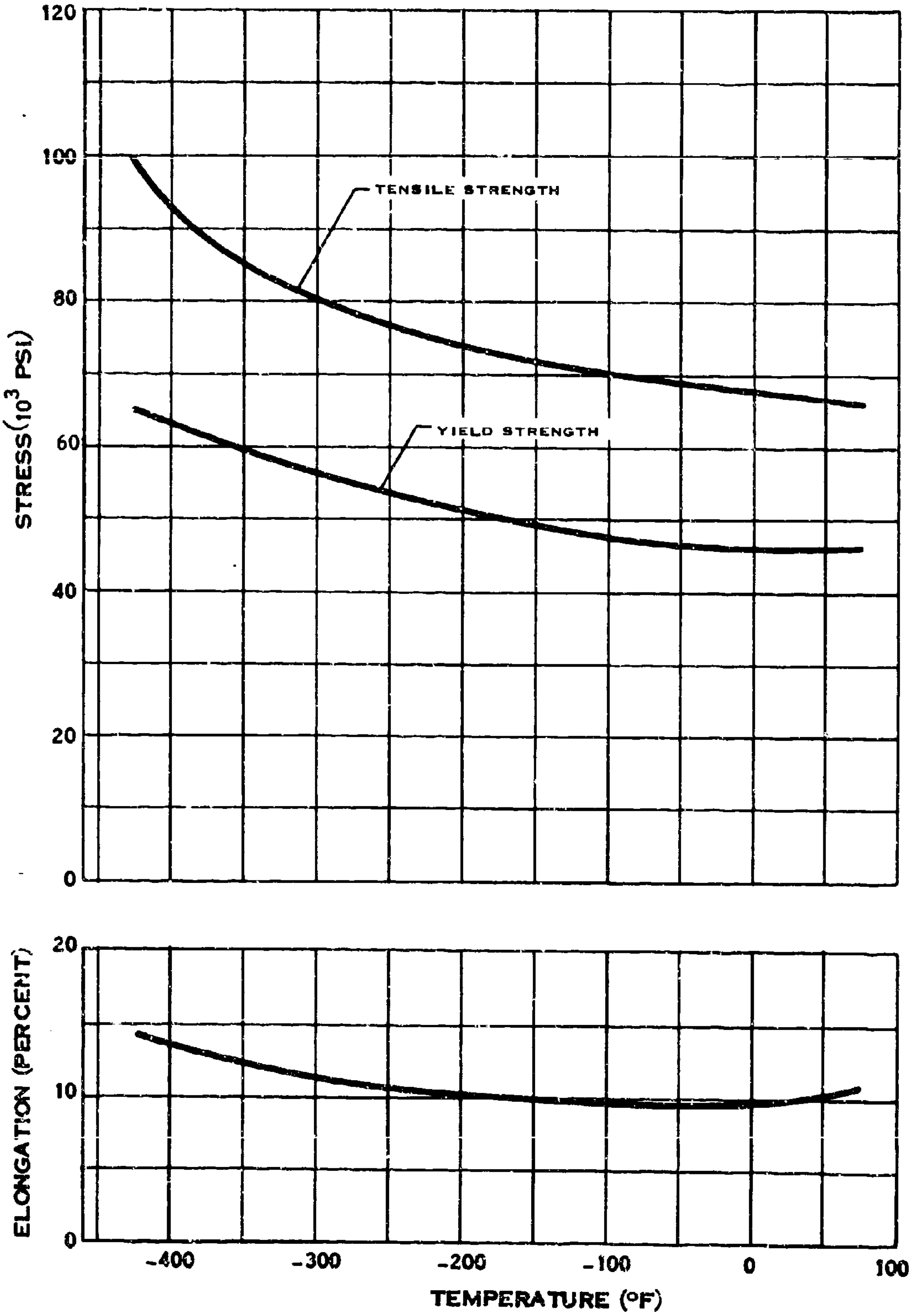
A.5



(1-66)

TYPICAL PROPERTIES OF 2219-T6 ALUMINUM

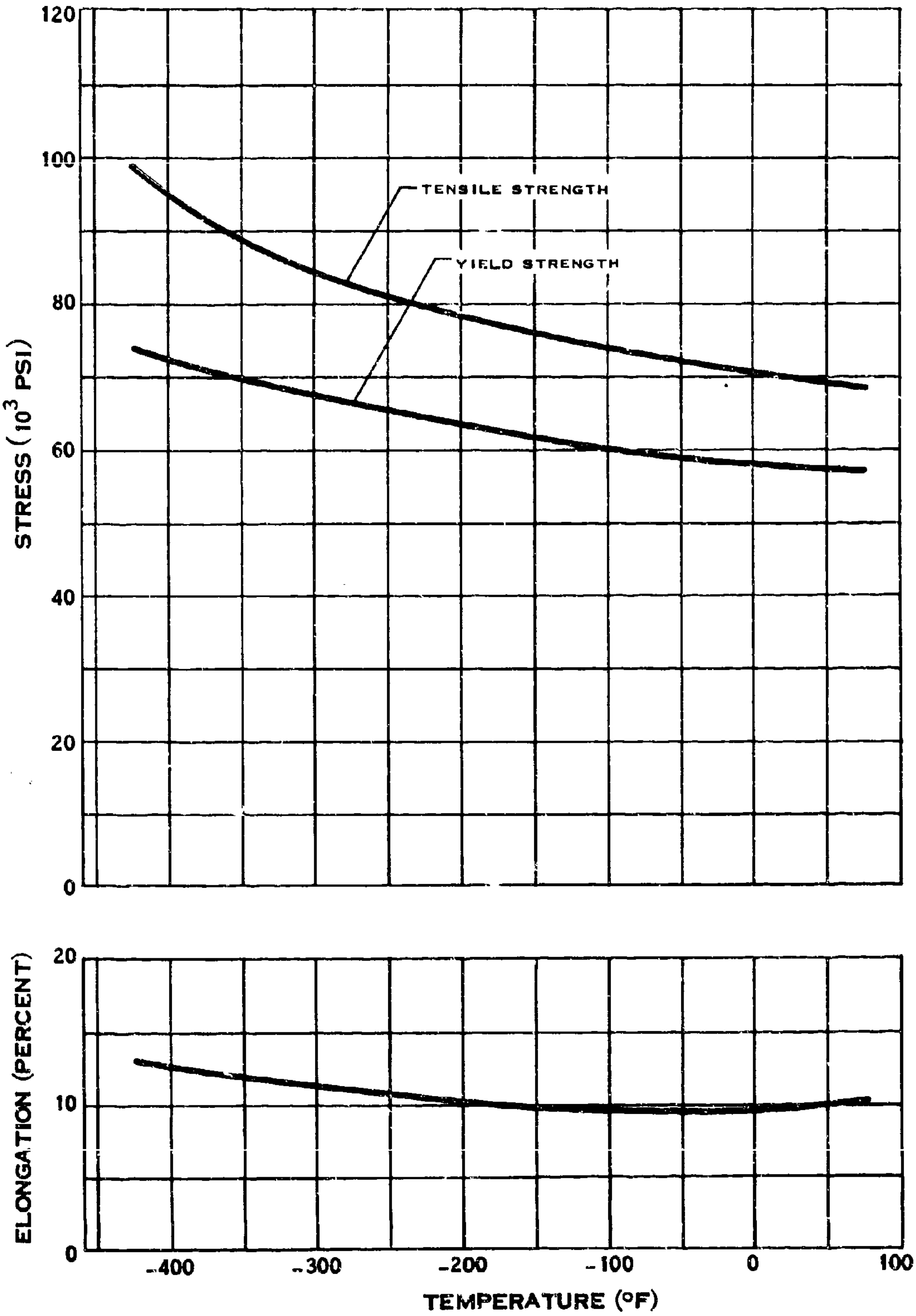
A.5.1



(3-66)

TYPICAL PROPERTIES OF 2219-T81 ALUMINUM

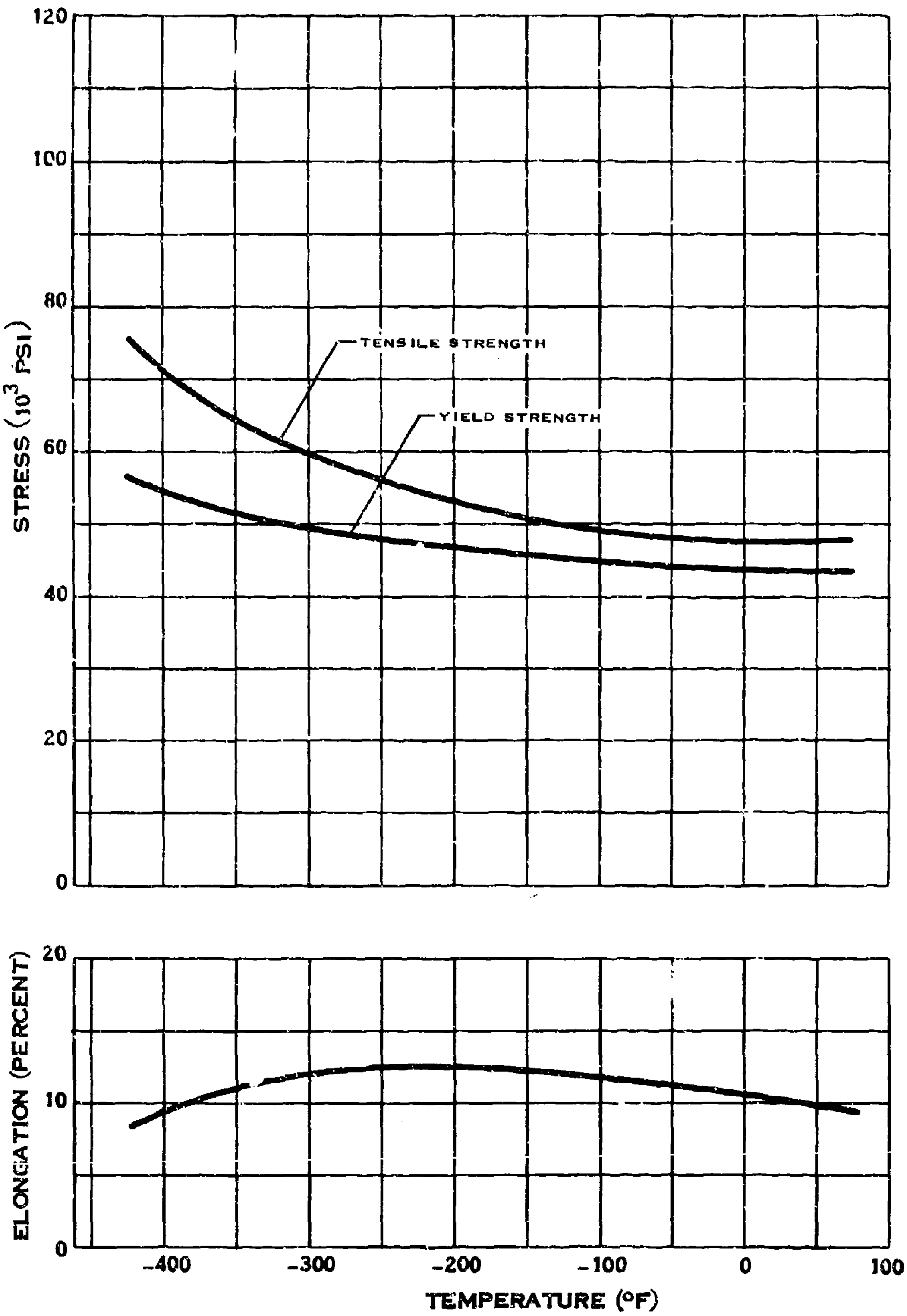
A.5.2



(3-66)

TYPICAL PROPERTIES OF 2219-T87 ALUMINUM

A.12



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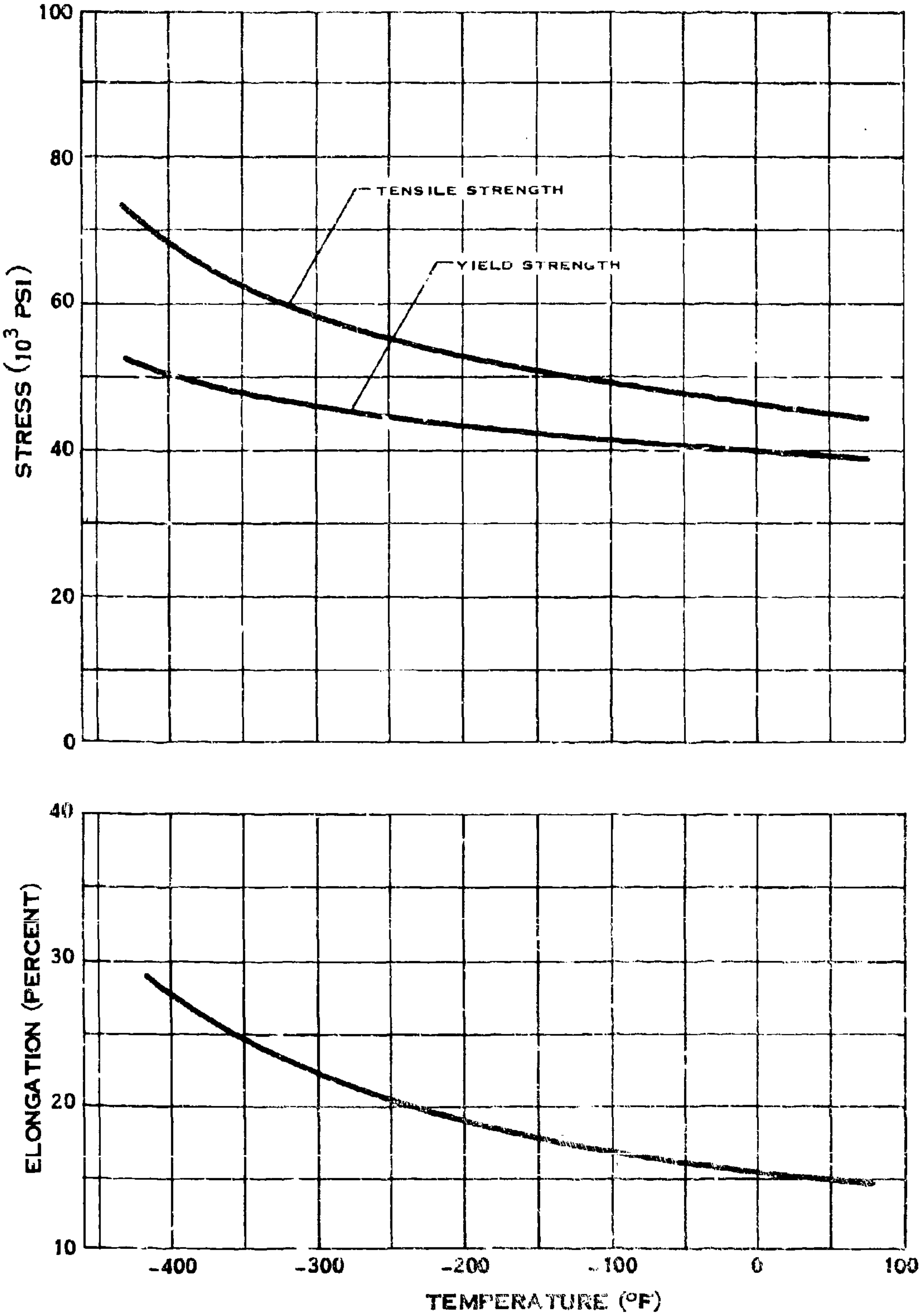
TYPICAL PROPERTIES OF 5456-H343 ALUMINUM

A.13



(3-66)

TYPICAL PROPERTIES OF 6061-T6 ALUMINUM

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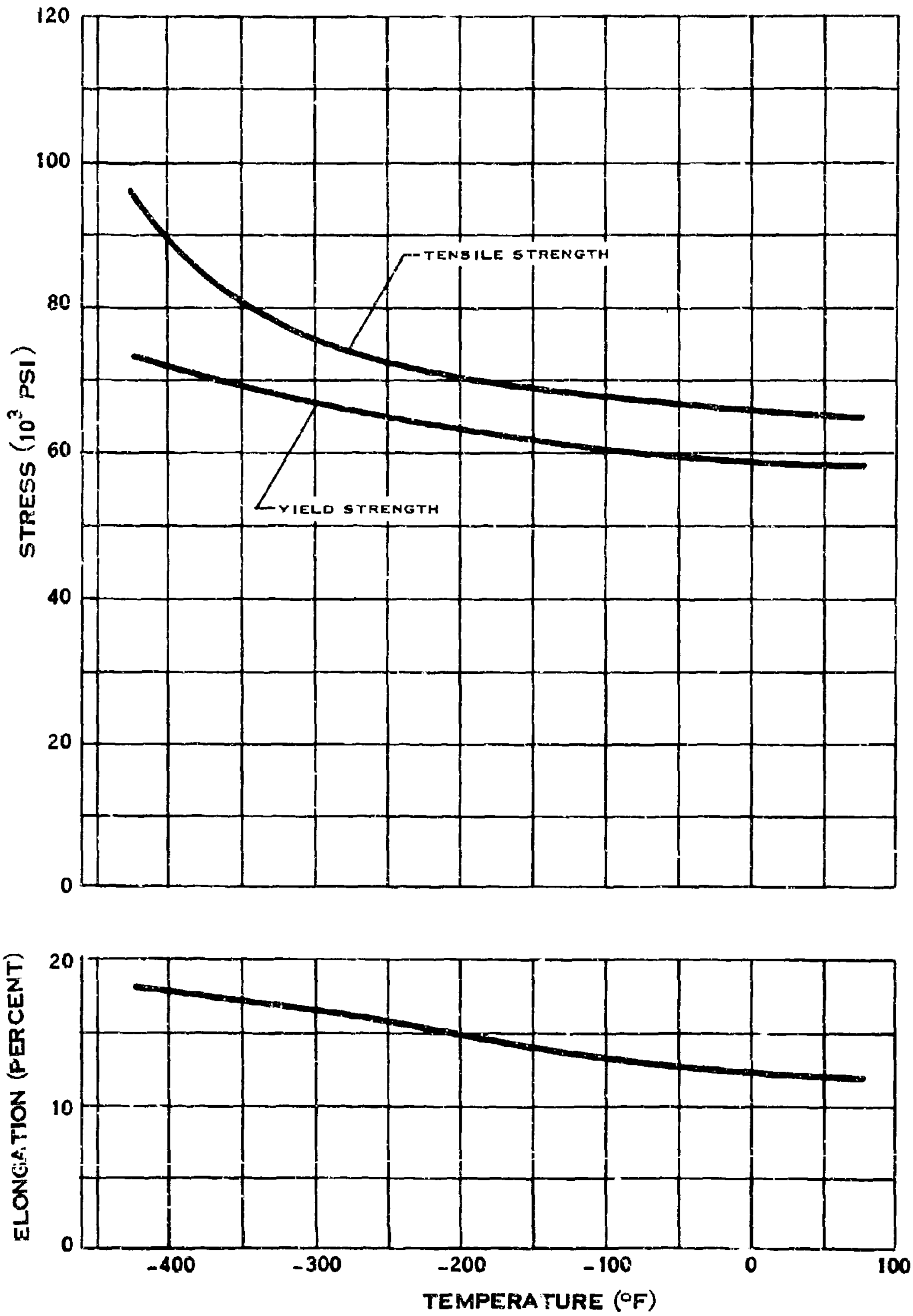

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TYPICAL PROPERTIES OF 7039-T6 ALUMINUM

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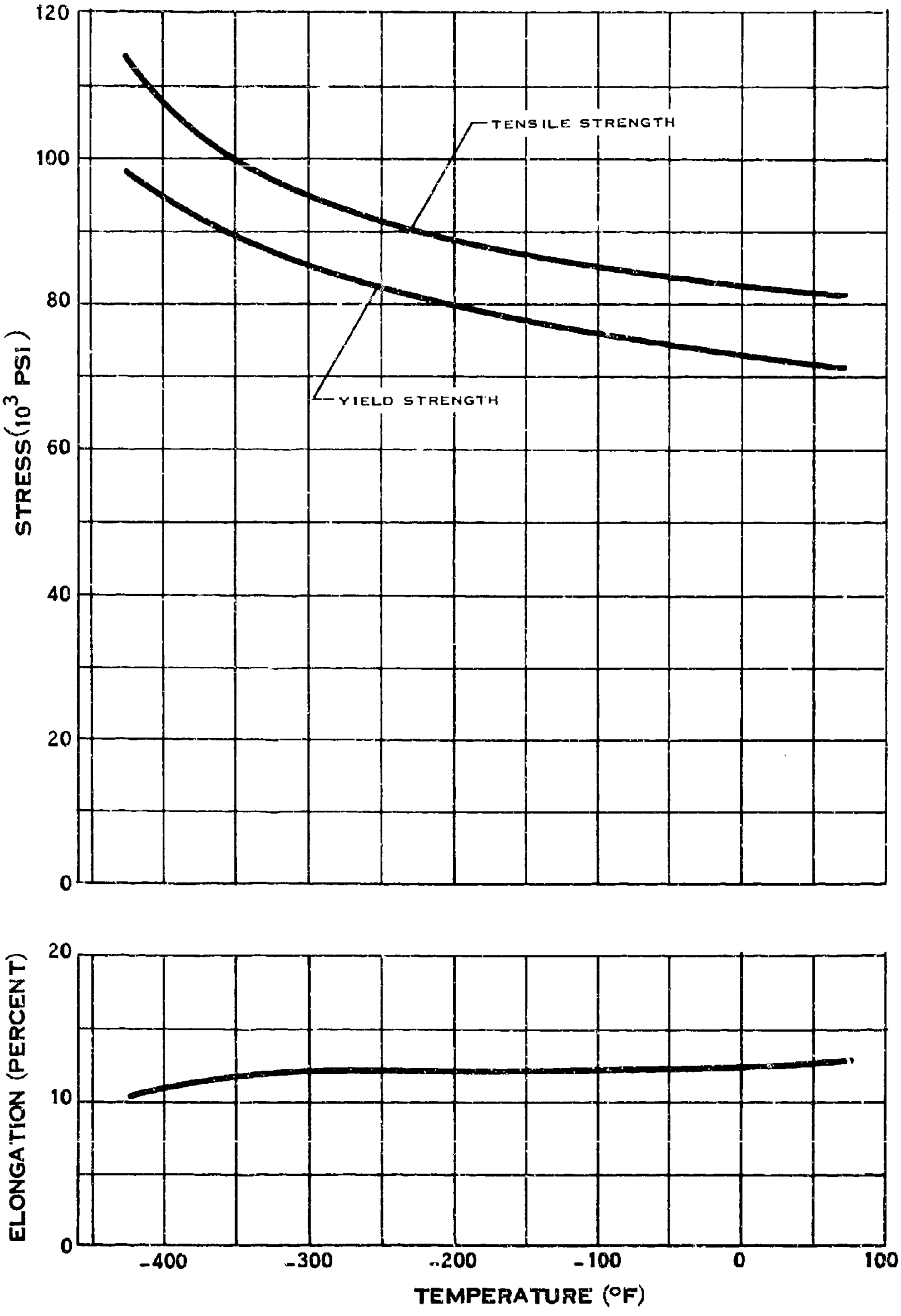

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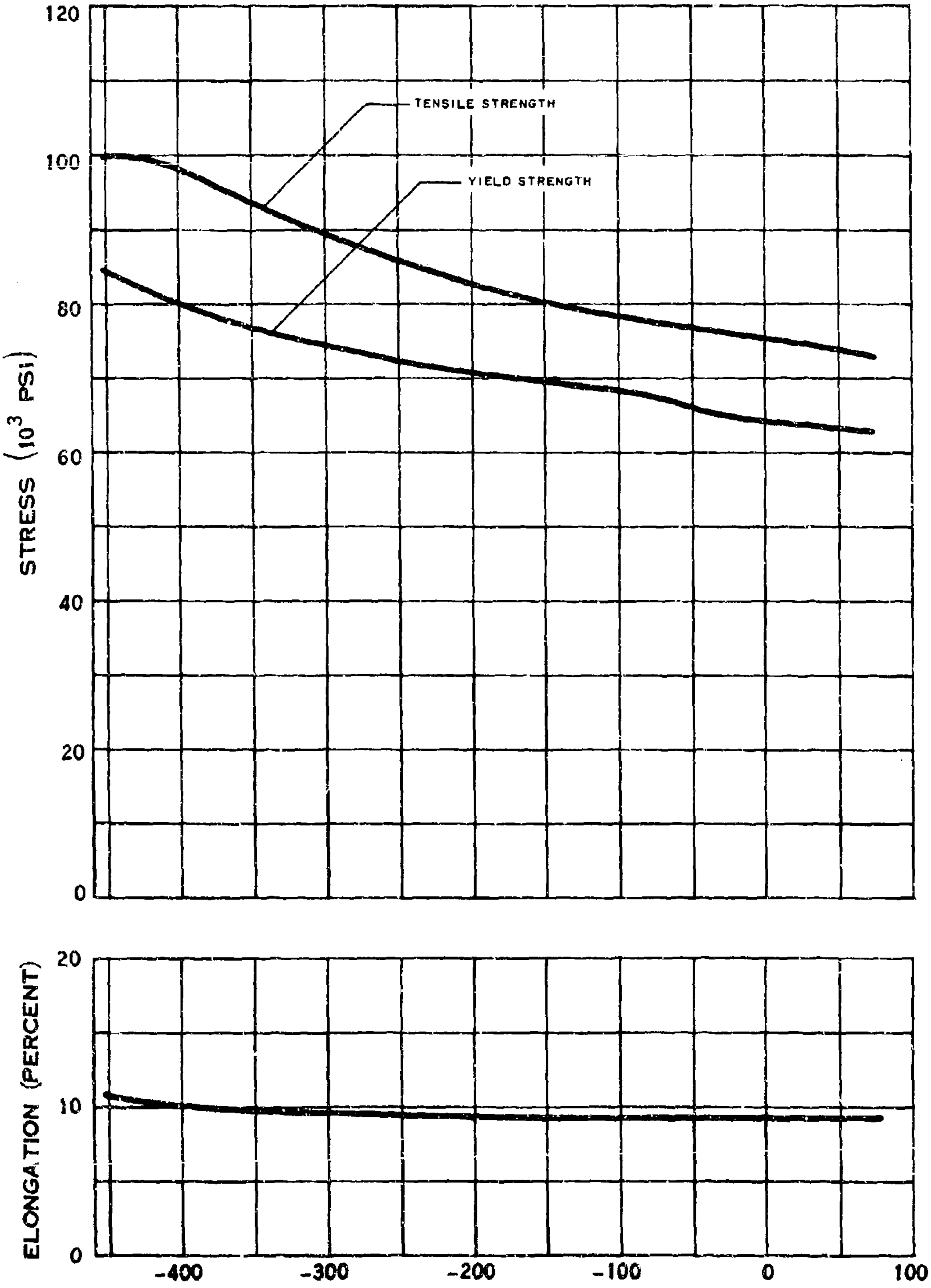
TYPICAL PROPERTIES OF 7075-T6 ALUMINUM

A.23



TYPICAL PROPERTIES OF 2021-T81 ALUMINUM

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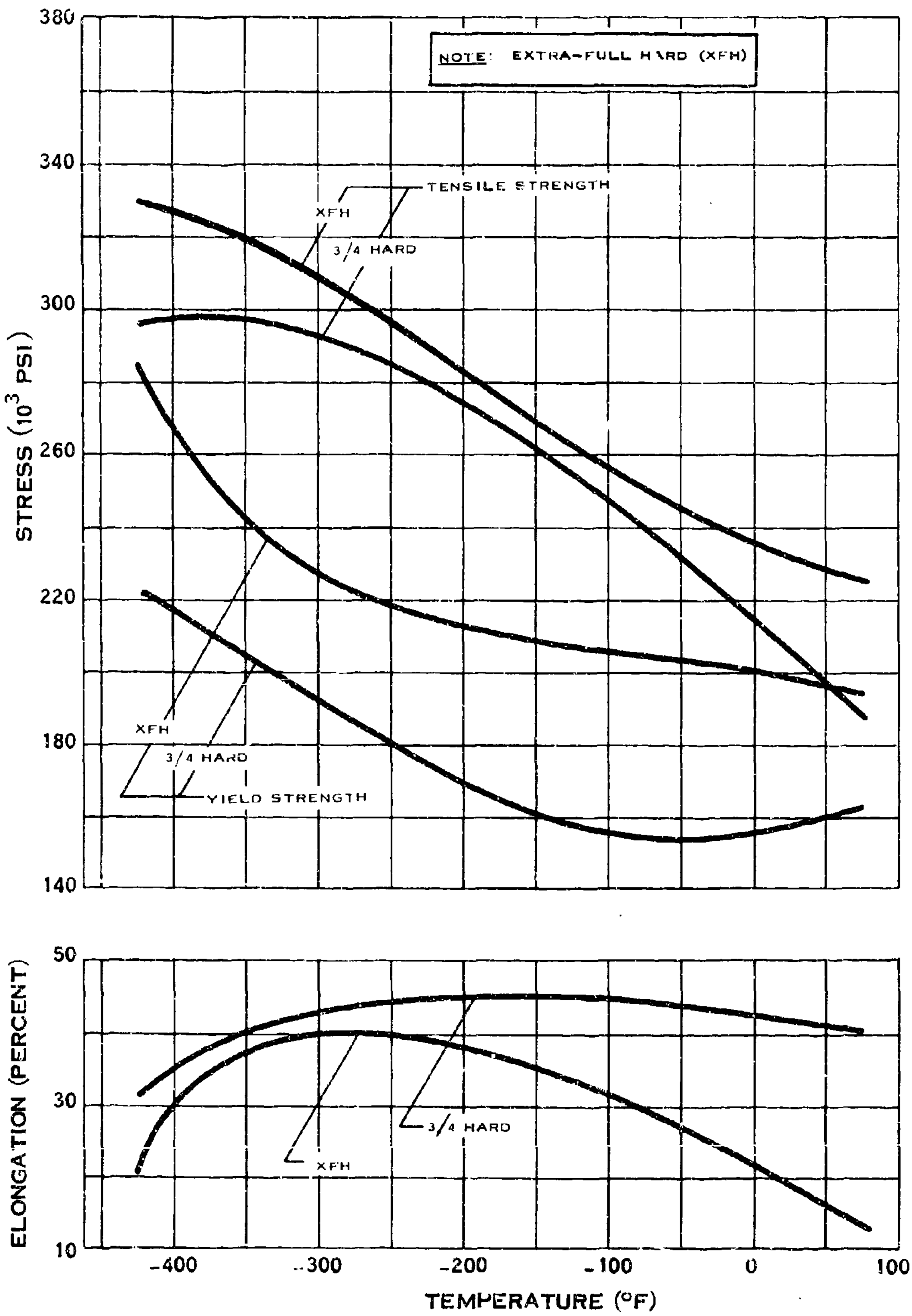
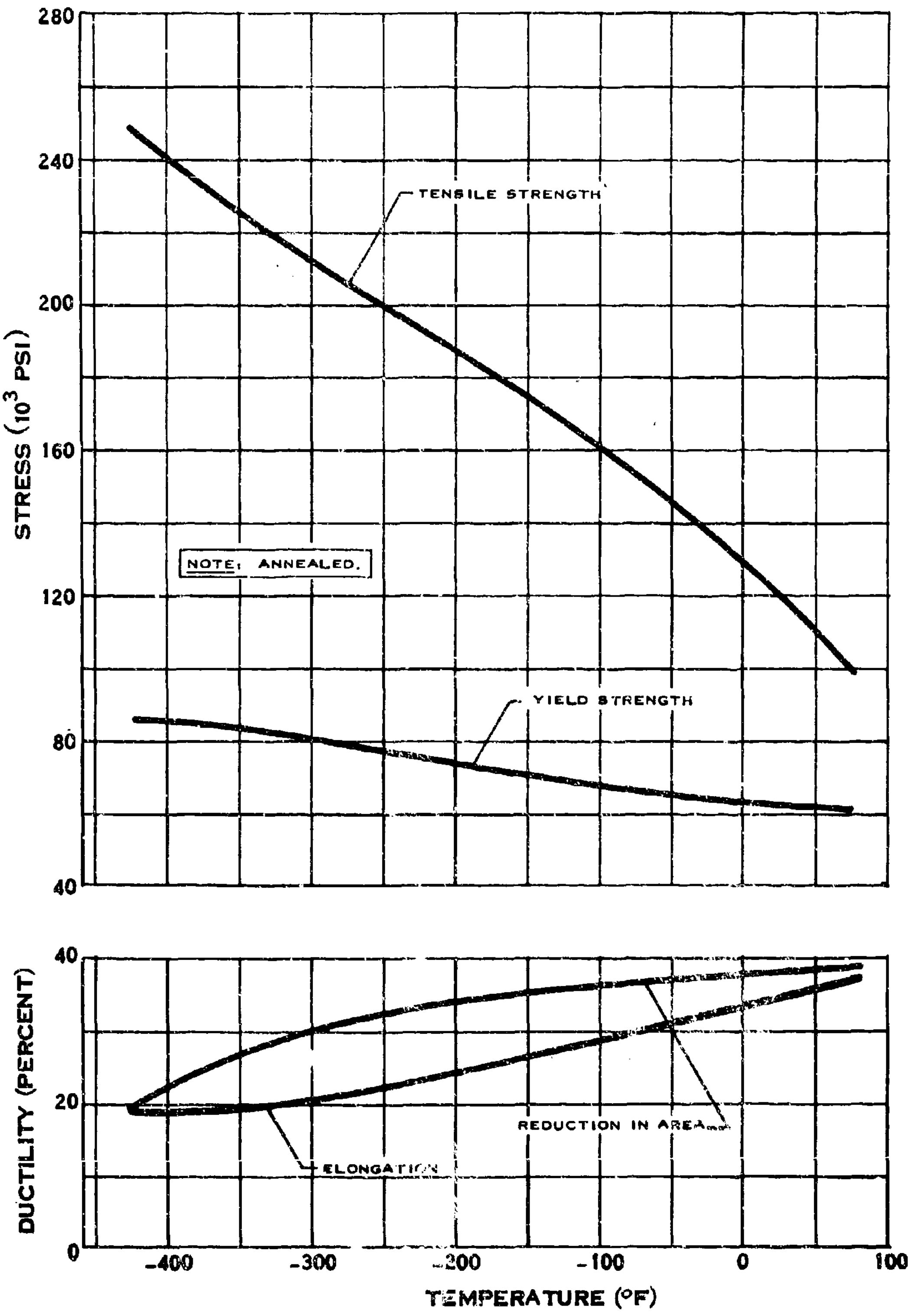
B.1



(3-65)

TYPICAL PROPERTIES OF 301 STAINLESS STEEL



(3-66)

TYPICAL PROPERTIES OF 304 STAINLESS STEEL

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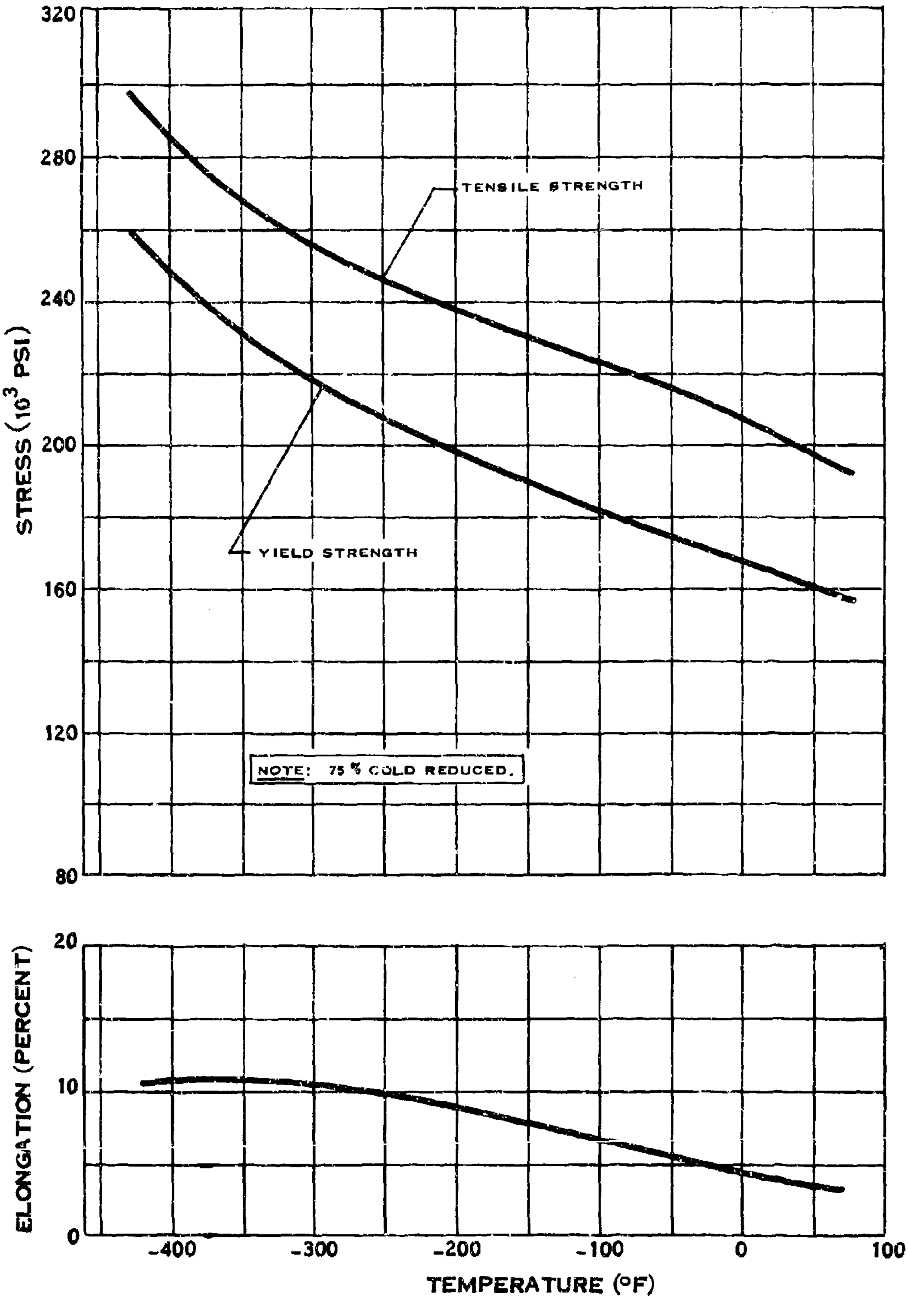
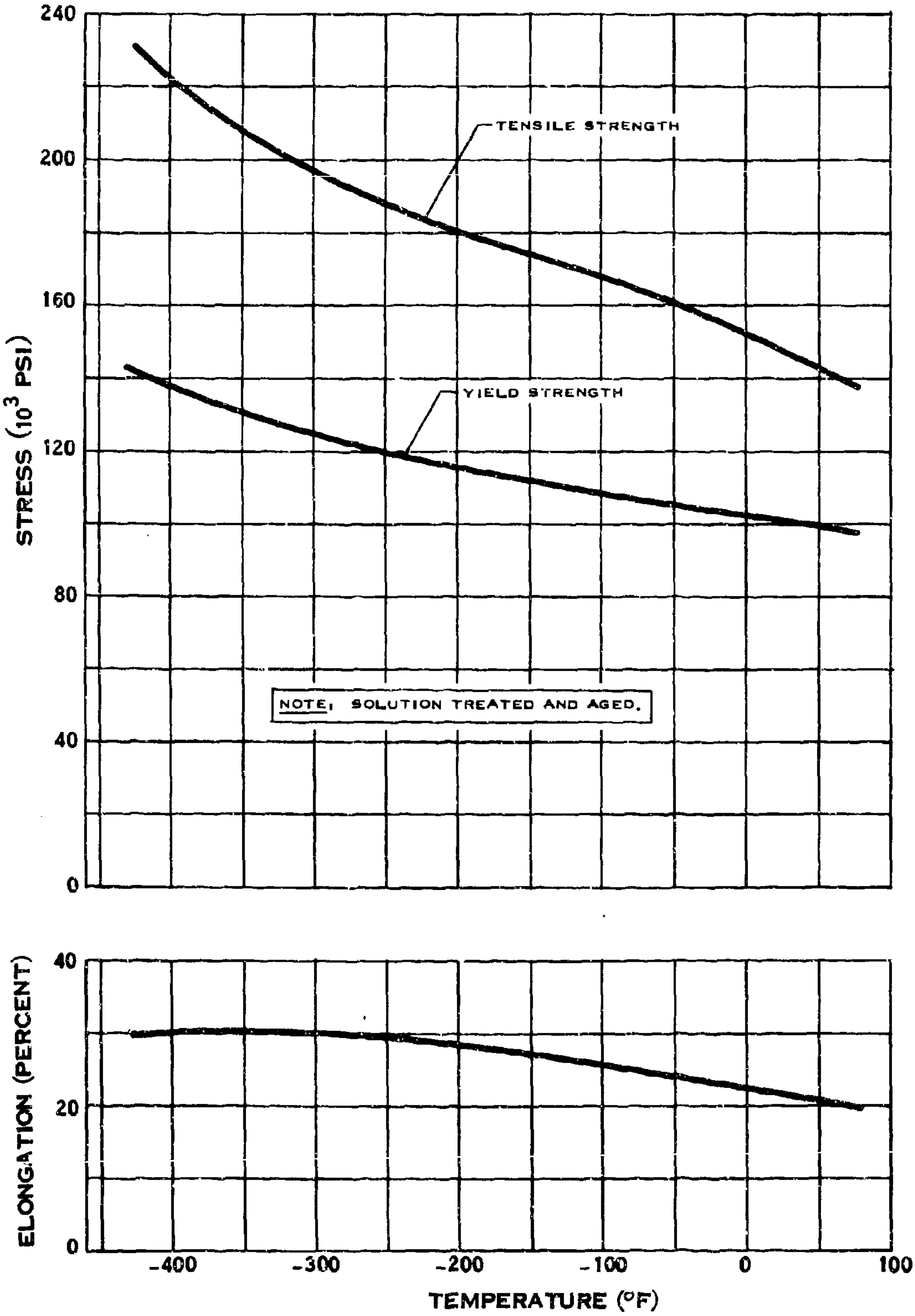
B.5



(3-66)

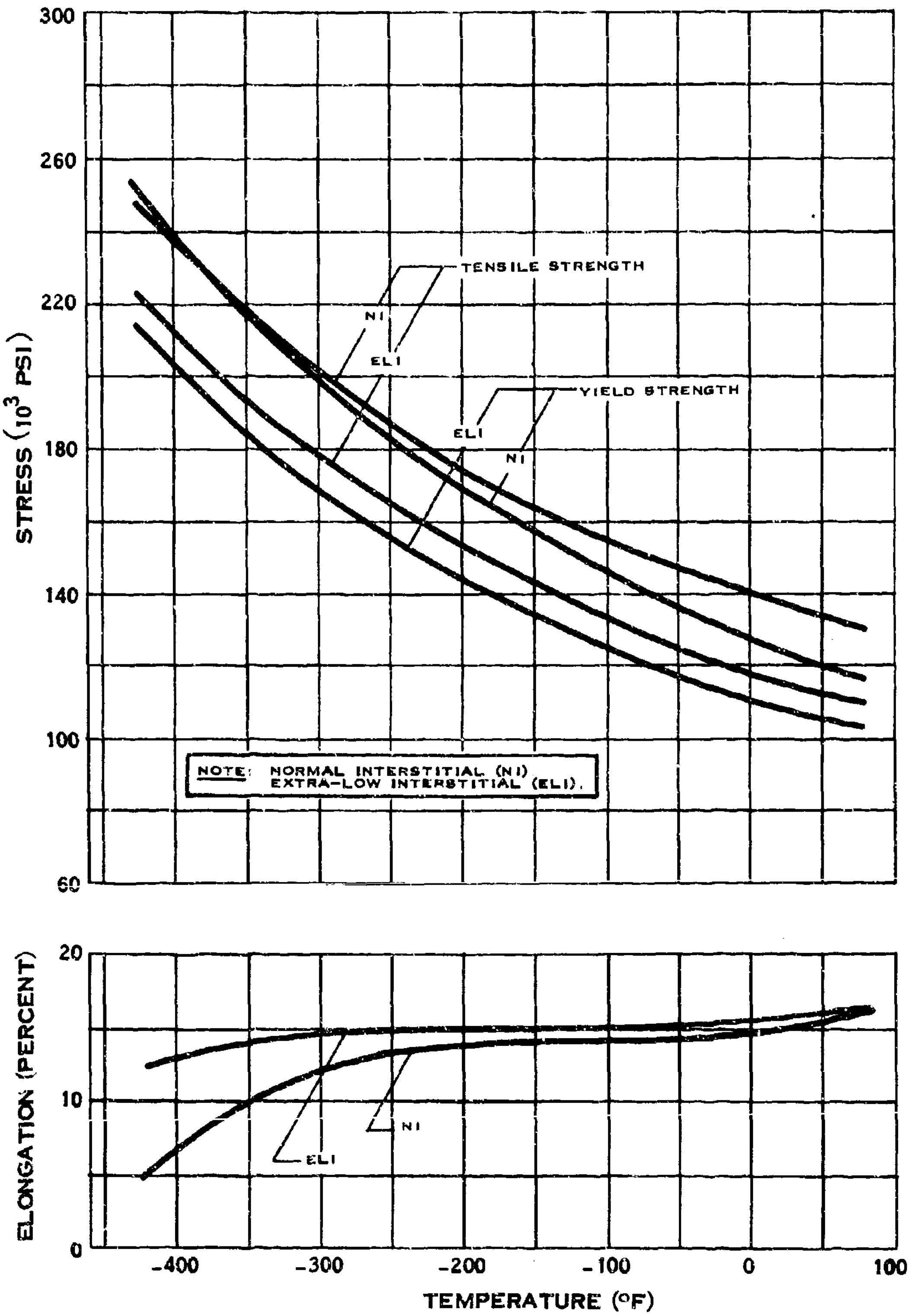
TYPICAL PROPERTIES OF 310 STAINLESS STEEL

B.11



(3-66) TYPICAL PROPERTIES OF A-286 STAINLESS STEEL

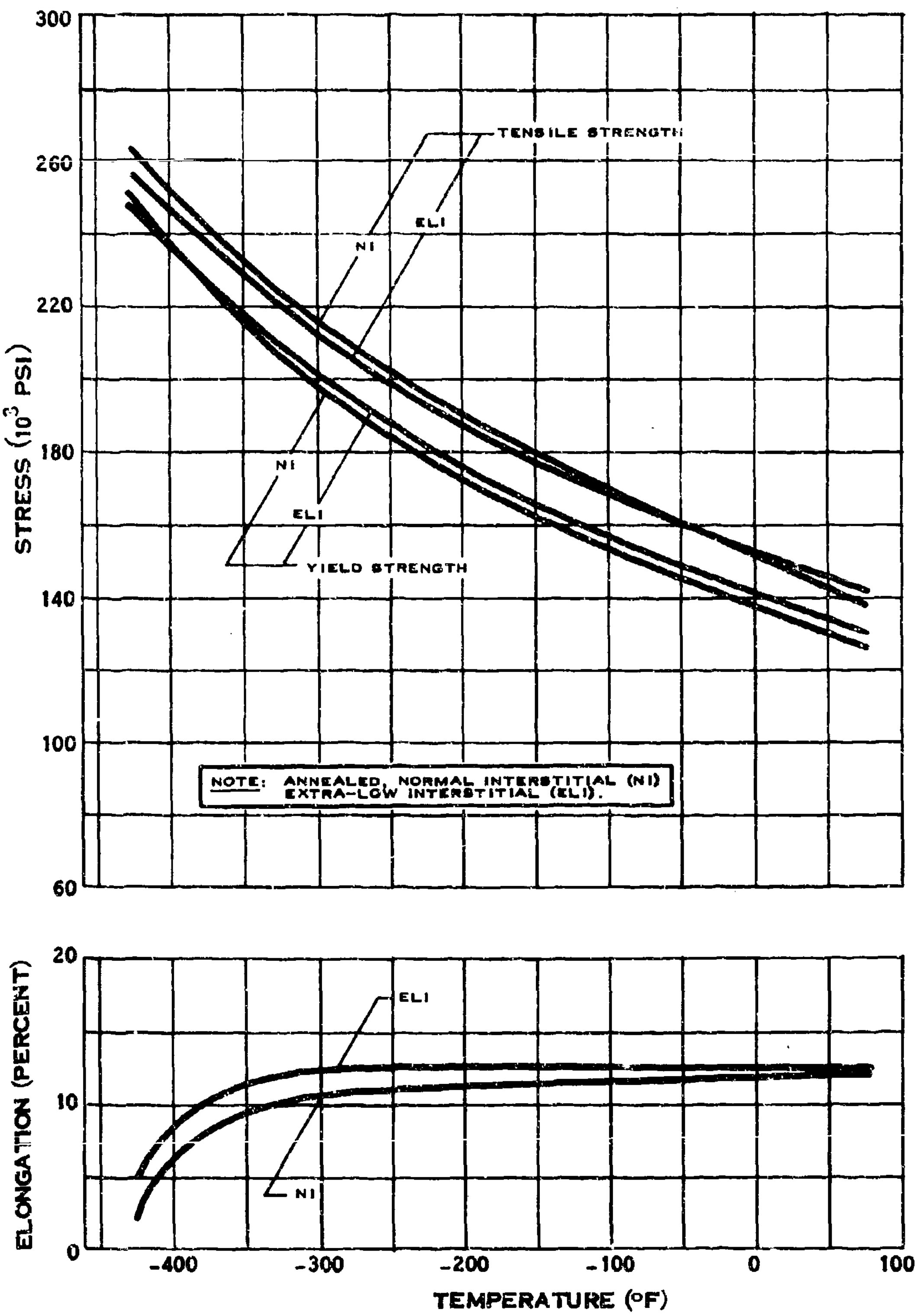
C.2



(3-66)

TYPICAL PROPERTIES OF 5Al-2.5Sn TITANIUM

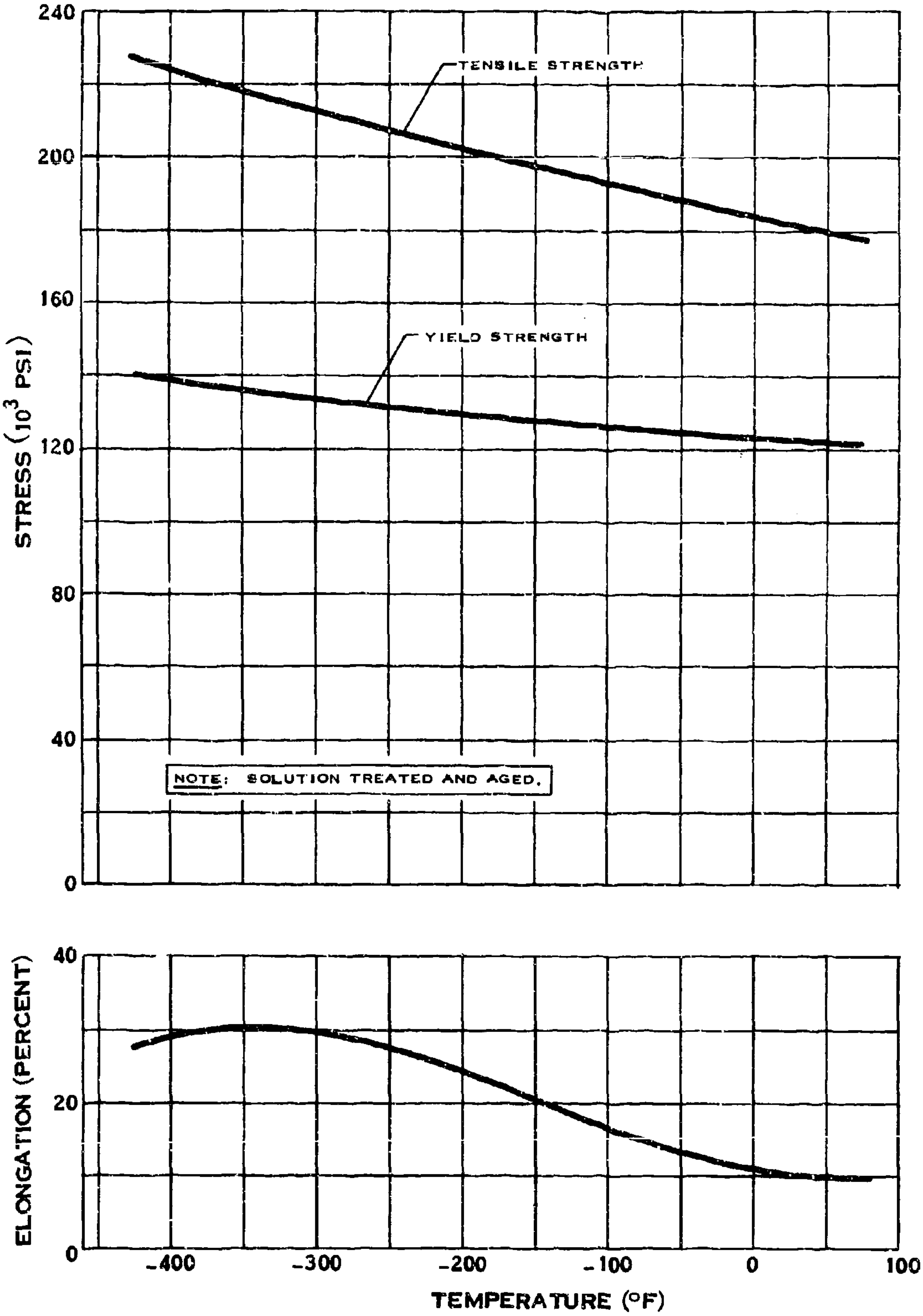
C.7



(3-66)

TYPICAL PROPERTIES OF 6Al-4V TITANIUM

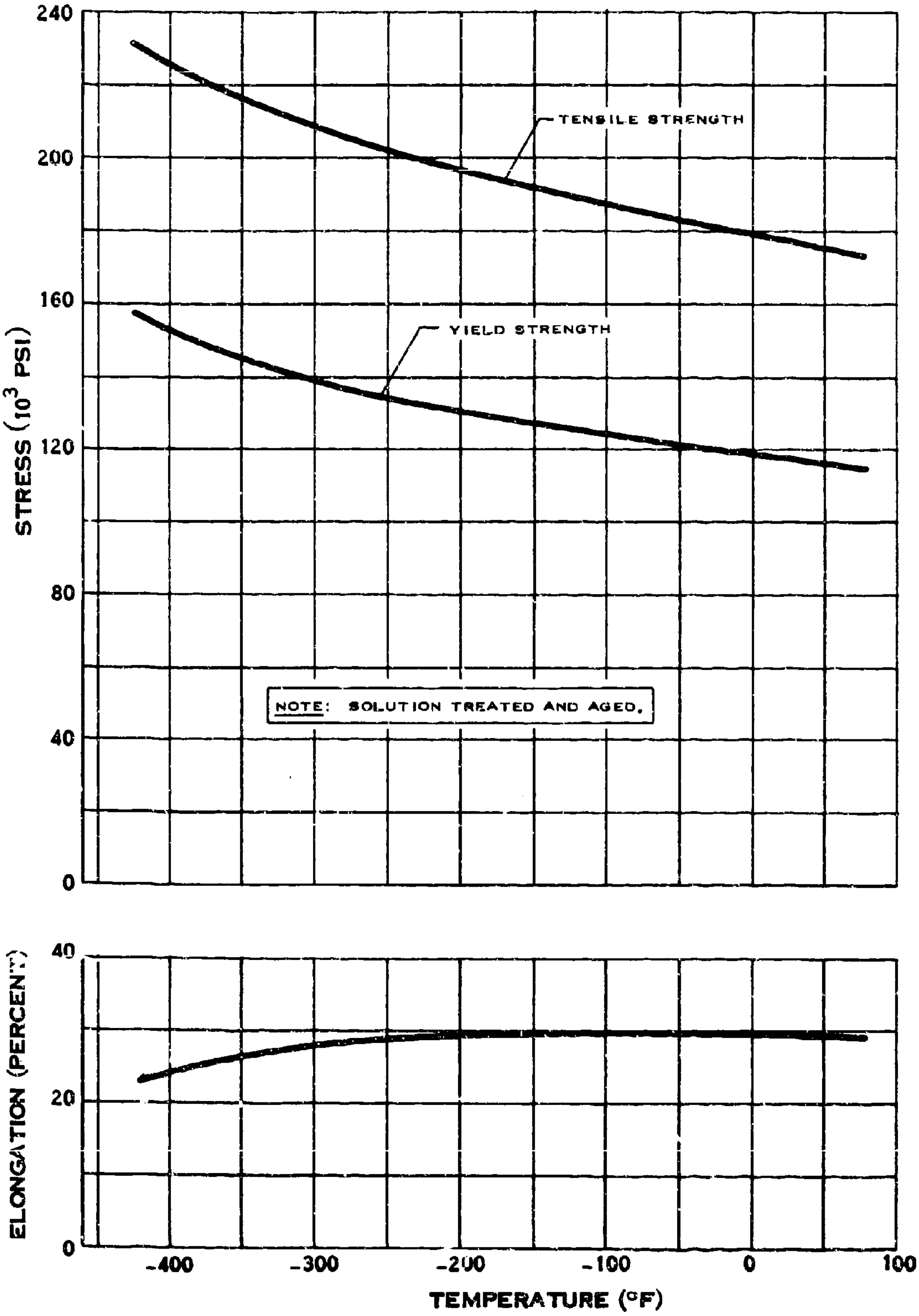
D.3



(3-66)

TYPICAL PROPERTIES OF INCONEL X

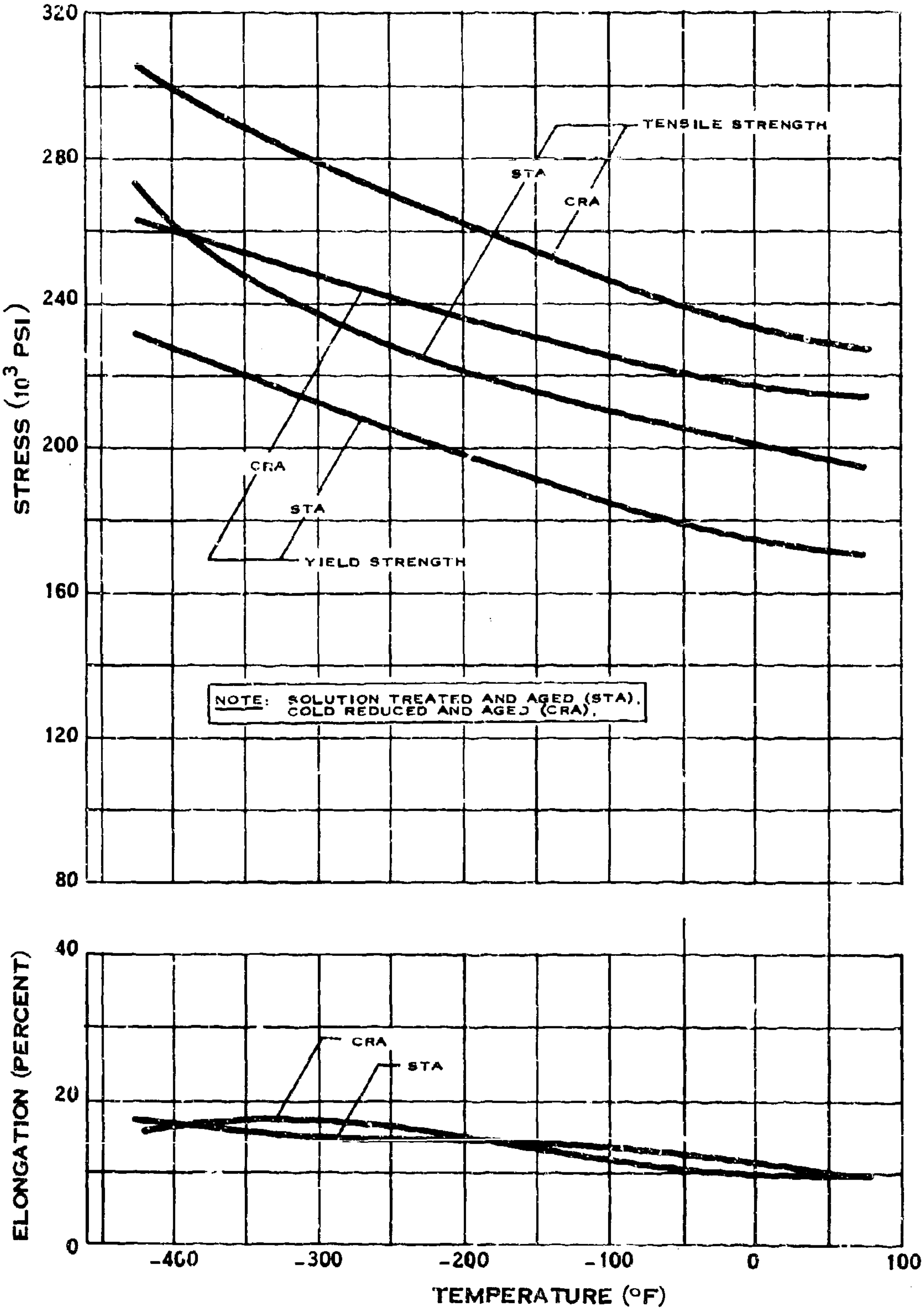
D.9



(3-66)

TYPICAL PROPERTIES OF RENE' 41

D.13

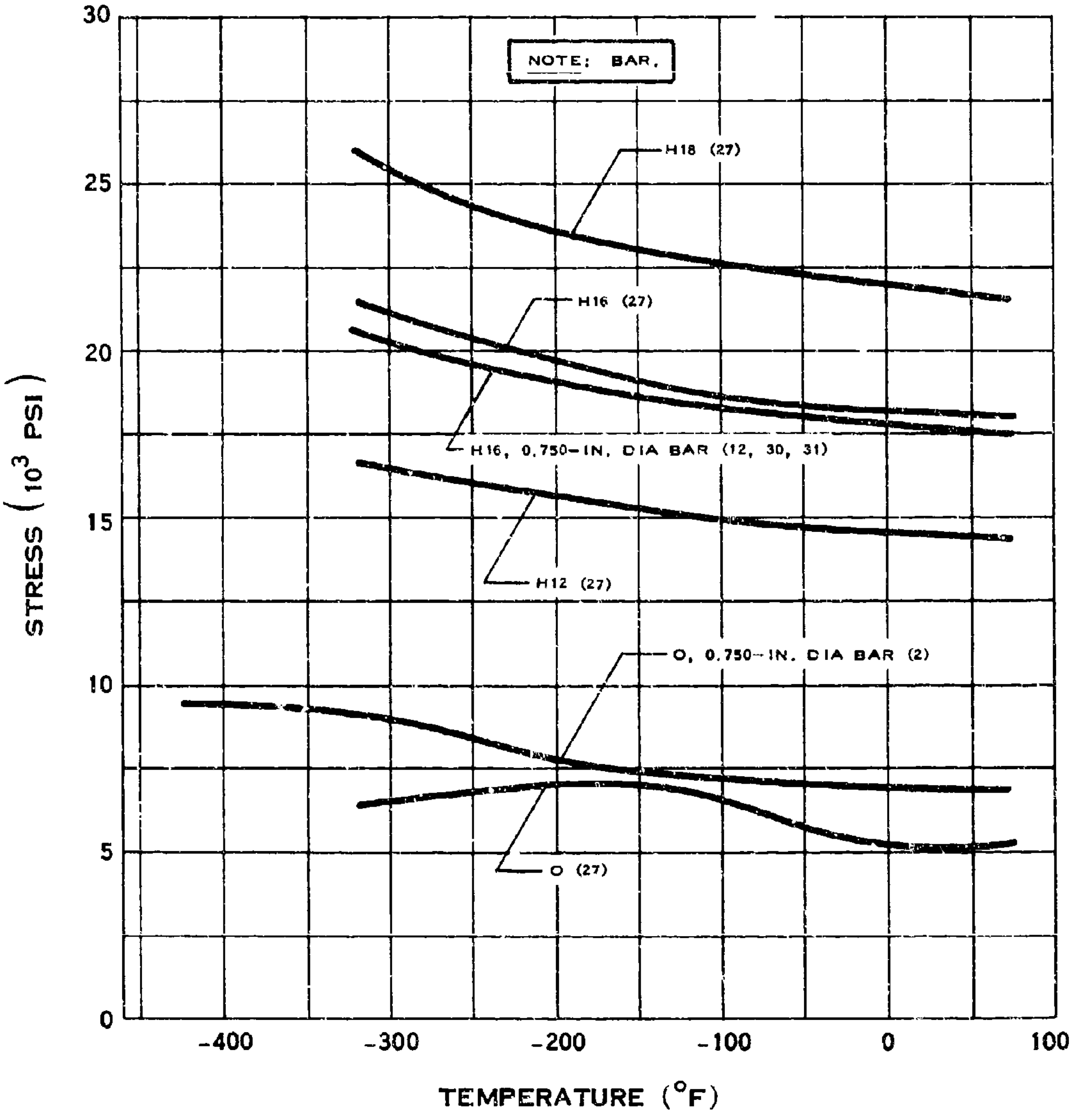


(3-66)

TYPICAL PROPERTIES OF INCONEL 718

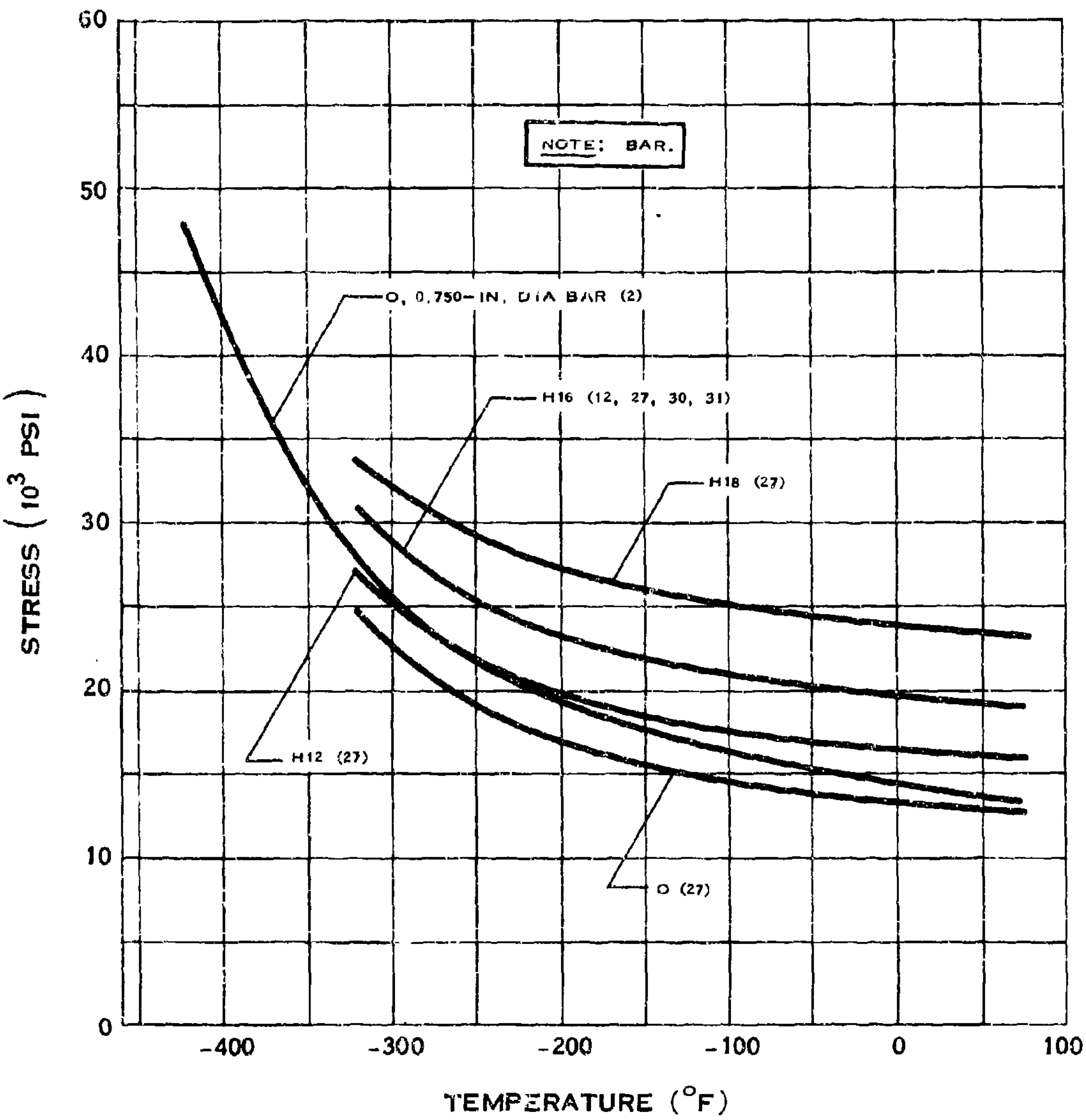
A - ALUMINUM

A.1.a



YIELD STRENGTH OF 1100 ALUMINUM

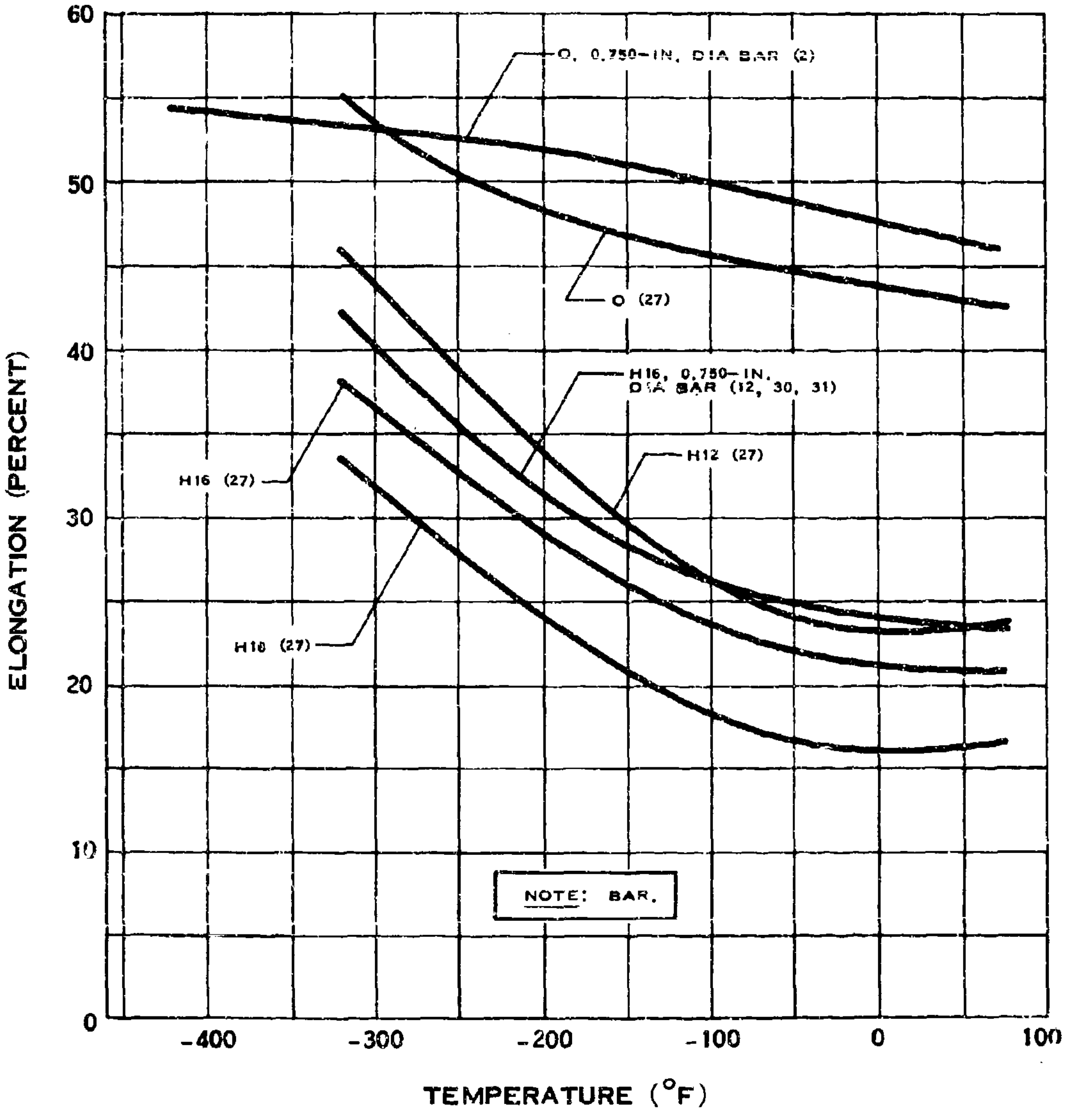
A.1.b



TENSILE STRENGTH OF 1100 ALUMINUM

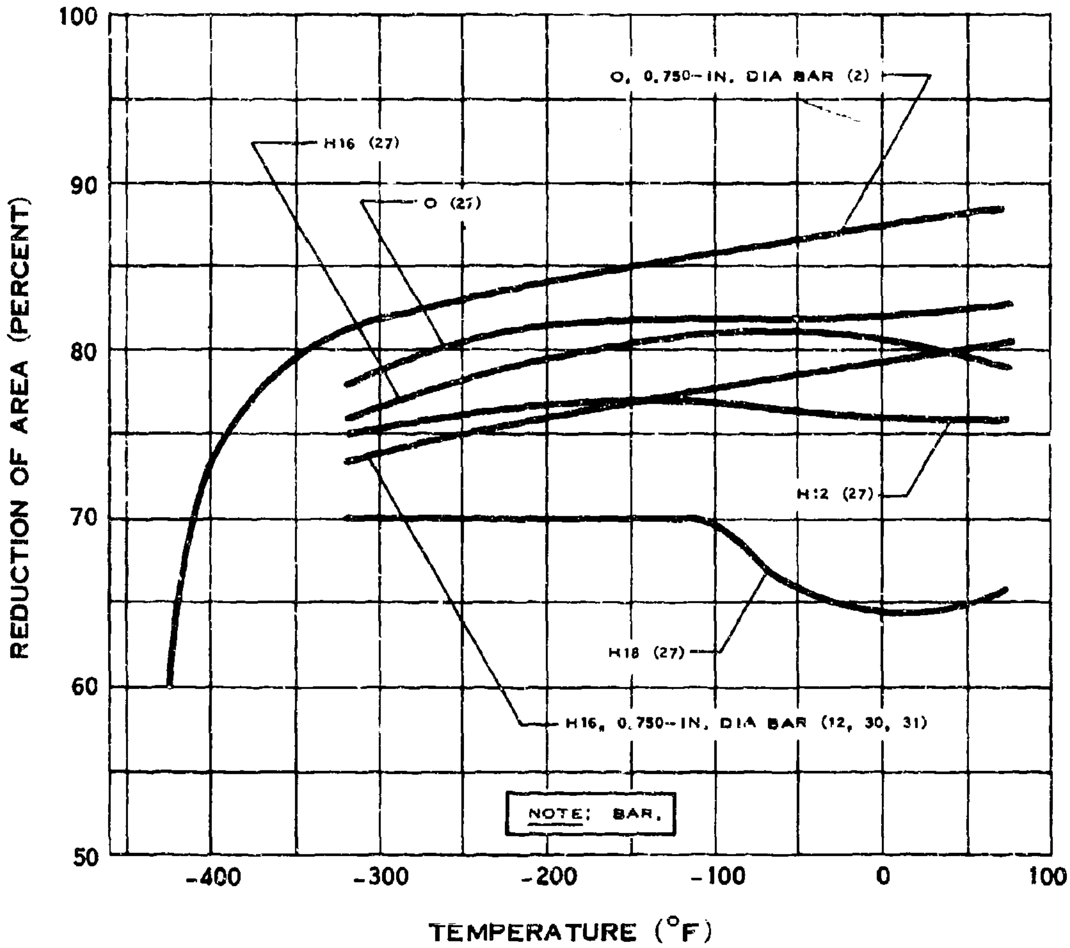
(7-64)

A.1.c



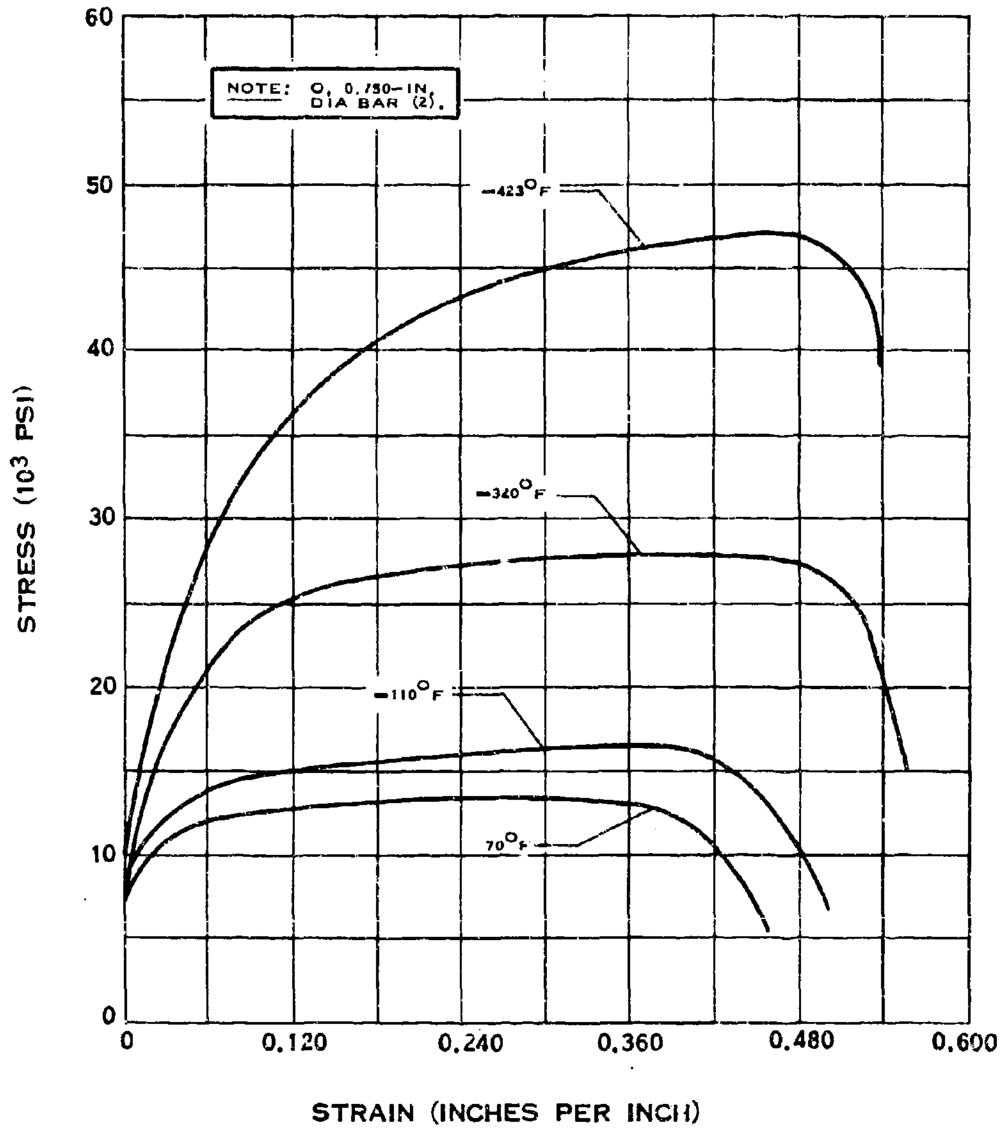
ELONGATION OF 1100 ALUMINUM

(7-64)



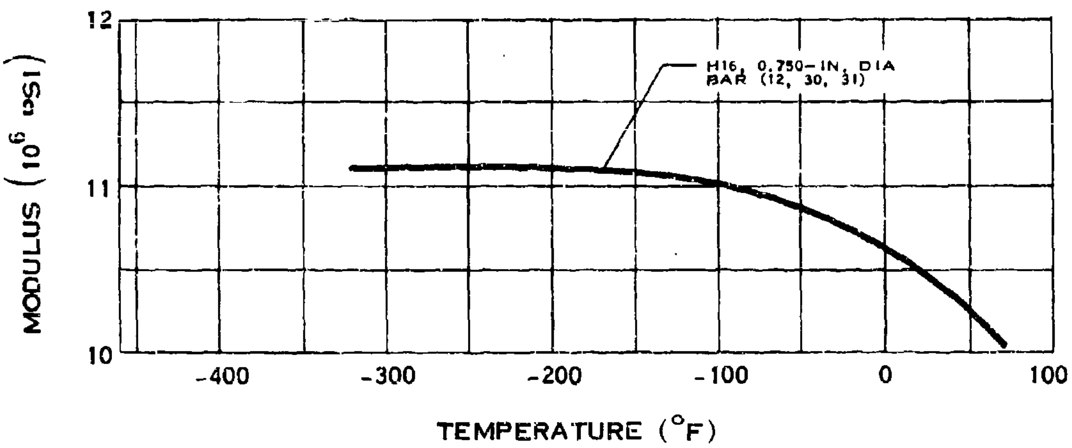
REDUCTION OF AREA OF 1100 ALUMINUM

A.1.h

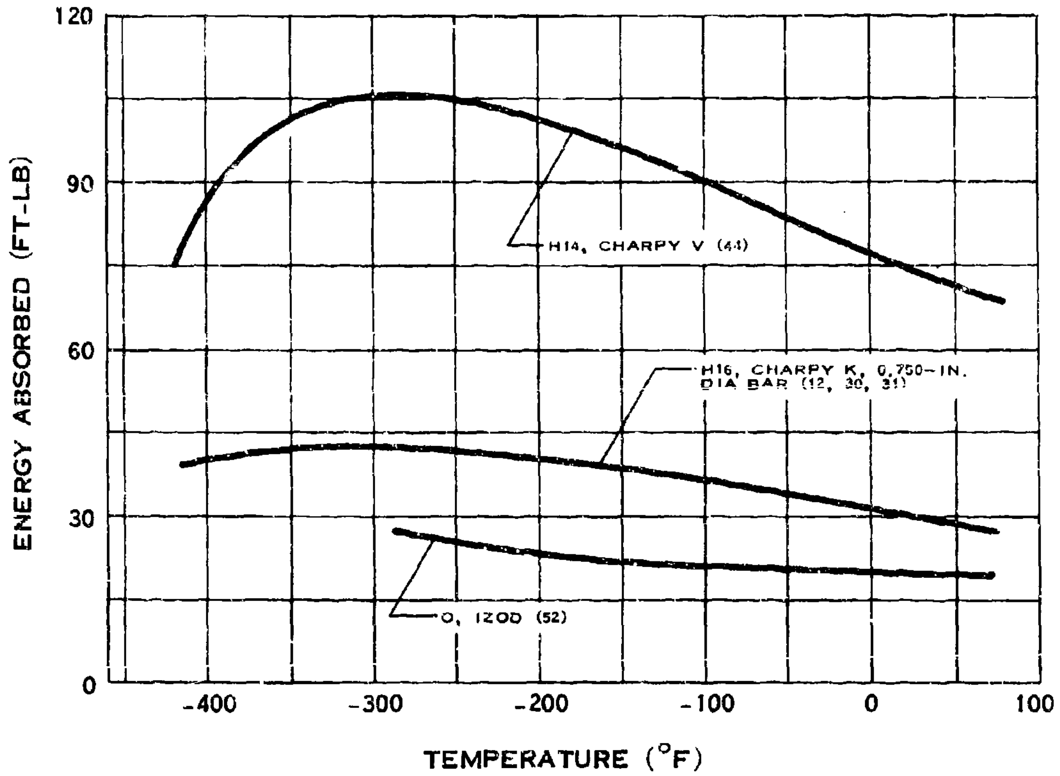


STRESS-STRAIN DIAGRAM FOR 1100 ALUMINUM

A.1.ij

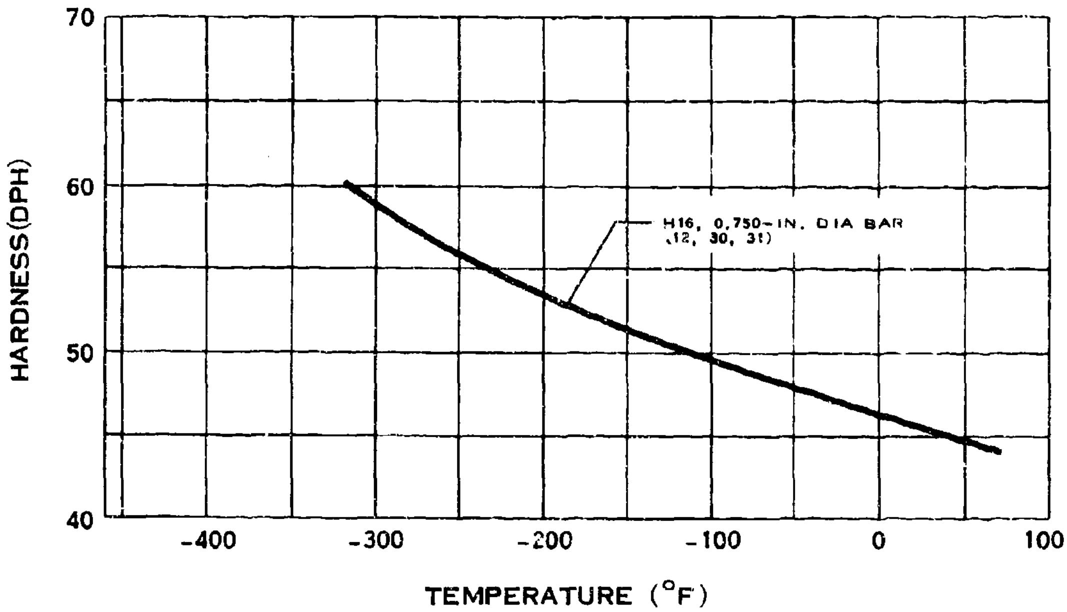


MODULUS OF ELASTICITY OF 1100 ALUMINUM

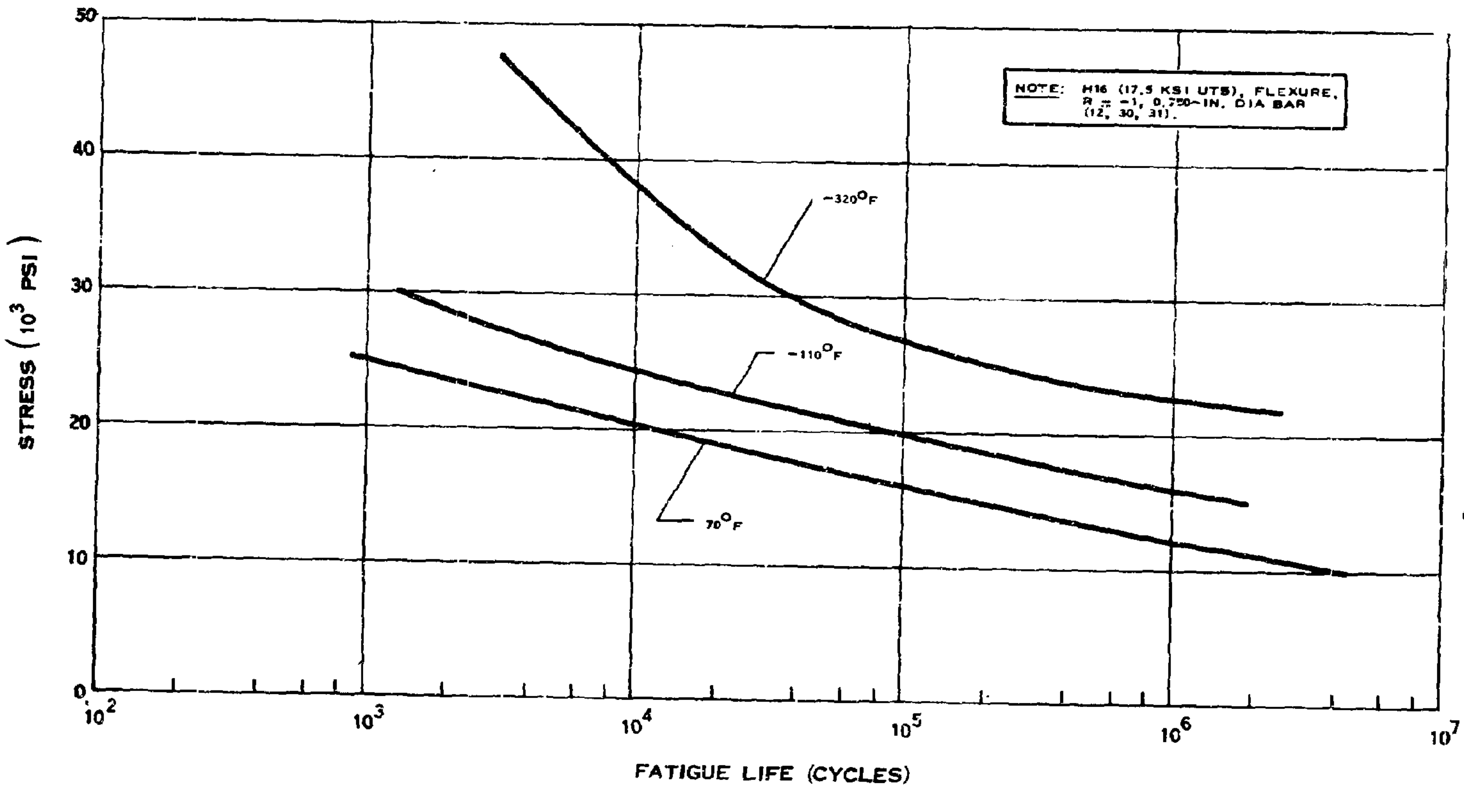


IMPACT STRENGTH OF 1100 ALUMINUM

A.1.k



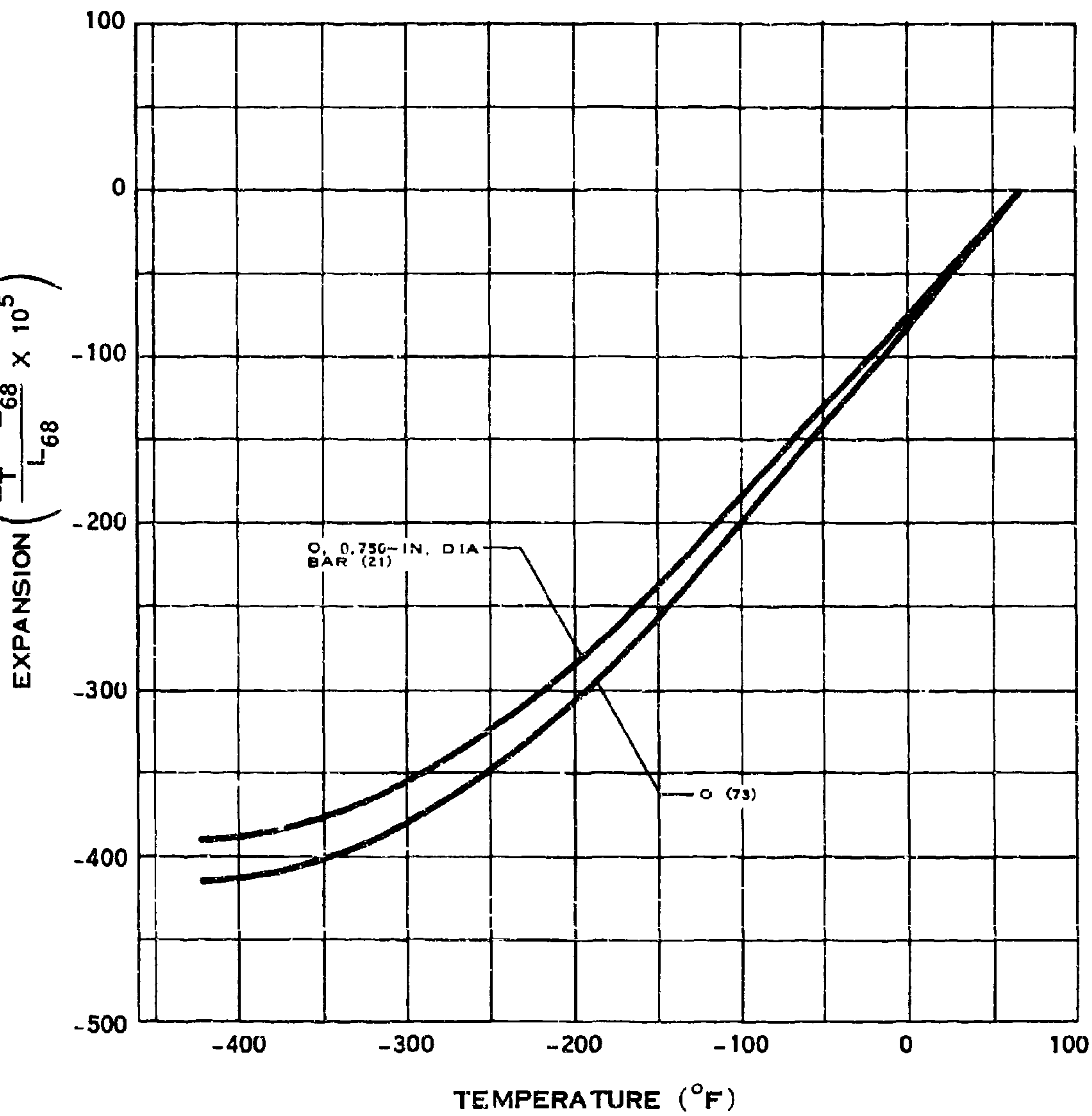
HARDNESS OF 1100 ALUMINUM



FATIGUE STRENGTH OF 1100 ALUMINUM

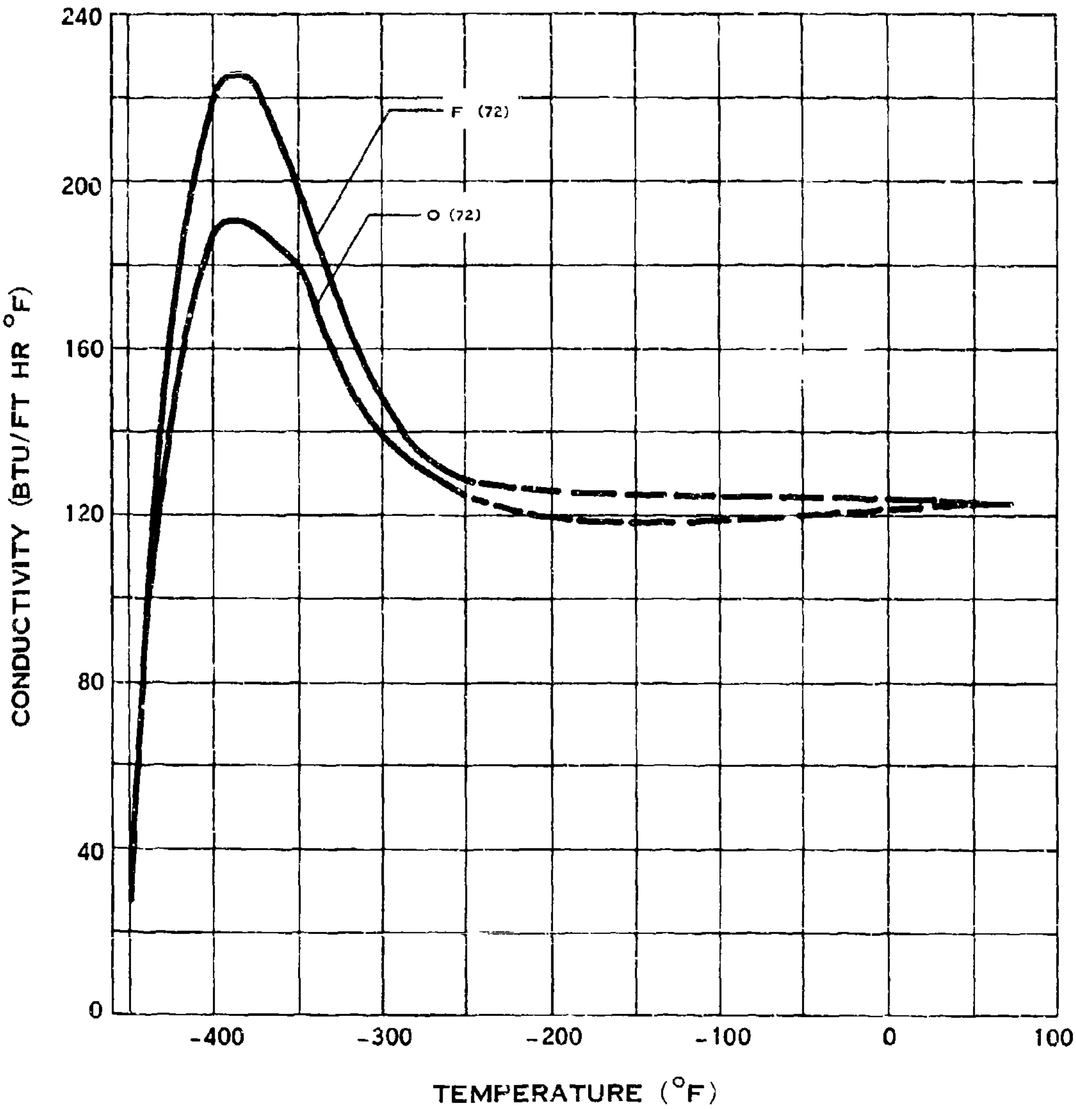
(7-64)

A.1.t



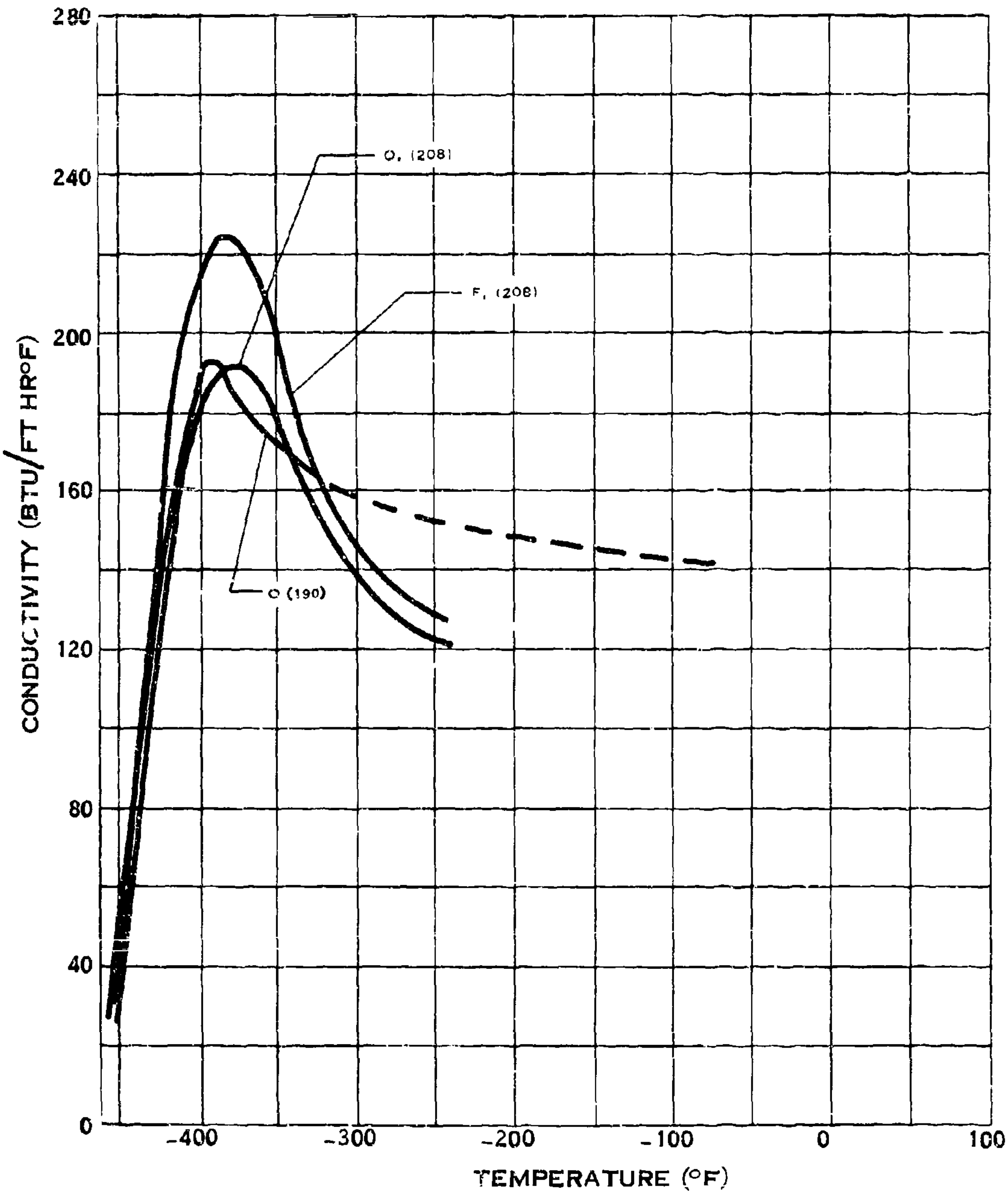
THERMAL EXPANSION OF 1100 ALUMINUM

A.1.v



THERMAL CONDUCTIVITY OF 1100 ALUMINUM

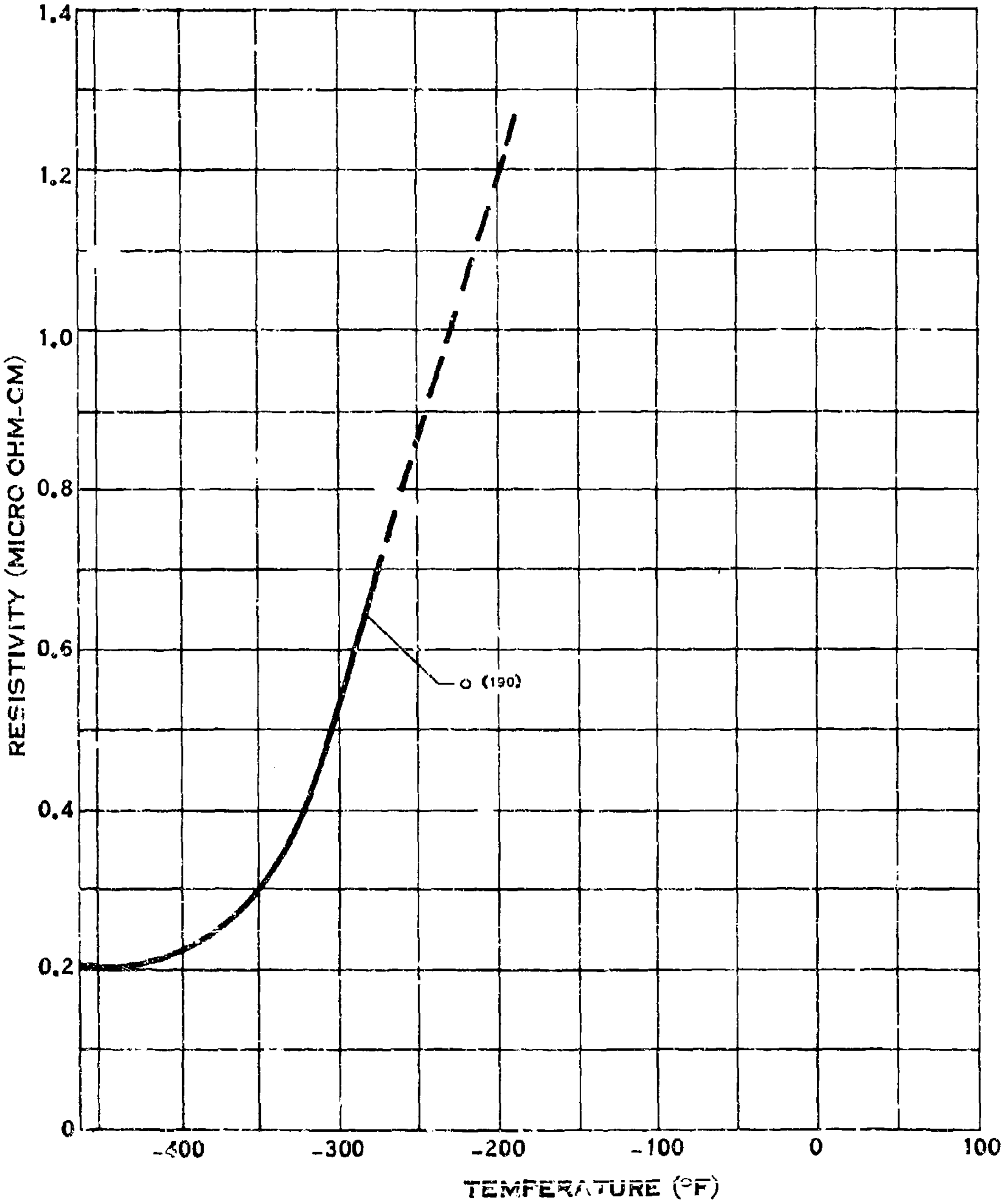
A.1.v-1



THERMAL CONDUCTIVITY OF 1100 ALUMINUM

(6-58)

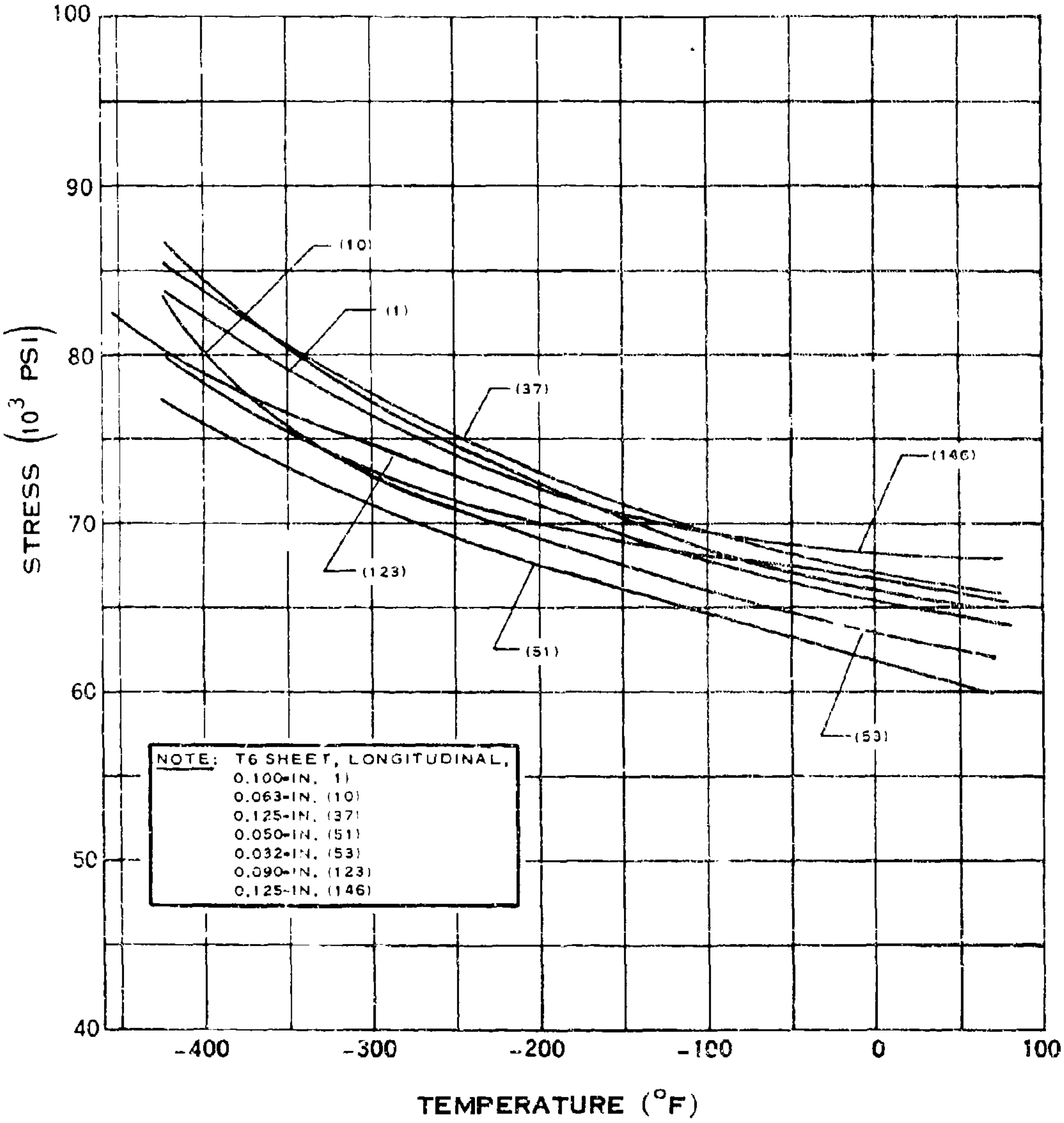
A.1.w



ELECTRICAL RESISTIVITY OF 1100 ALUMINUM

(3-65)

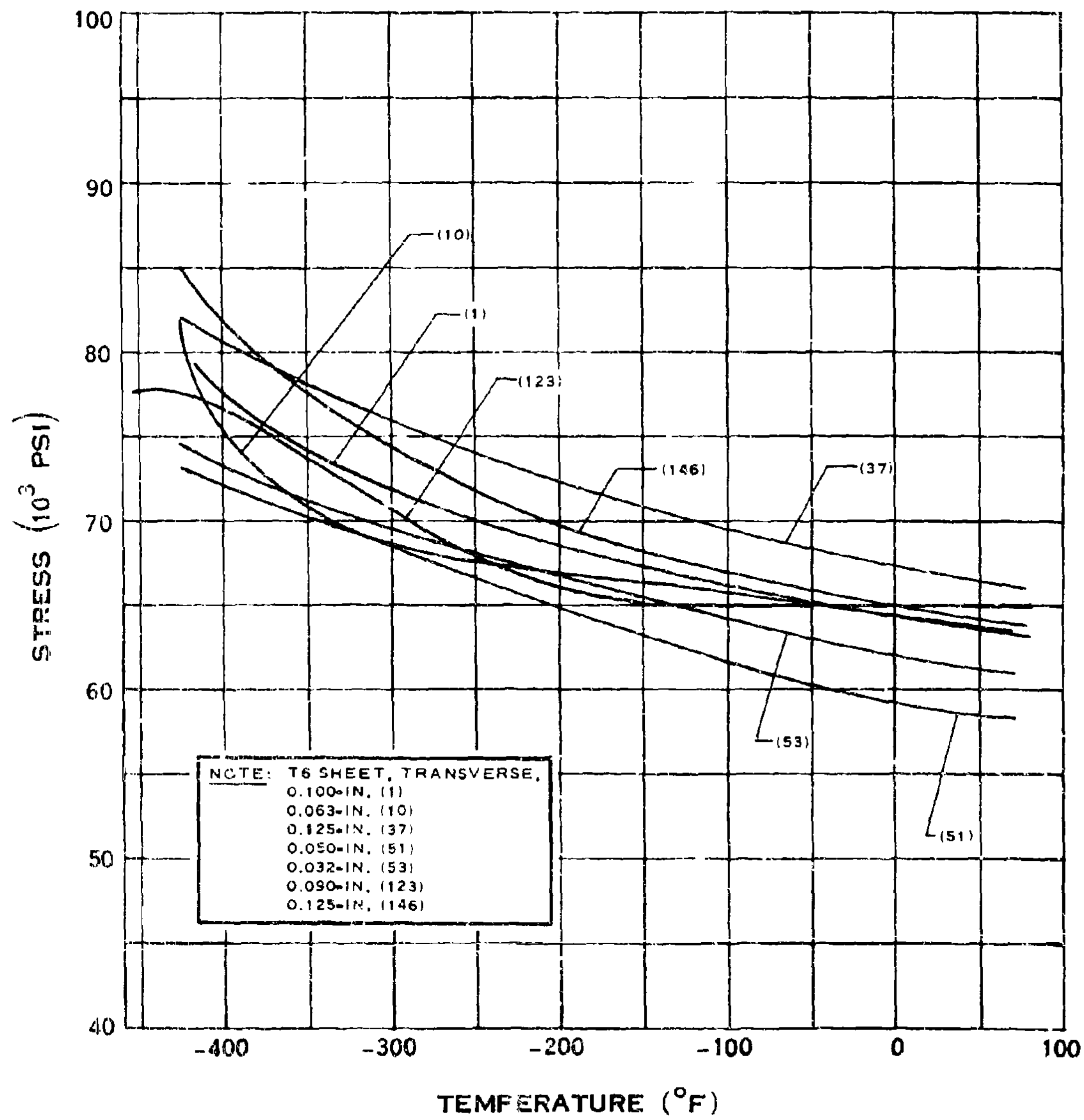
A.2.a



YIELD STRENGTH OF 2014 ALUMINUM

(6-68)

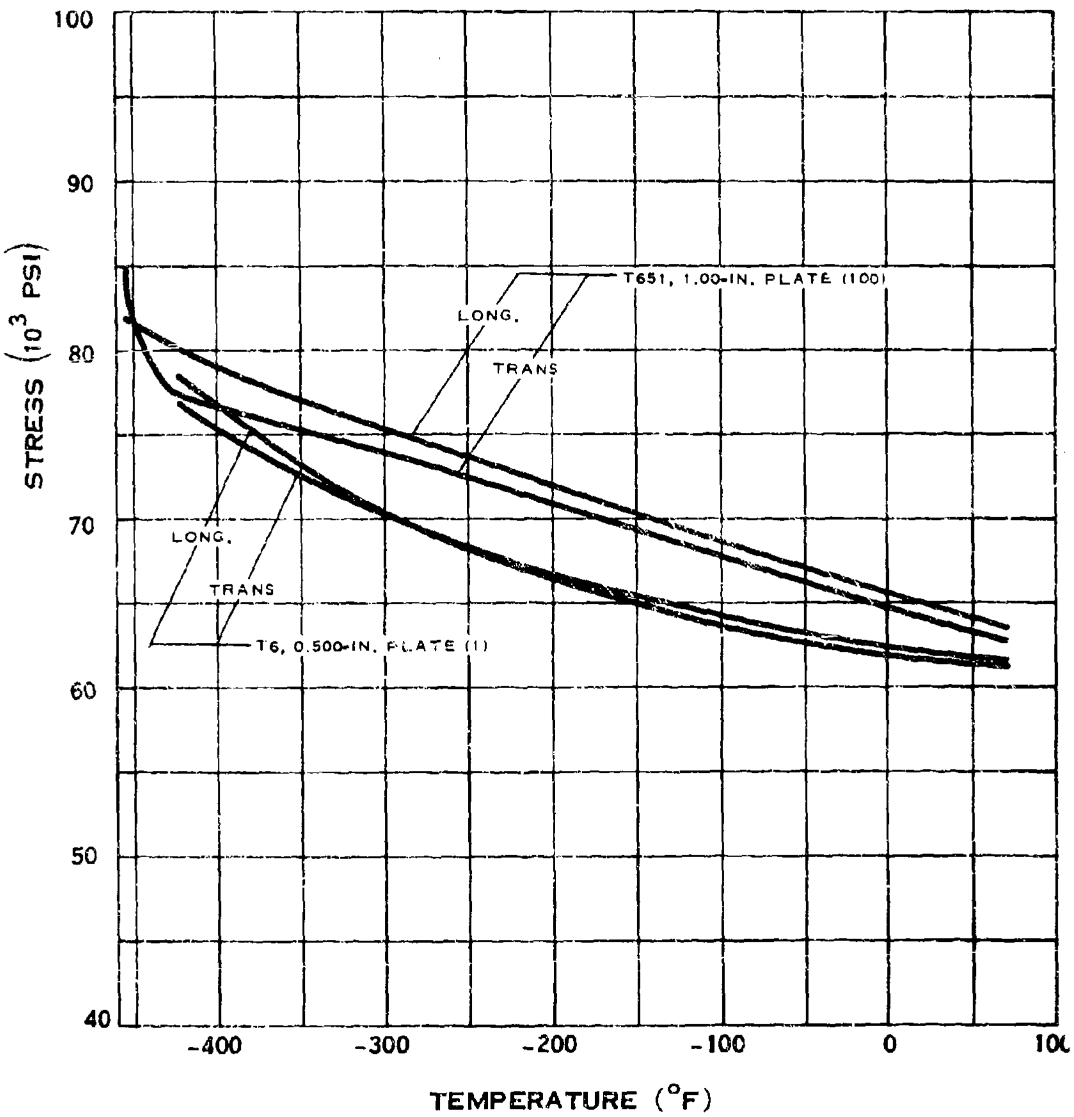
A.2.a-1



YIELD STRENGTH OF 2014 ALUMINUM

(6-68)

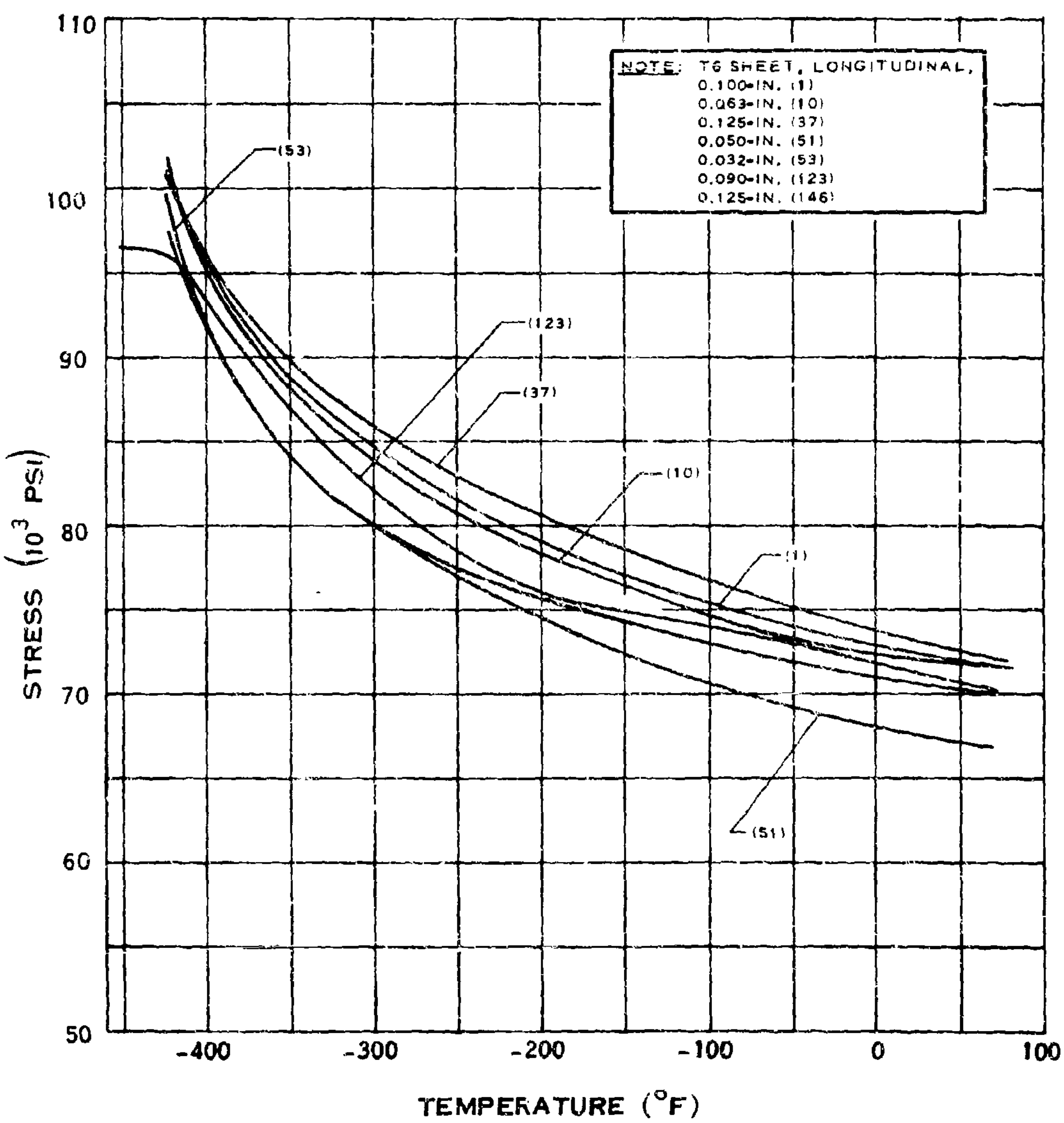
A.2.a-2



YIELD STRENGTH OF 2014 ALUMINUM

(6-68)

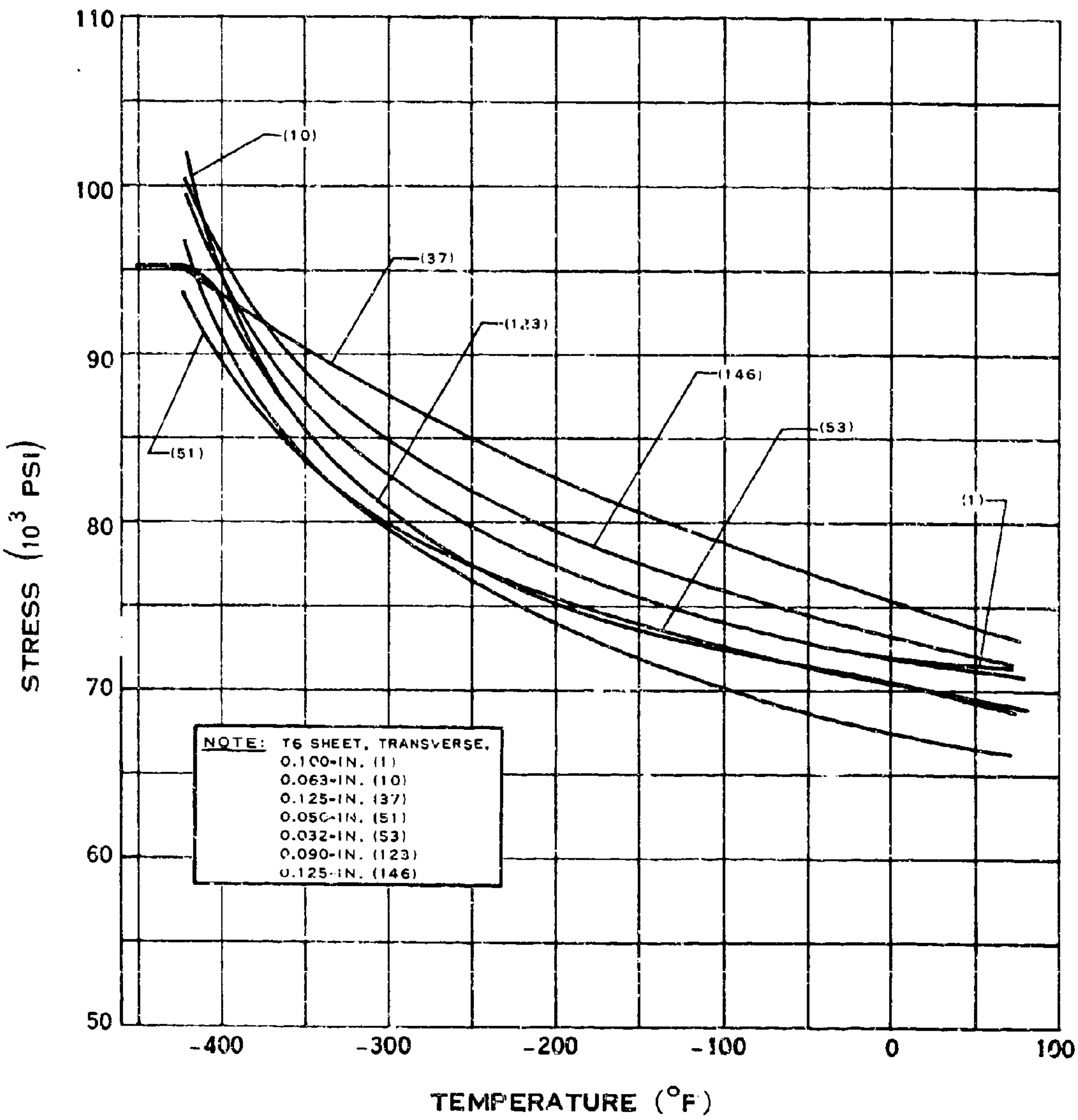
A.2.b



TENSILE STRENGTH OF 2014 ALUMINUM

(6-68)

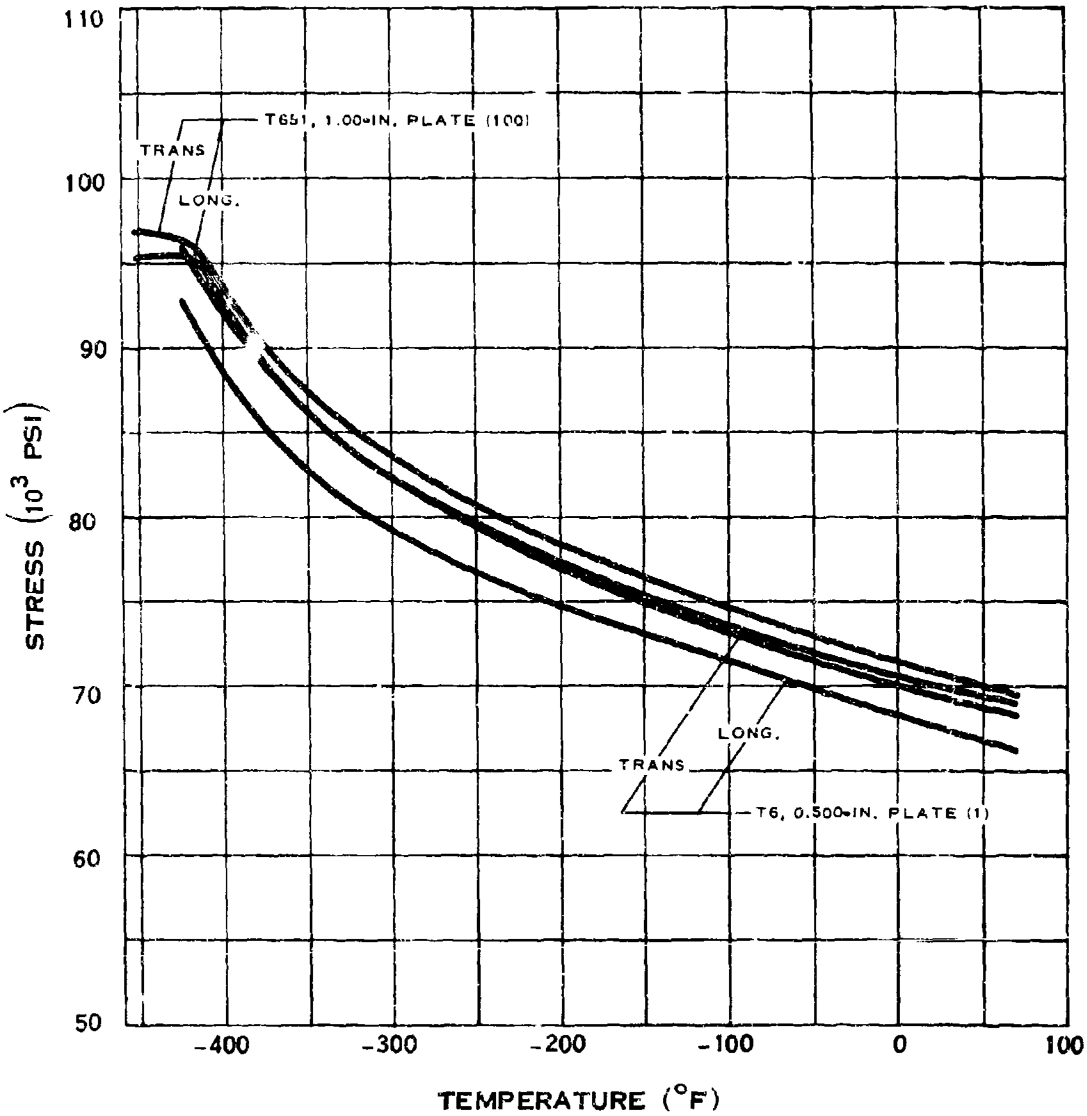
A.2.b-1



TENSILE STRENGTH OF 2014 ALUMINUM

(6-68)

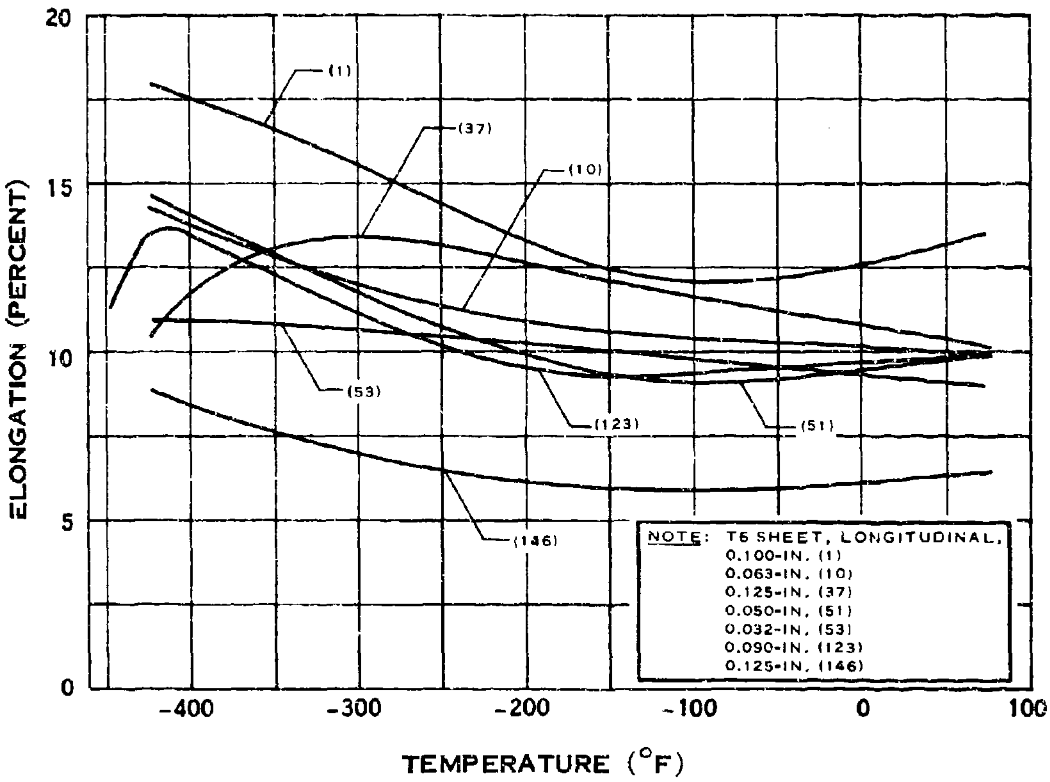
A.2.b-2



TENSILE STRENGTH OF 2014 ALUMINUM

(6-66)

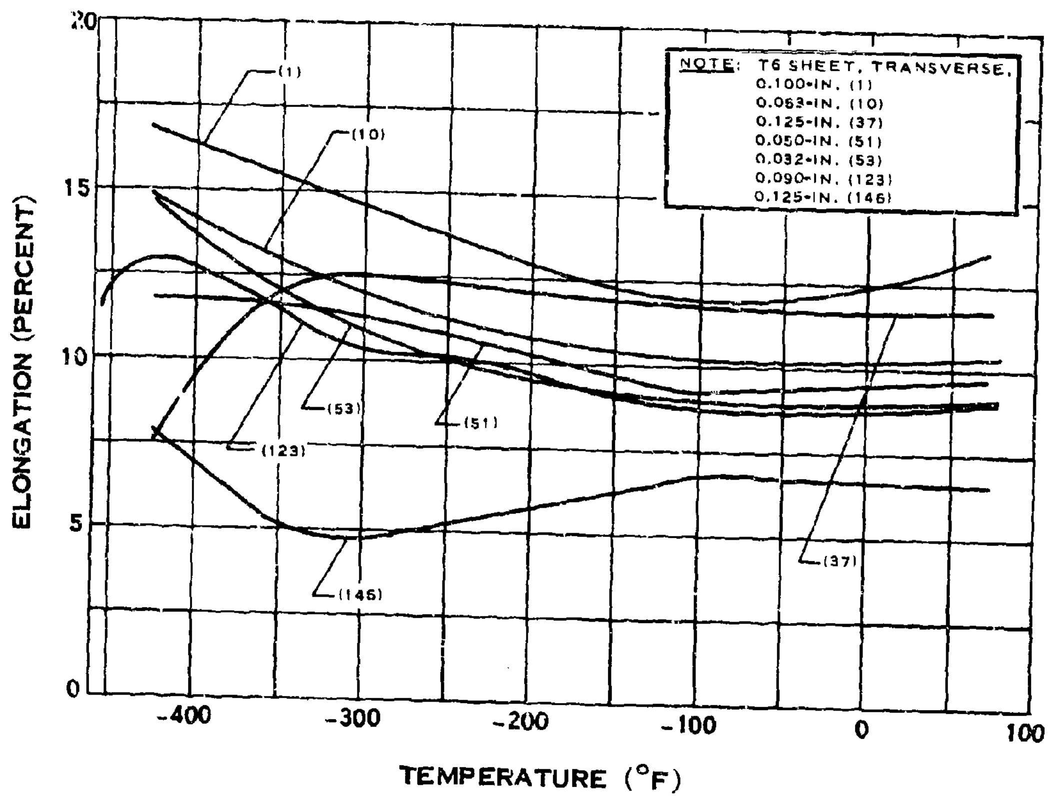
A.2.c



ELONGATION OF 2014 ALUMINUM

(6-68)

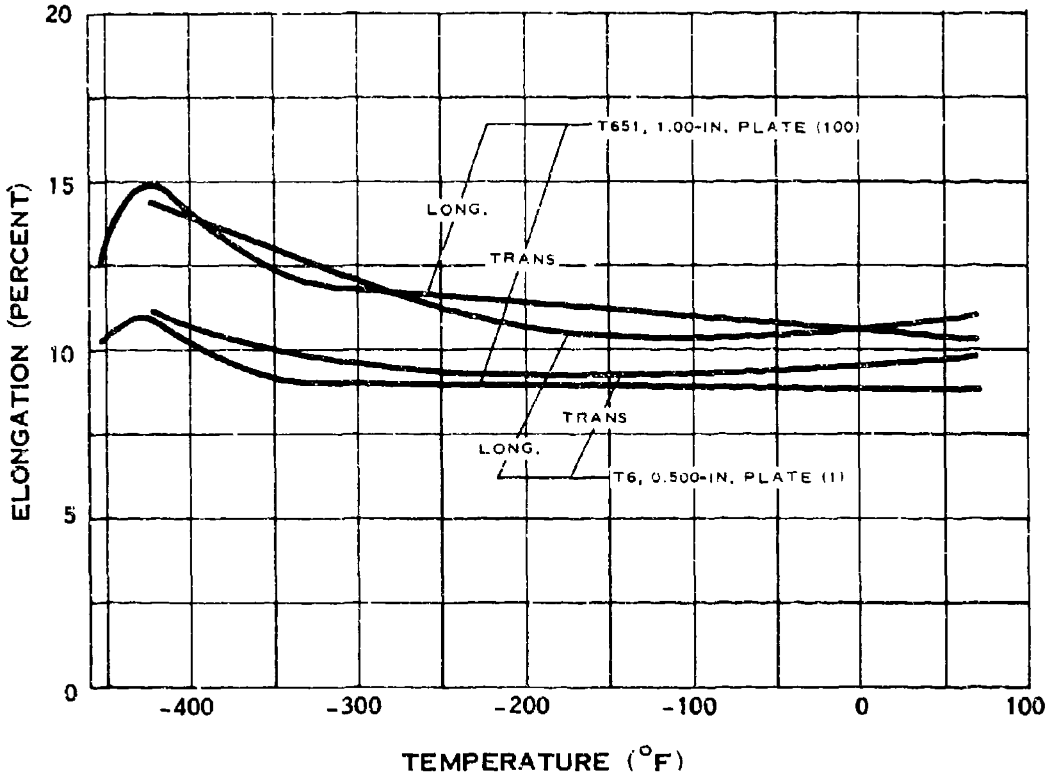
A.2.c-1



ELONGATION OF 2014 ALUMINUM

(6-68)

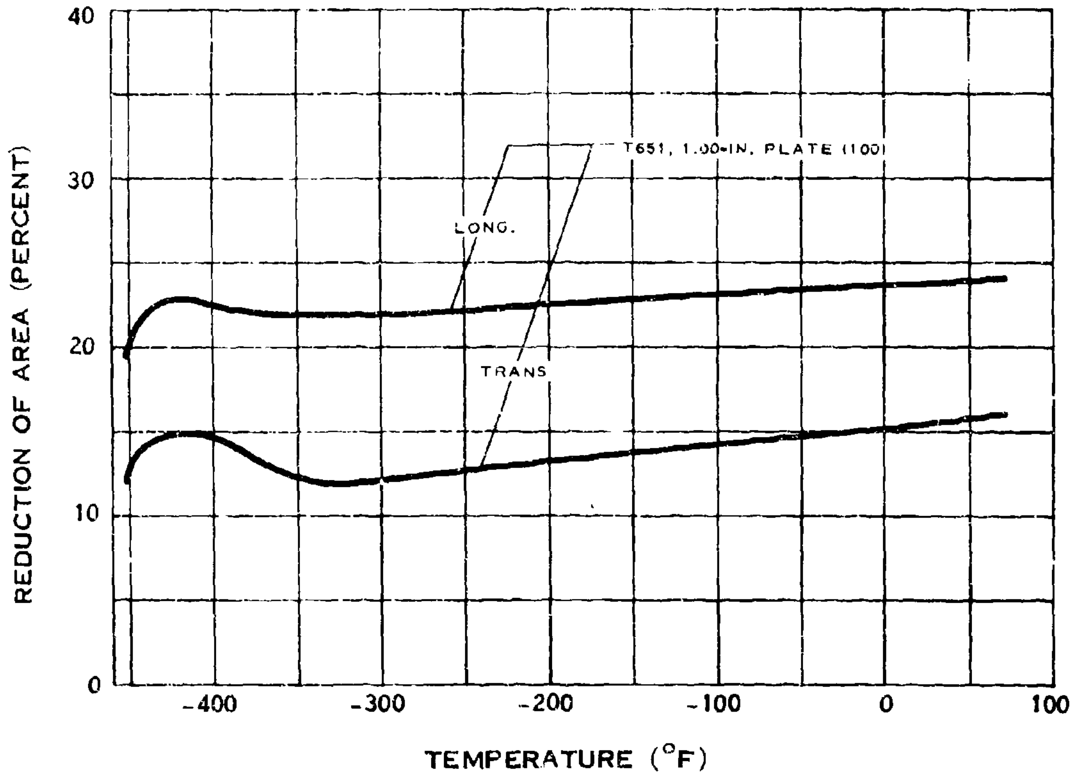
A.2.c-2



ELONGATION OF 2014 ALUMINUM

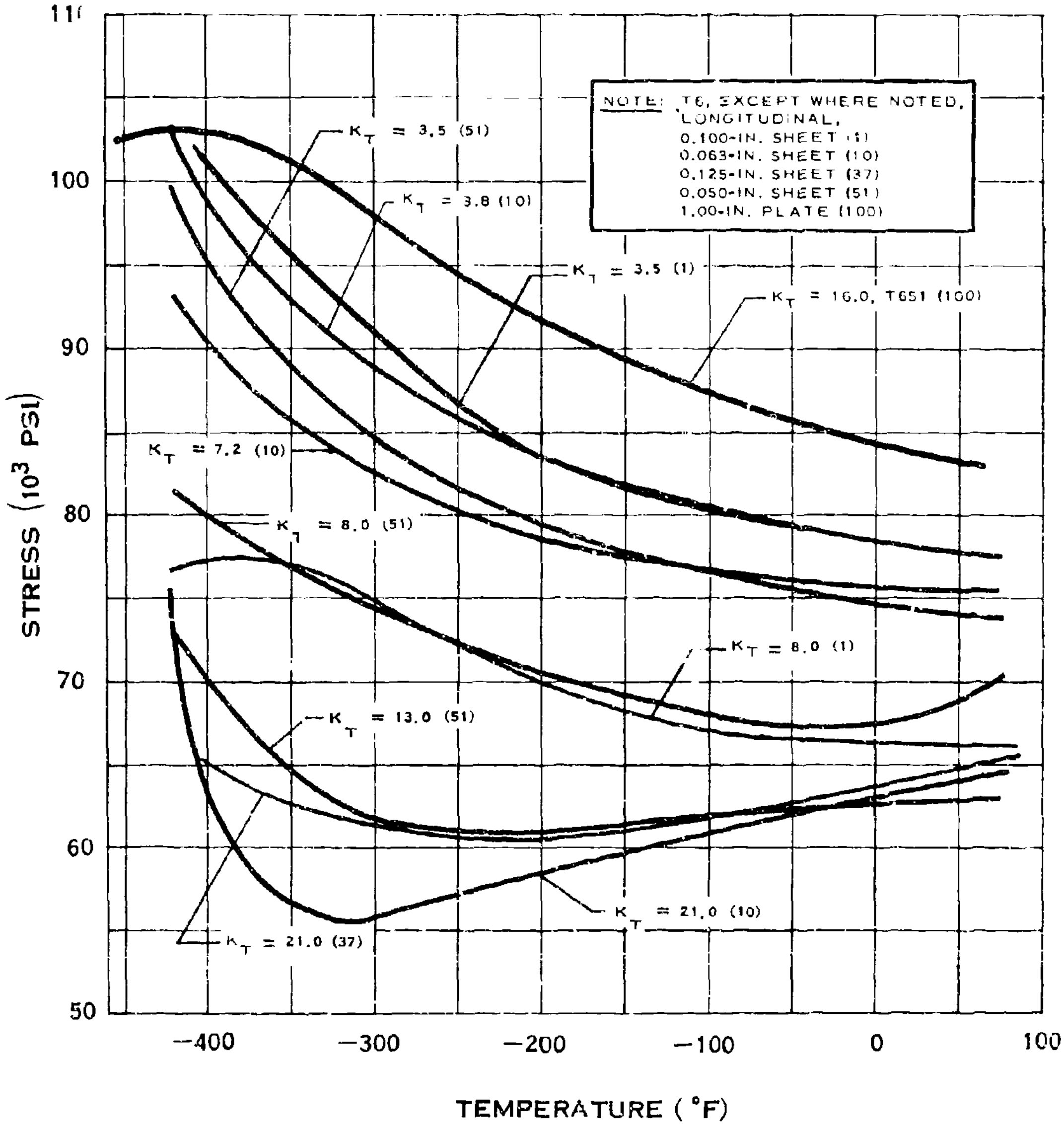
(6-68)

A.2.d



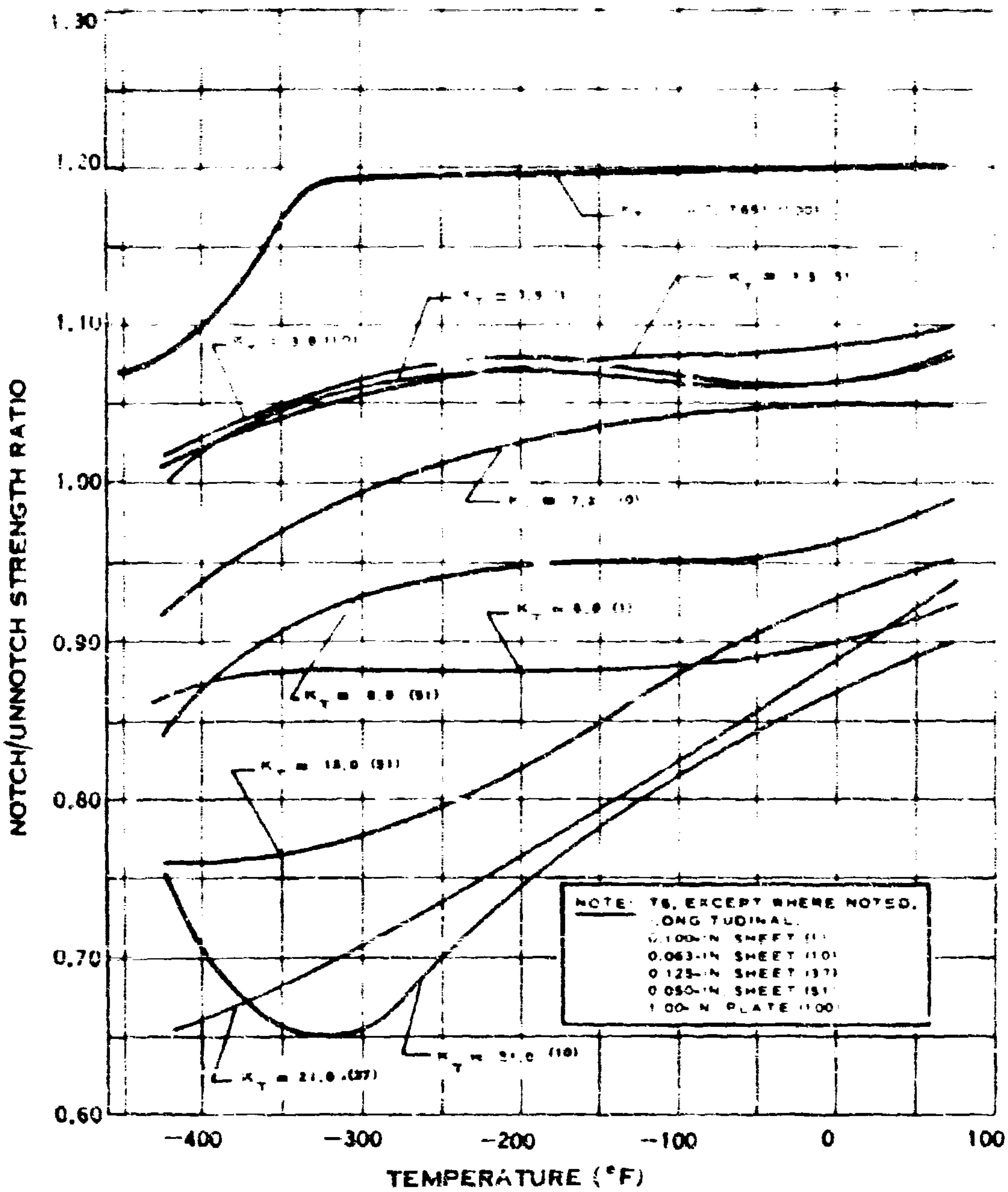
REDUCTION OF AREA OF 2014 ALUMINUM

(6-68)



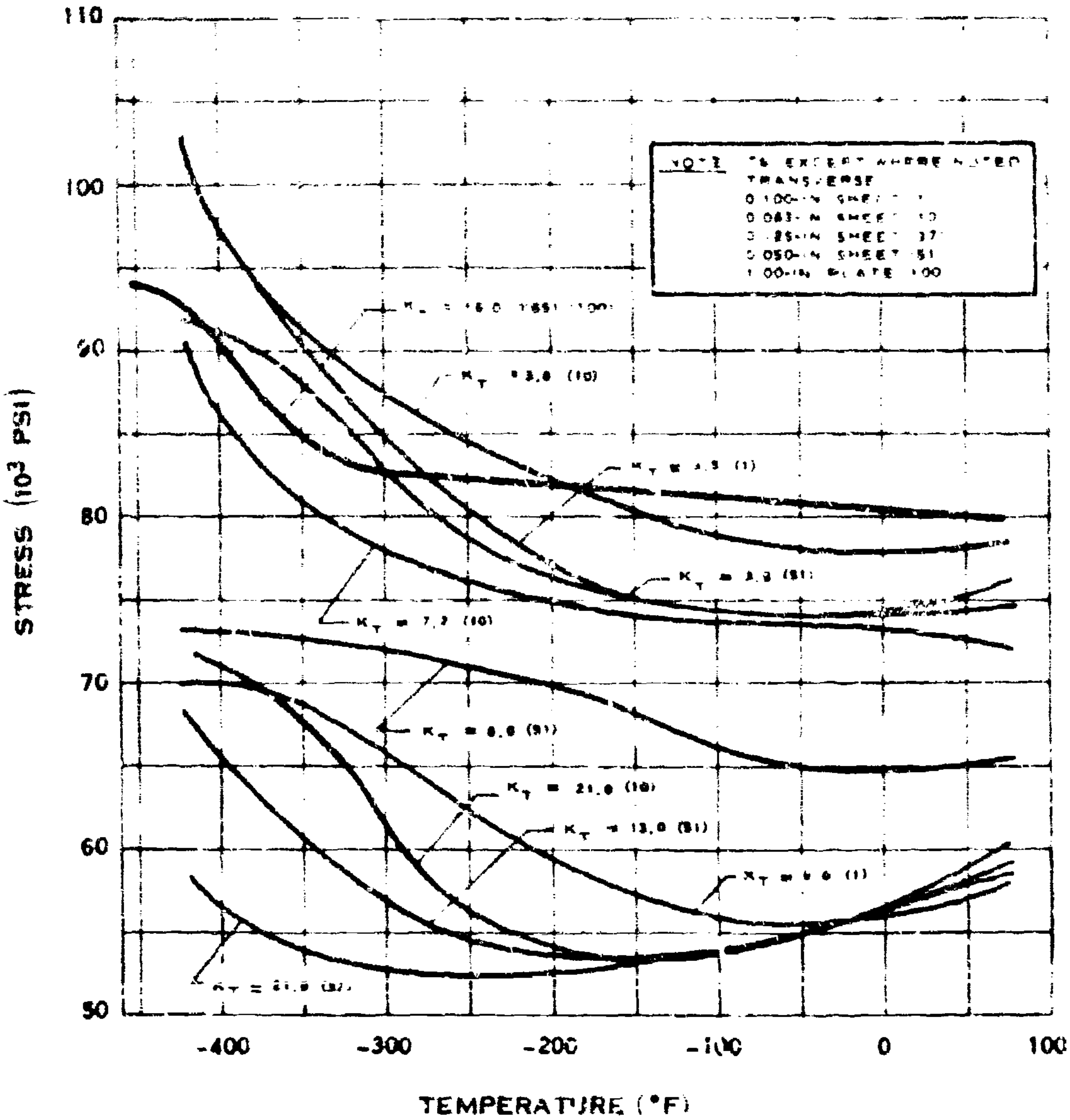
NOTCH TENSILE STRENGTH OF 2014 ALUMINUM

(6-68)



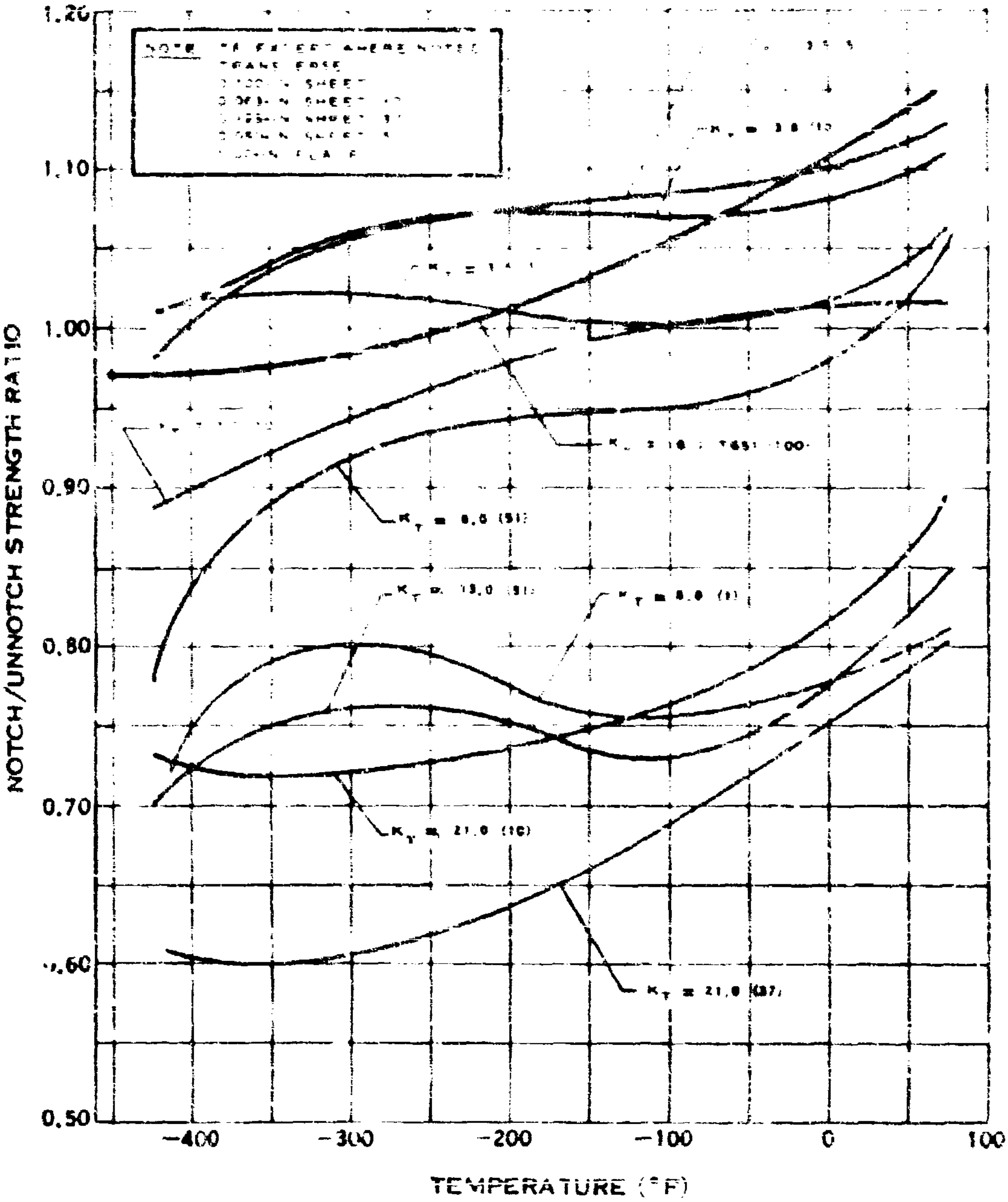
NOTCH STRENGTH RATIO OF 2014 ALUMINUM

16-68



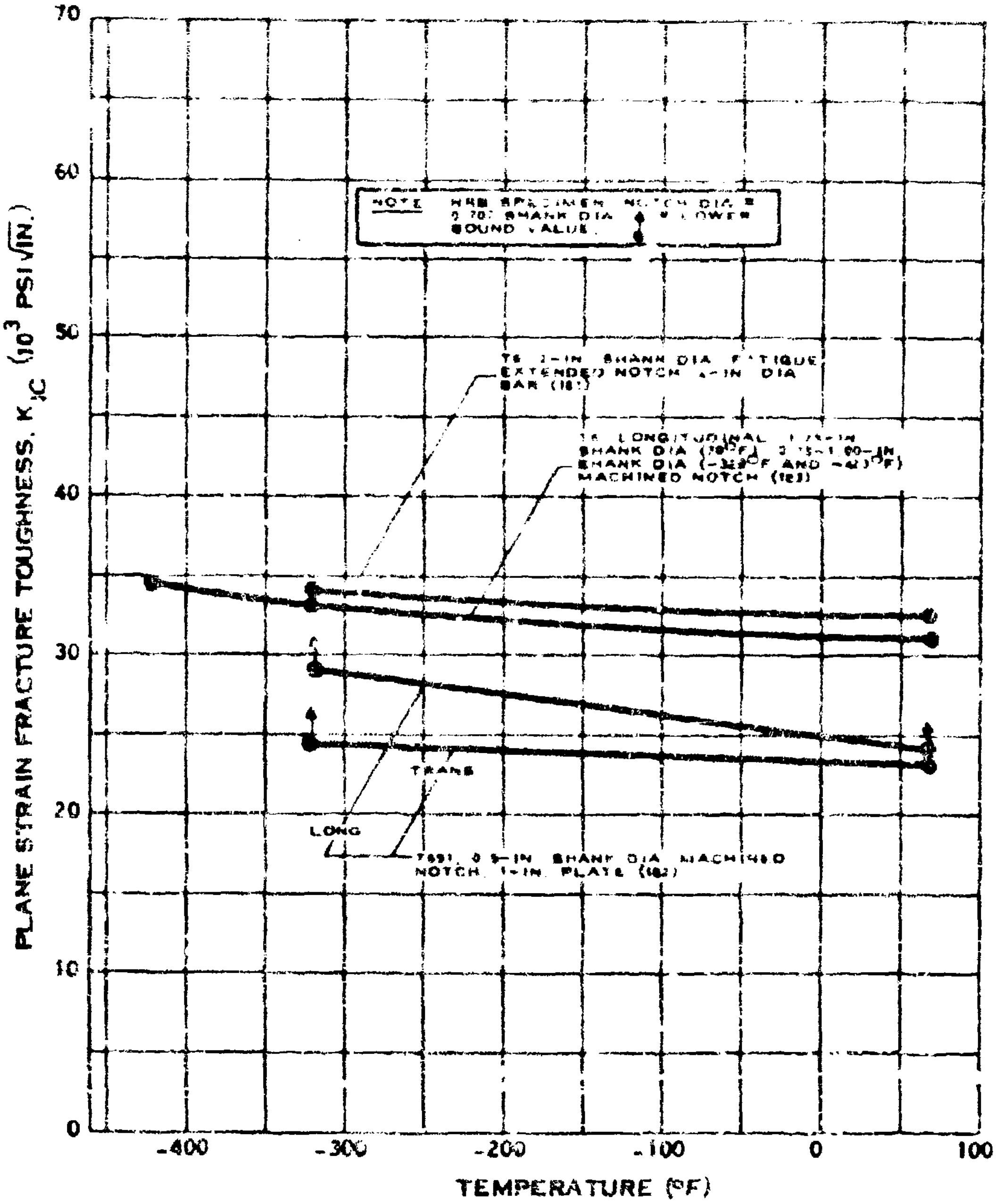
NOTCH TENSILE STRENGTH OF 2014 ALUMINUM

10-64



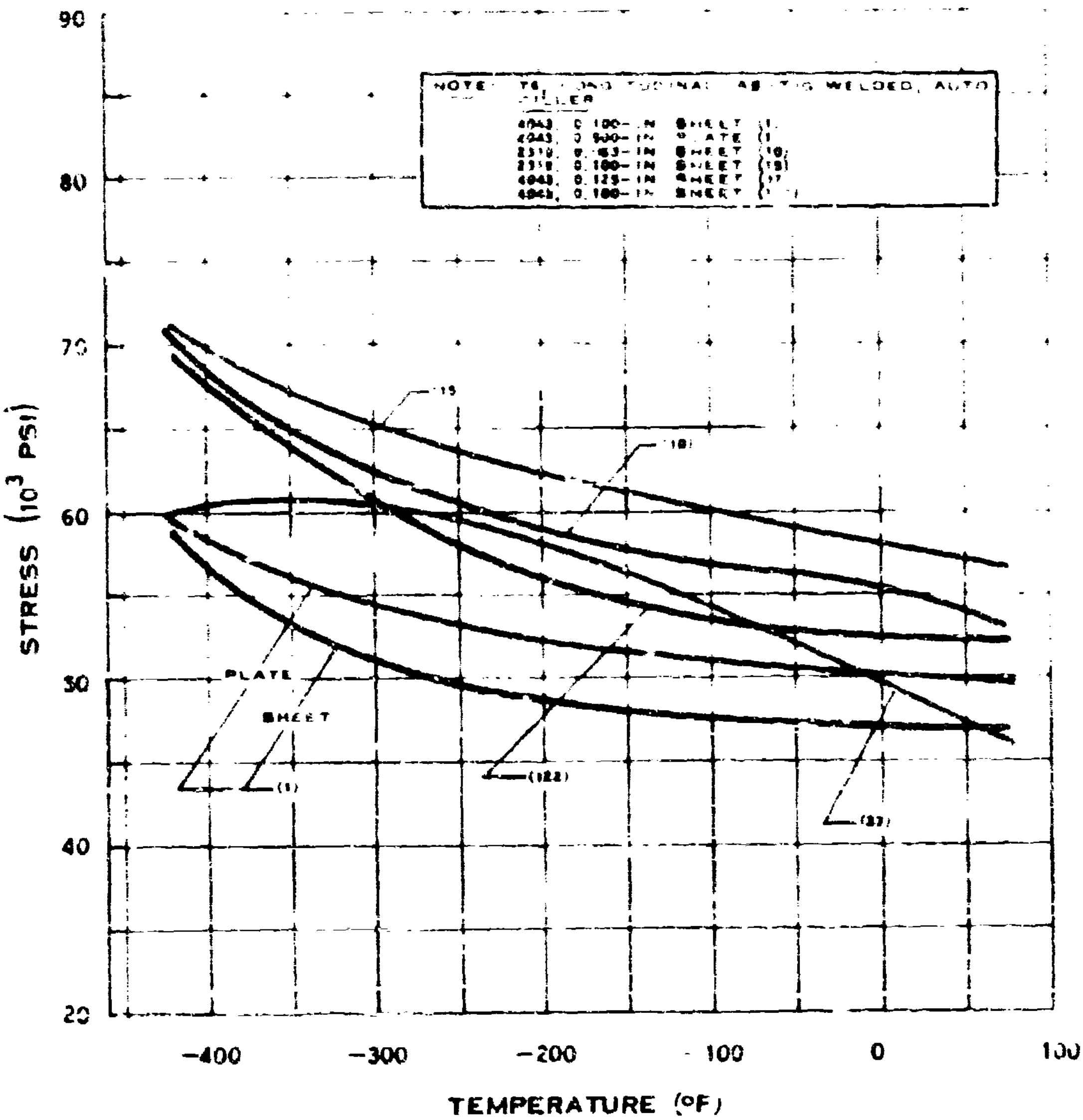
NOTCH STRENGTH RATIO OF 2014 ALUMINUM

A.2.f



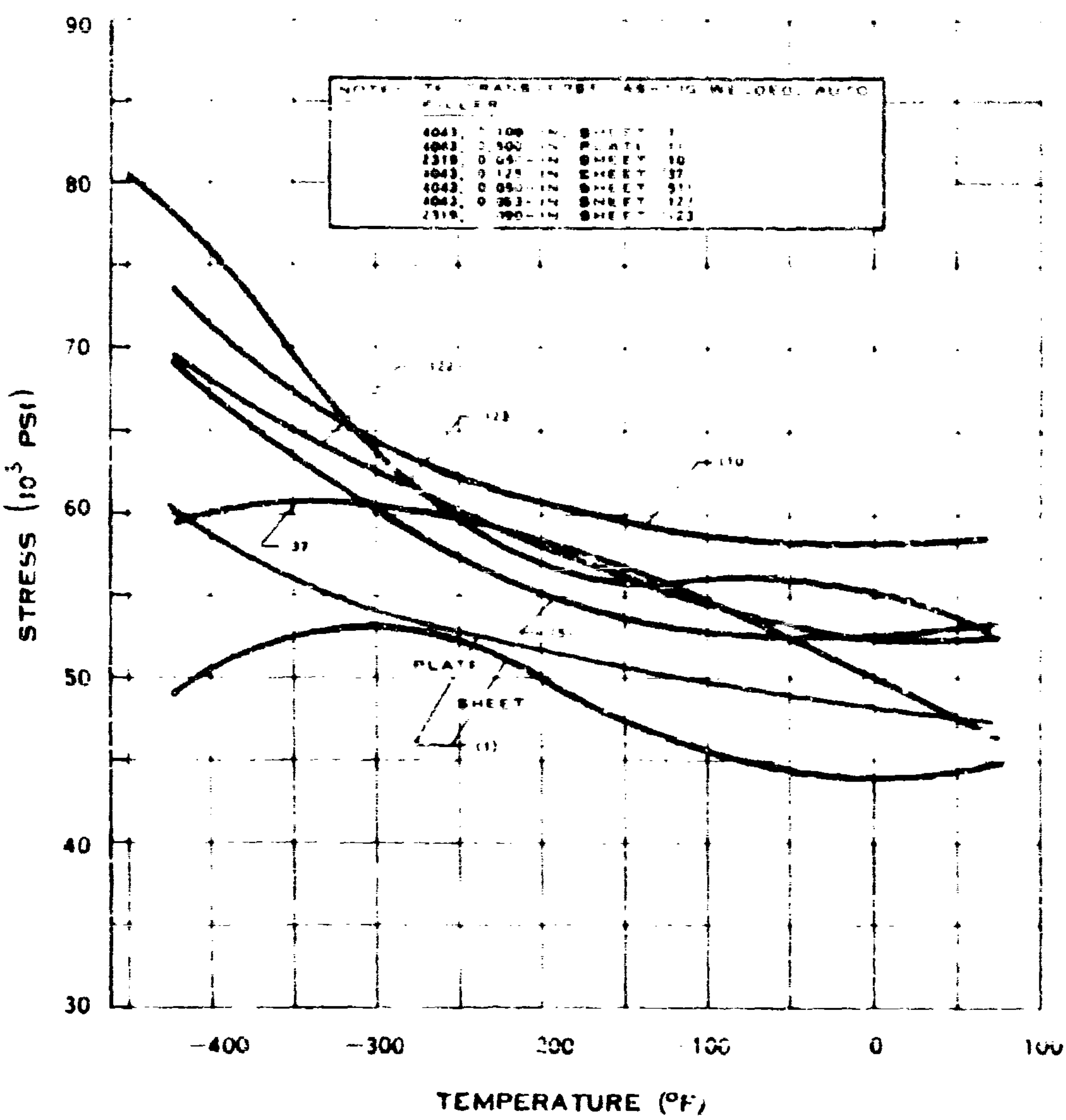
FRACTURE TOUGHNESS OF 2014 ALUMINUM

A.2.g



WELD TENSILE STRENGTH OF 2014 ALUMINUM

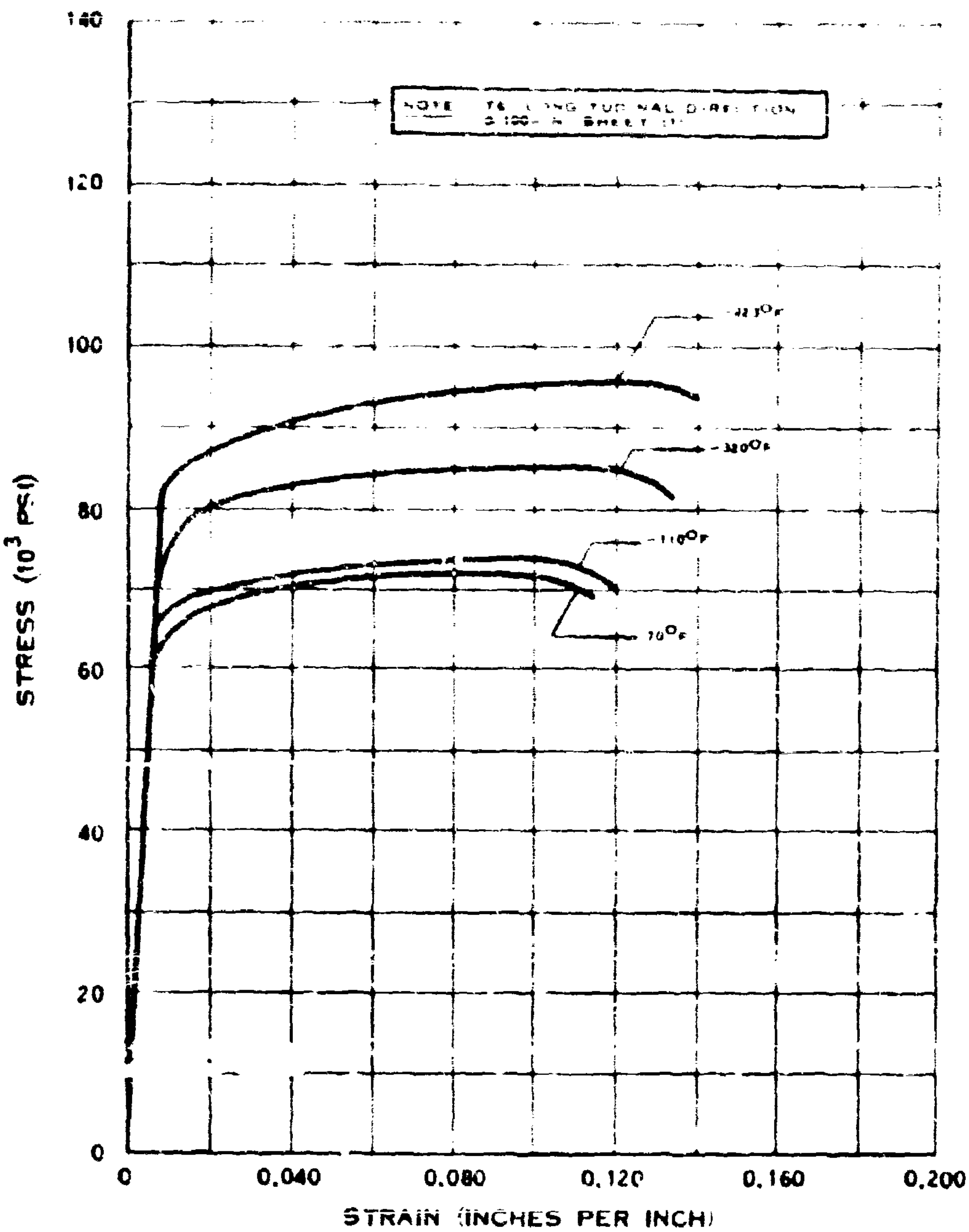
A.2.g-1



WELD TENSILE STRENGTH OF 2014 ALUMINUM

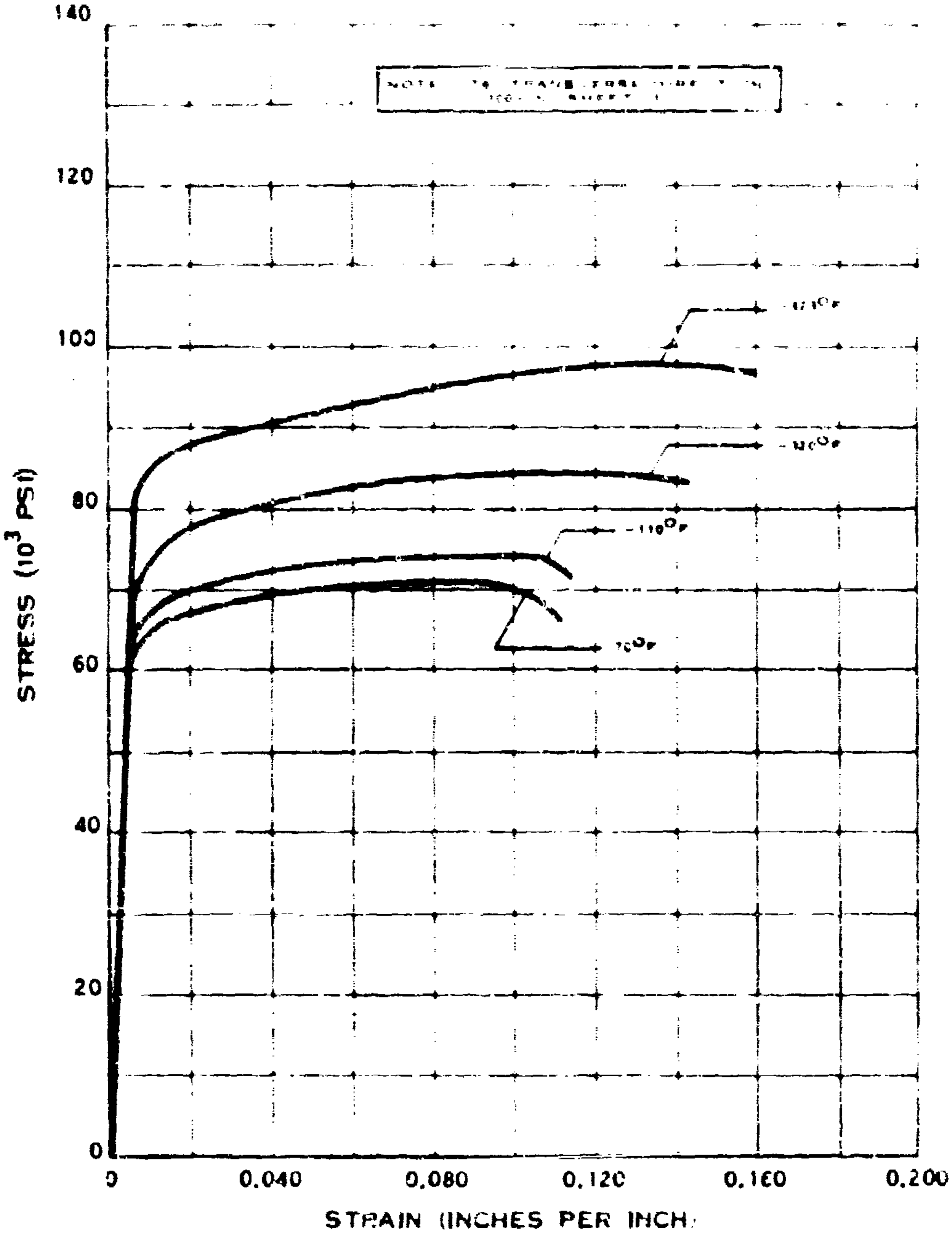
7-64

A.2.h



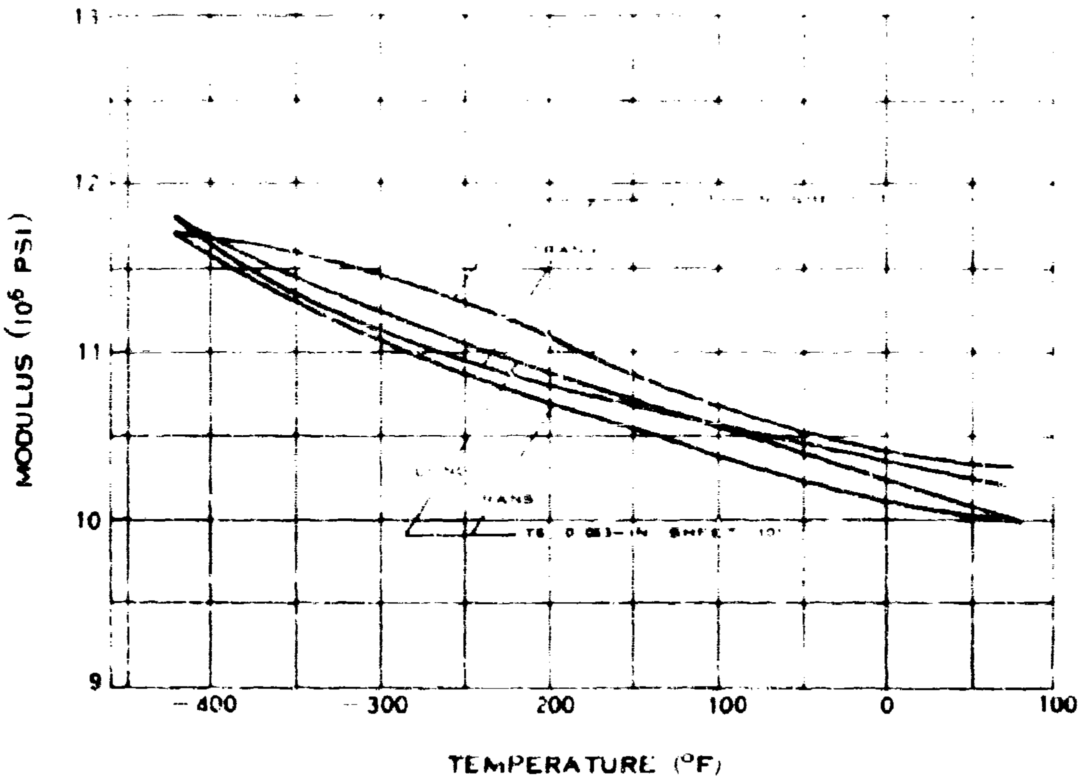
STRESS-STRAIN DIAGRAM FOR 2014 ALUMINUM

A.2.h-1



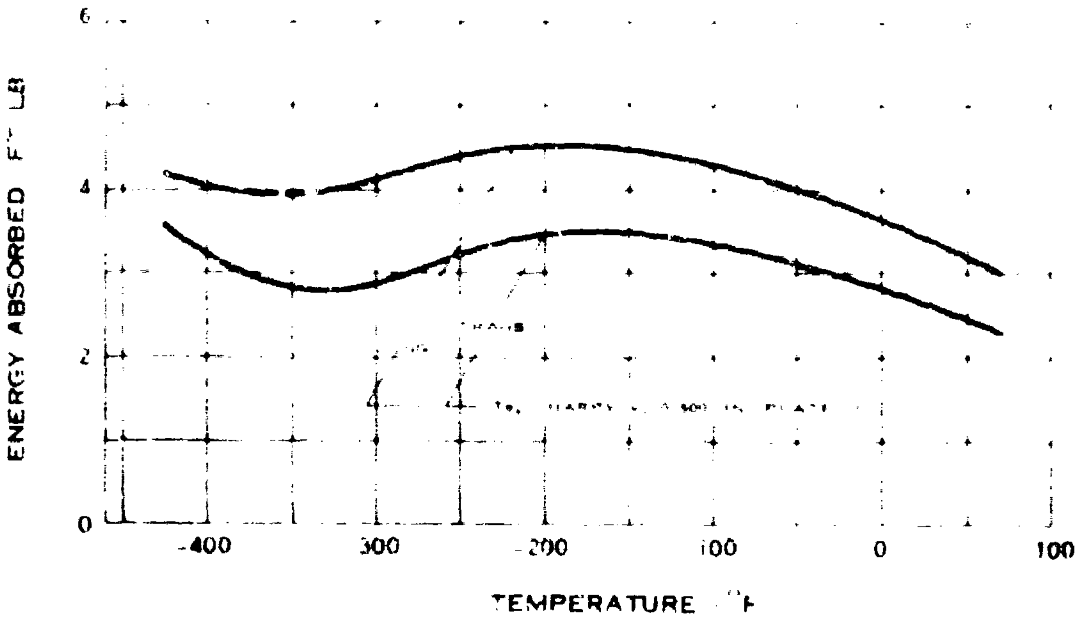
STRESS-STRAIN DIAGRAM FOR 2014 ALUMINUM

A.2.i



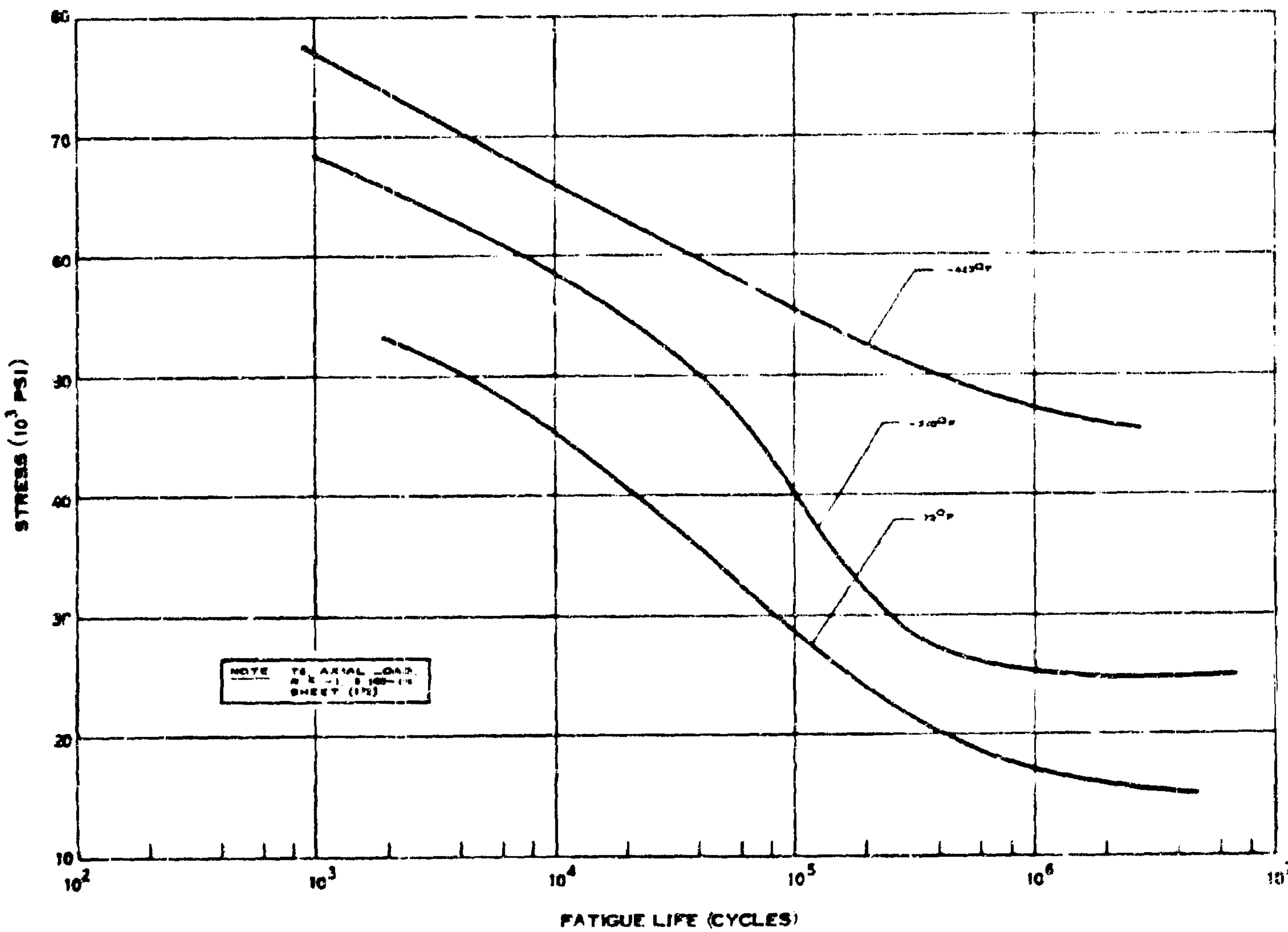
MODULUS OF ELASTICITY OF 2014 ALUMINUM

A.2.j



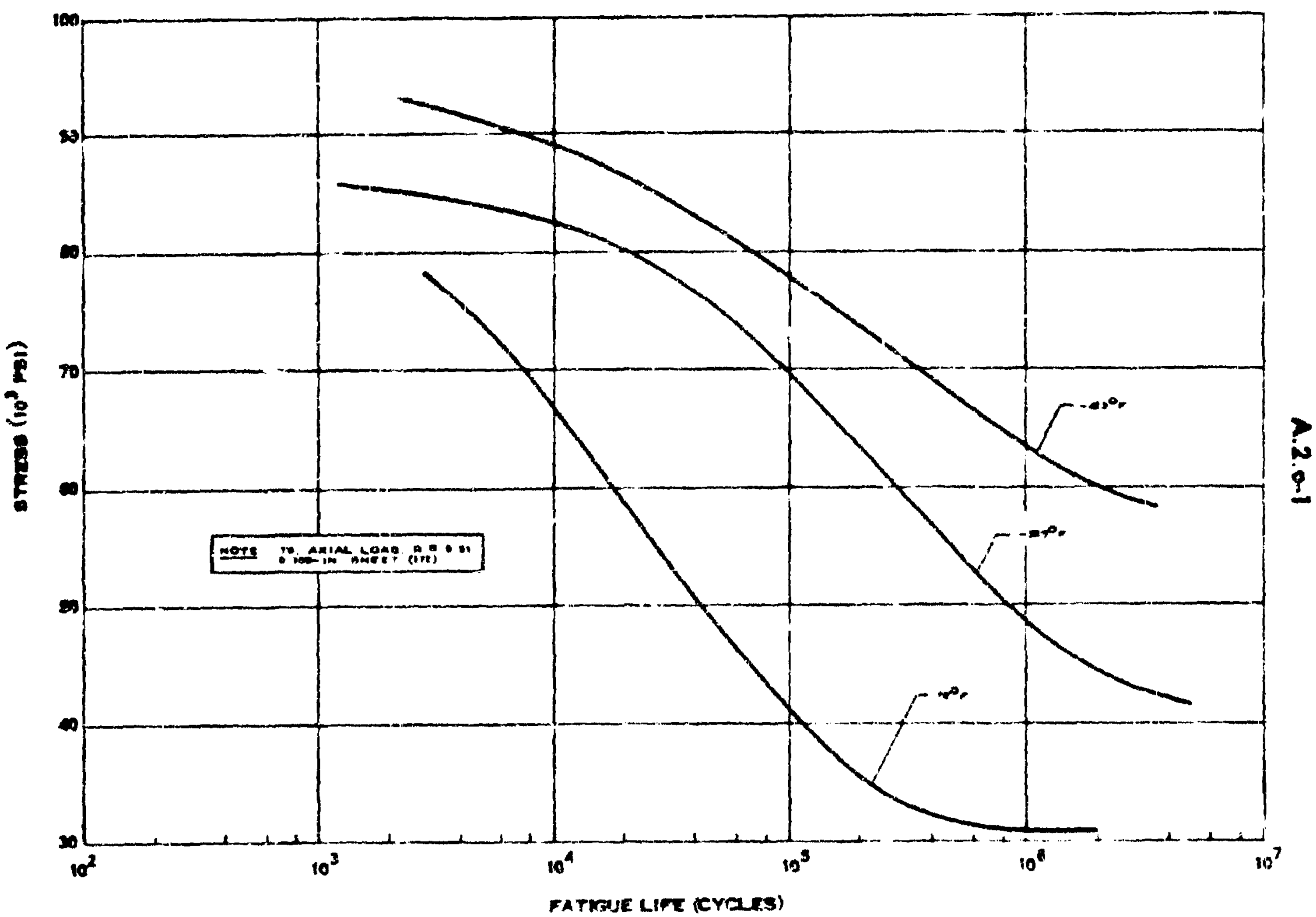
IMPACT STRENGTH OF 2014 ALUMINUM

7-64



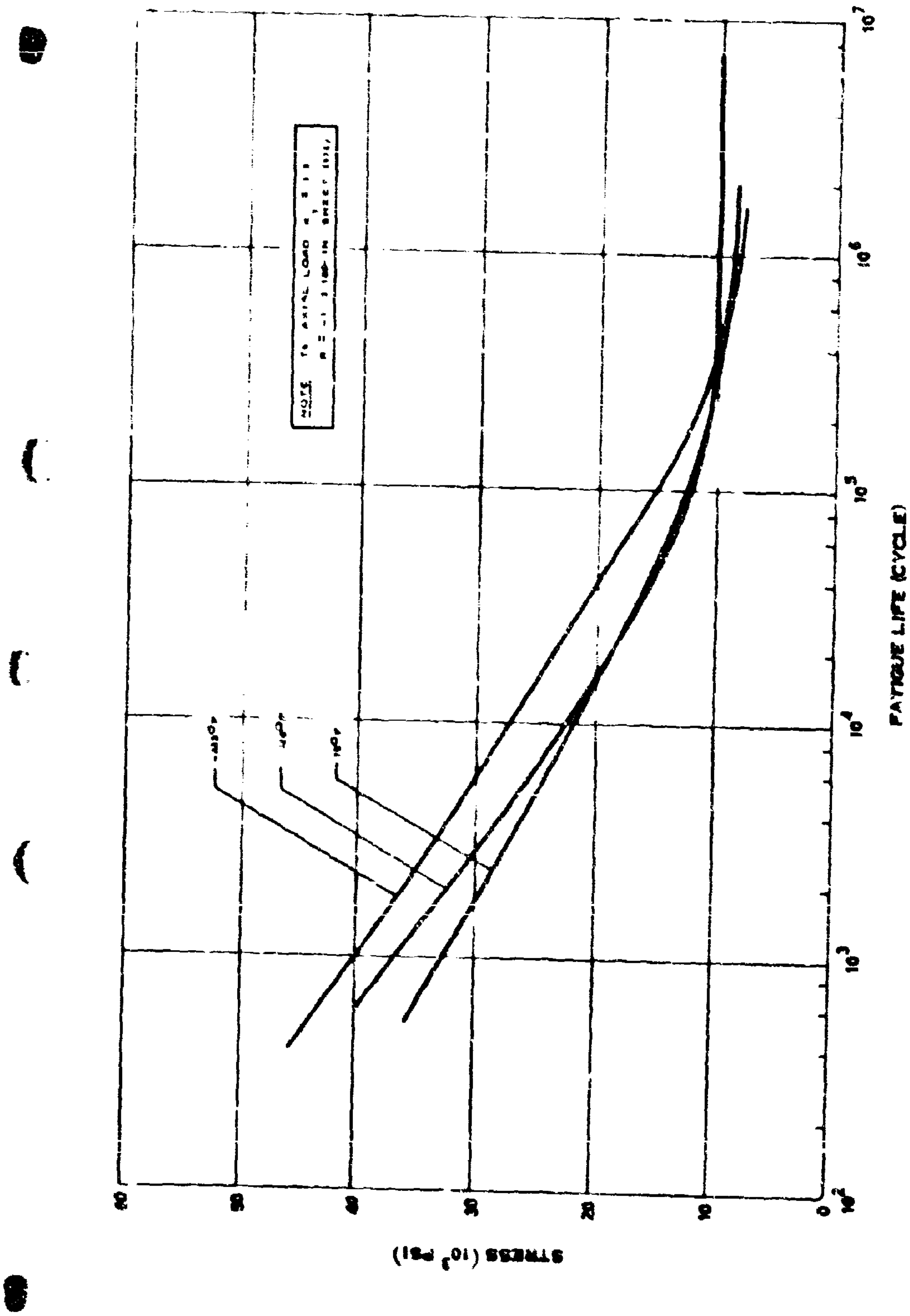
FATIGUE STRENGTH OF 2014 ALUMINUM

A.2.c-1



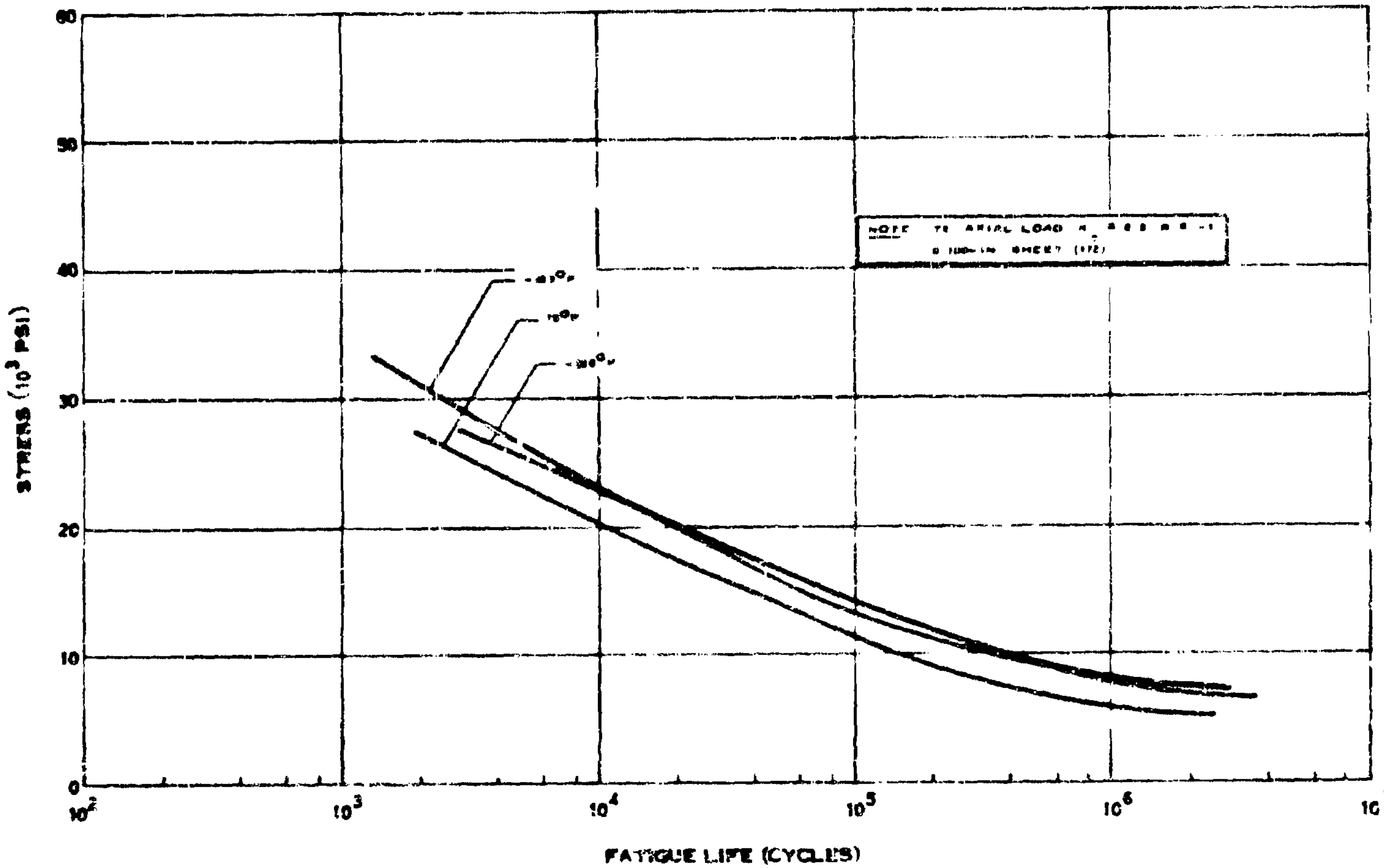
FATIGUE STRENGTH OF 2014 ALUMINUM

A.2.o-2

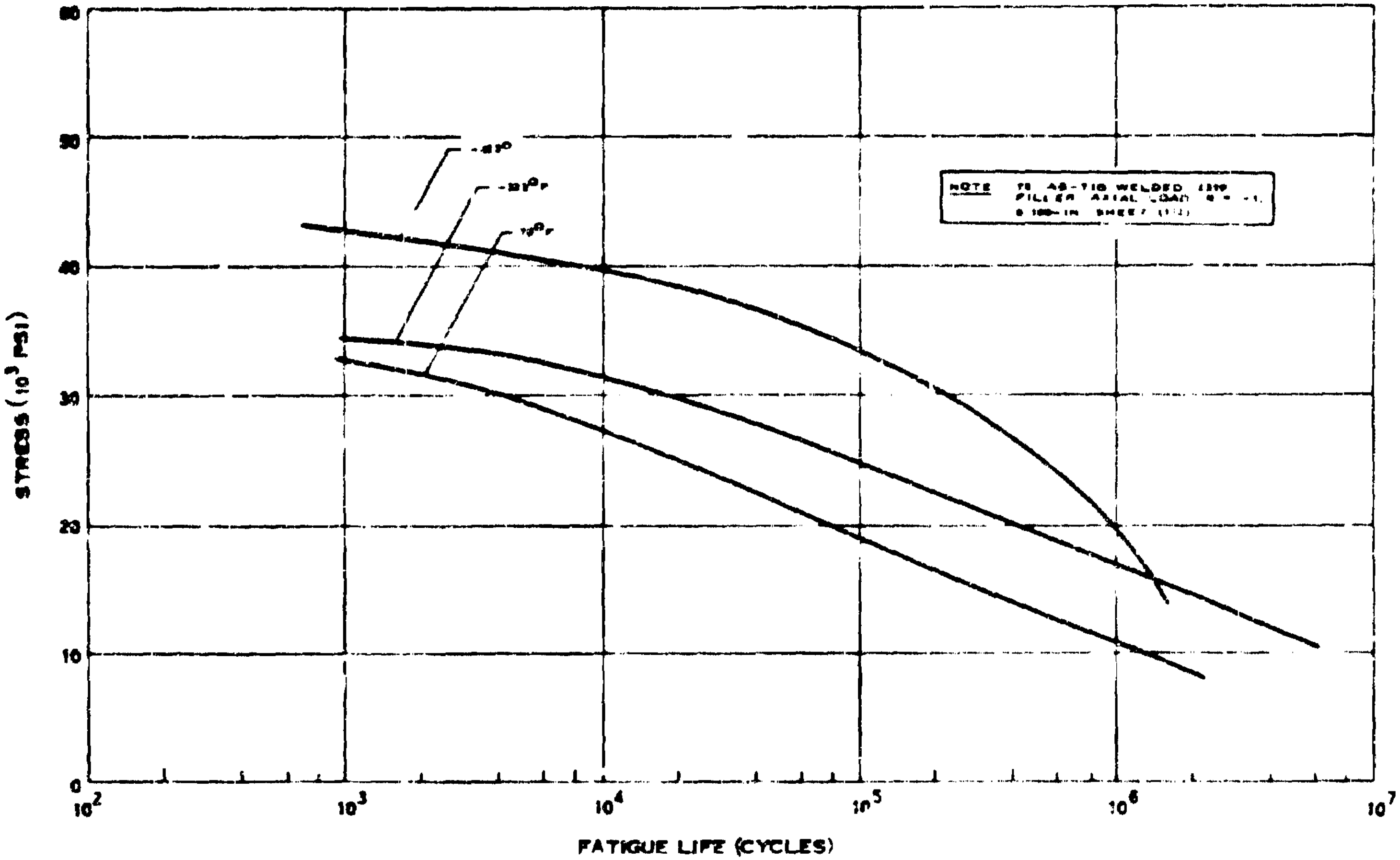


NOTCH FATIGUE STRENGTH OF 2014 ALUMINUM

A.2.o-3

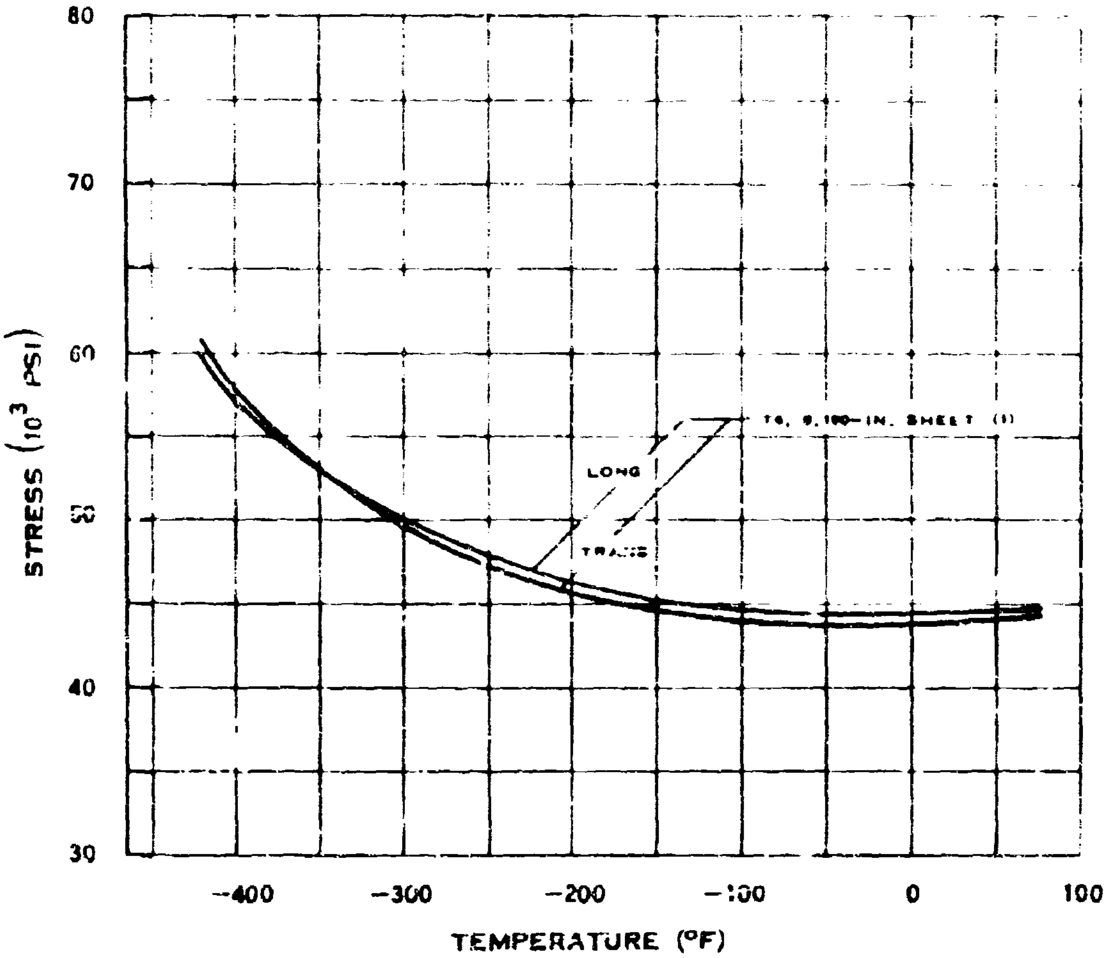


NOTCH FATIGUE STRENGTH OF 2014 ALUMINUM

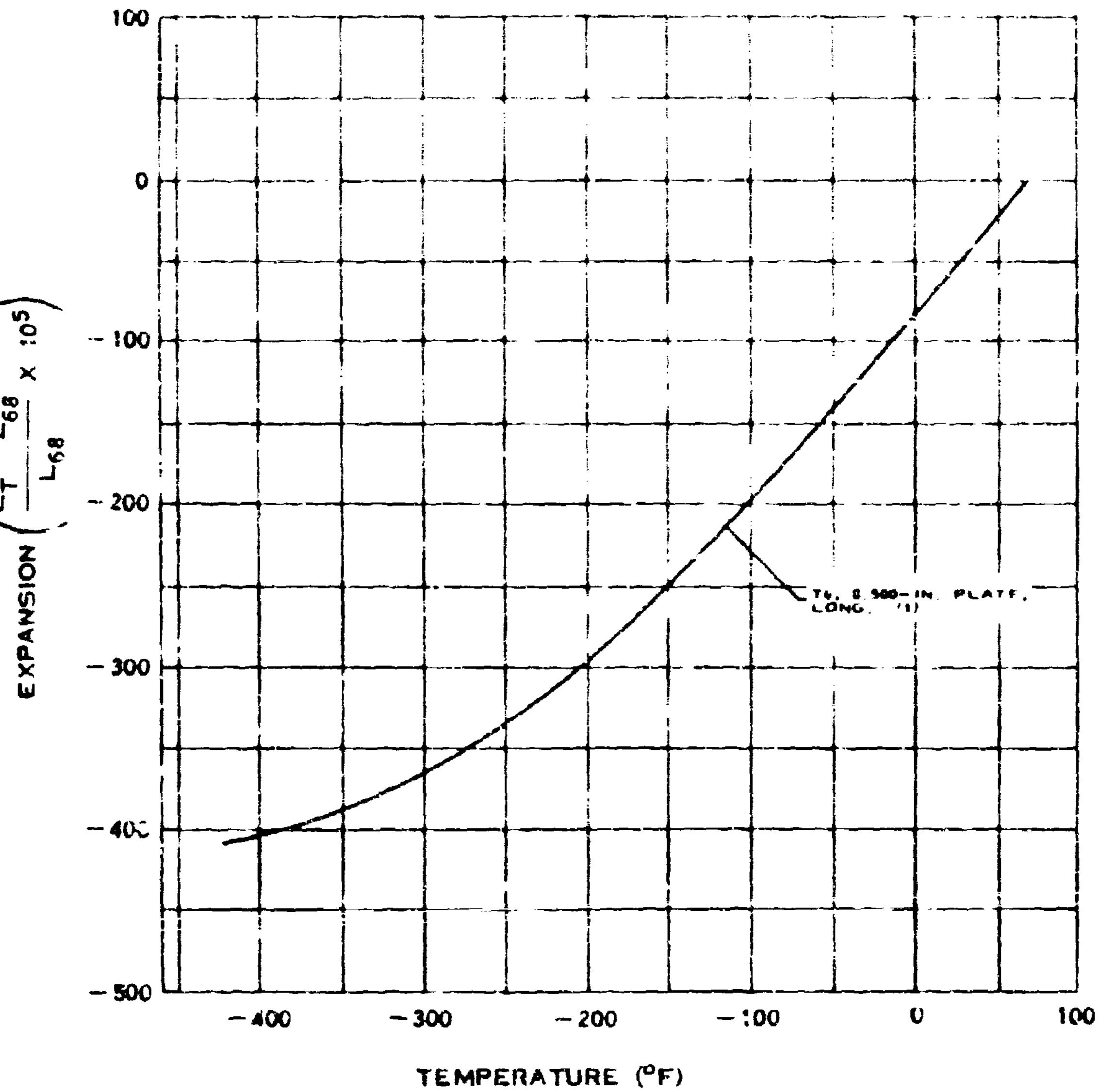


WELD FATIGUE STRENGTH OF 2014 ALUMINUM

A.2.p

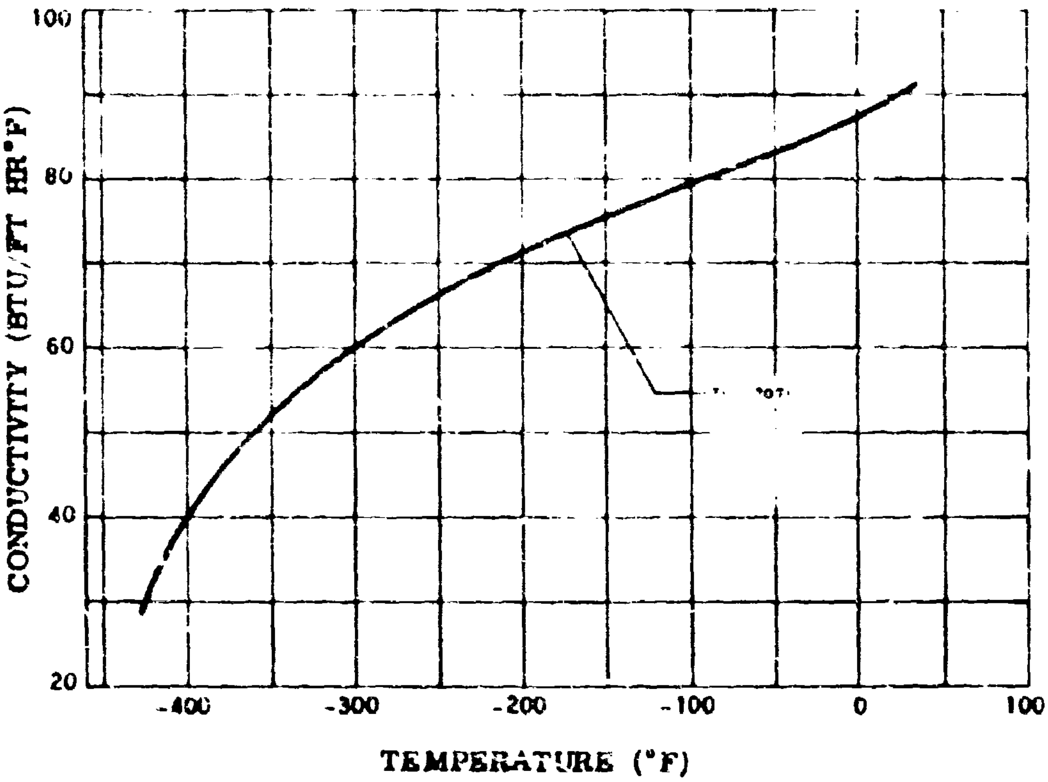


SHEAR STRENGTH OF 2014 ALUMINUM



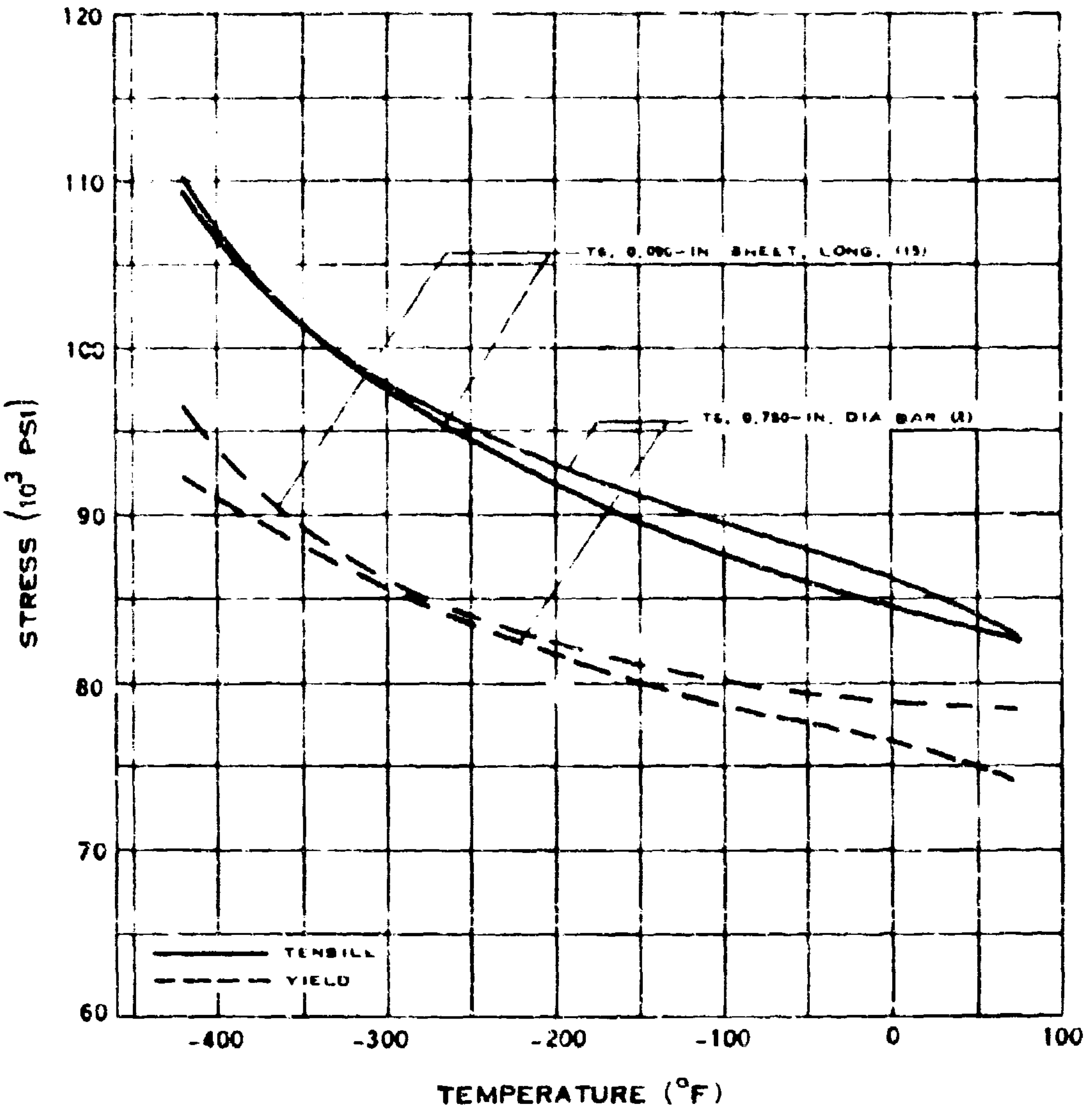
THERMAL EXPANSION OF 2014 ALUMINUM

A.2.v



THERMAL CONDUCTIVITY OF 2014 ALUMINUM

A.3.ab



STRENGTH OF 2020 ALUMINUM

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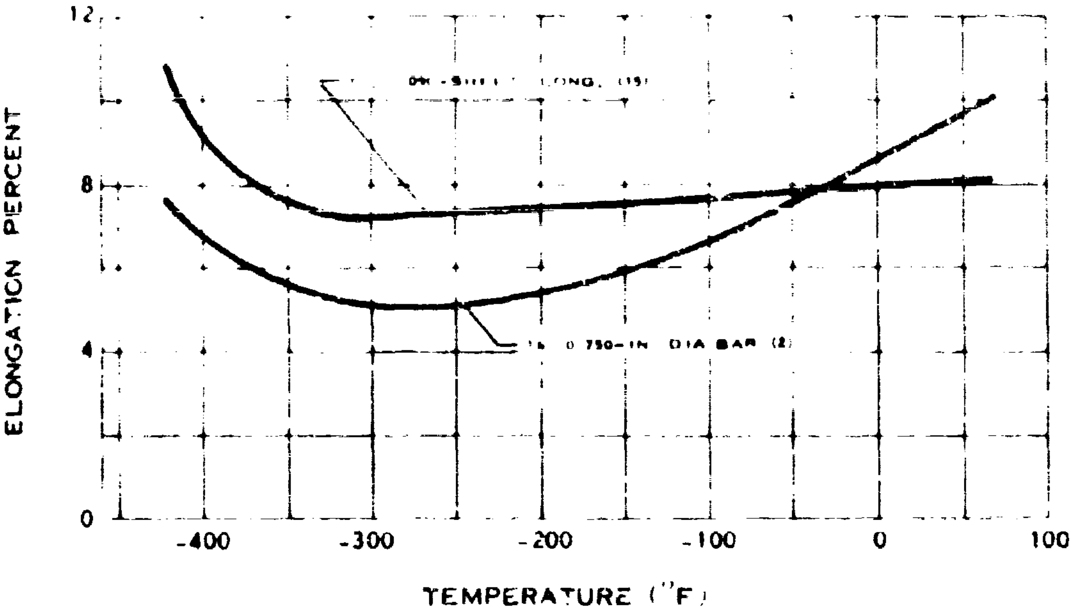
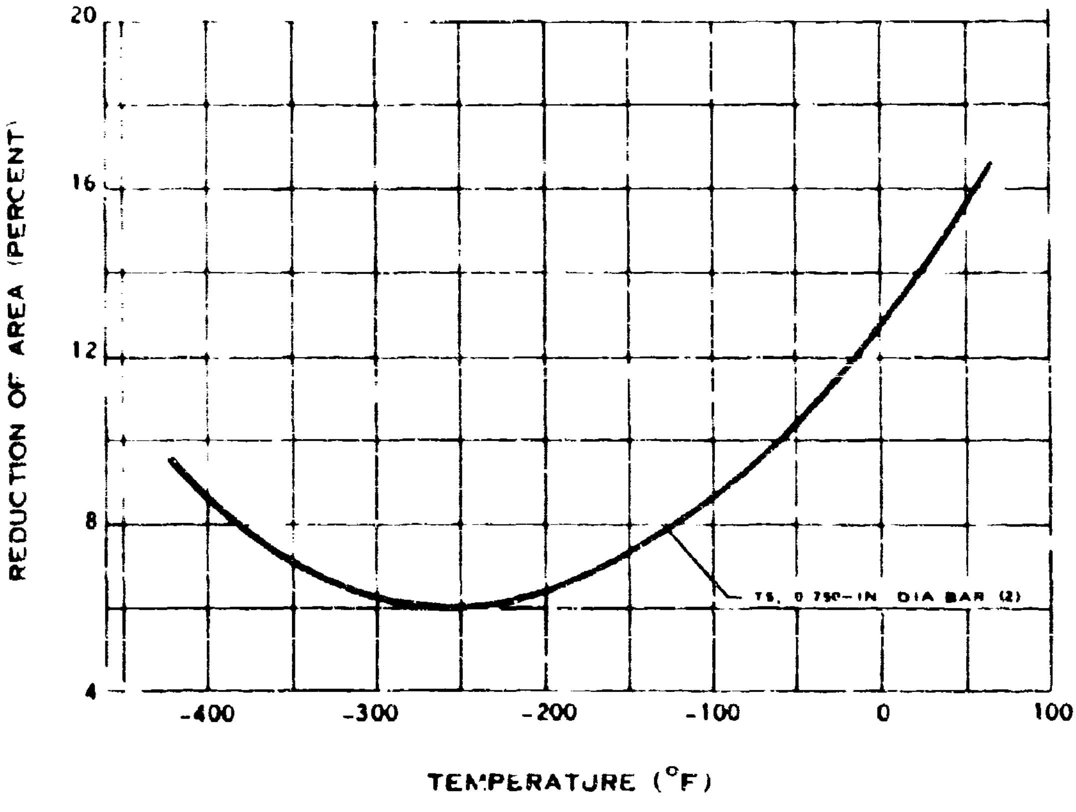
(7-64)

A.3.cd

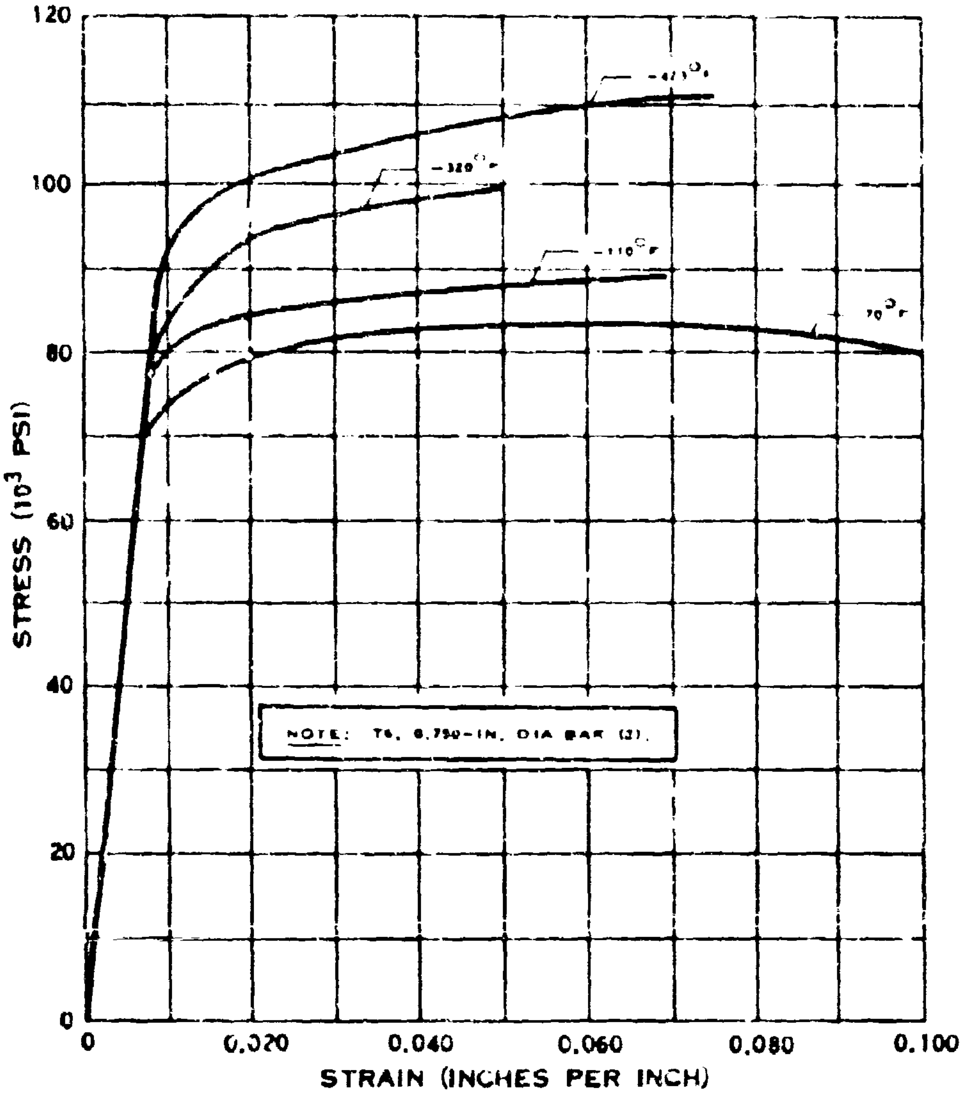


ELONGATION OF 2020 ALUMINUM

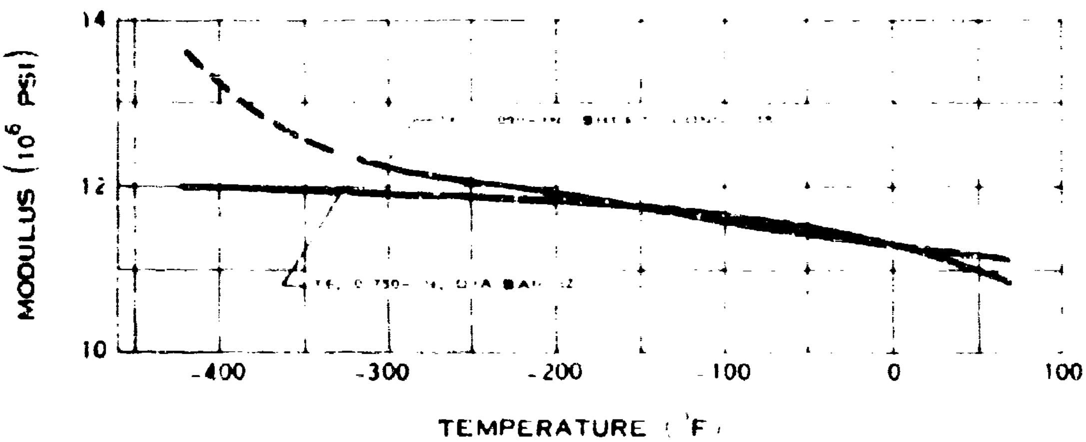


REDUCTION OF AREA OF 2020 ALUMINUM

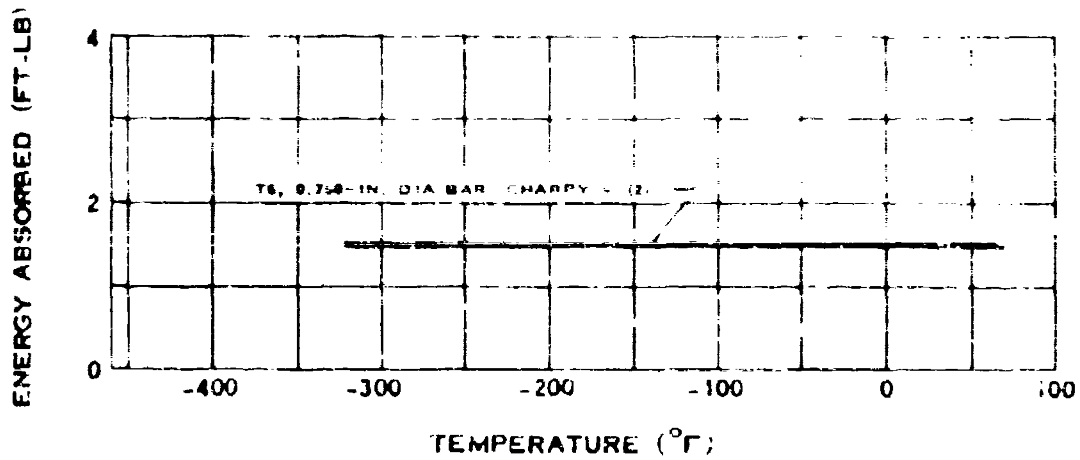
A.3.h



STRESS – STRAIN DIAGRAM FOR 2020 ALUMINUM

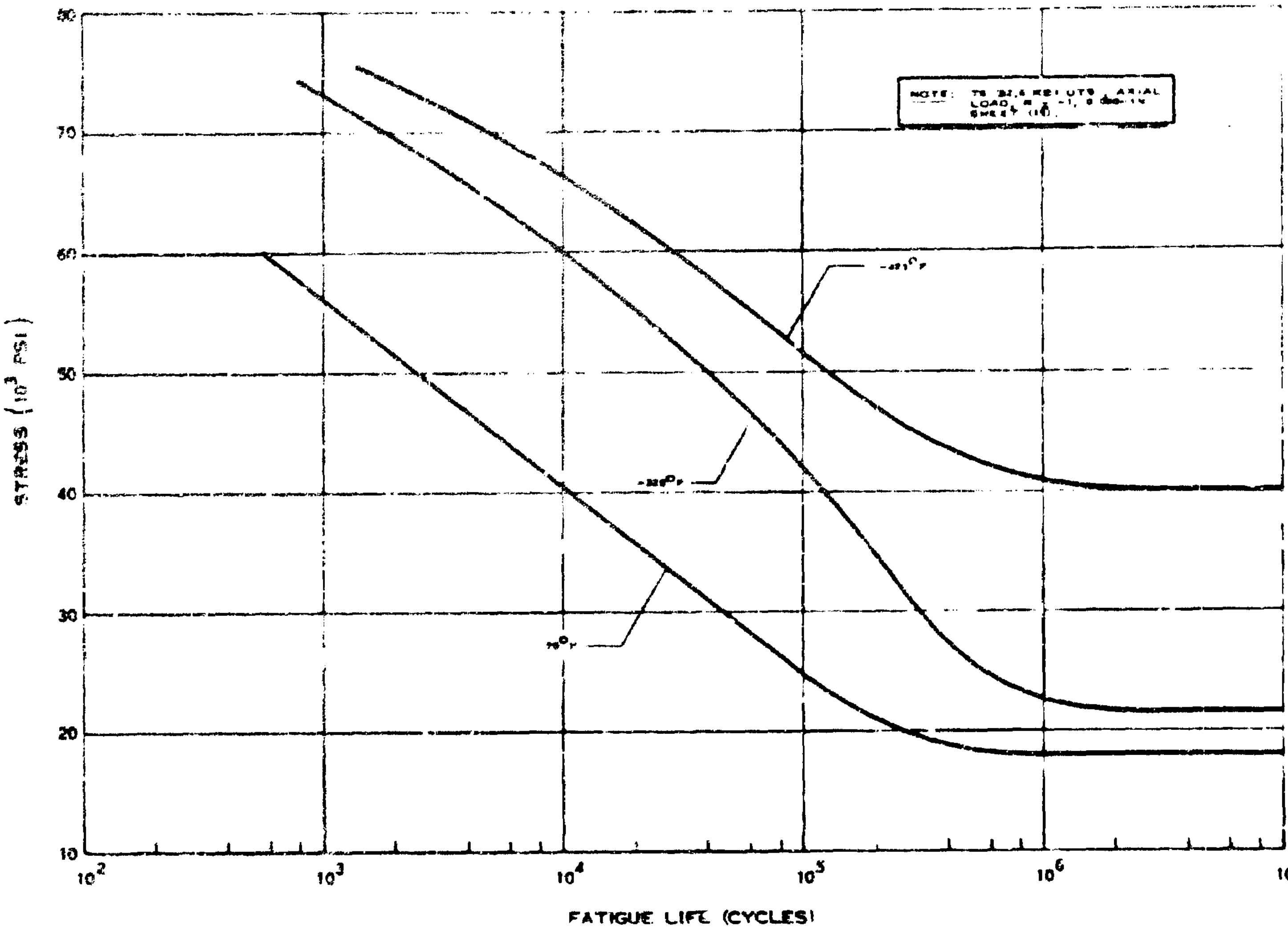


MODULUS OF ELASTICITY OF 2020 ALUMINUM



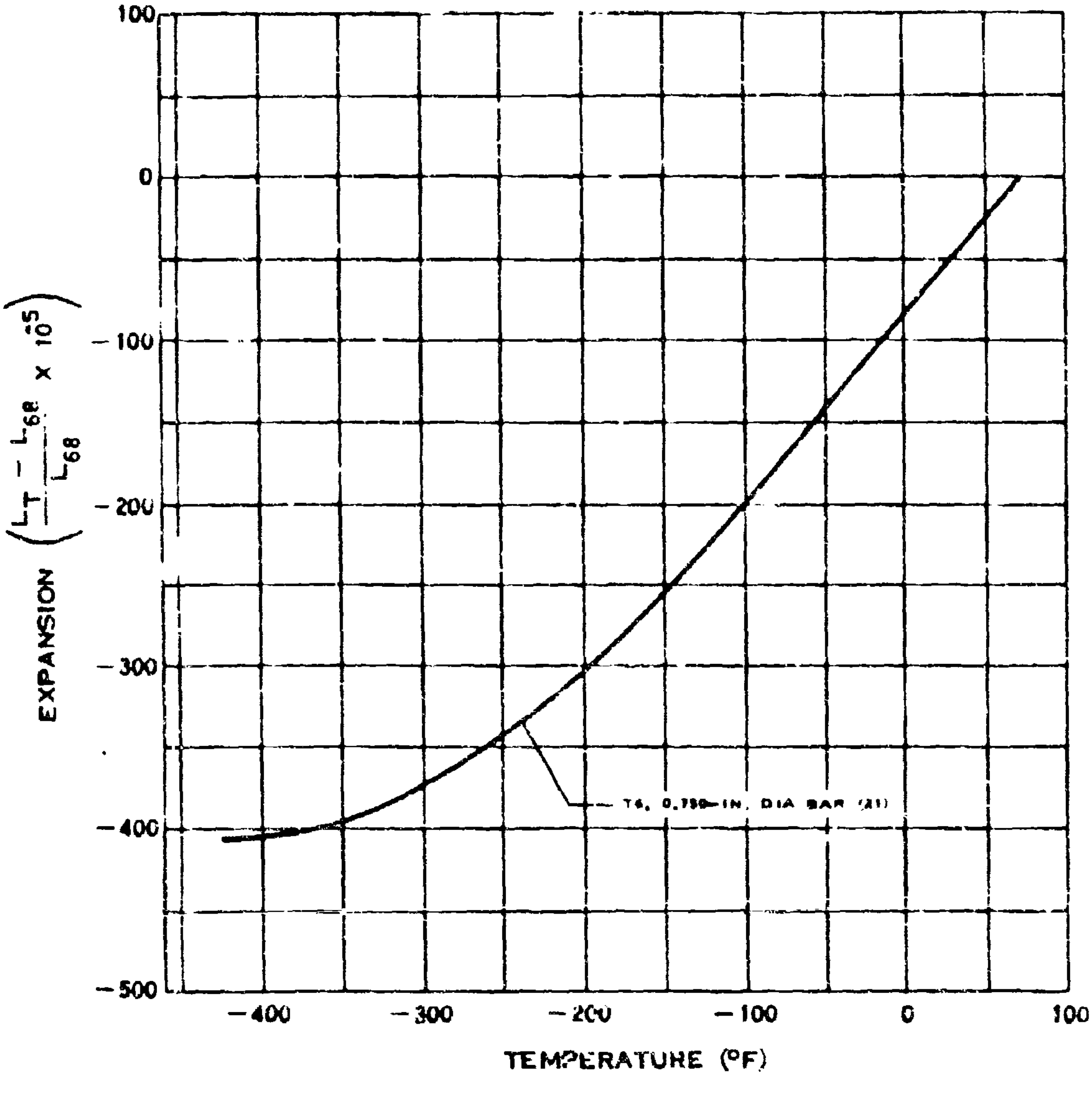
IMPACT ENERGY OF 2020 ALUMINUM

A.3.o



FATIGUE STRENGTH OF ?020 ALUMINUM

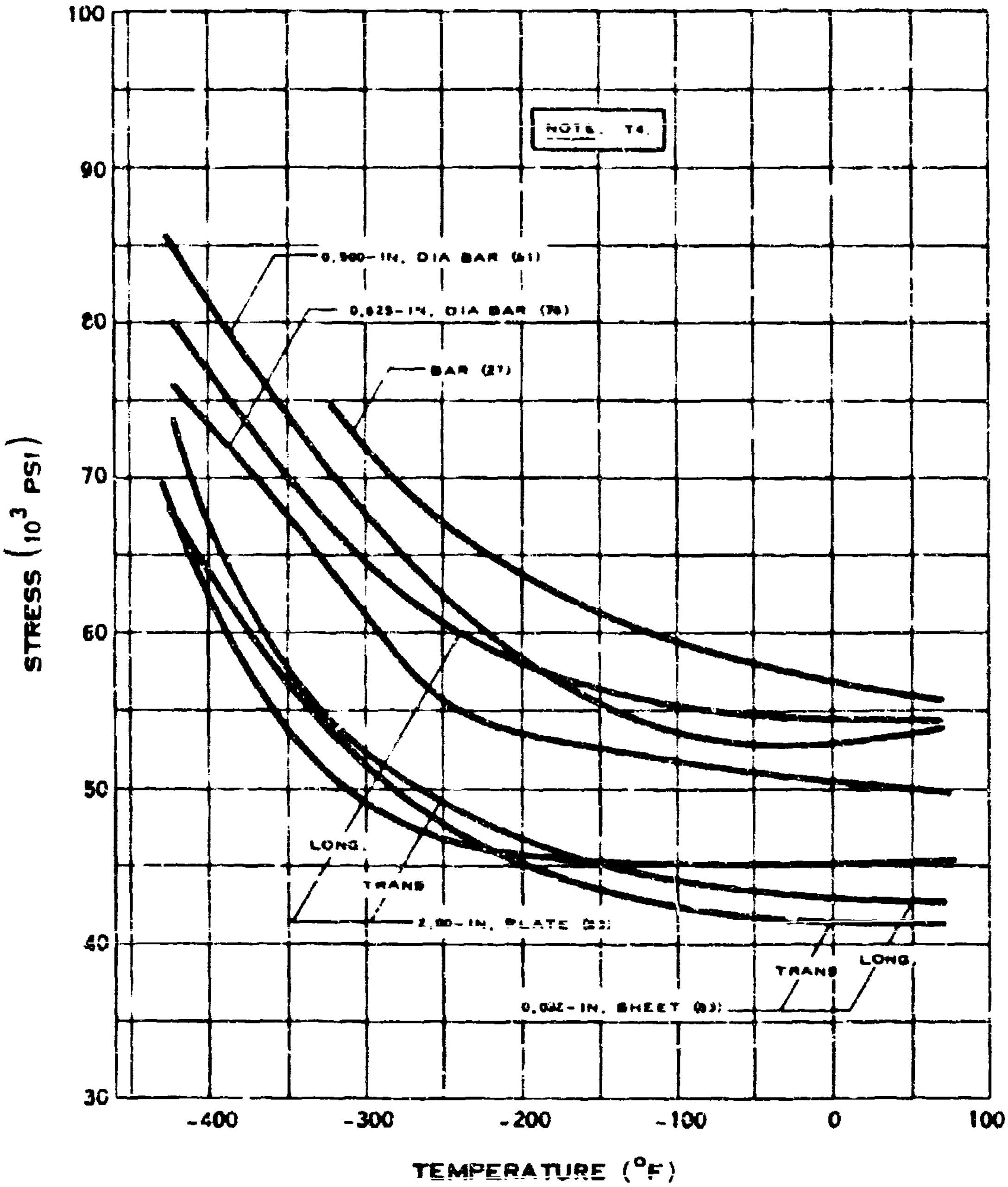
A.3.i



THERMAL EXPANSION OF 2020 ALUMINUM

(7-64)

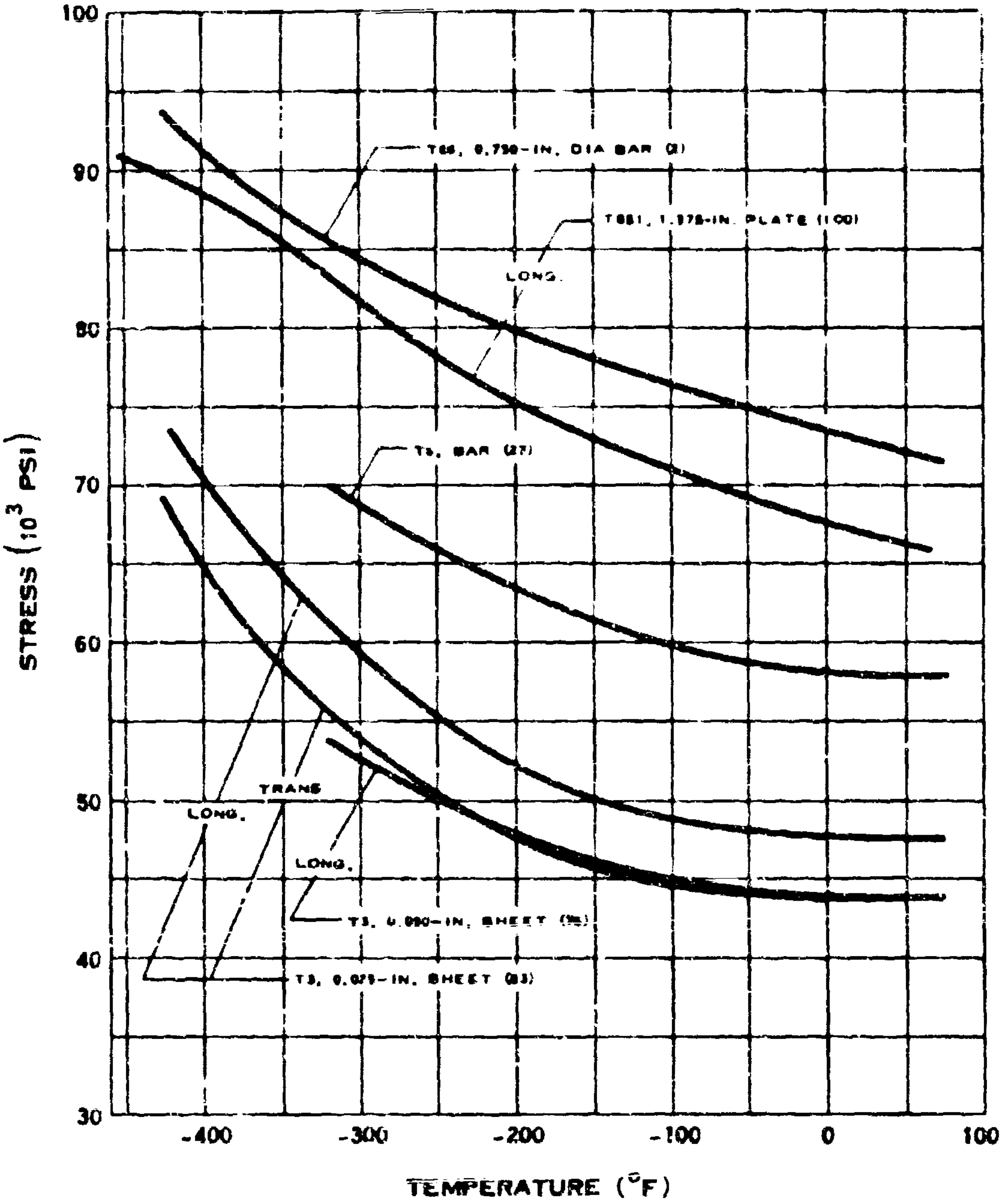
A.4.a



YIELD STRENGTH OF 2024 ALUMINUM

(7-64)

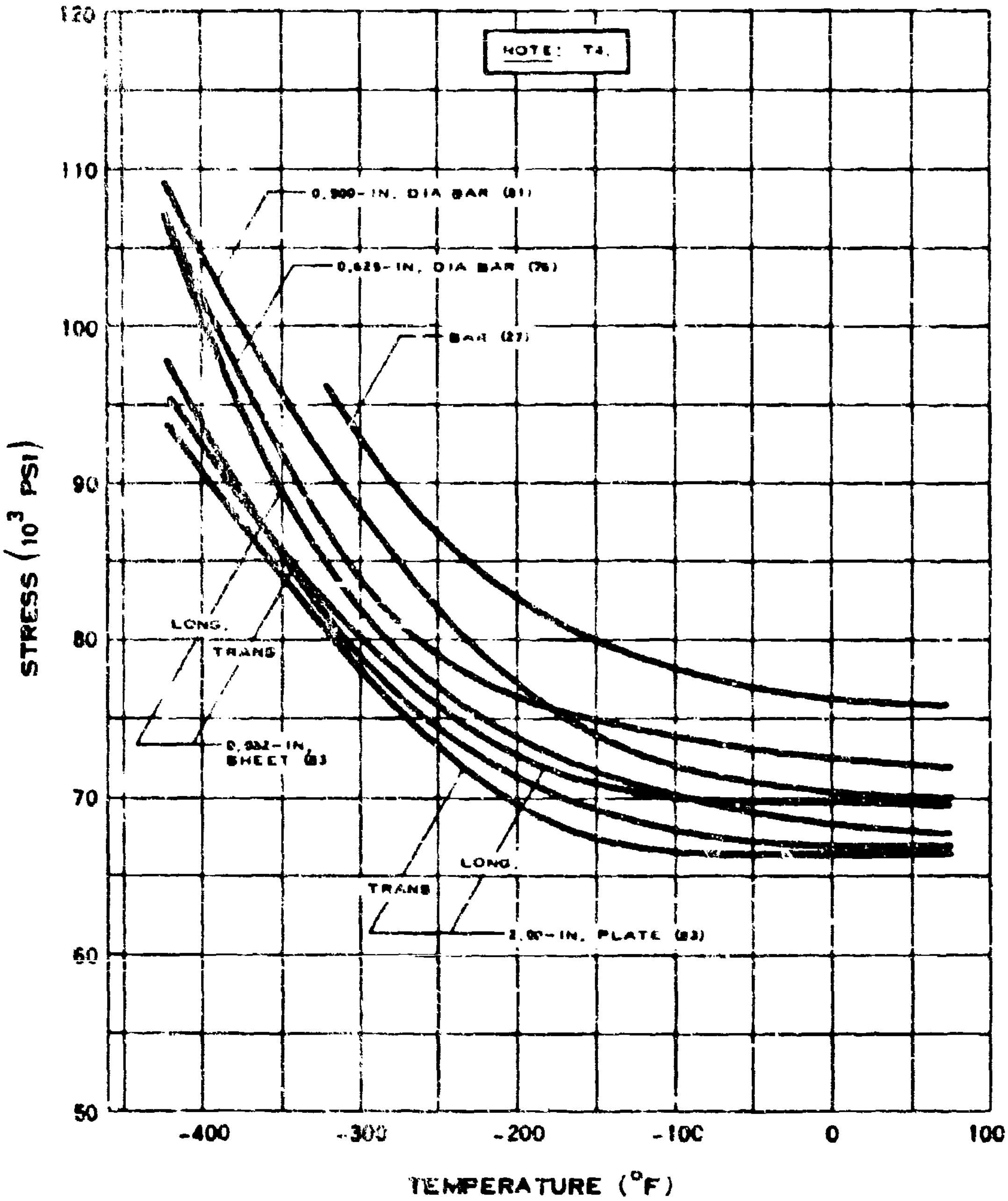
A.4.a-1



YIELD STRENGTH OF 2024 ALUMINUM

(6-61)

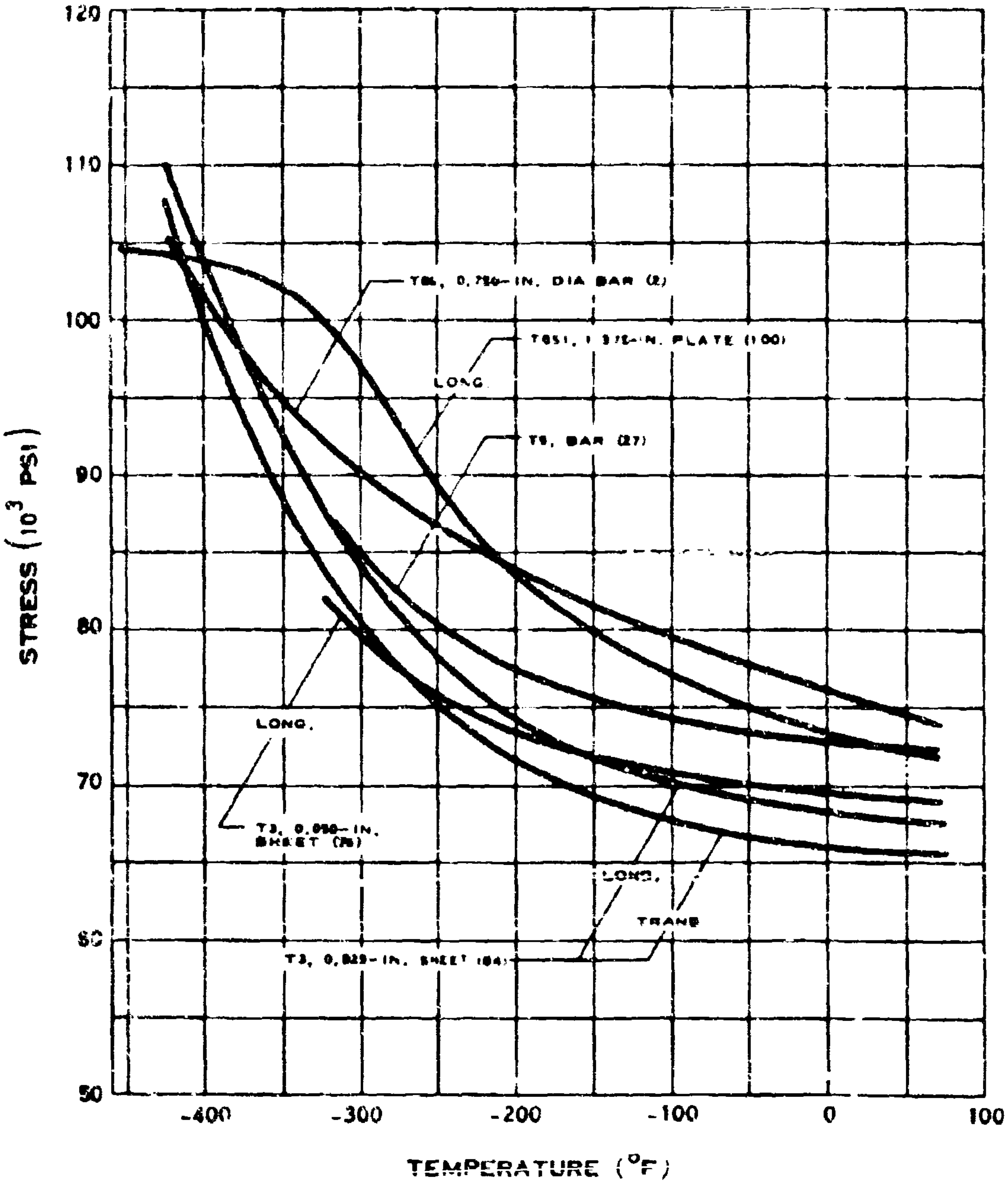
A.4.b



TENSILE STRENGTH OF 2024 ALUMINUM

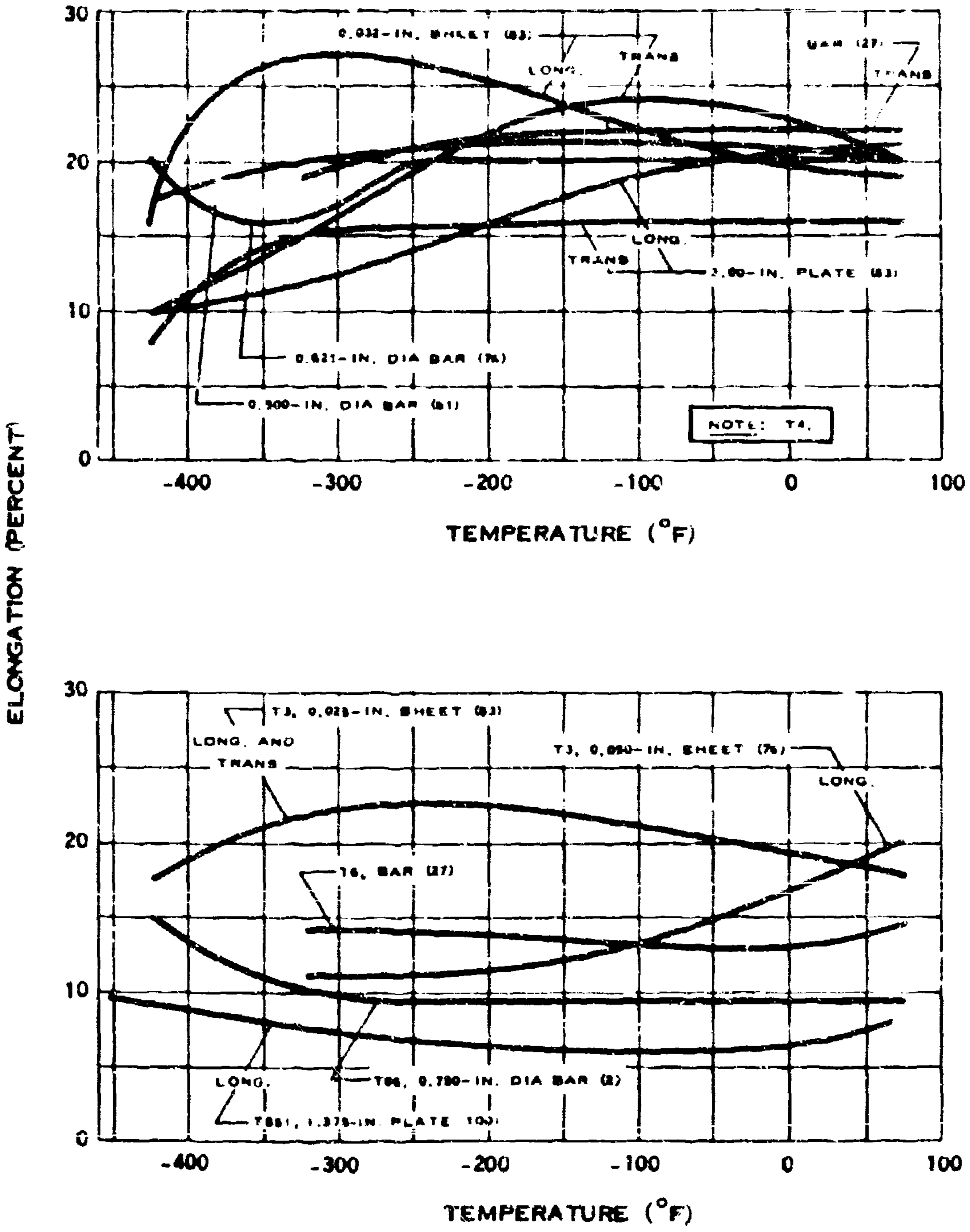
(7-64)

A.4.b-1



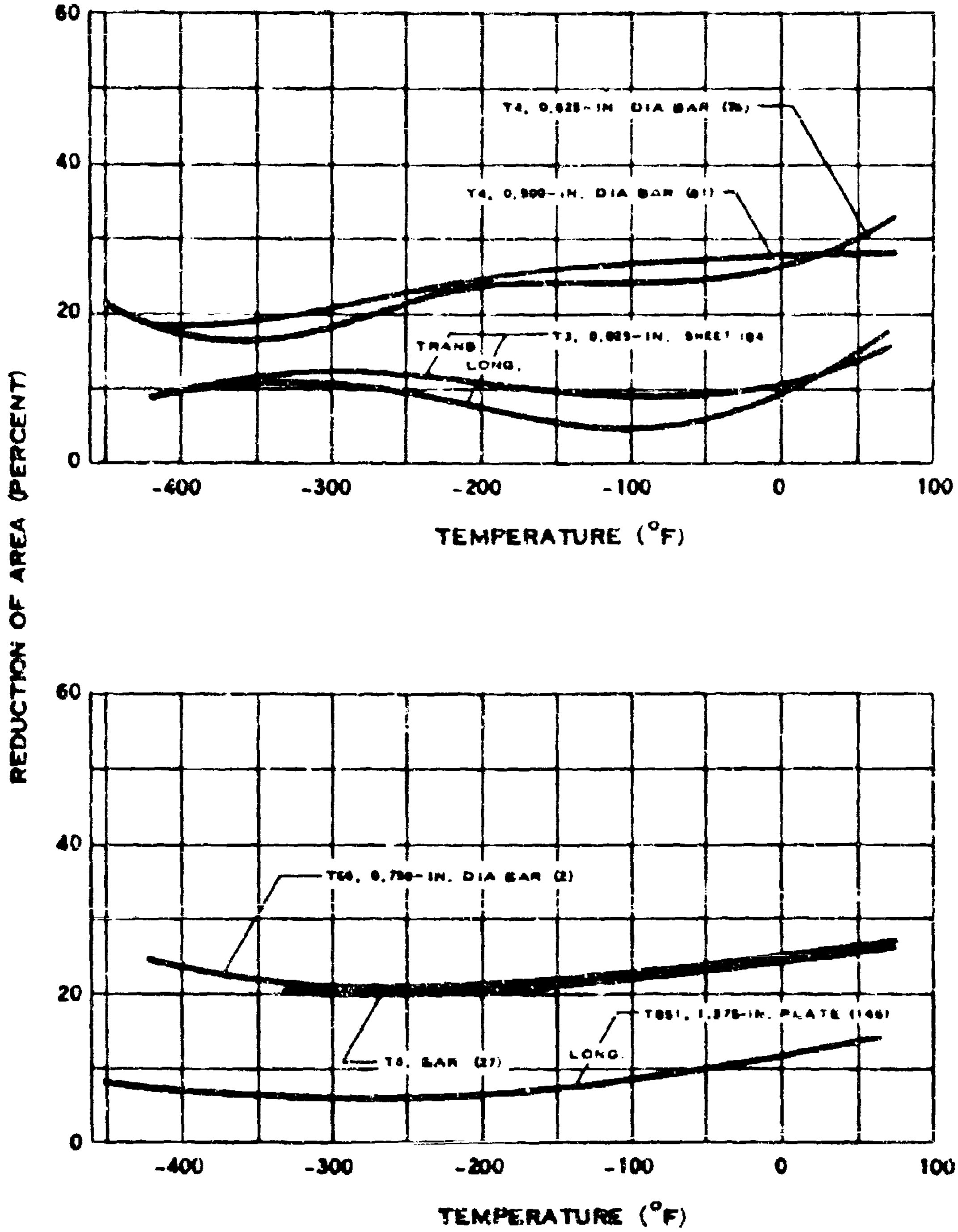
TENSILE STRENGTH OF 2024 ALUMINUM

10-66



ELONGATION OF 2024 ALUMINUM

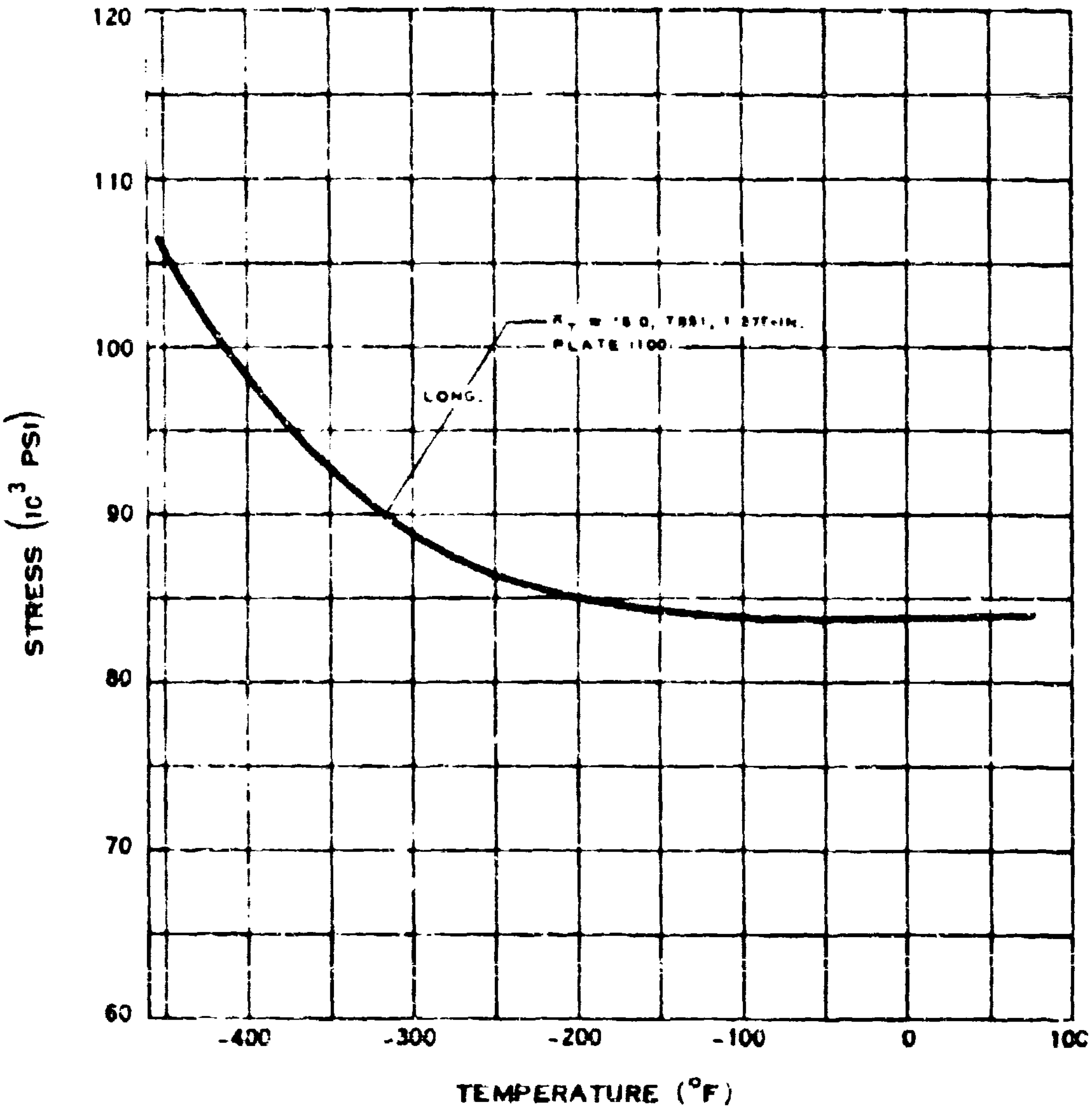
A.4.d



REDUCTION OF AREA OF 2024 ALUMINUM

(6-68)

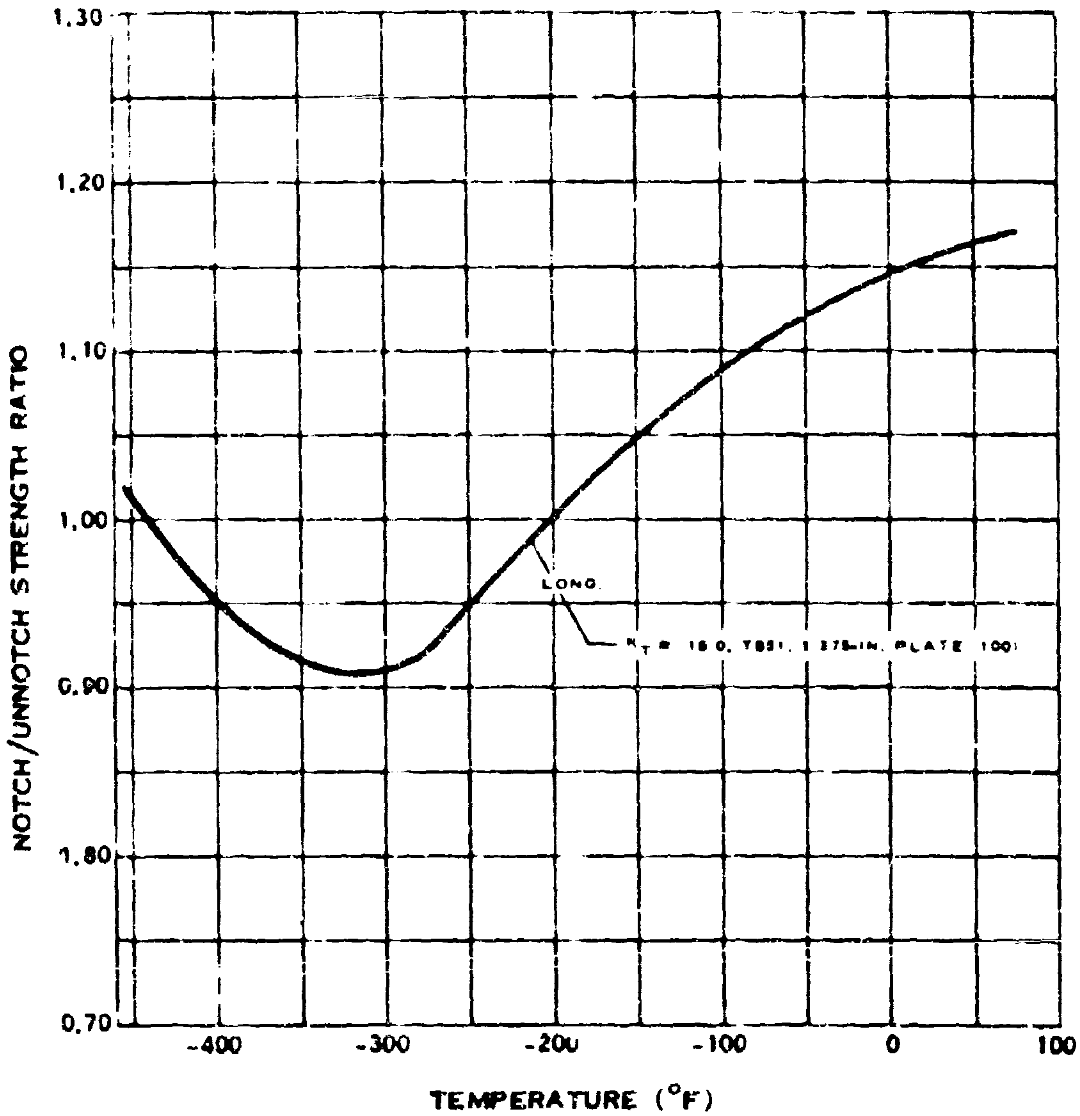
A.4.e



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

10-68

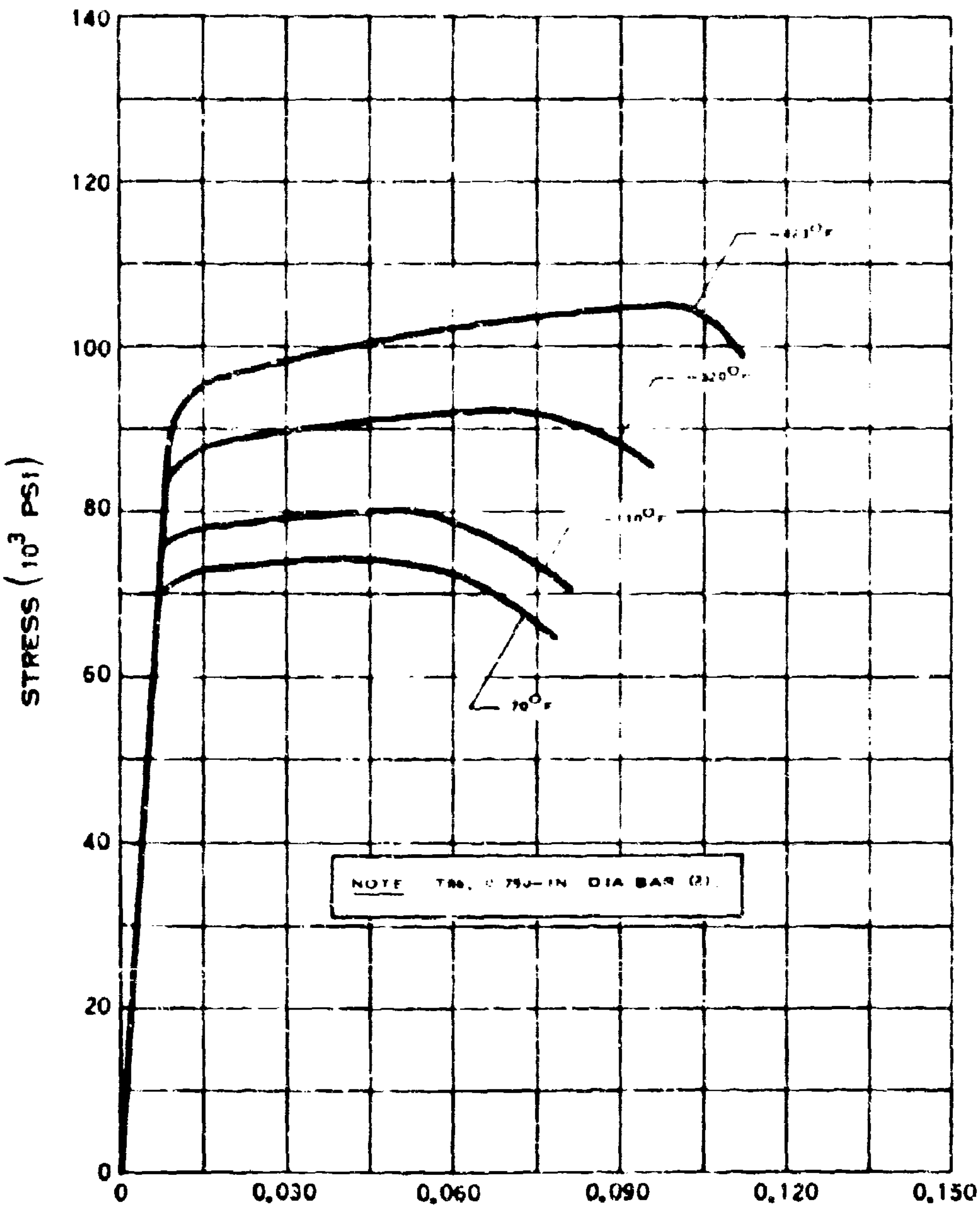
A.4.e-1



NOTCH STRENGTH RATIO OF 2024 ALUMINUM

10-68

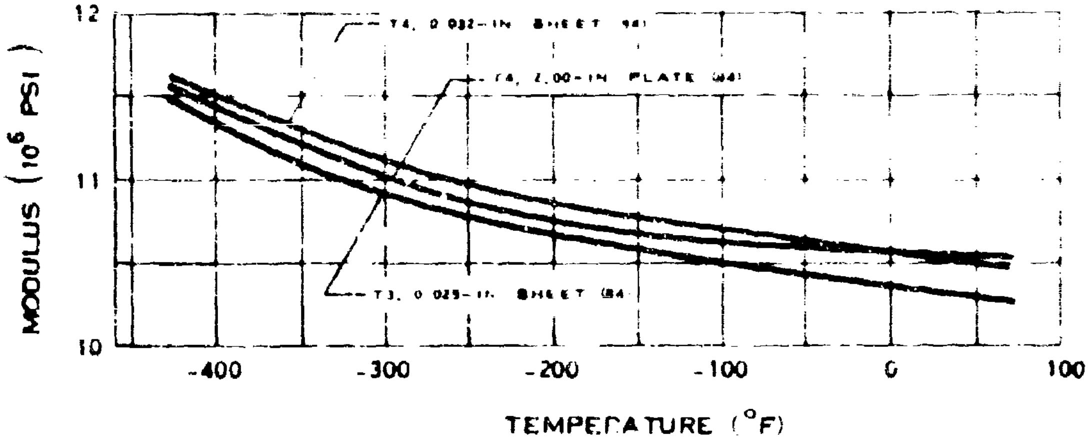
A.4.h



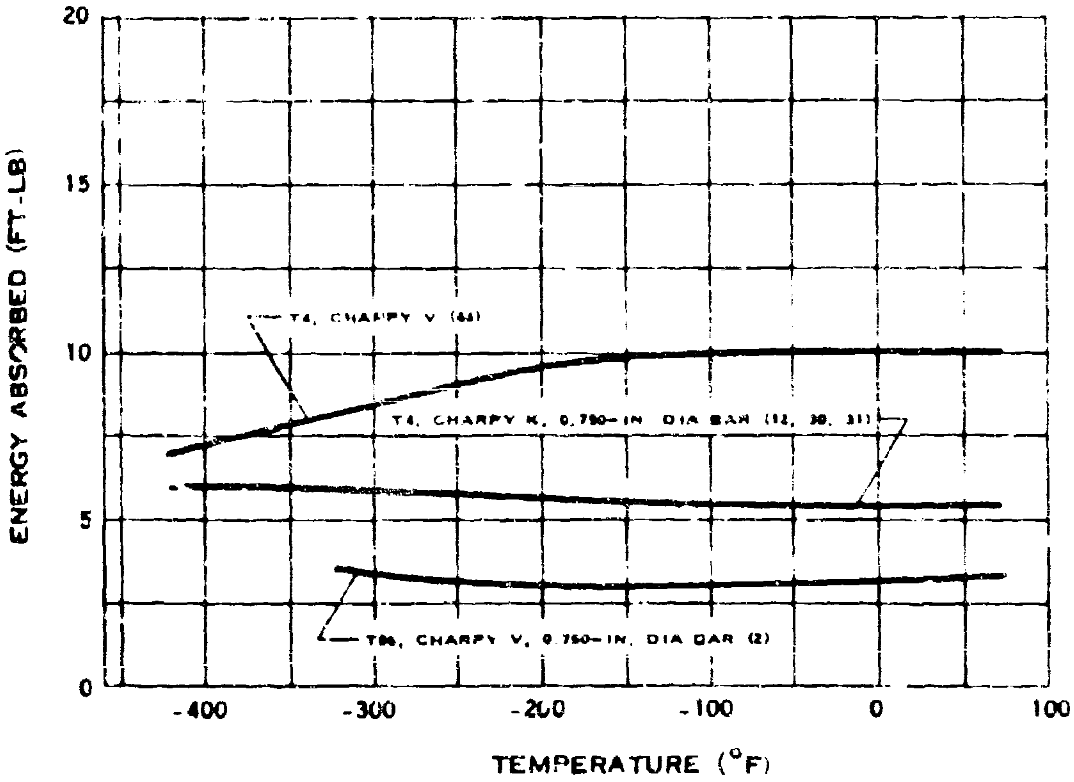
STRESS-STRAIN DIAGRAM FOR 2024 ALUMINUM

(7-64)

A.4.ij

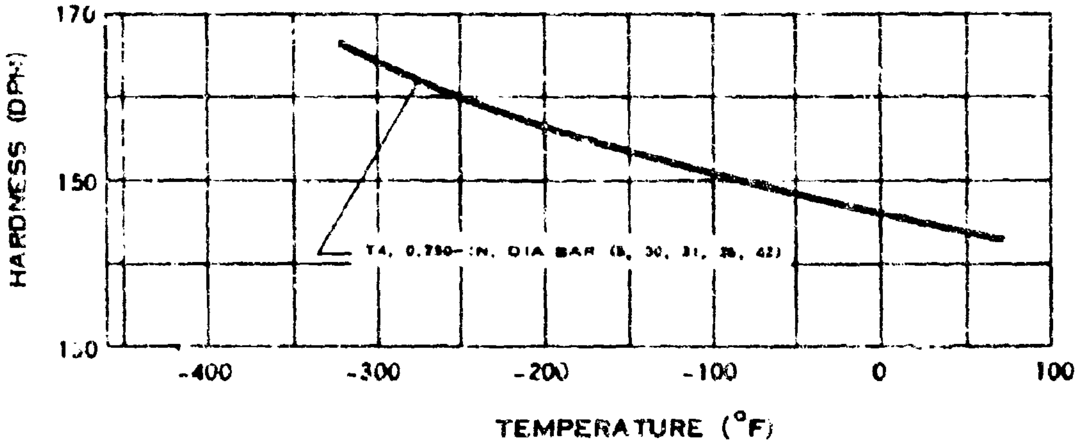


MODULUS OF ELASTICITY OF 2024 ALUMINUM



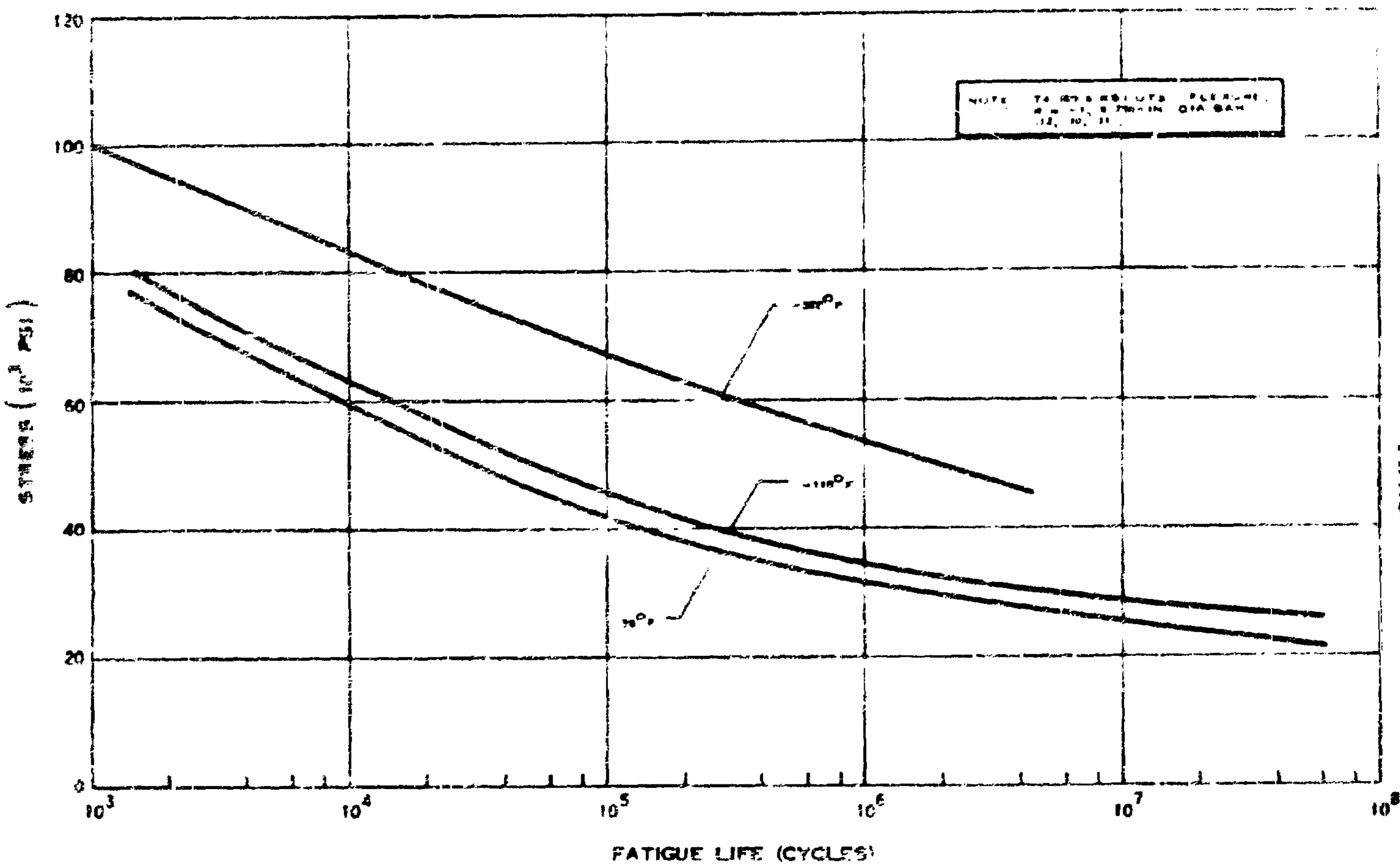
IMPACT STRENGTH OF 2024 ALUMINUM

A.4.k



HARDNESS OF 2024 ALUMINUM

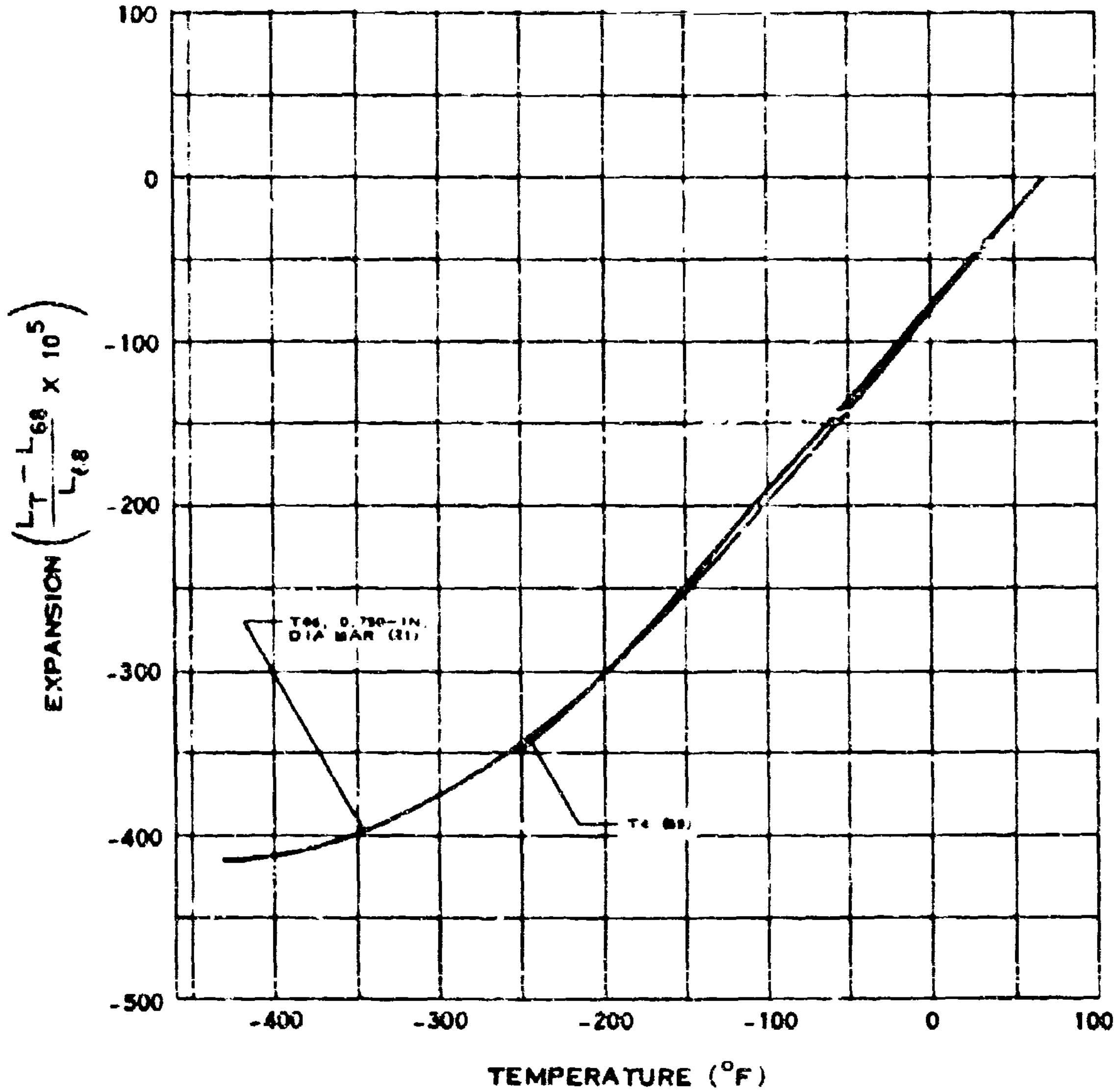
A.4.o



FATIGUE STRENGTH OF 2024 ALUMINUM

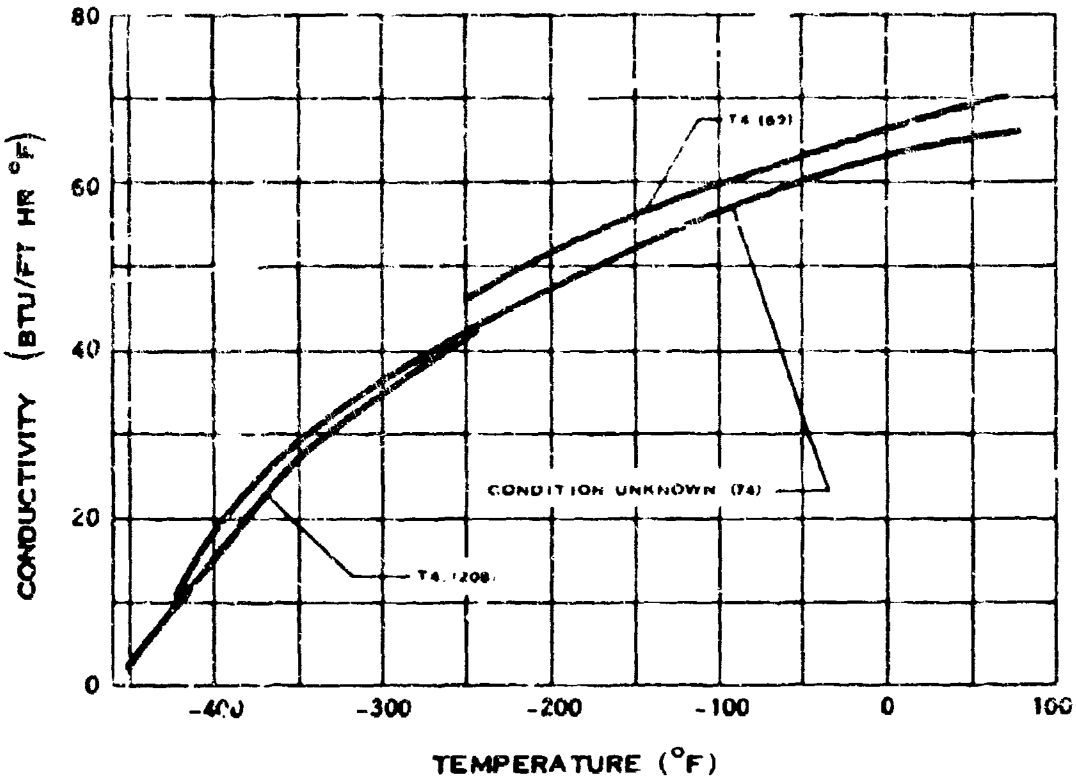
(7-64)

A.4.1



THERMAL EXPANSION OF 2024 ALUMINUM

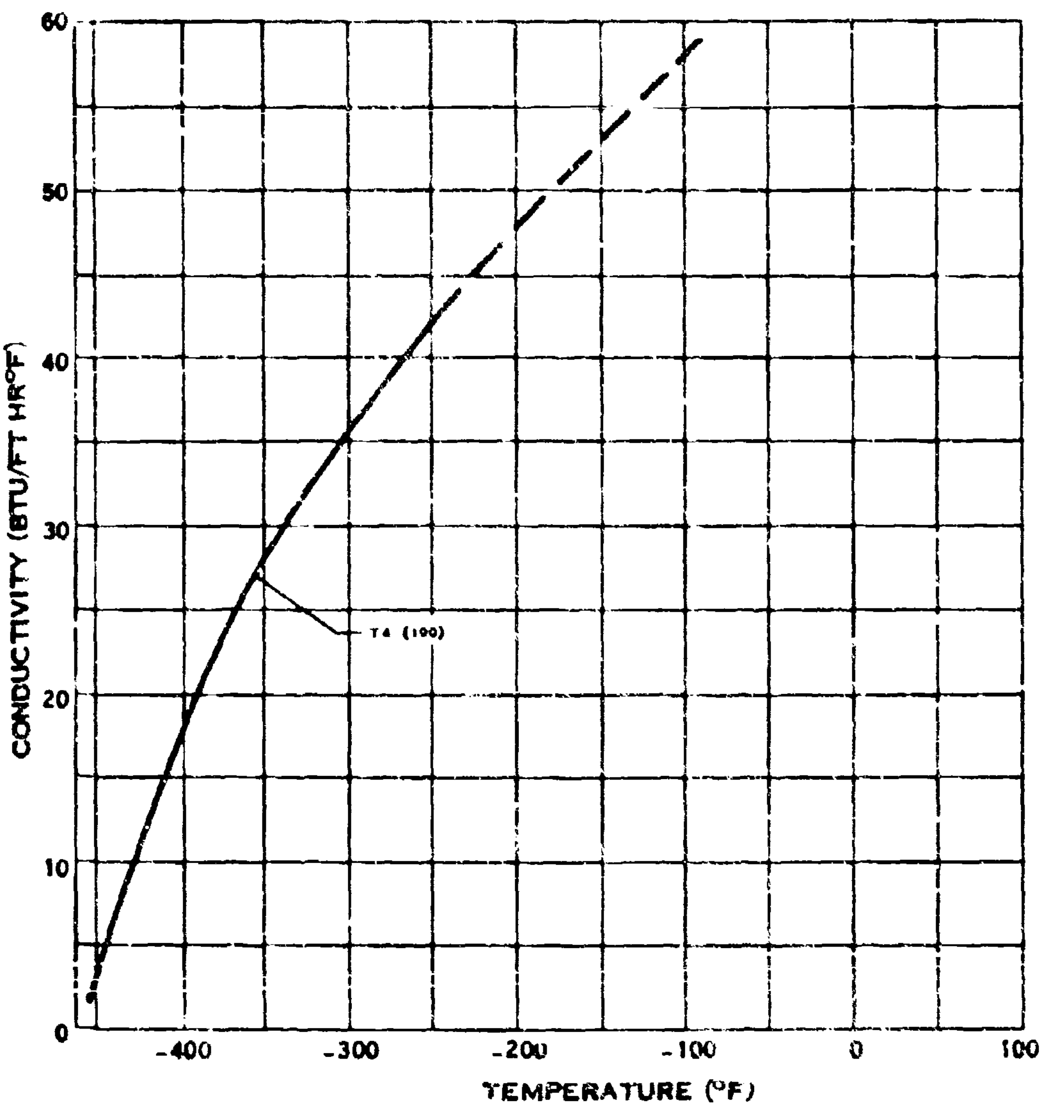
A.4.v



THERMAL CONDUCTIVITY OF 2024 ALUMINUM

16-68

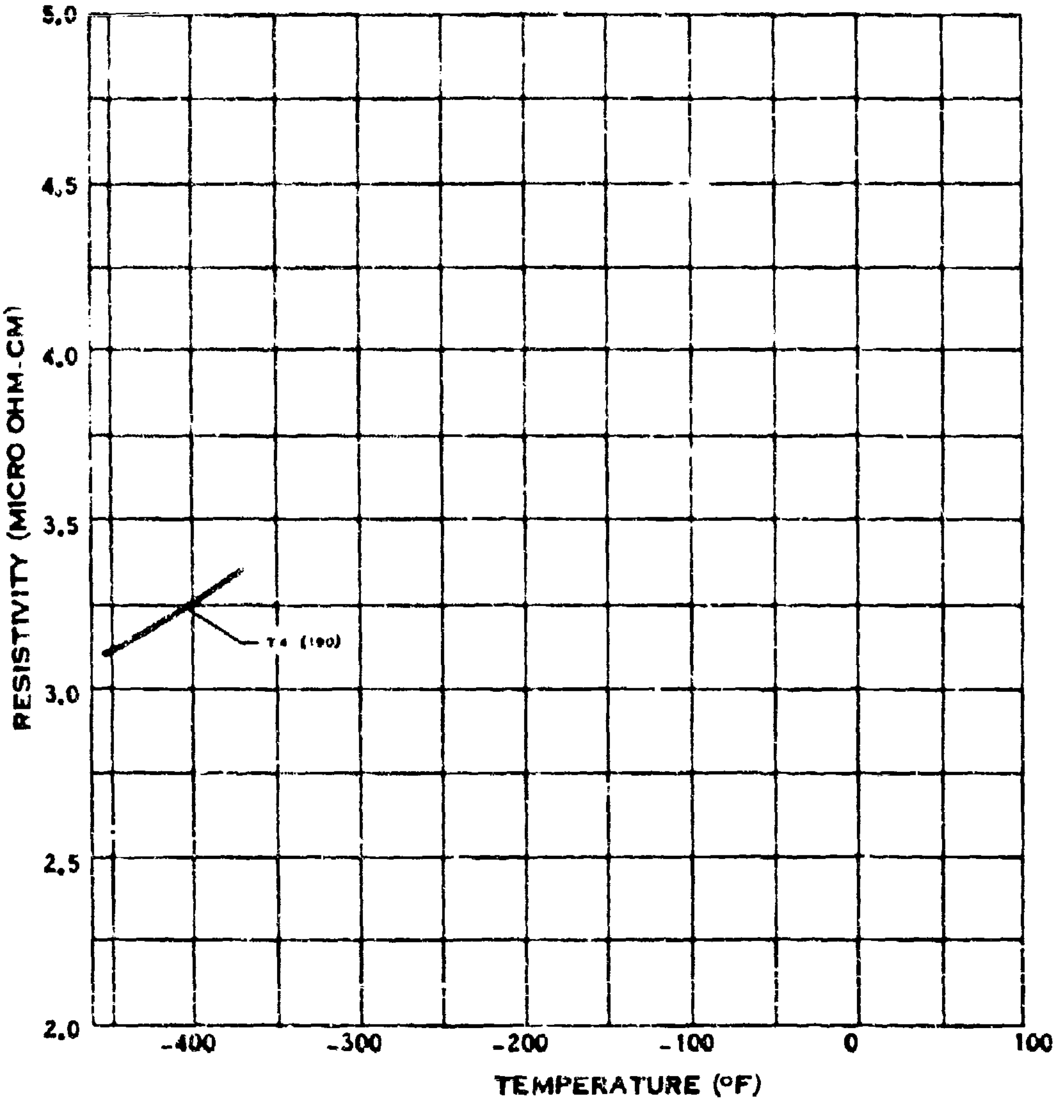
A.4.v-1



THERMAL CONDUCTIVITY OF 2024 ALUMINUM

16-68

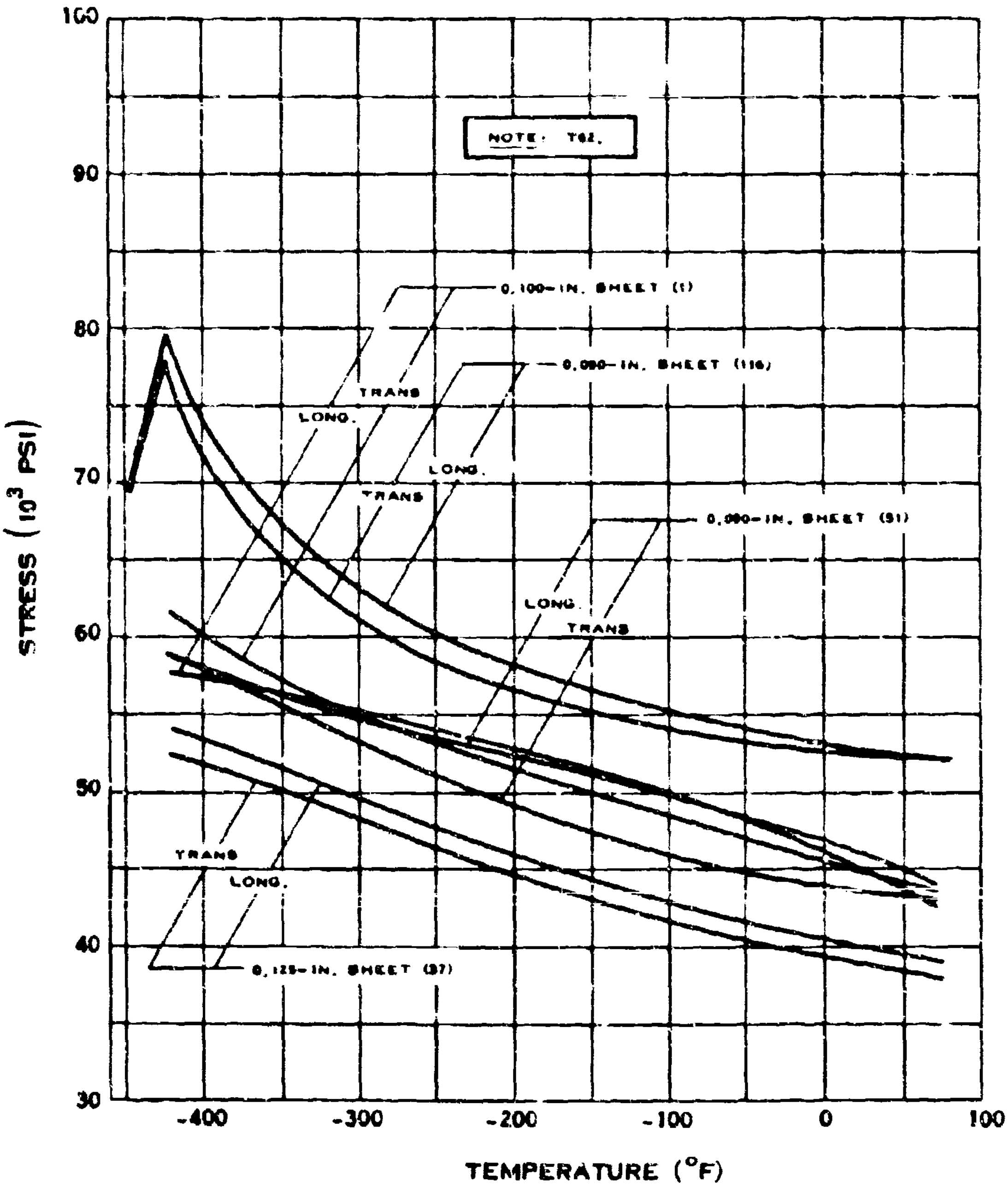
A.4.w



ELECTRICAL RESISTIVITY OF 2024 ALUMINUM

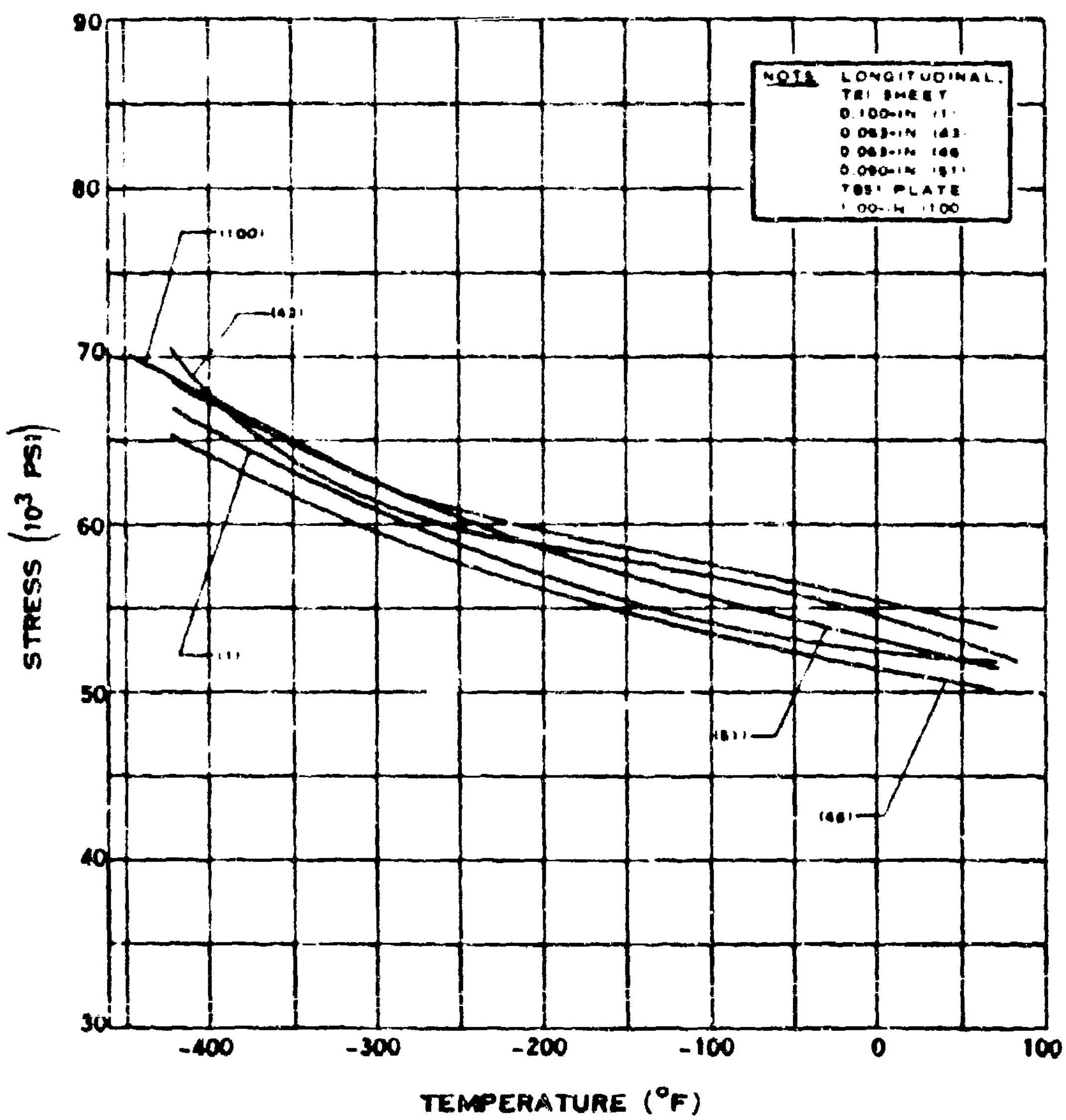
(3-64)

A.5.a



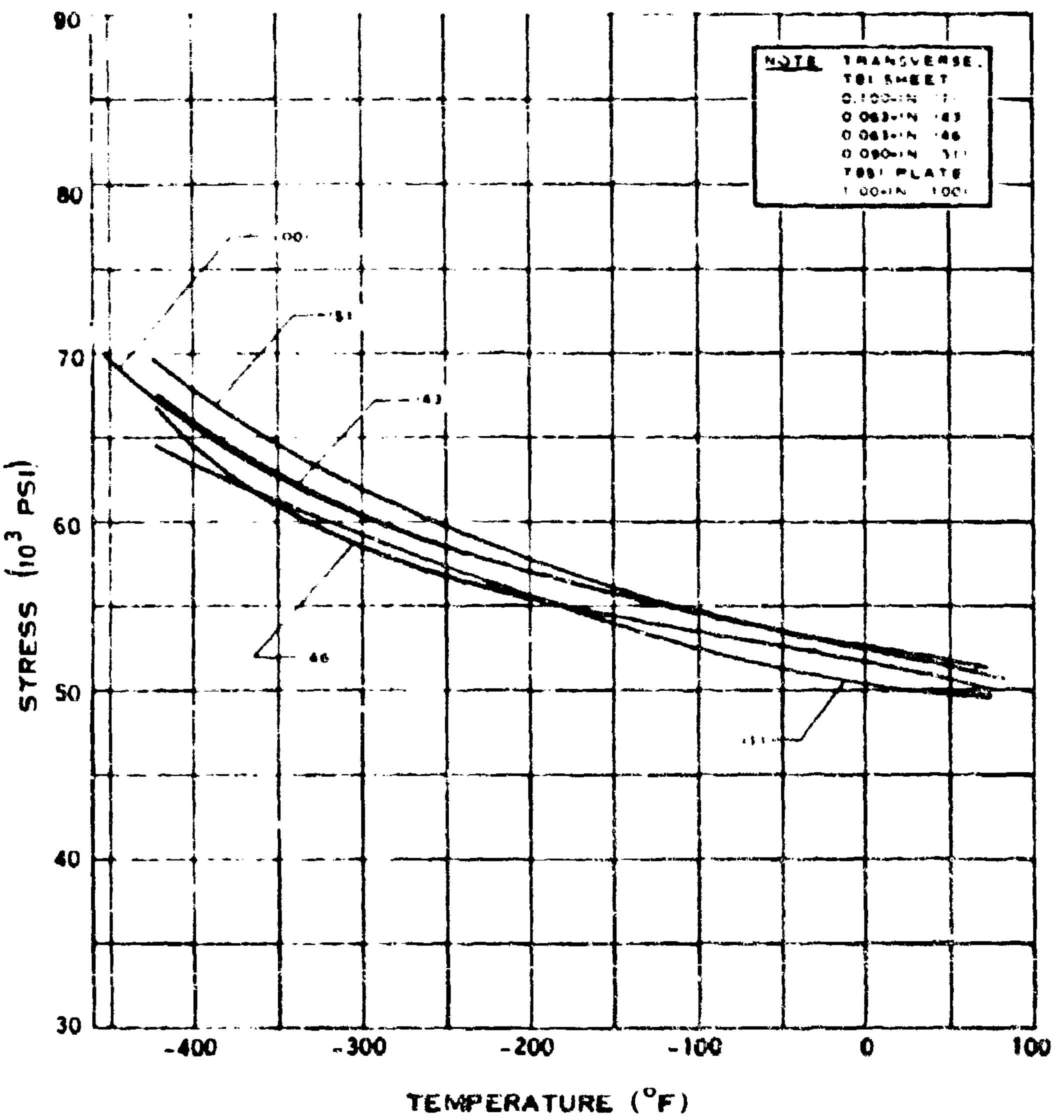
YIELD STRENGTH OF 2219 ALUMINUM

A.5.a-1



YIELD STRENGTH OF 2219 ALUMINUM

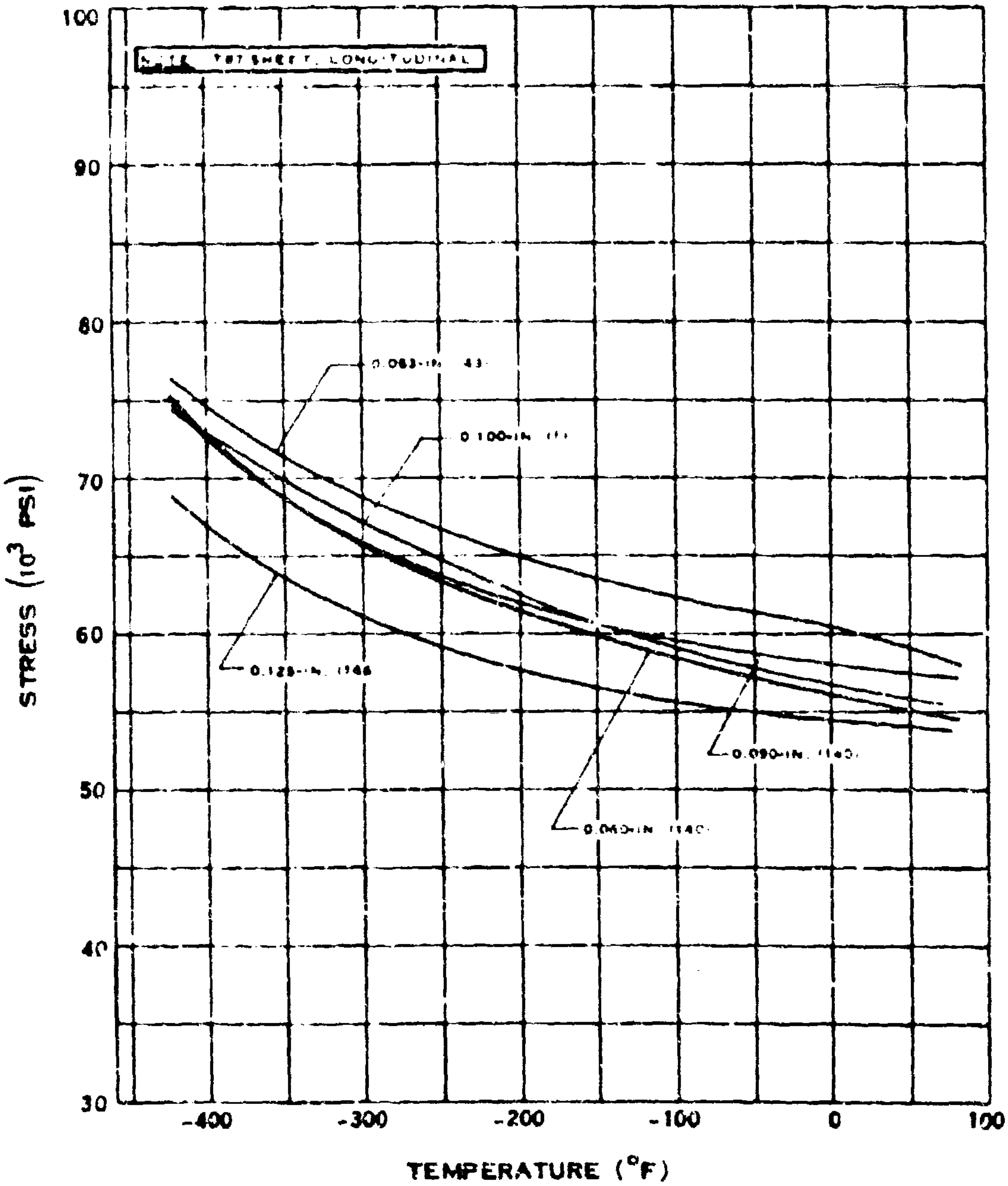
A.5.a-2



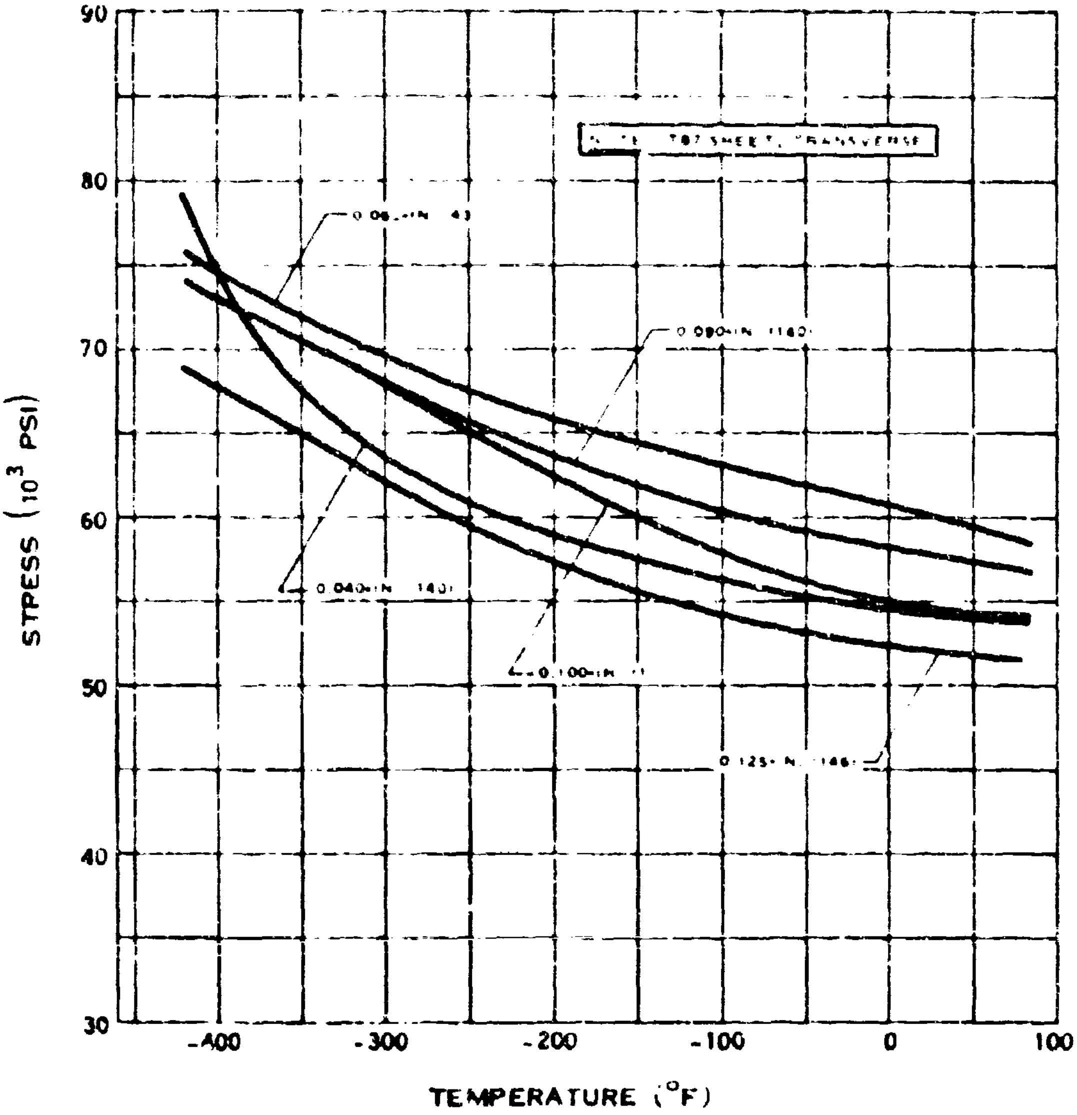
YIELD STRENGTH OF 2219 ALUMINUM

10-66

A.5.a-3

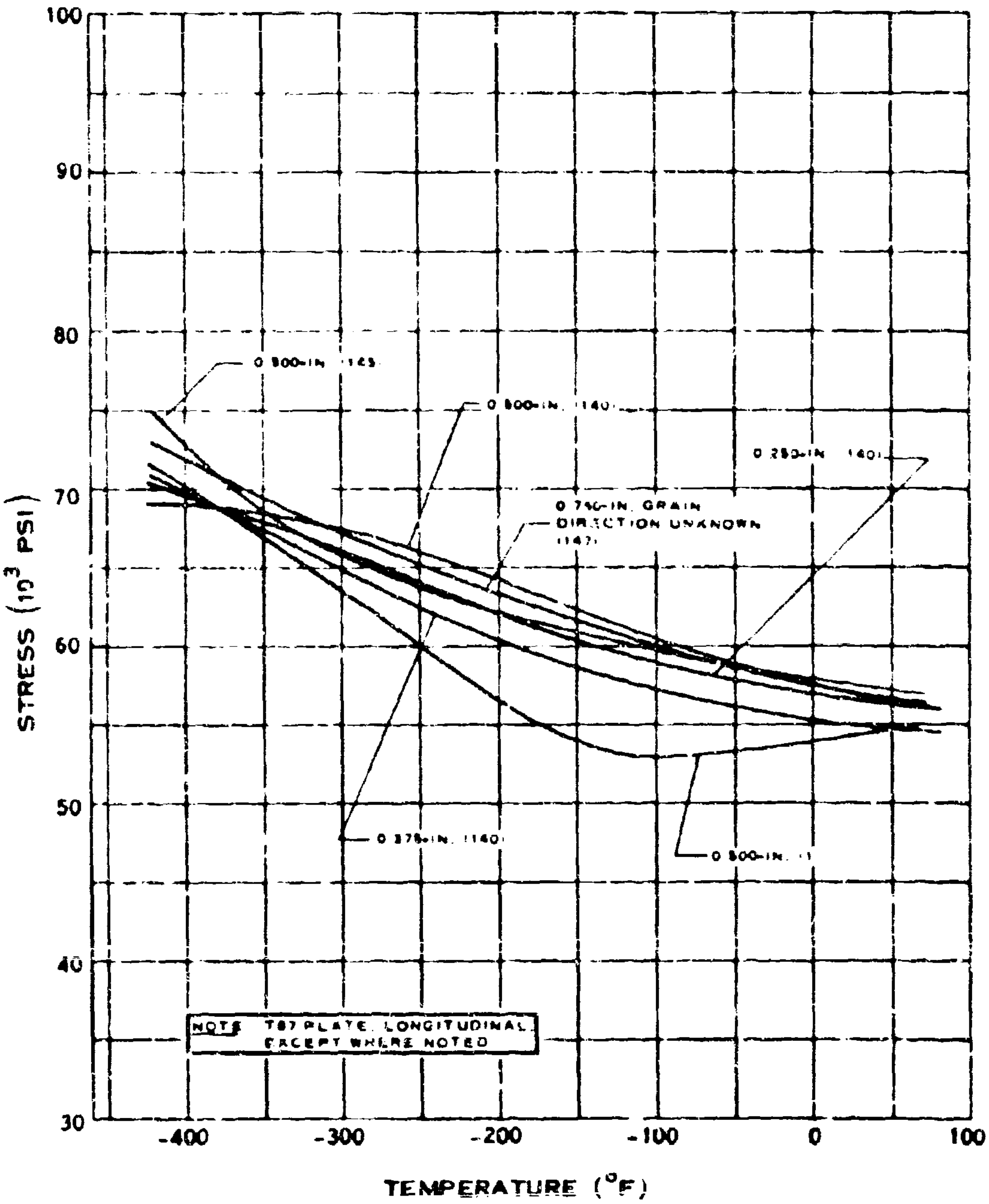


YIELD STRENGTH OF 2219 ALUMINUM



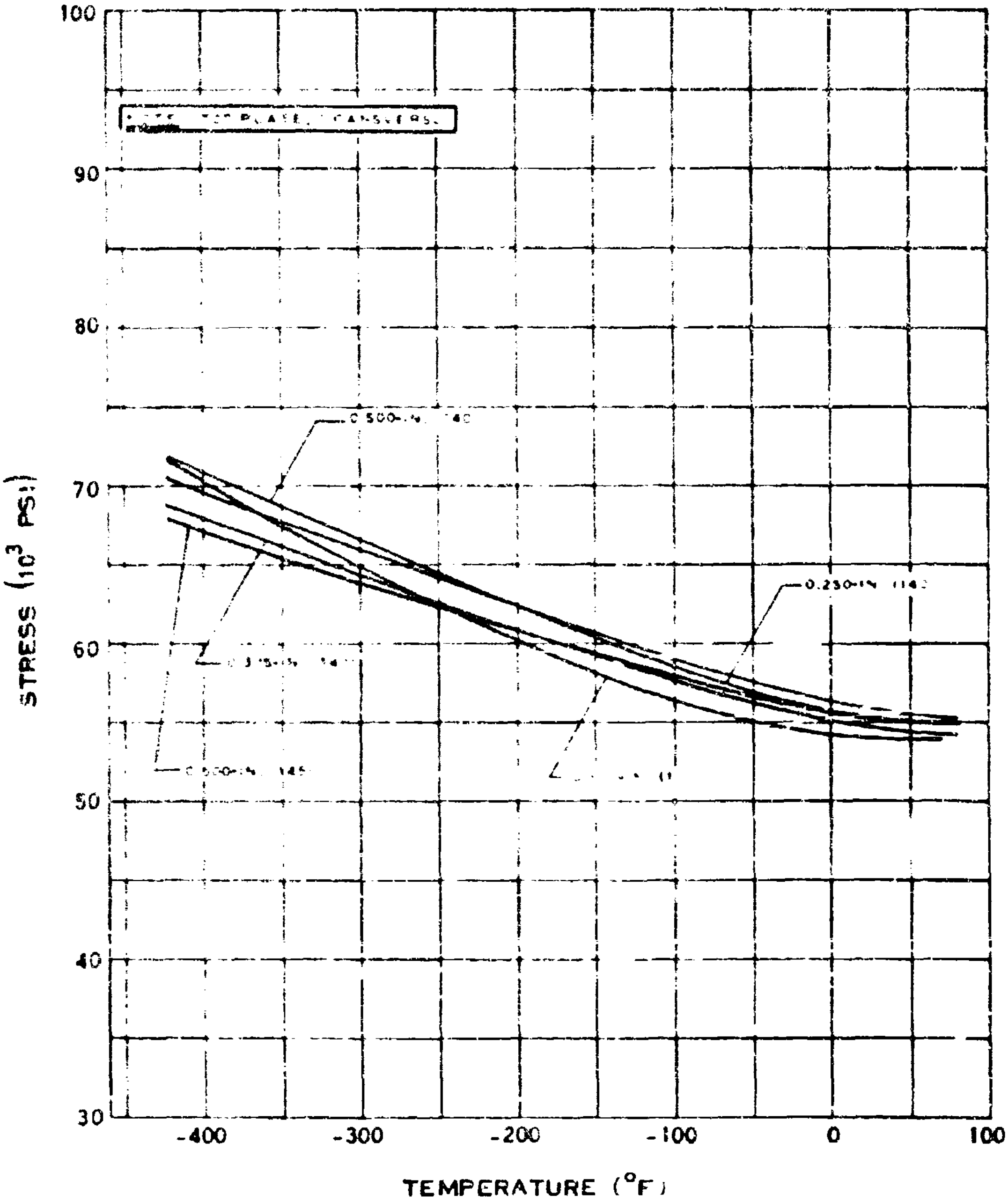
YIELD STRENGTH OF 2219 ALUMINUM

A.5.a-5



YIELD STRENGTH OF 2219 ALUMINUM

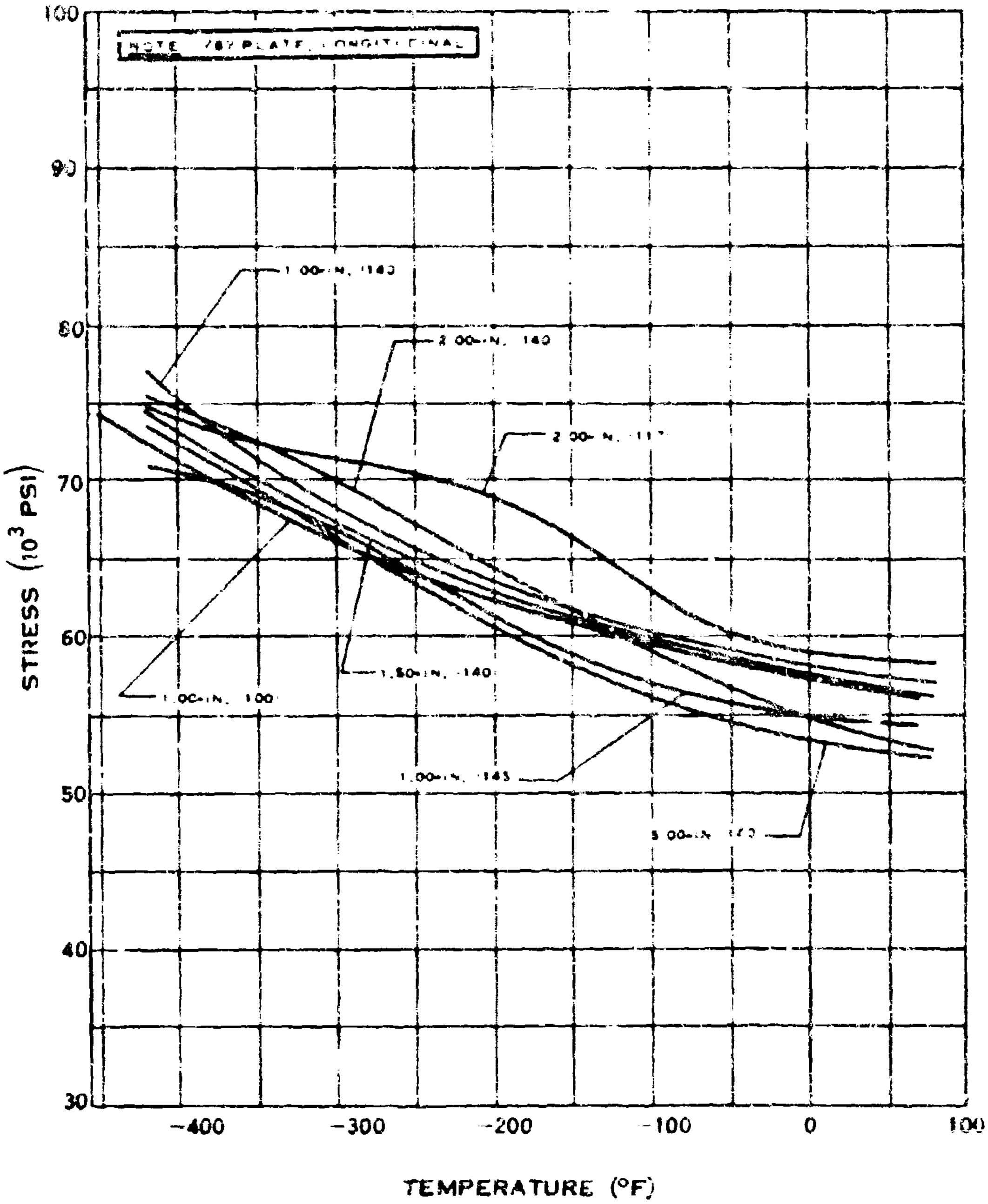
A.5.a-6



YIELD STRENGTH OF 2219 ALUMINUM

A-68

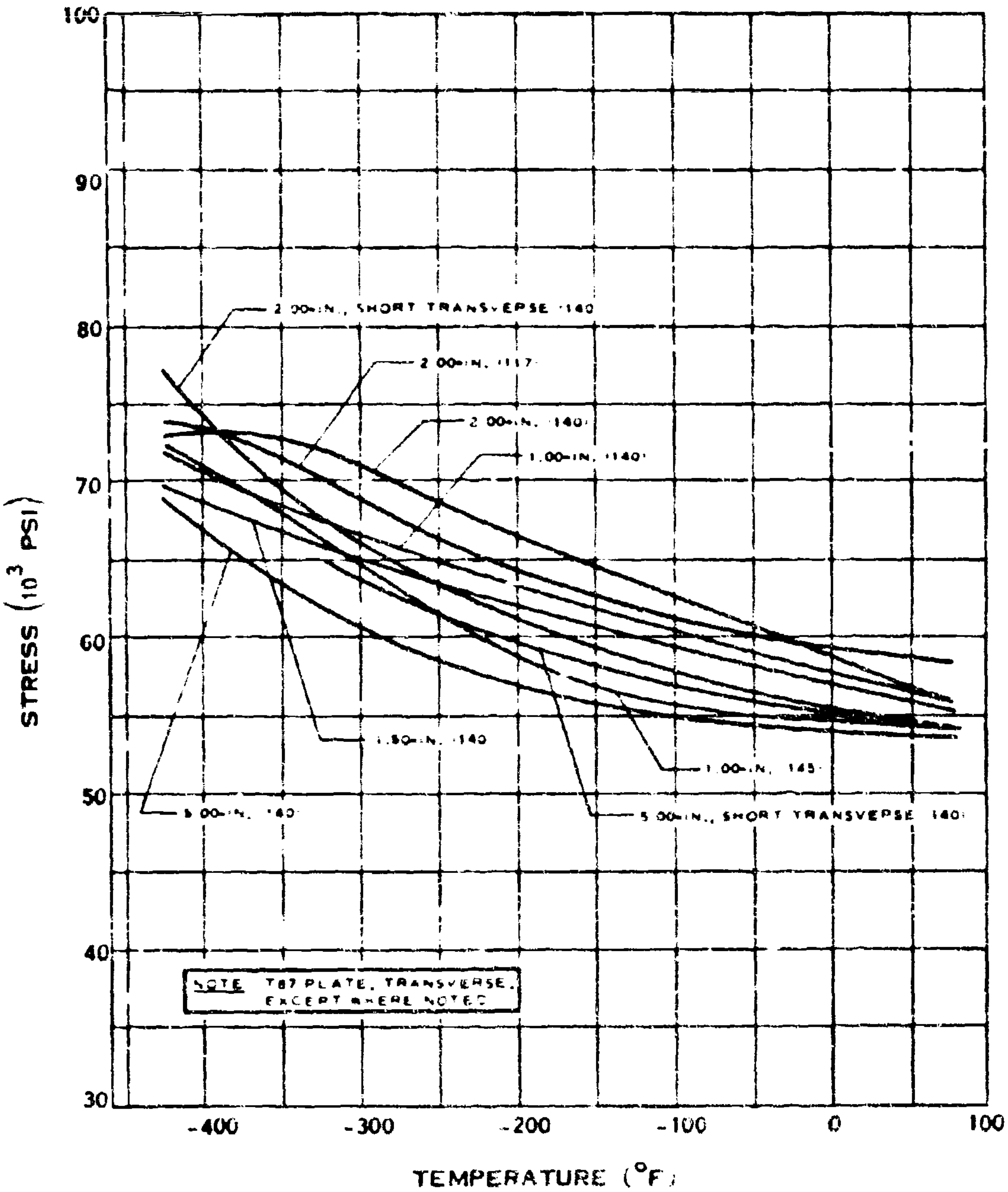
A.5.a-7



YIELD STRENGTH OF 2219 ALUMINUM

6-68

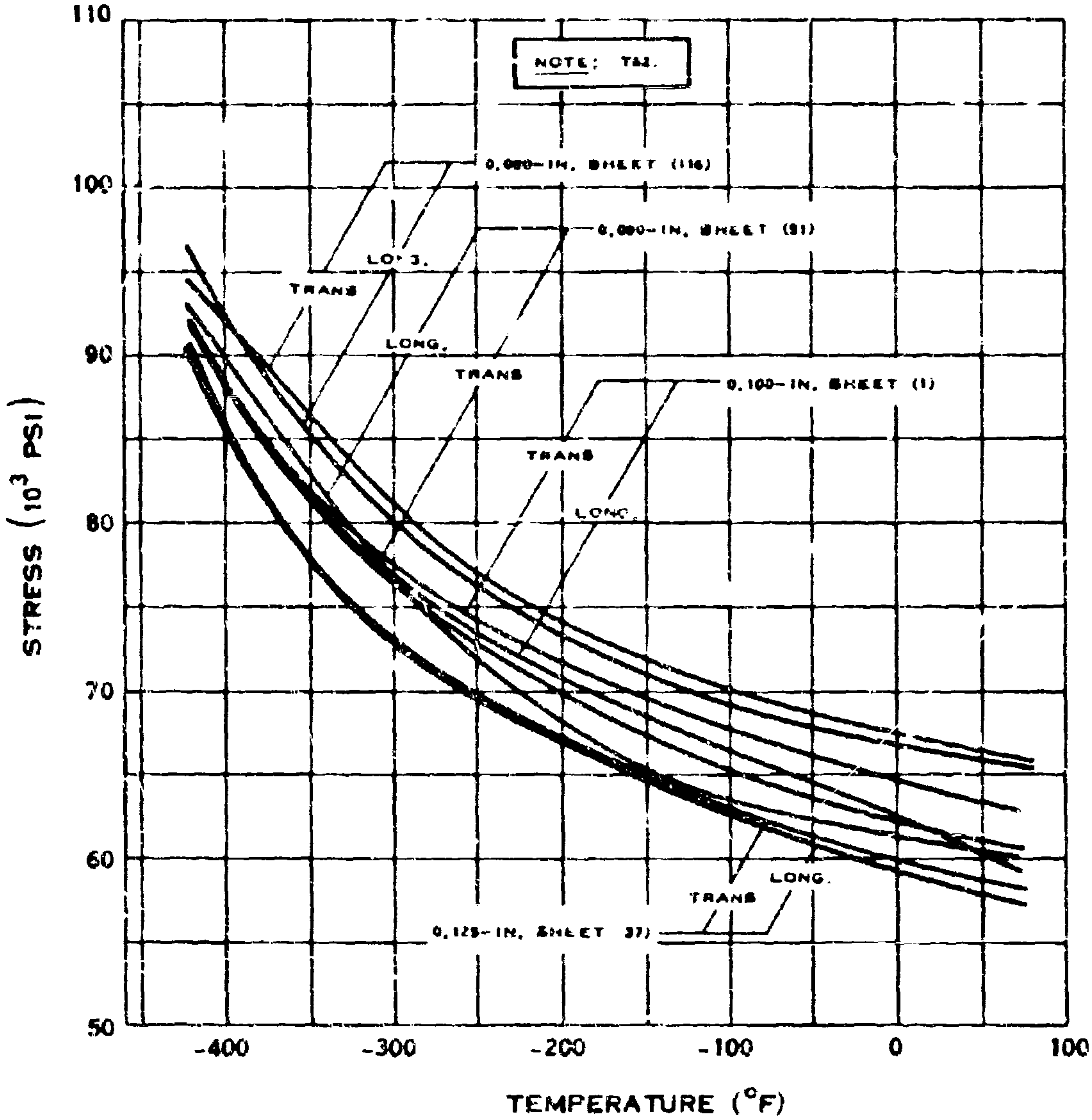
A.5.a-8



YIELD STRENGTH OF 2219 ALUMINUM

(6-66)

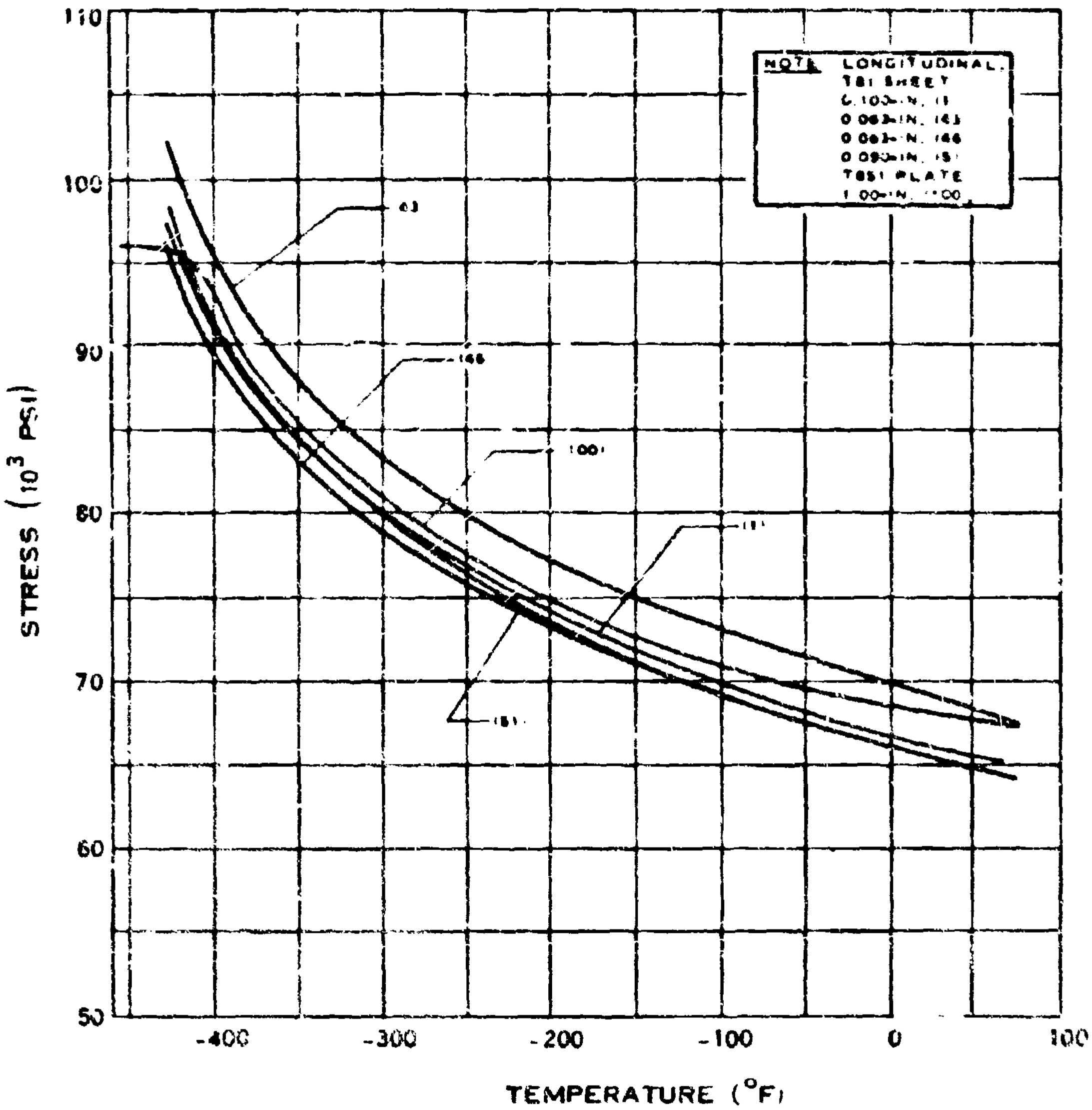
A.5.b



TENSILE STRENGTH OF 2219 ALUMINUM

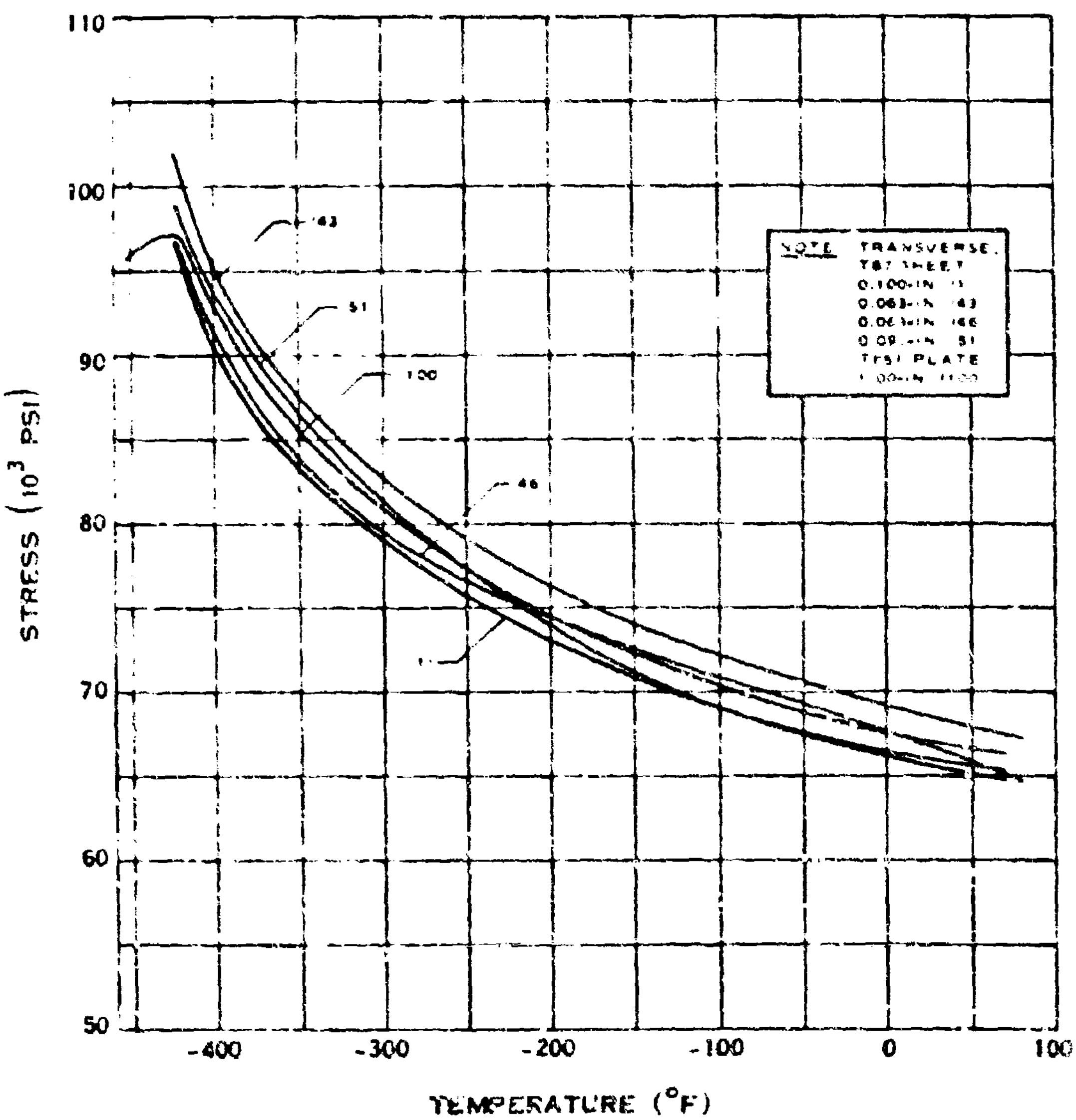
(7-64)

A.5.b-1



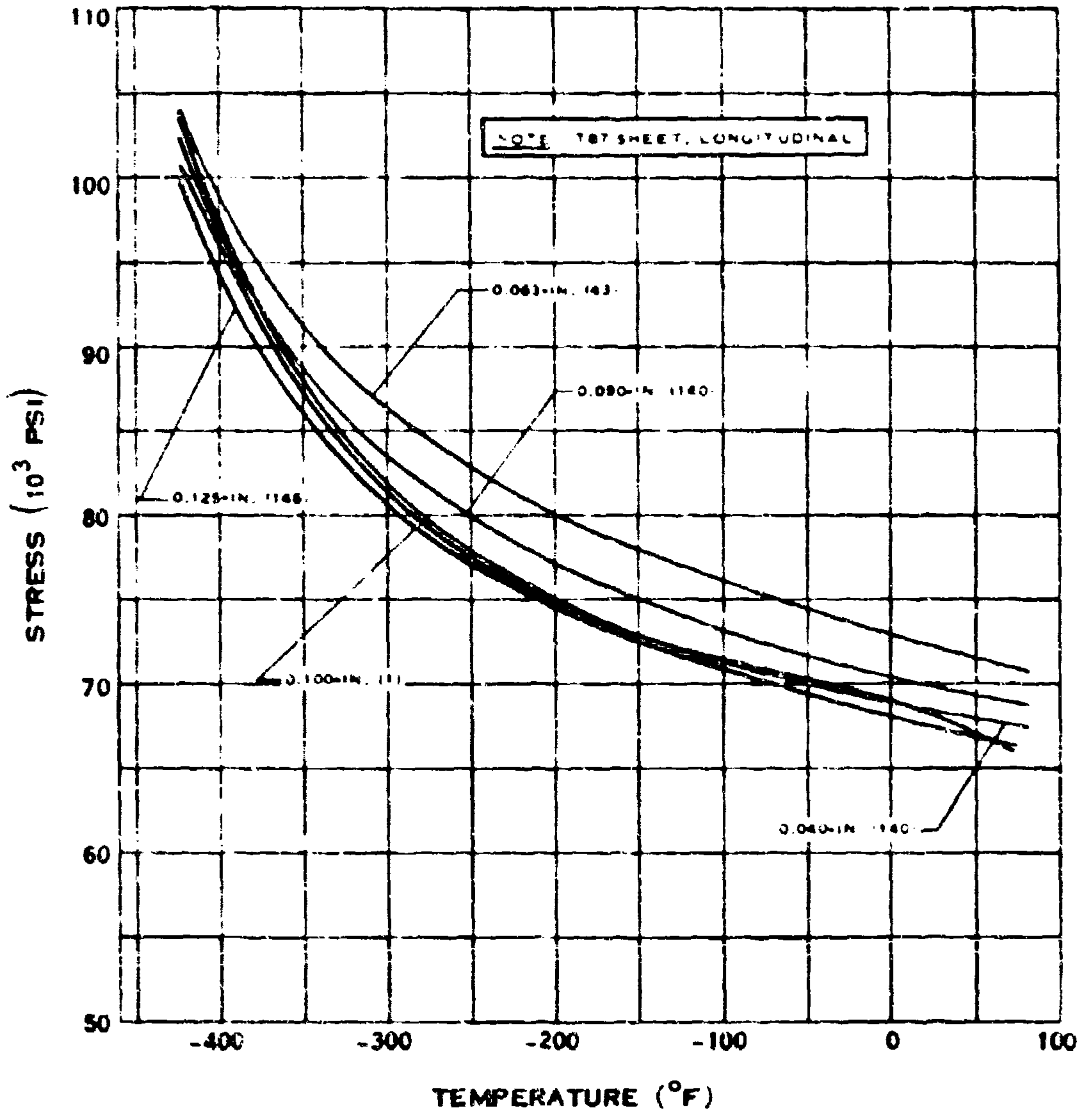
TENSILE STRENGTH OF 2219 ALUMINUM

A.5.b-2



TENSILE STRENGTH OF 2219 . LUMINUM

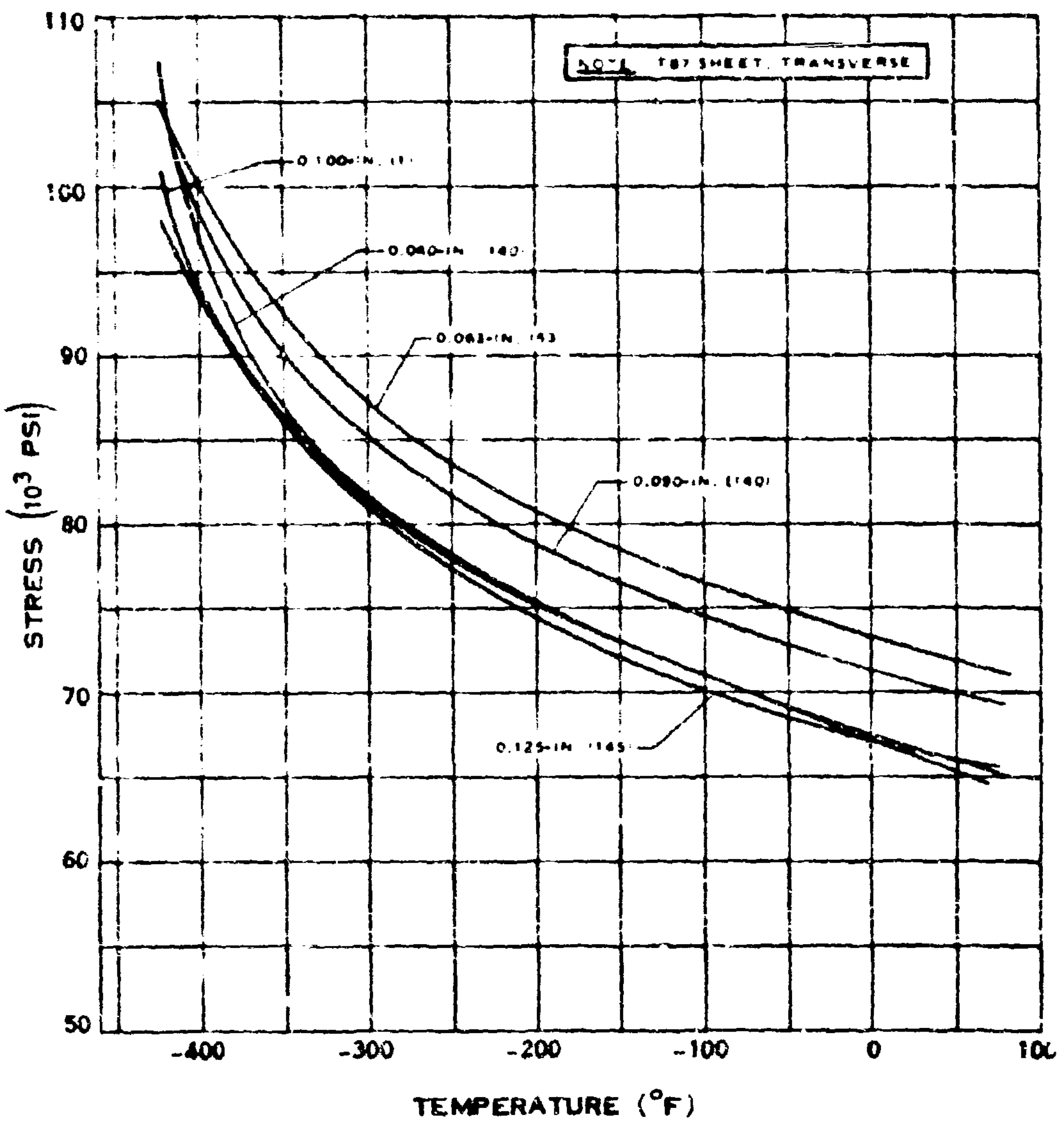
A.5.b-3



TENSILE STRENGTH OF 2219 ALUMINUM

(6-08)

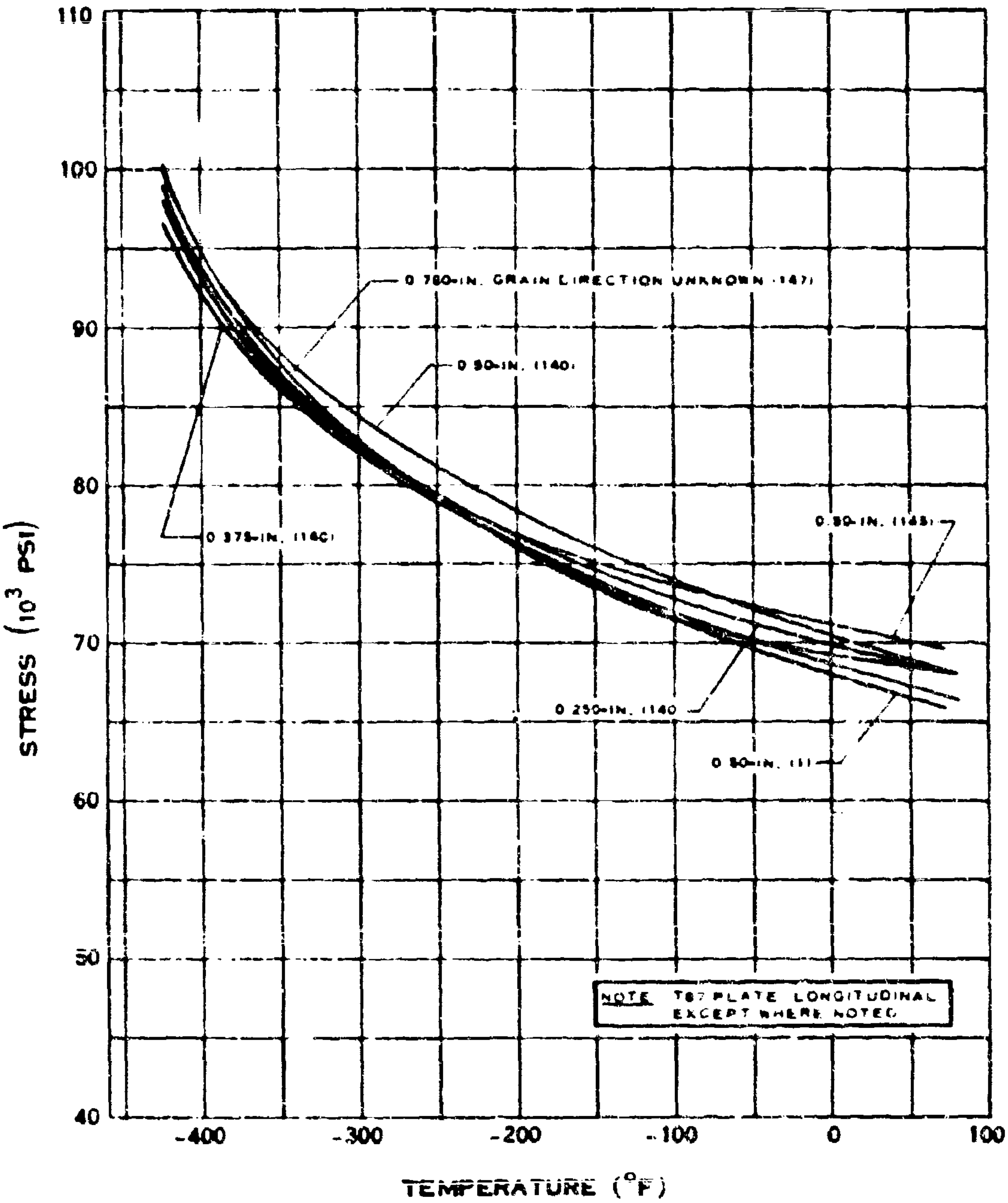
A.5.b-4



TENSILE STRENGTH OF 2219 ALUMINUM

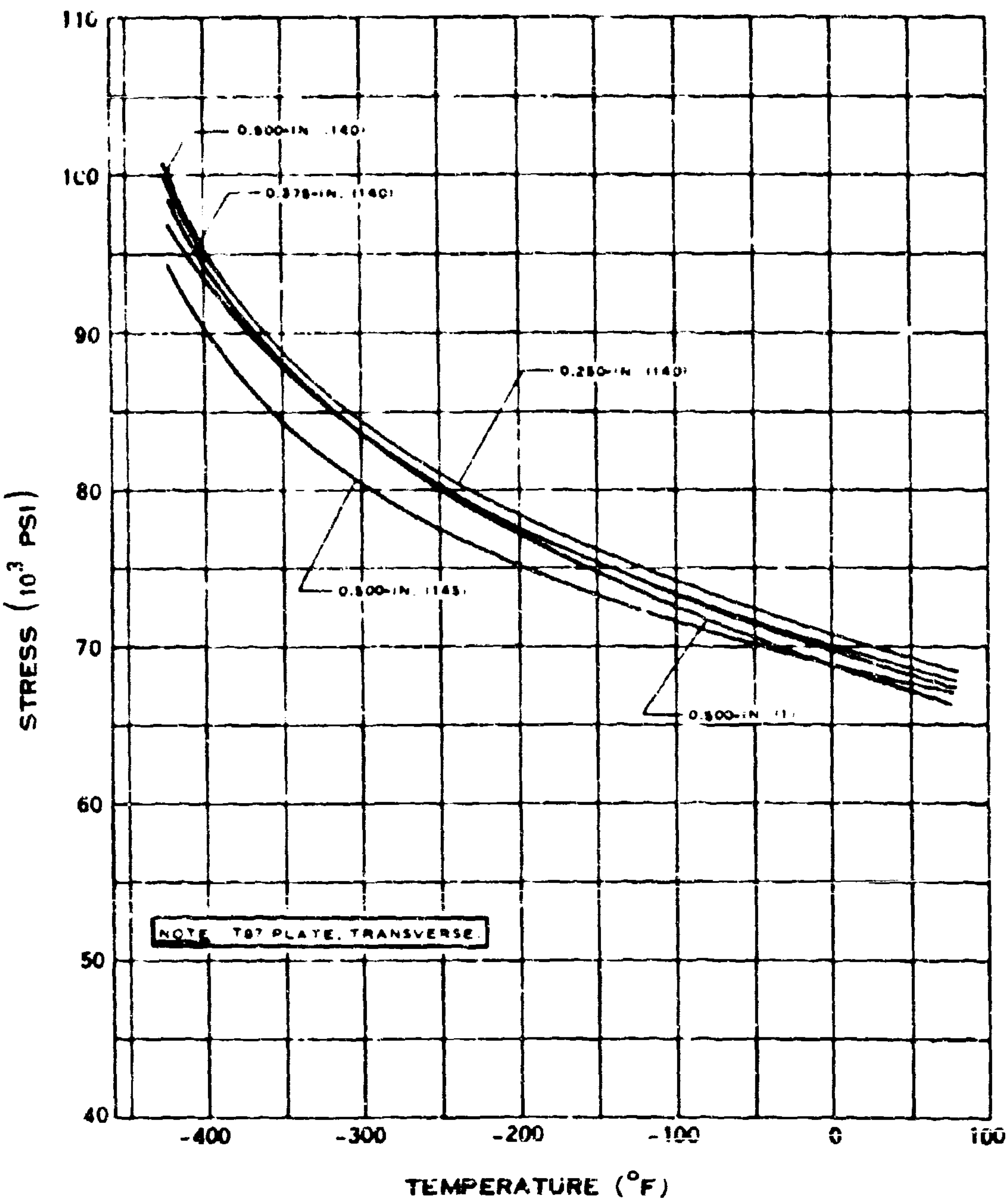
10-68

A.5.b-5



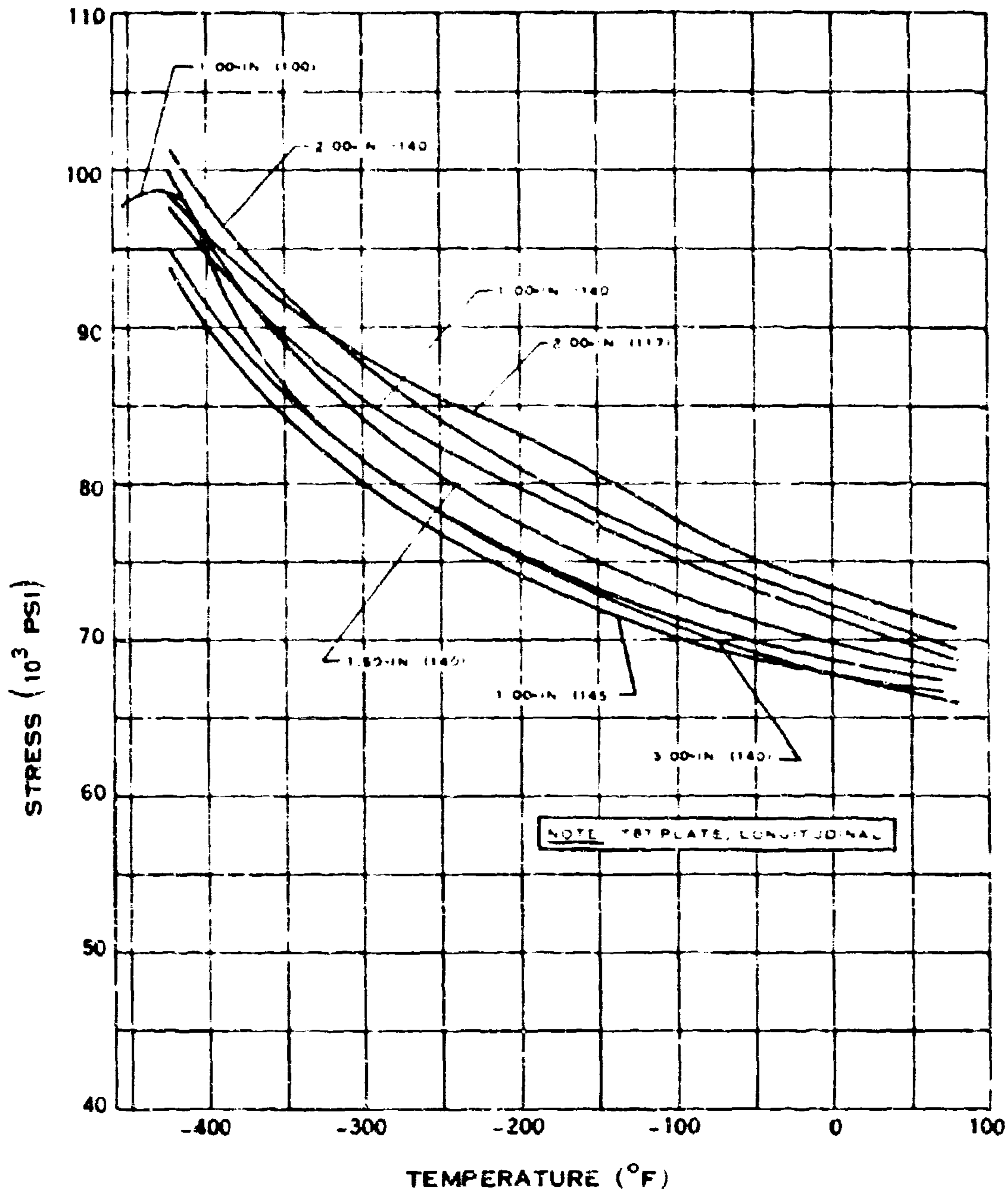
TENSILE STRENGTH OF 2219 ALUMINUM

A.5.b-6



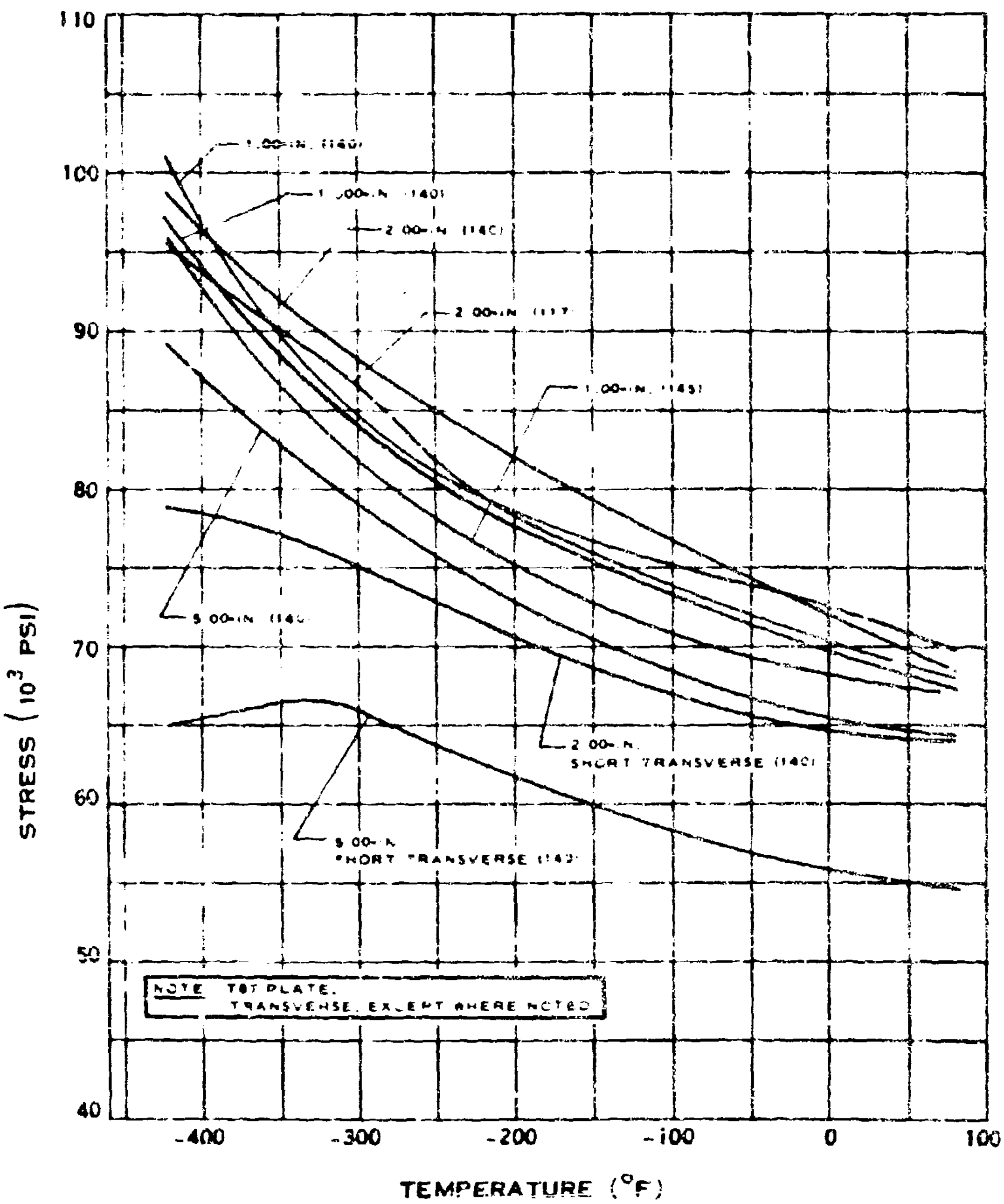
TENSILE STRENGTH OF 2219 ALUMINUM

A.5.b-7



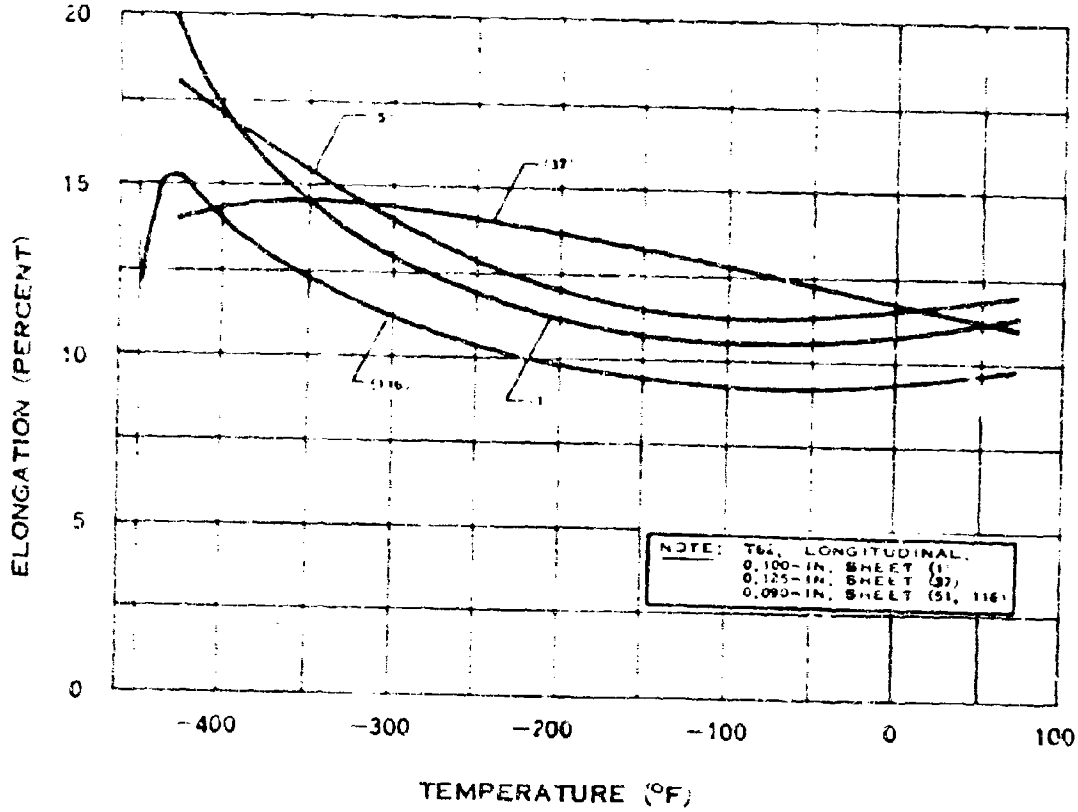
TENSILE STRENGTH OF 2219 ALUMINUM

10-65



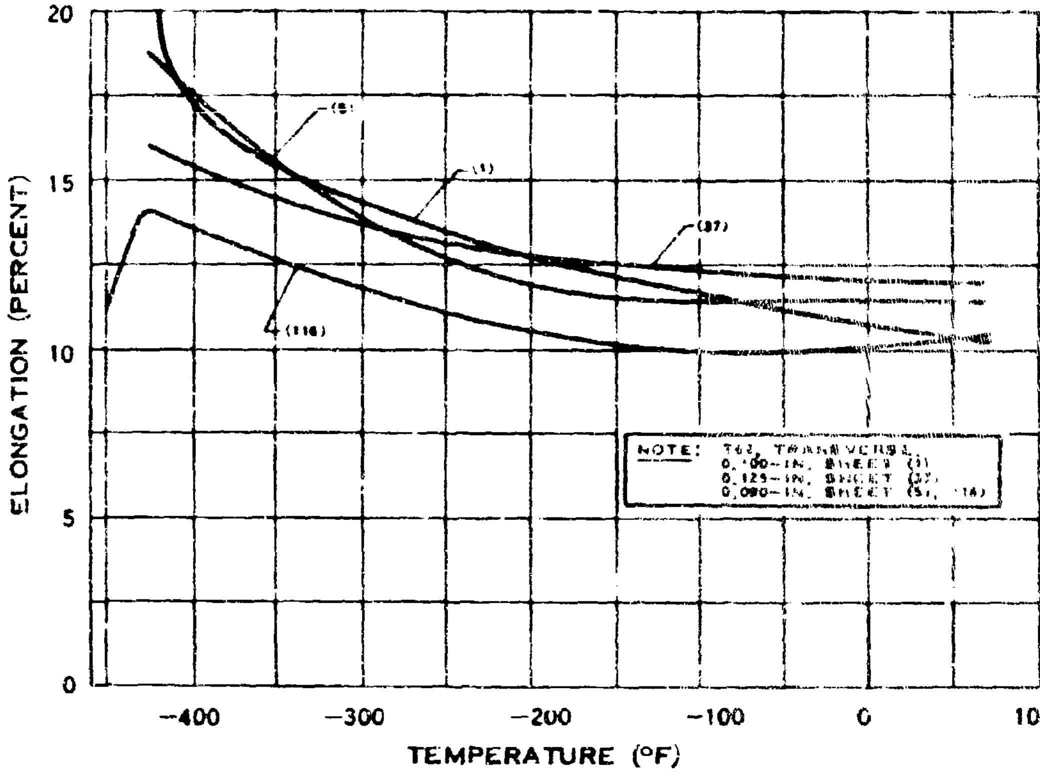
TENSILE STRENGTH OF 2219 ALUMINUM

10-66



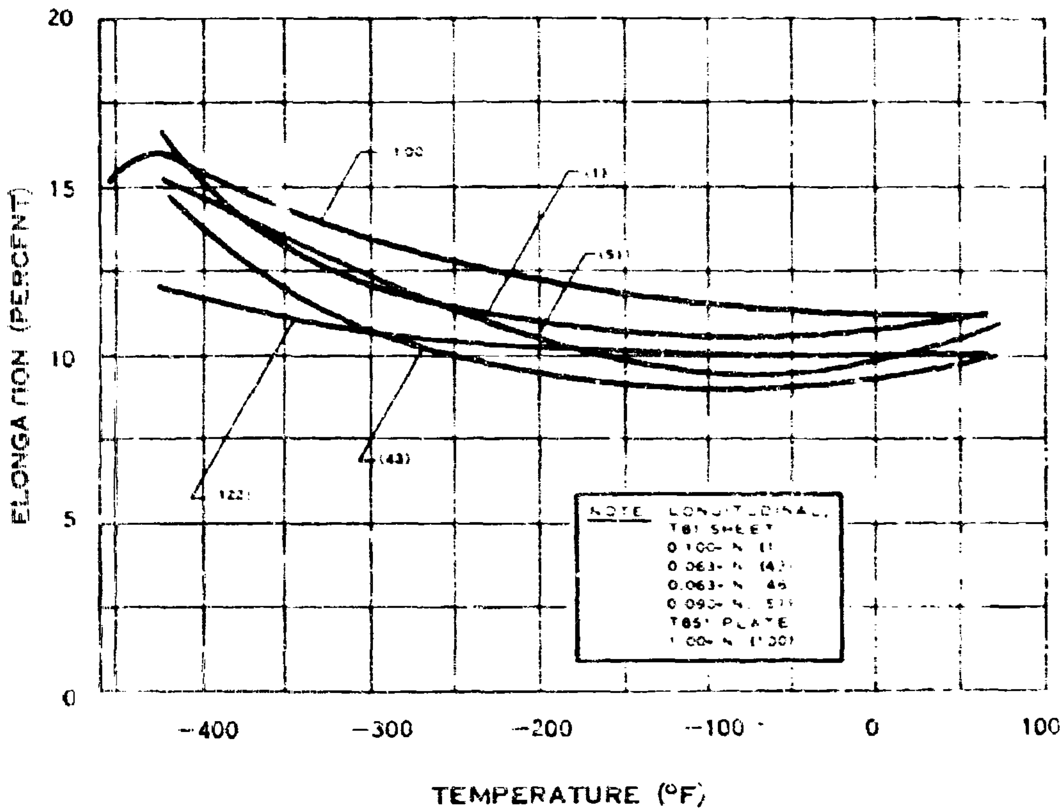
ELONGATION OF 2219 ALUMINUM

A.5.c-1



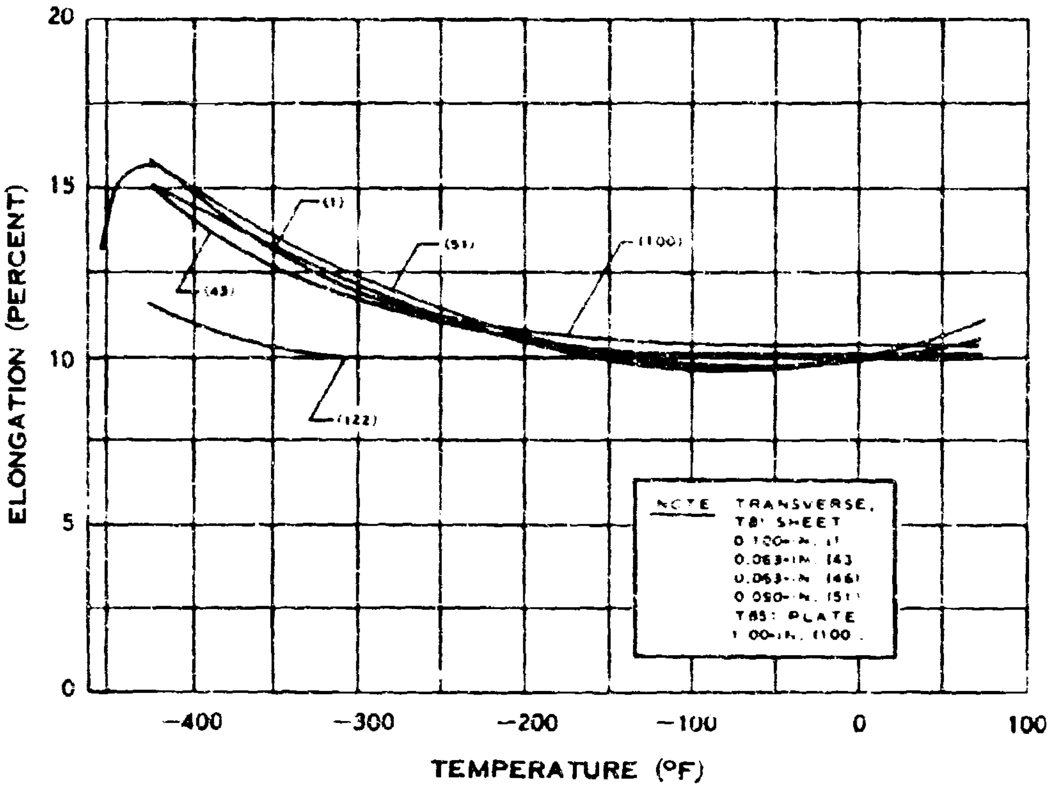
ELONGATION OF 2219 ALUMINUM

A.5.c-2



ELONGATION OF 2219 ALUMINUM

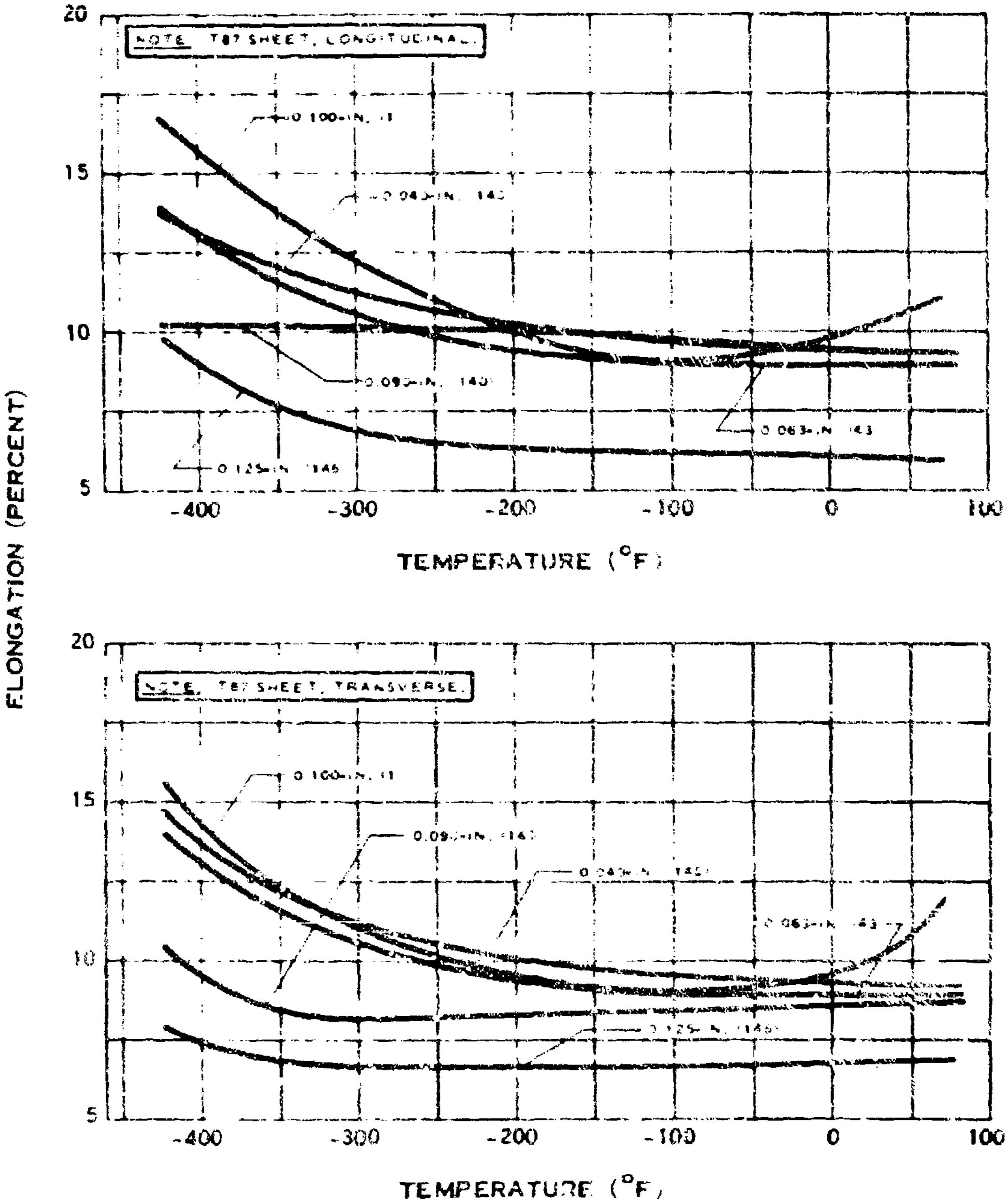
A.5.c-3



ELONGATION OF 2219 ALUMINUM

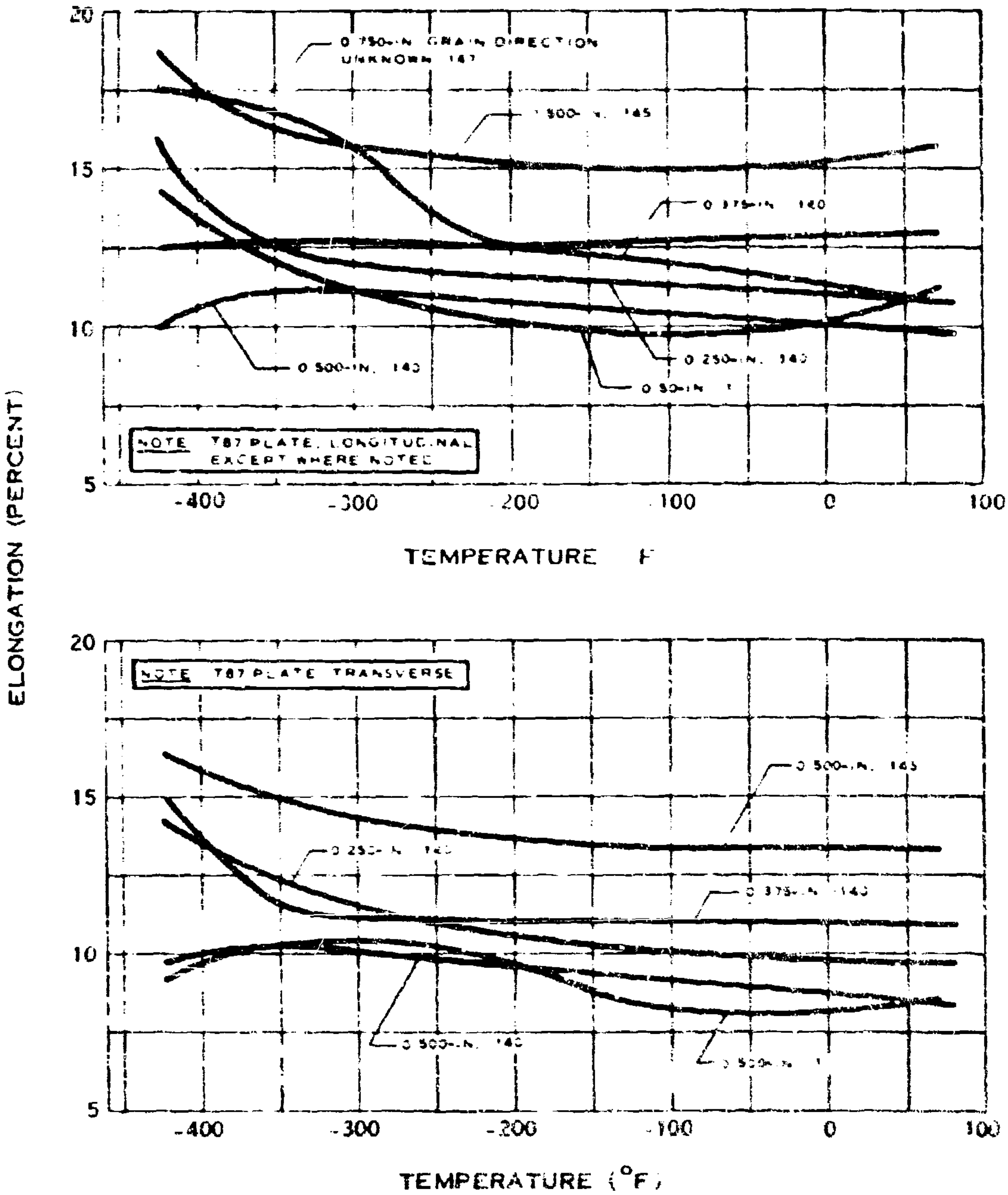
6-6a

A.5.c-4



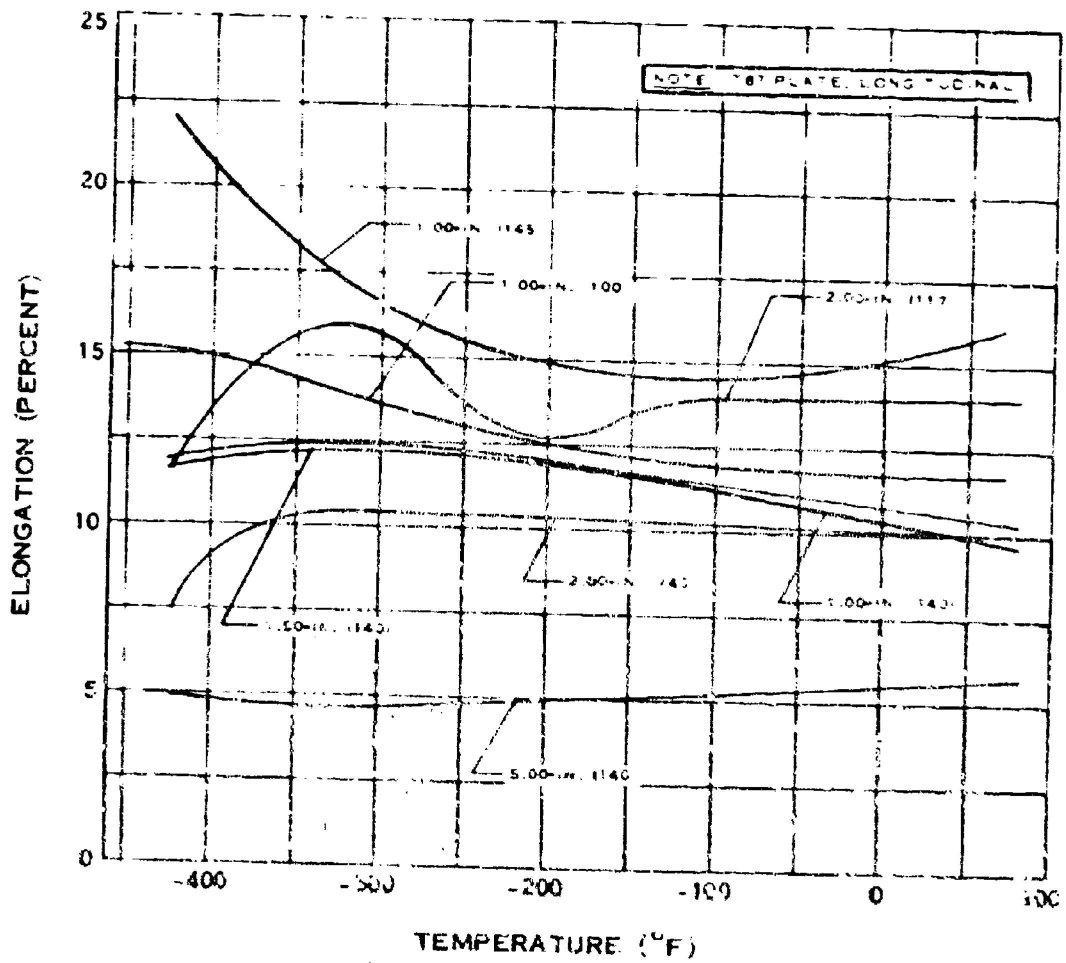
ELONGATION OF 2219 ALUMINUM

A.5.c-5



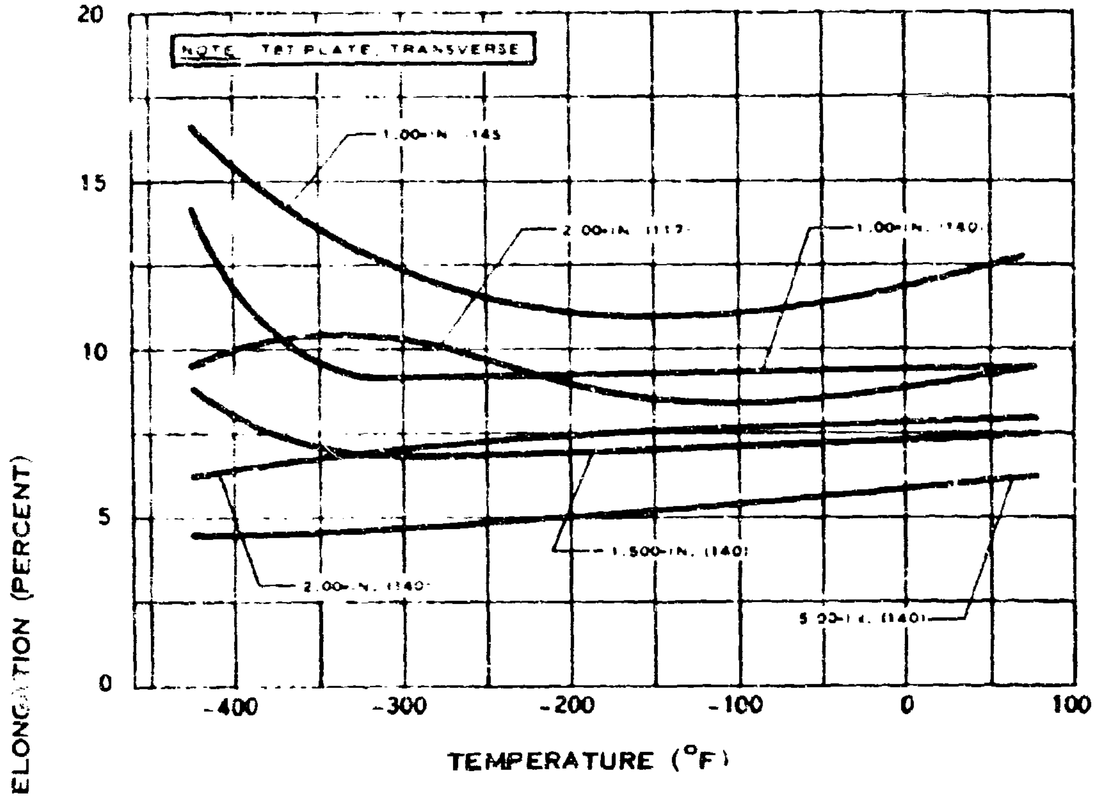
ELONGATION OF 2219 ALUMINUM

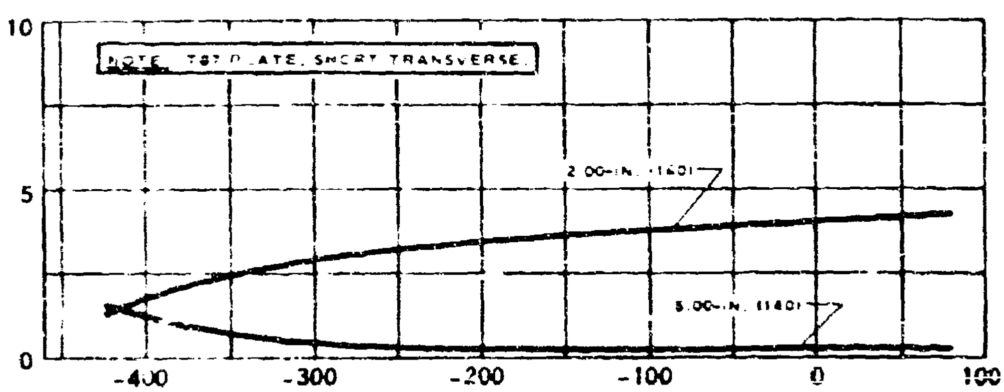
A.5.c-6



ELONGATION OF 2219 ALUMINUM

A.5.c-7

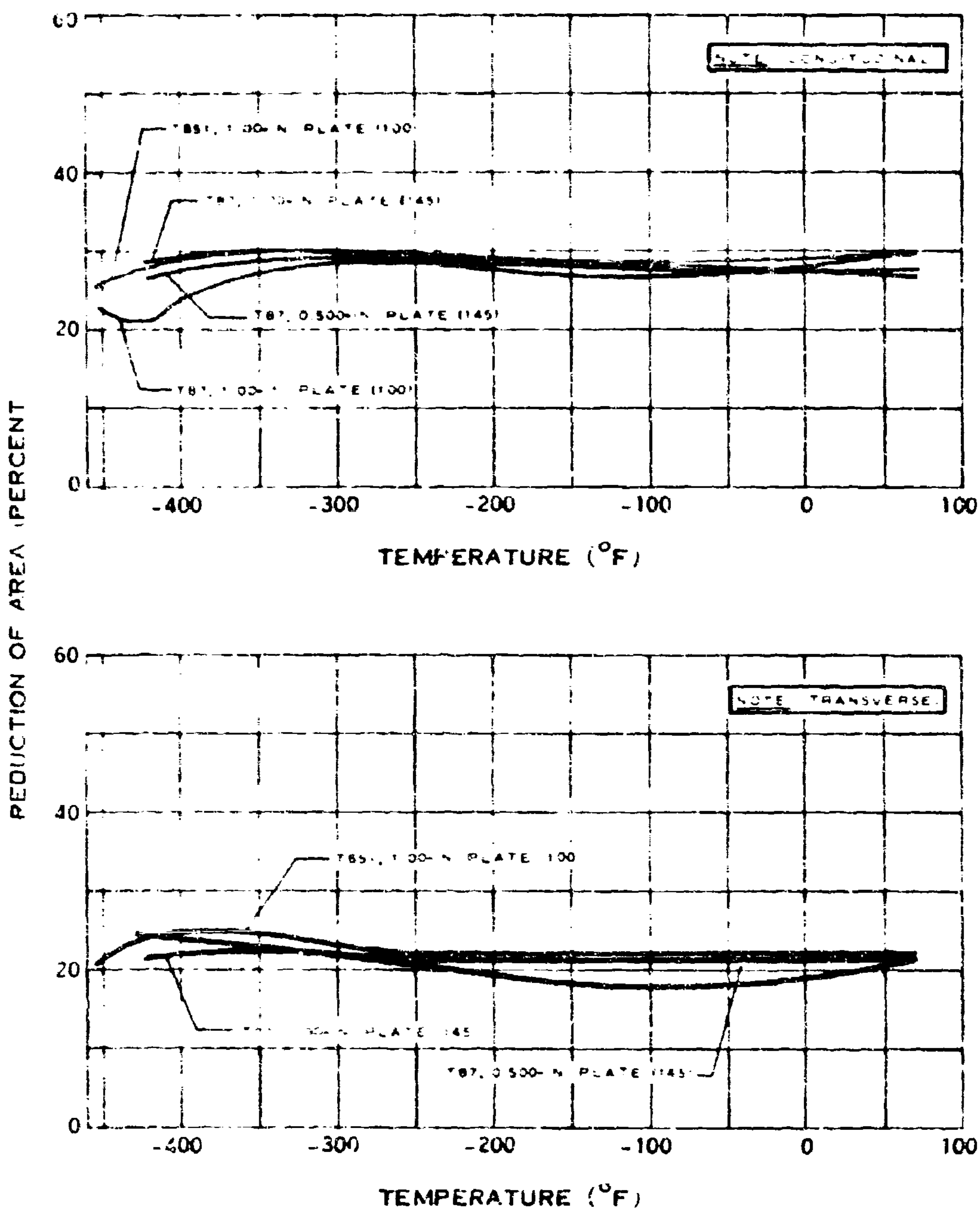




ELONGATION OF 2219 ALUMINUM

6-68

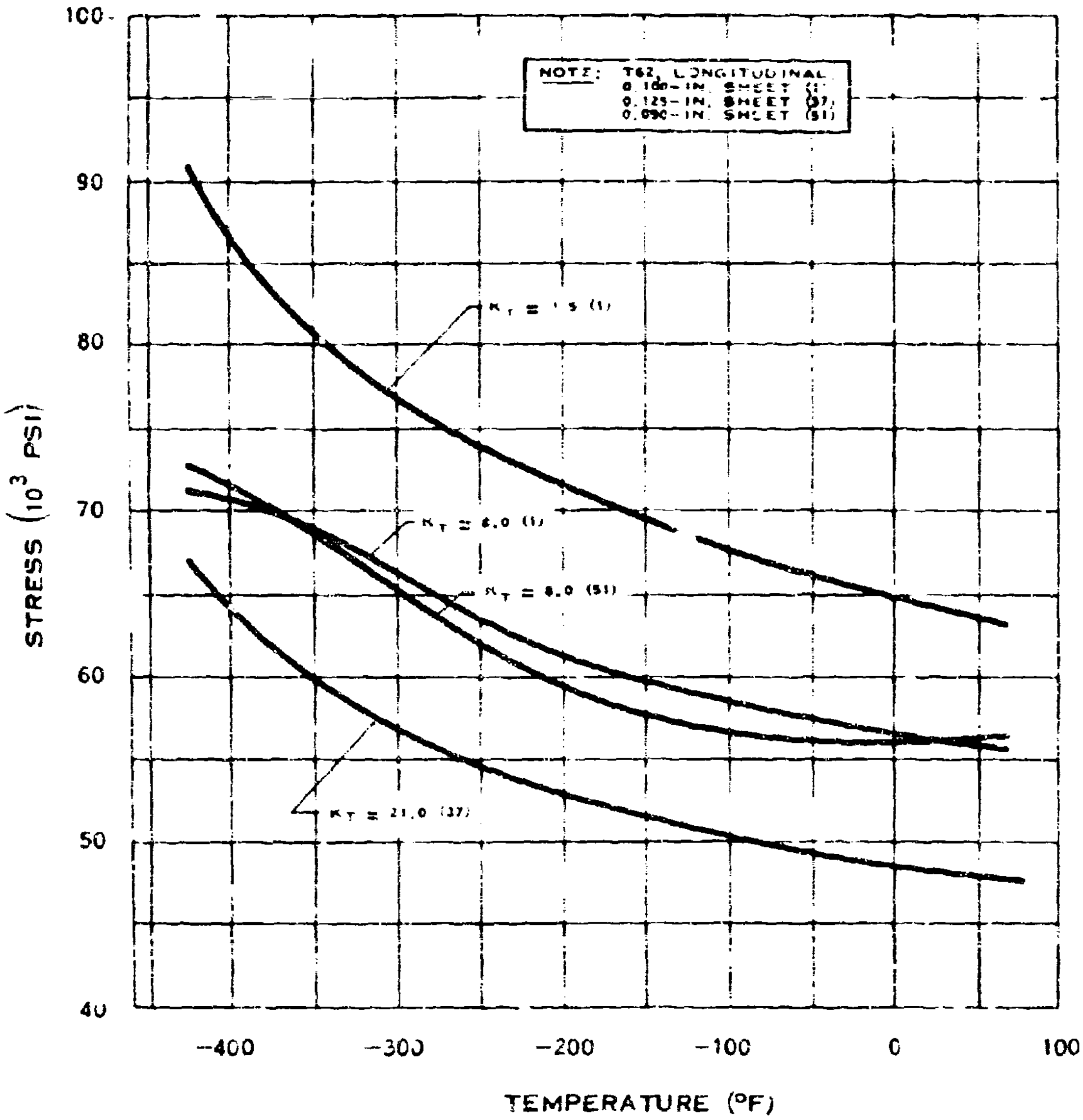
A.5.d



REDUCTION OF AREA OF 2219 ALUMINUM

6-66

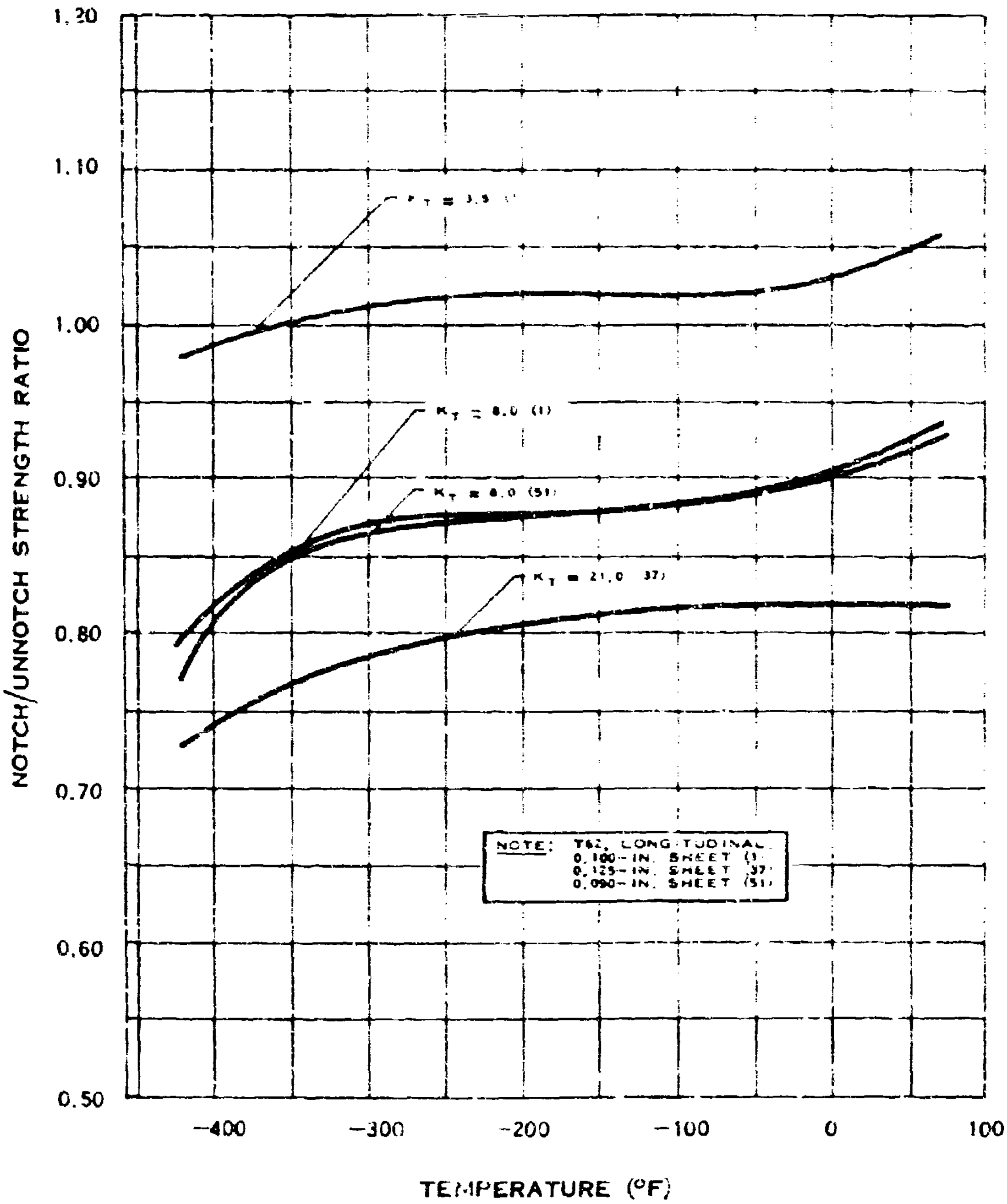
A.5.e



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

7-64

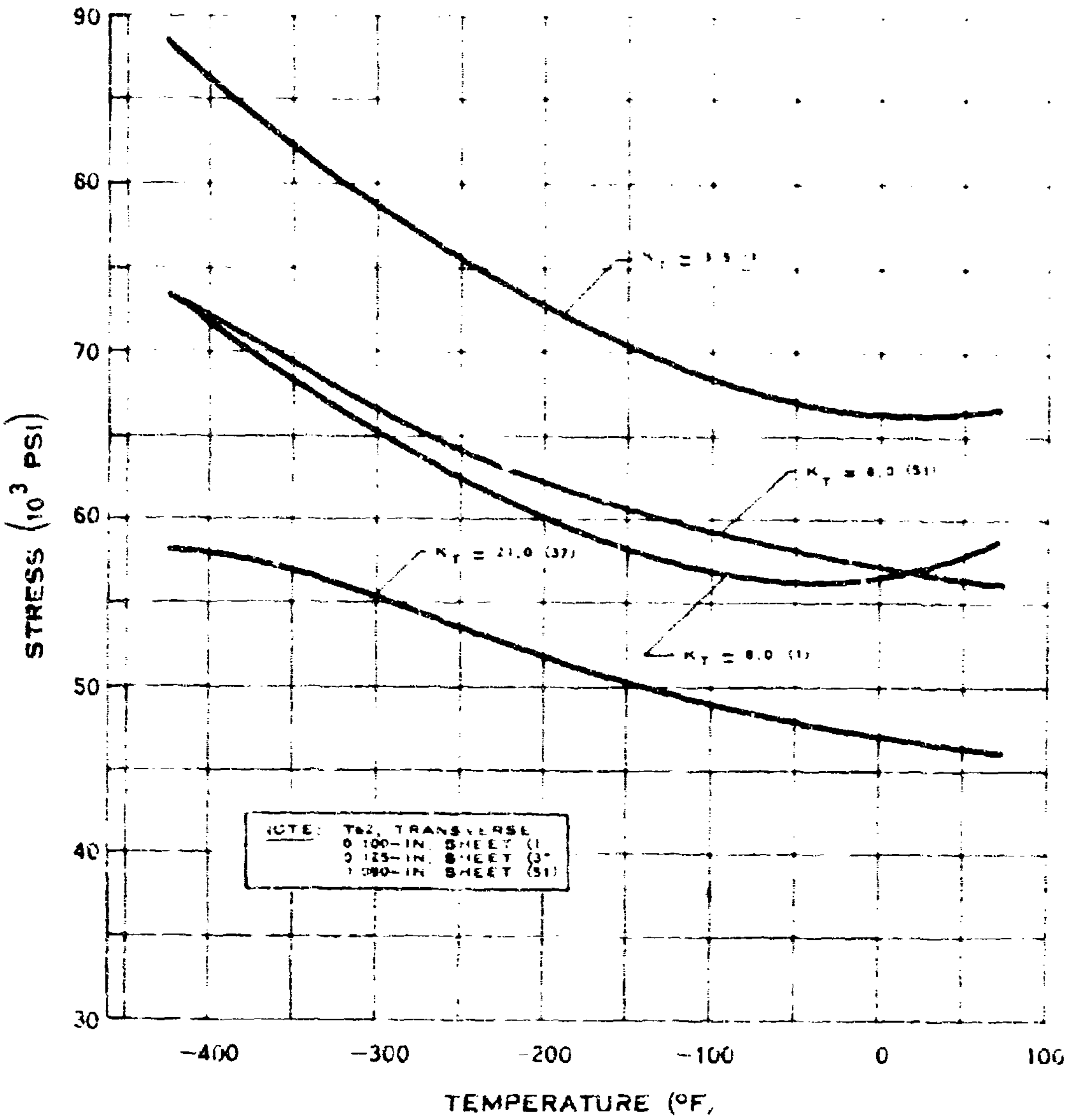
A.5.e-1



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

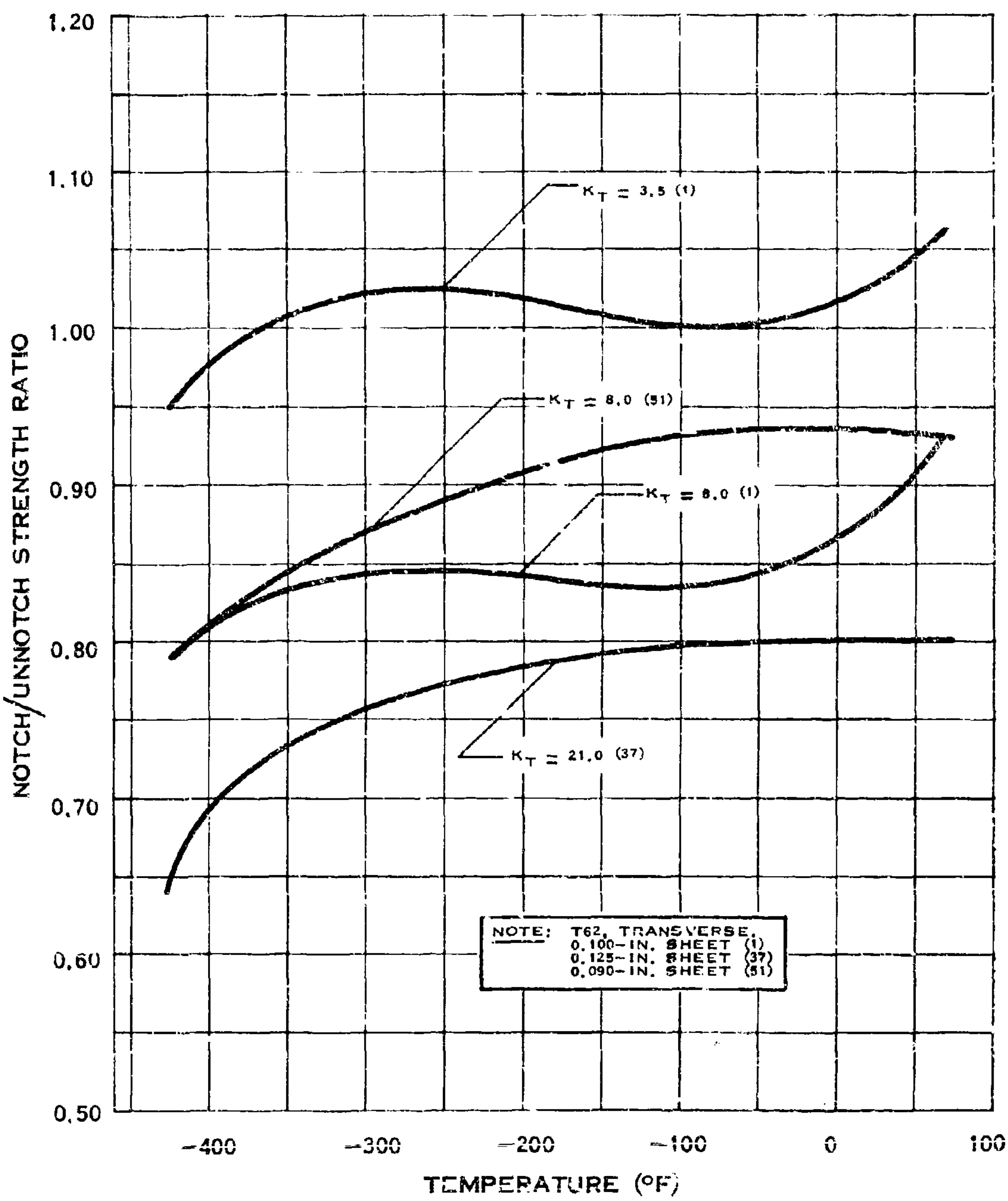
12-64

A.5.e-2



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

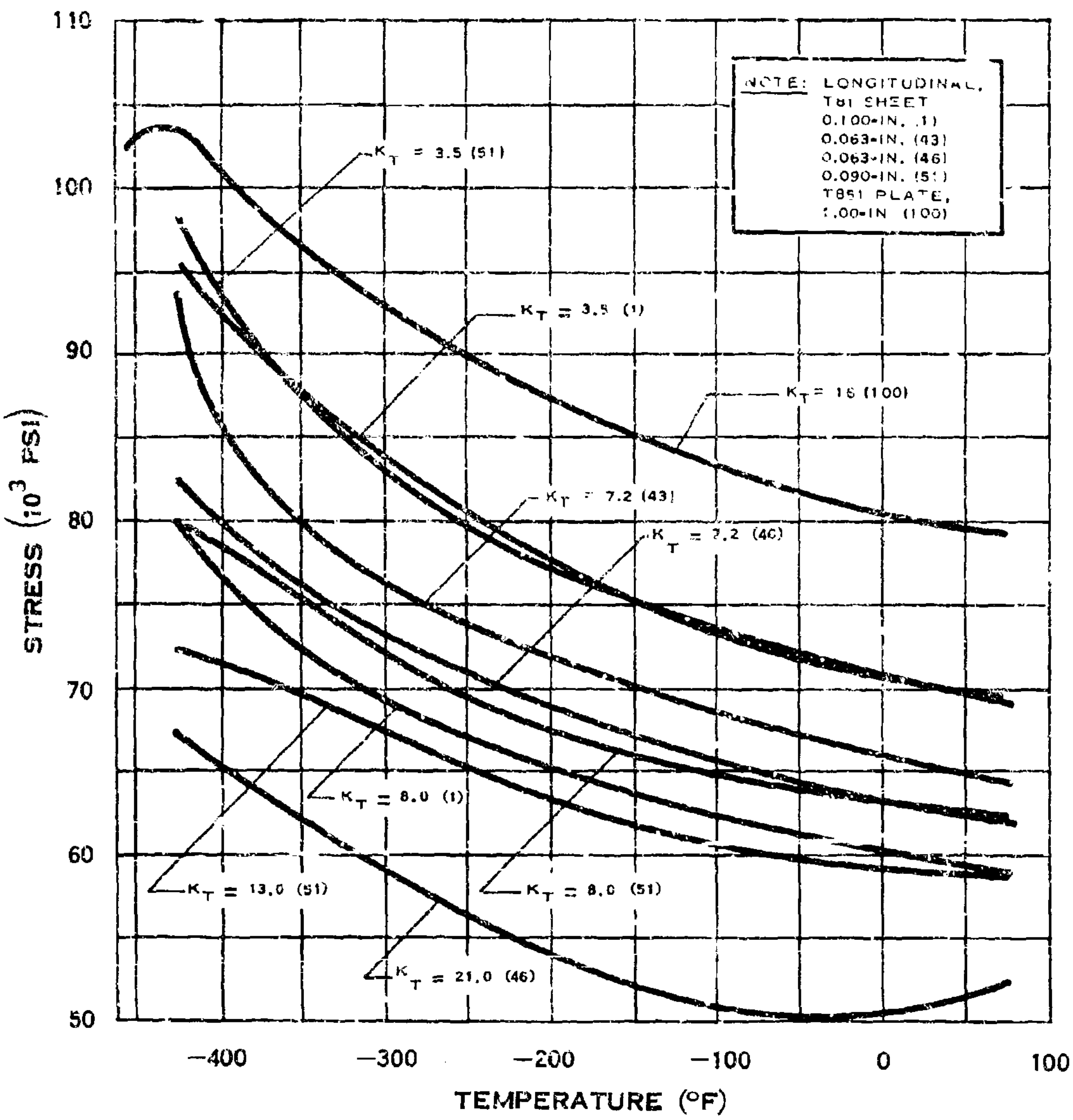
A.5.e-3



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

(7-64)

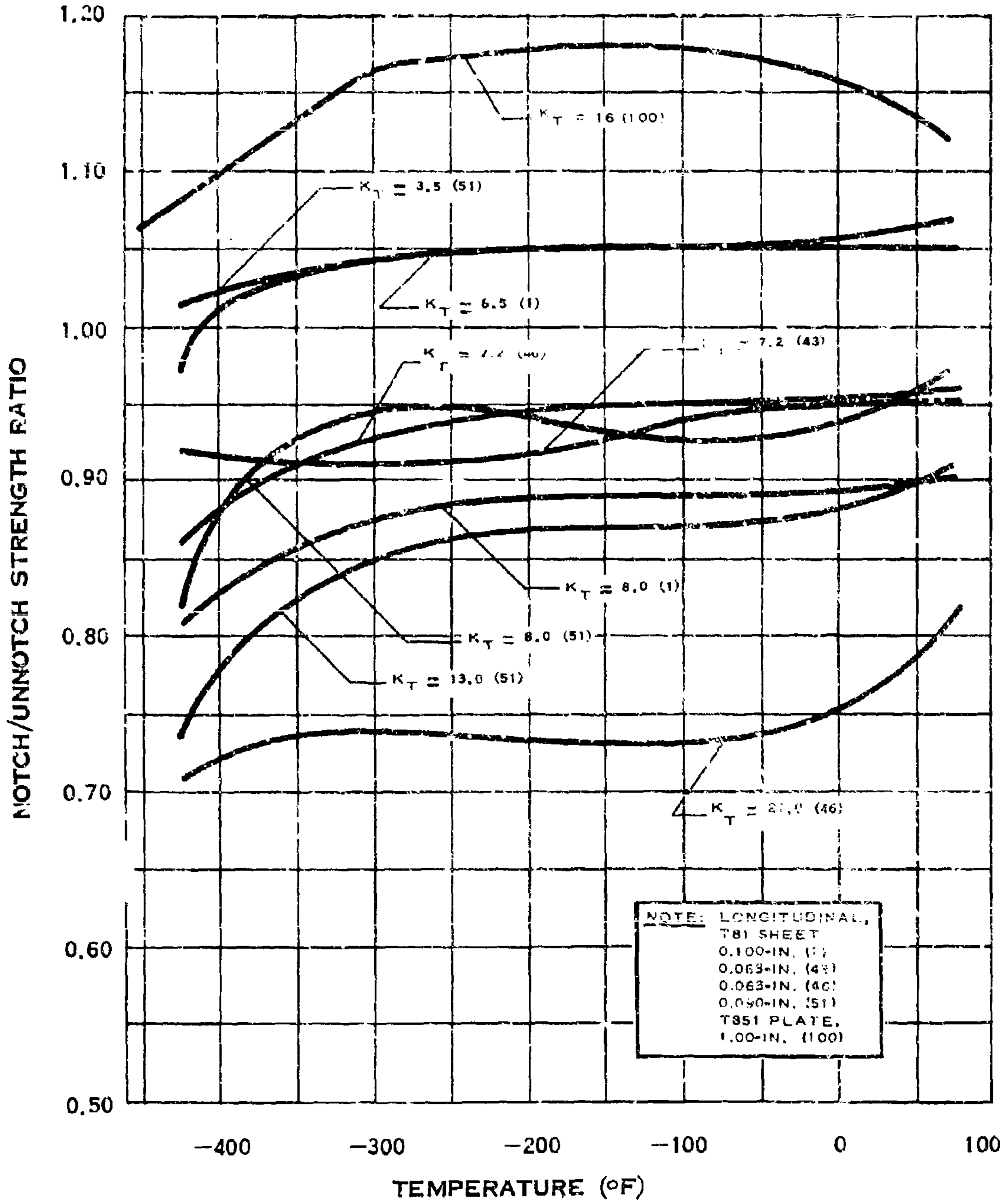
A.5.e-4



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

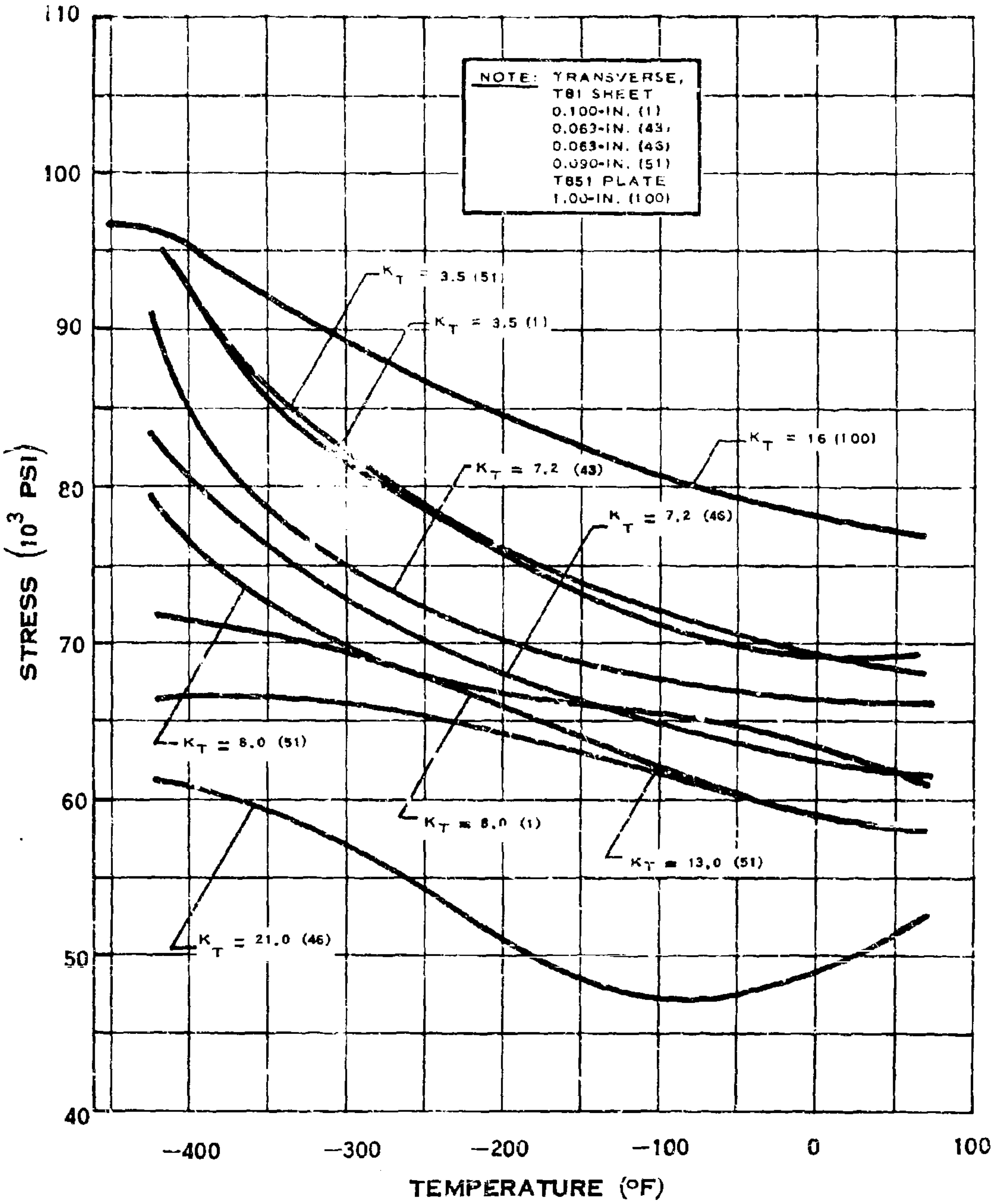
(6-68)

A.5.e-5



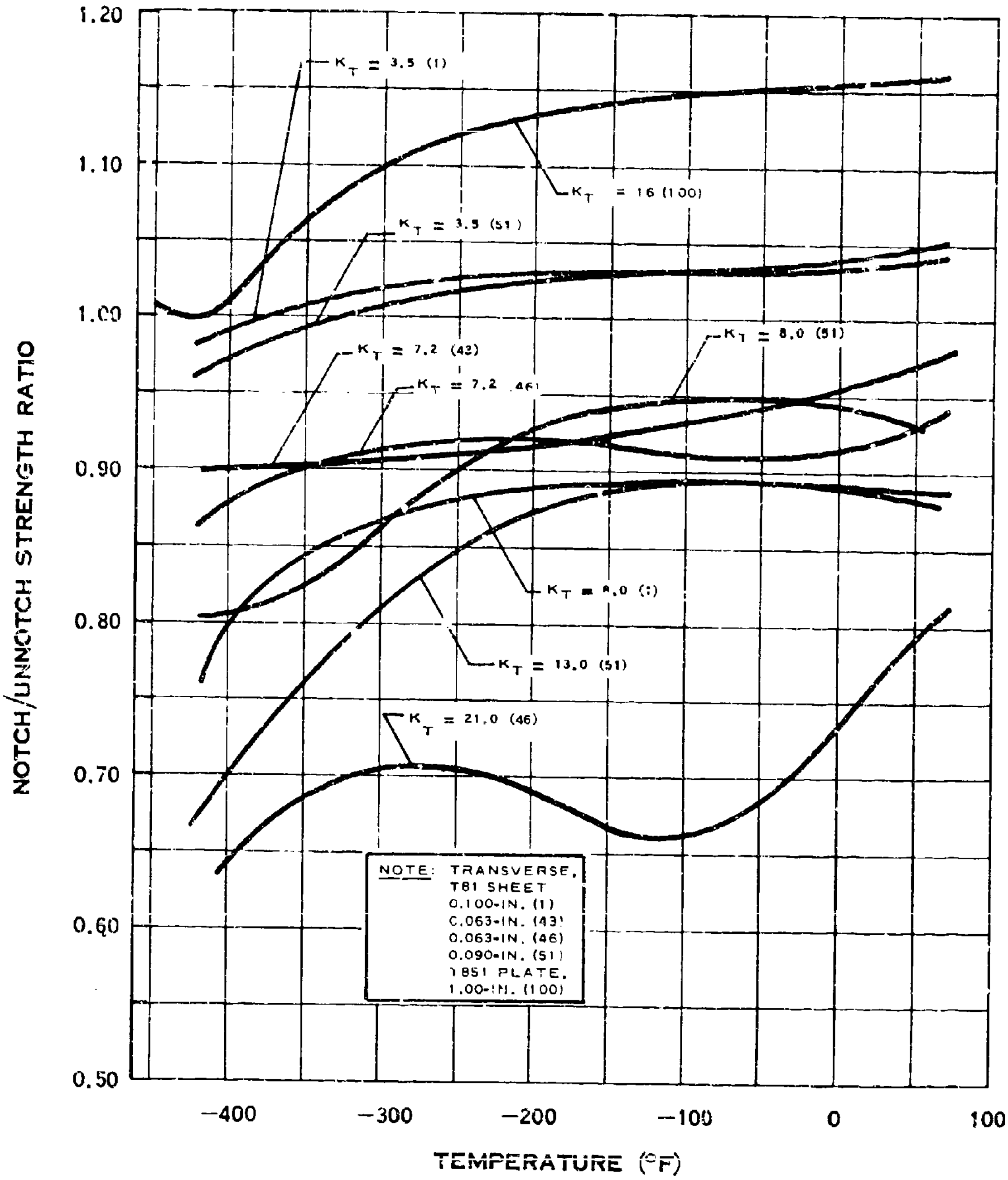
NOTCH STRENGTH RATIO OF 2219 ALUMINUM

(6-68)



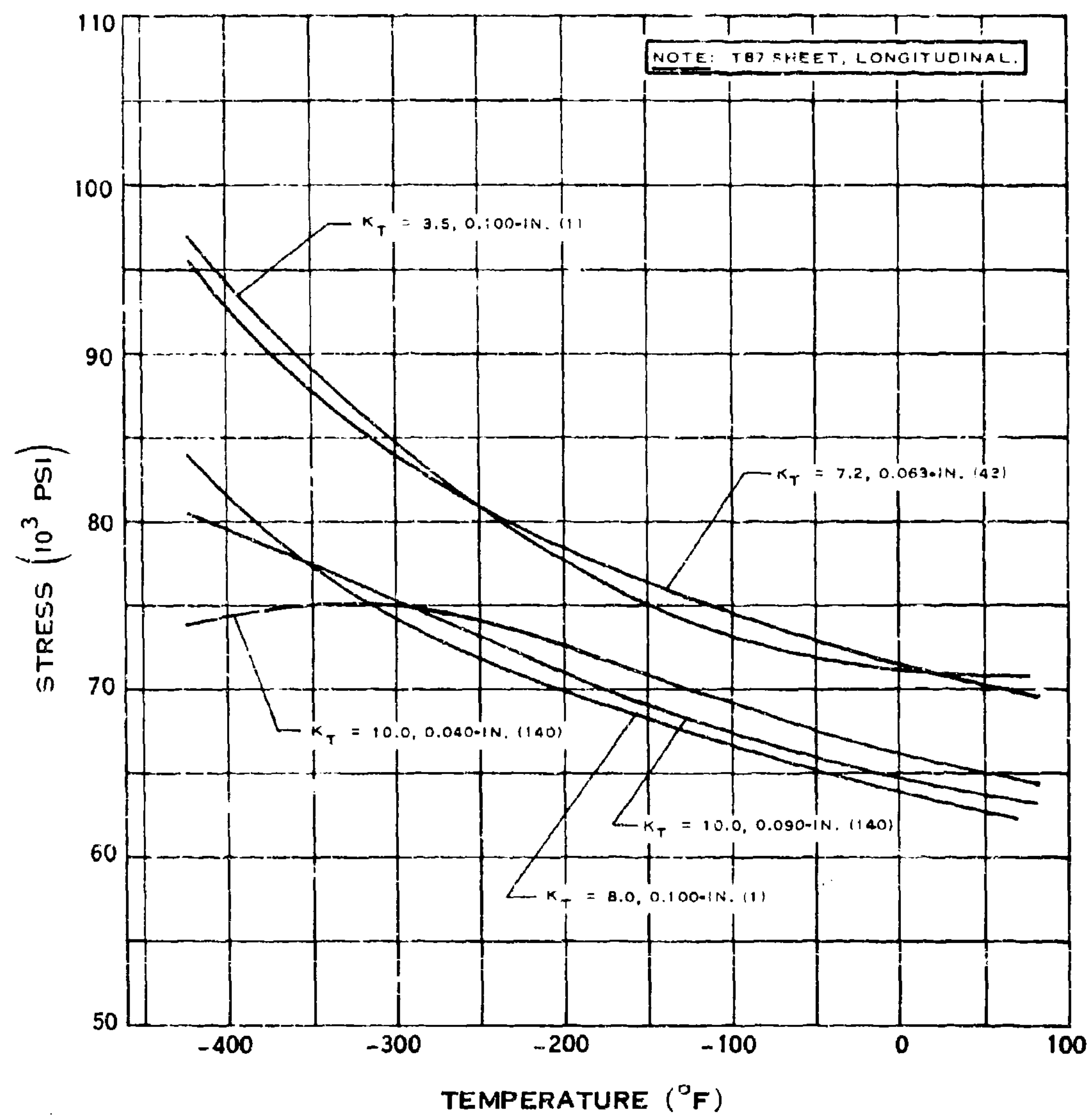
NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

(6-63)



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

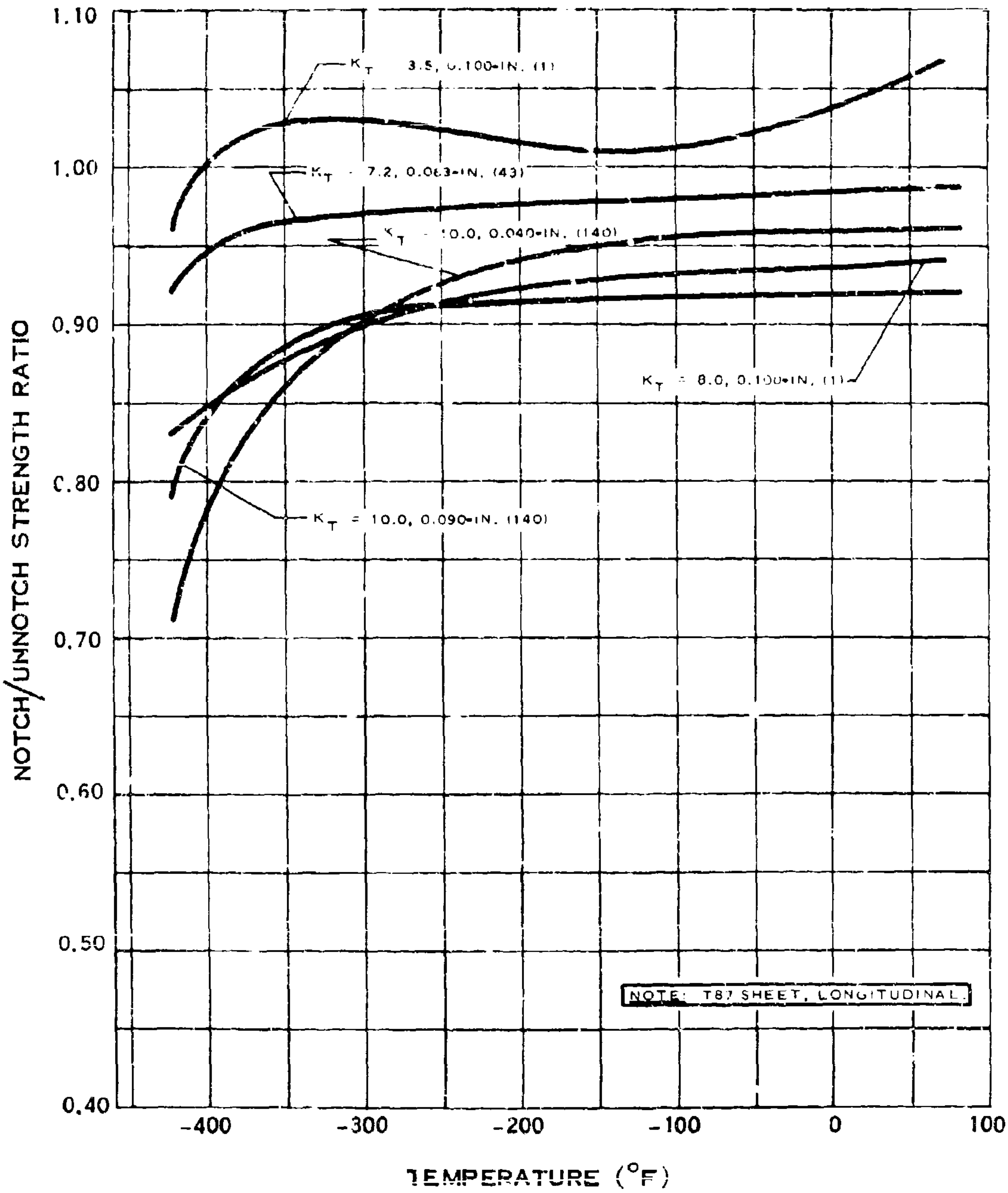
A.5.e-8



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

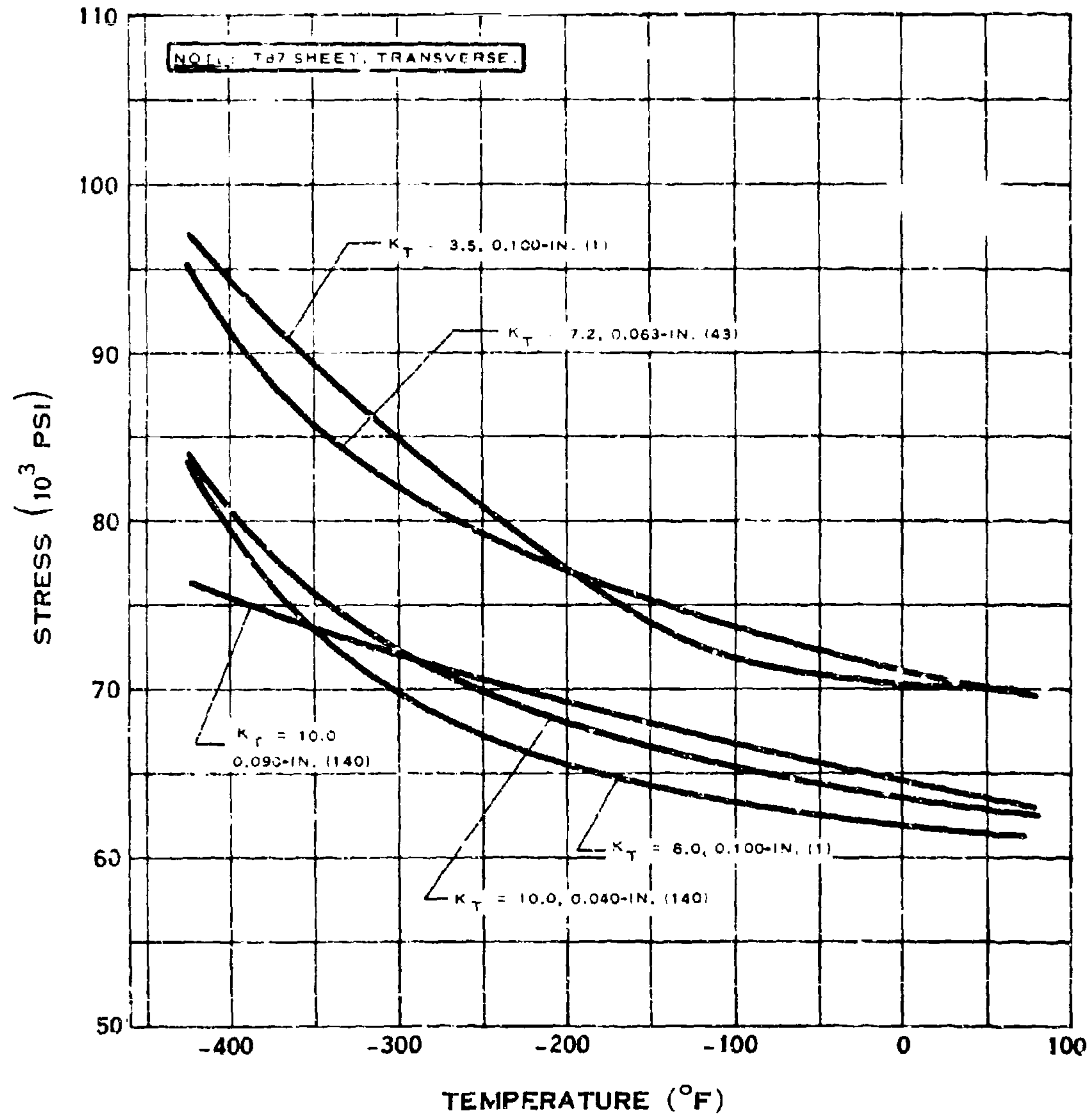
(6-68)

A.5.e-9



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

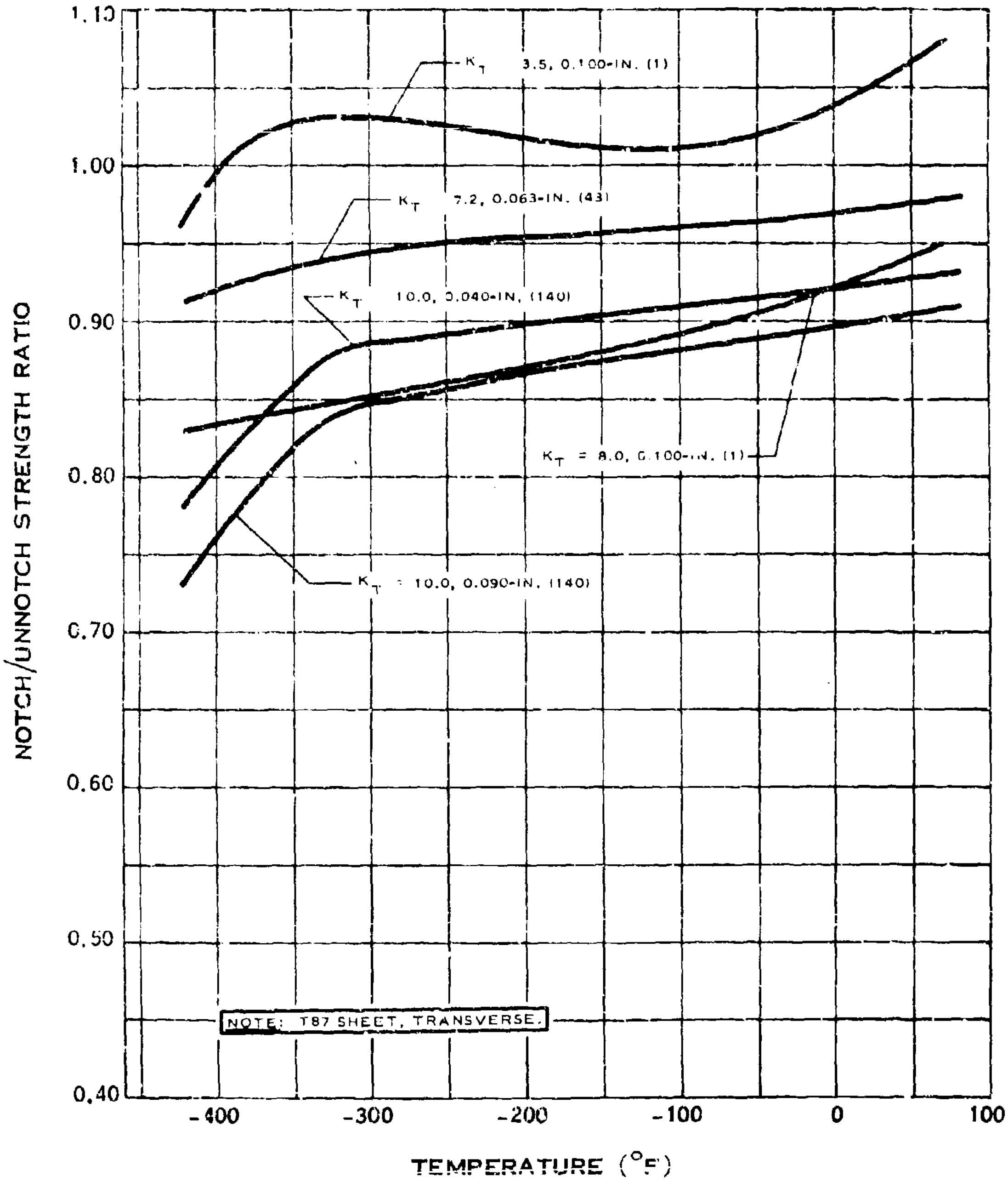
(6-68)



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

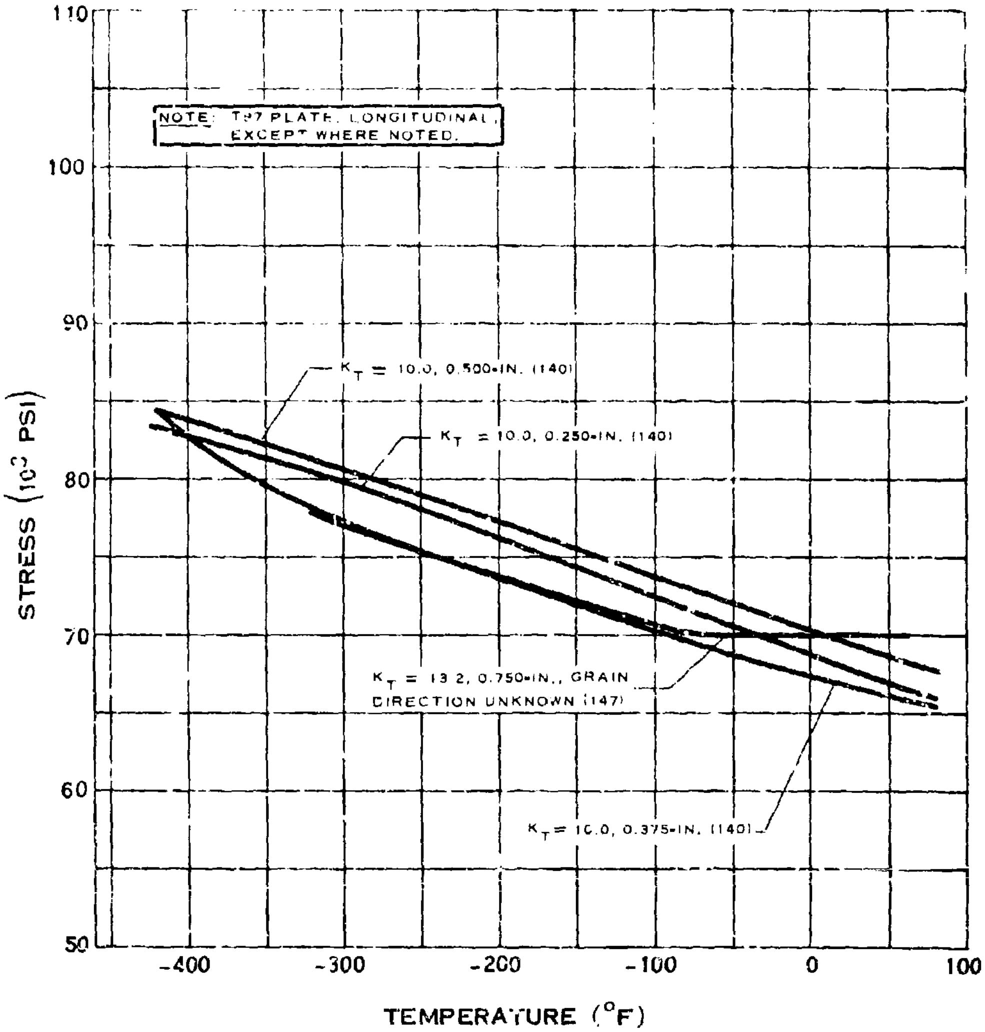
(5-68)

A.5.e-11



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

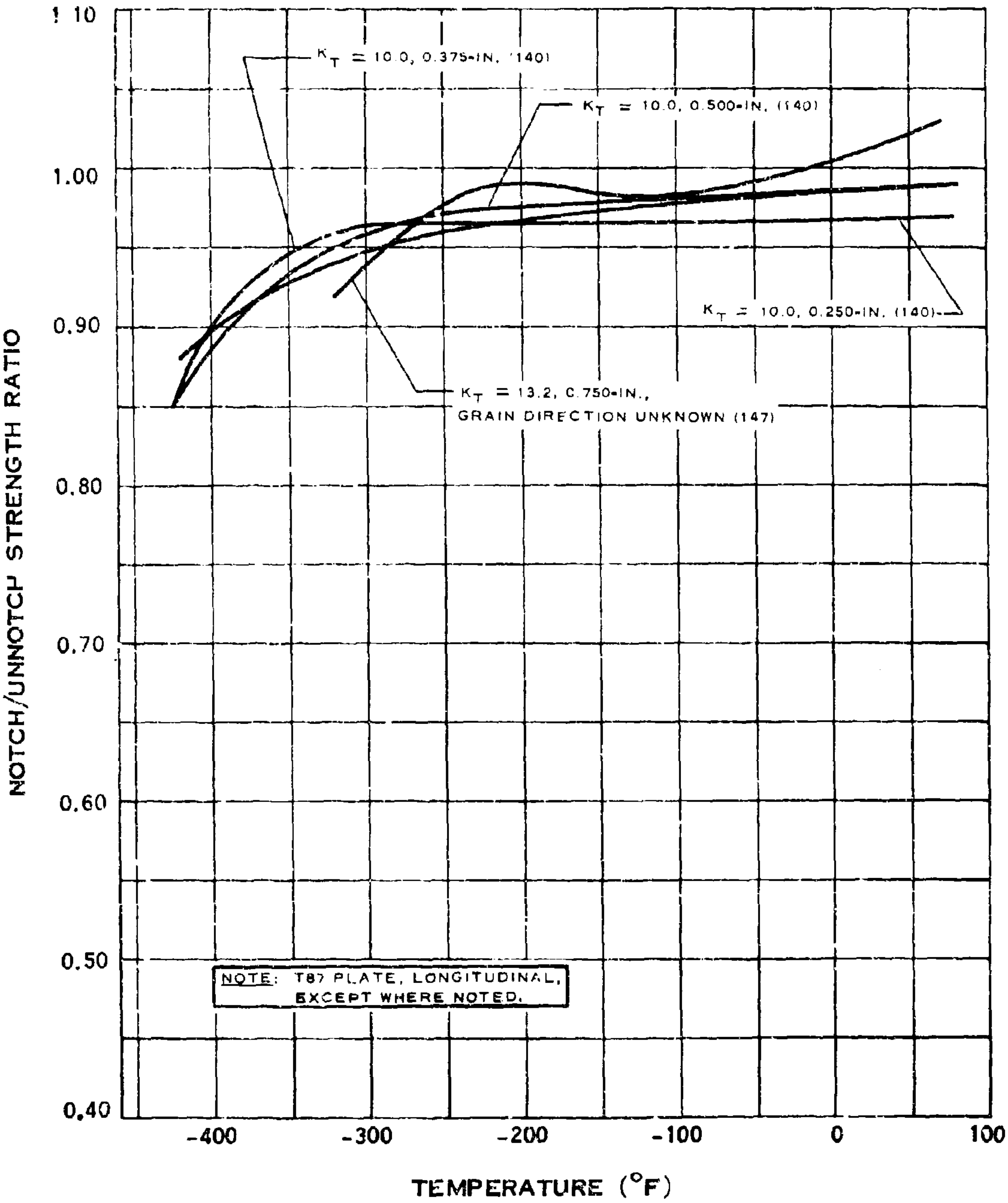
(6-68)



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

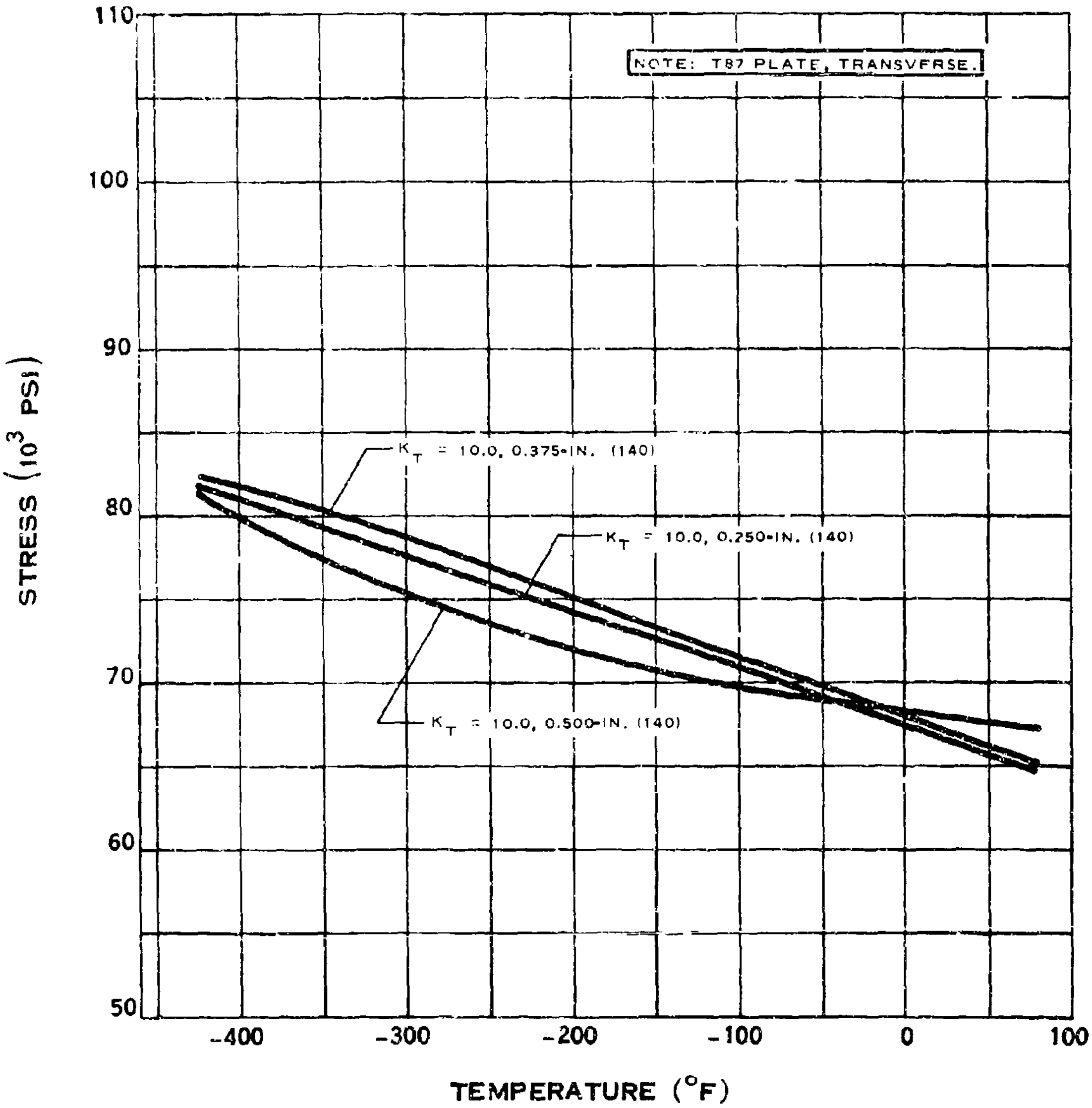
(6-68)

A.5.e-13



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

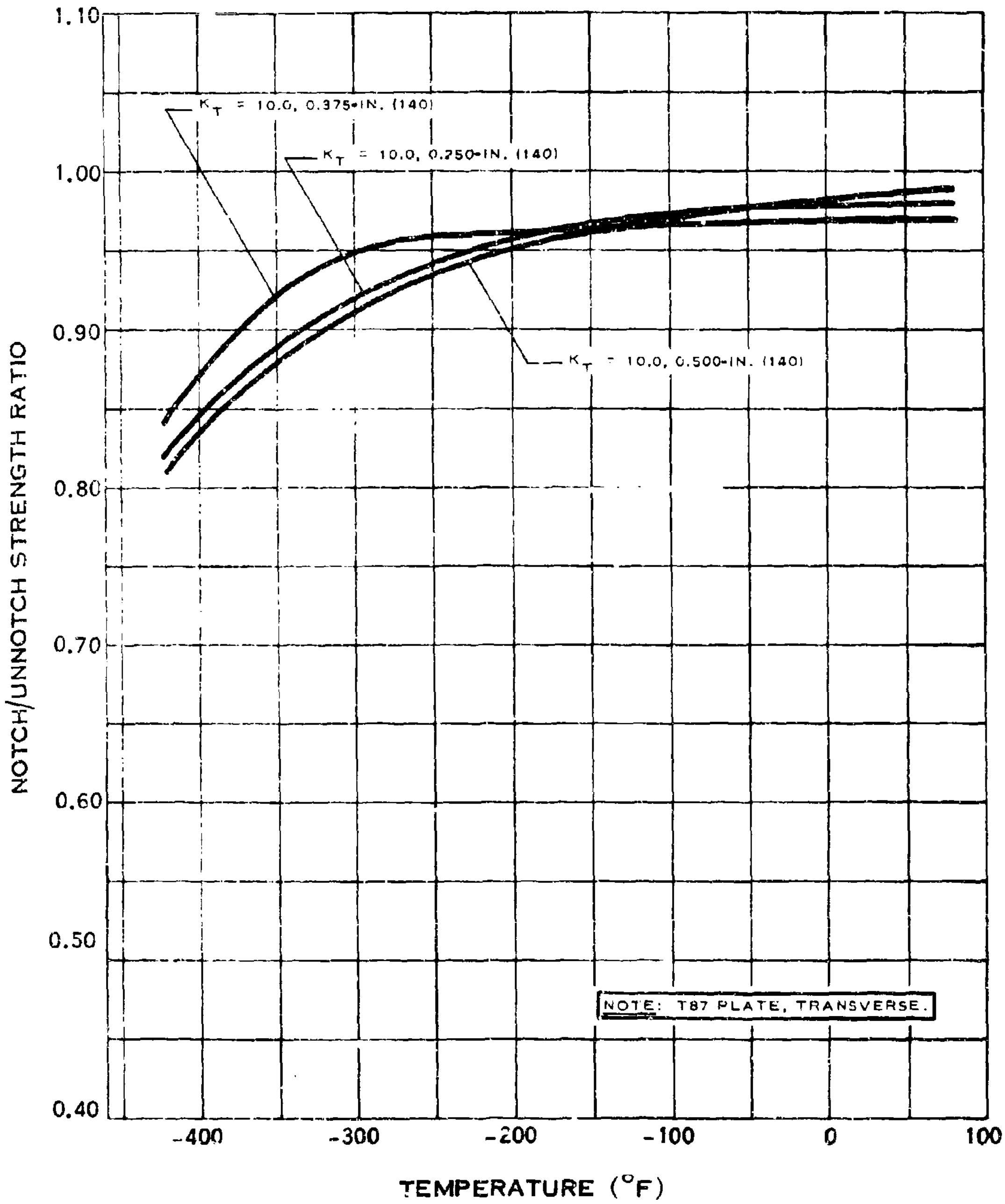
(6-68)



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

(F-68)

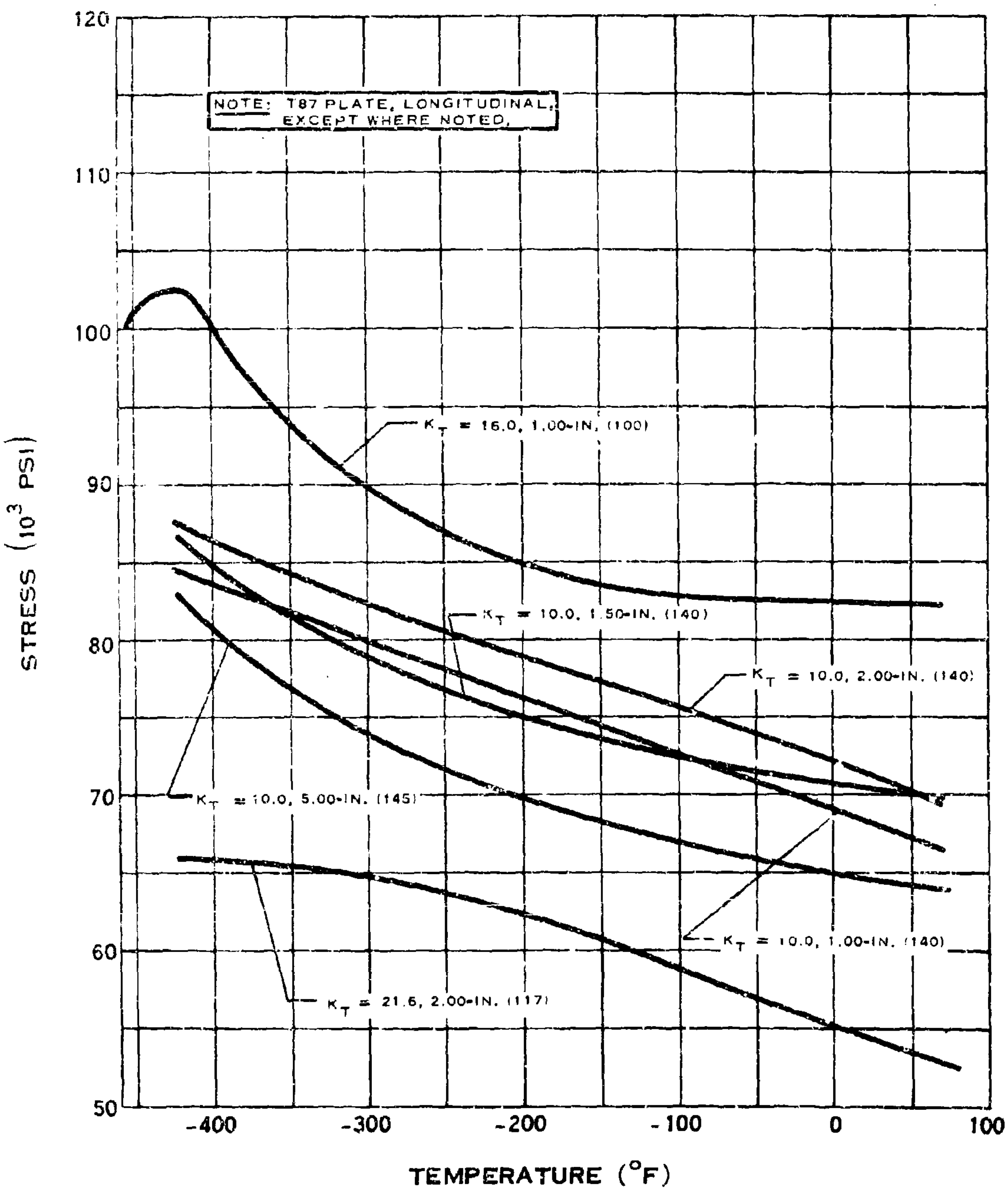
A.5.e-15



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

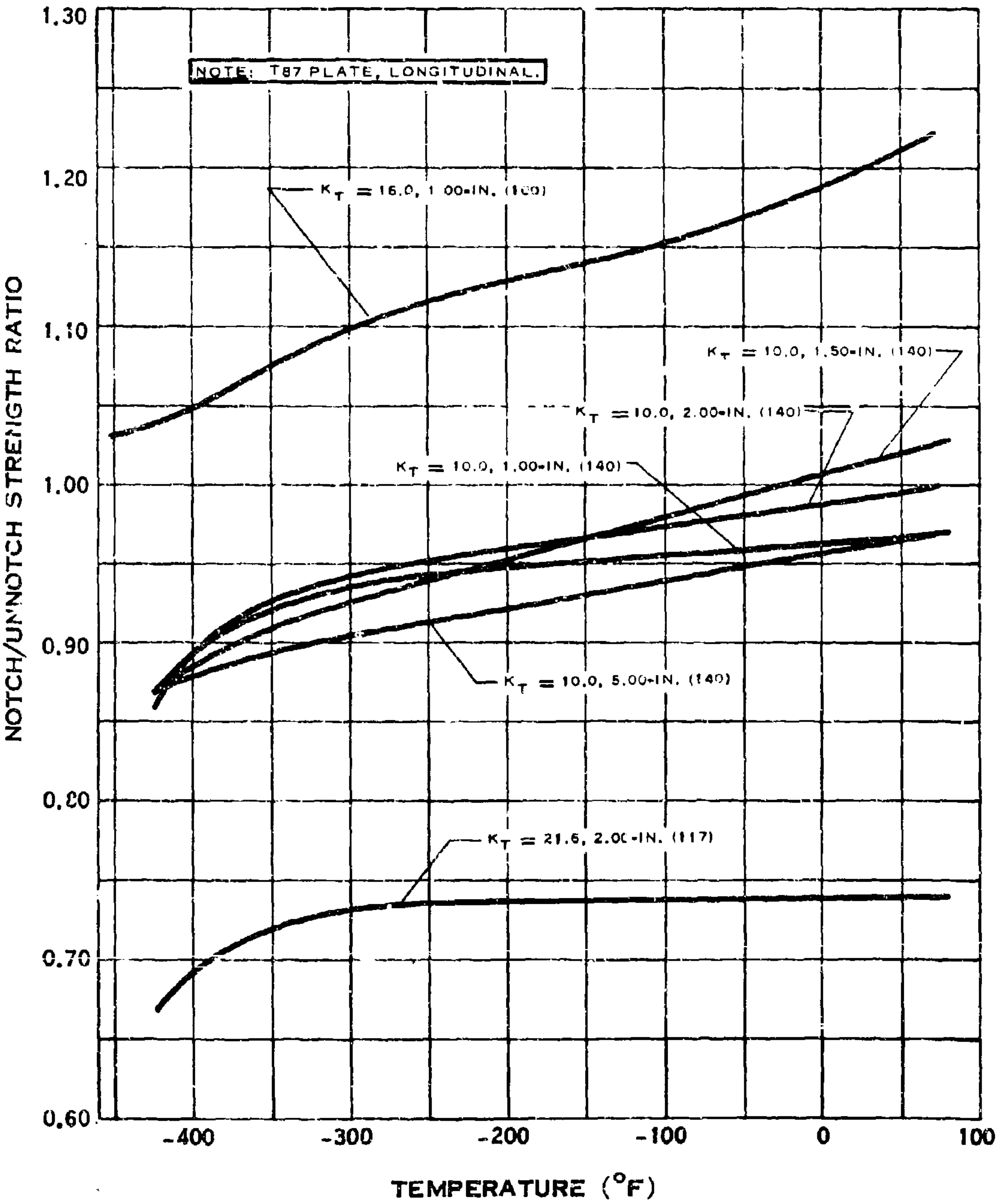
(E-68)

A.5.e-16



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

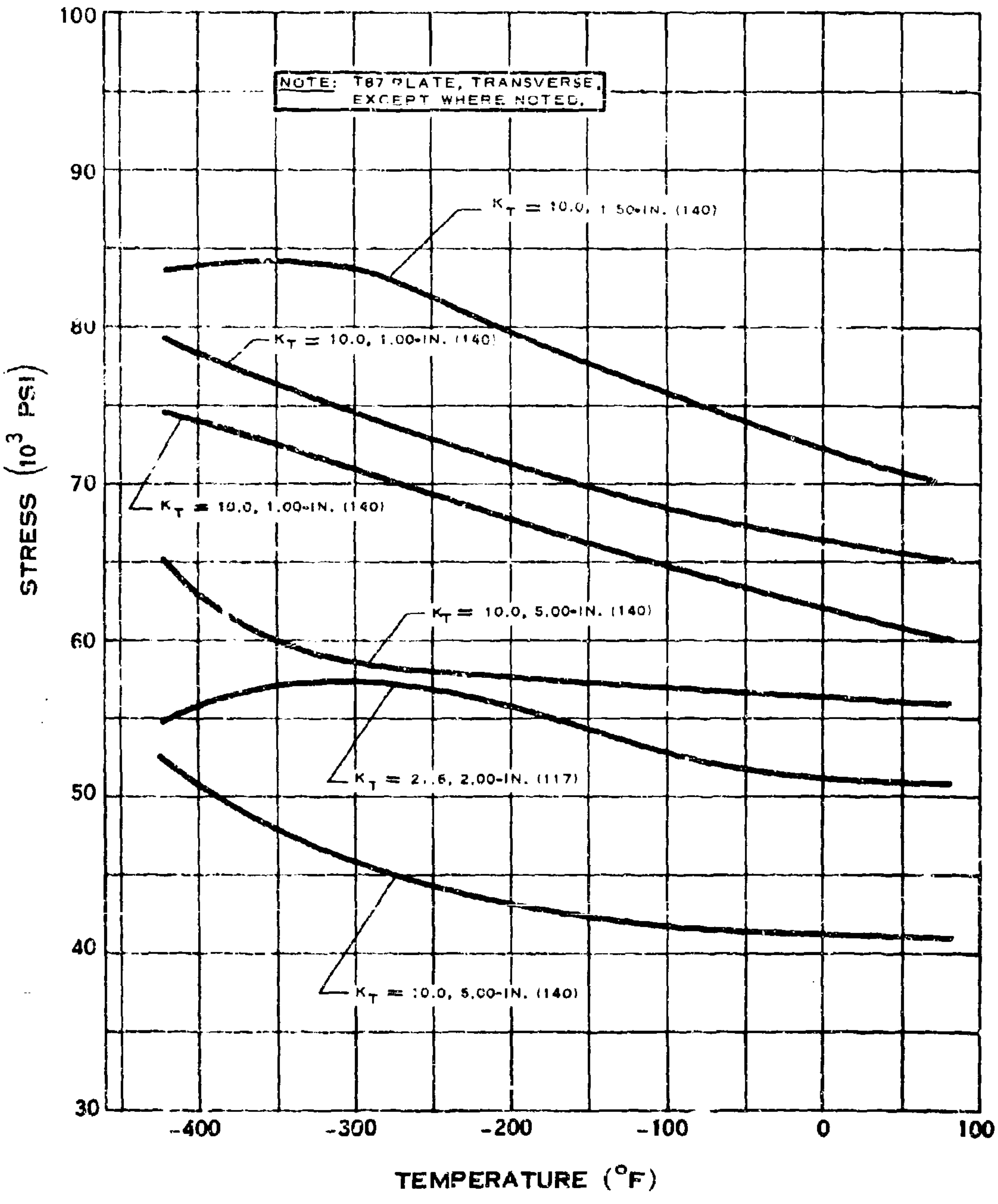
(6-68)



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

(6-68)

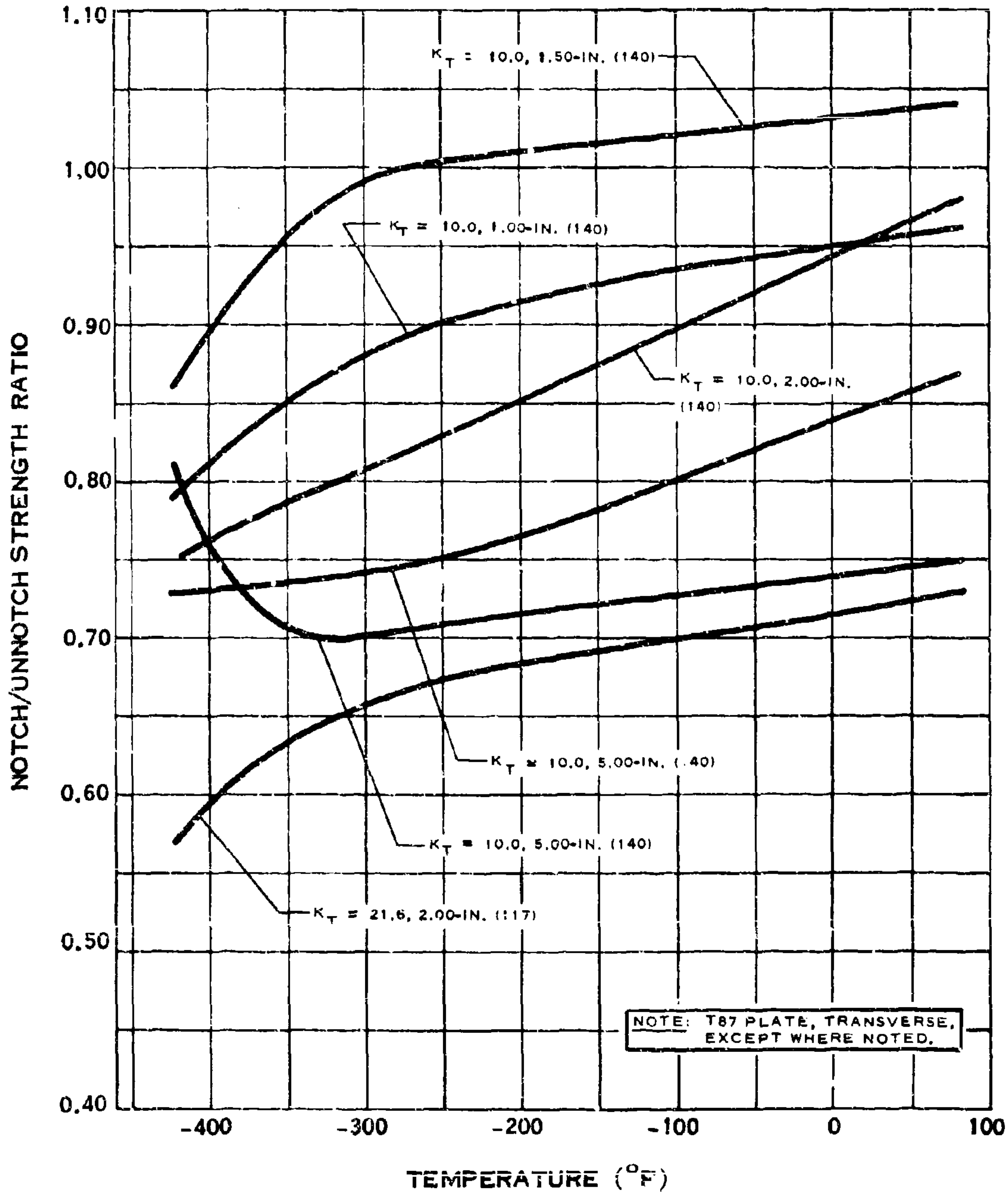
A.5.e-18



NOTCH TENSILE STRENGTH OF 2219 ALUMINUM

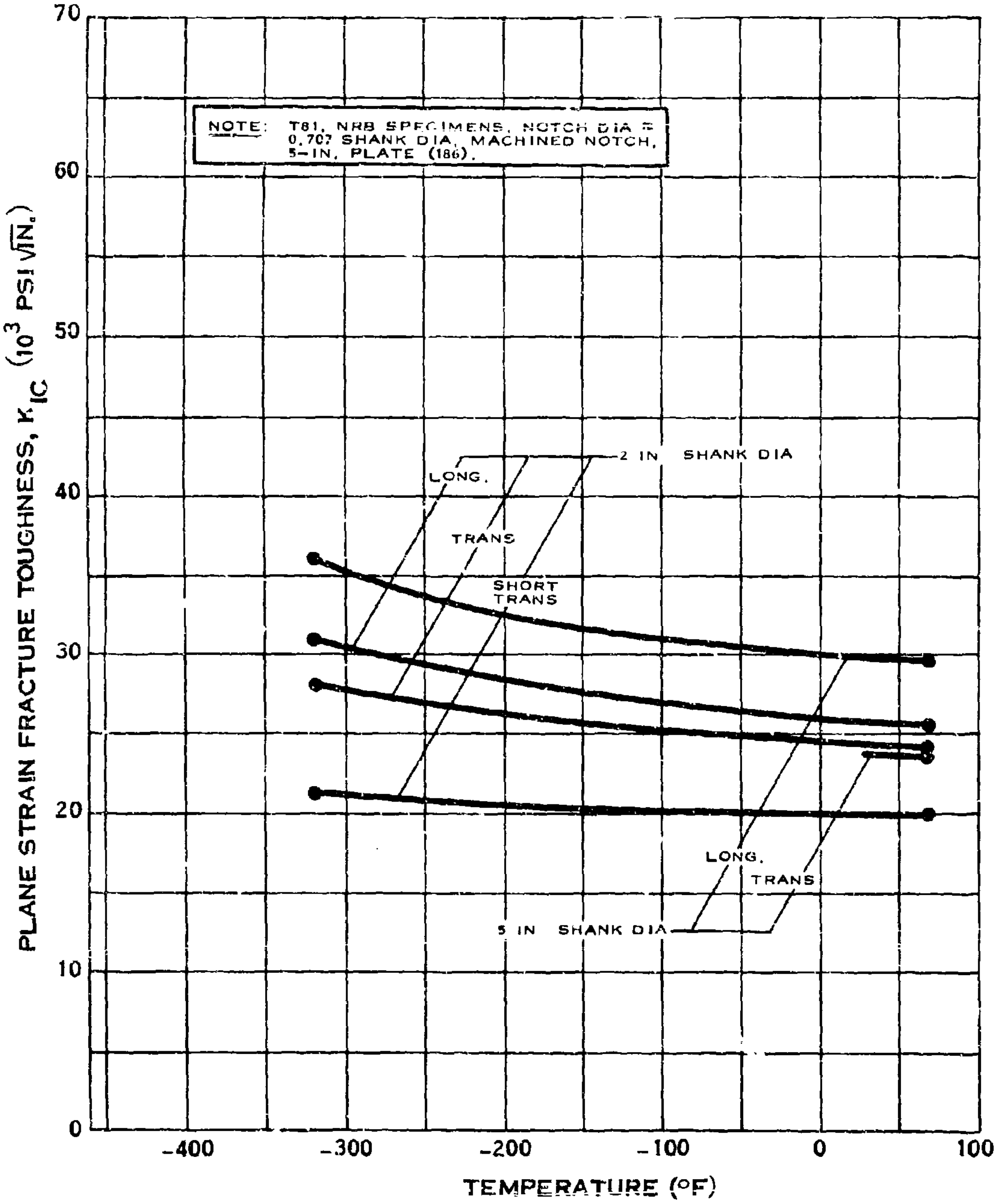
(6-68)

A.5.e-19



NOTCH STRENGTH RATIO OF 2219 ALUMINUM

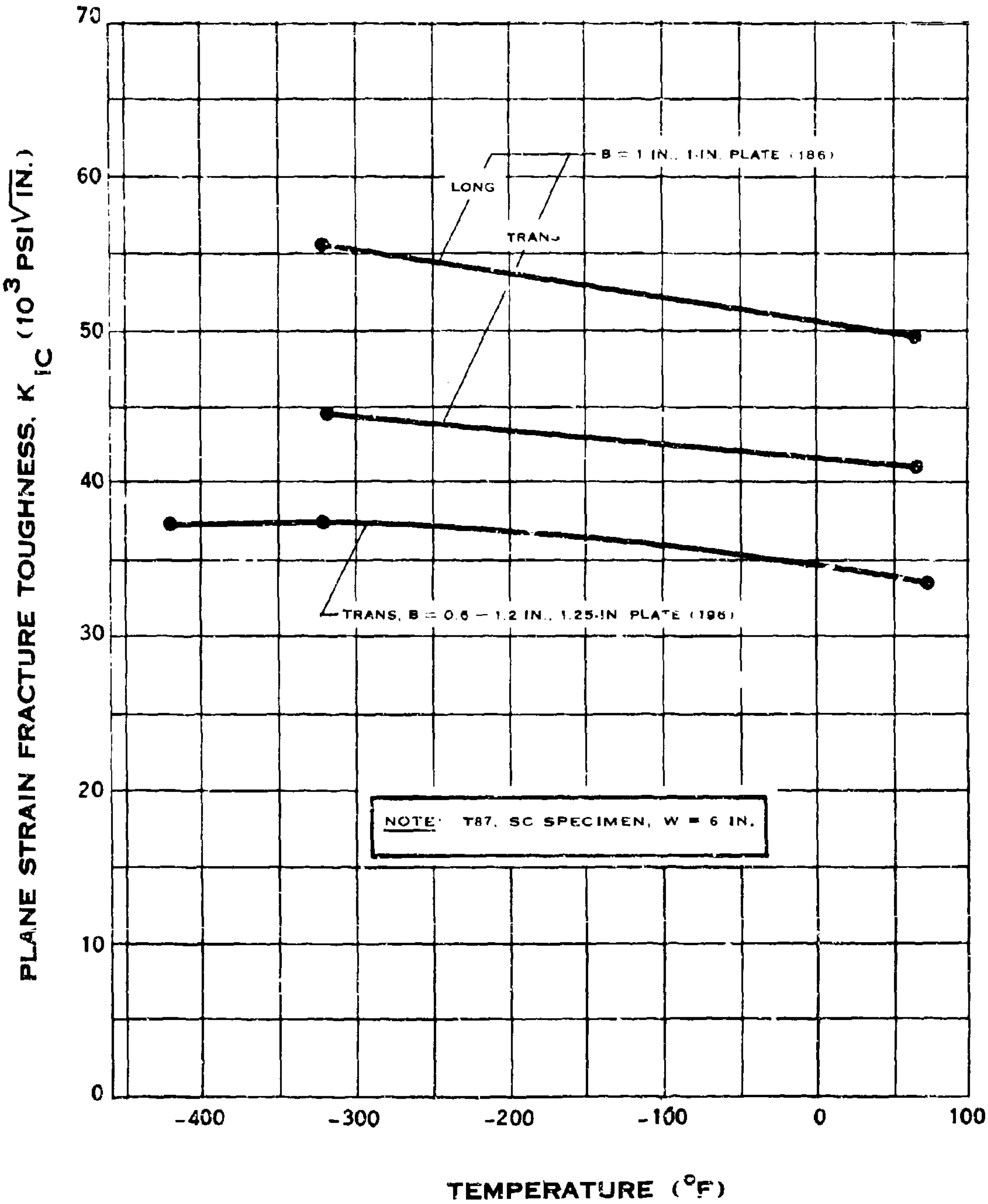
(6-38)



FRACTURE TOUGHNESS OF 2219 ALUMINUM

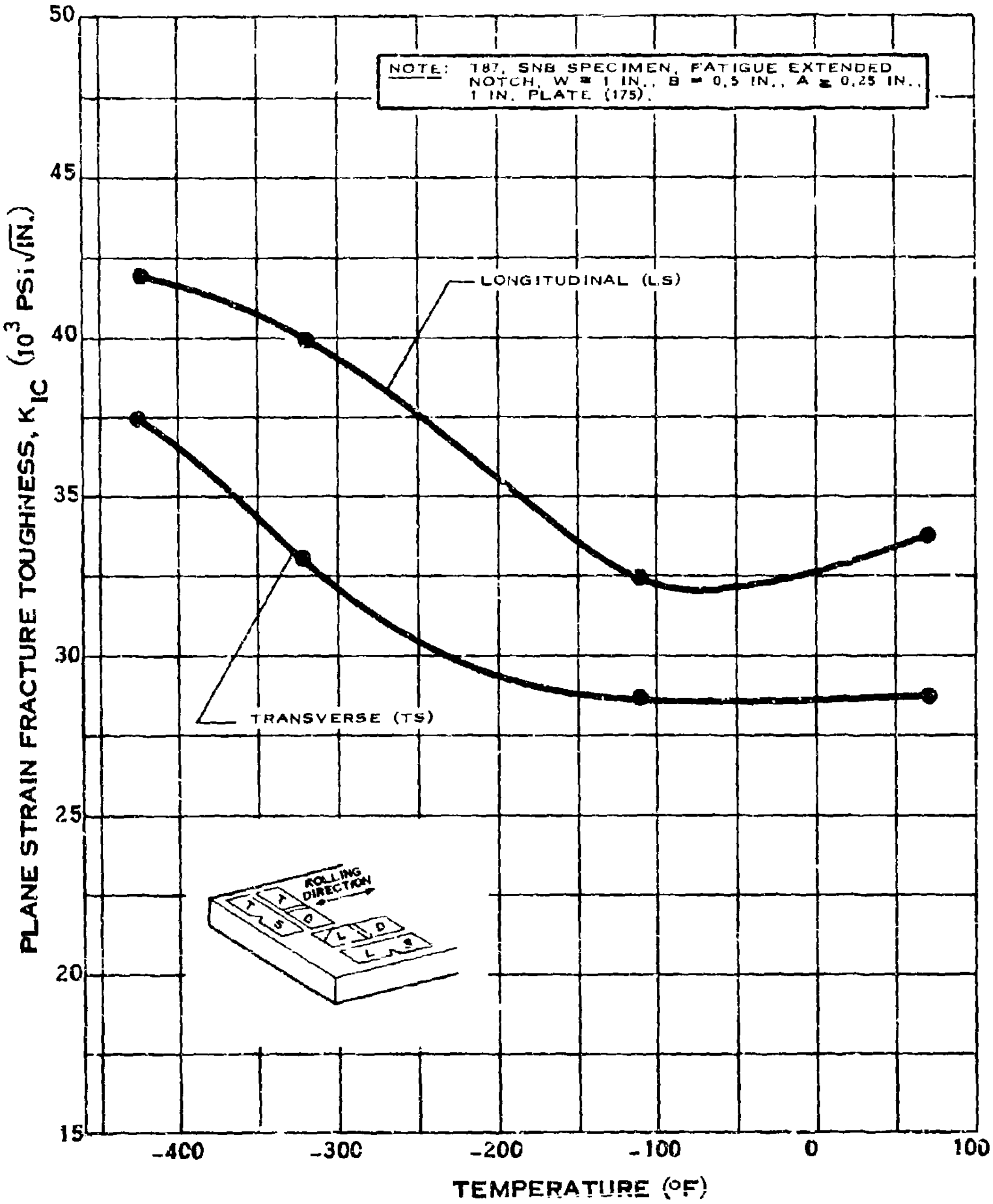
(3-66)

A.5.f-1



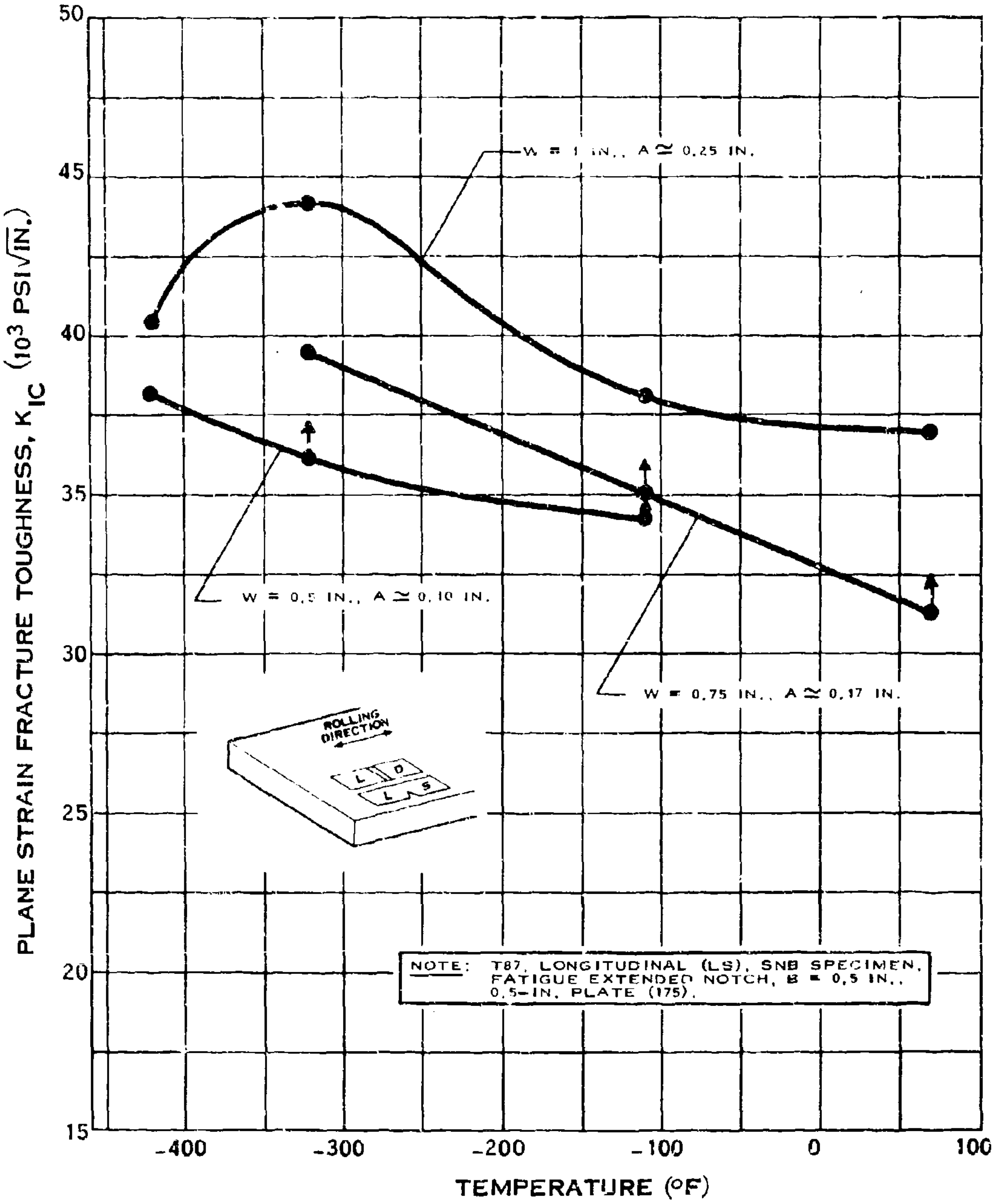
FRACTURE TOUGHNESS OF 2219 ALUMINUM

A.5.f-2



FRACTURE TOUGHNESS OF 2219 ALUMINUM

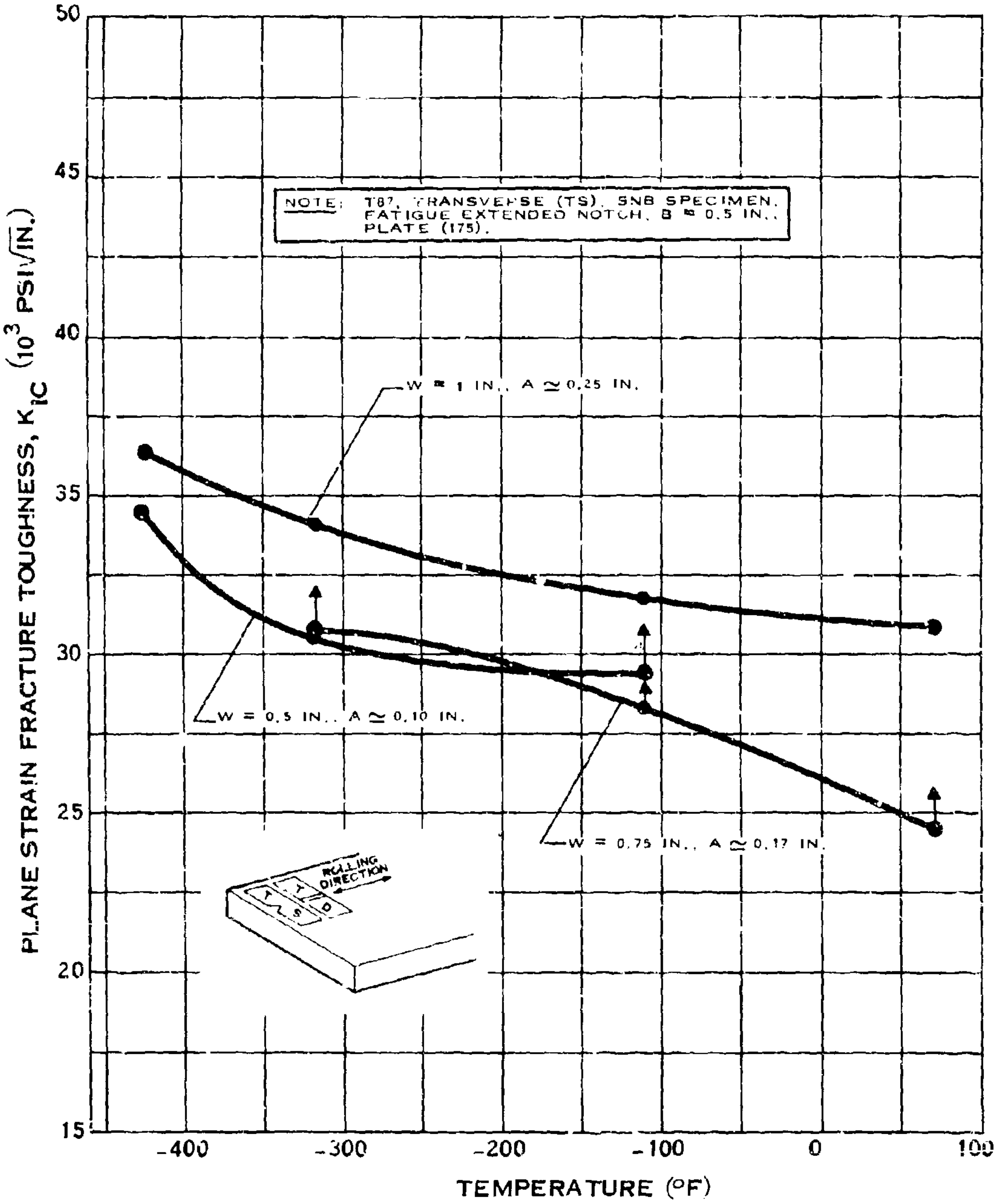
(3-66)



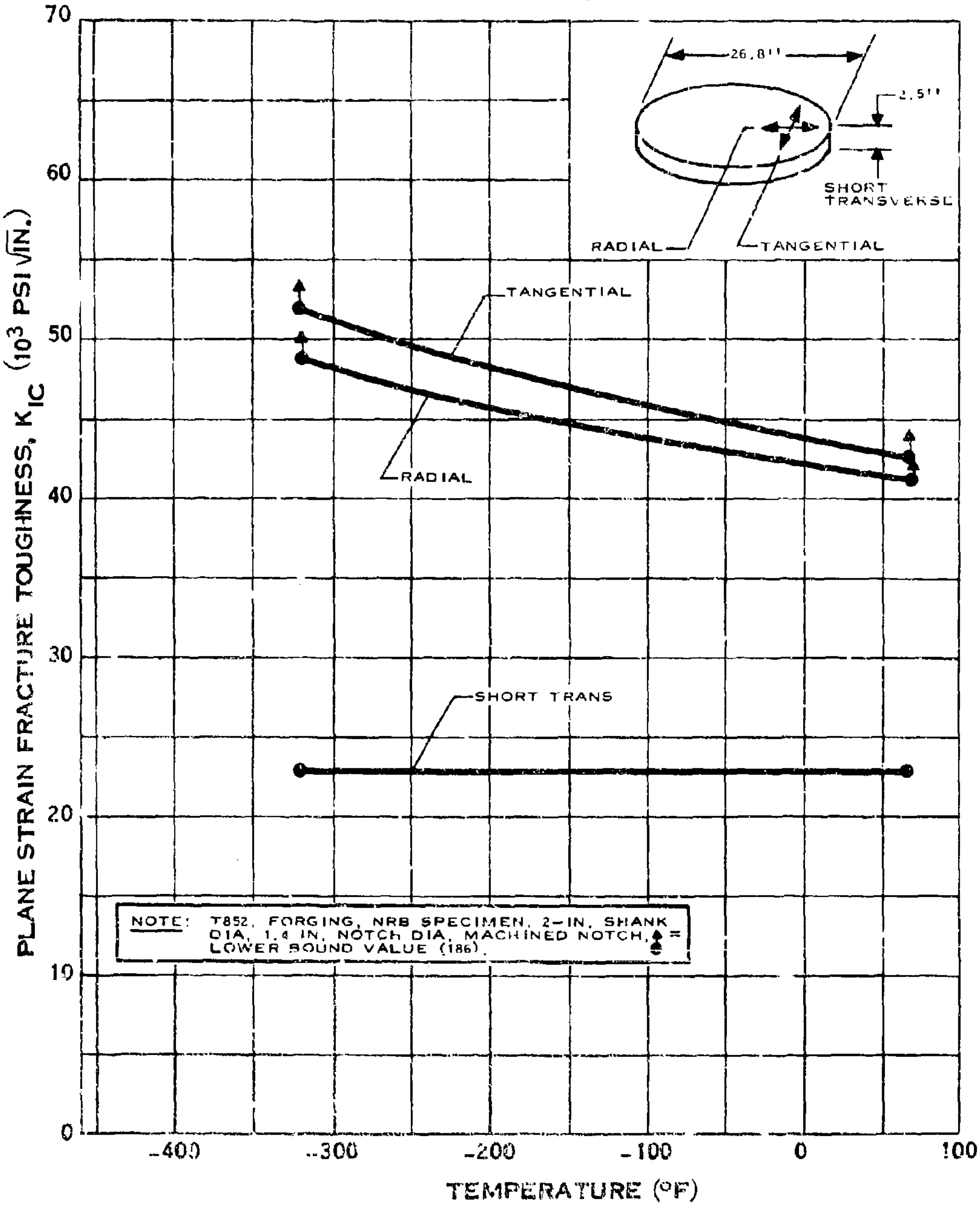
FRACTURE TOUGHNESS OF 2219 ALUMINUM

(3-66)

A.5.f-4

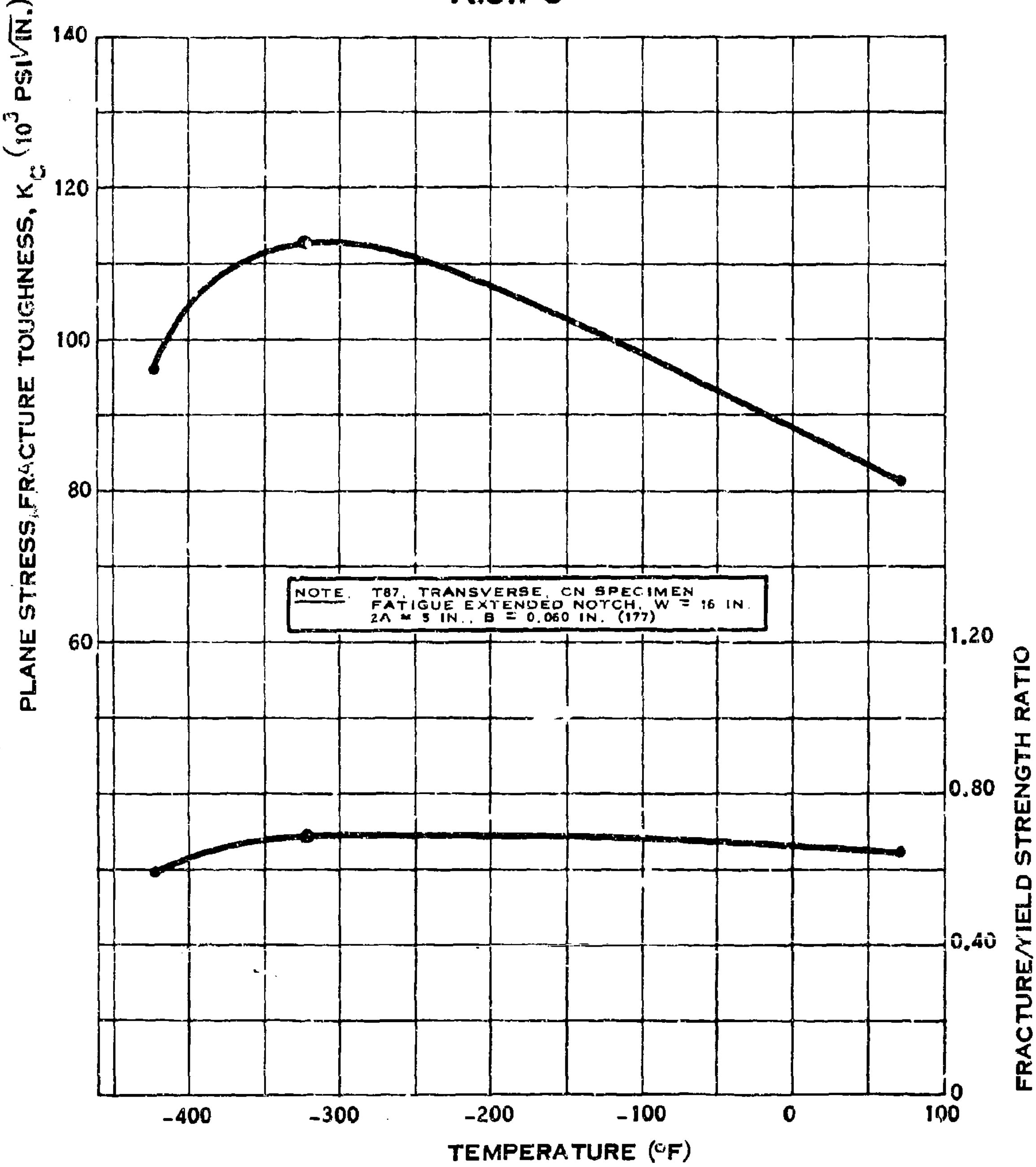


FRACTURE TOUGHNESS OF 2219 ALUMINUM



FRACTURE TOUGHNESS OF 2219 ALUMINUM

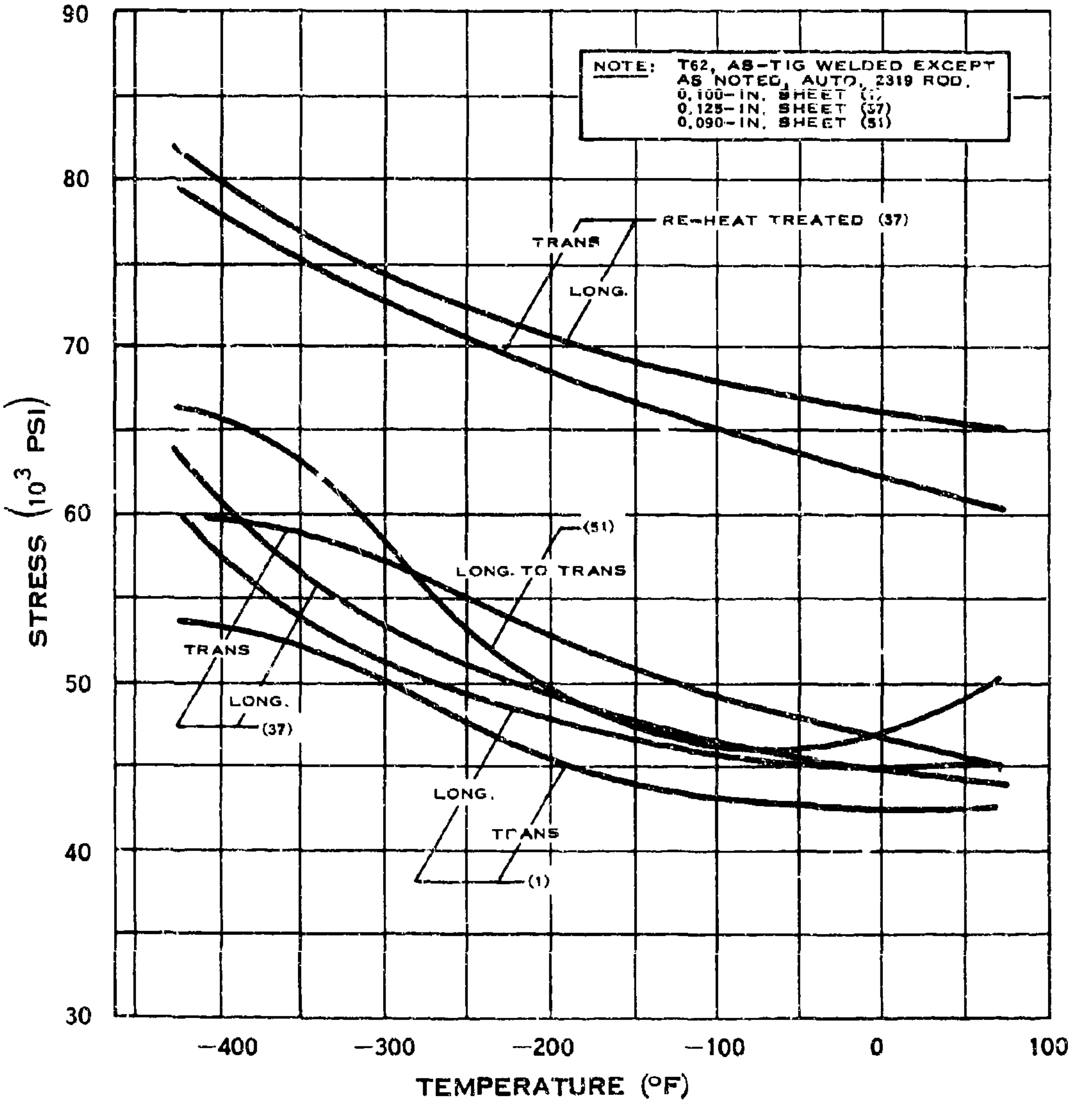
(3-66)



FRACTURE TOUGHNESS OF 2219 ALUMINUM

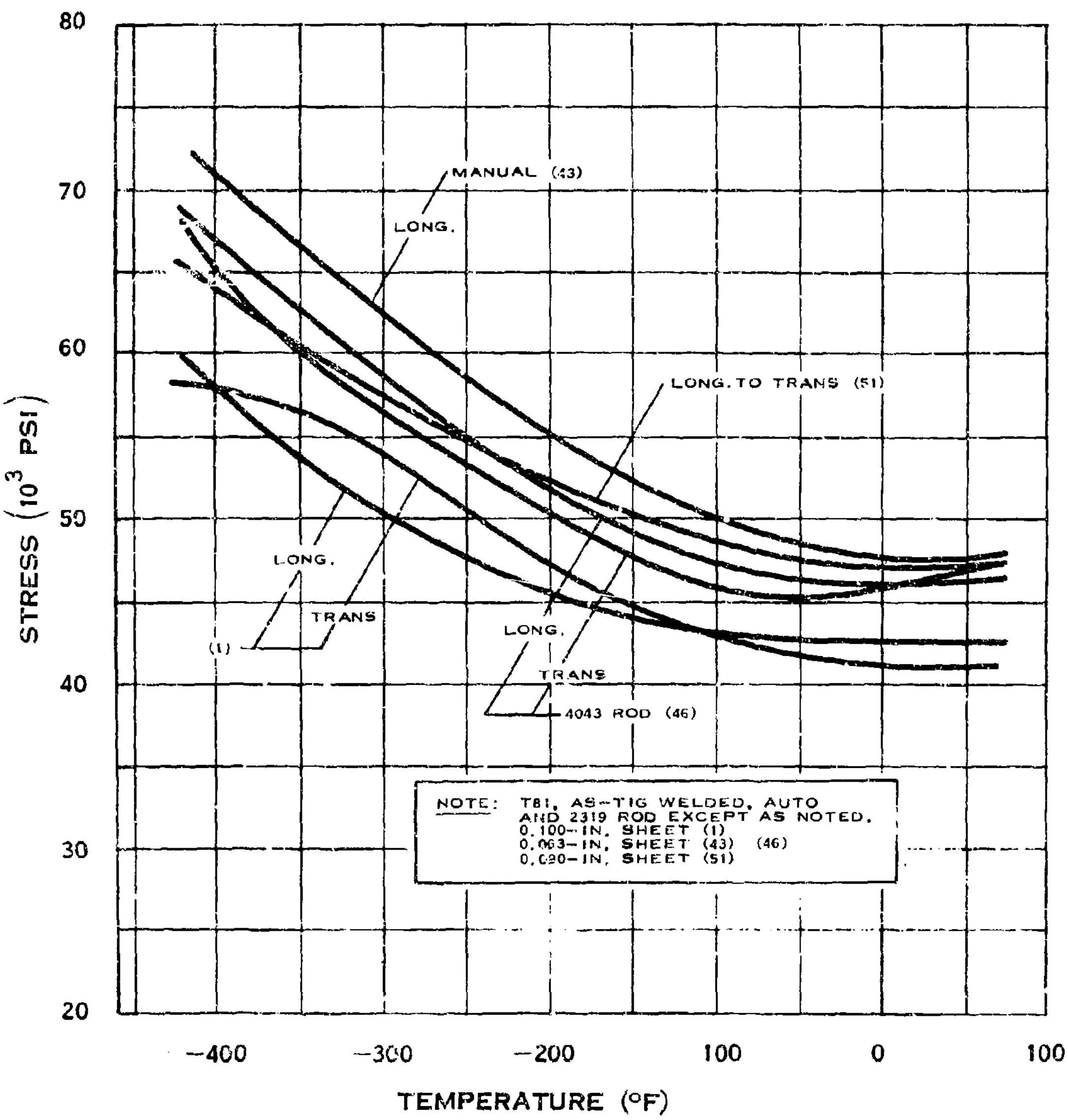
(3-65)

A.5.g



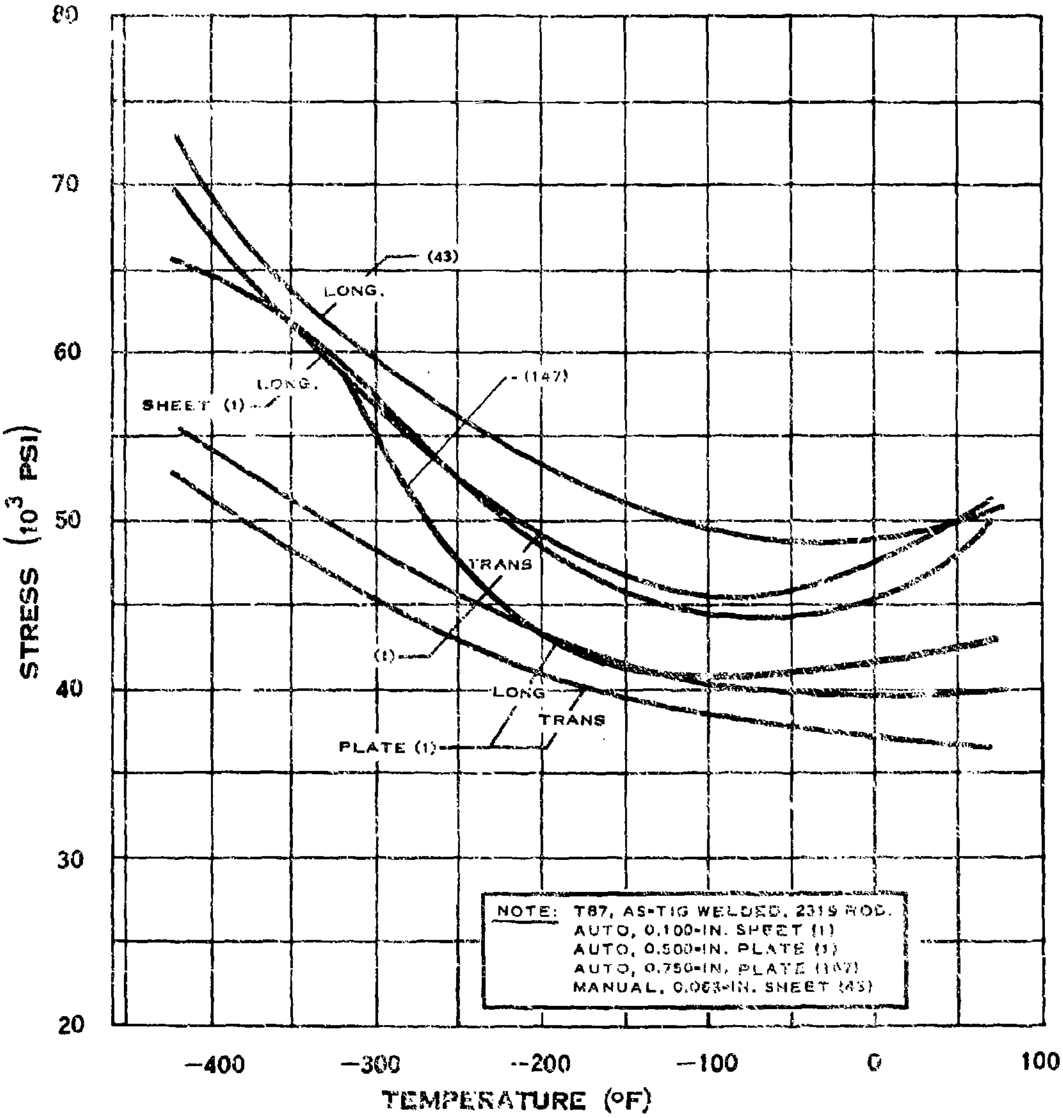
WELD TENSILE STRENGTH OF 2219 ALUMINUM

A.5.g-1



WELD TENSILE STRENGTH OF 2219 ALUMINUM

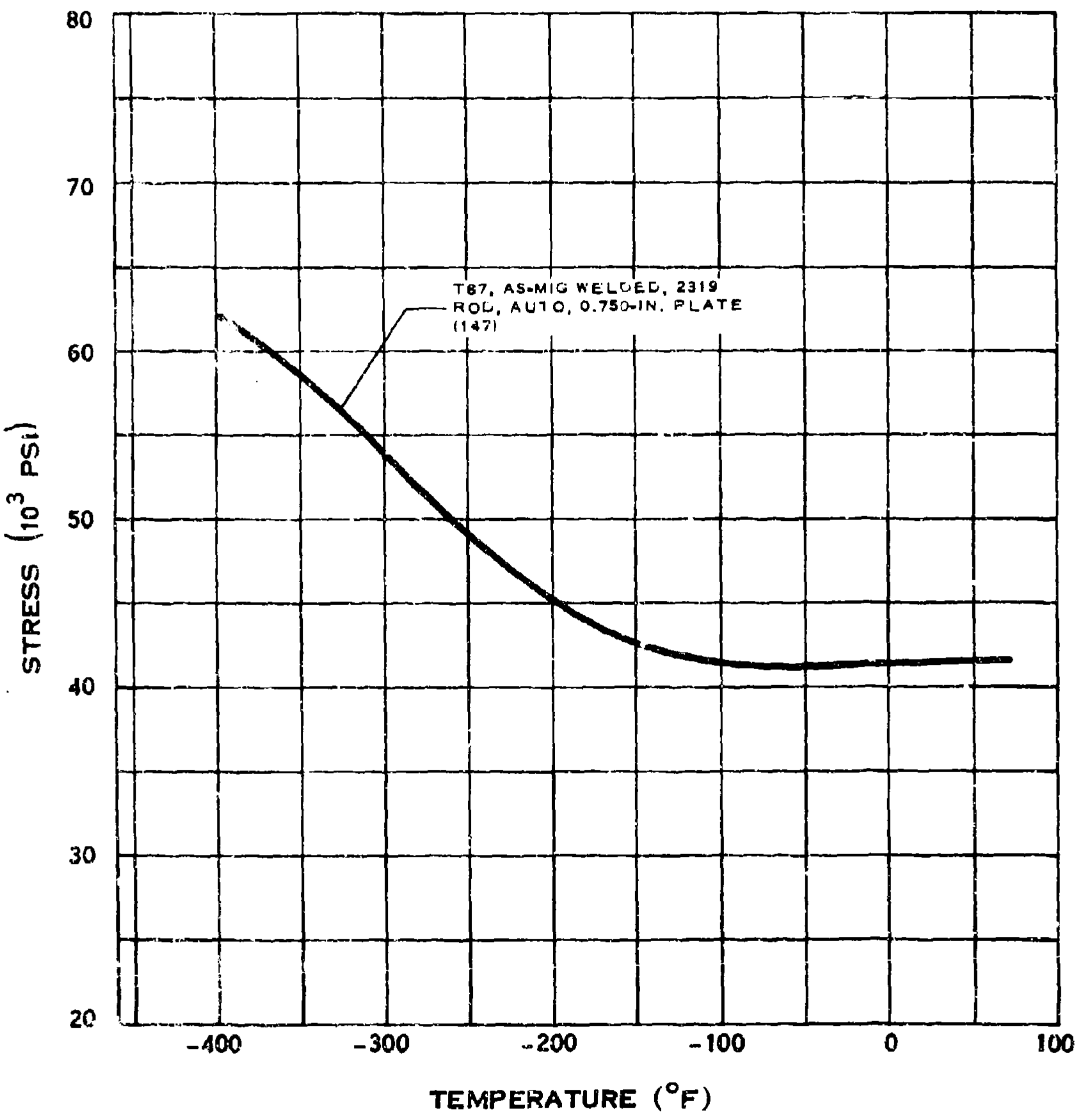
A.5.g-2



WELD TENSILE STRENGTH OF 2219 ALUMINUM

(6-68)

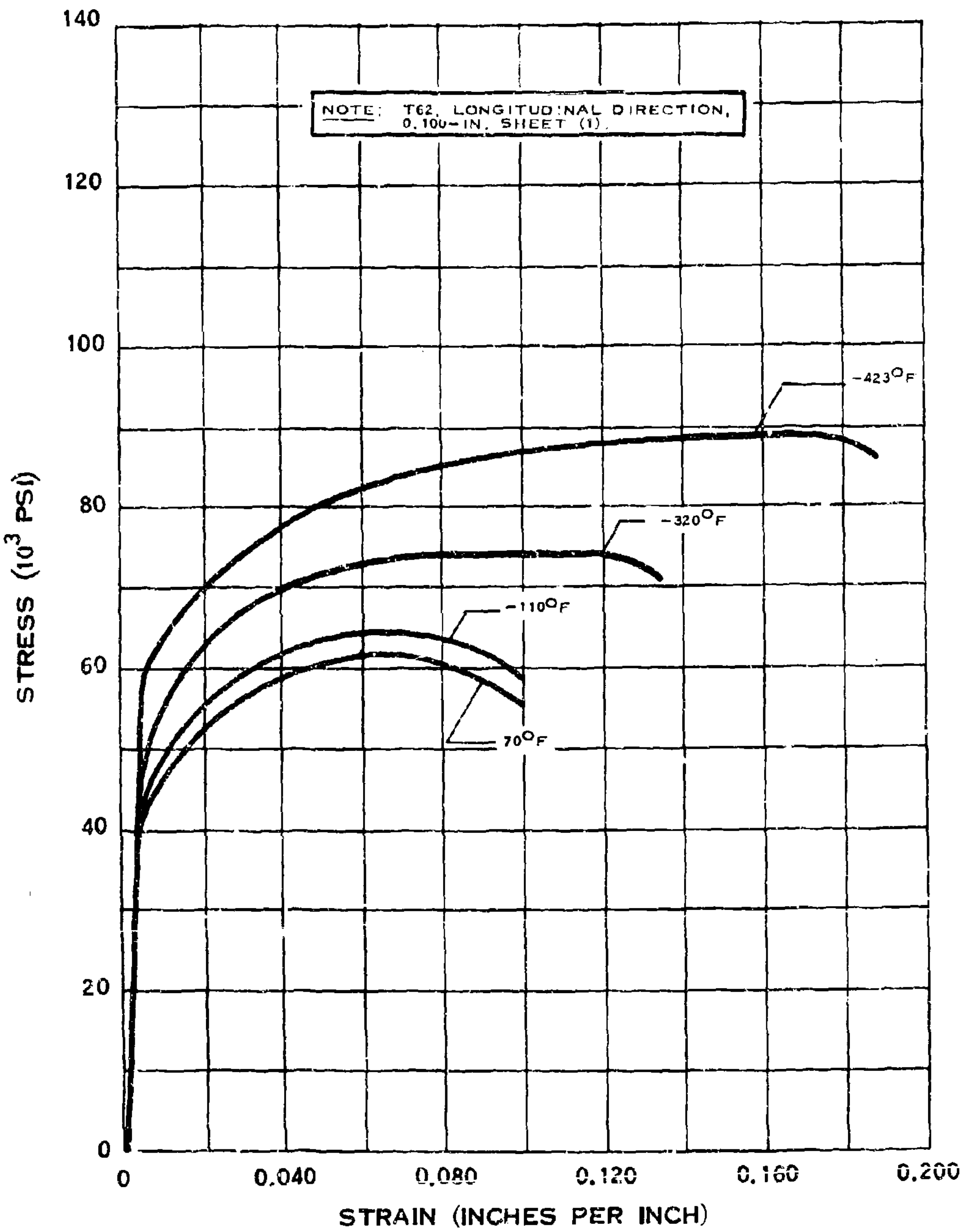
A.5.g-3



WELD TENSILE STRENGTH OF 2219 ALUMINUM

(6-68)

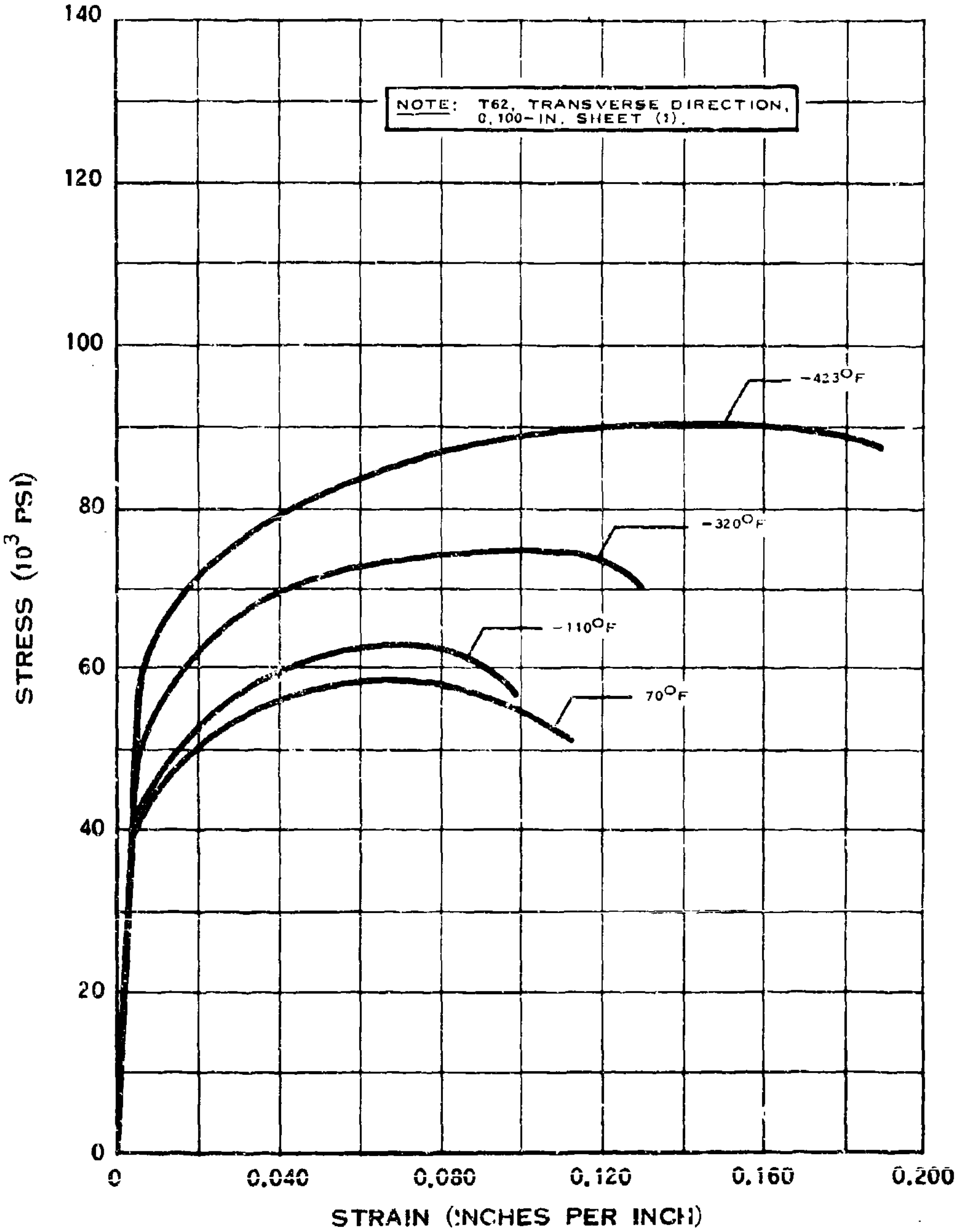
A.5.h



STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

(1-65)

A.5.h-1



STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

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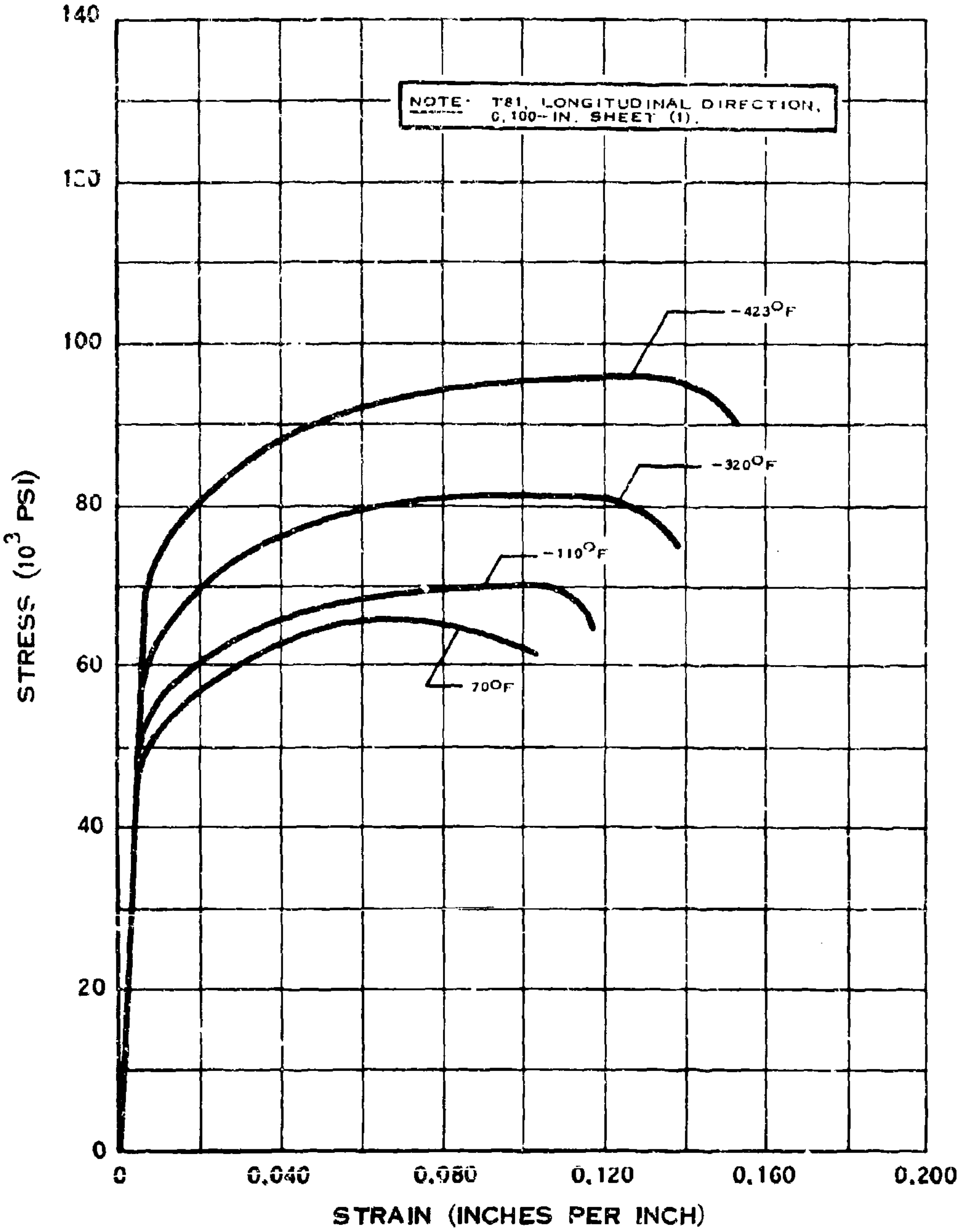
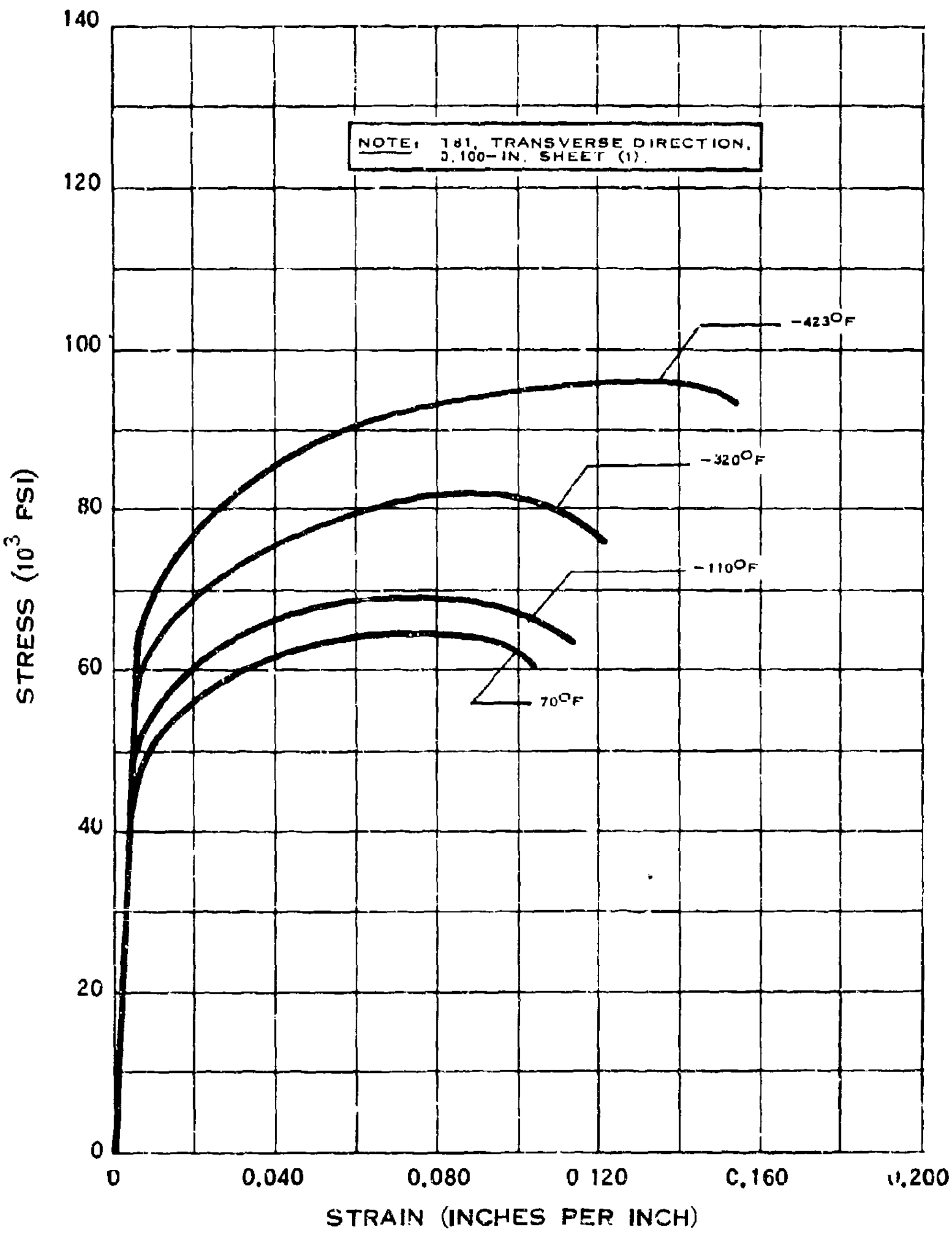
A.5.h-2



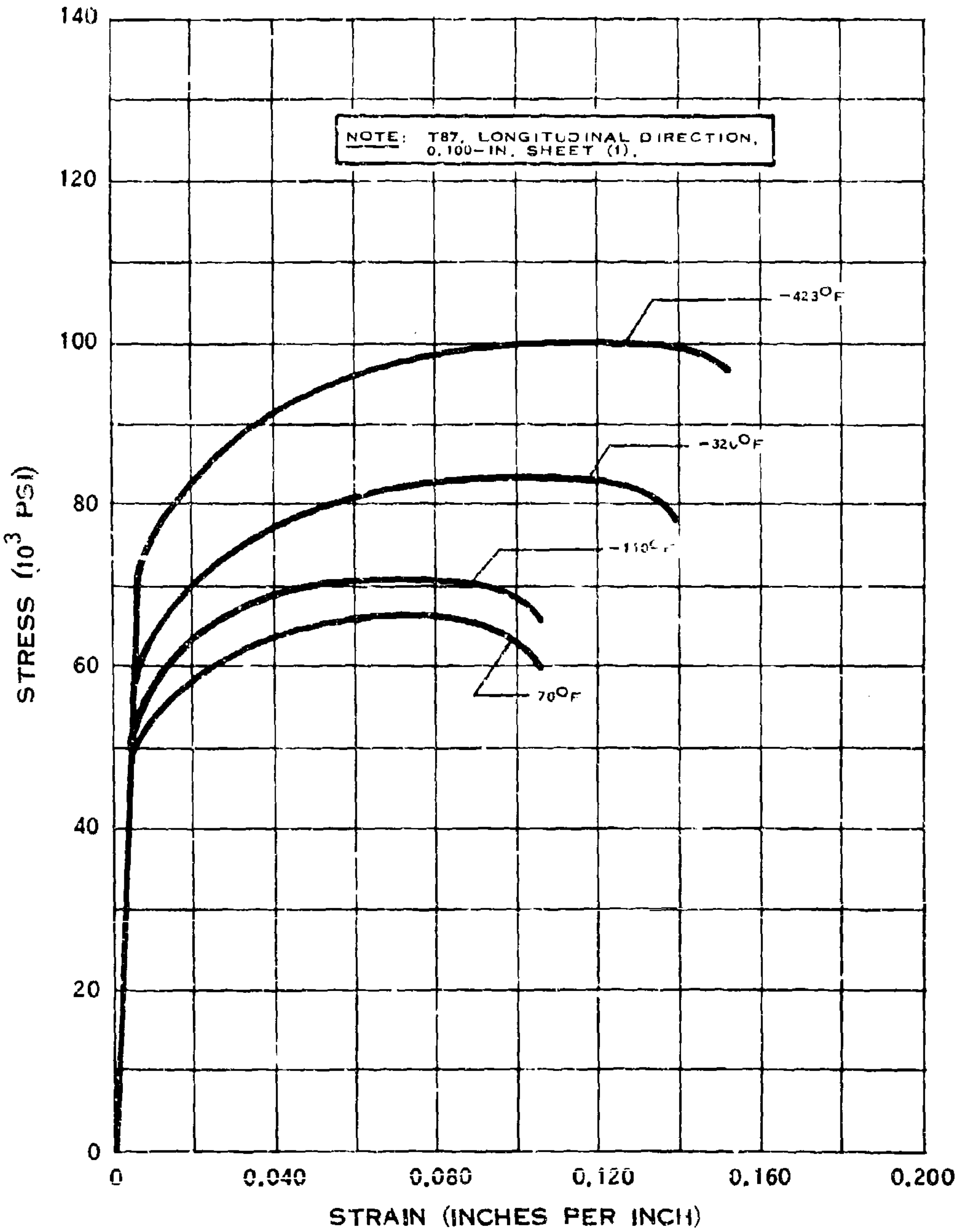
STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

A.5.h-3



STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

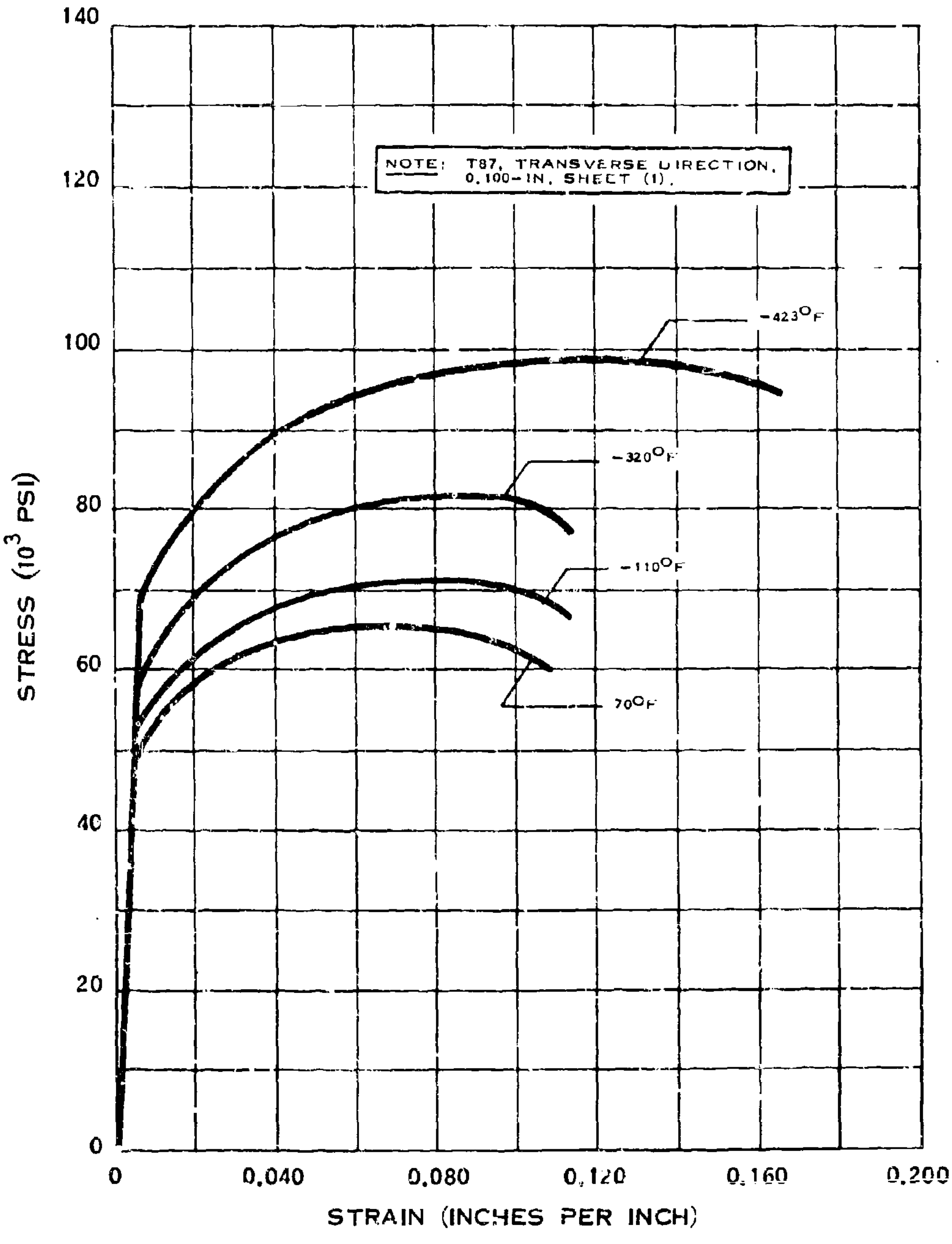
A.5.h-4



STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

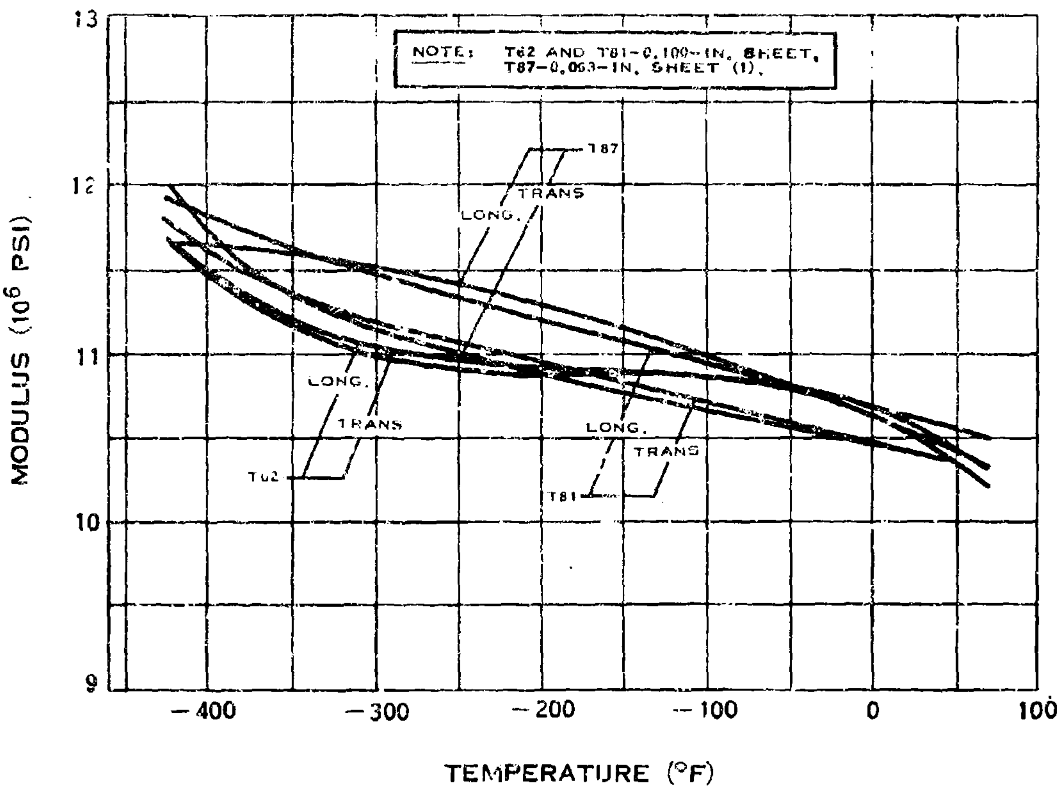
(1-65)

A.5.h-5



STRESS-STRAIN DIAGRAM FOR 2219 ALUMINUM

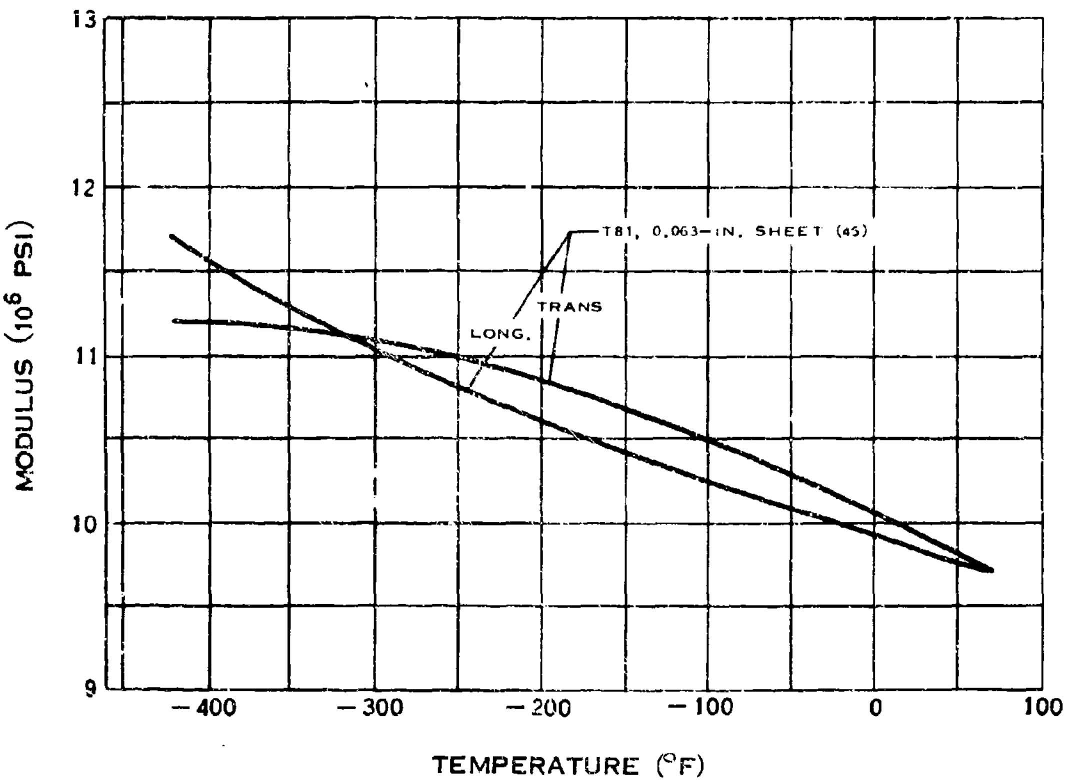
A.5.i



MODULUS OF ELASTICITY OF 2219 ALUMINUM

(7-64)

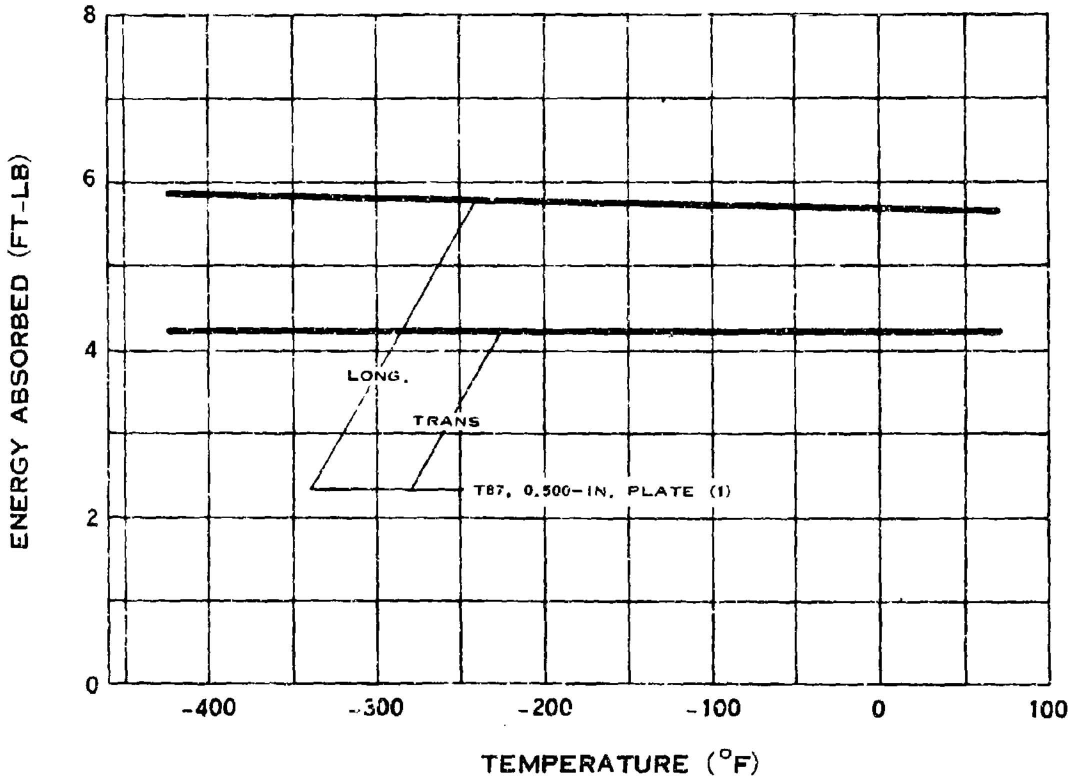
A.5.i-1



MODULUS OF ELASTICITY OF 2219 ALUMINUM

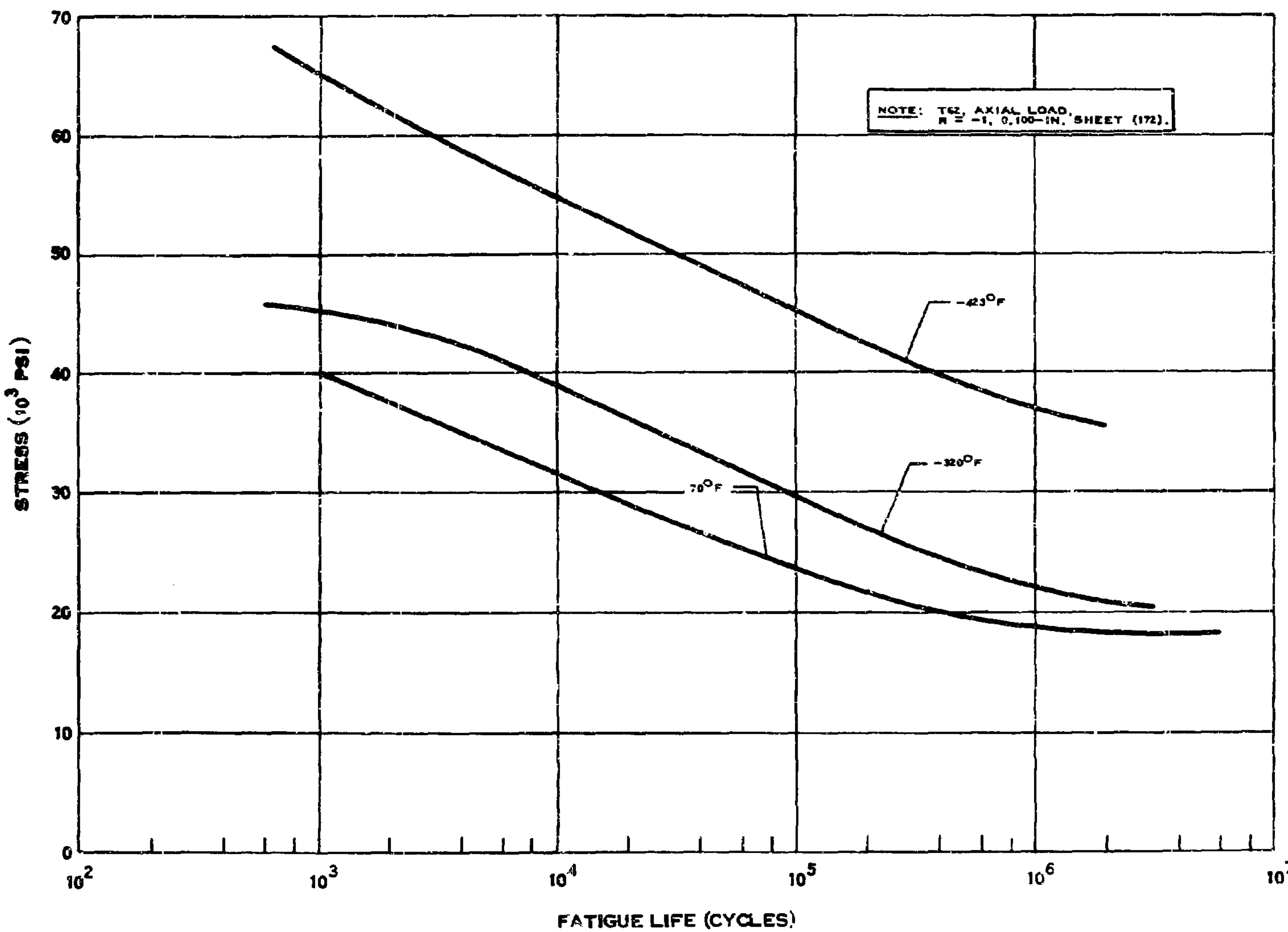
(7-64)

A.5.j



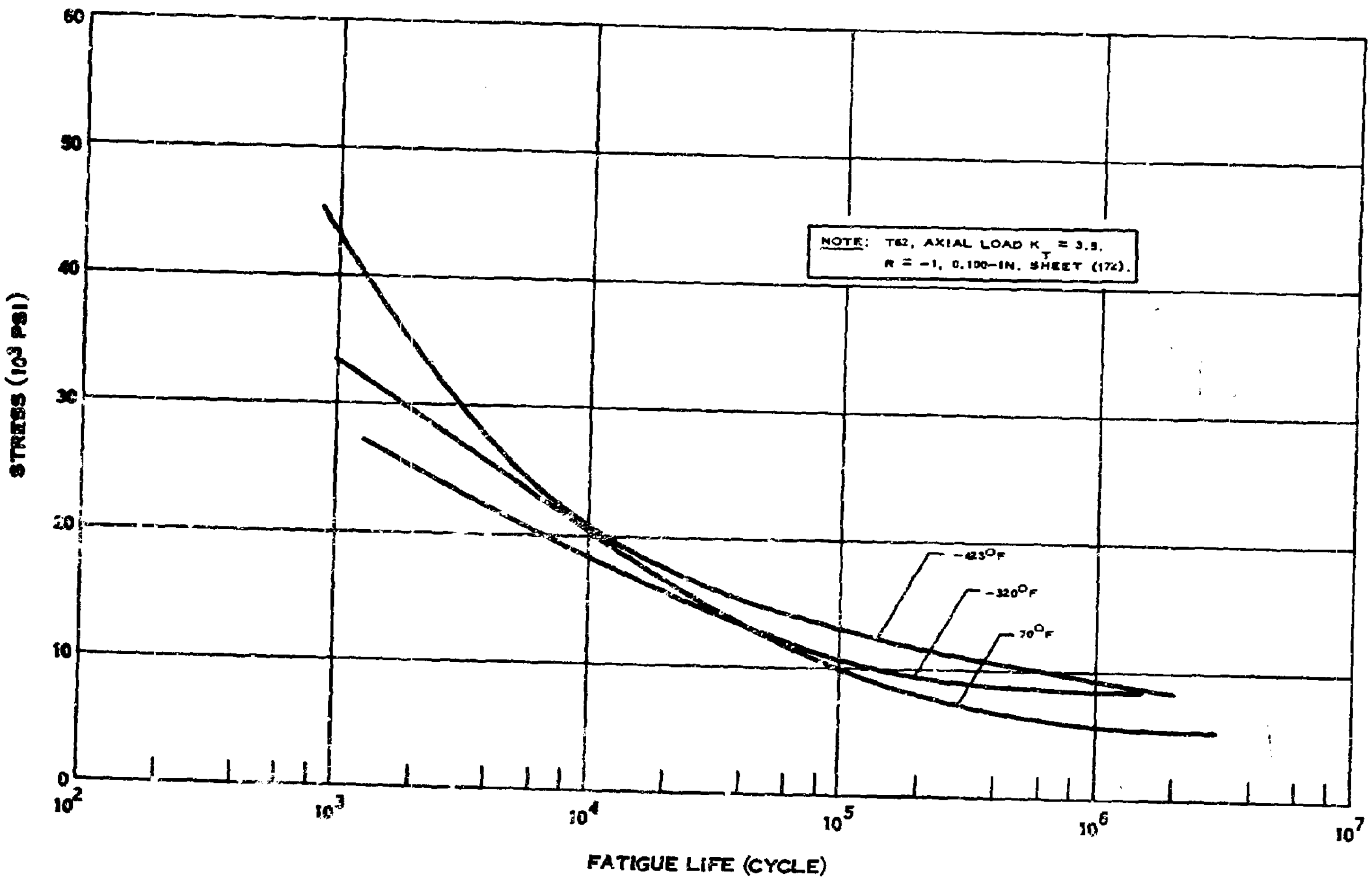
IMPACT STRENGTH OF 2219 ALUMINUM

A.5.o

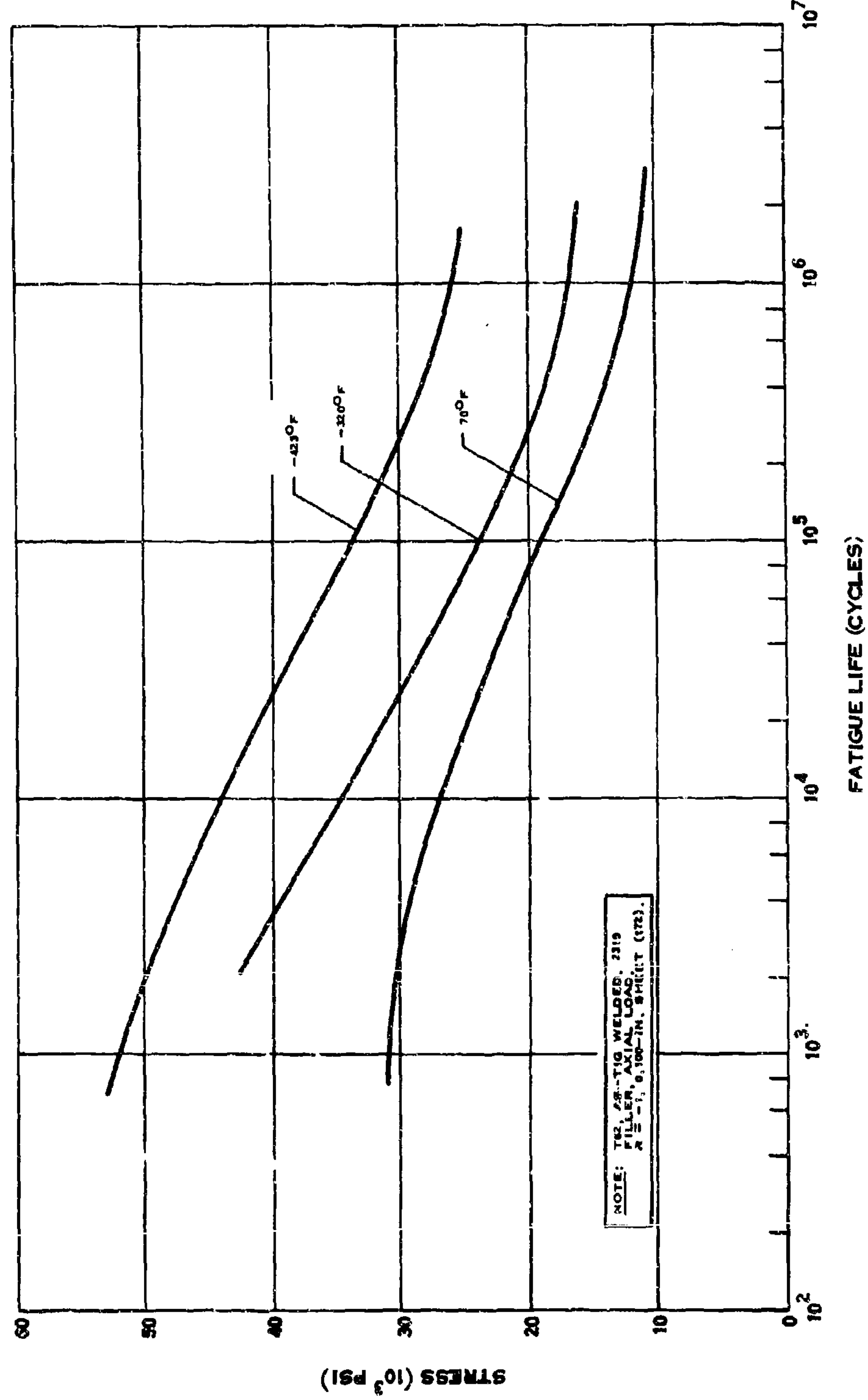


FATIGUE STRENGTH OF 2219 ALUMINUM

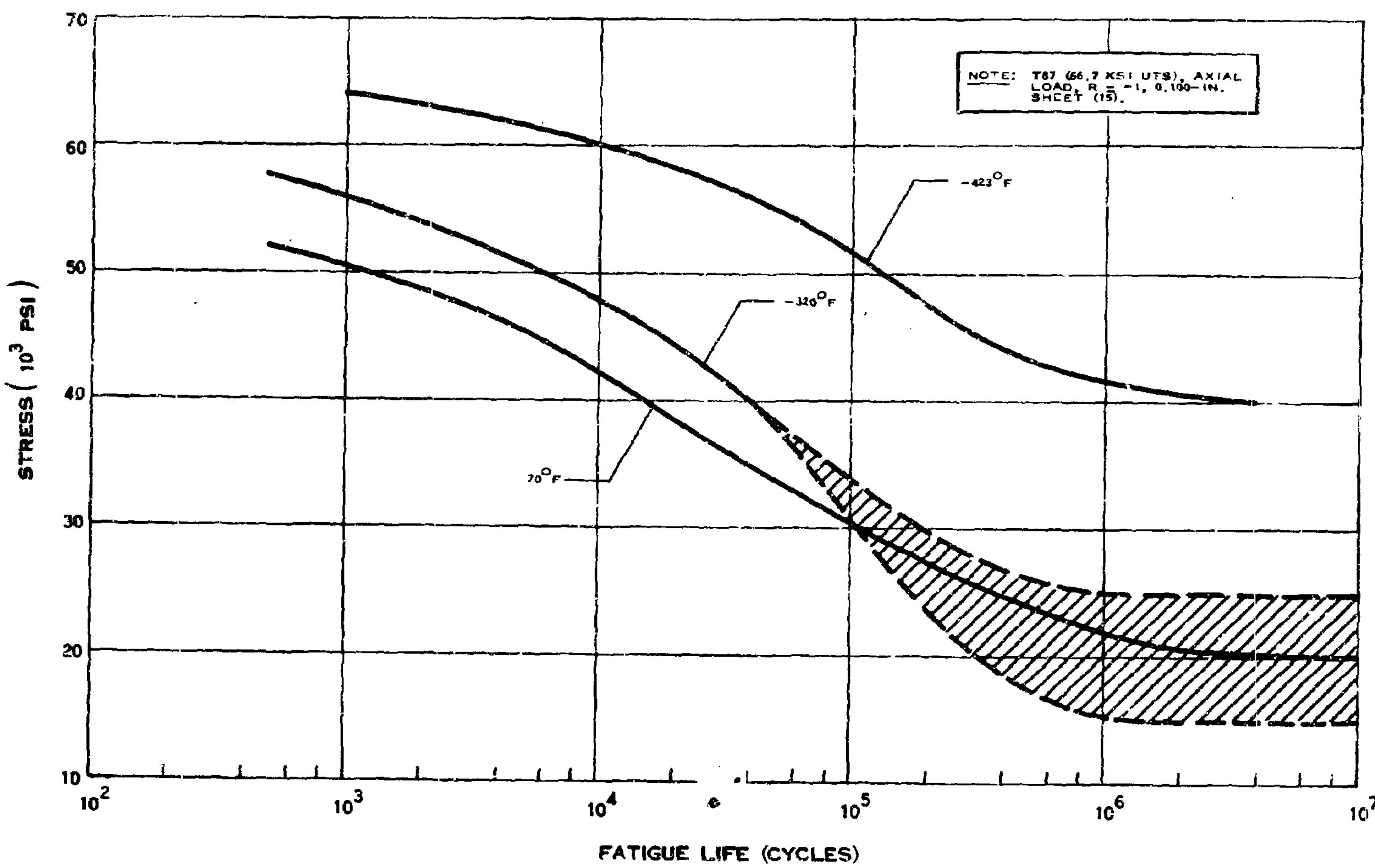
A.5.o-1



NOTCH FATIGUE STRENGTH OF 2219 ALUMINUM



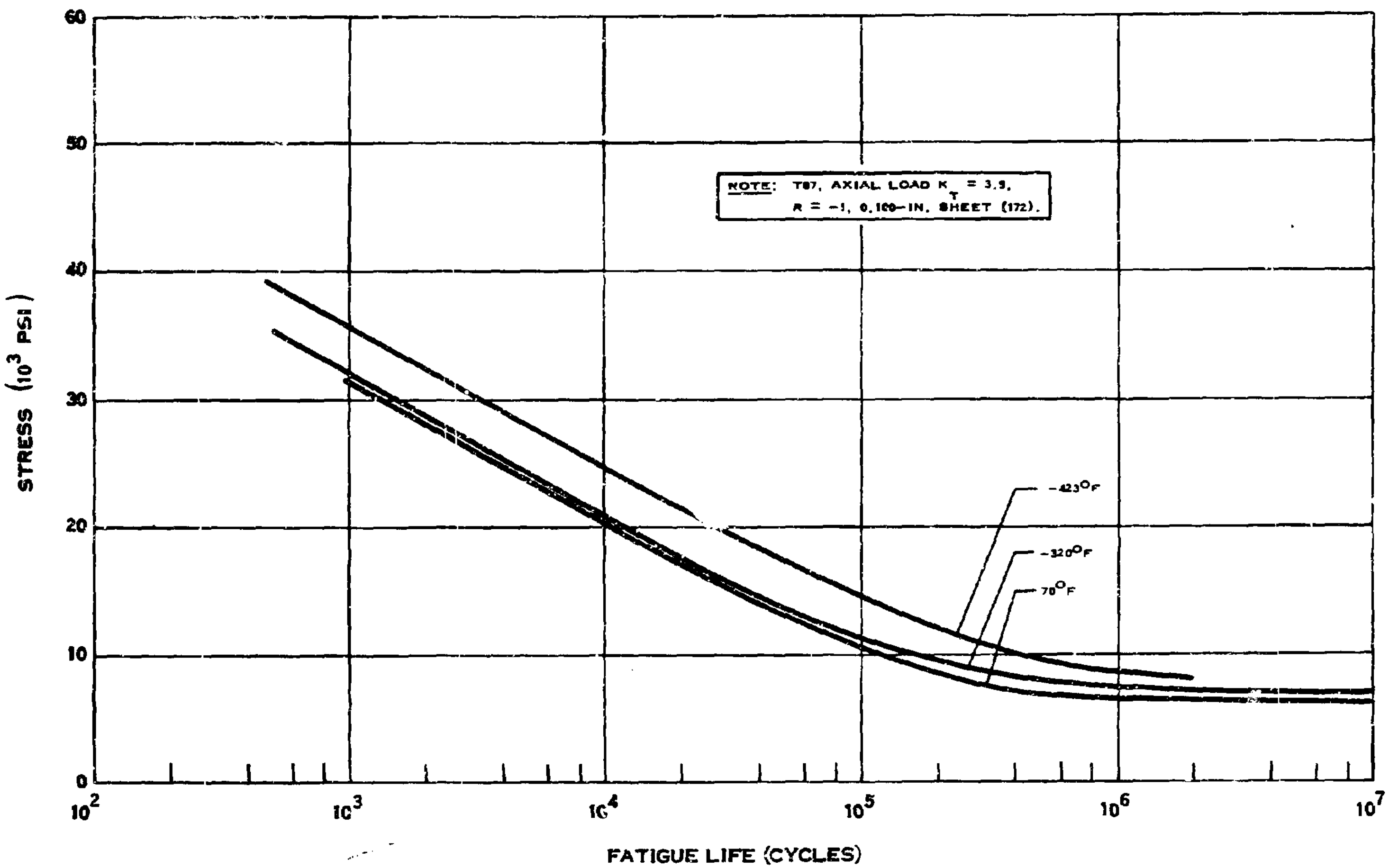
WELD FATIGUE STRENGTH OF 2219 ALUMINUM



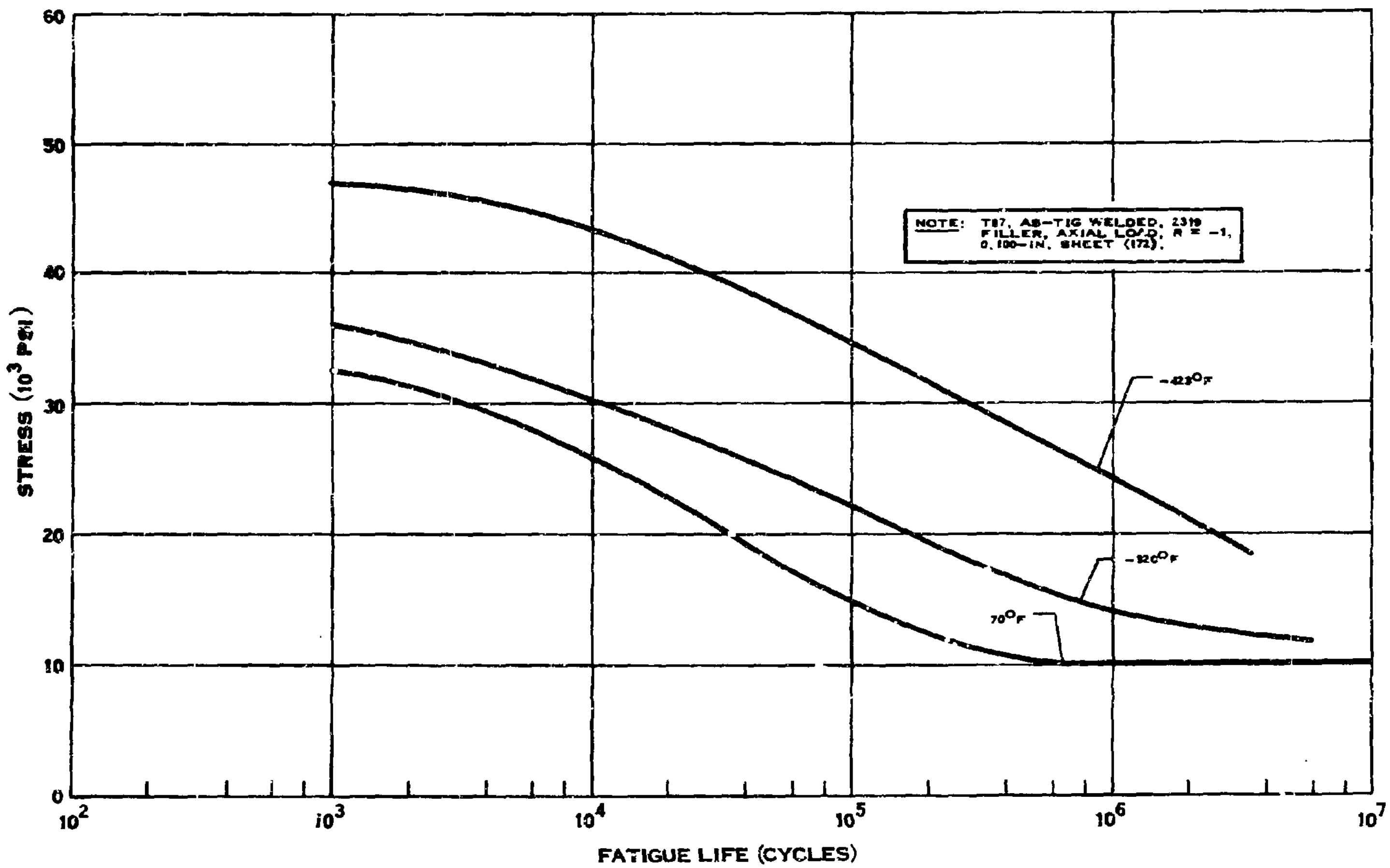
FATIGUE STRENGTH OF 2219 ALUMINUM

(7-64)

A.5.o-4



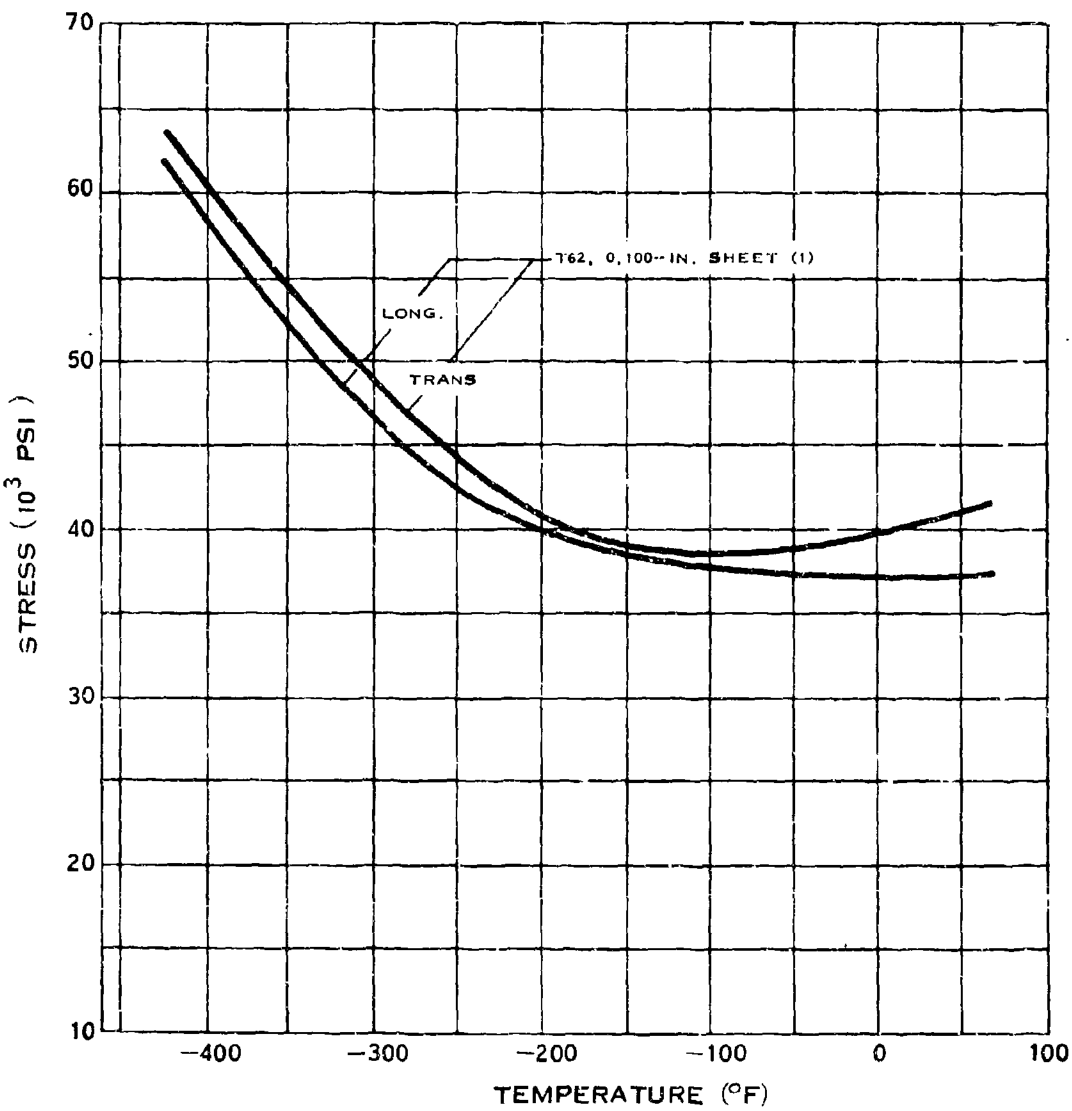
NOTCH FATIGUE STRENGTH OF 2219 ALUMINUM



WELD FATIGUE STRENGTH OF 2219 ALUMINUM

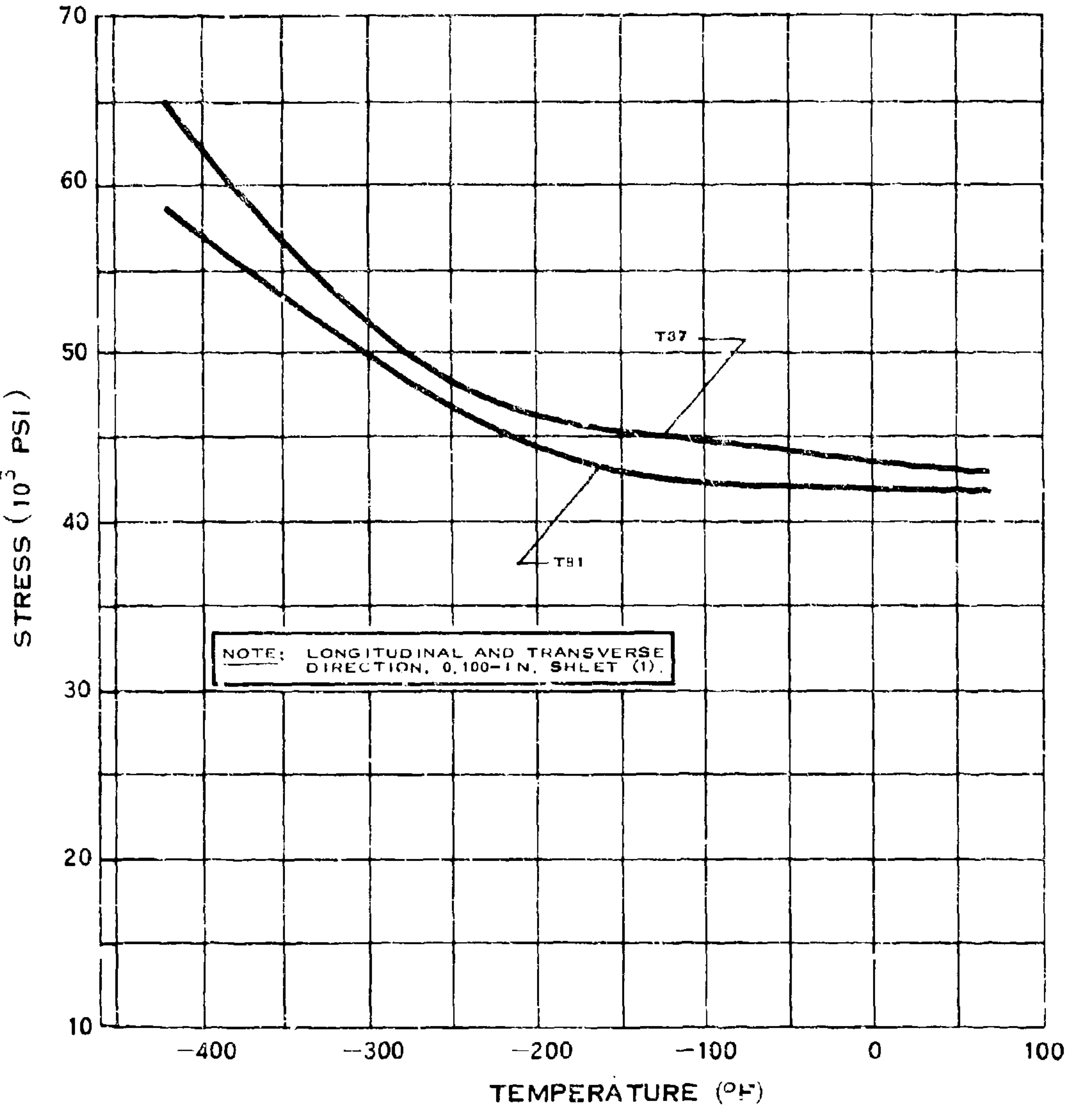
(3-66)

A.5.p



SHEAR STRENGTH OF 2219 ALUMINUM

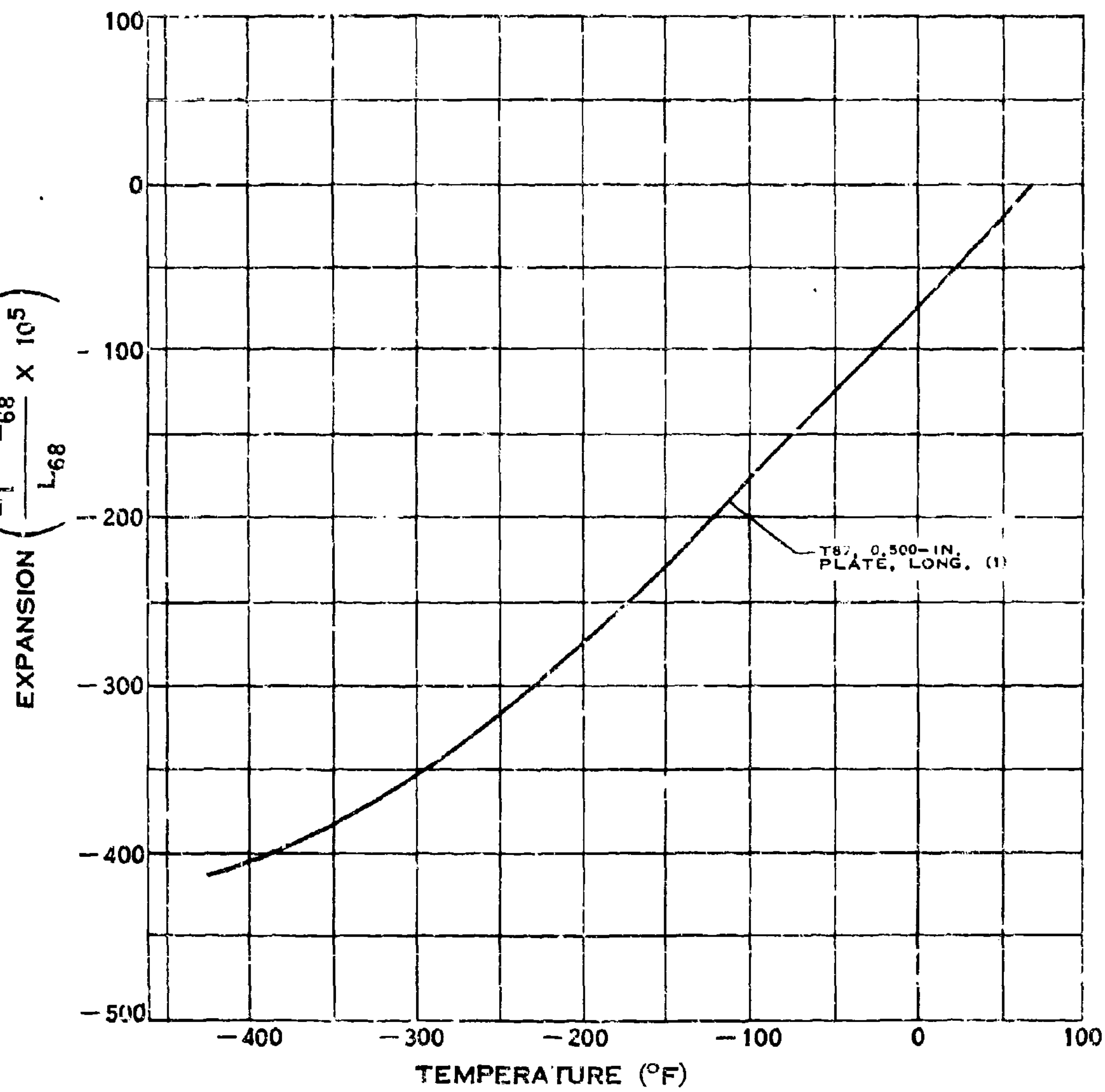
A.5.p-1



SHEAR STRENGTH OF 2219 ALUMINUM

(1-65)

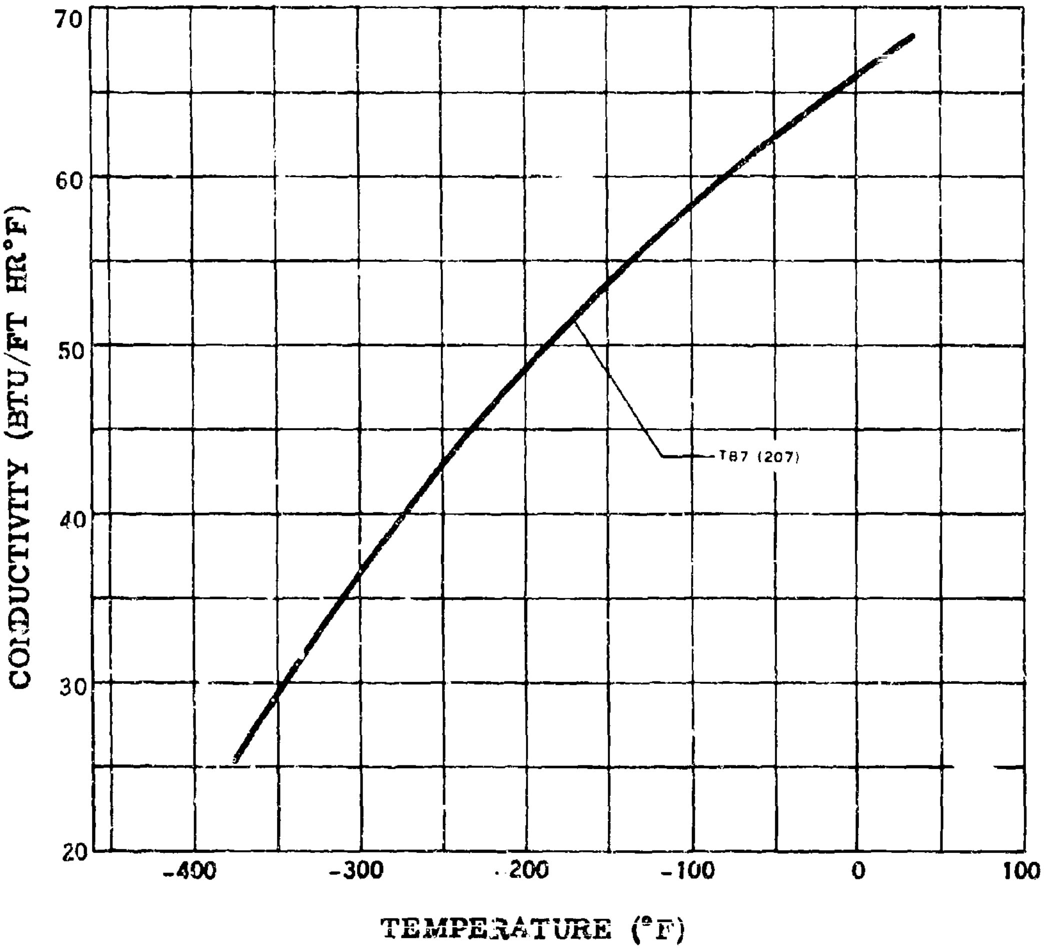
A.5.t



THERMAL EXPANSION OF 2219 ALUMINUM

(7-64)

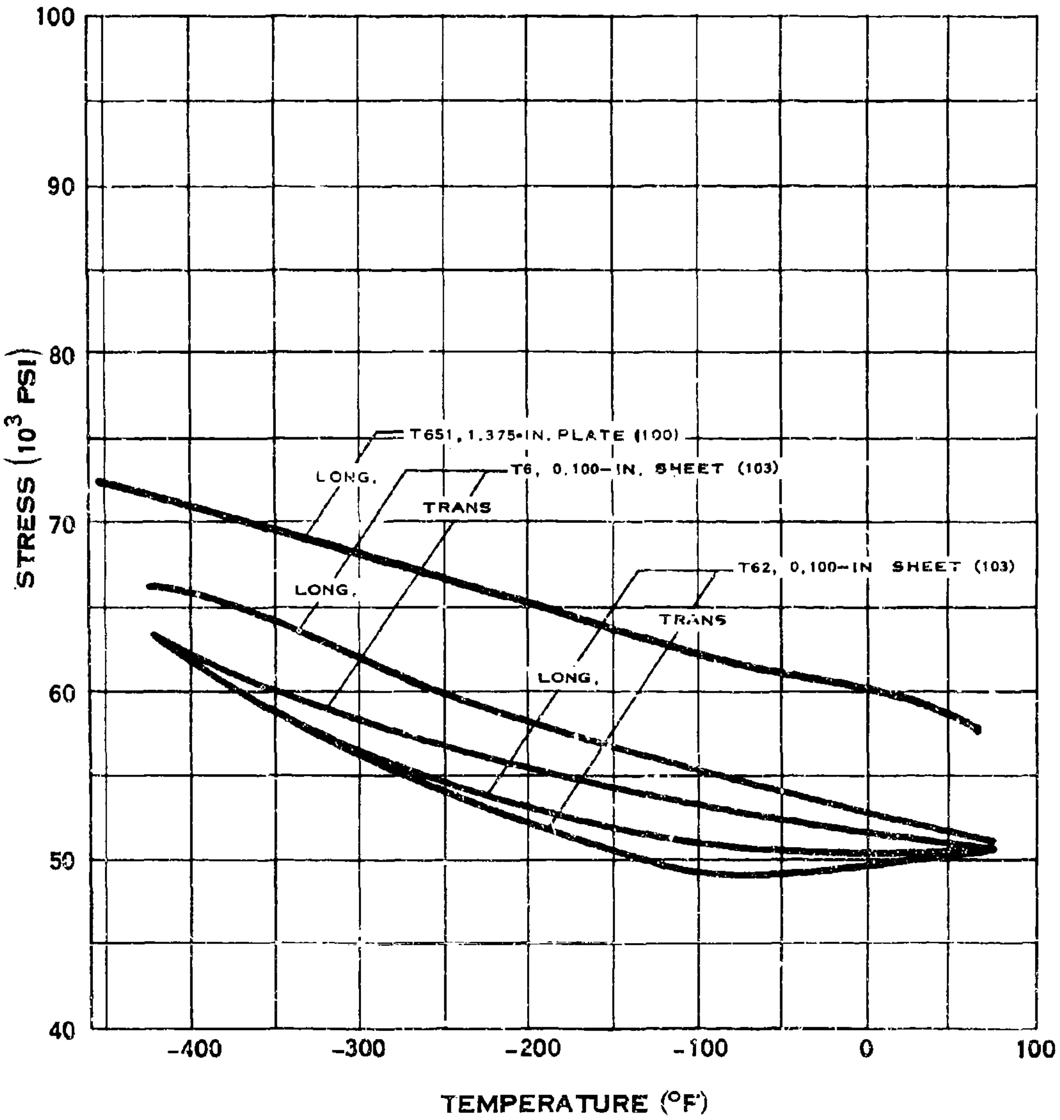
A.5.v



THERMAL CONDUCTIVITY OF 2219 ALUMINUM

(6-68)

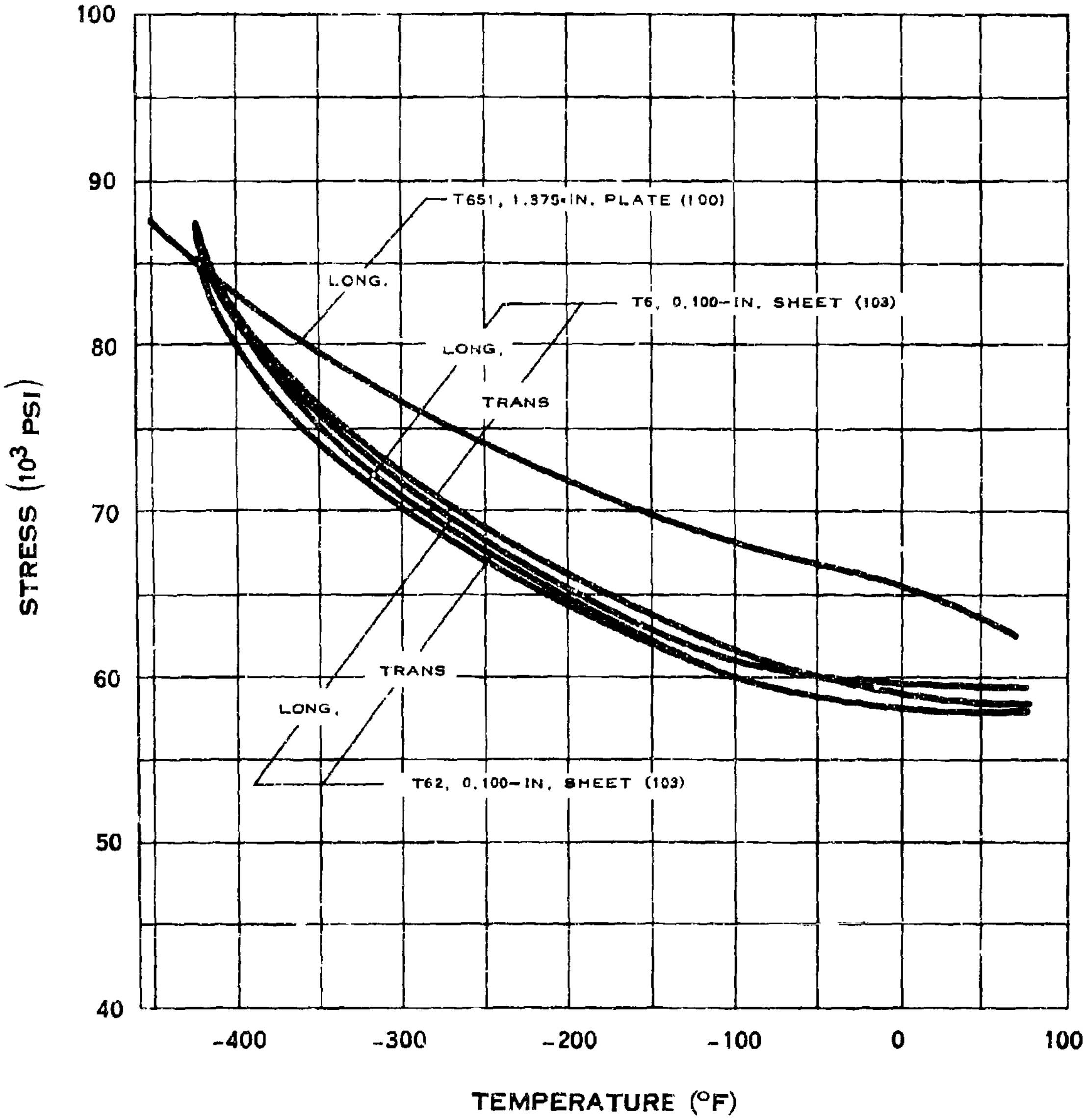
A.6.a



YIELD STRENGTH OF 2618 ALUMINUM

(6-68)

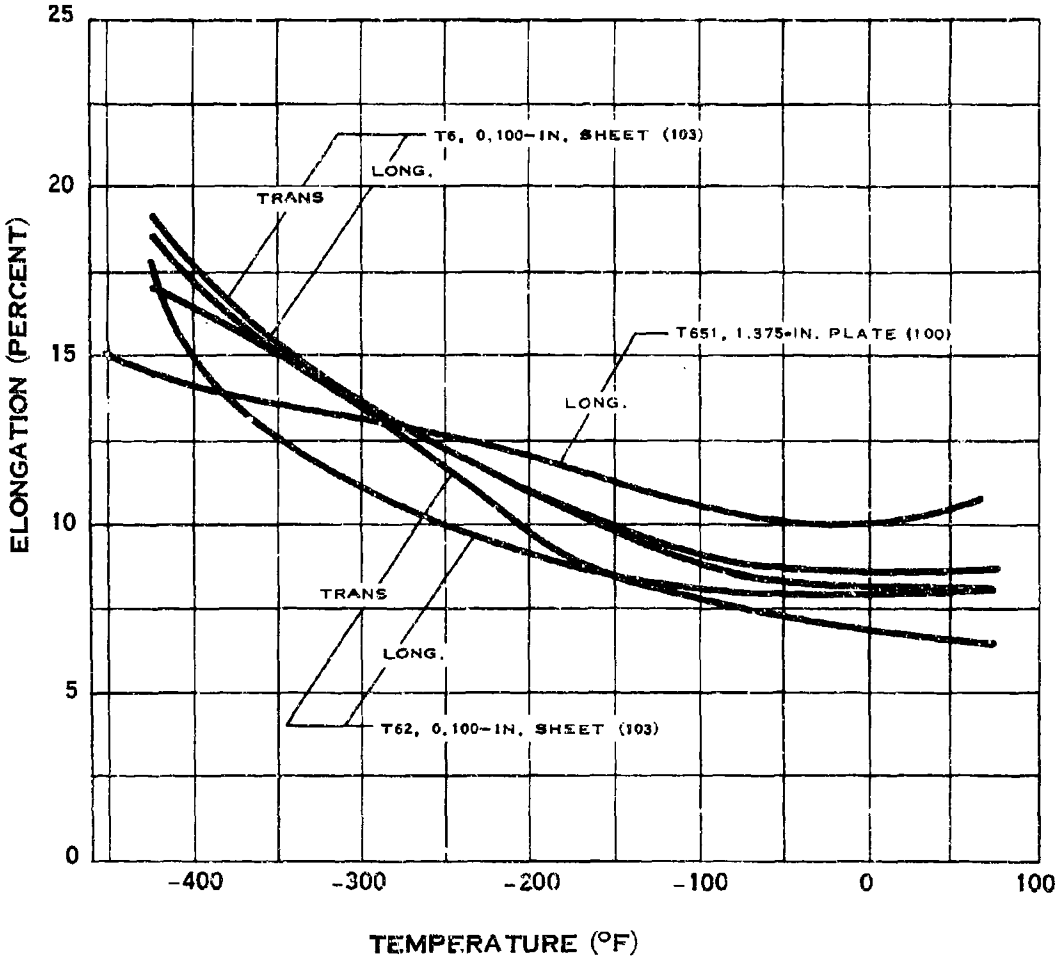
A.6.b



TENSILE STRENGTH OF 2618 ALUMINUM

(6-68)

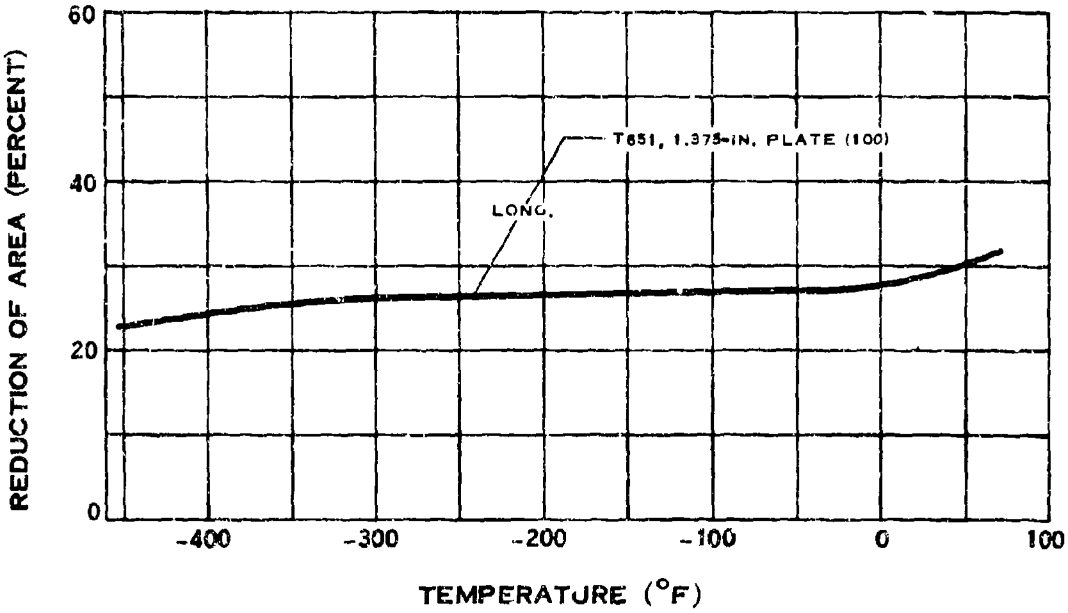
A.6.c



ELONGATION OF 2618 ALUMINUM

(6-68)

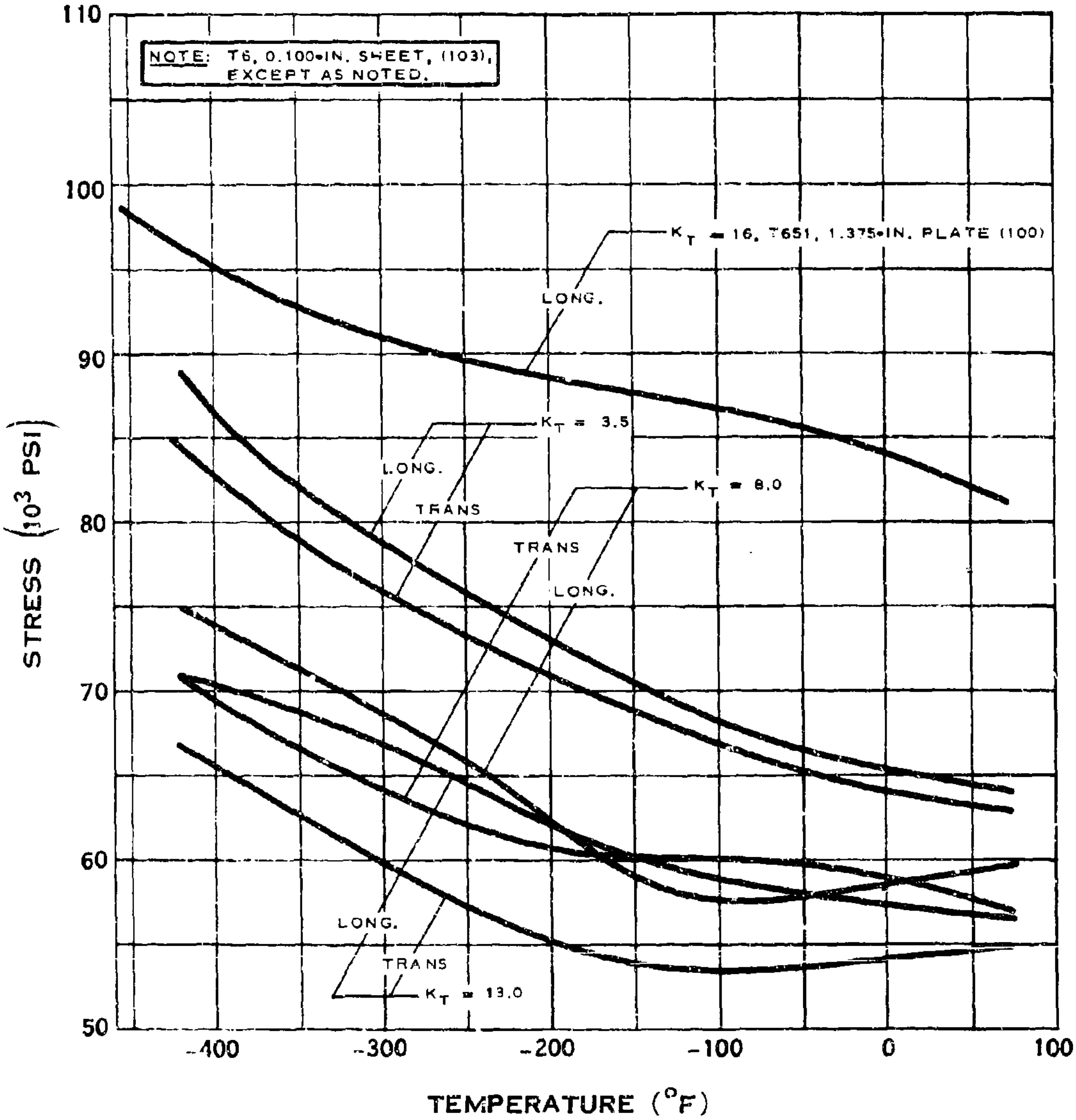
A.6.d



REDUCTION OF AREA OF 2618 ALUMINUM

(6-68)

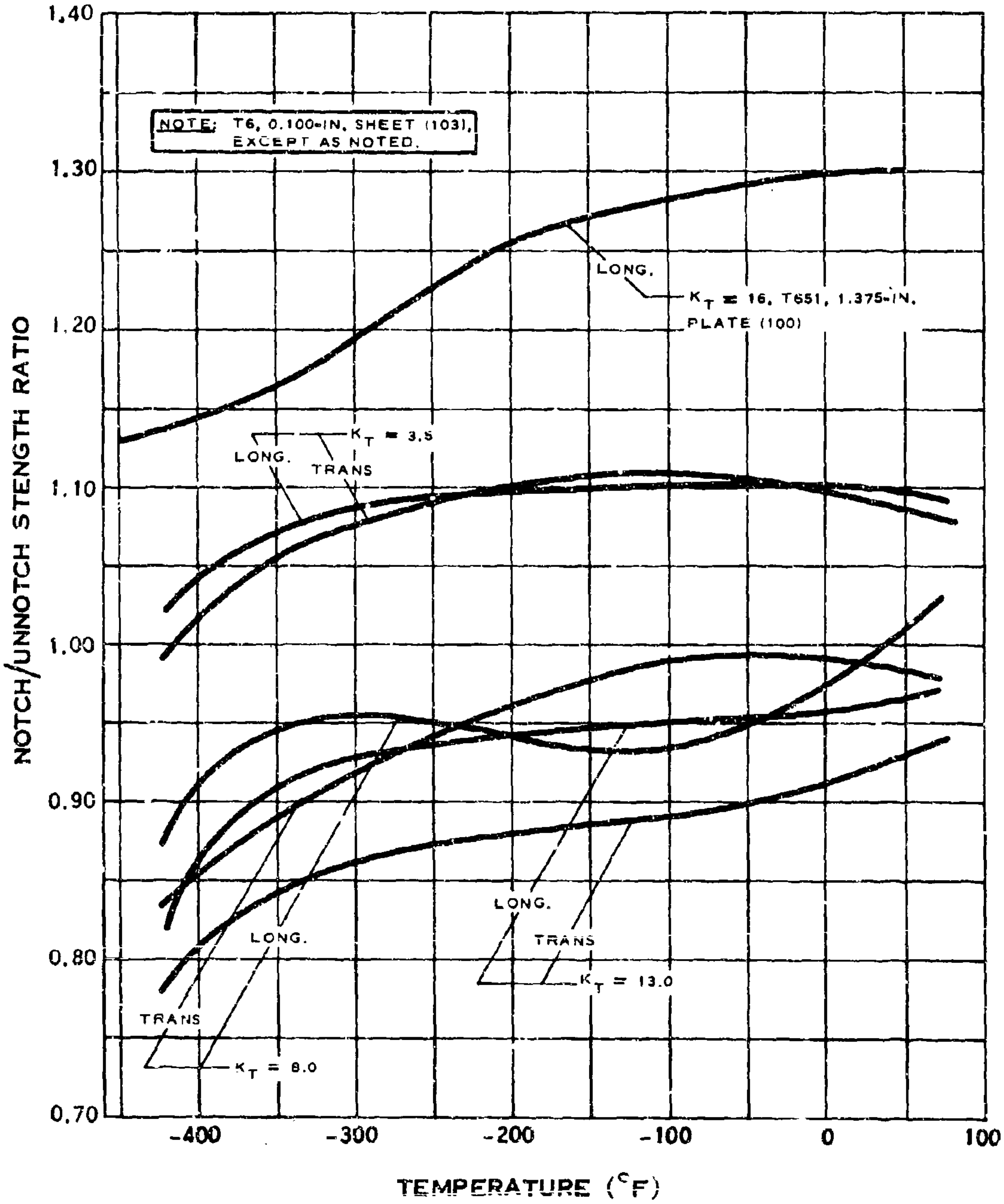
A.6.e



NOTCH TENSILE STRENGTH OF 2618 ALUMINUM

(6-68)

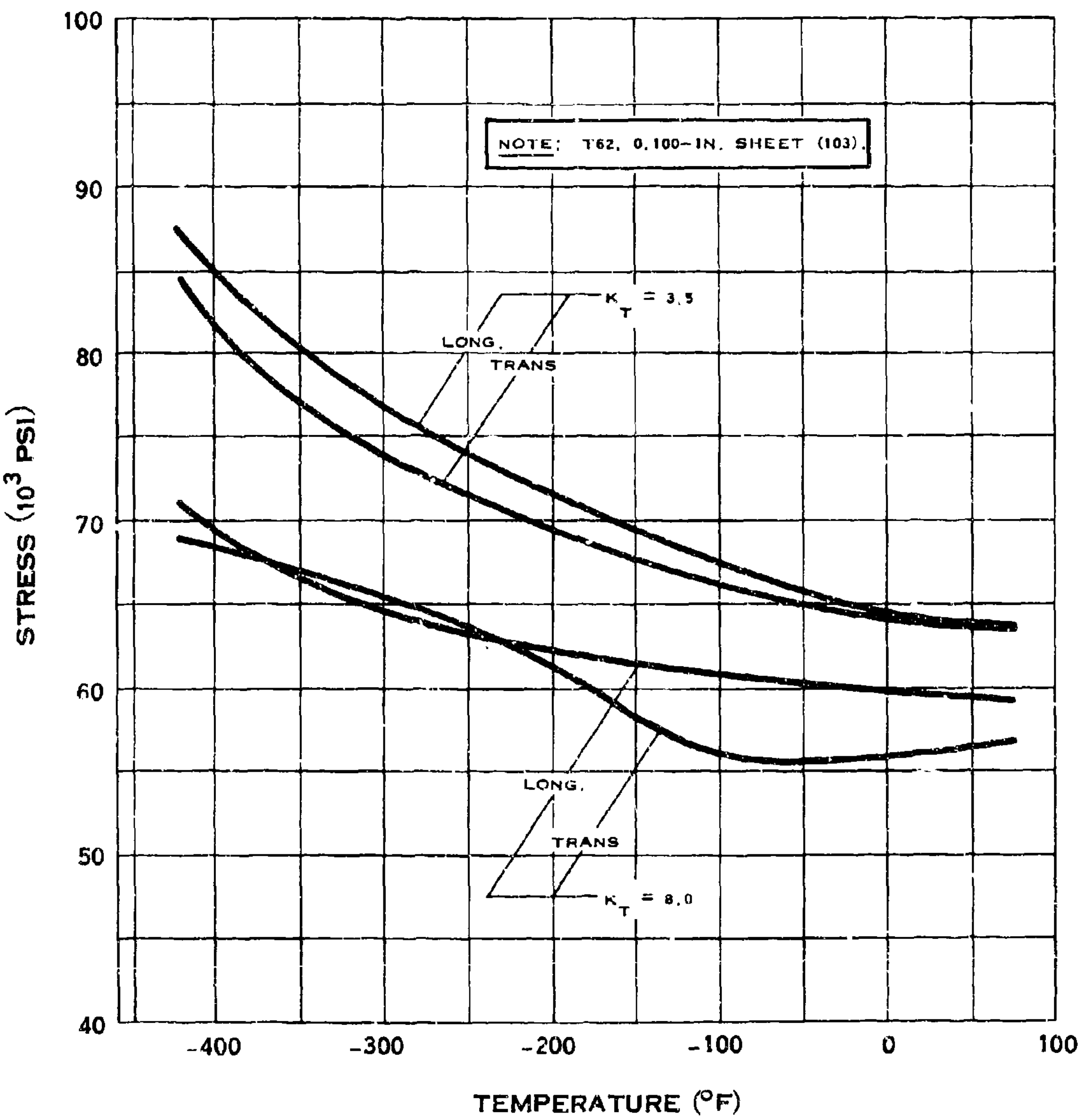
A.6.e-1



NOTCH STRENGTH RATIO OF 2618 ALUMINUM

(6-68)

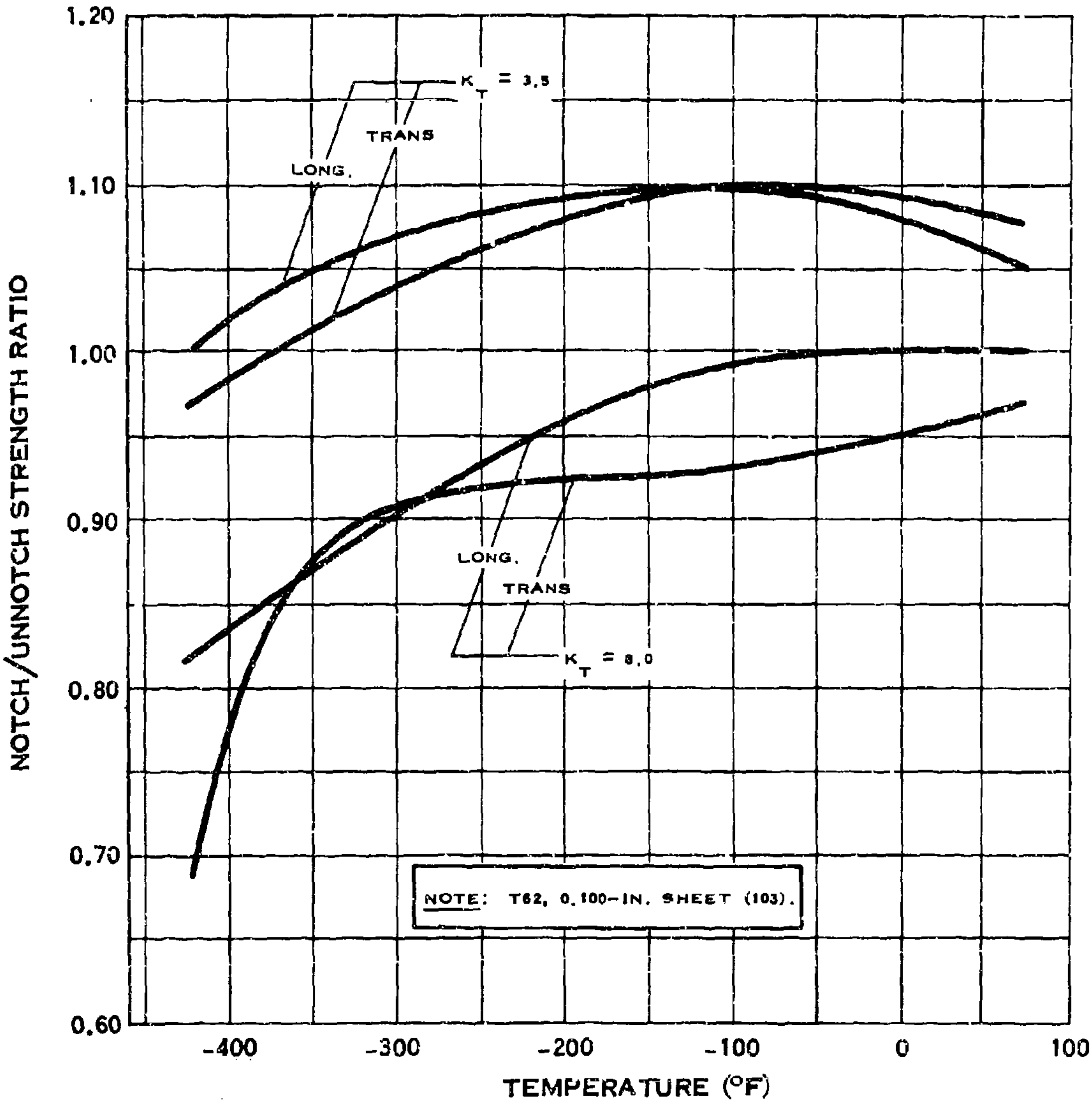
A.6.e-2



NOTCH TENSILE STRENGTH OF 2618 ALUMINUM

(7-65)

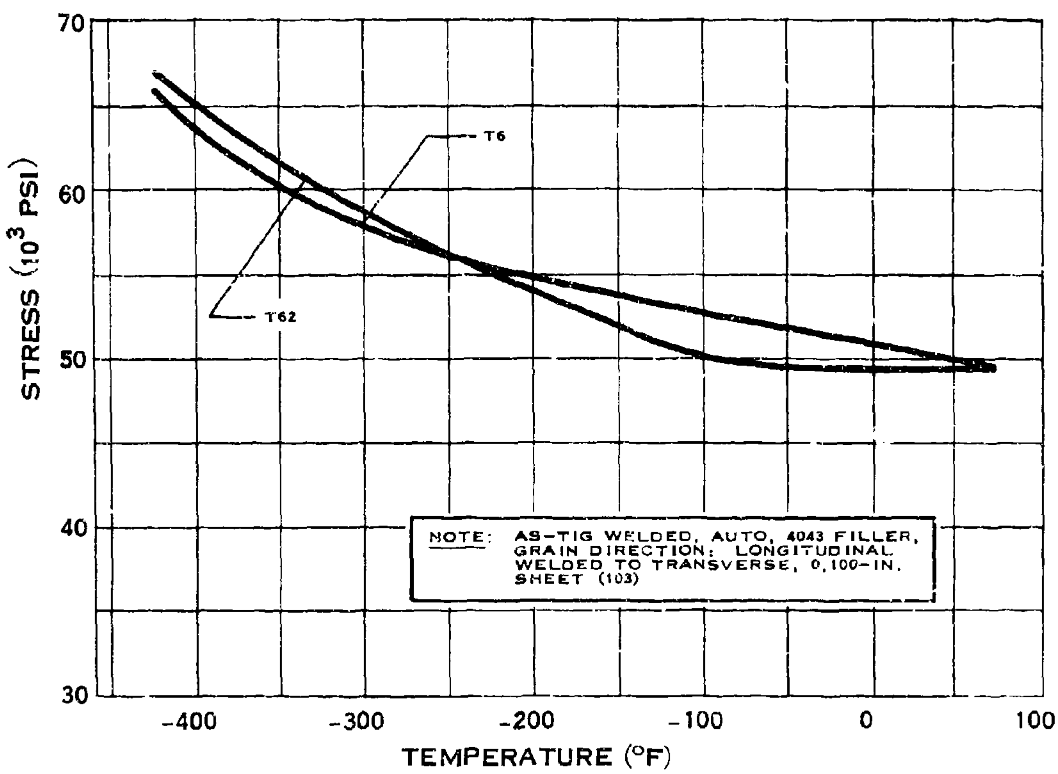
A.6.e-3



NOTCH STRENGTH RATIO OF 2618 ALUMINUM

(7-65)

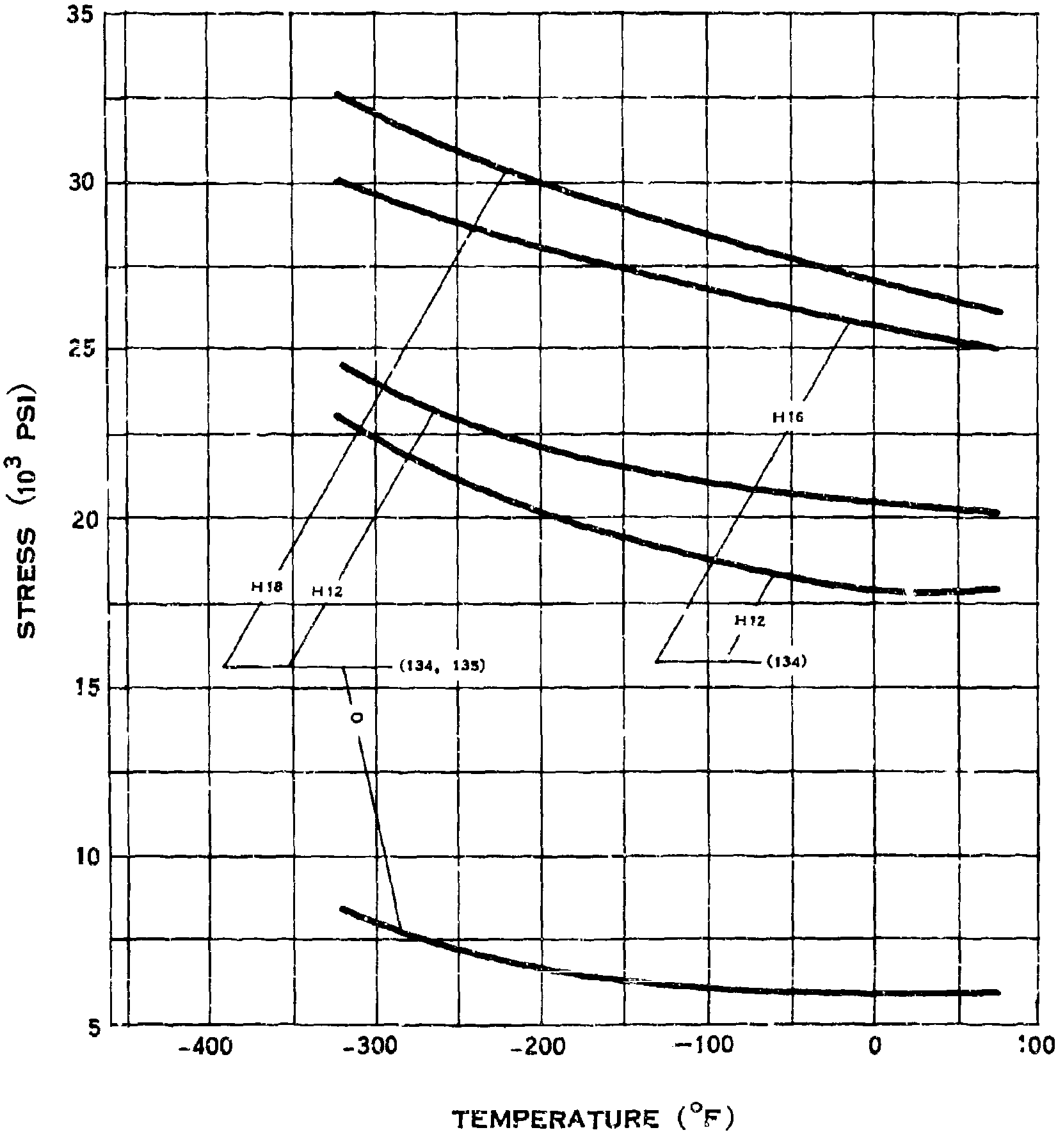
A.6.g



WELD TENSILE STRENGTH OF 2618 ALUMINUM

(7-65)

A.7.a



YIELD STRENGTH OF 3003 ALUMINUM

(7-65)

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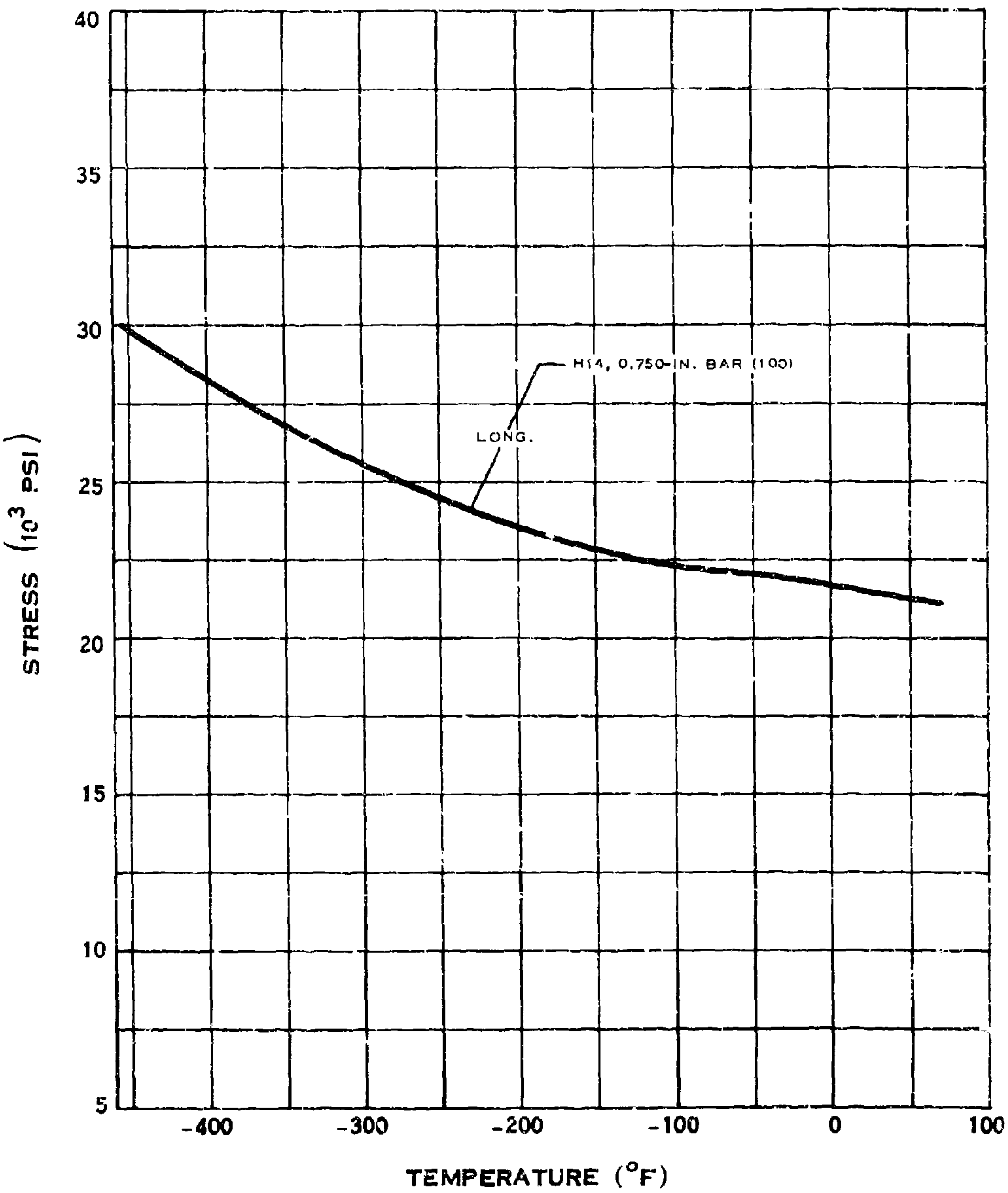
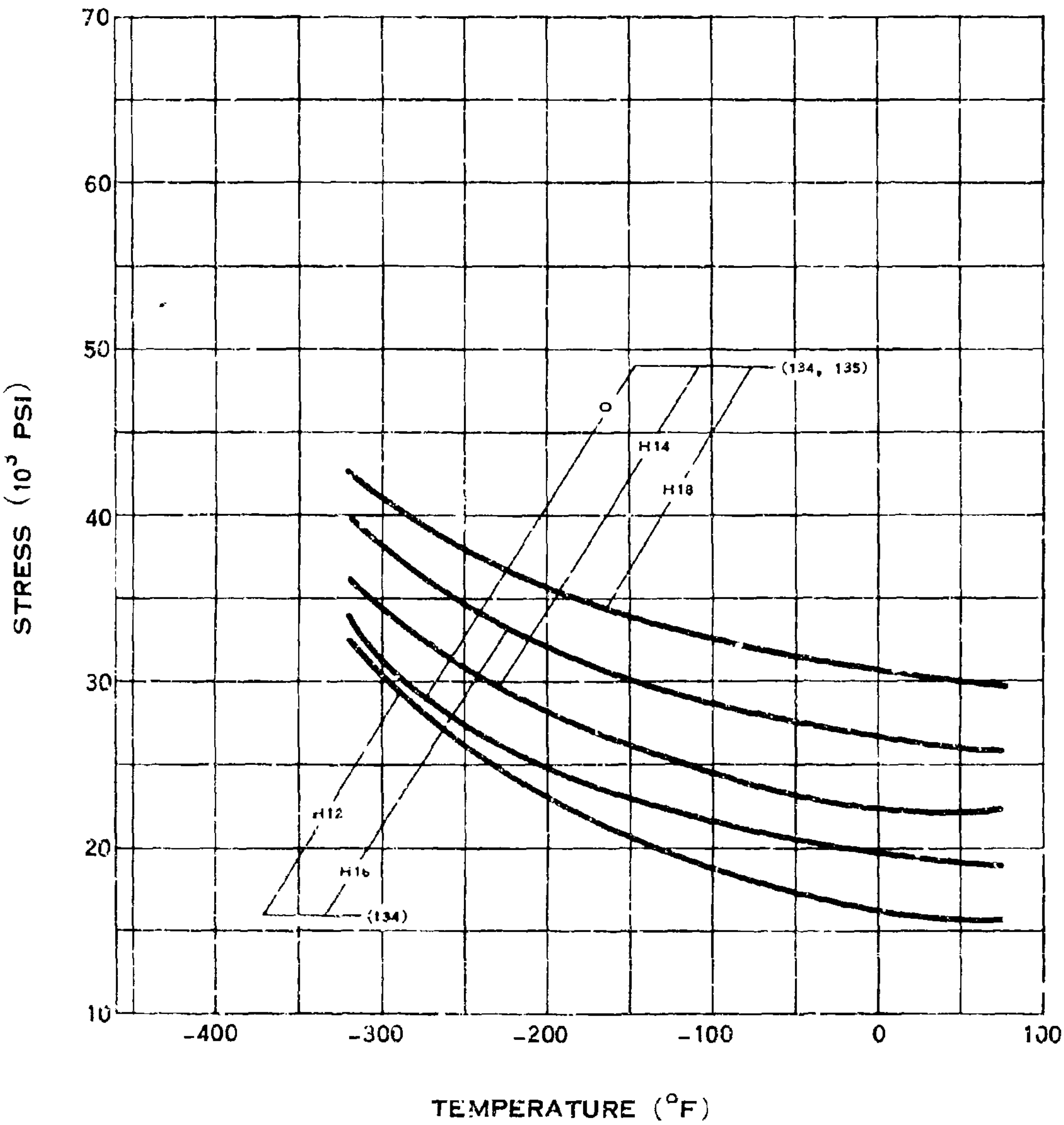
A.7.a-1



YIELD STRENGTH OF 3003 ALUMINUM

(6-68)

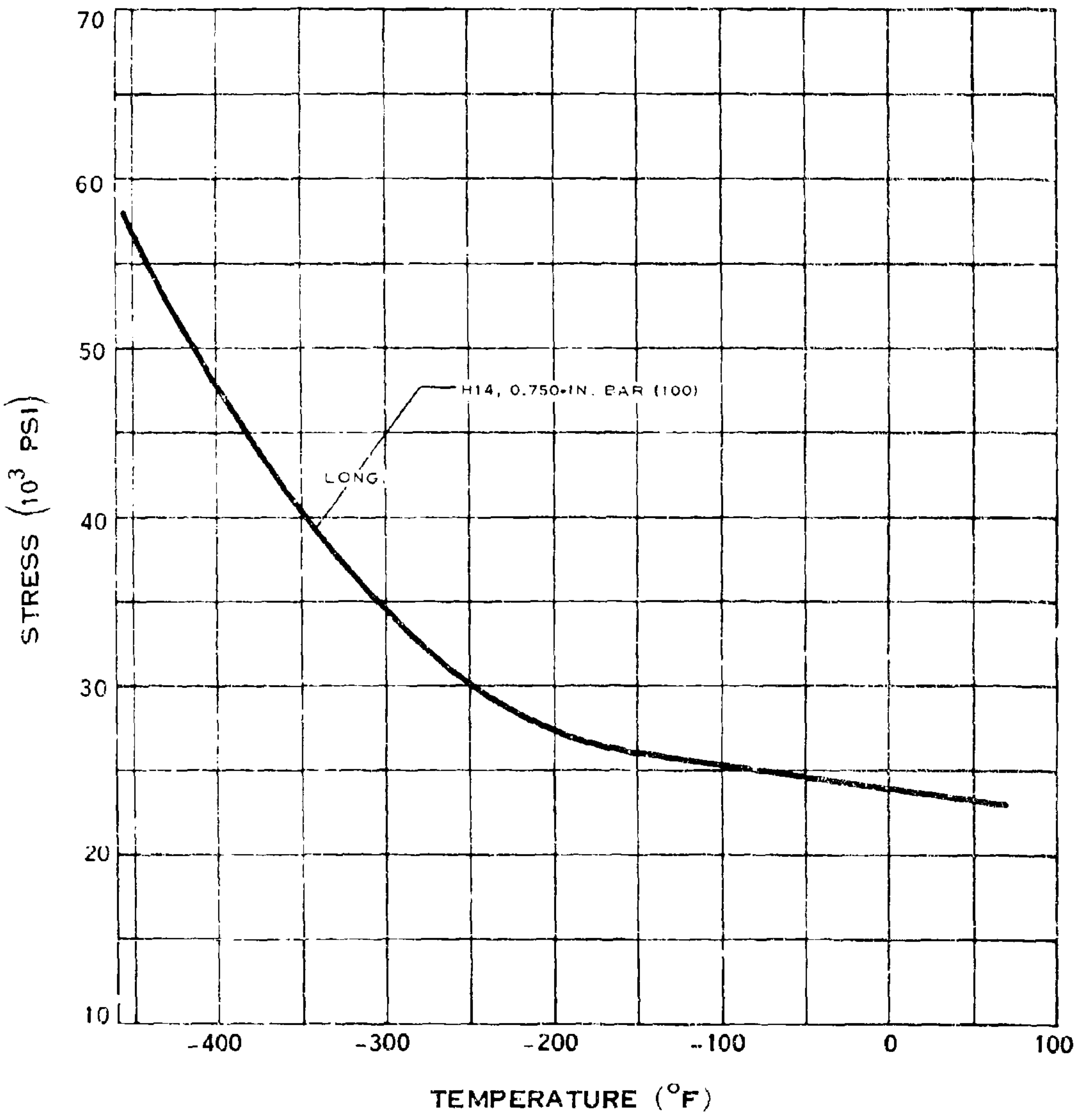
A.7.b



TENSILE STRENGTH OF 3003 ALUMINUM

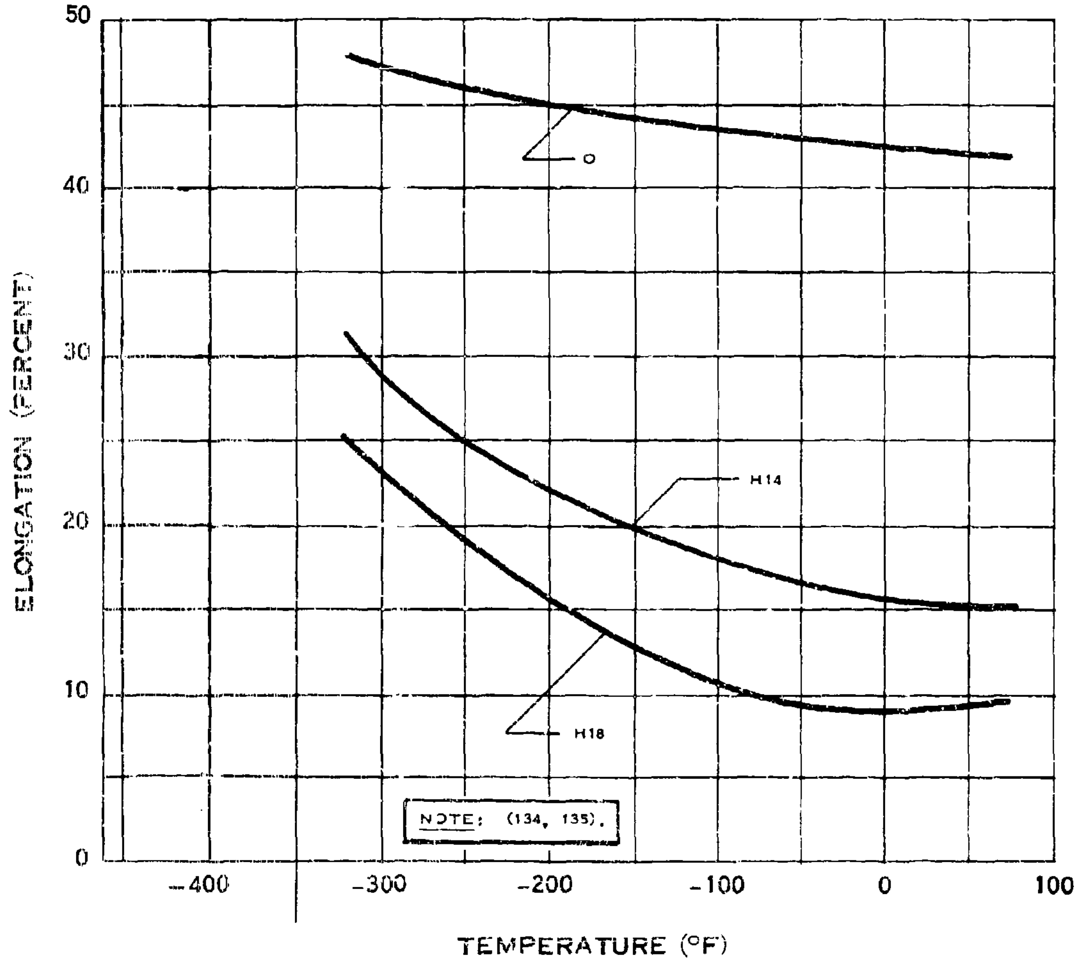
(7-65)

A.7.b-1



TENSILE STRENGTH OF 3003 ALUMINUM

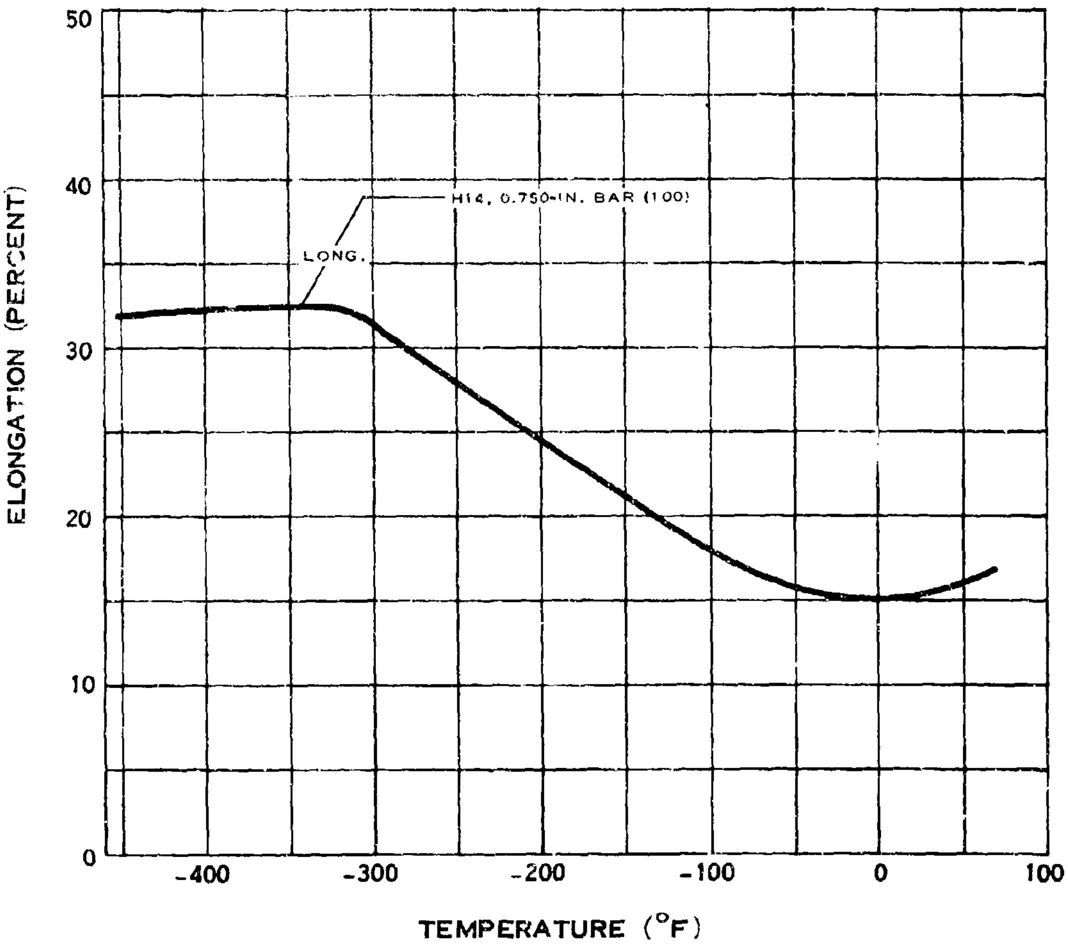
(6-68)



ELONGATION OF 3003 ALUMINUM

(7-65)

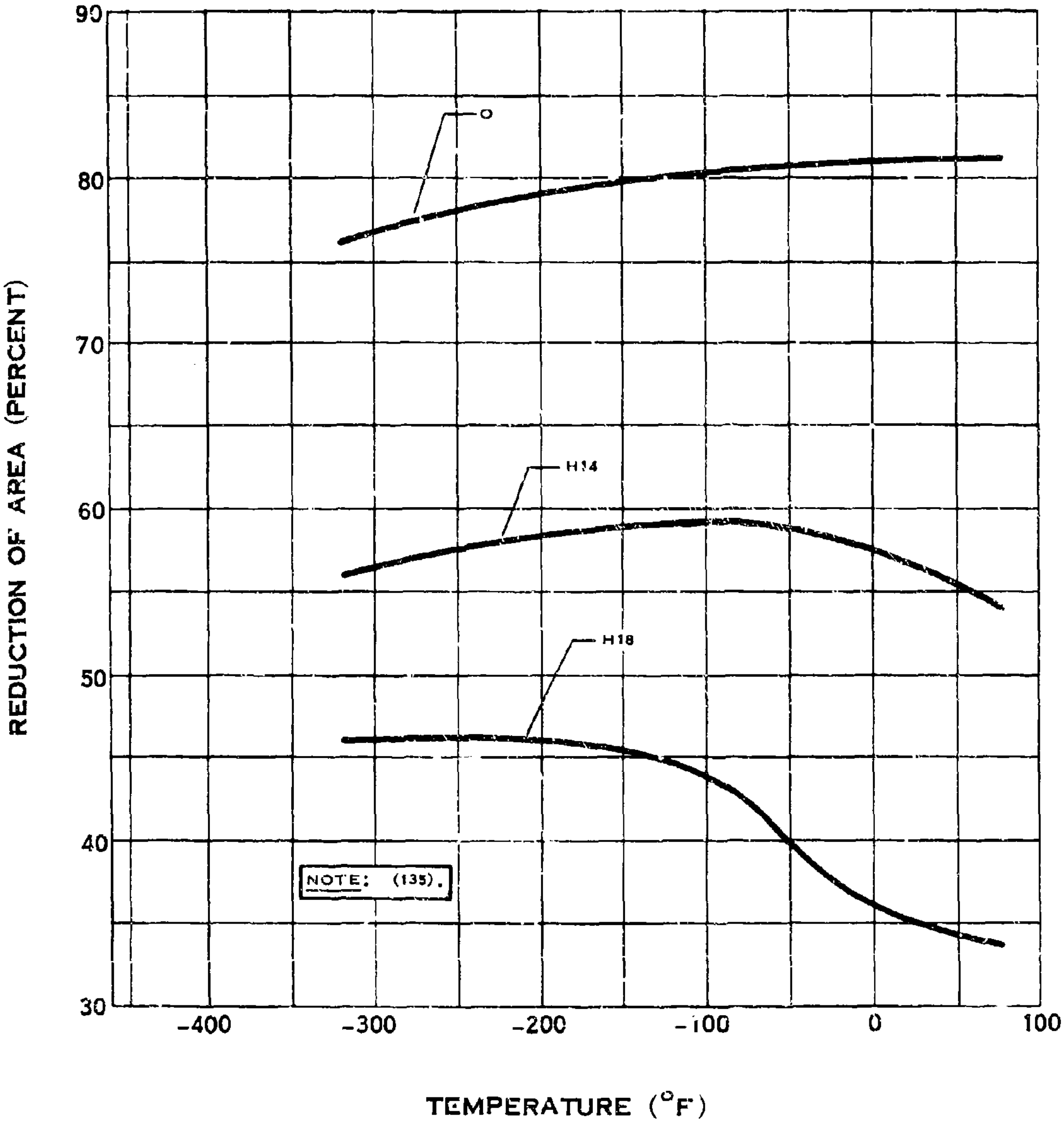
A.7.c-1



ELONGATION OF 3003 ALUMINUM

(6-66)

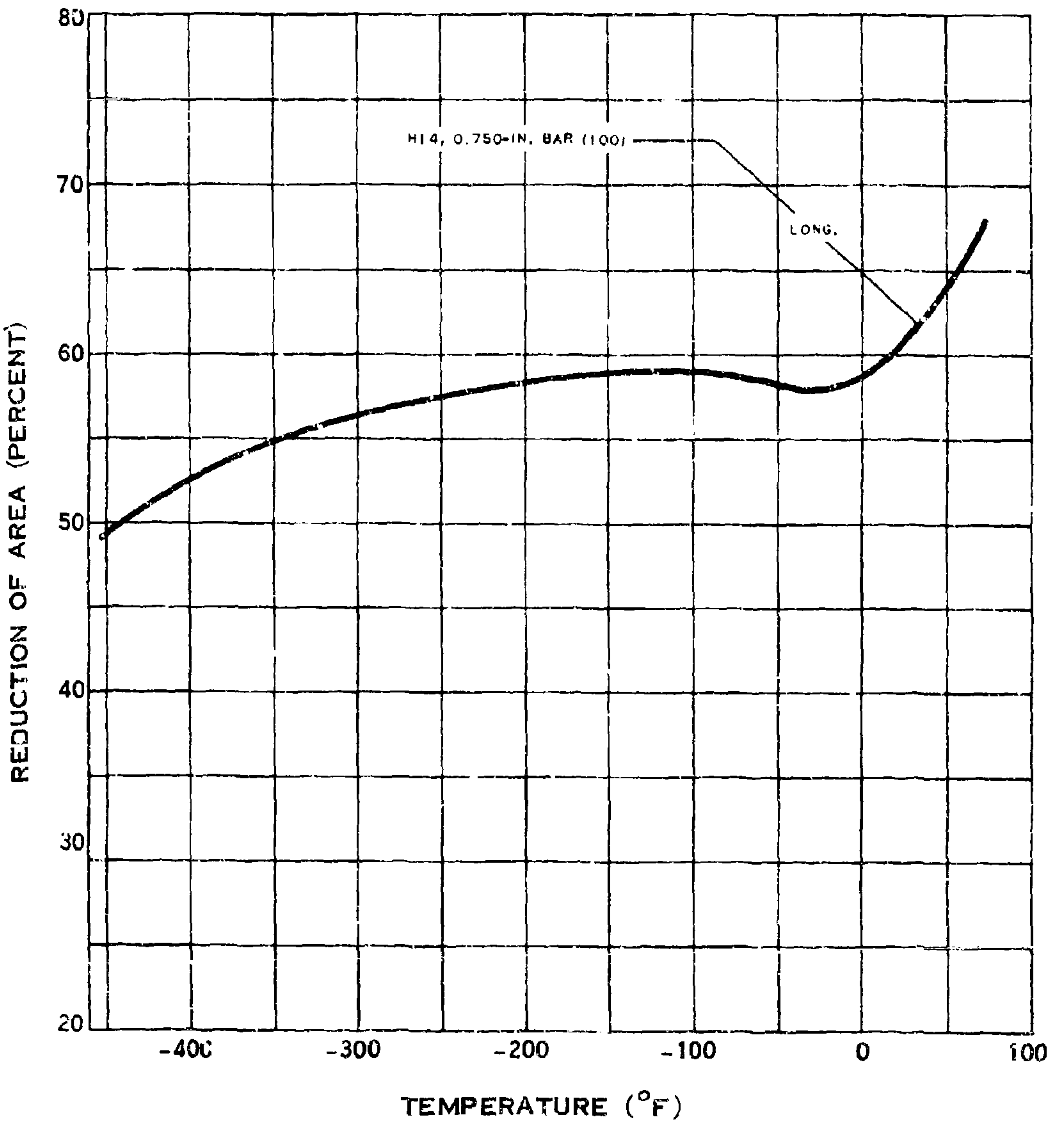
A.7.d



REDUCTION OF AREA OF 3003 ALUMINUM

(7-65)

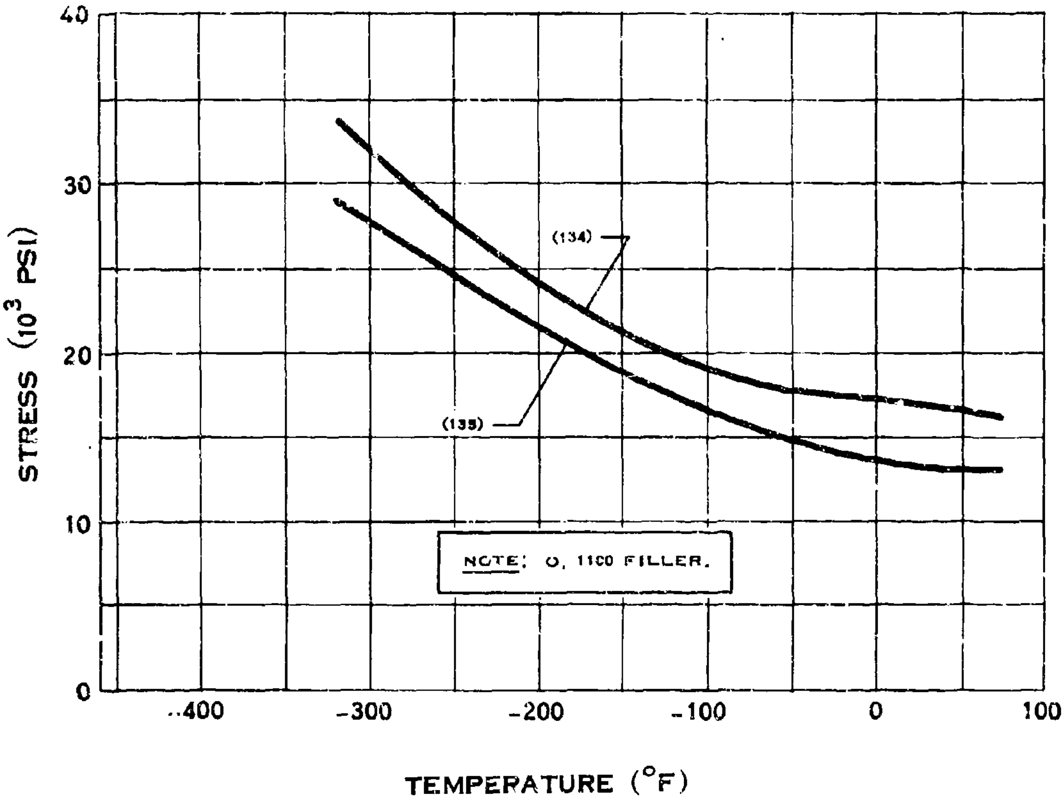
A.7.d-1



REDUCTION OF AREA OF 3003 ALUMINUM

(6-68)

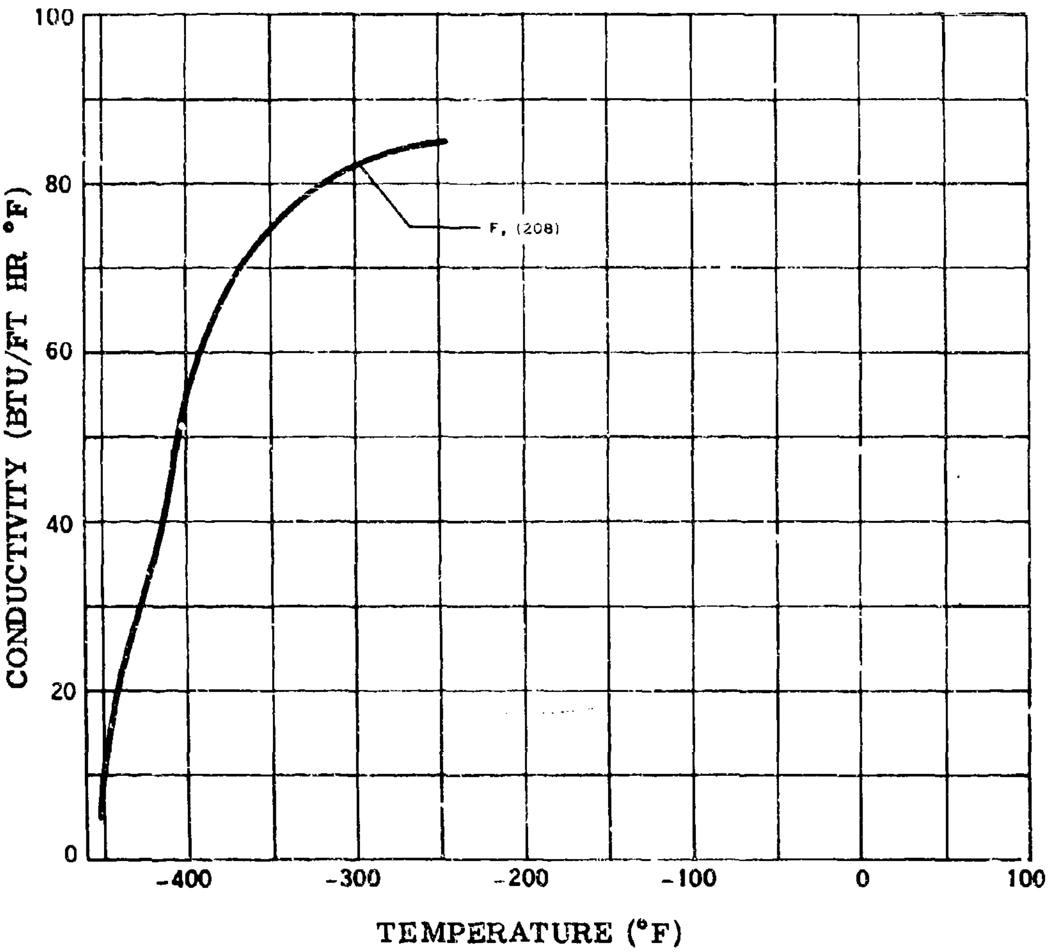
A.7.g



WELD TENSILE STRENGTH OF 3003 ALUMINUM

(7-65)

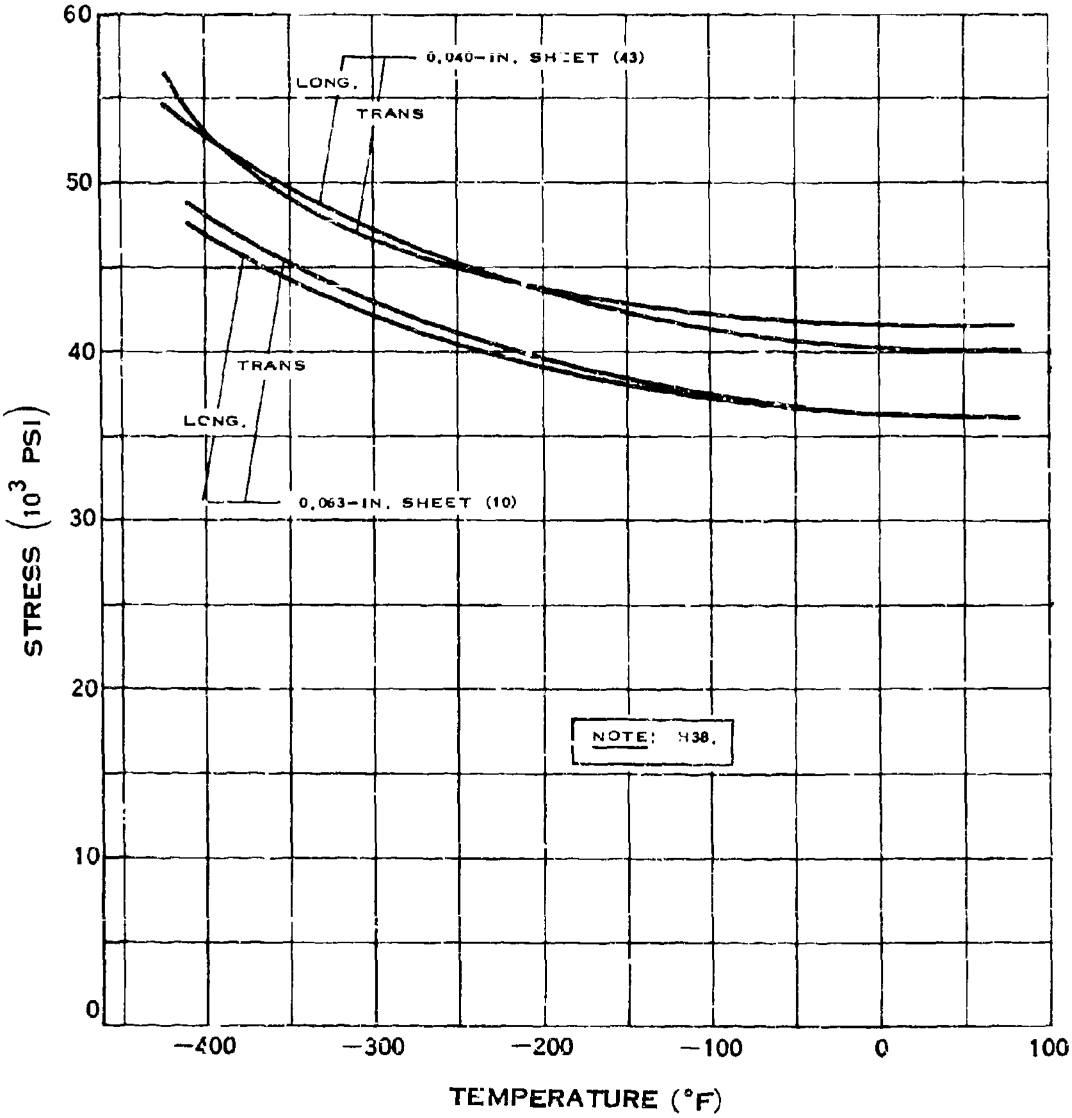
A.7.v



THERMAL CONDUCTIVITY OF 3003 ALUMINUM

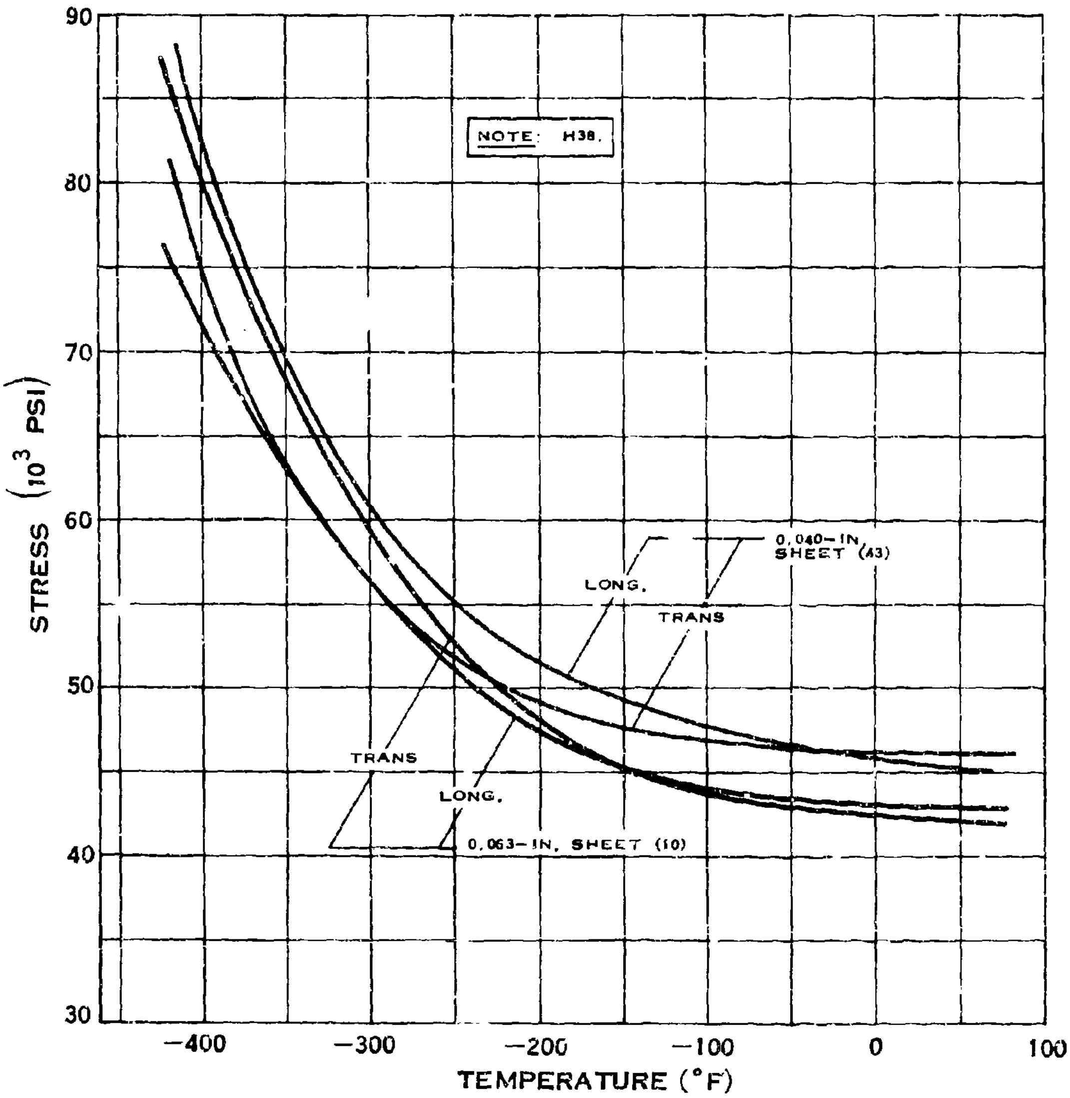
(6-68)

A.8.a



YIELD STRENGTH OF 5052 ALUMINUM

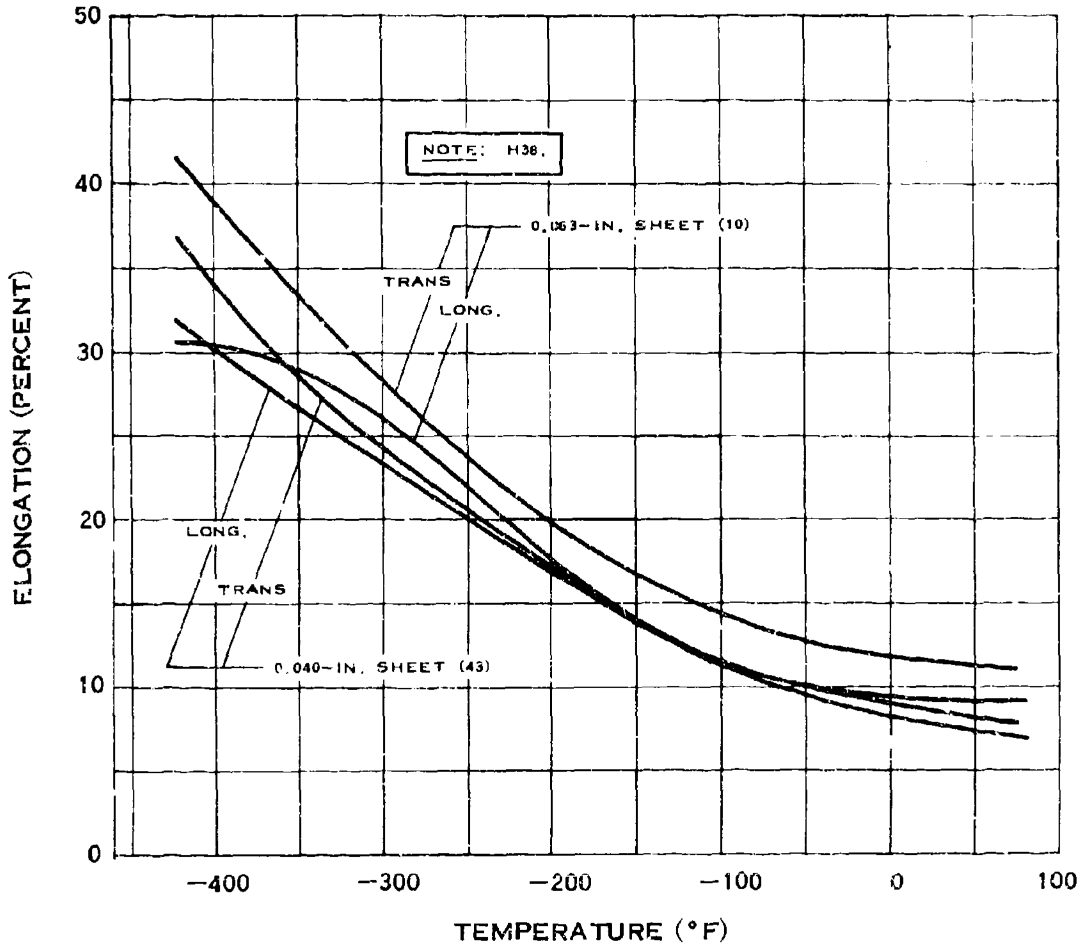
A.8.b



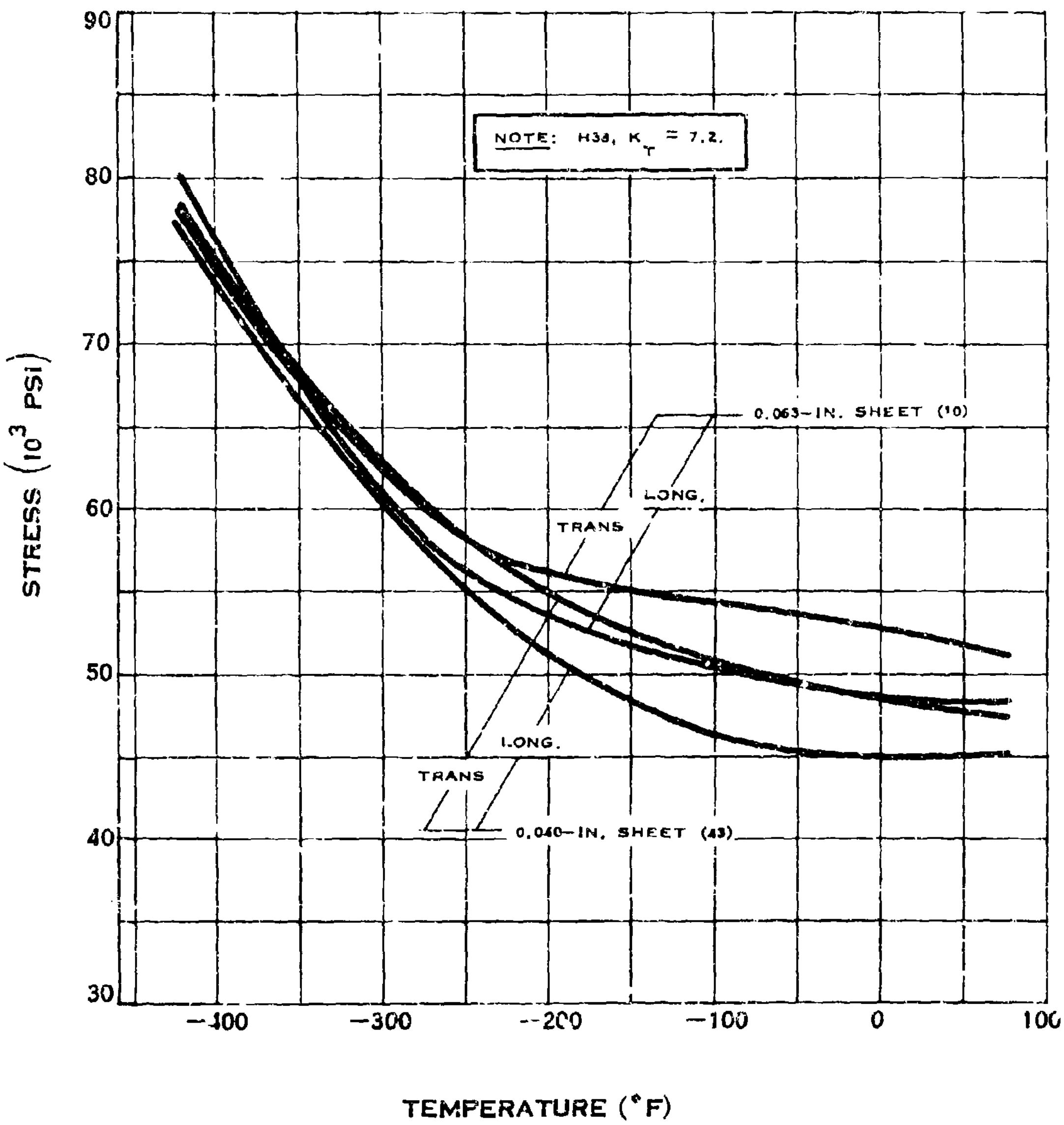
TENSILE STRENGTH OF 5052 ALUMINUM

(7-65)

A.8.c



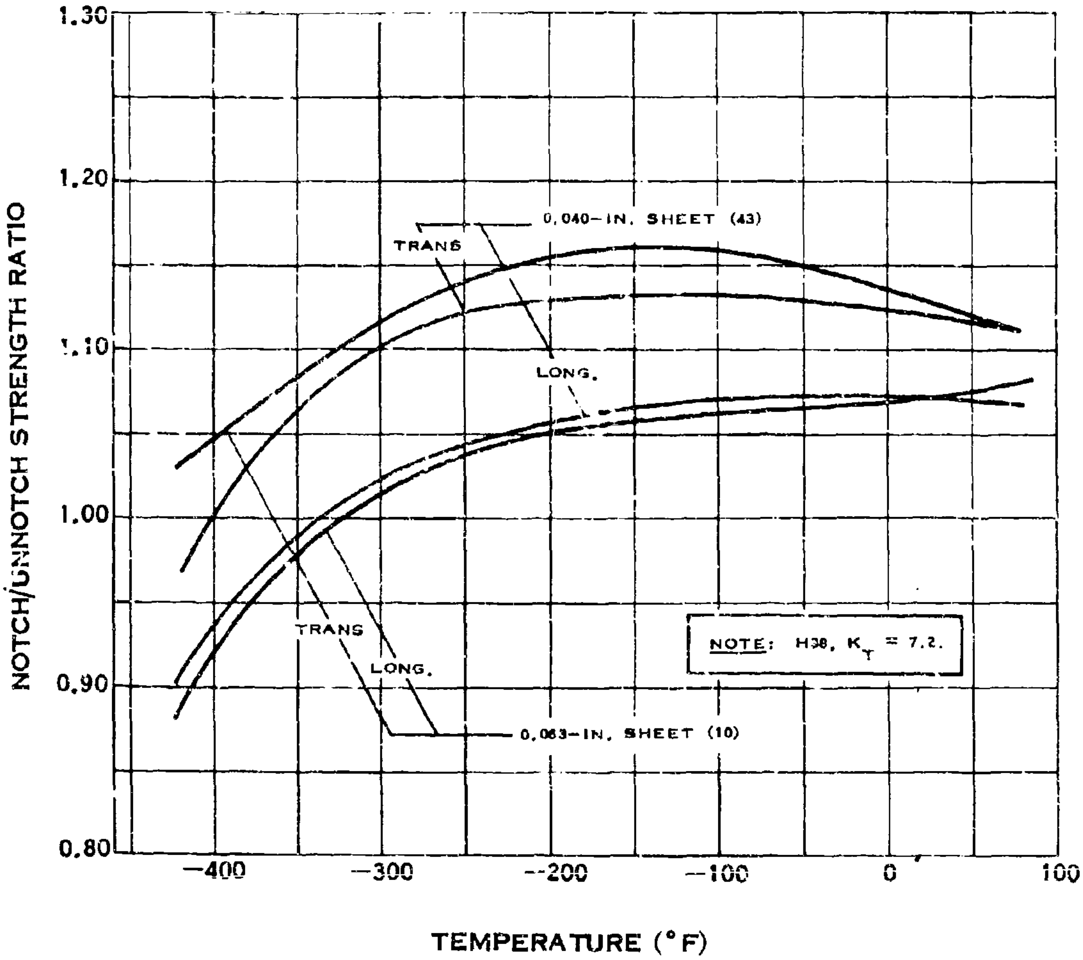
ELONGATION OF 5052 ALUMINUM



NOTCH TENSILE STRENGTH OF 5052 ALUMINUM

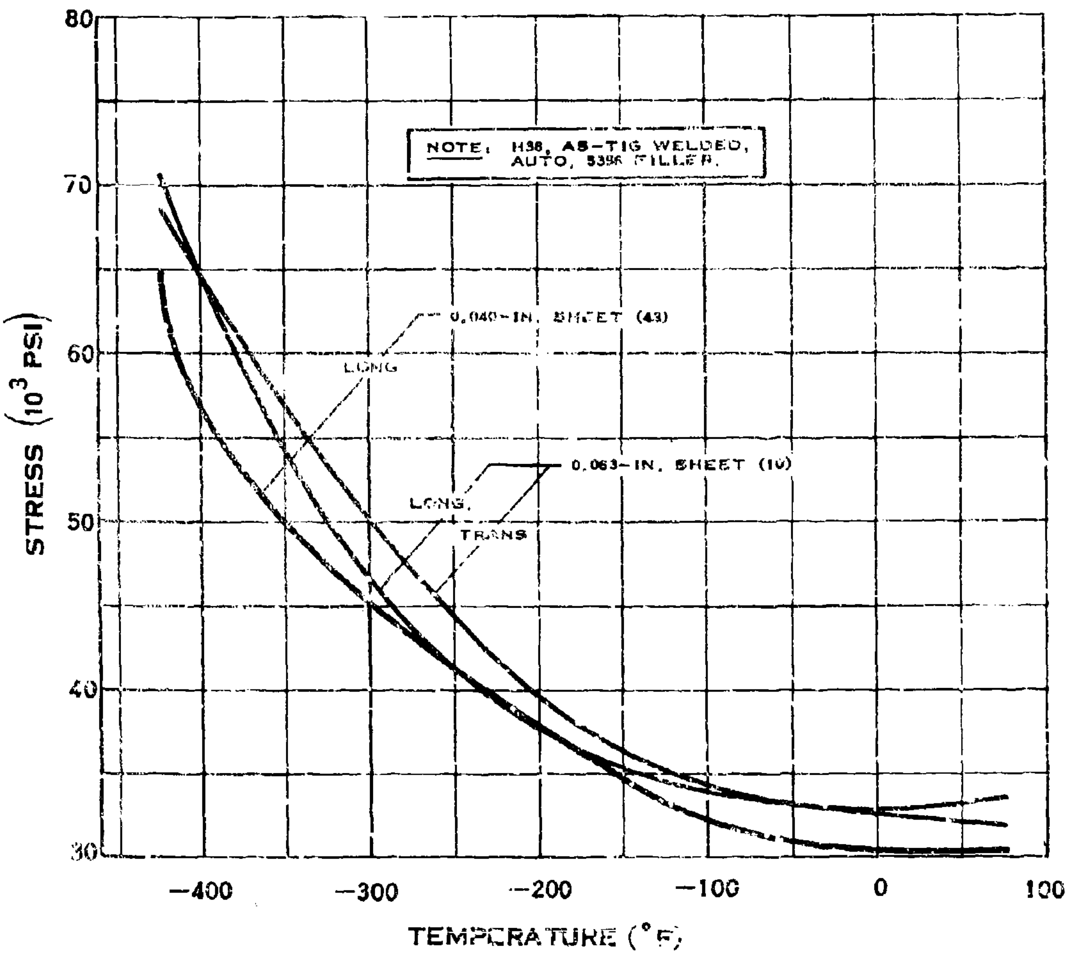
(7-55)

A.8.e-1



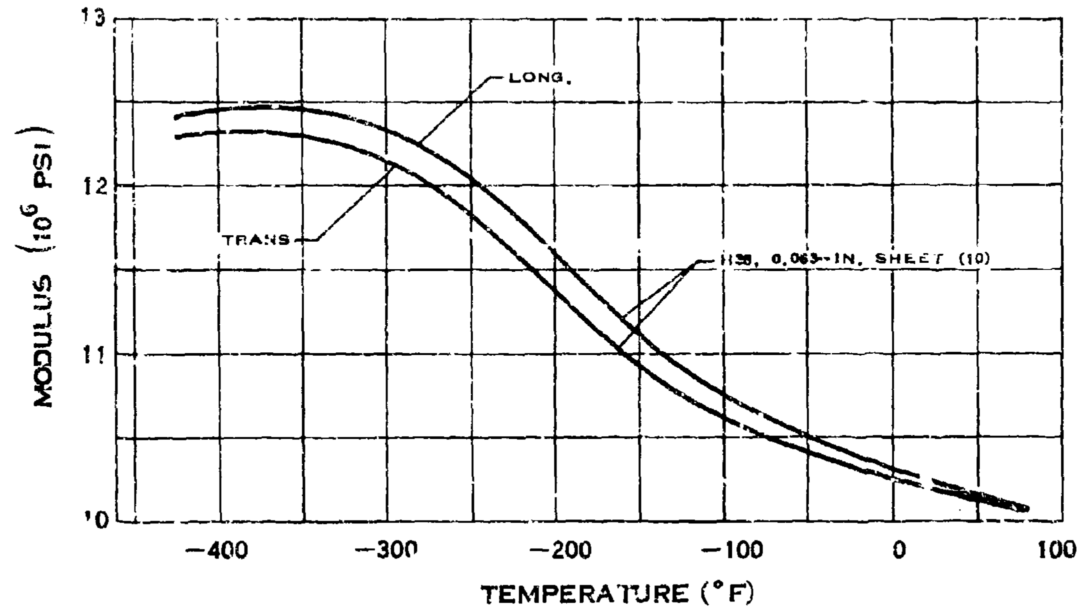
NOTCH STRENGTH RATIO OF 5052 ALUMINUM

A.8.g



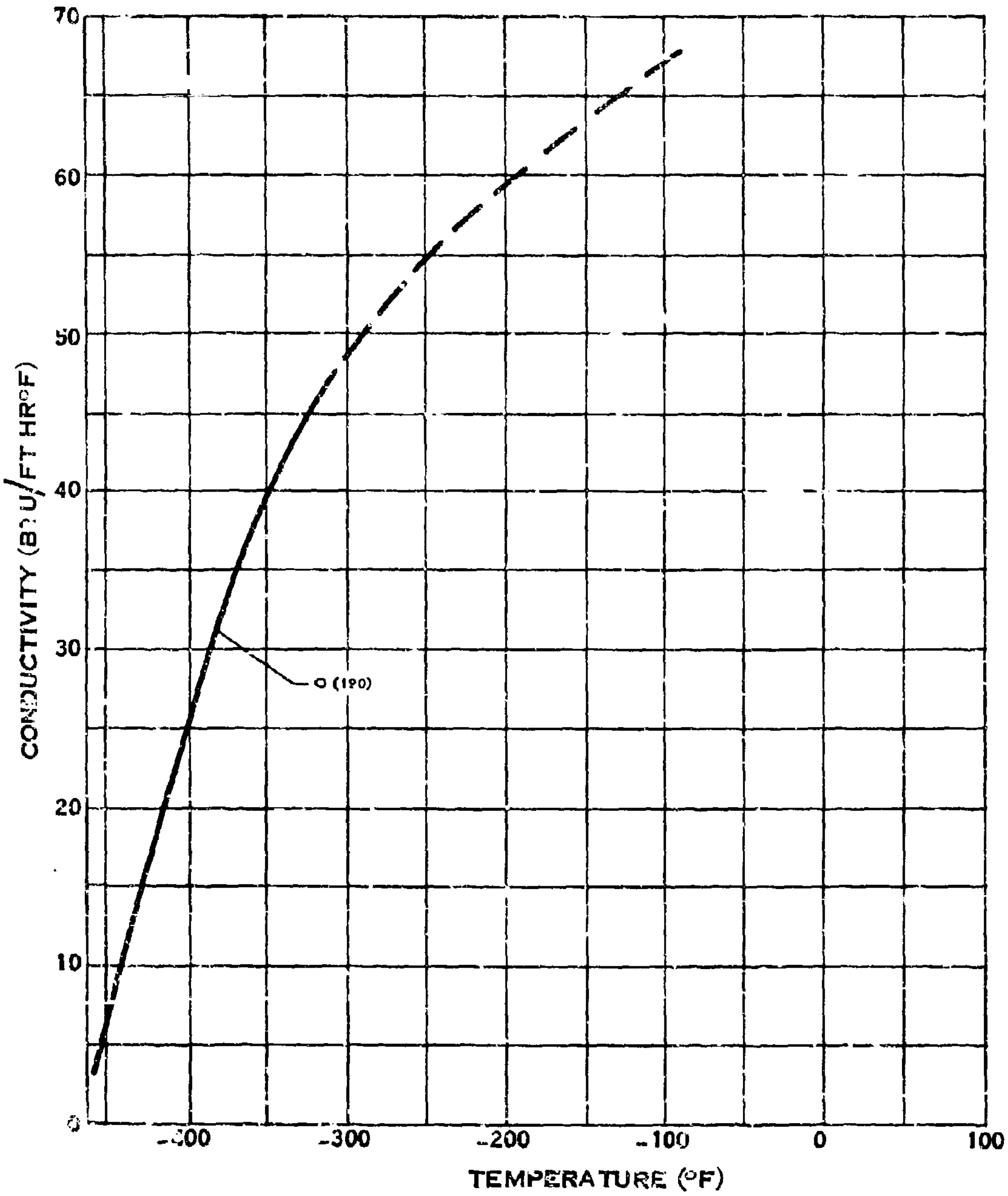
WELD TENSILE STRENGTH OF 5052 ALUMINUM

(7–65)



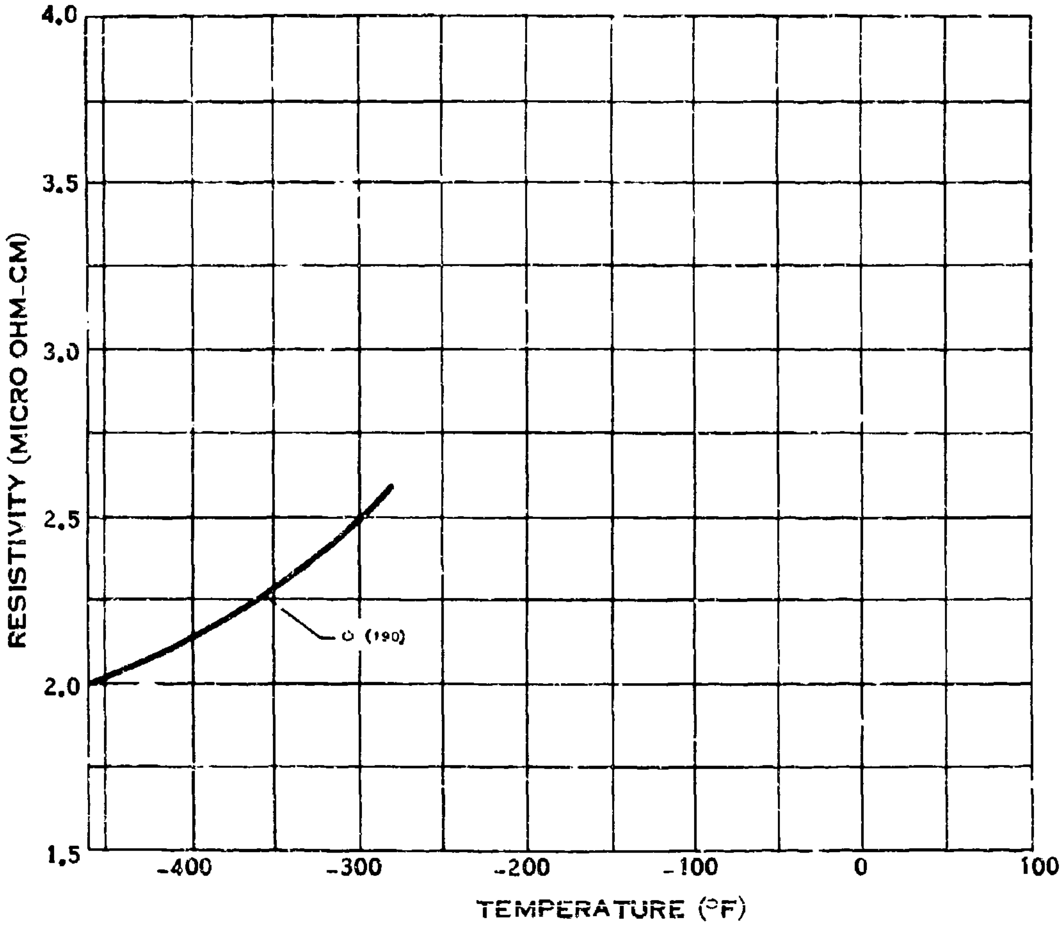
MODULUS OF ELASTICITY OF 5052 ALUMINUM

A.8.v



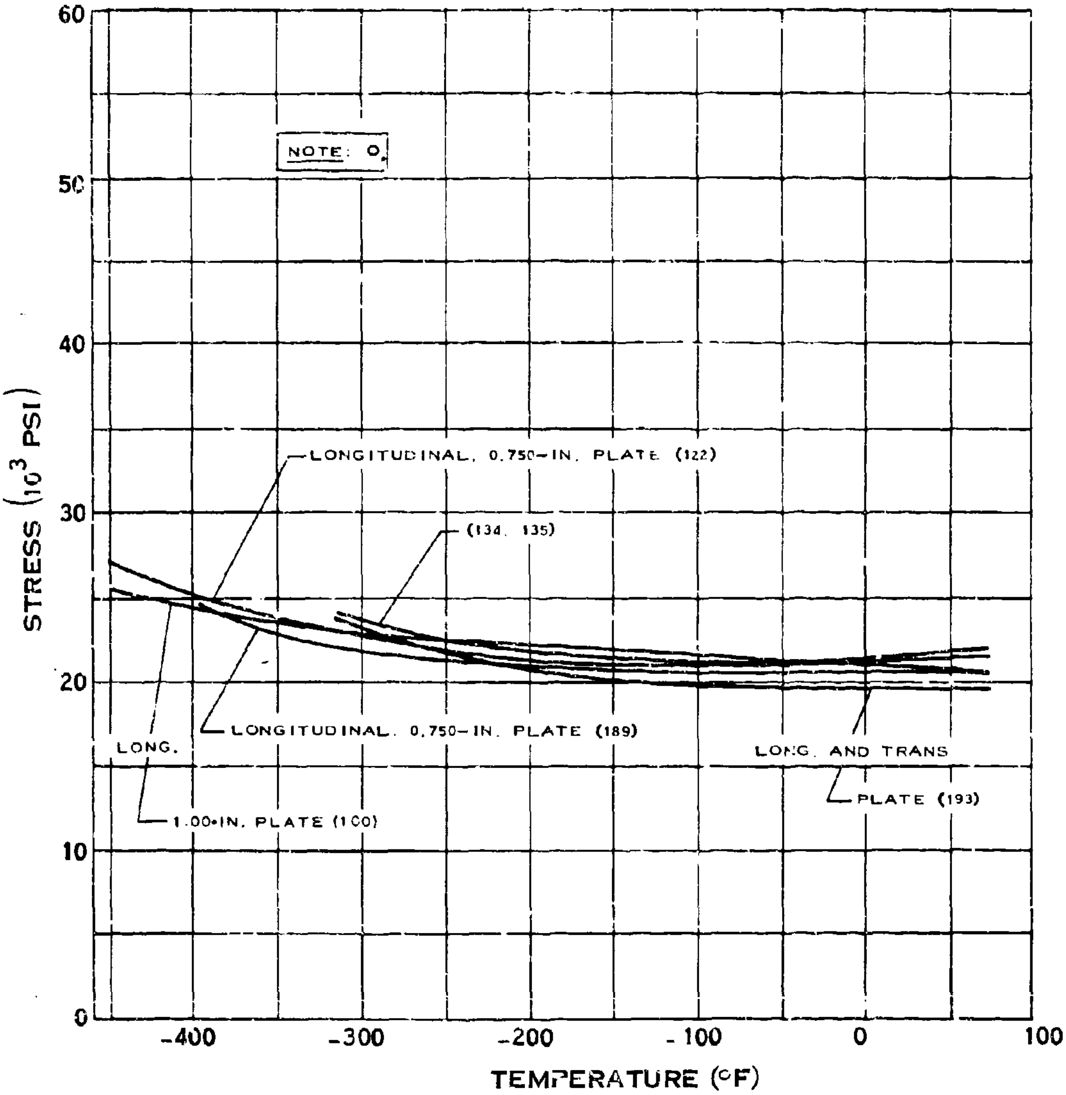
THERMAL CONDUCTIVITY OF 5052 ALUMINUM

A.8.w



ELECTRICAL RESISTIVITY OF 5052 ALUMINUM

A.9.a



YIELD STRENGTH OF 5083 ALUMINUM

(6-68)

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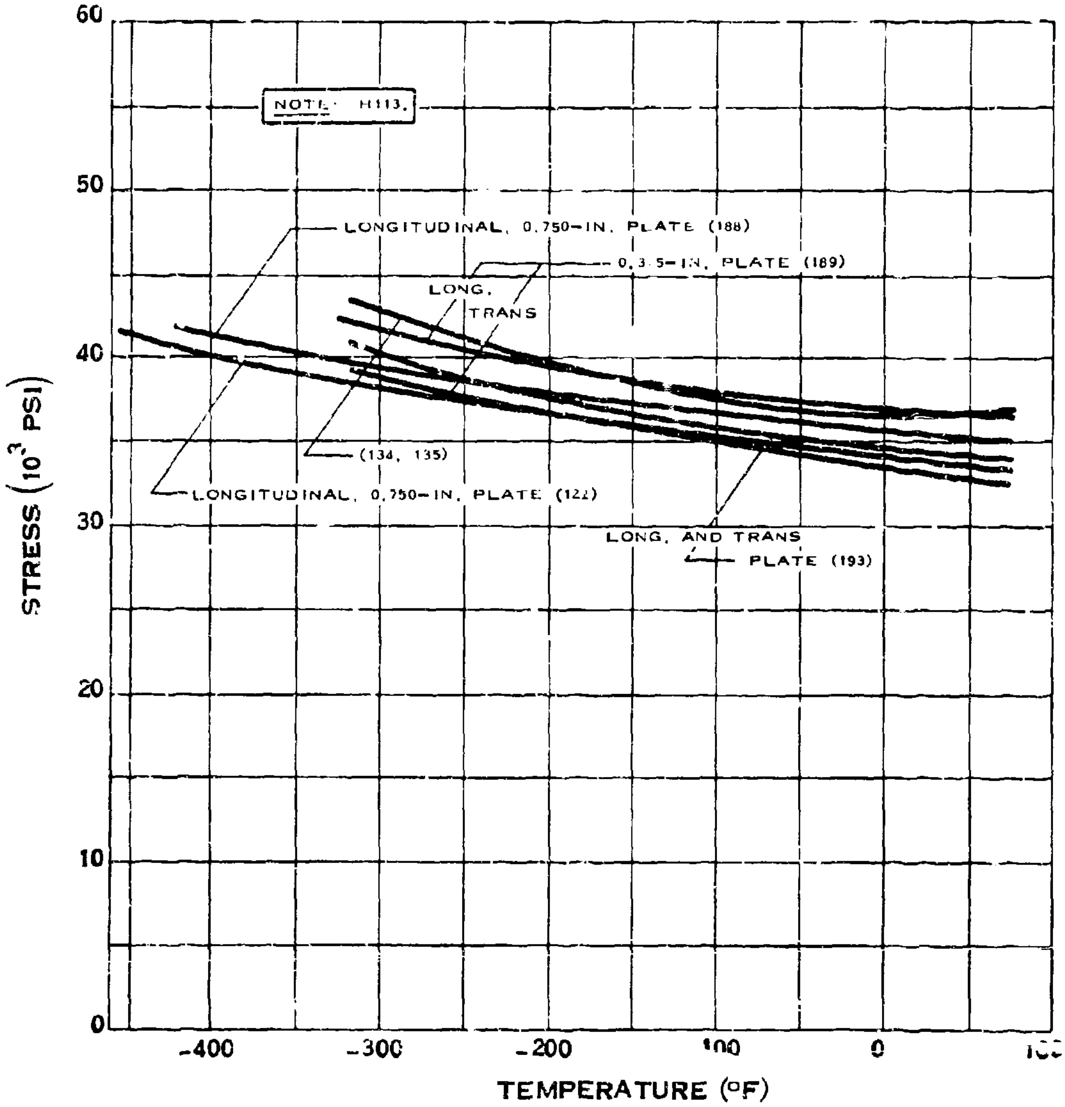
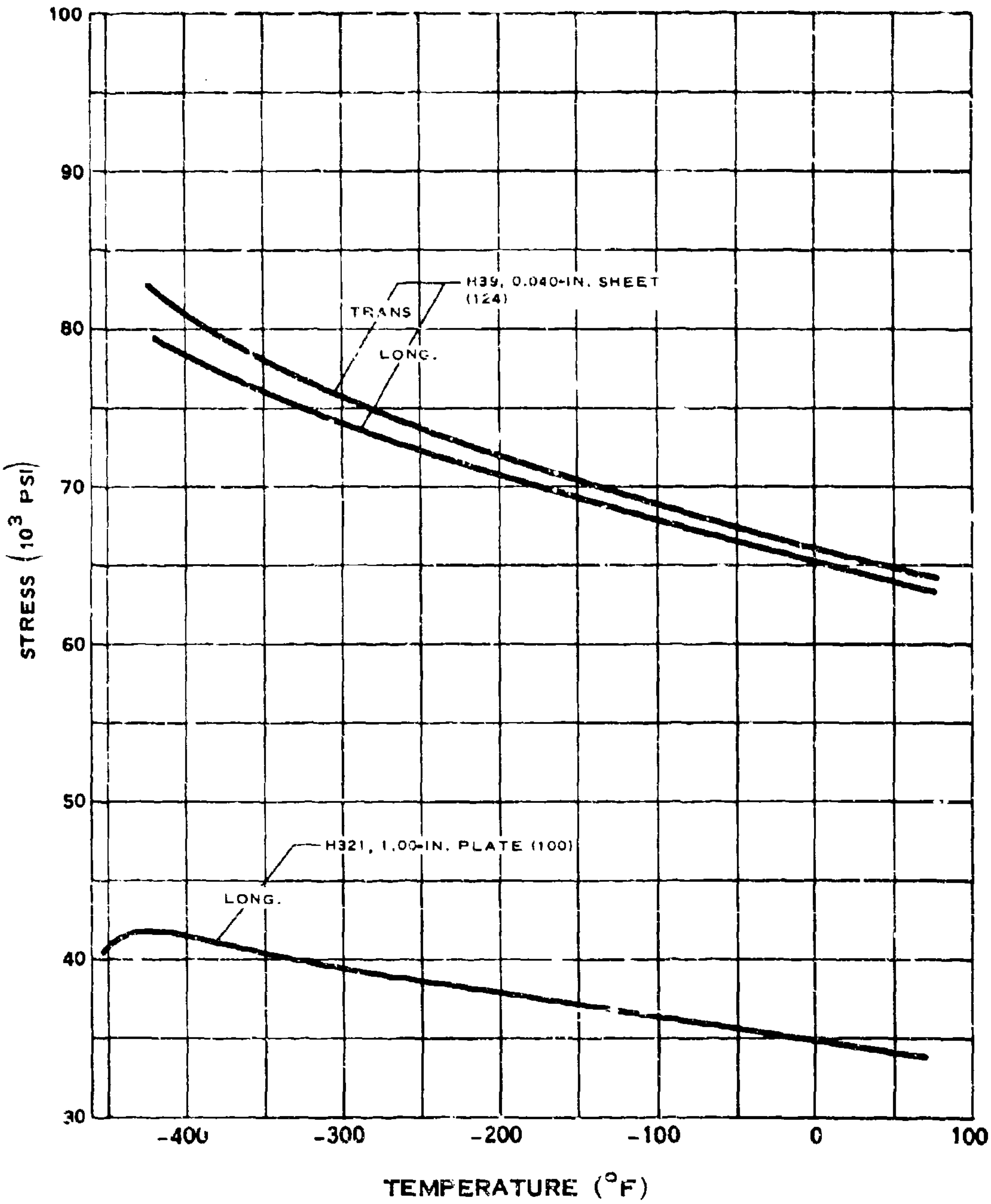
A.9.a-1



YIELD STRENGTH OF 5083 ALUMINUM

(3-66)

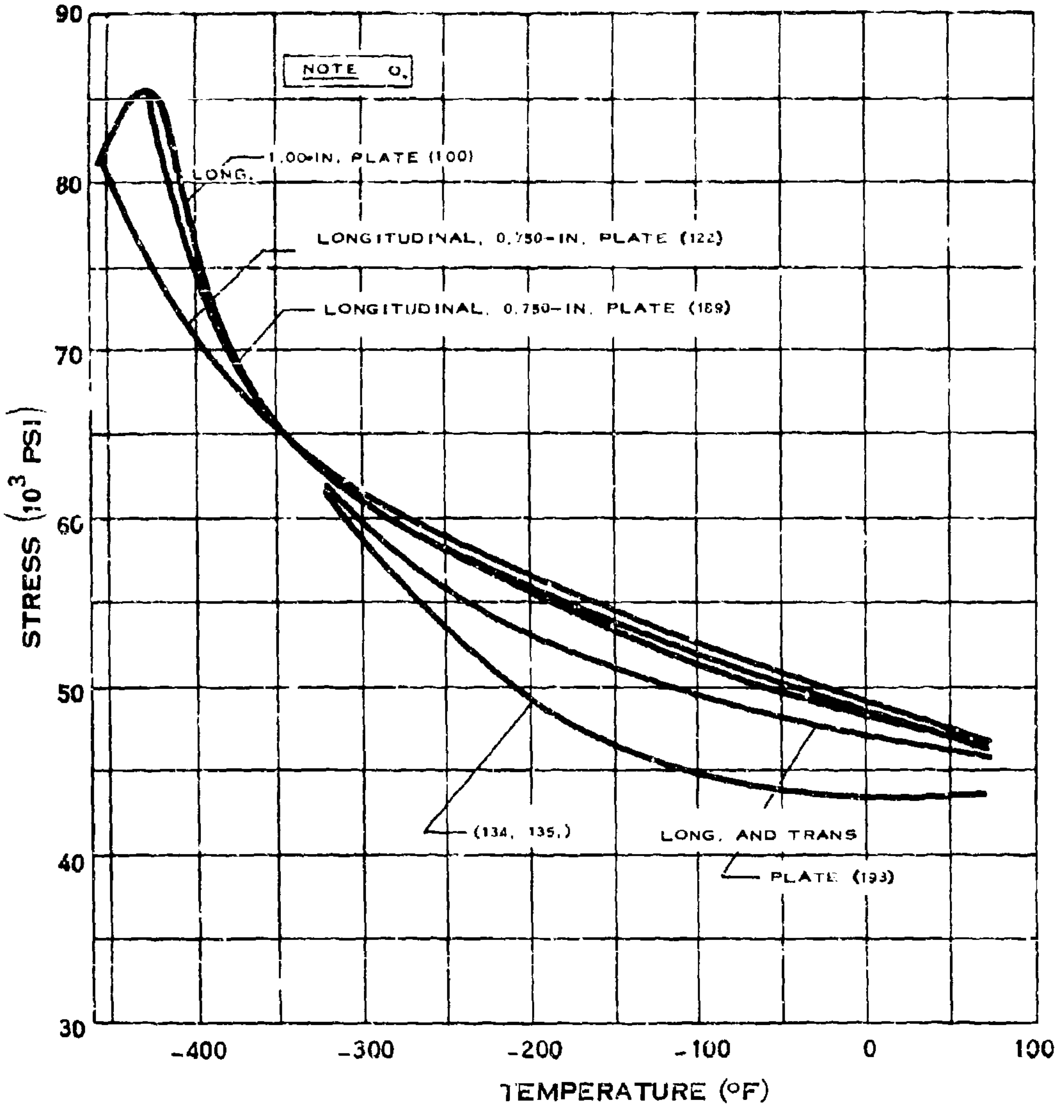
A.9.a-2



YIELD STRENGTH OF 5083 ALUMINUM

(6-68)

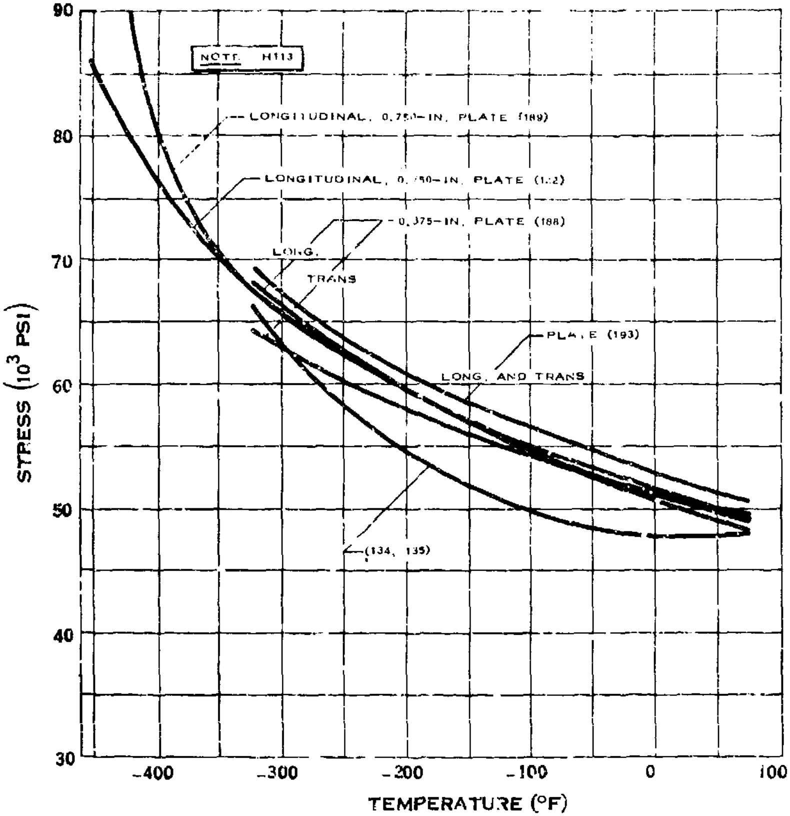
A.9.b



TENSILE STRENGTH OF 5083 ALUMINUM

(6-69)

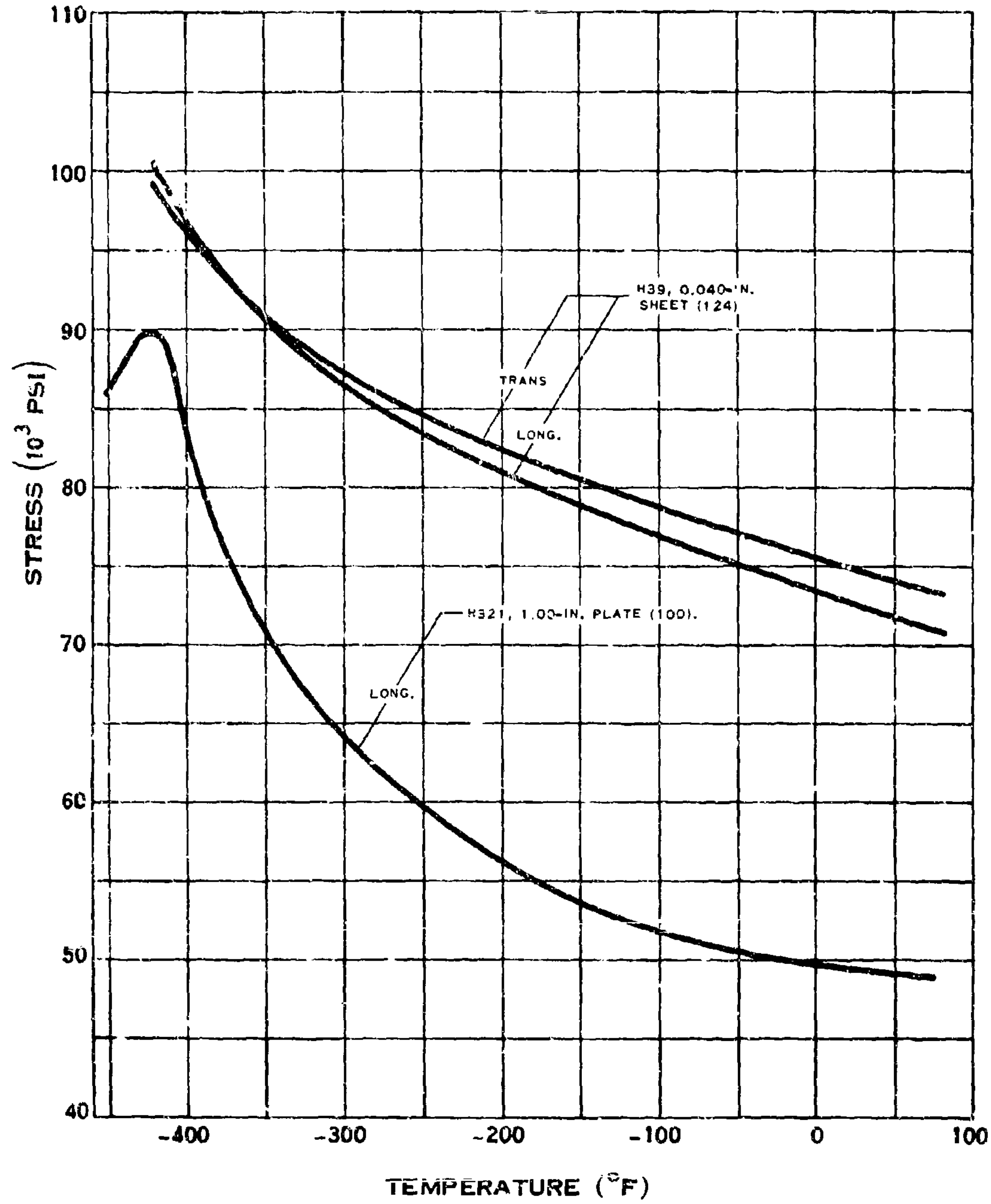
A.9.b-1



TENSILE STRENGTH OF 5083 ALUMINUM

(3-66)

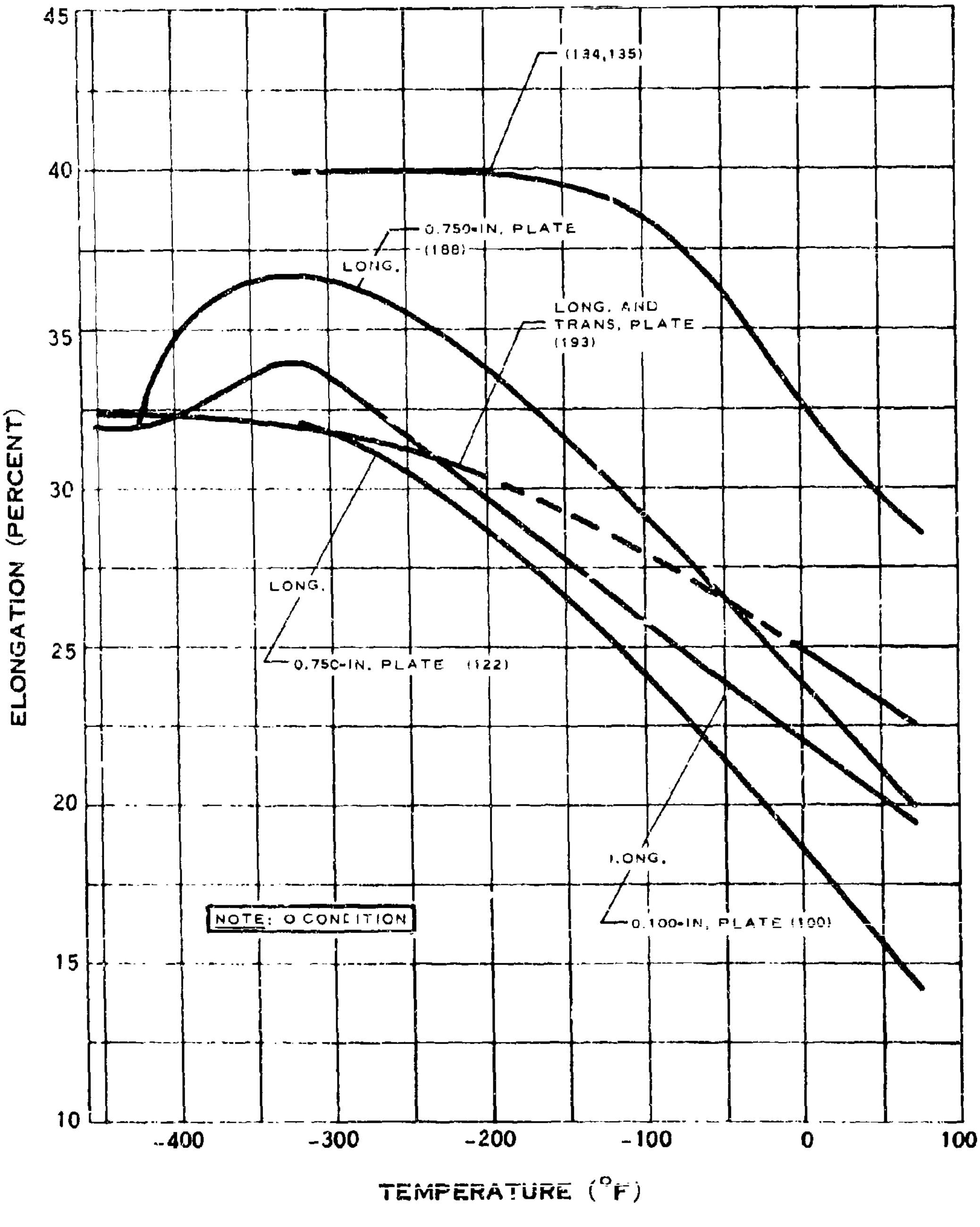
A.9.b-2



TENSILE STRENGTH OF 5083 ALUMINUM

(6-68)

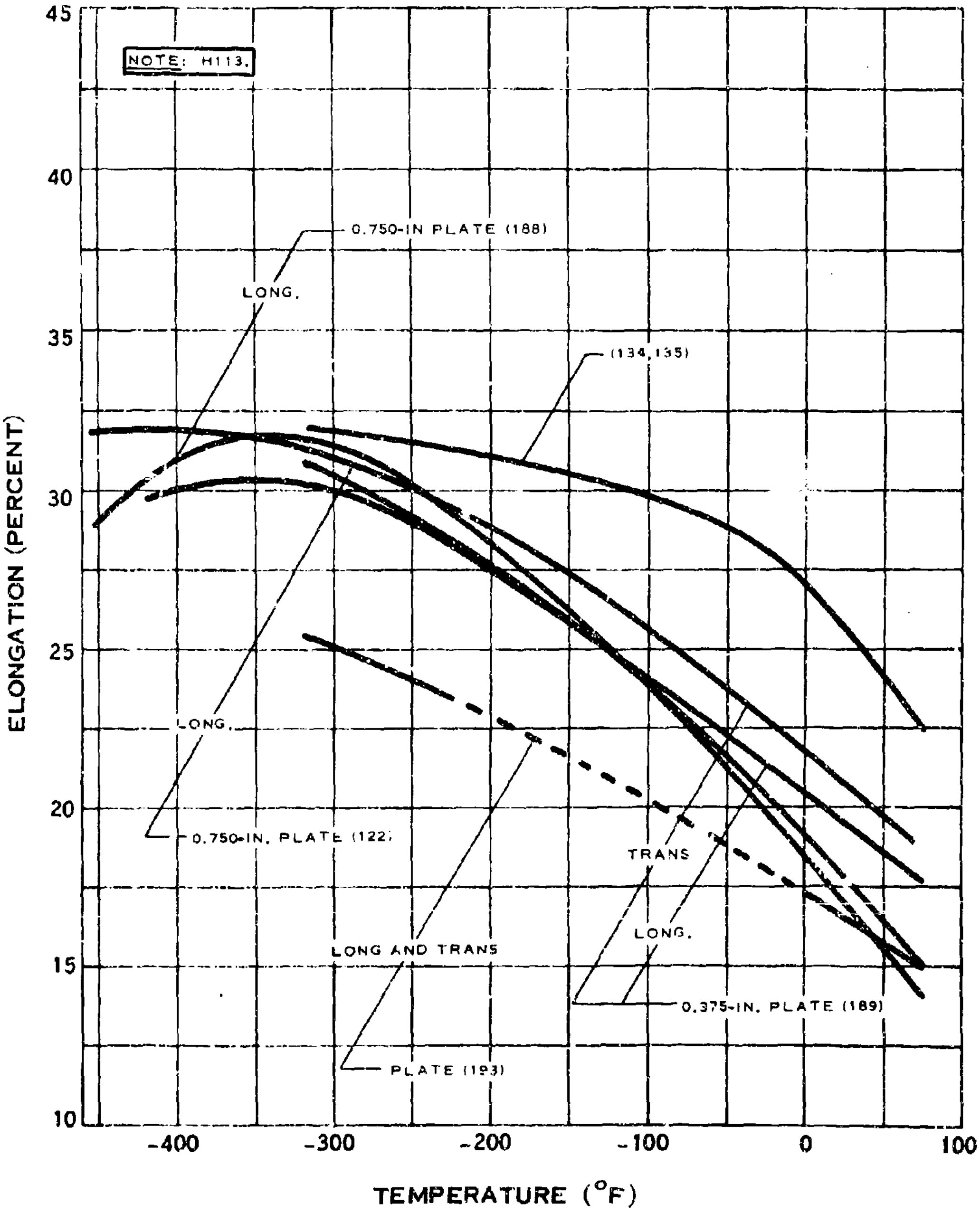
A.9.c



ELONGATION OF 5083 ALUMINUM

(6-68)

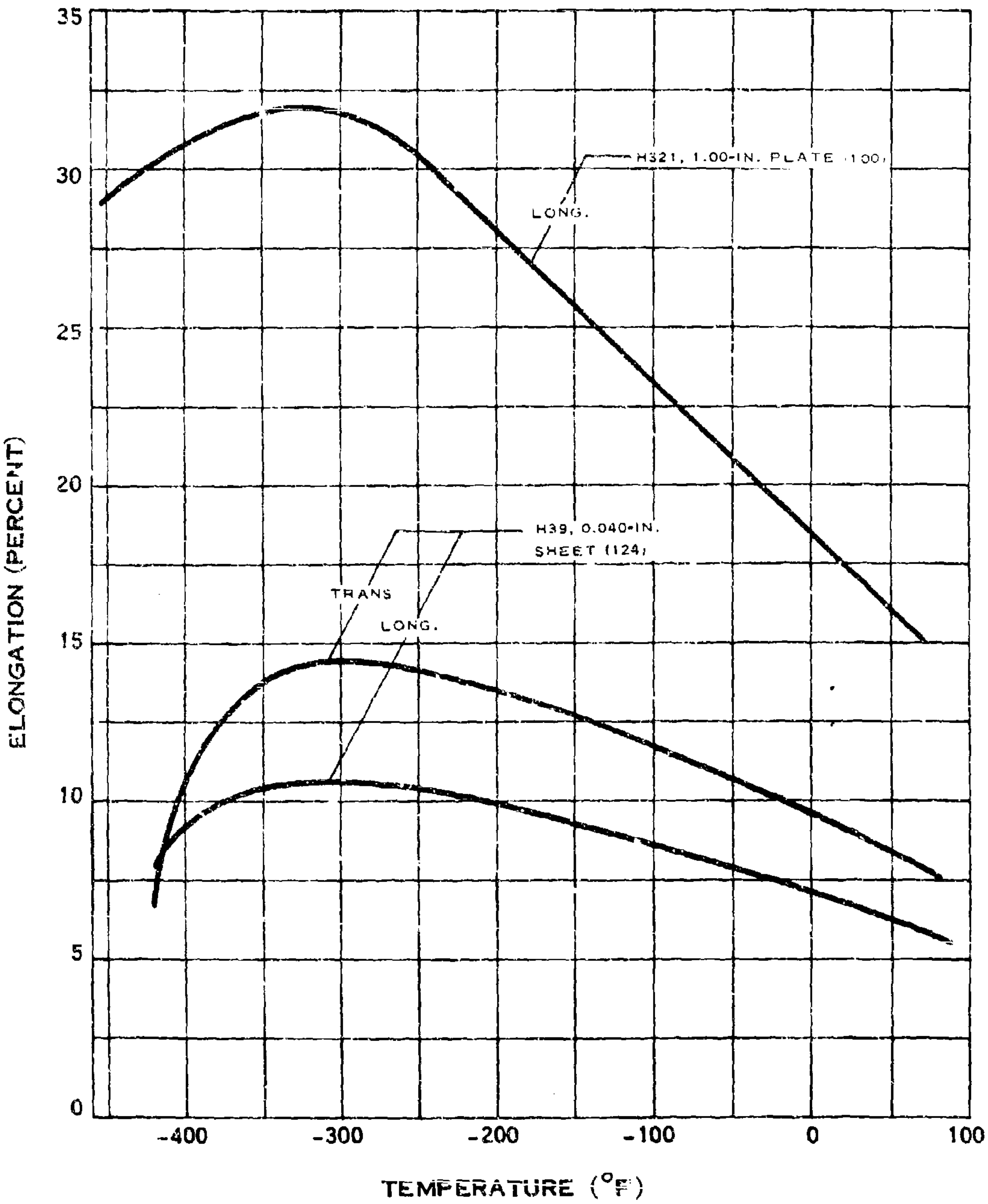
A.9.c-1



ELONGATION OF 5083 ALUMINUM

(6-68)

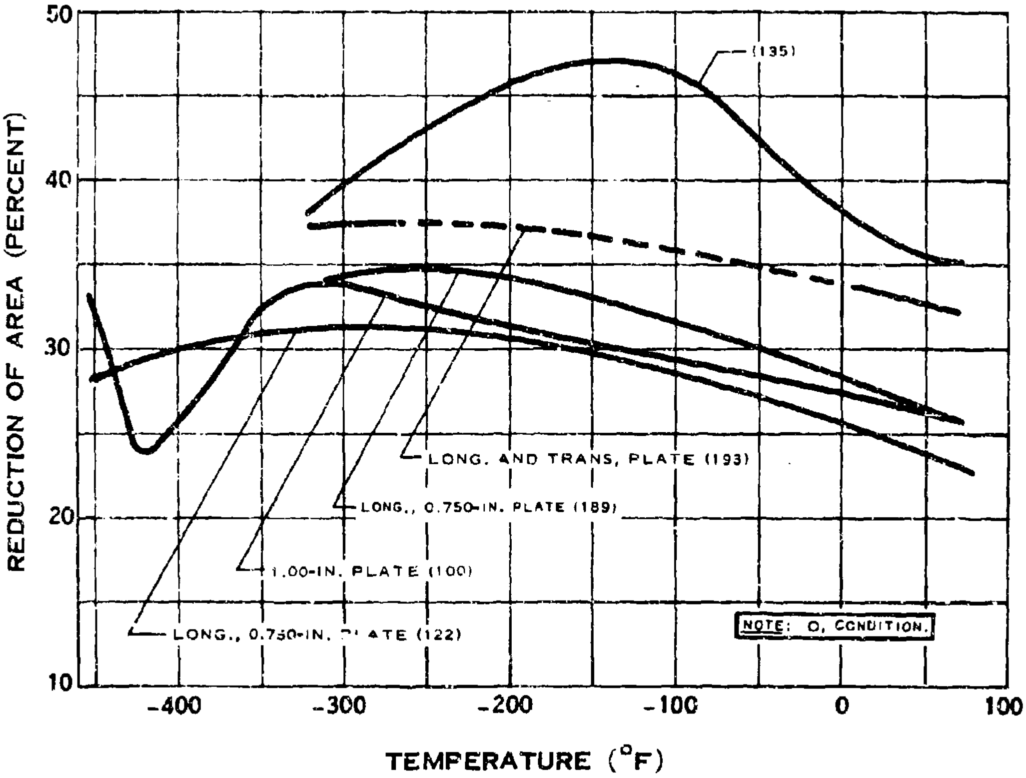
A.9.c-2



ELONGATION OF 5083 ALUMINUM

(6-68)

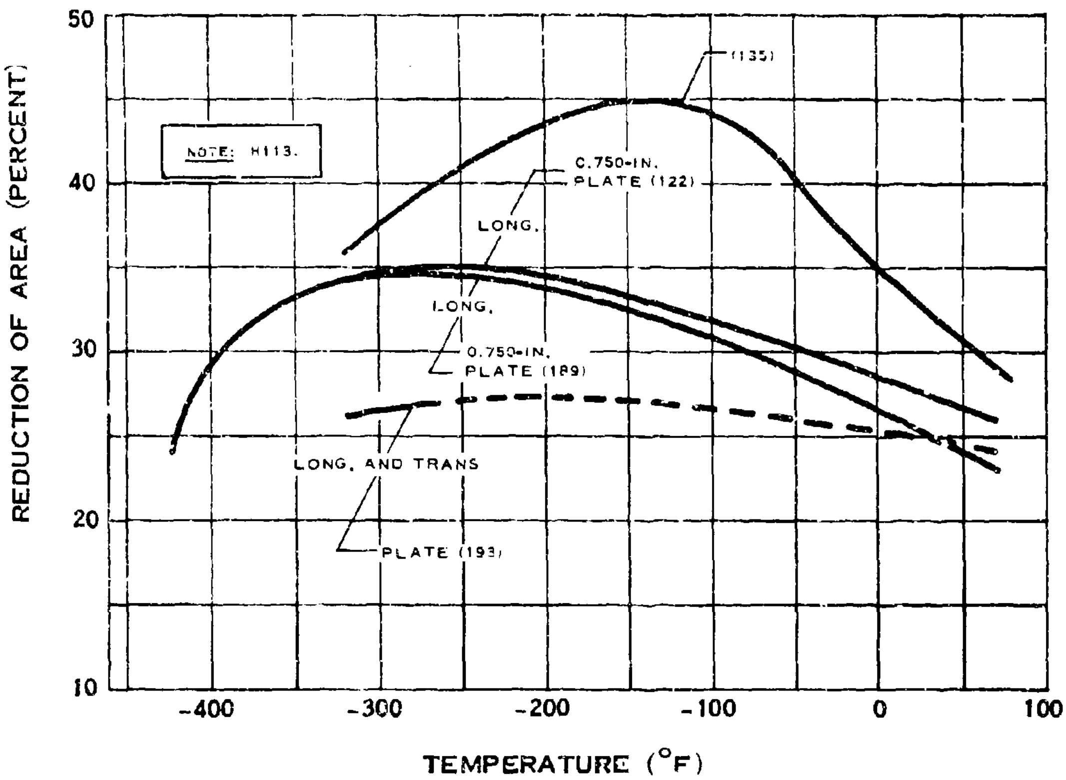
A.9.d



REDUCTION OF AREA OF 5083 ALUMINUM

(6-68)

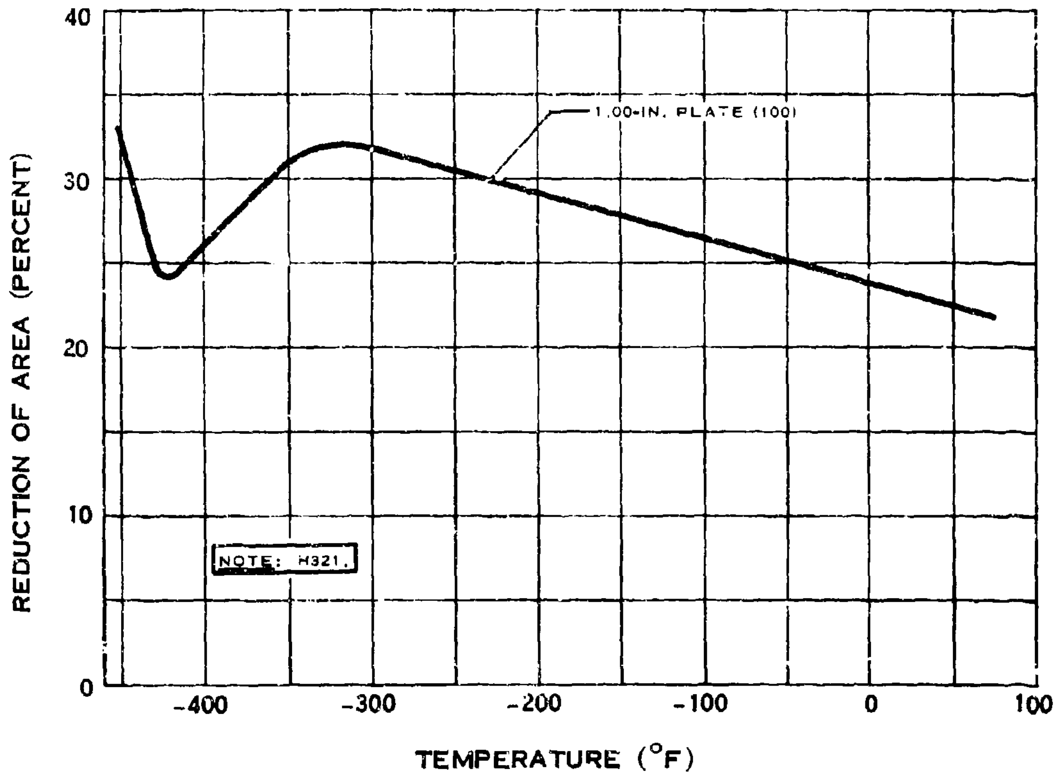
A.9.d-1



REDUCTION OF AREA OF 5083 ALUMINUM

(6-68)

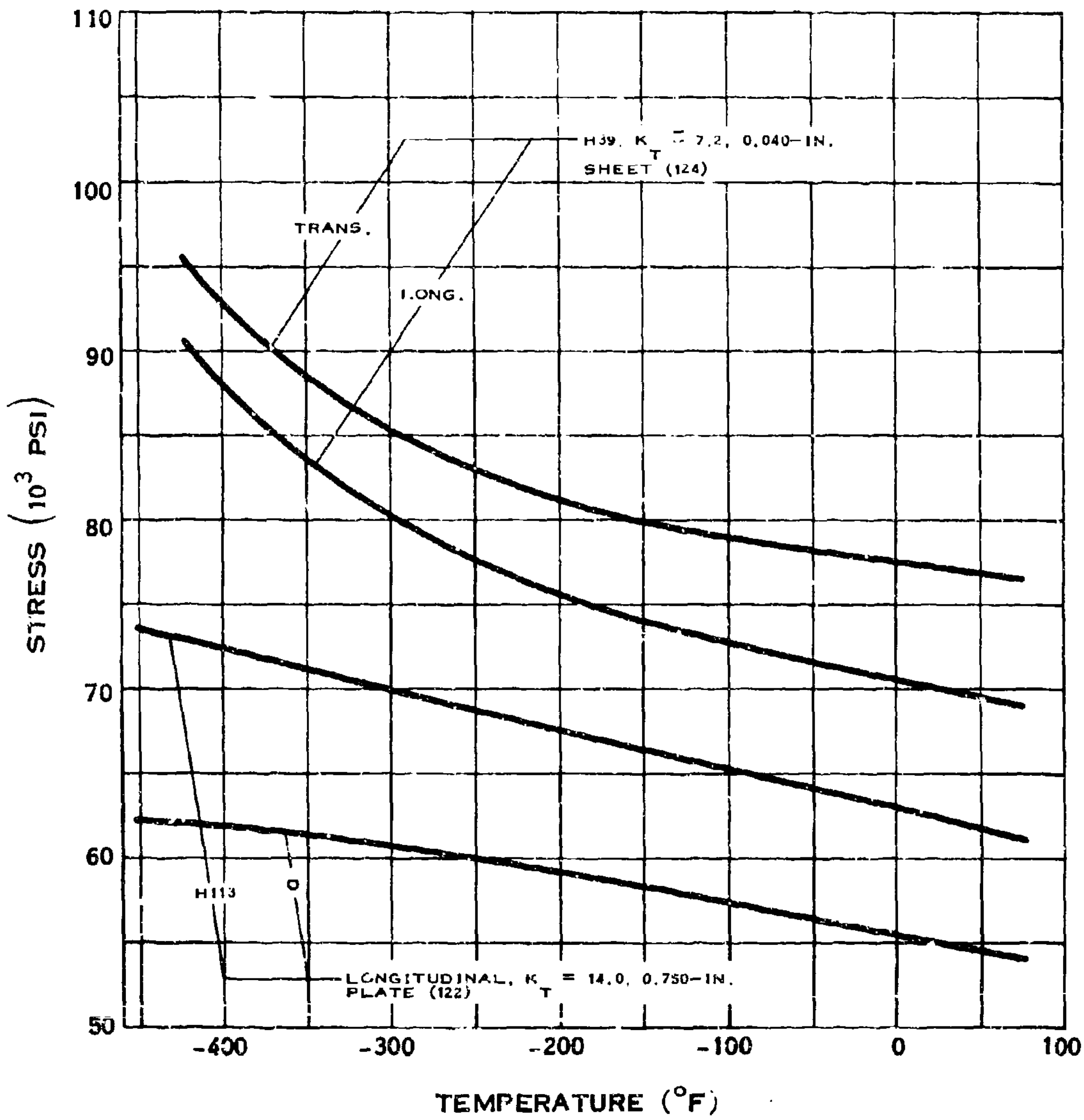
A.9.d-2



REDUCTION OF AREA OF 5083 ALUMINUM

(6-68)

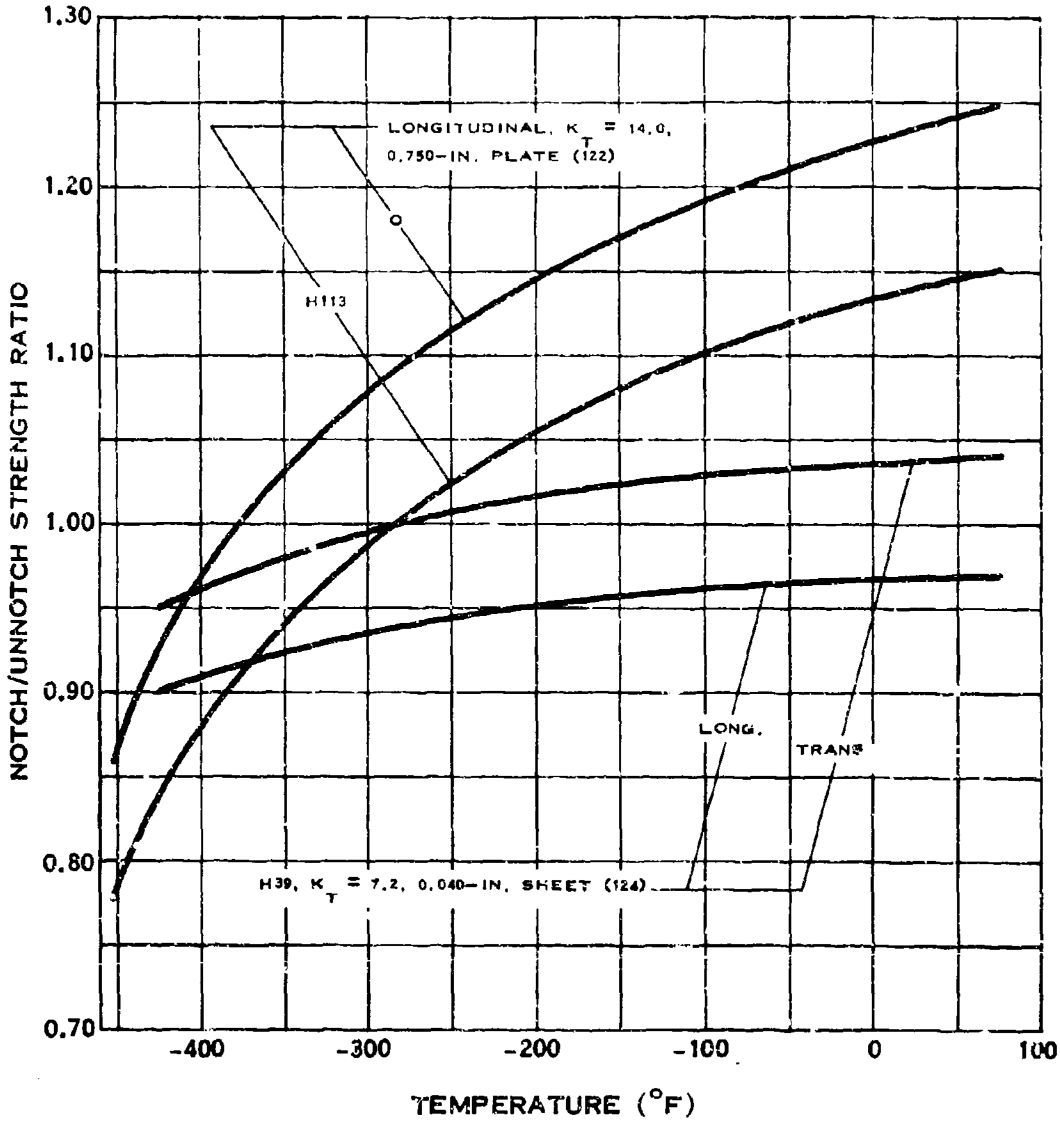
A.9.e



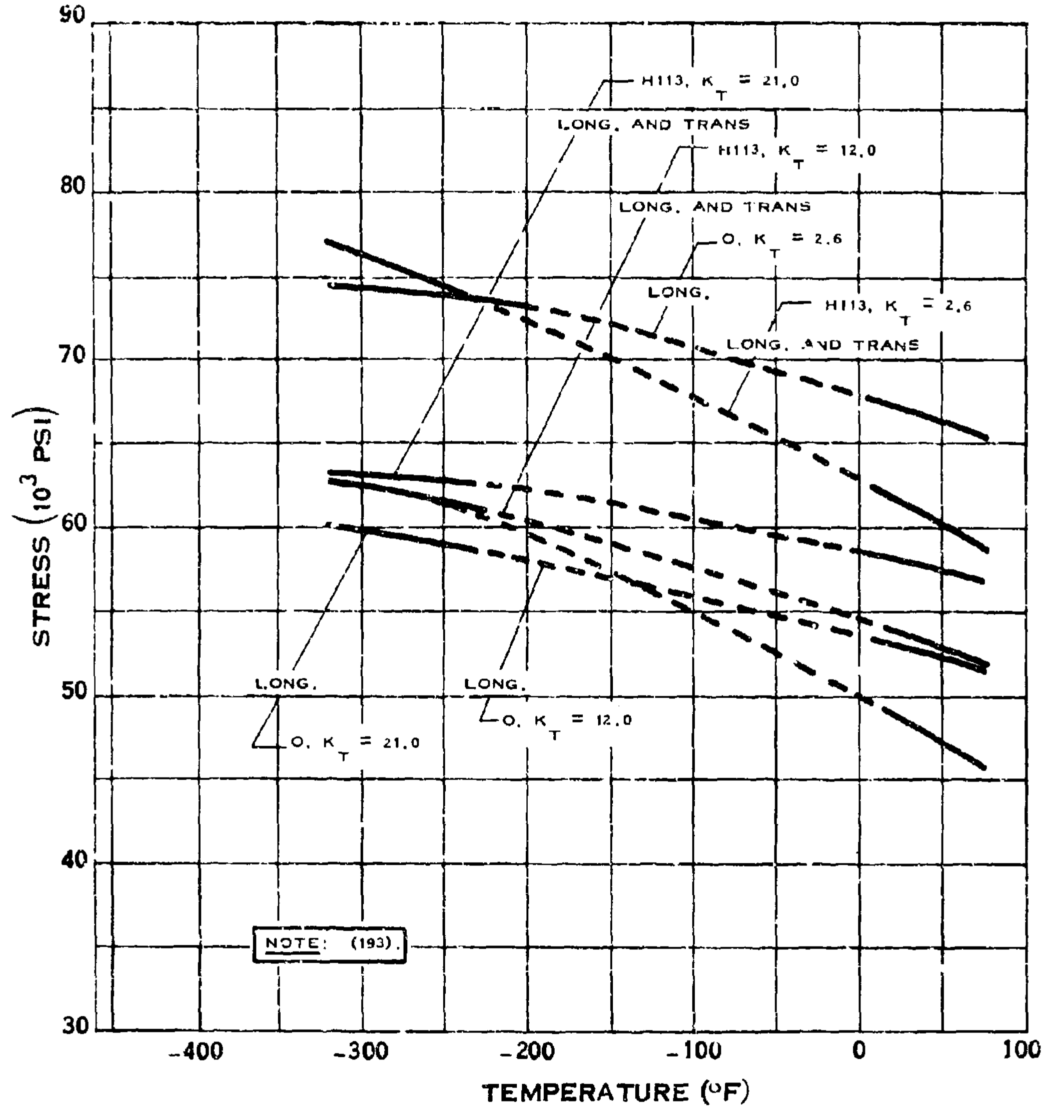
NOTCH TENSILE STRENGTH OF 5083 ALUMINUM

(6-68)

A.9.e-1

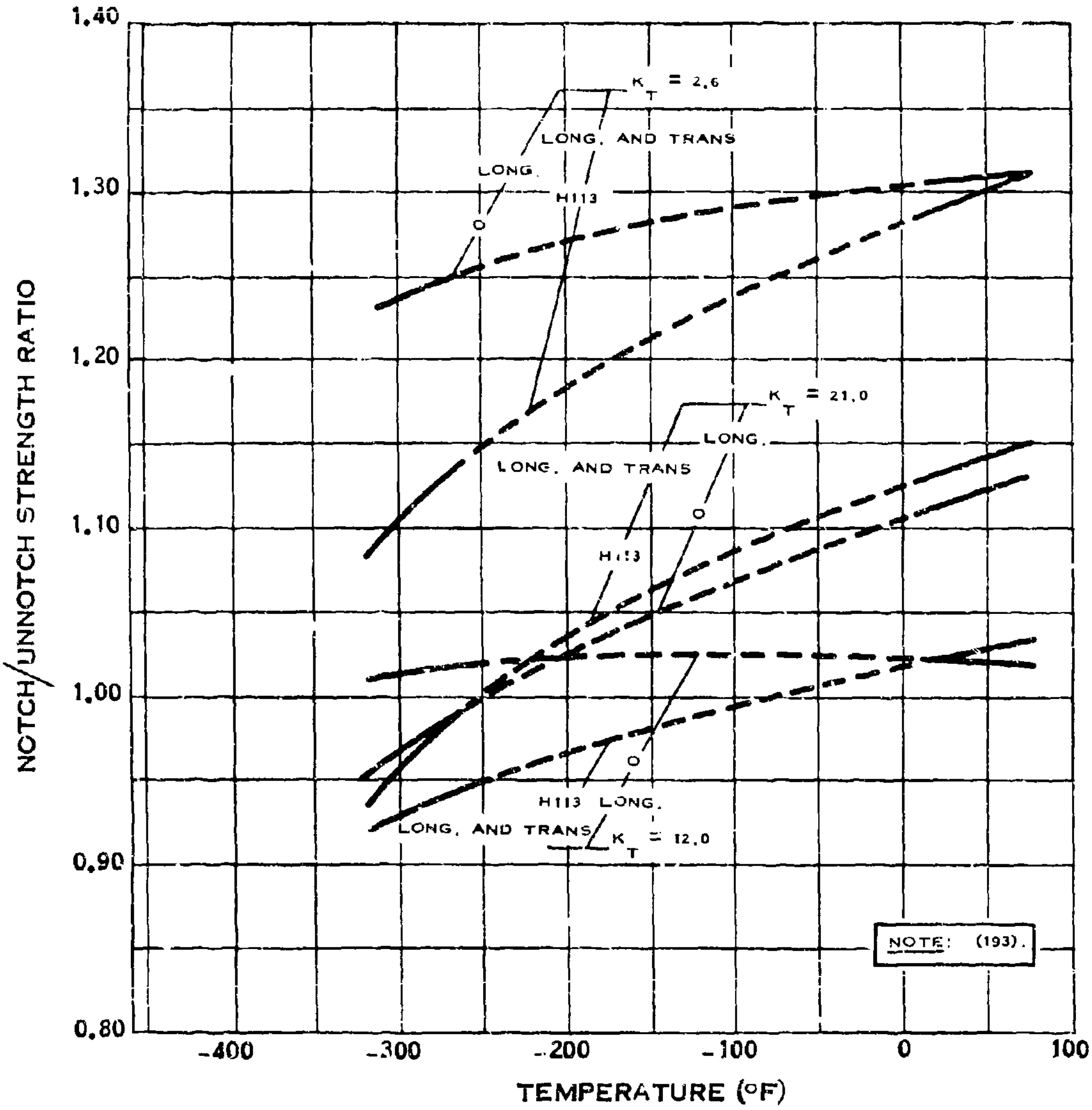


NOTCH STRENGTH RATIO OF 5083 ALUMINUM



NOTCH TENSILE STRENGTH OF 5083 ALUMINUM

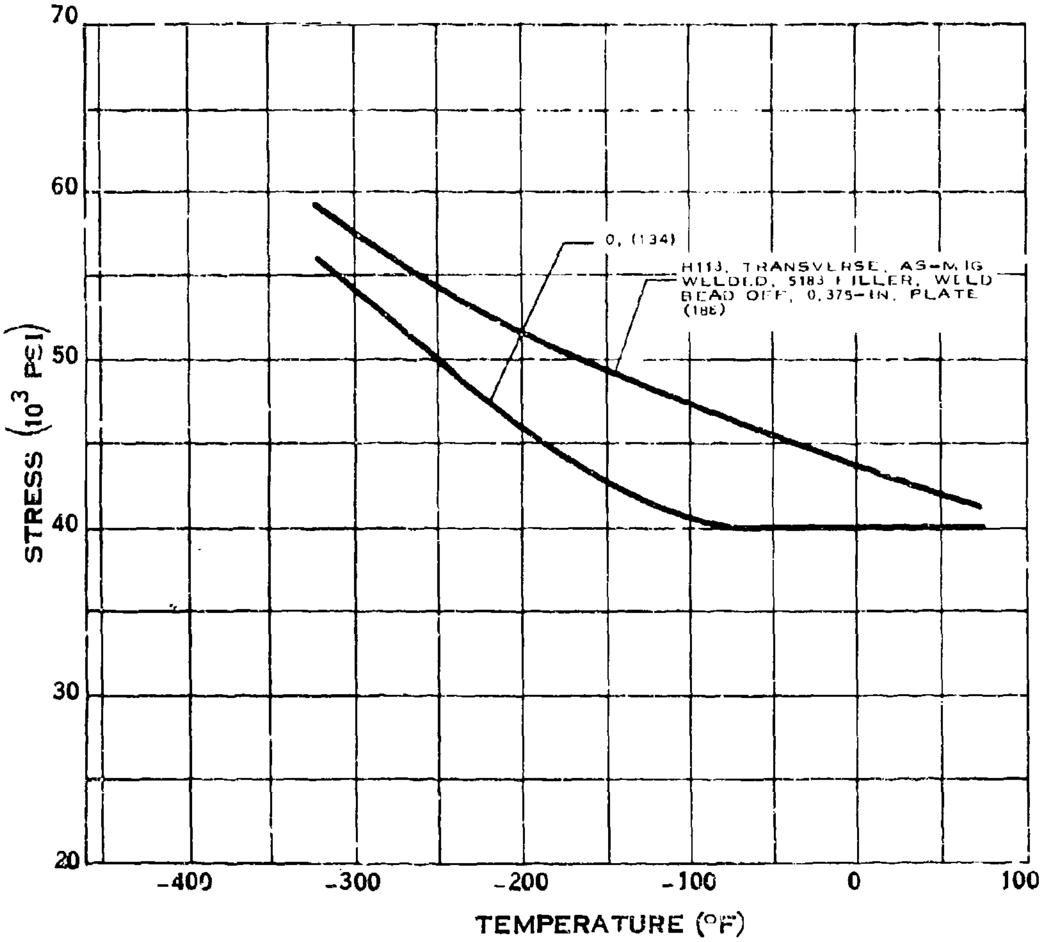
(3-66)



NOTCH STRENGTH RATIO OF 5083 ALUMINUM

(3–66)

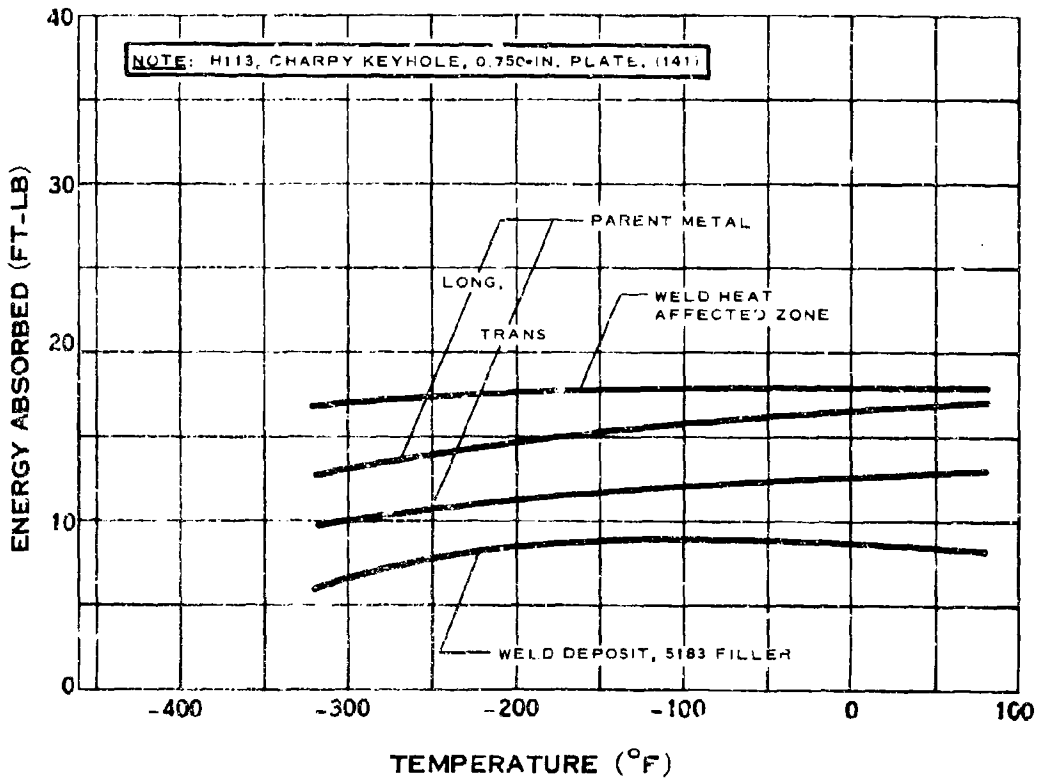
A.9.g



WELD TENSILE STRENGTH OF 5083 ALUMINUM

(3-66)

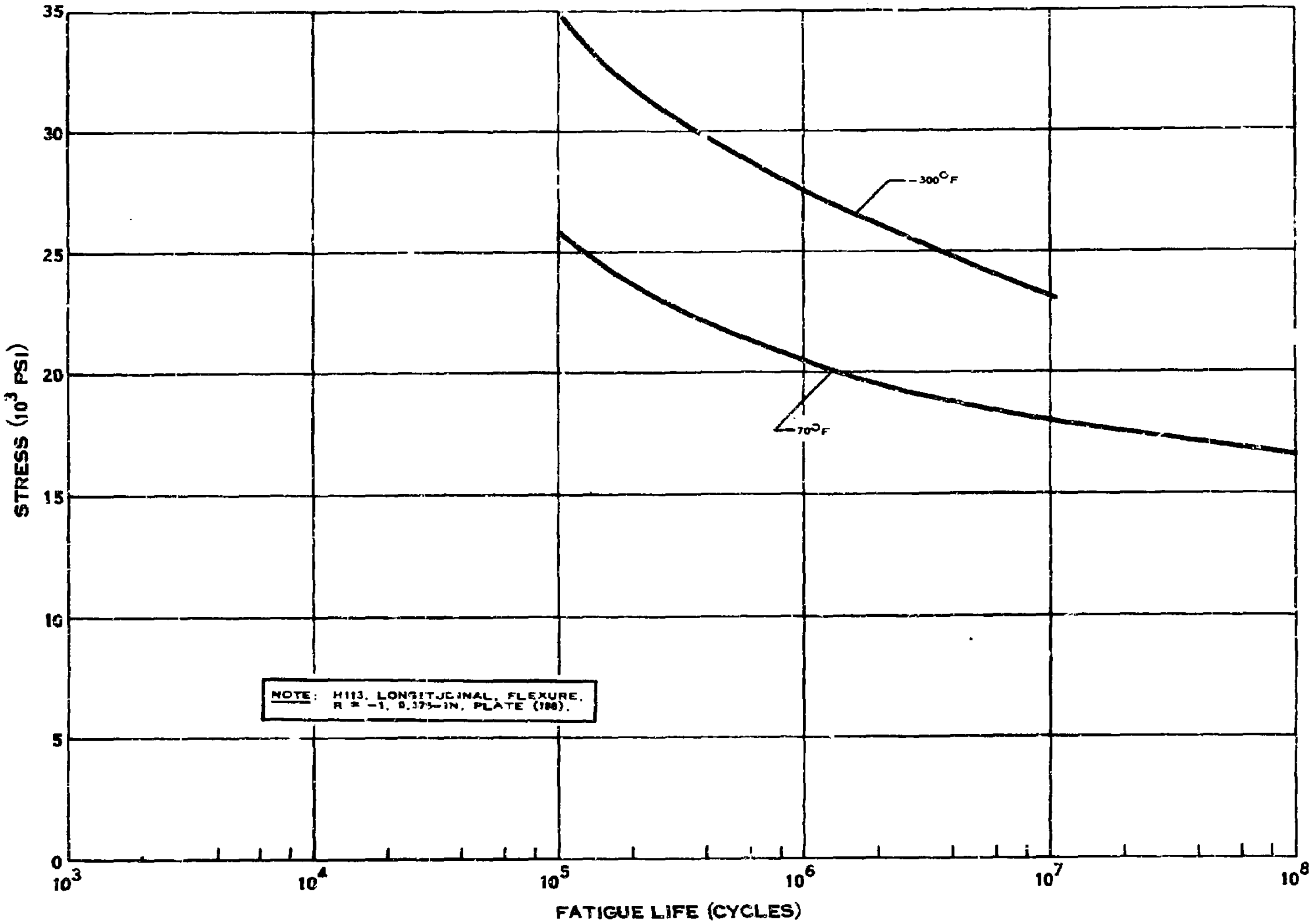
A.9.j



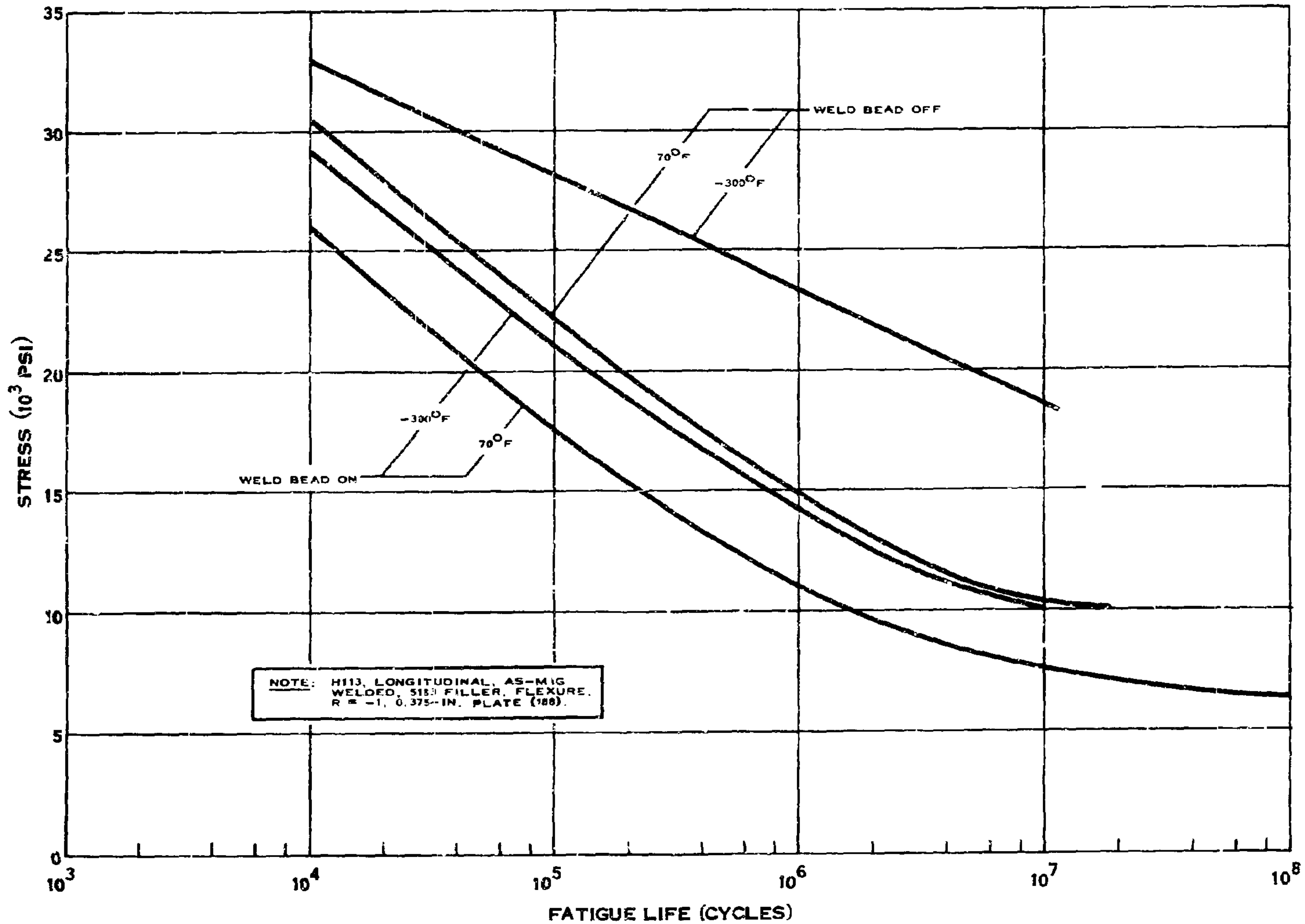
IMPACT STRENGTH OF 5083 ALUMINUM

(6 68)

A.9.o



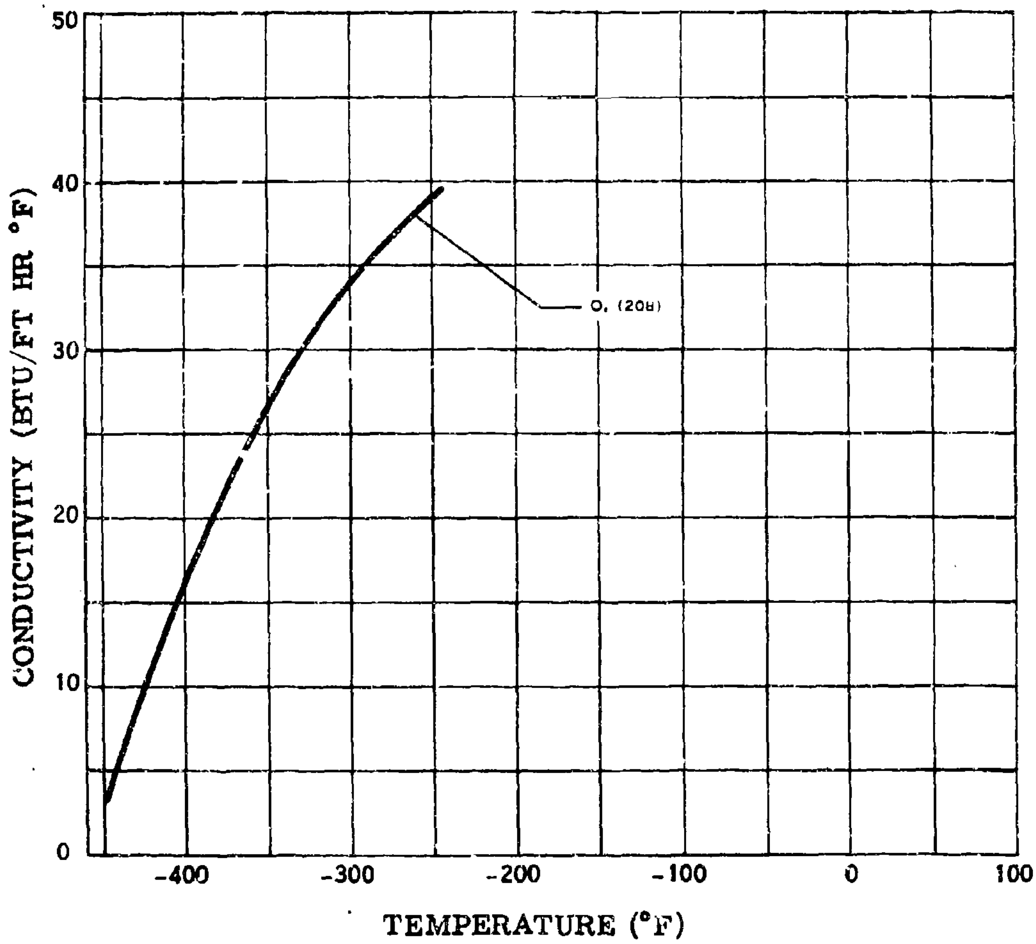
FATIGUE STRENGTH OF 5083 ALUMINUM



WELD FATIGUE STRENGTH OF 5083 ALUMINUM

(3-66)

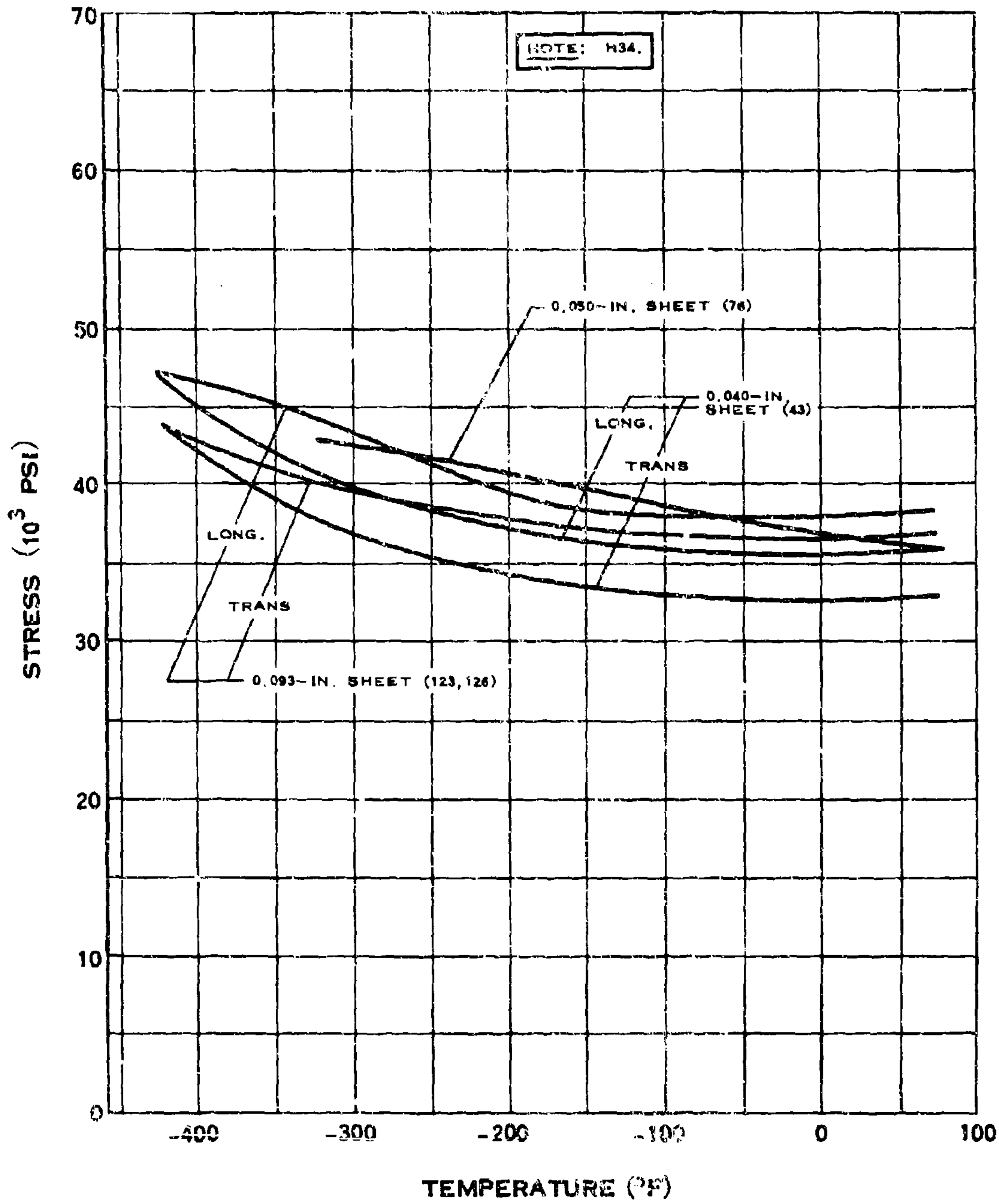
A.9.v



THERMAL CONDUCTIVITY OF 5083 ALUMINUM

(6-68)

A.10.a



YIELD STRENGTH OF 5083 ALUMINUM

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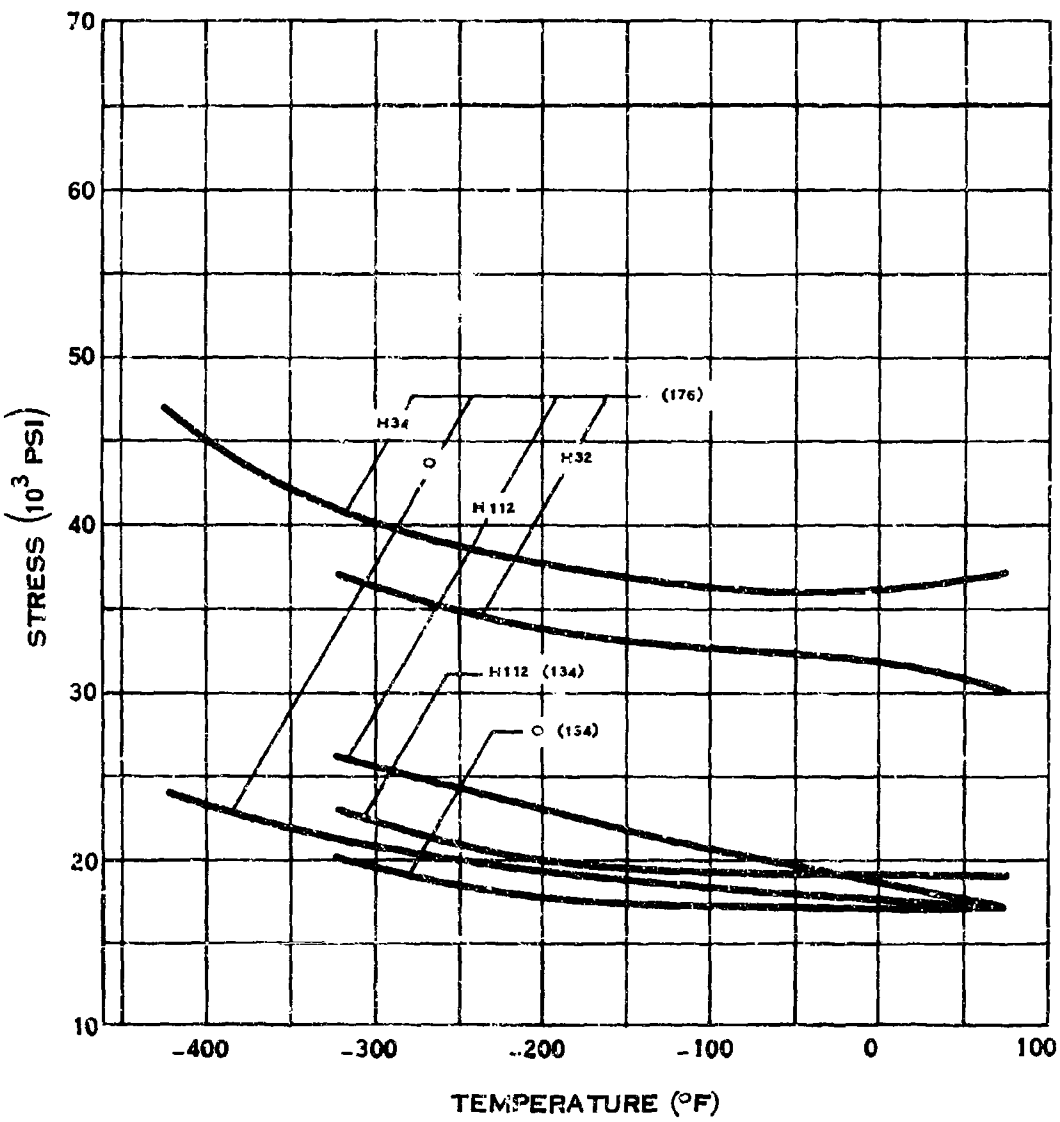
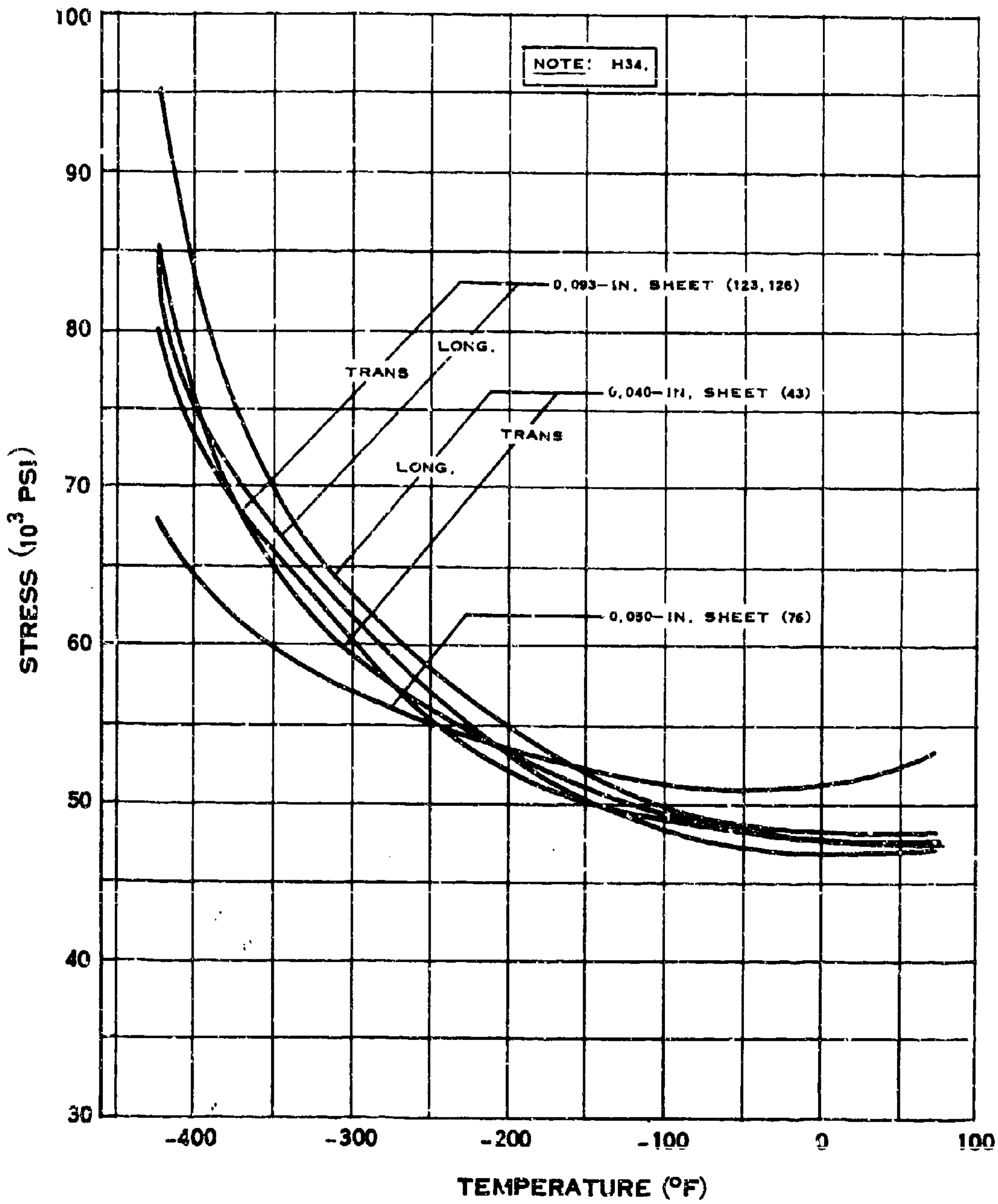
A.10.a-1



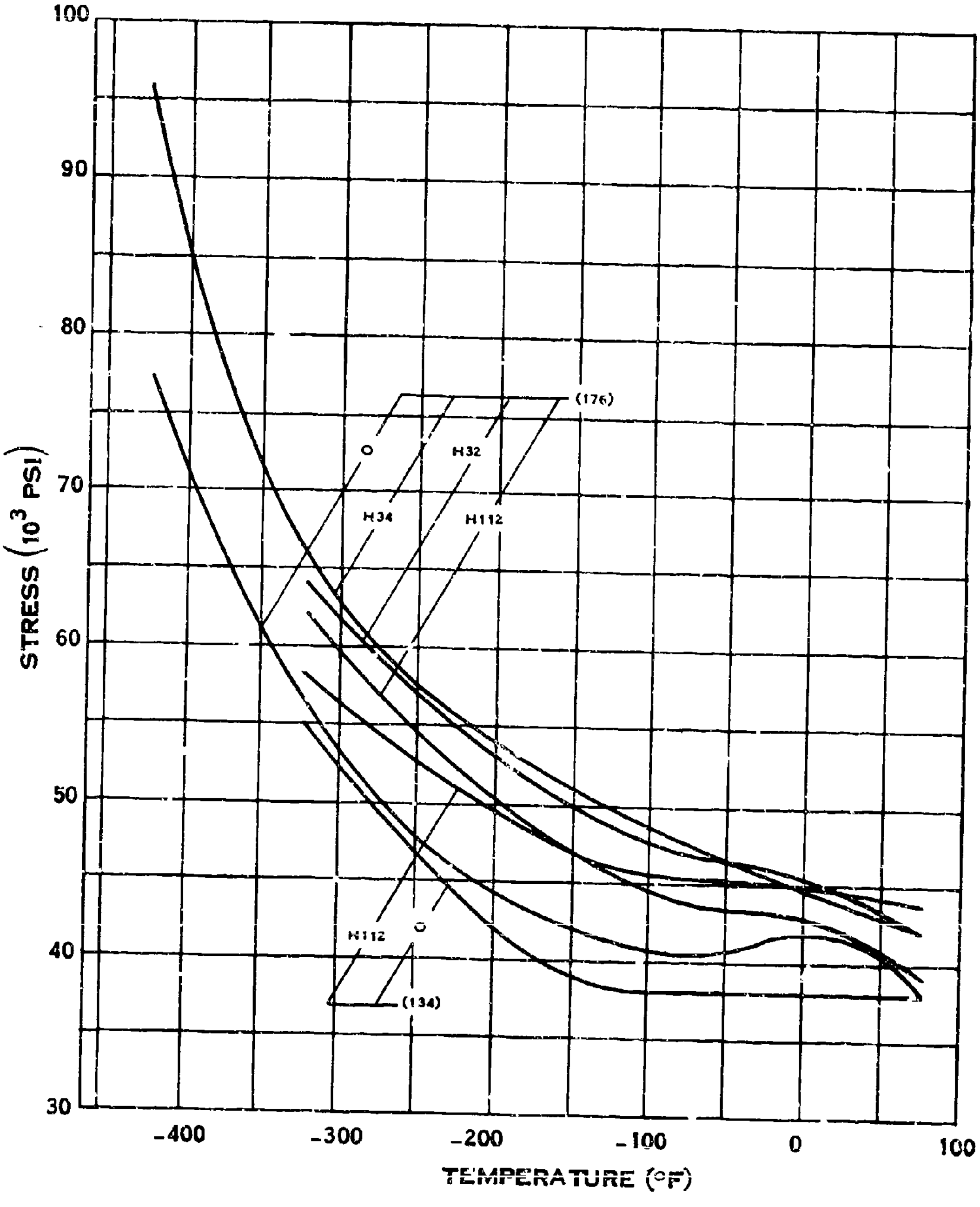
YIELD STRENGTH OF 5086 ALUMINUM

A.10.b



TENSILE STRENGTH OF 5086 ALUMINUM

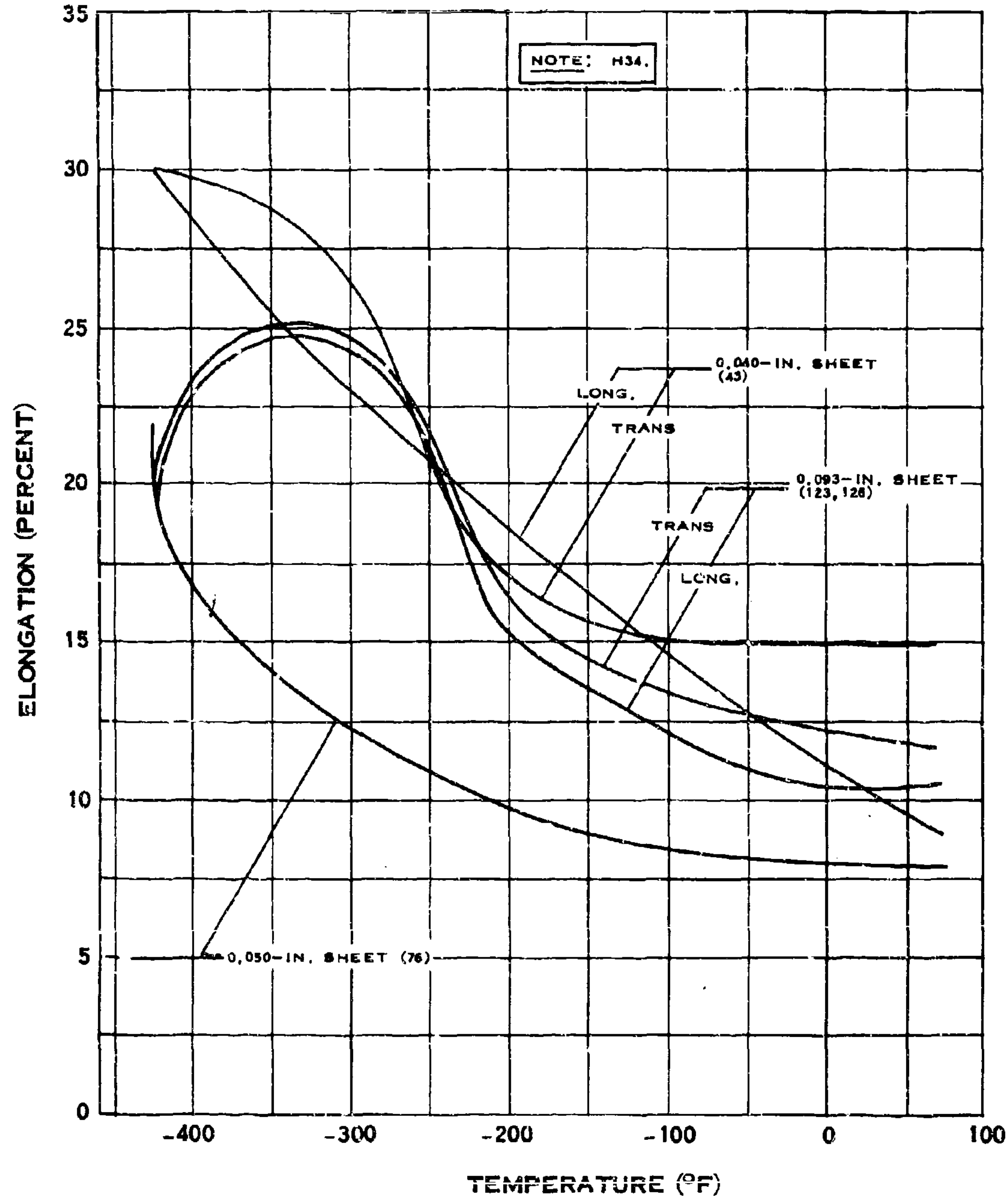
A.10.b-1



TENSILE STRENGTH OF 5086 ALUMINUM

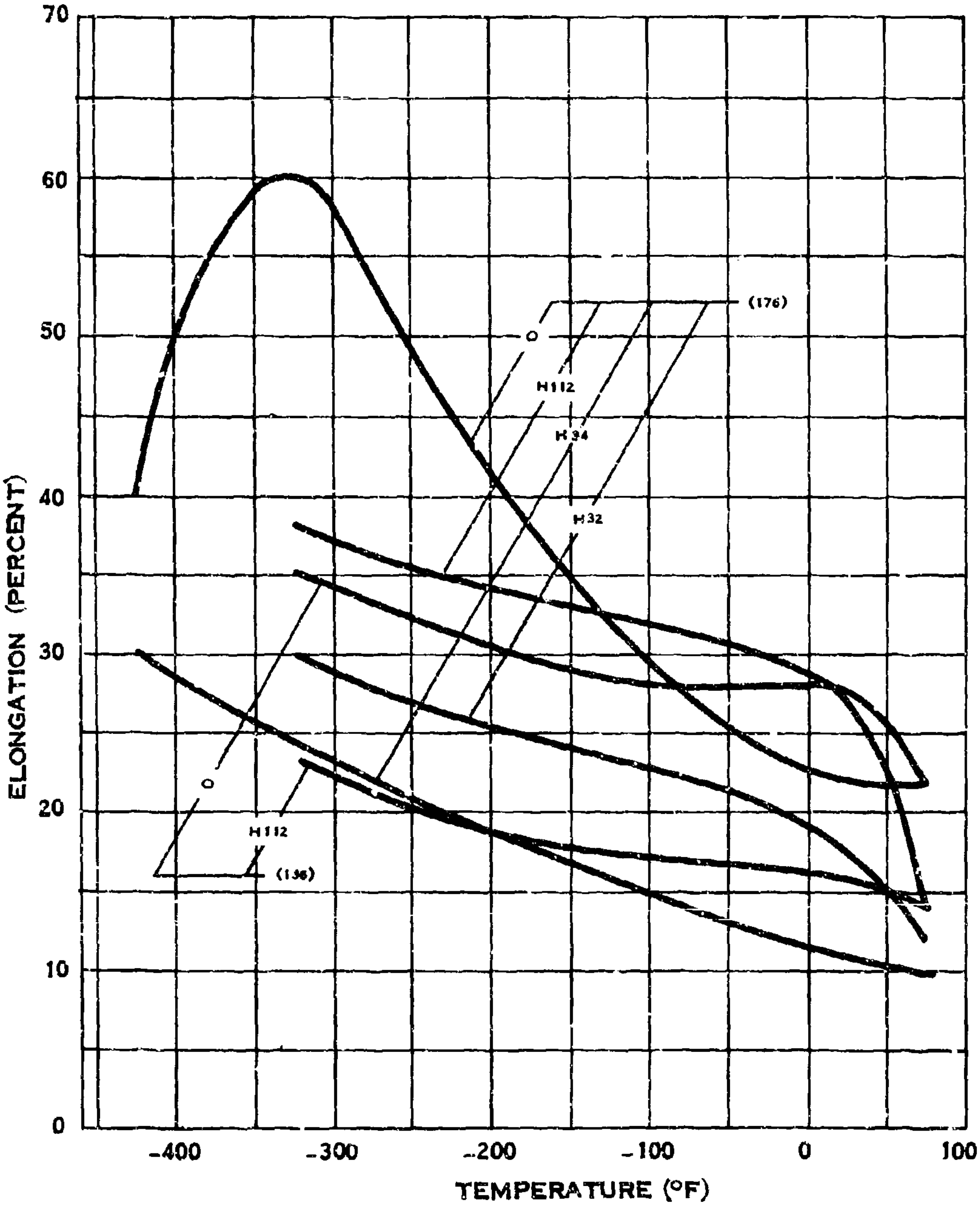
(3—C6)

A.10.c



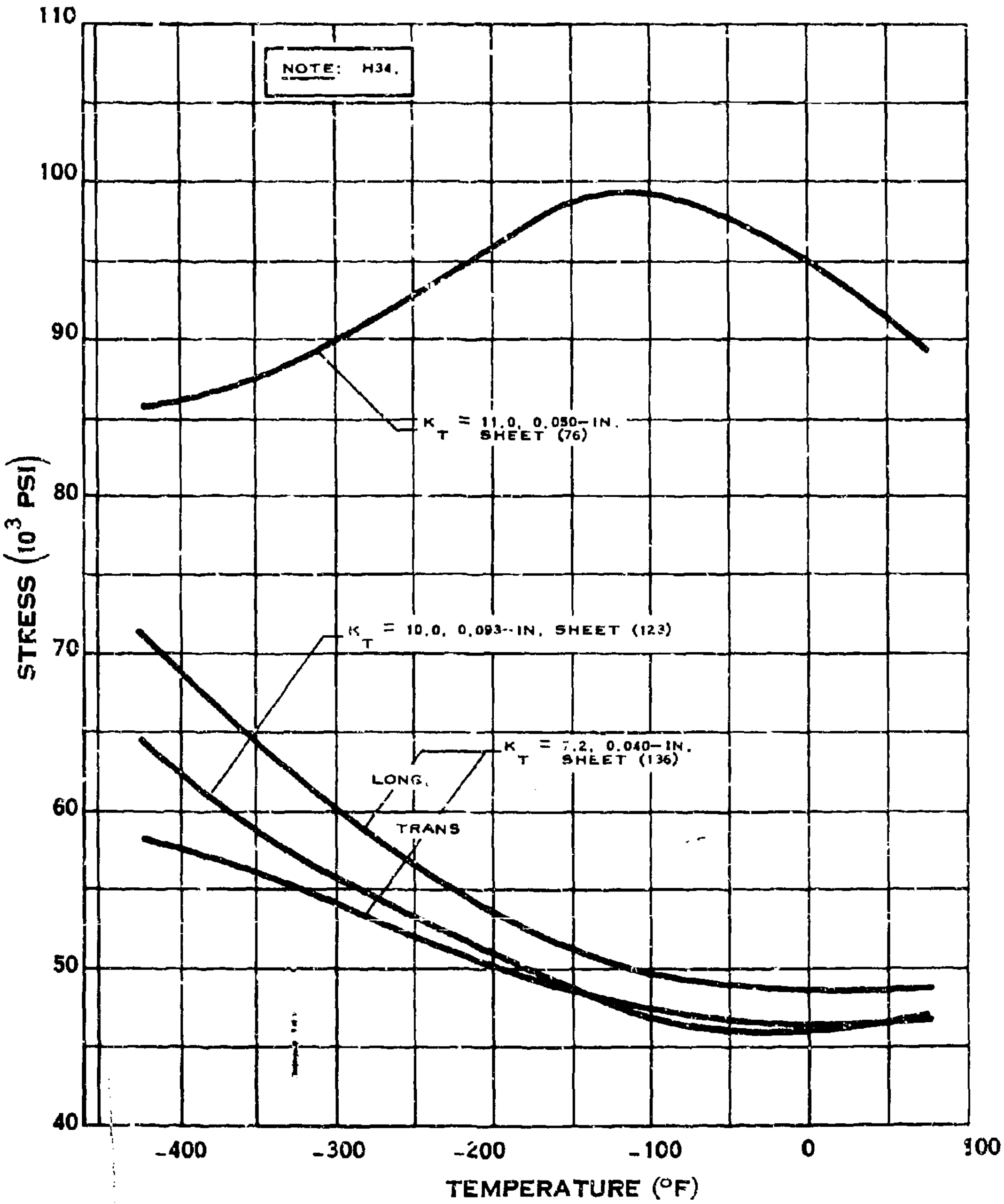
ELONGATION OF 5086 ALUMINUM

A.10.c-1



ELONGATION OF 5086 ALUMINUM

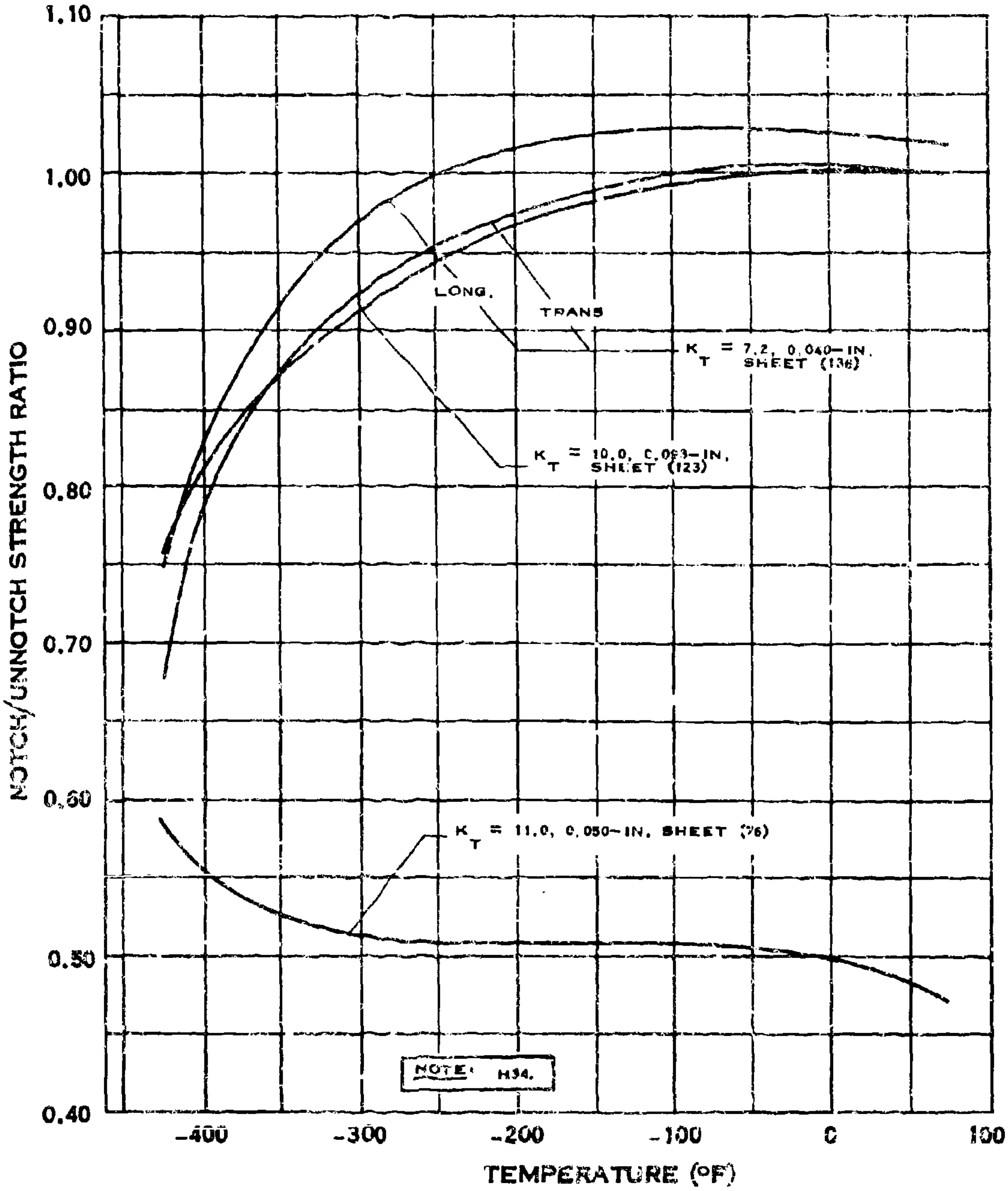
A.10.e



NOTCH TENSILE STRENGTH OF 5086 ALUMINUM

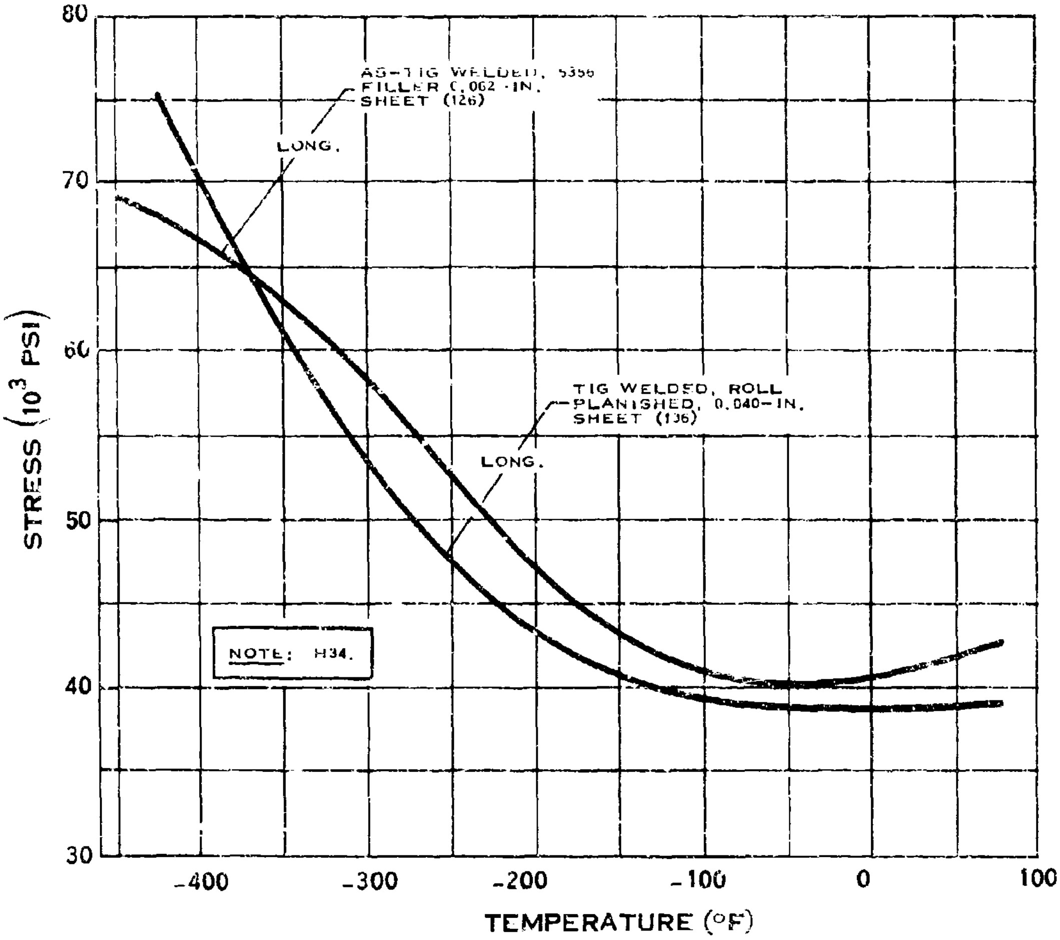
(3--66)

A.10.e-1



NOTCH STRENGTH RATIO OF 5086 ALUMINUM

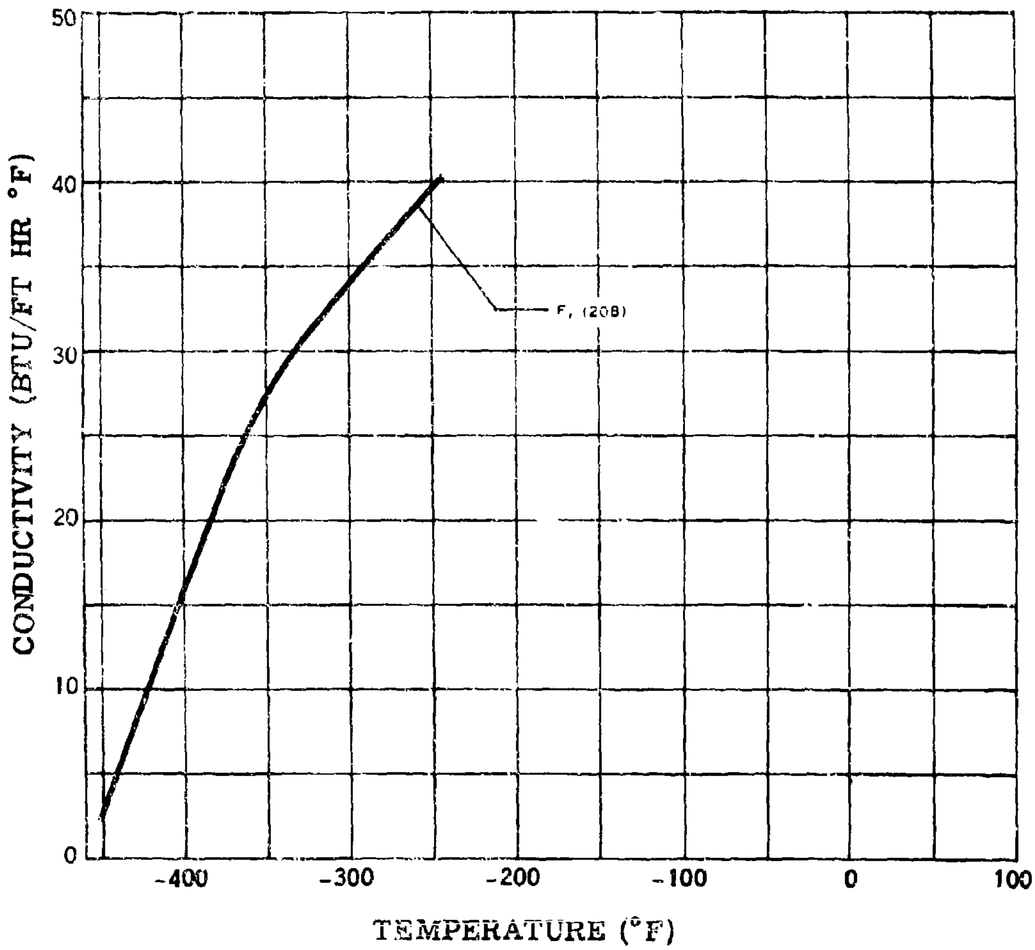
A.10.g



WELD TENSILE STRENGTH OF 5086 ALUMINUM

(3-66)

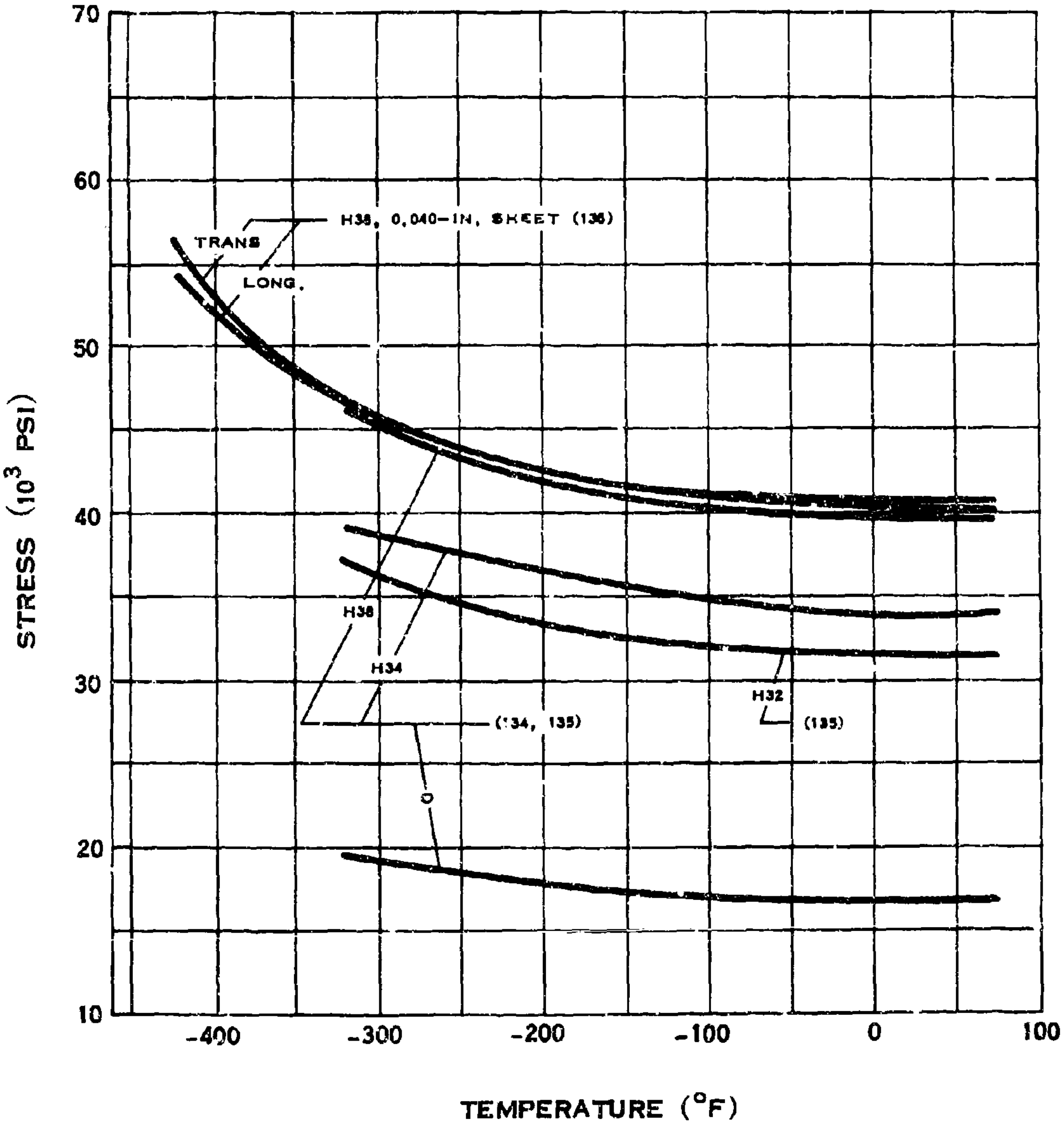
A.10.v



THERMAL CONDUCTIVITY OF 5083 ALUMINUM

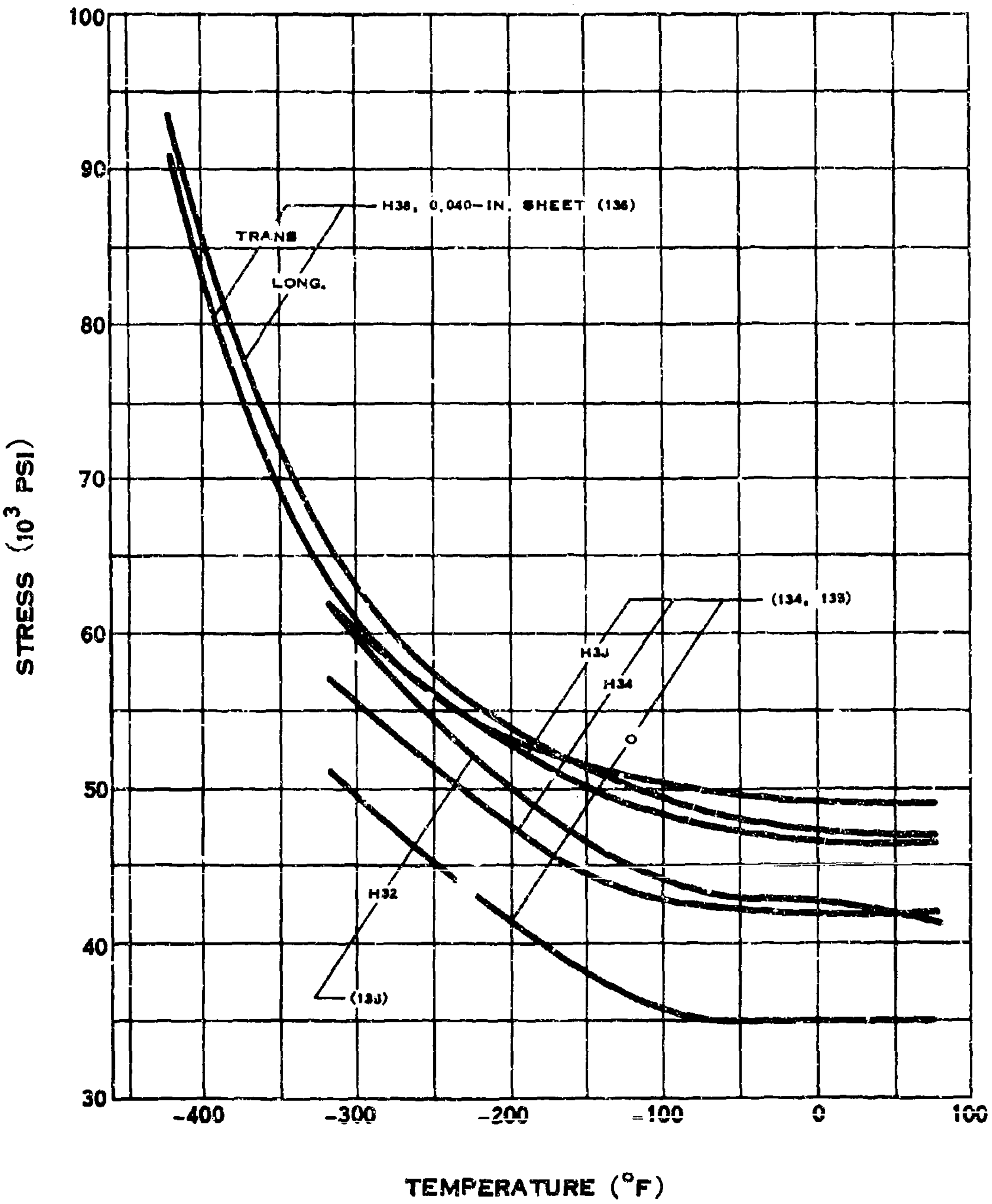
(5-6

A.11.a



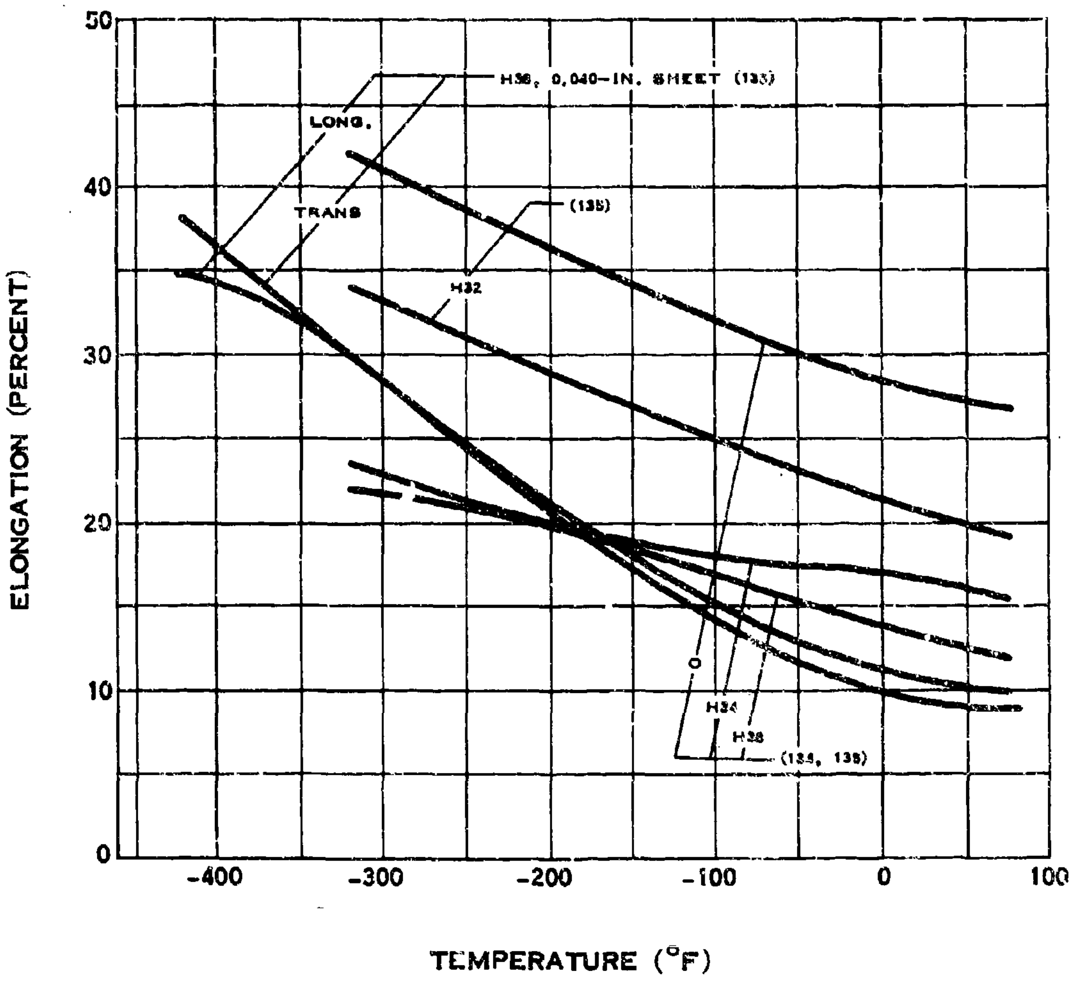
YIELD STRENGTH OF 5154 ALUMINUM

A.11.b



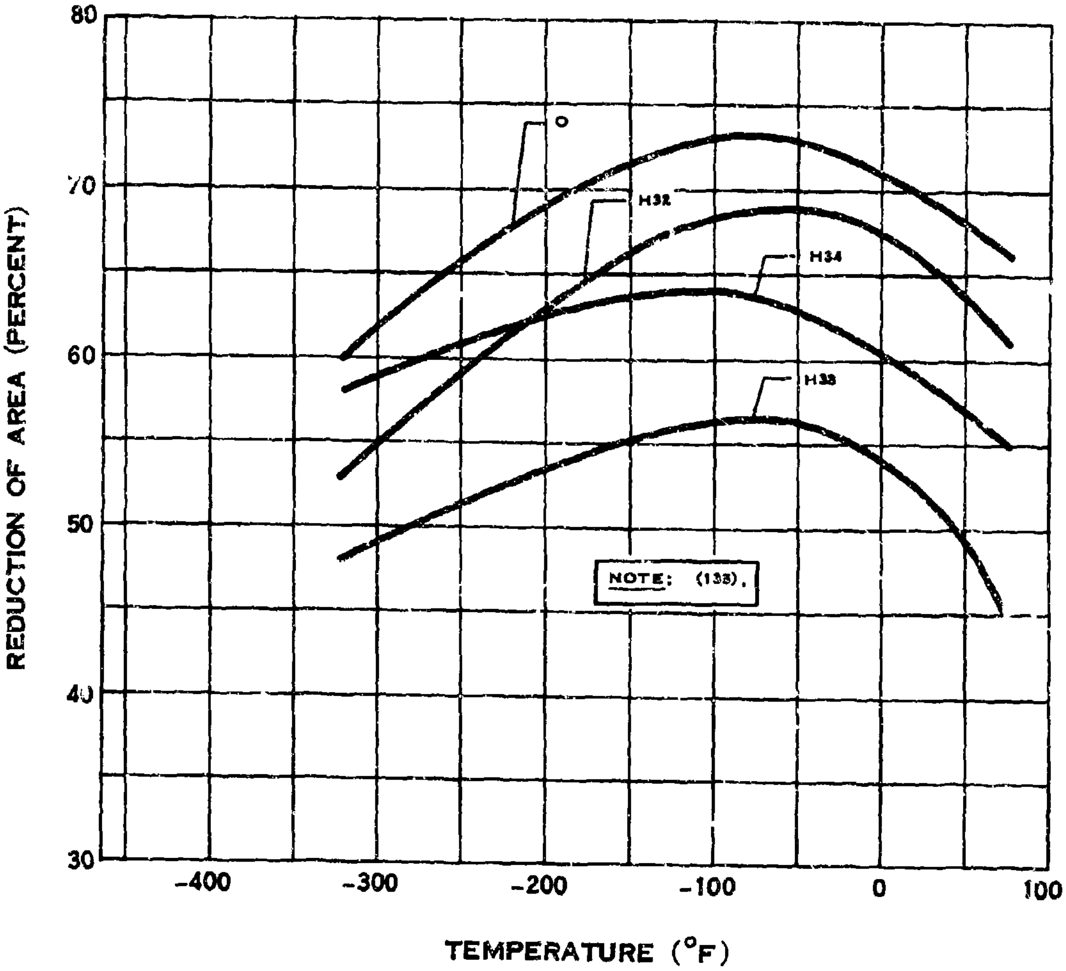
TENSILE STRENGTH OF 5154 ALUMINUM

A.11.c



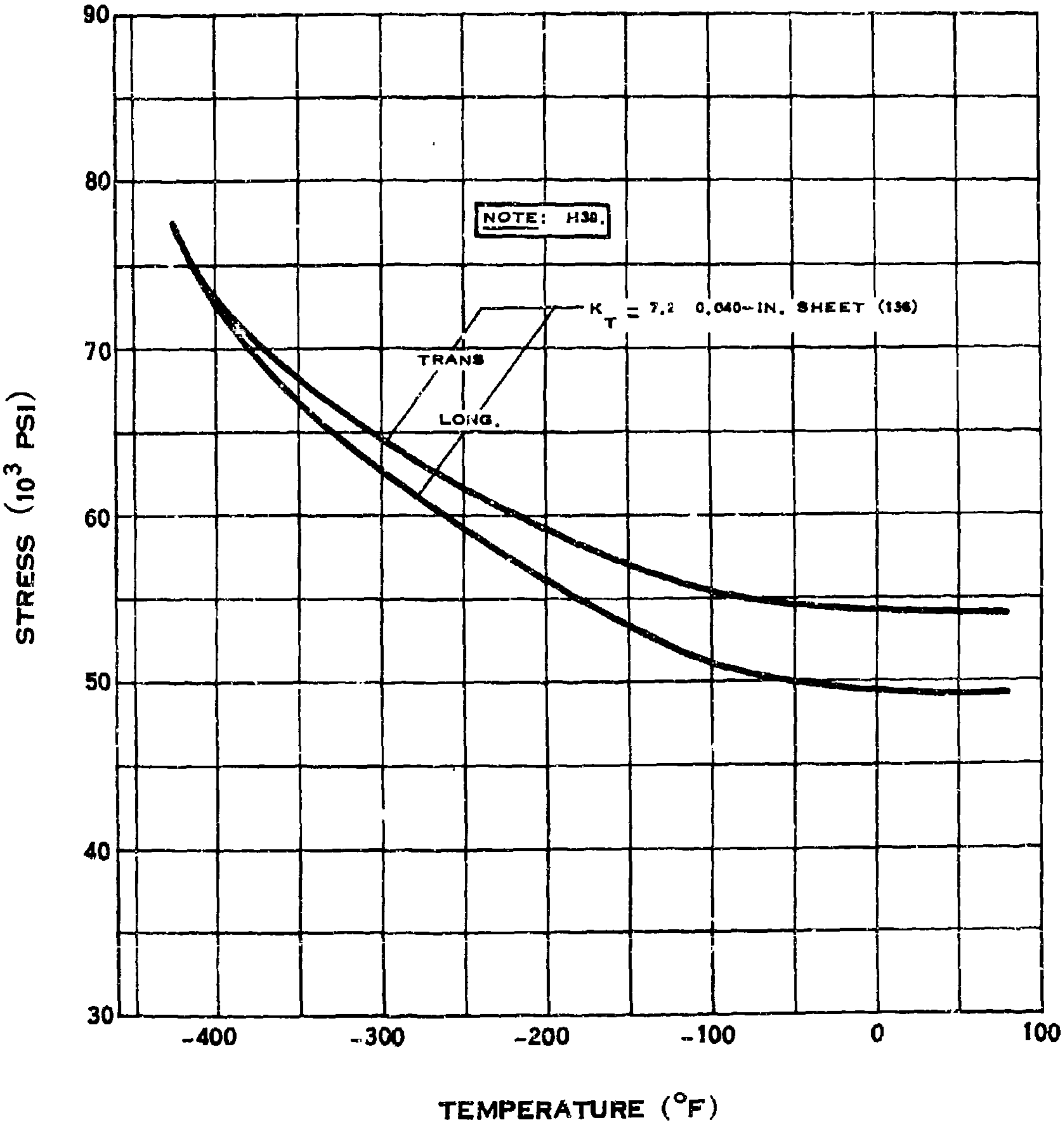
ELONGATION OF 5154 ALUMINUM

A.11.d



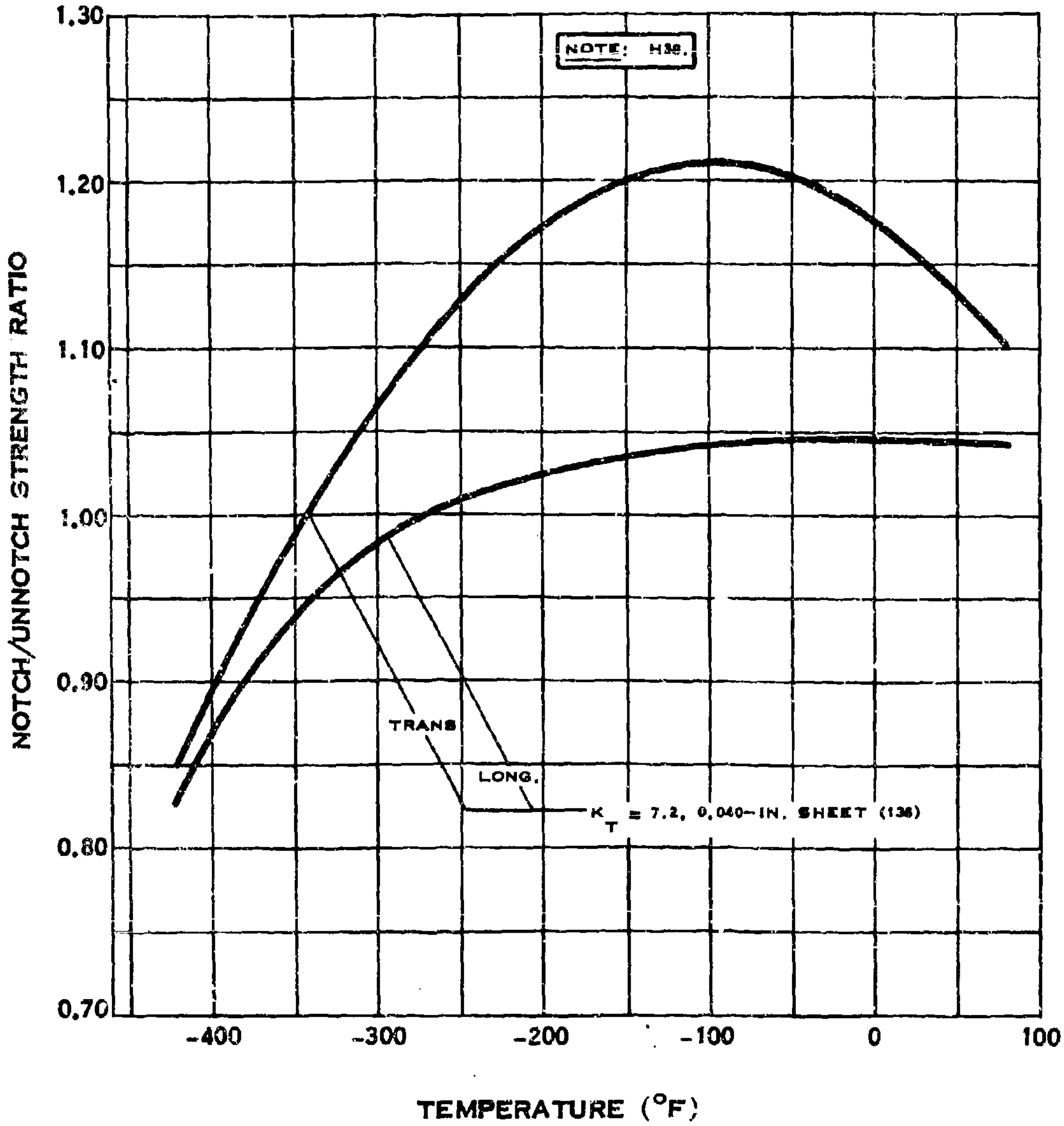
REDUCTION OF AREA OF 5154 ALUMINUM

A.11.e



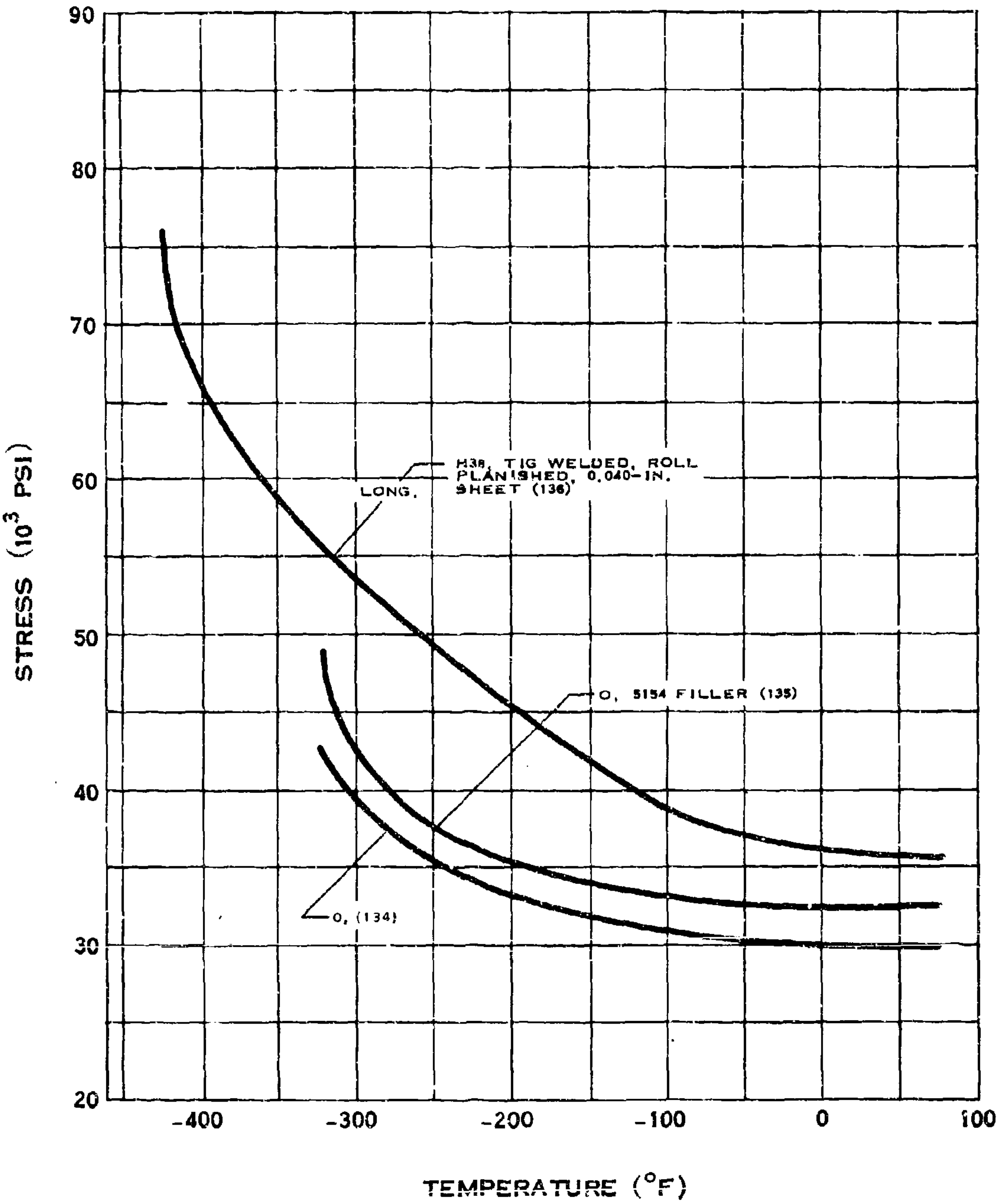
NOTCH TENSILE STRENGTH OF 5154 ALUMINUM

A.11.e-1



NOTCH STRENGTH RATIO OF 5154 ALUMINUM

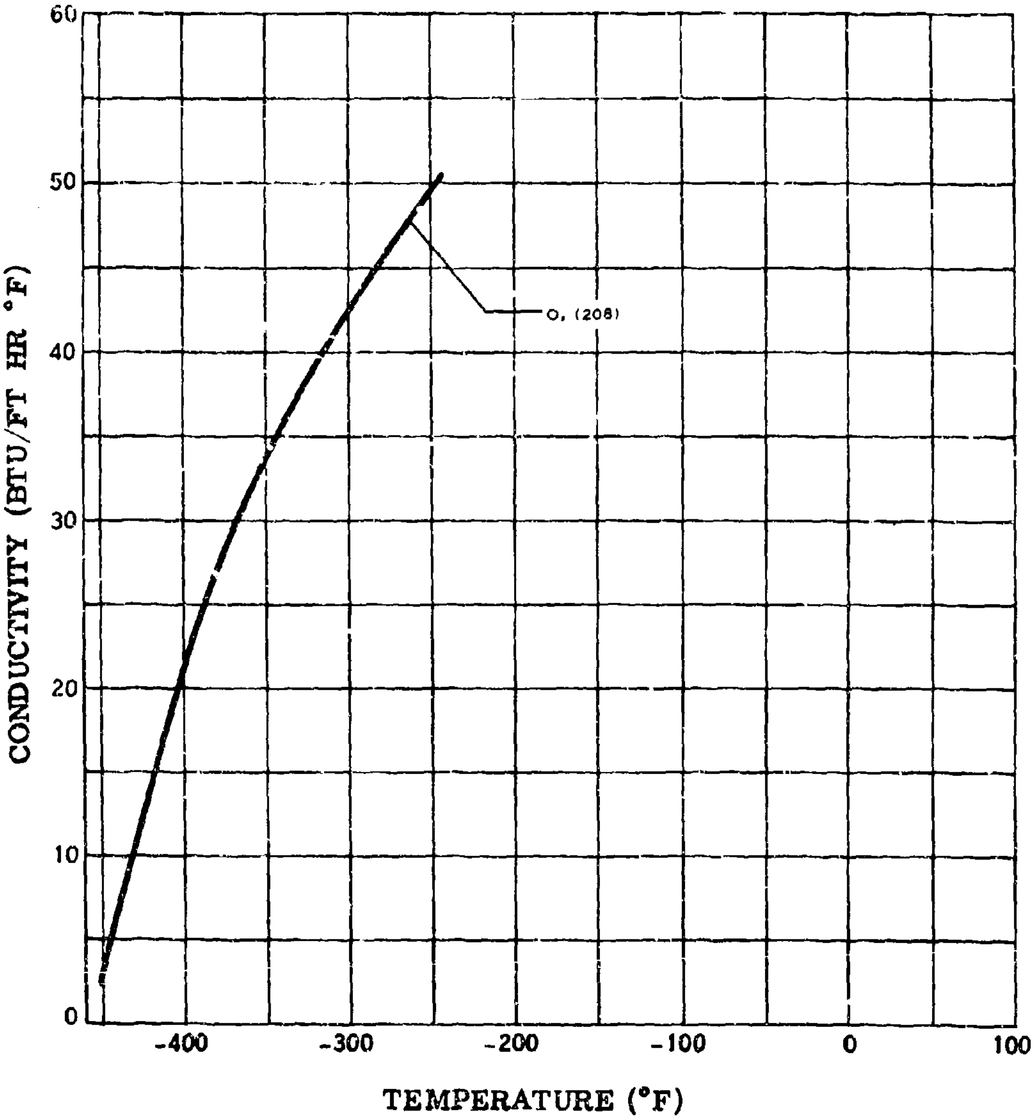
A.11.g



WELD TENSILE STRENGTH OF 5154 ALUMINUM

(7-65)

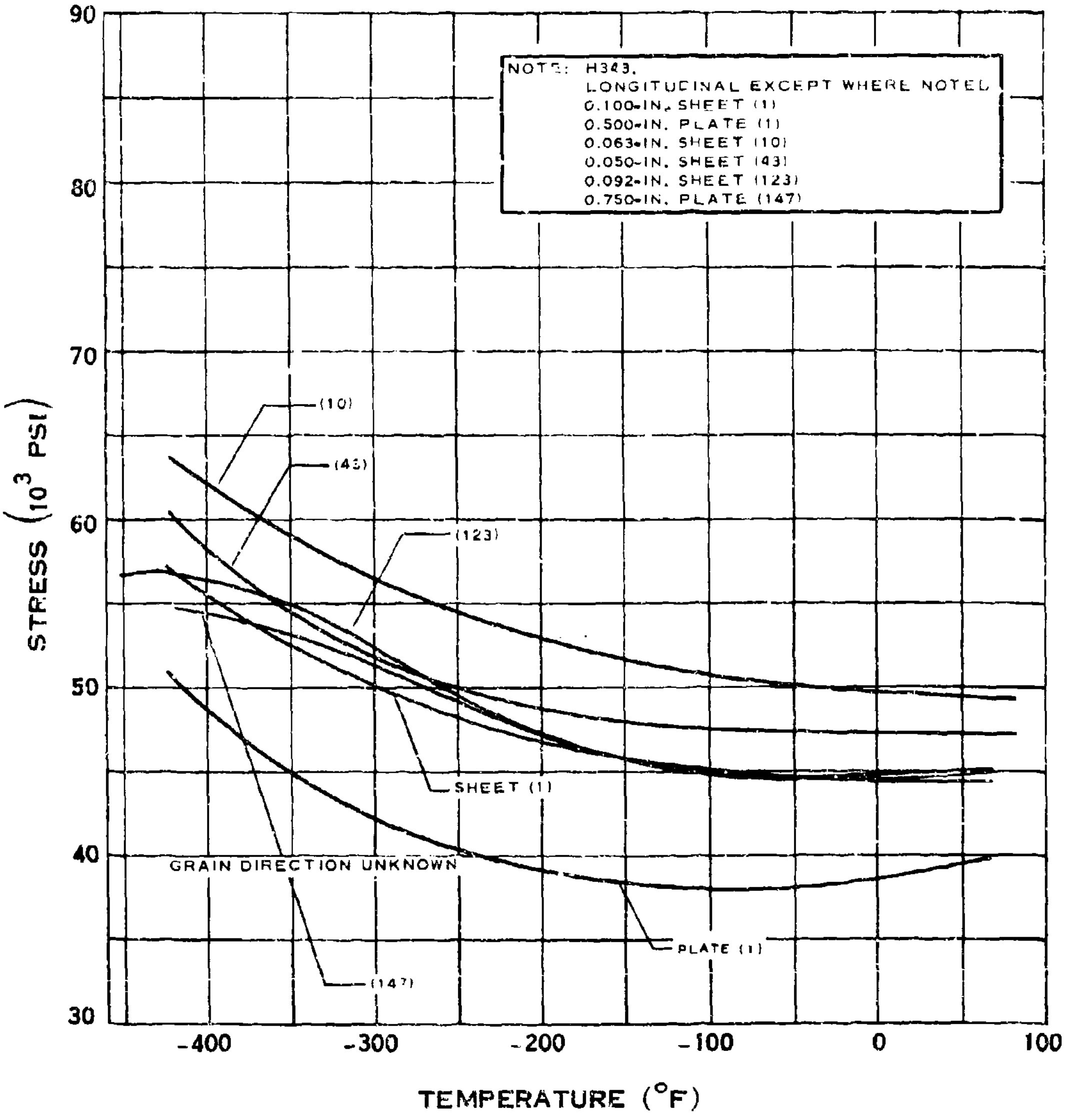
A.11.v



THERMAL CONDUCTIVITY OF 5154 ALUMINUM

(6-65)

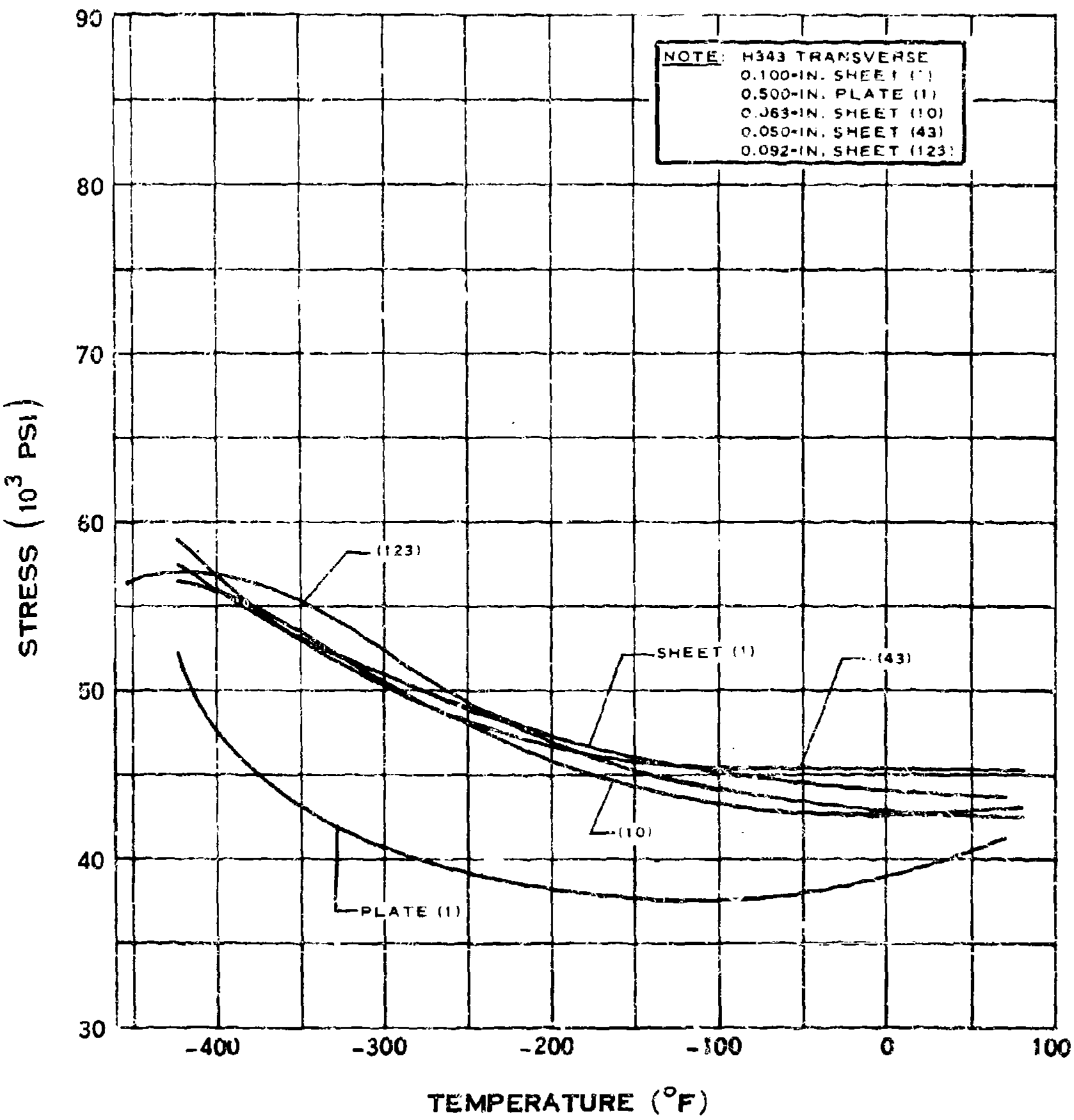
A.12.a



YIELD STRENGTH OF 5456 ALUMINUM

(6-68)

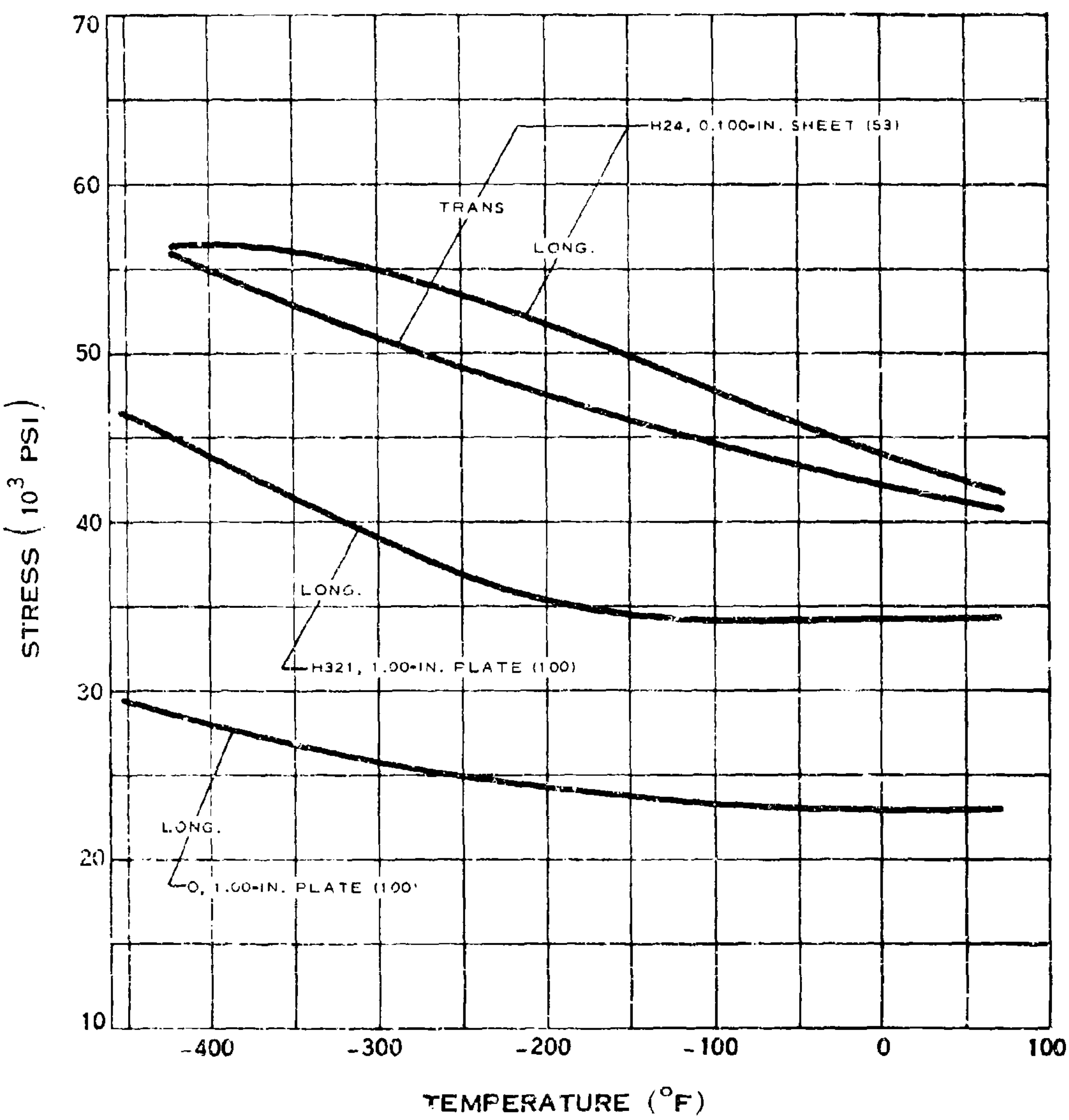
A.12.a-1



YIELD STRENGTH OF 5456 ALUMINUM

(6-68)

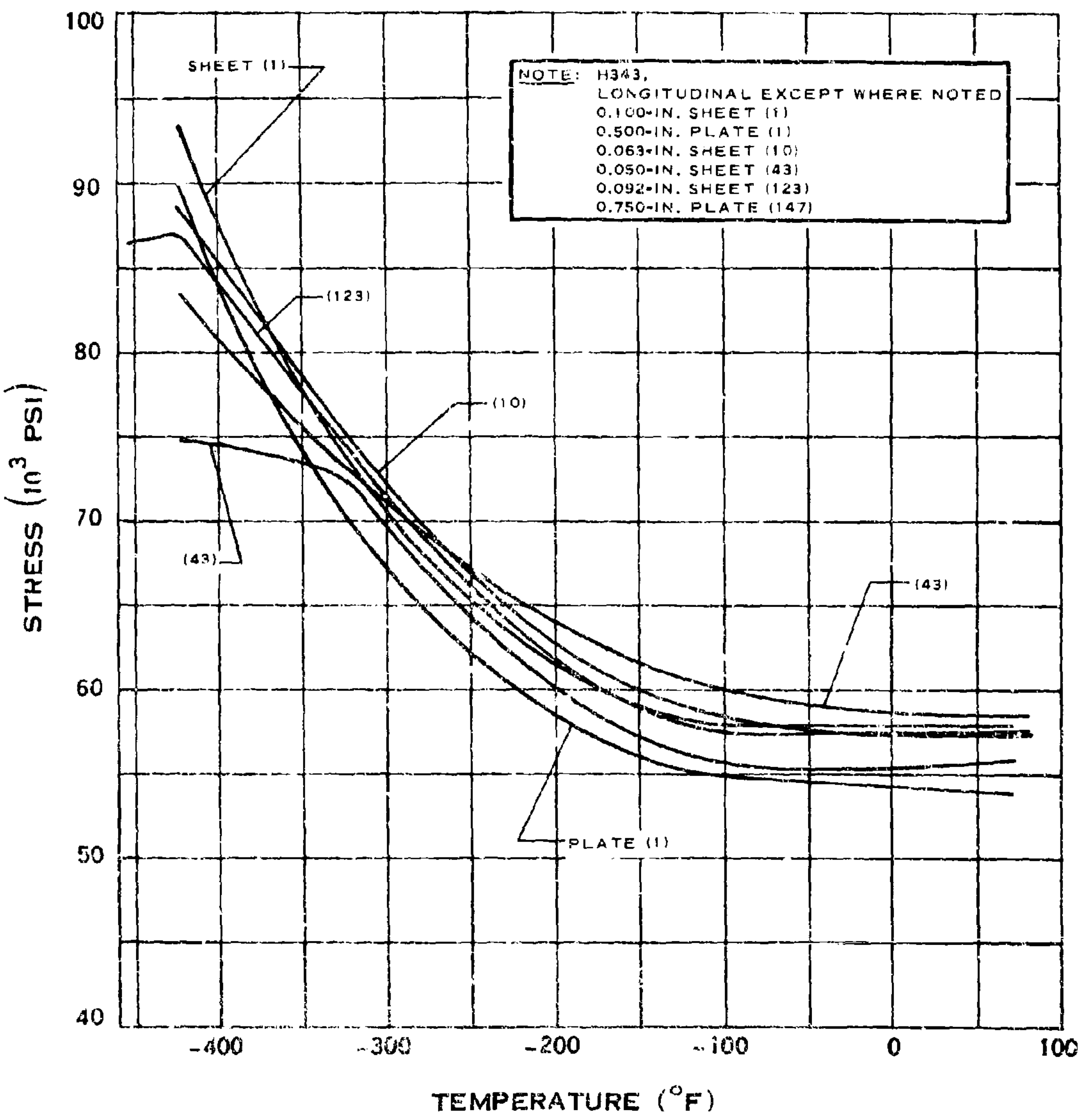
A.12.a-2



YIELD STRENGTH OF 5456 ALUMINUM

(6-68)

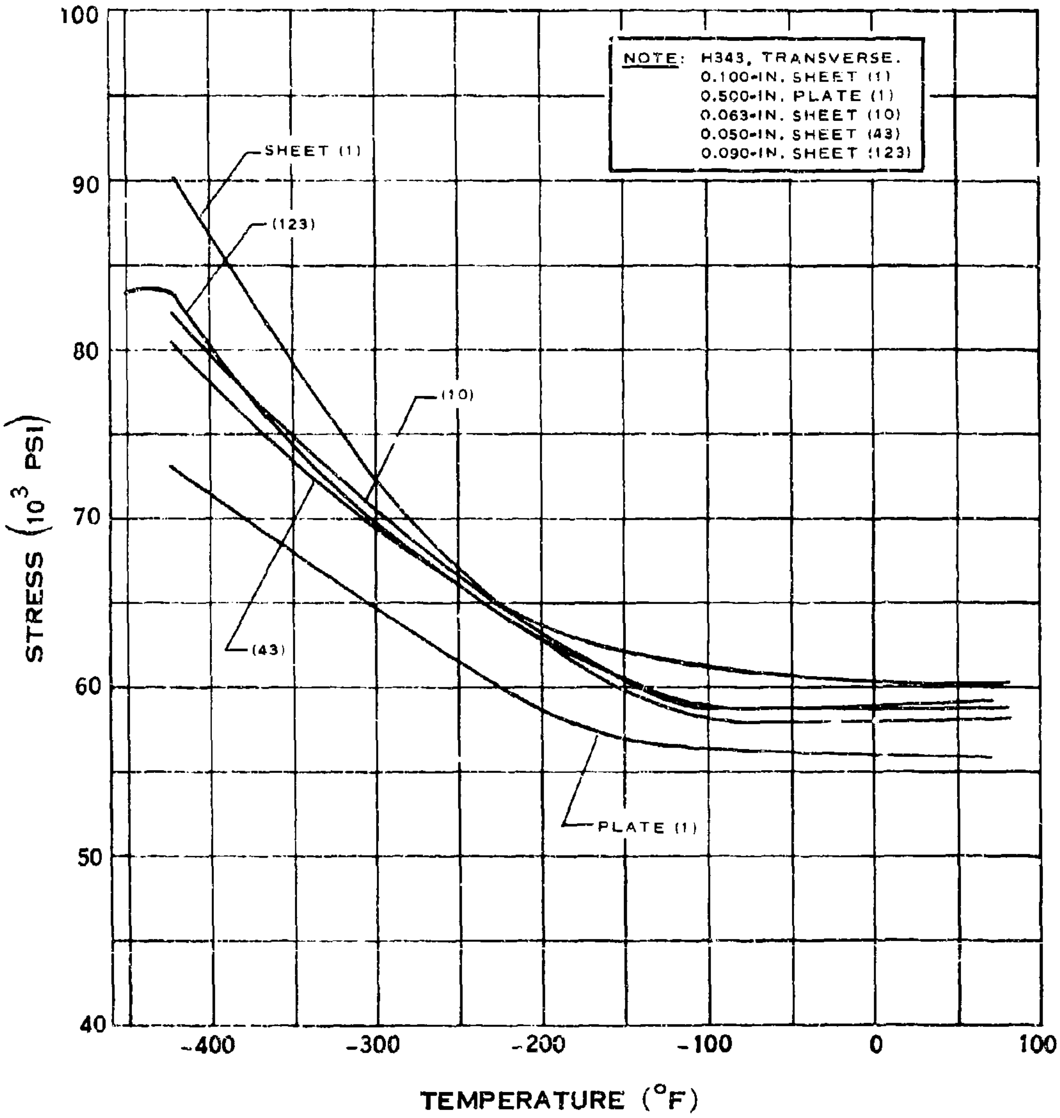
A.12.b



TENSILE STRENGTH OF 5456 ALUMINUM

(6-68)

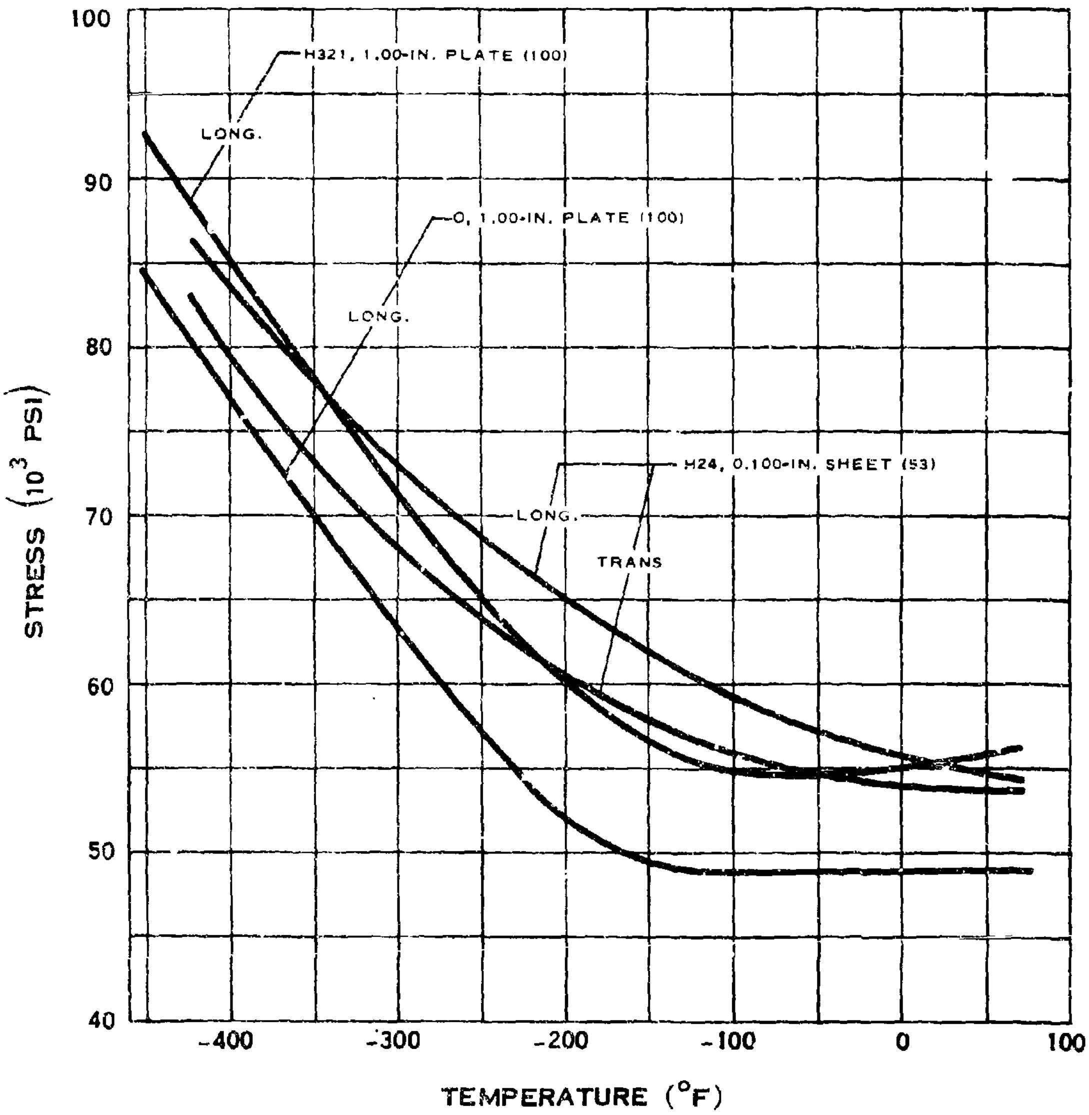
A.12.b-1



TENSILE STRENGTH OF 5456 ALUMINUM

(6-68)

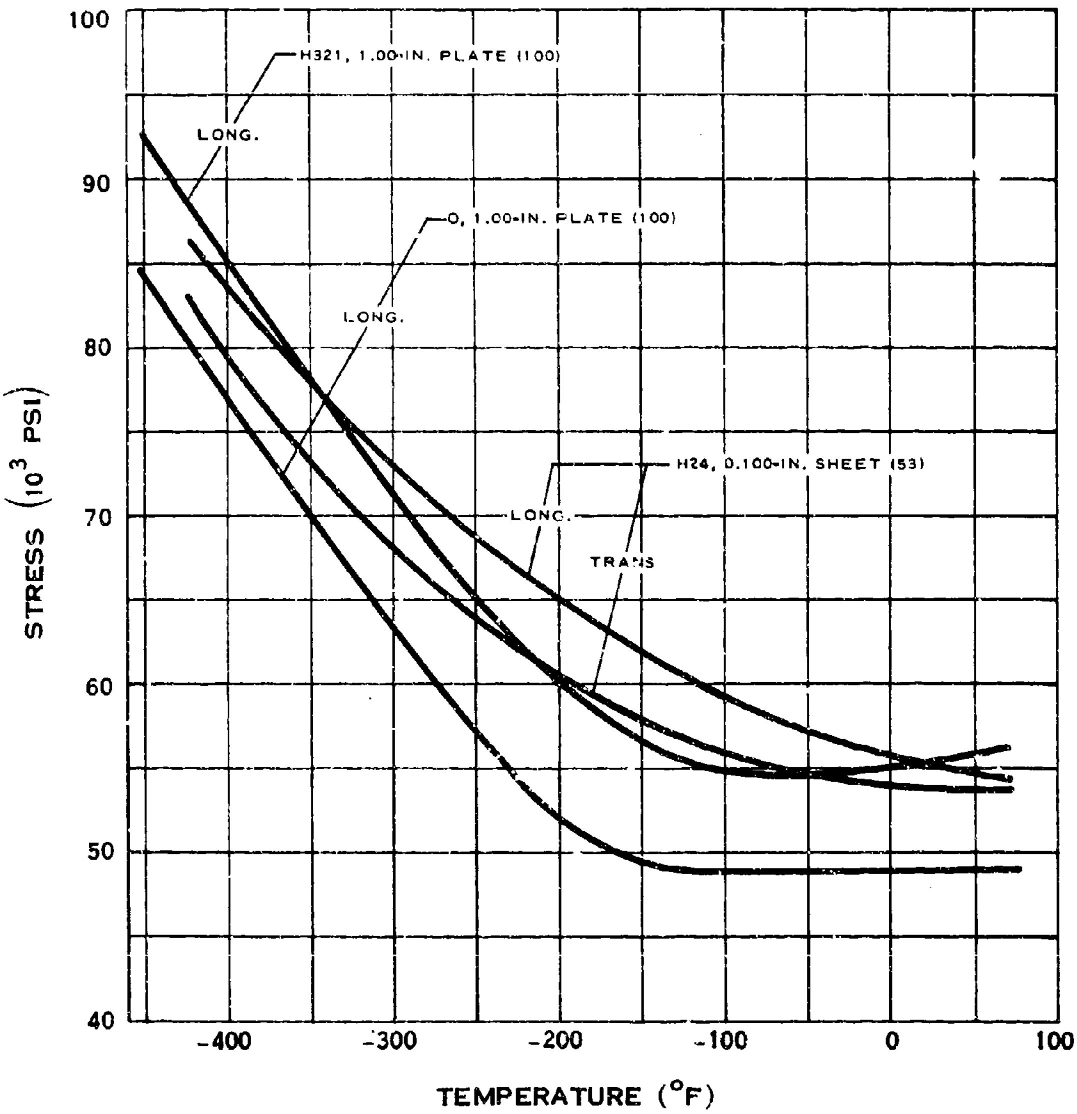
A.12.b-2



TENSILE STRENGTH OF 5456 ALUMINUM

(6-68)

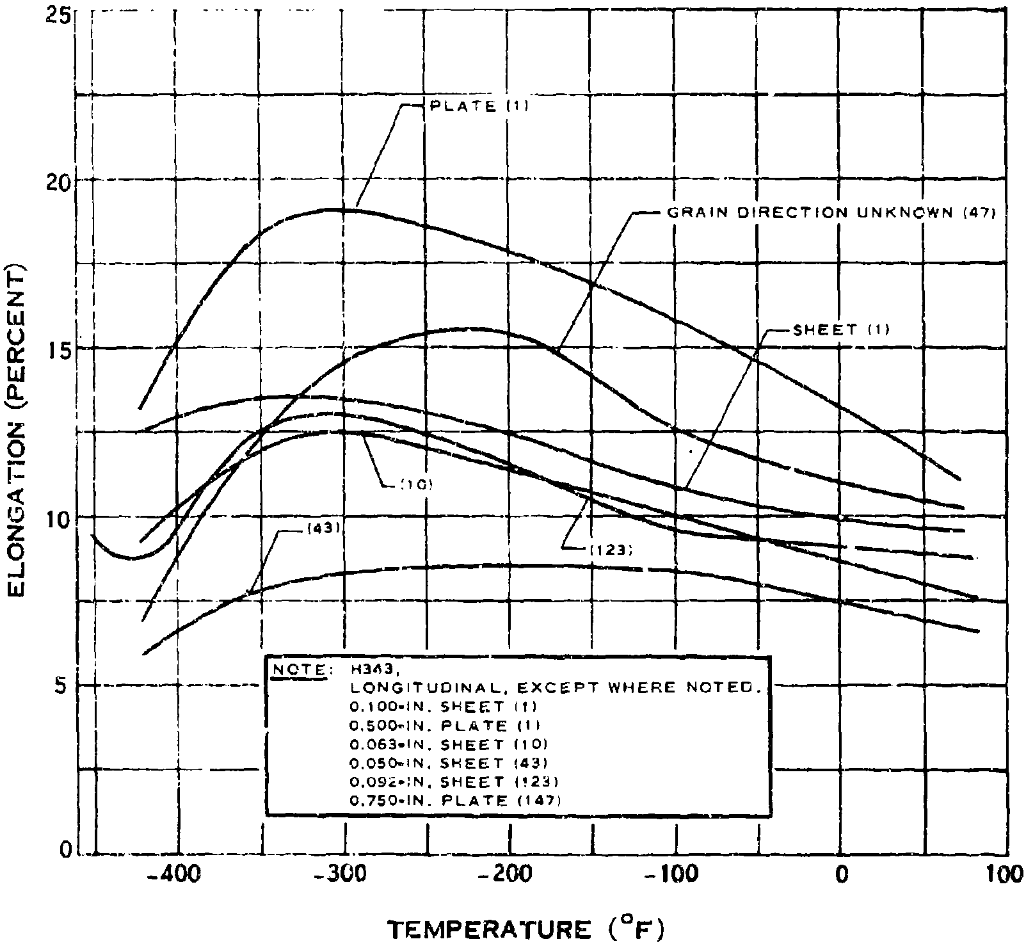
A.12.b-2



TENSILE STRENGTH OF 5456 ALUMINUM

(6-66)

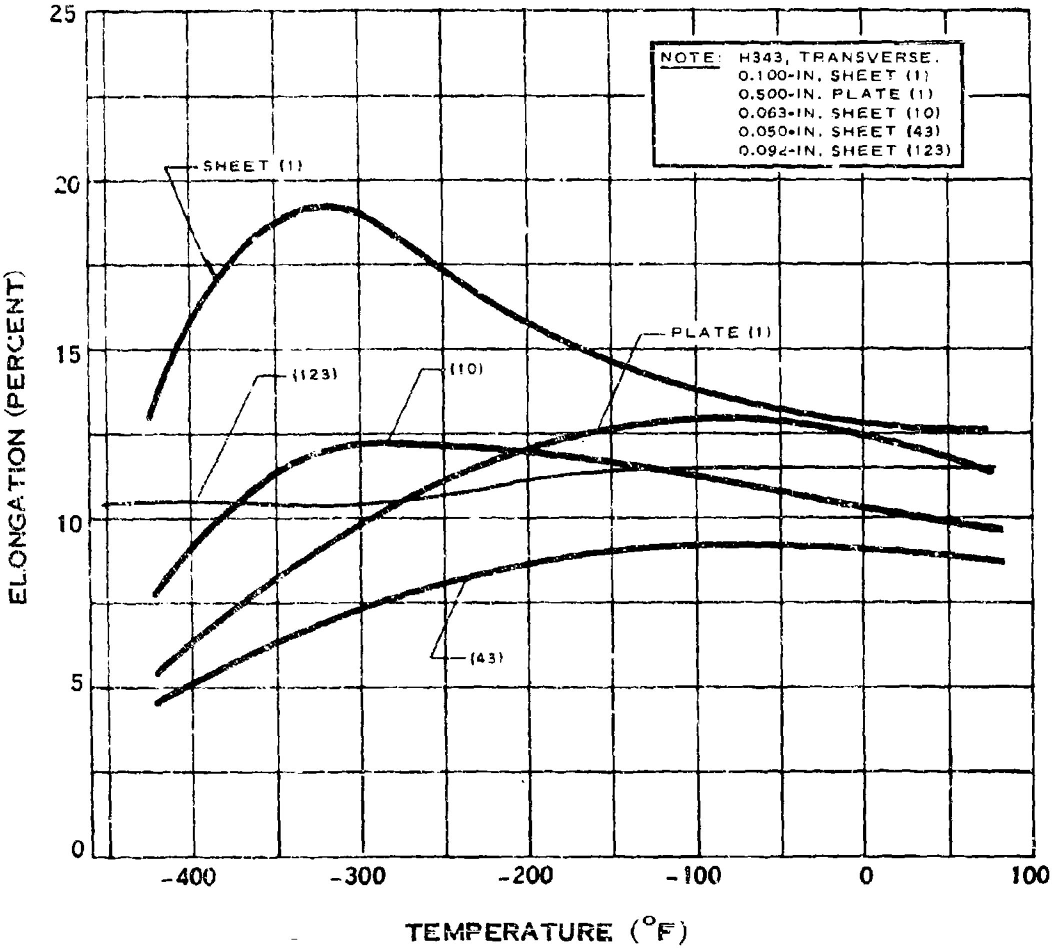
A.12.c



ELONGATION OF 5456 ALUMINUM

(6-68)

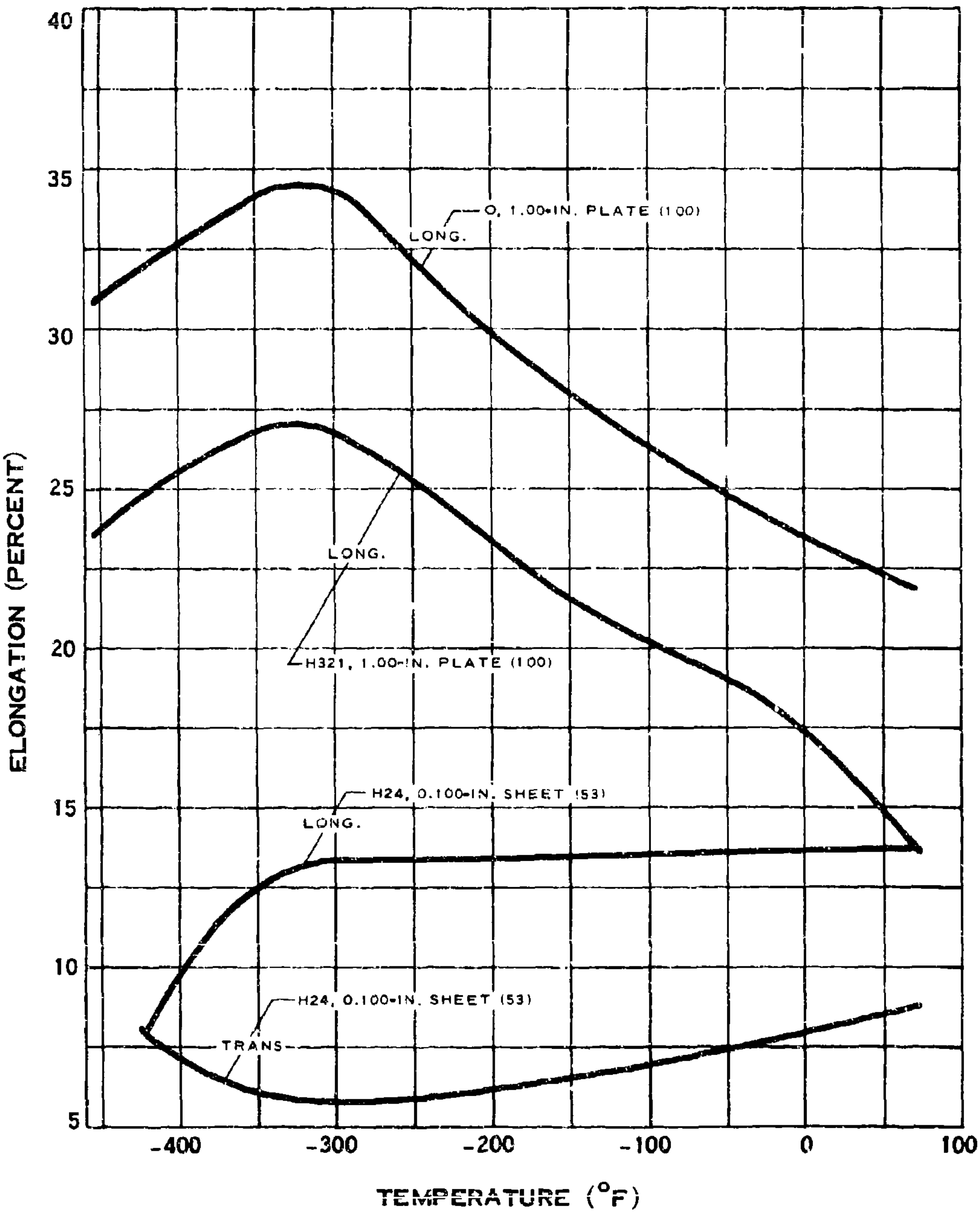
A.12.c-1



ELONGATION OF 5456 ALUMINUM

(6-63)

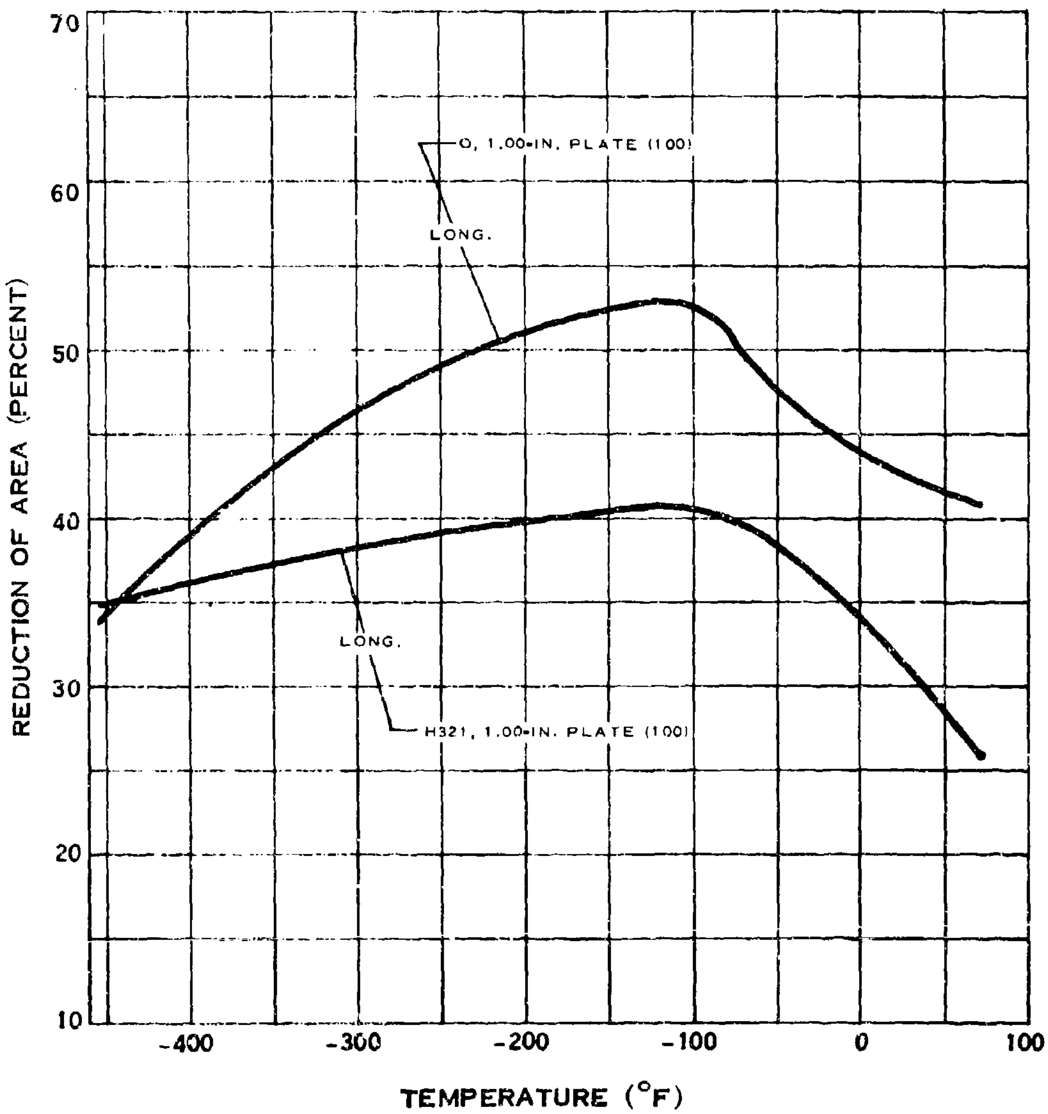
A.12.c-2



ELONGATION OF 5456 ALUMINUM

(6-68)

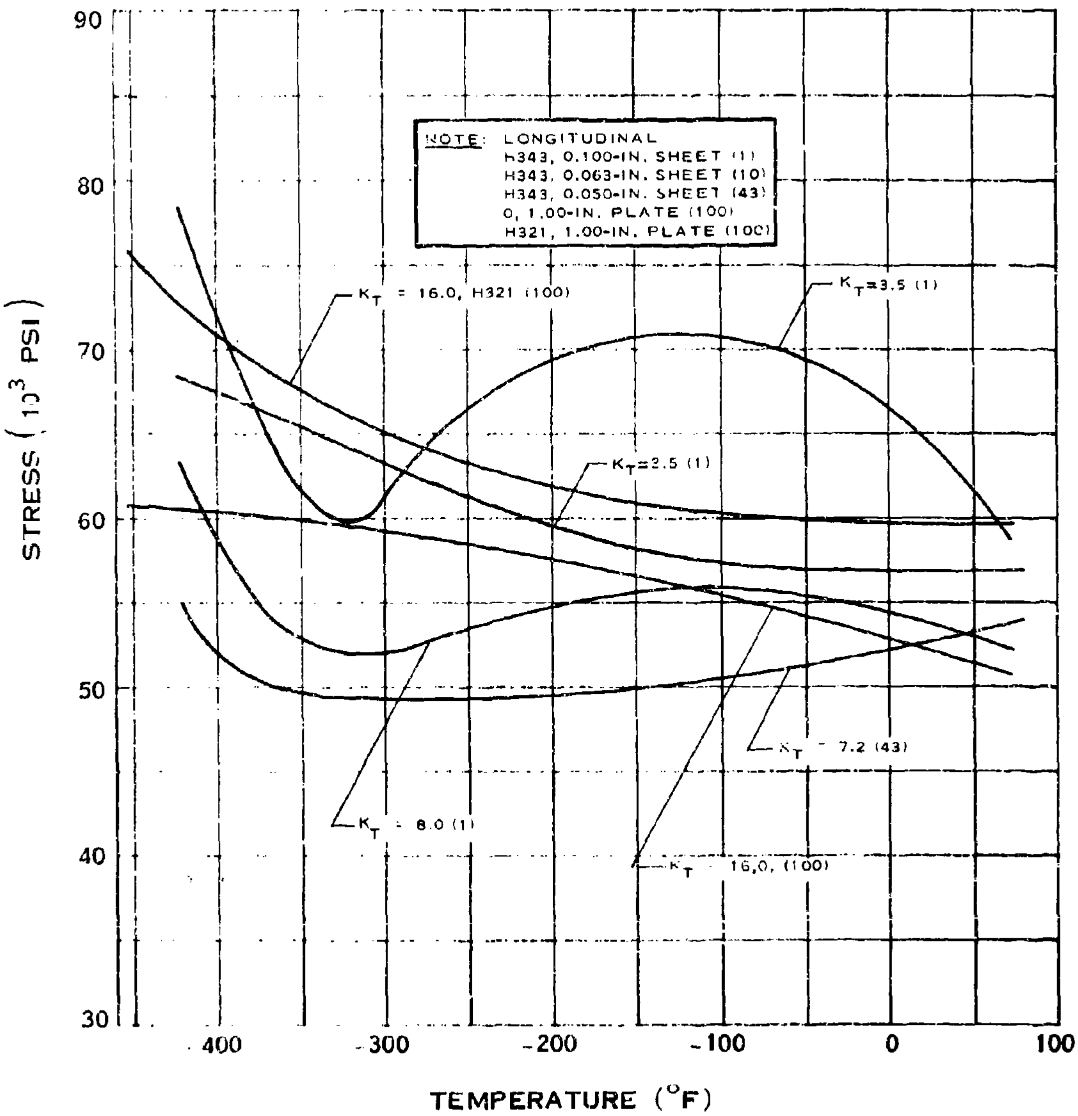
A.12.d



REDUCTION OF AREA OF 5456 ALUMINUM

(6-68)

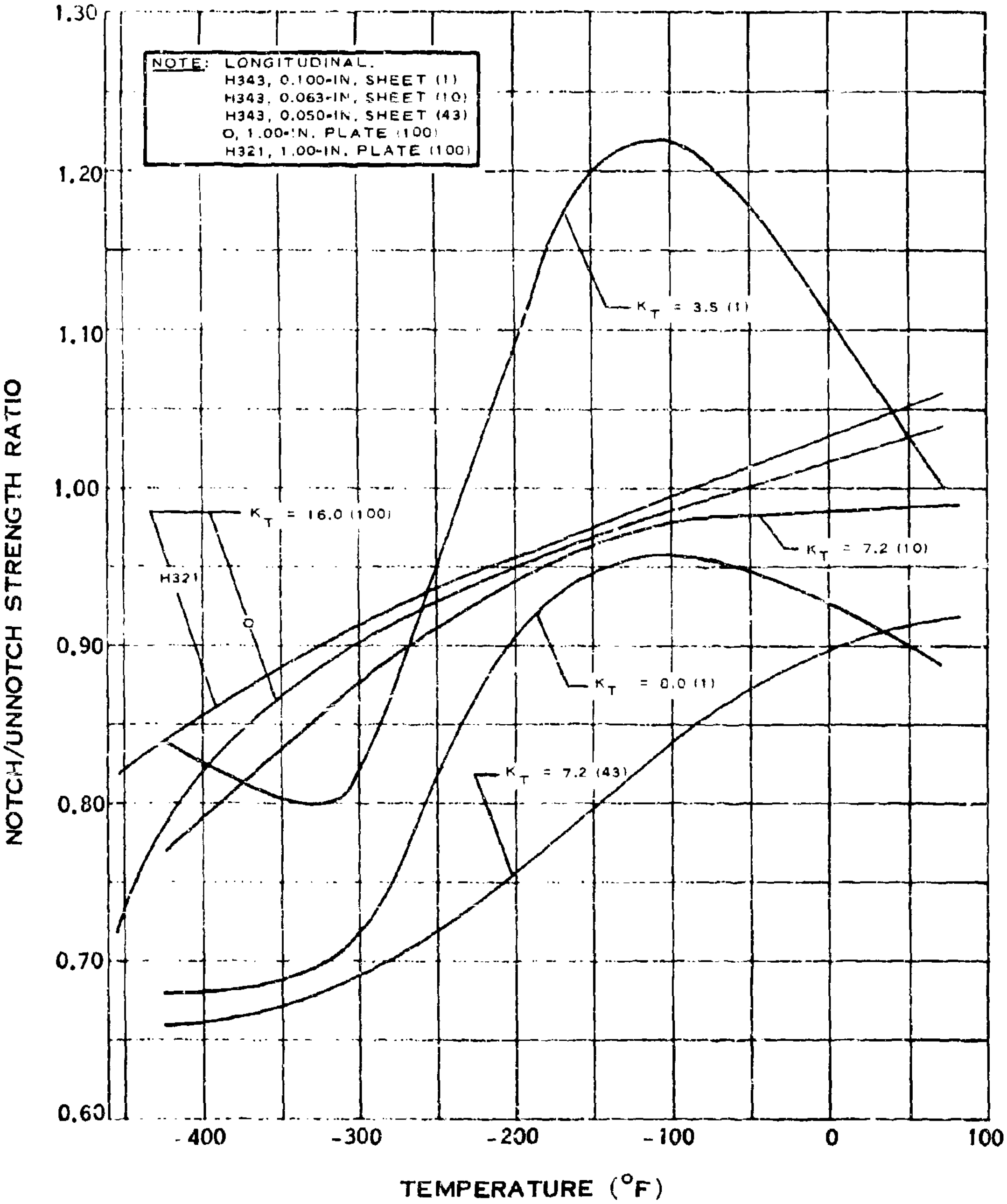
A.12.e



NOTCH TENSILE STRENGTH OF 5456 ALUMINUM

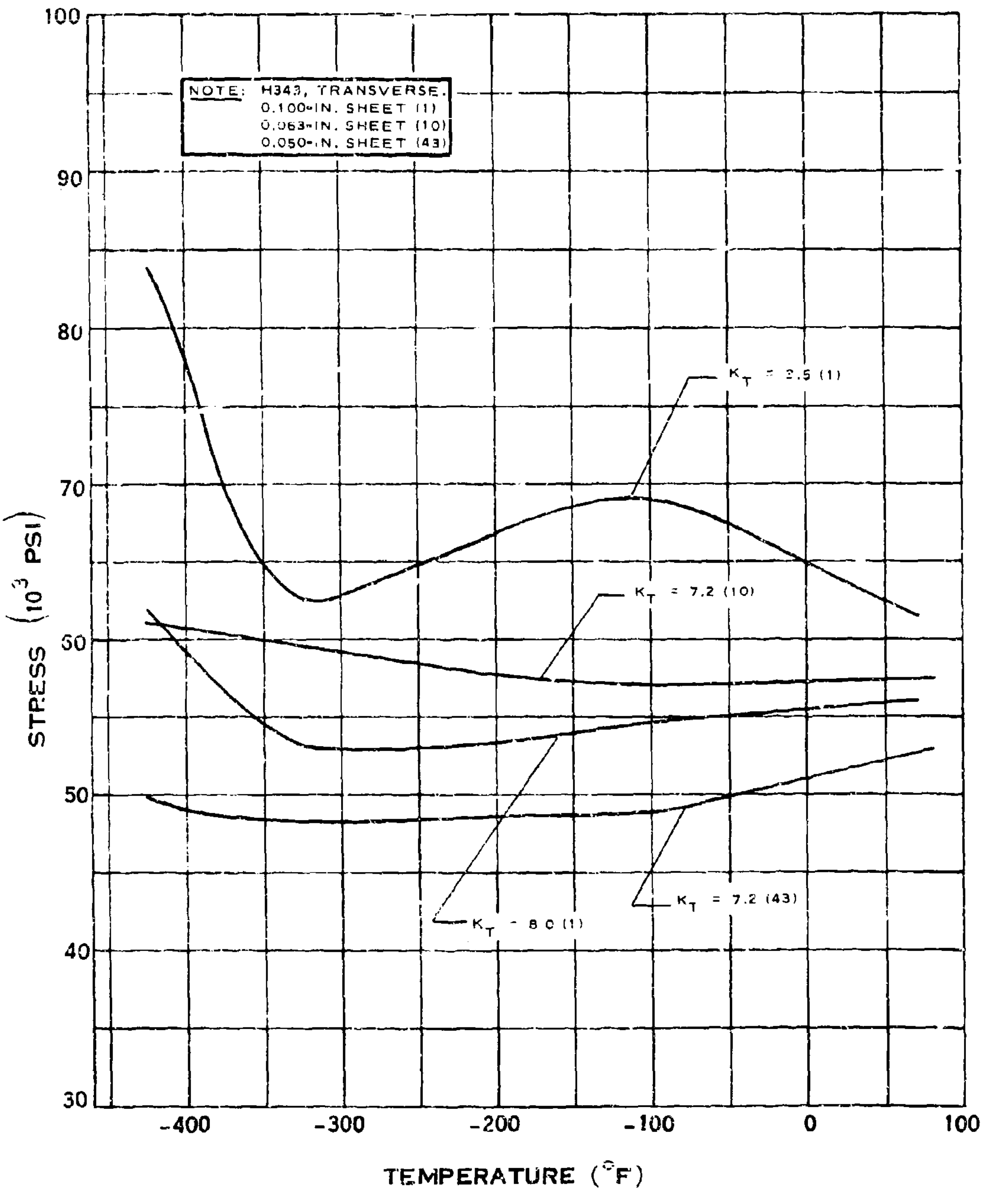
(6-68)

A.12.e-1



NOTCH STRENGTH RATIO OF 5456 ALUMINUM

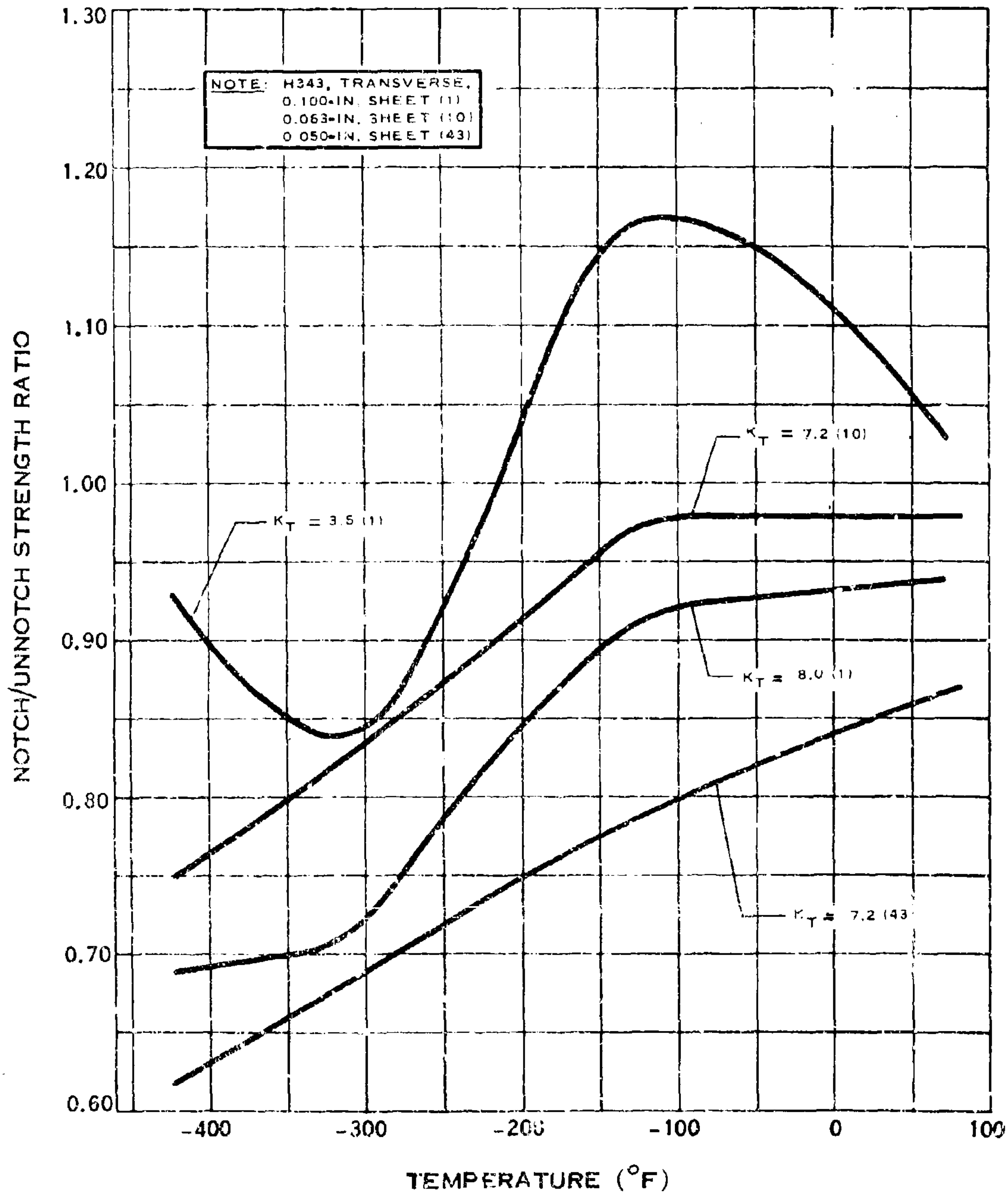
A.12.e-2



NOTCH TENSILE STRENGTH OF 5456 ALUMINUM

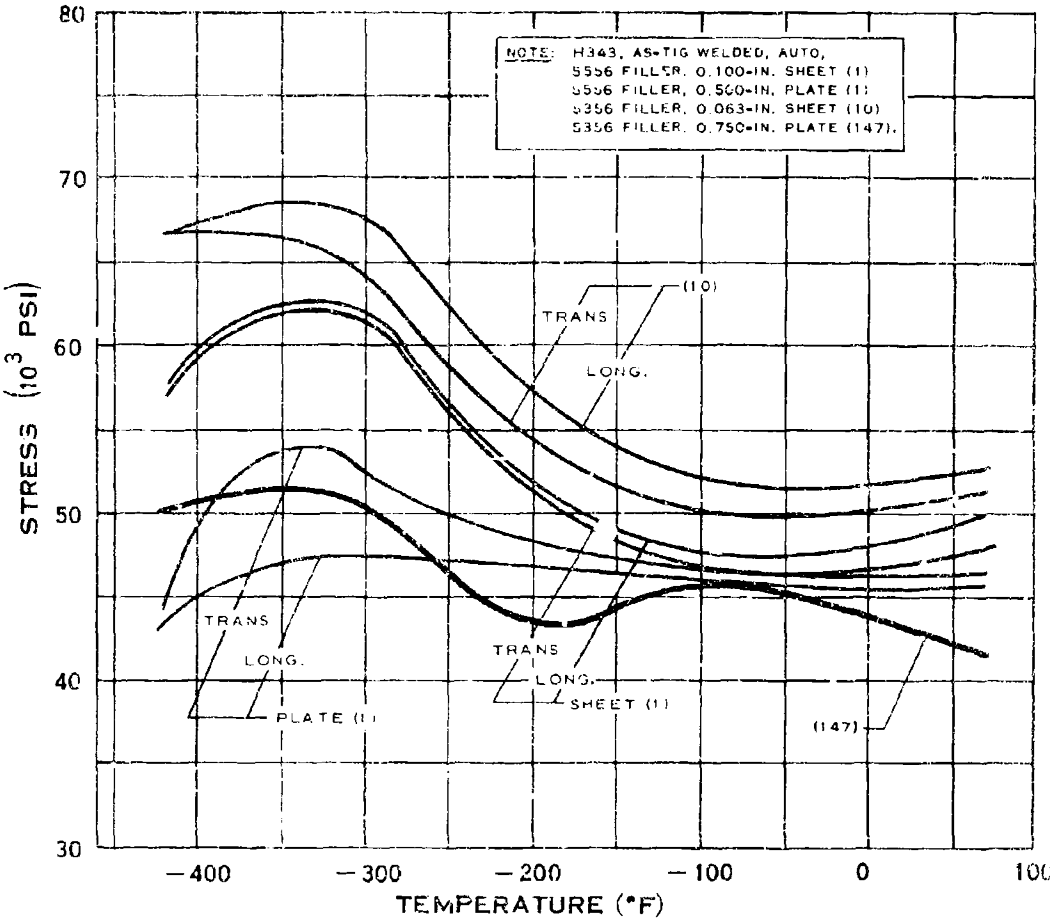
(6-68)

A.12.e-3



NOTCH STRENGTH RATIO OF 5456 ALUMINUM

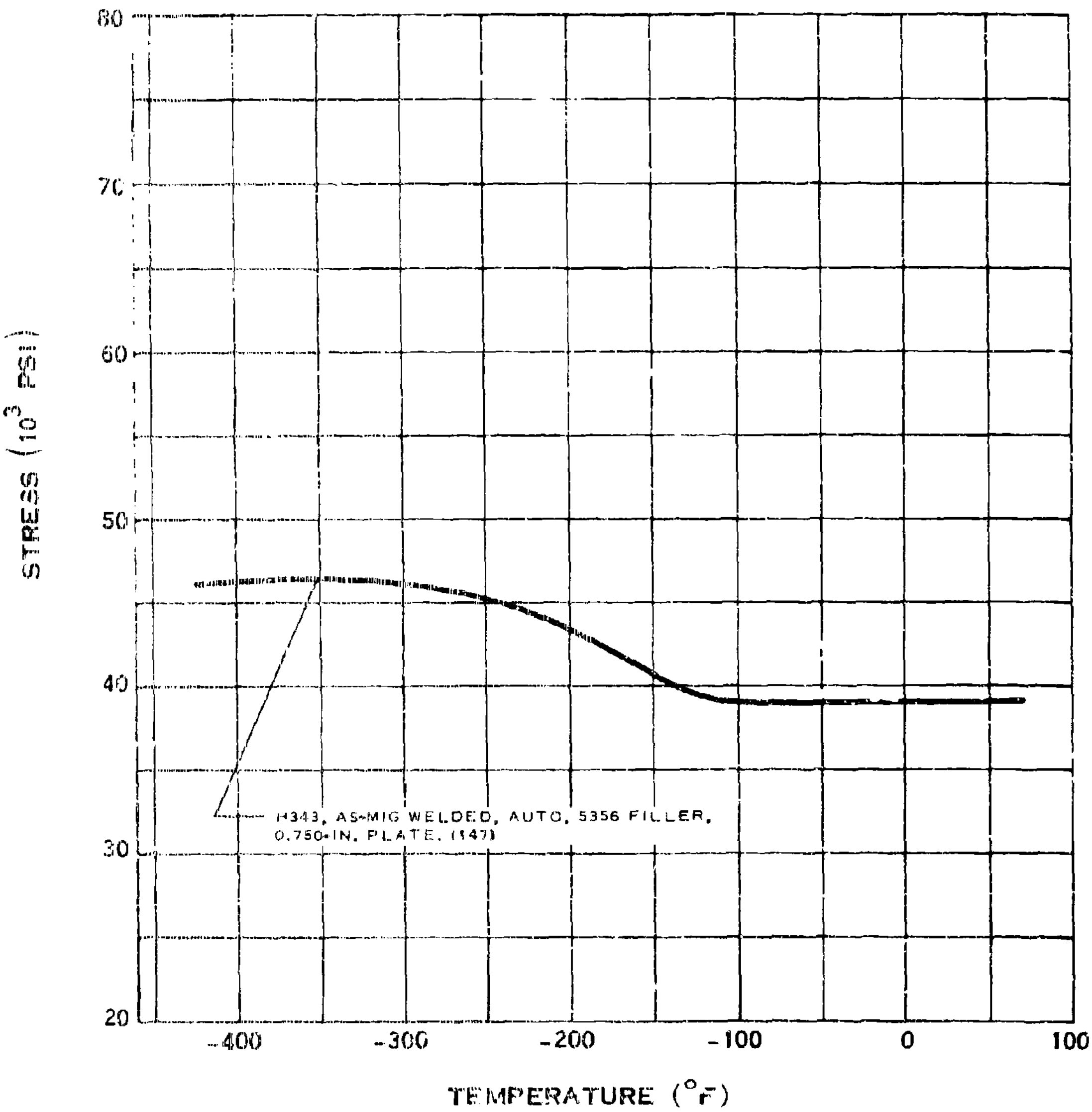
A.12.g



WELD TENSILE STRENGTH OF 5456 ALUMINUM

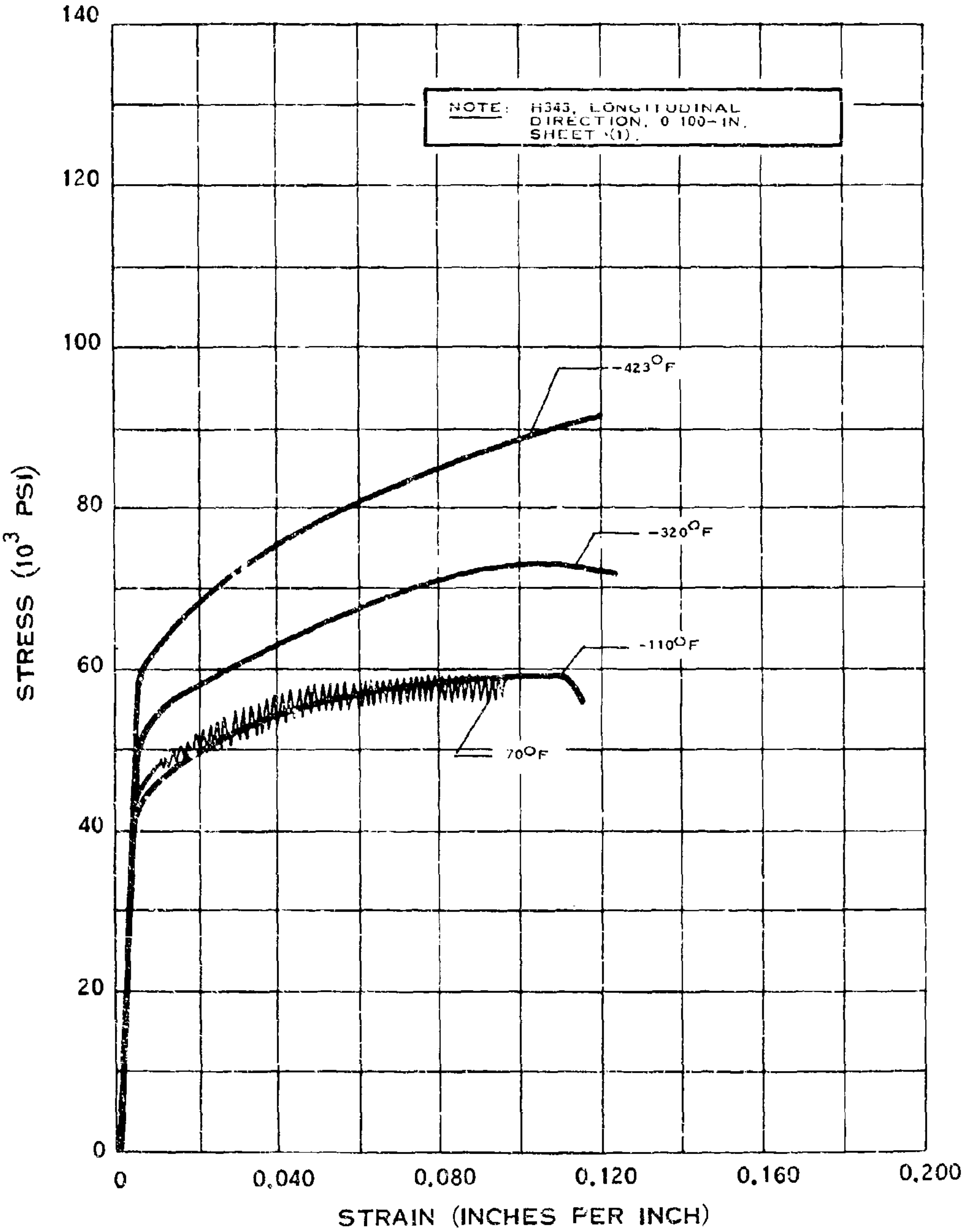
(6-58)

A.12.g-1



WELD TENSILE STRENGTH OF 5456 ALUMINUM

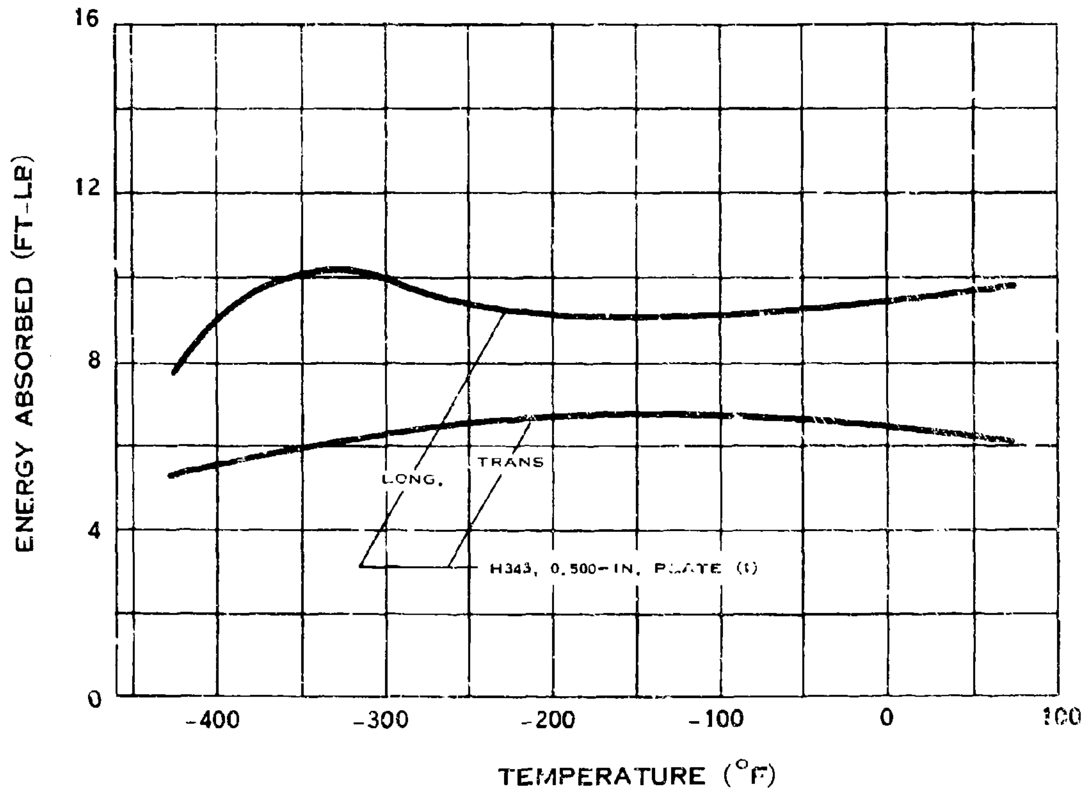
A.12.h



STRESS-STRAIN DIAGRAM FOR 5456 ALUMINUM

(1-65)

A.12.j



IMPACT STRENGTH OF 5456 ALUMINUM

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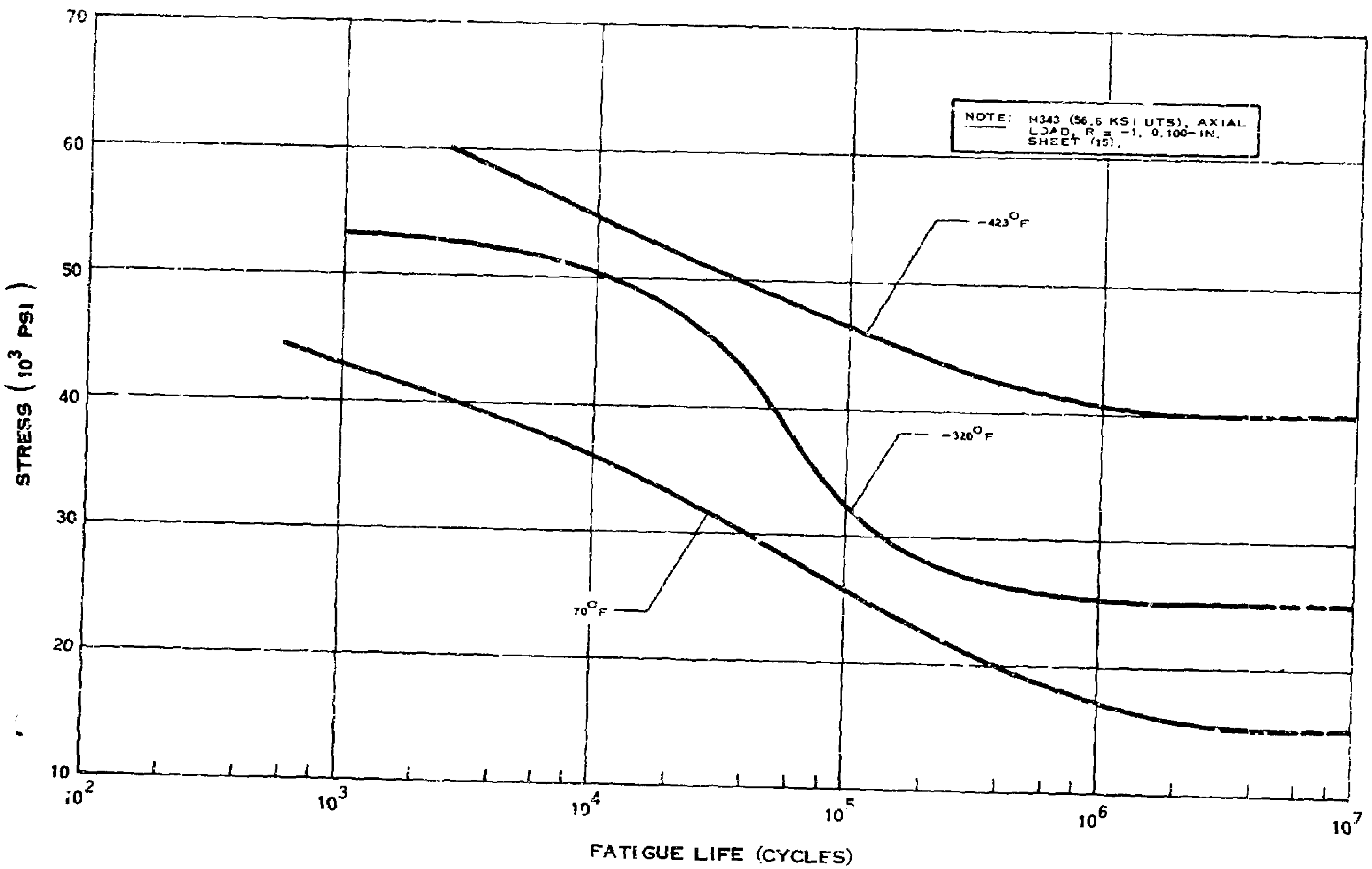
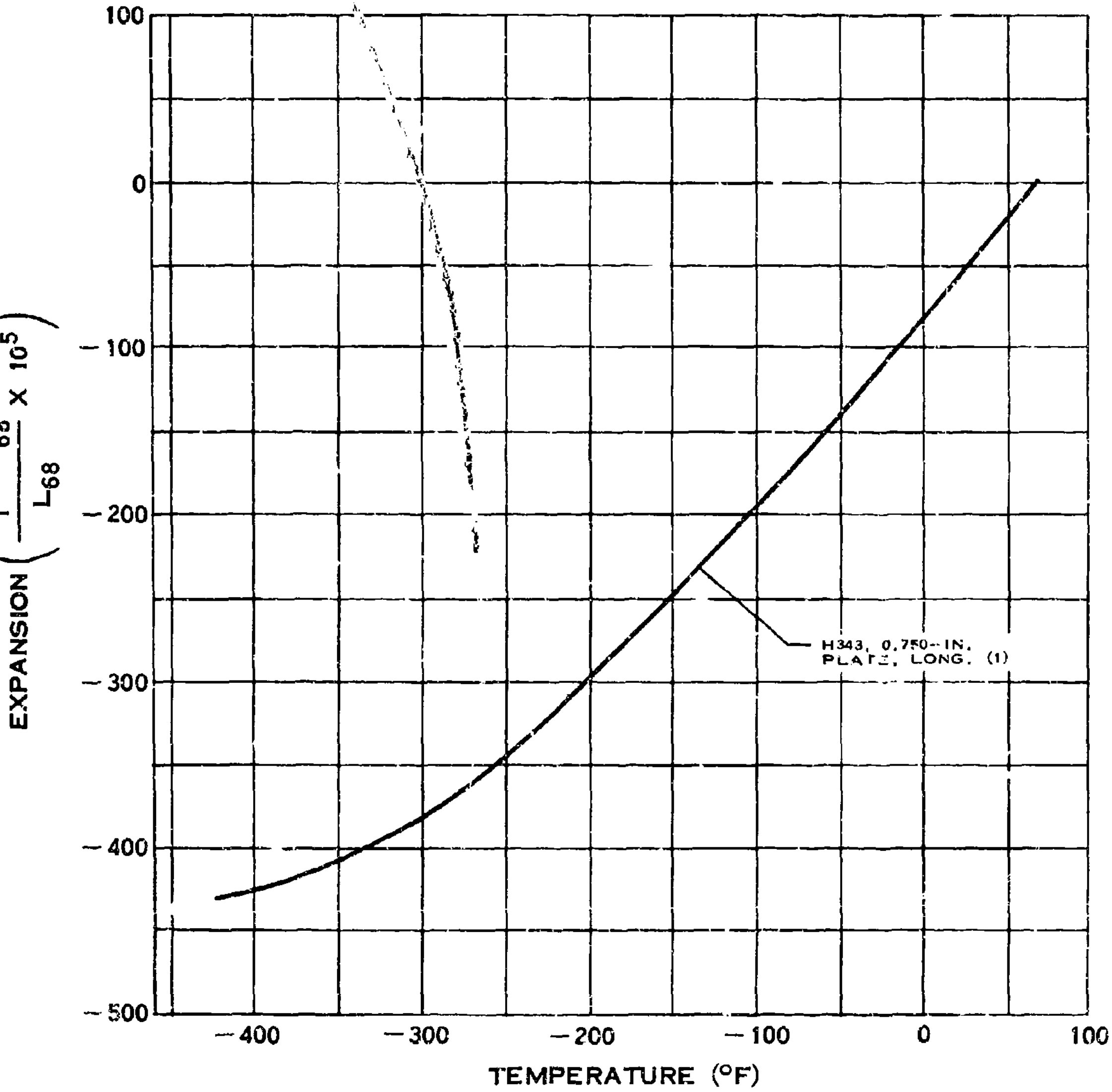
A.12.o



FATIGUE STRENGTH OF 5456 ALUMINUM

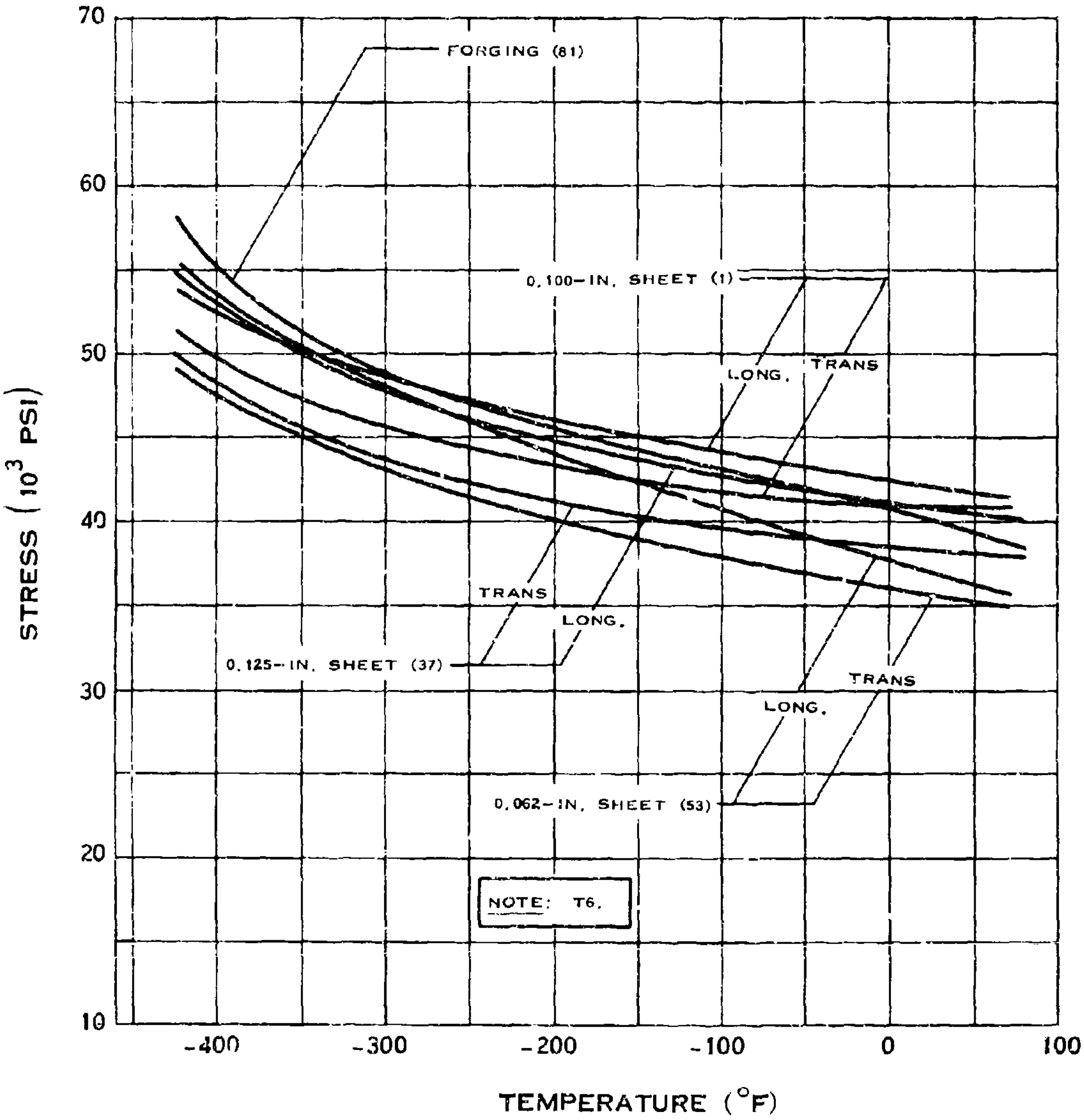
(7-64)

A.12.1



THERMAL EXPANSION OF 5456 ALUMINUM

A.13.a



YIELD STRENGTH OF 6061 ALUMINUM

(7-6 ;)

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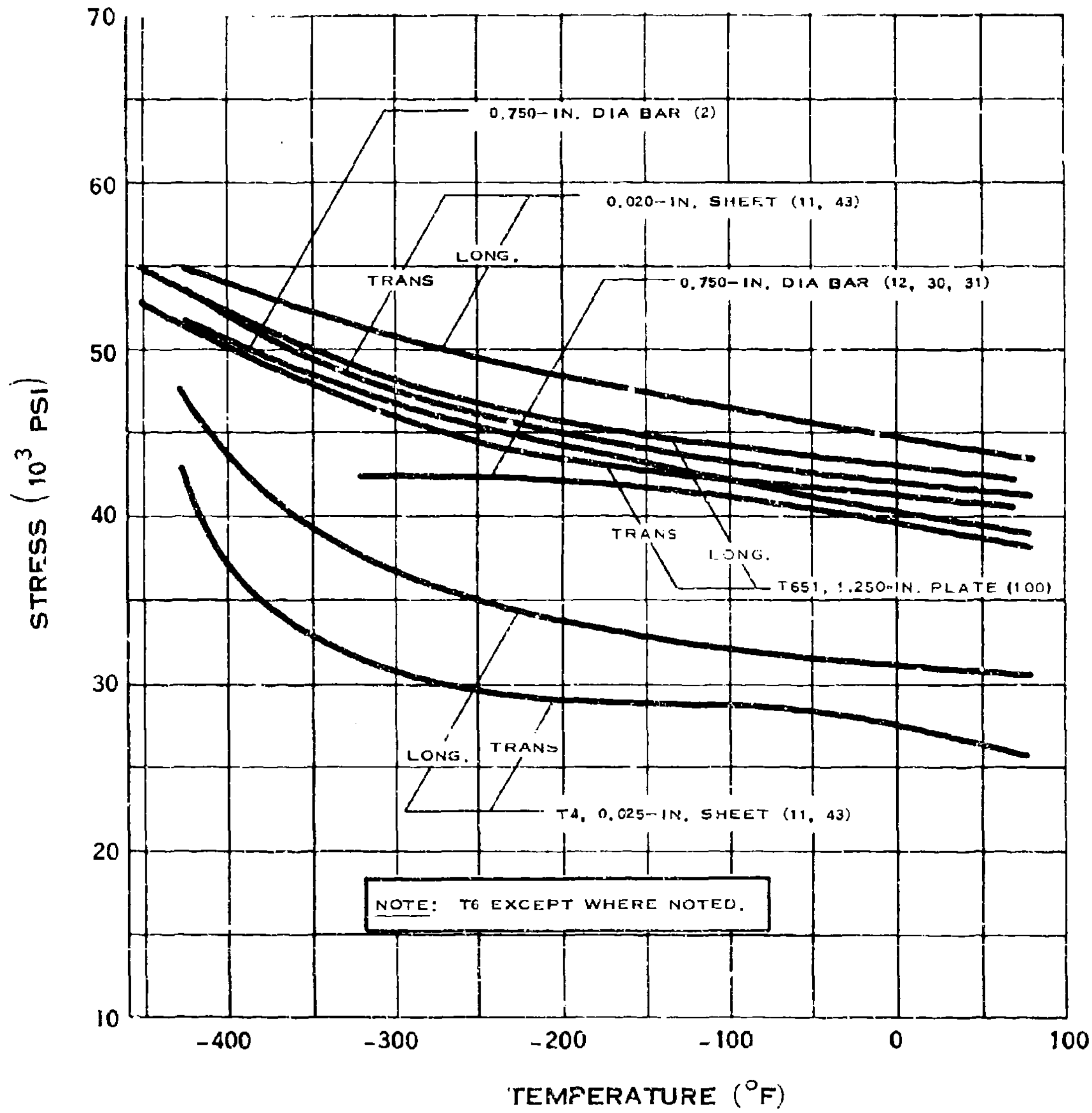
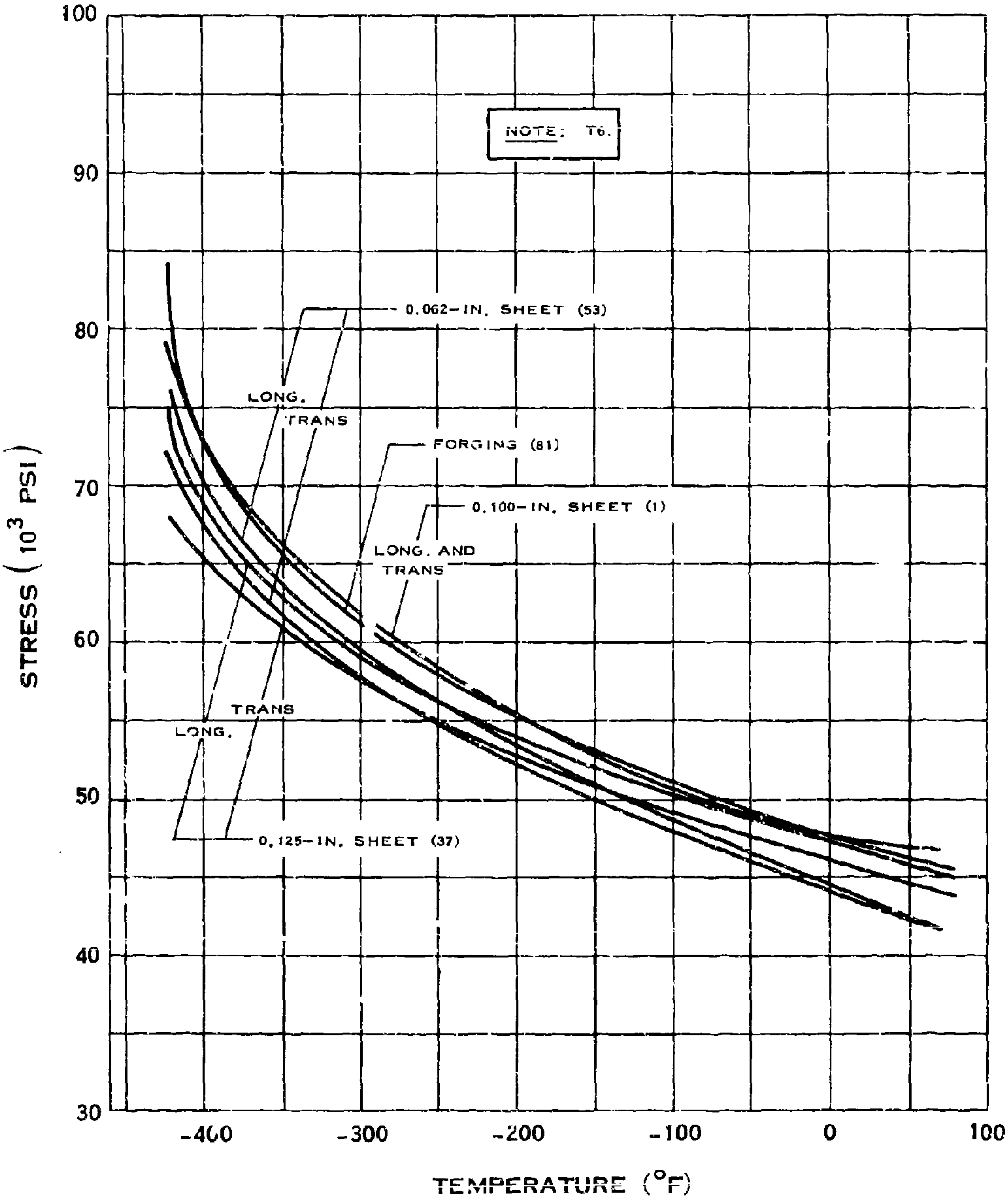
A.13.a-1



YIELD STRENGTH OF 6061 ALUMINUM

(6-63)

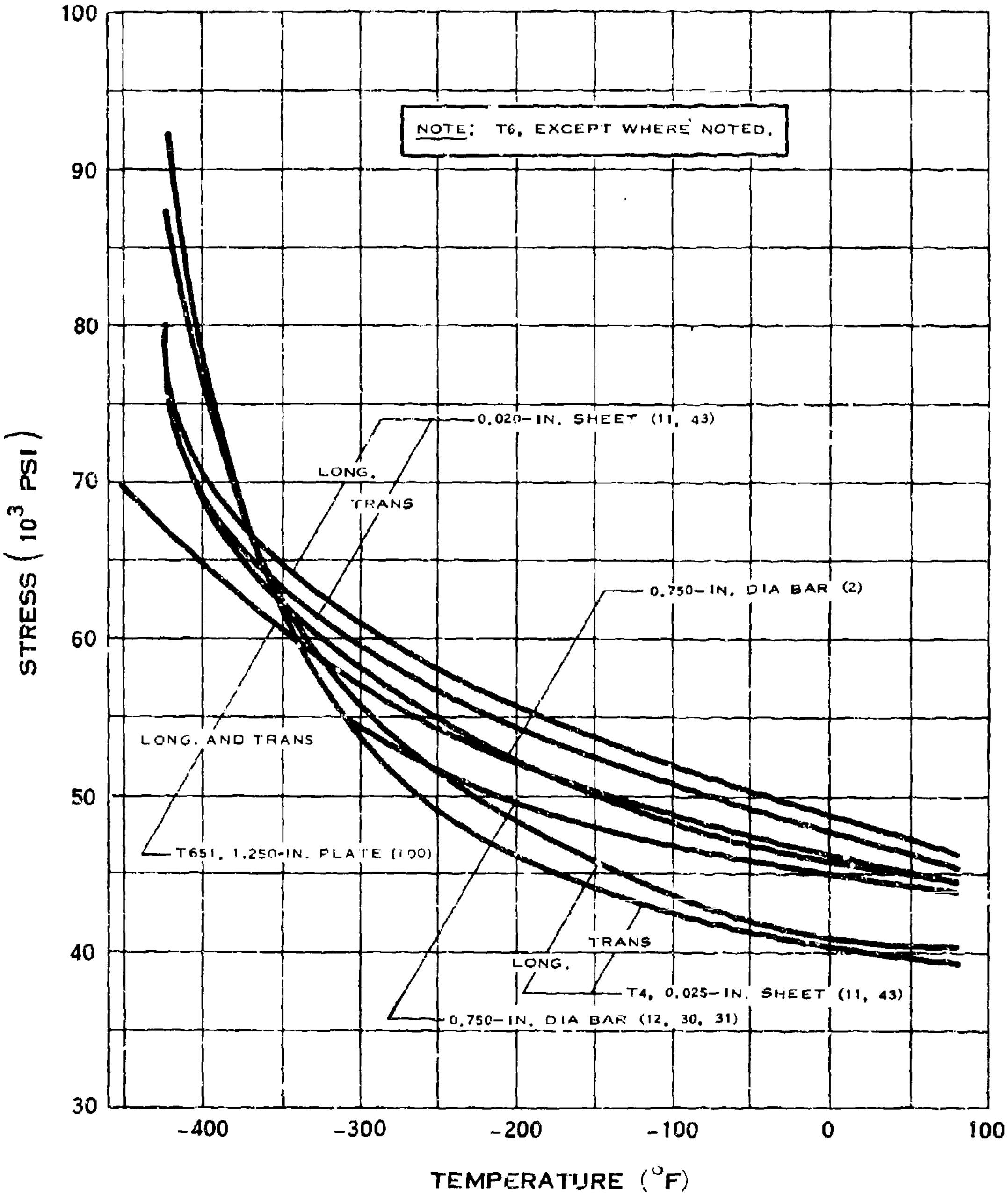
A.13.b



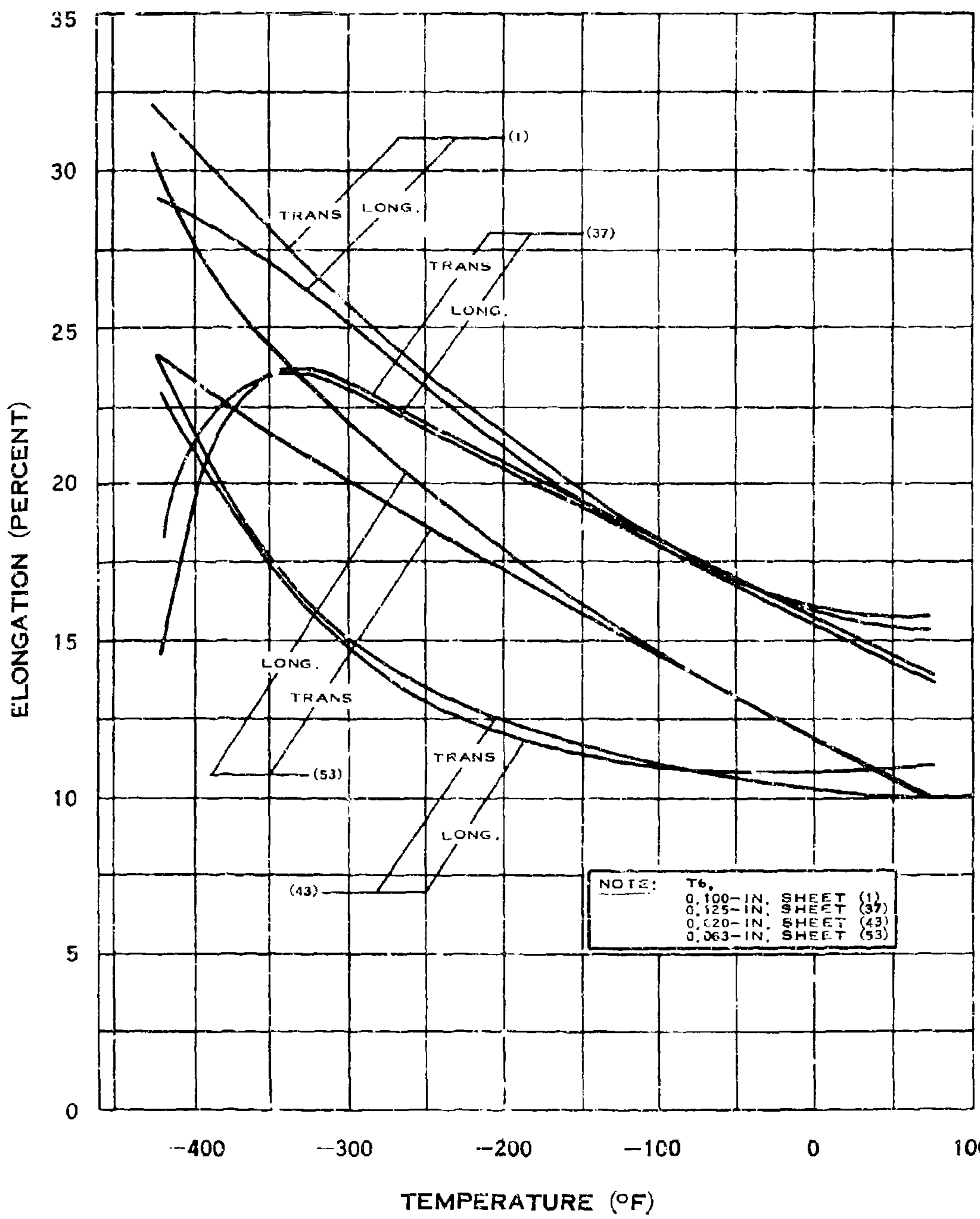
TENSILE STRENGTH OF 6061 ALUMINUM

(7-64)

A.13.b-1



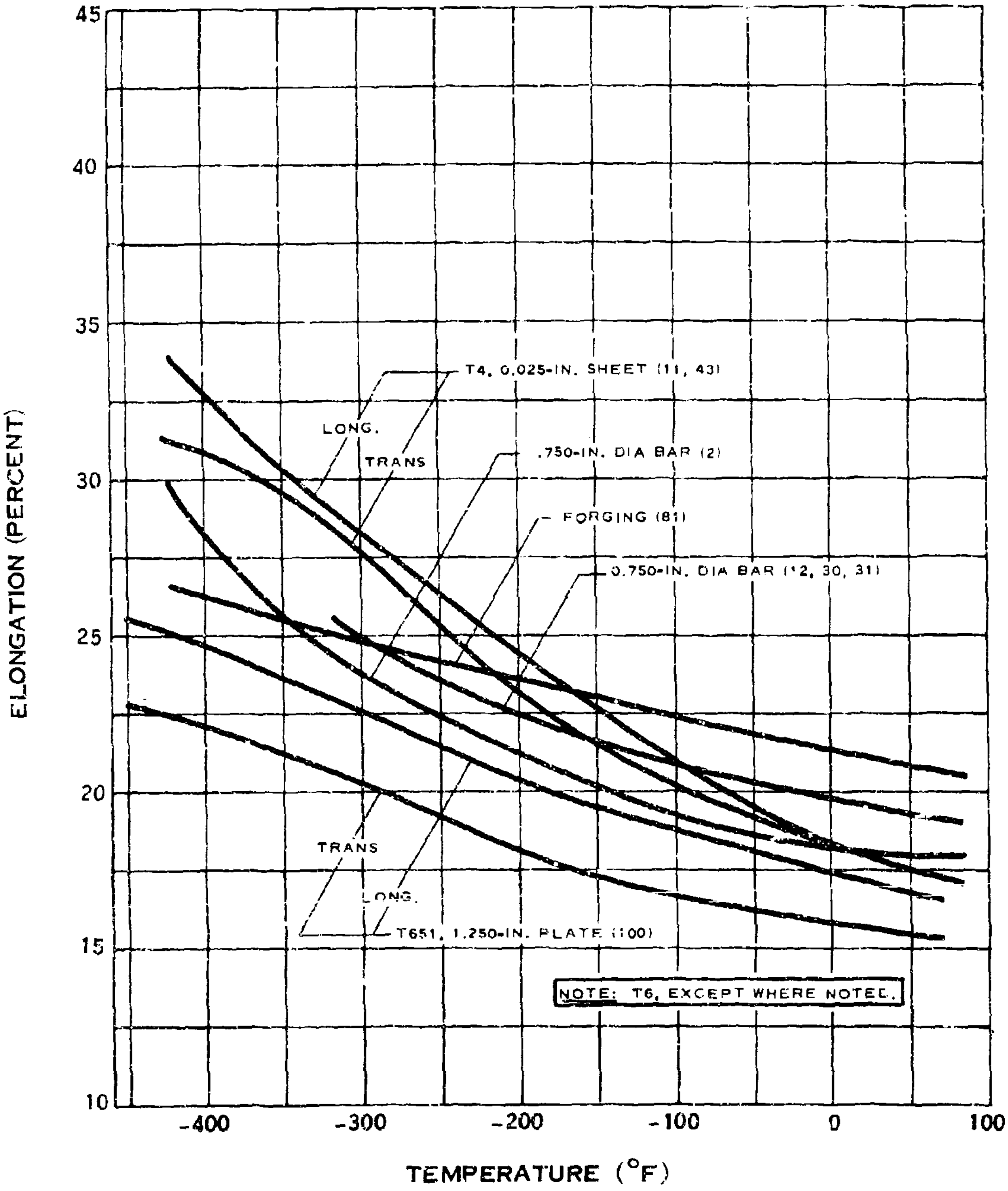
TENSILE STRENGTH OF 6061 ALUMINUM



ELONGATION OF 6061 ALUMINUM

(7-64)

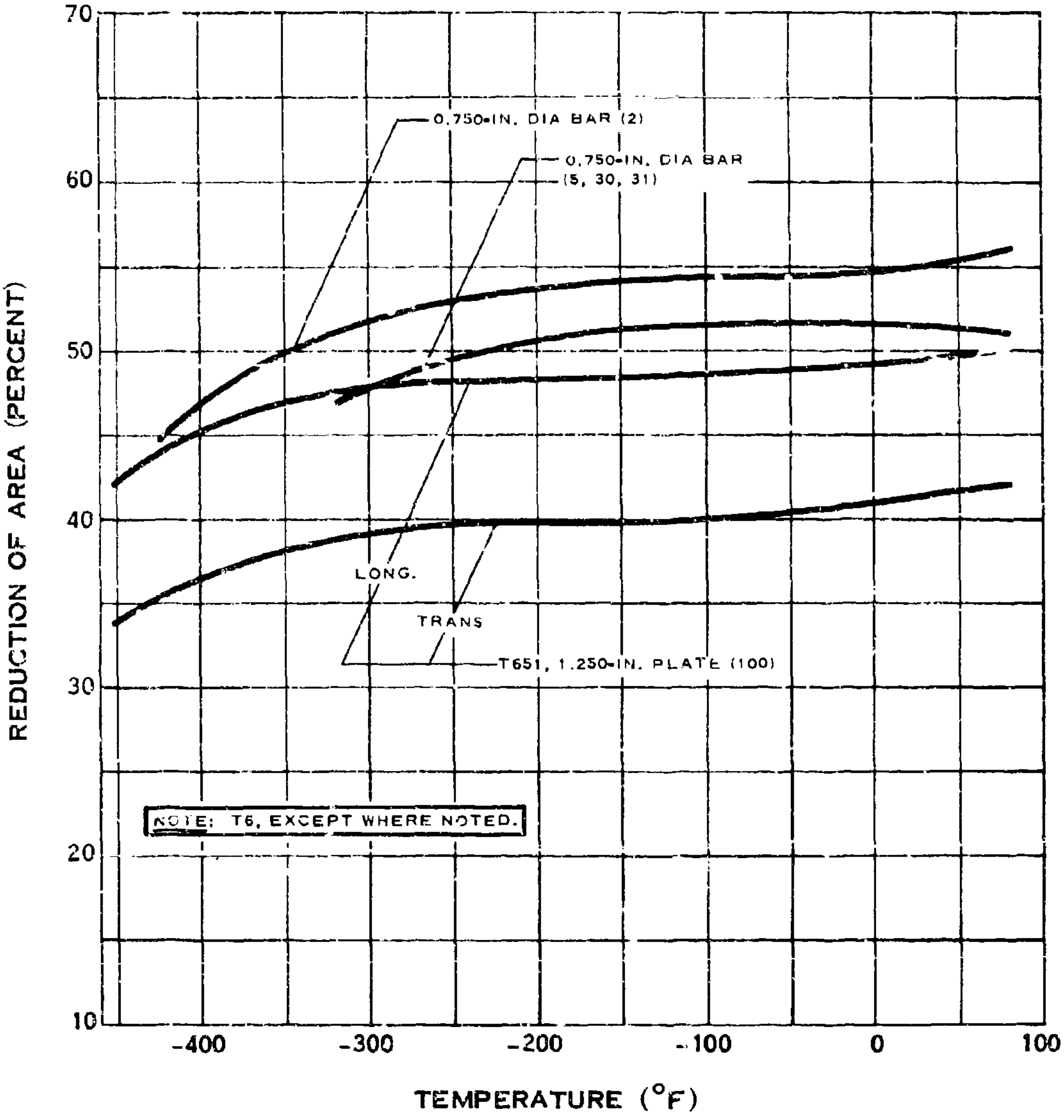
A.13.c-1



ELONGATION OF 6061 ALUMINUM

(6-68)

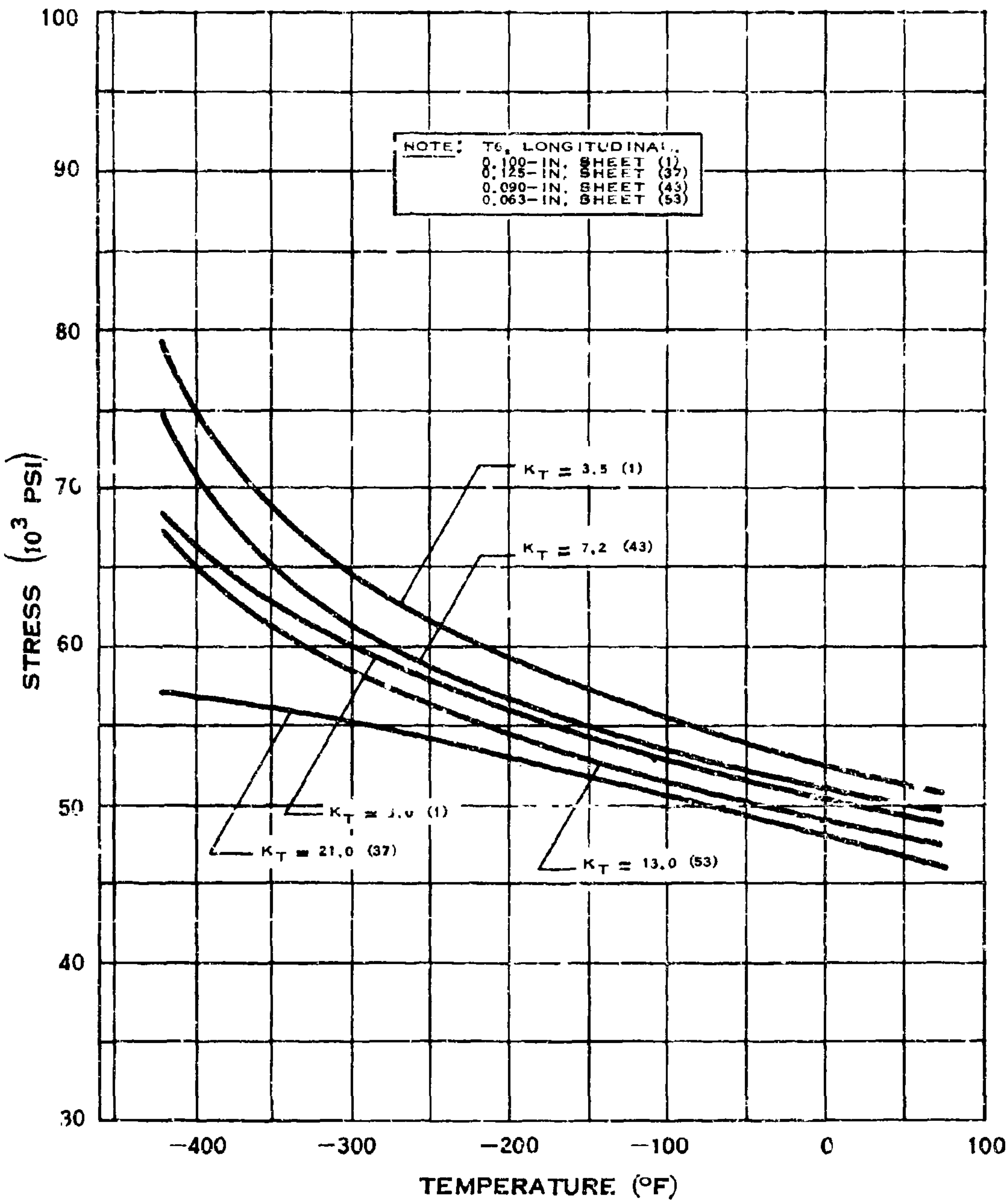
A.13.d



REDUCTION OF AREA OF 6061 ALUMINUM

(6-68)

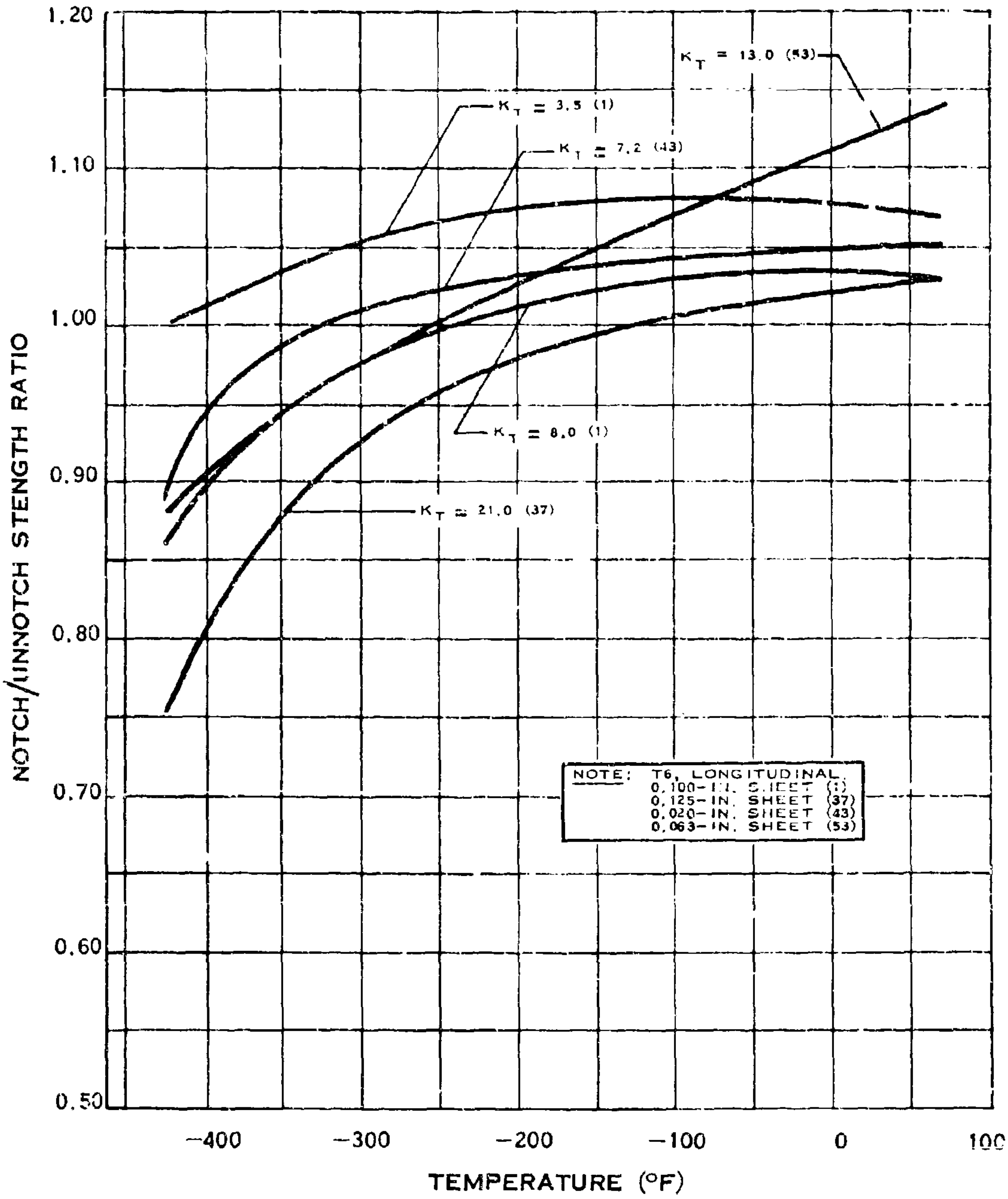
A.13.e



NOTCH TENSILE STRENGTH OF 6061 ALUMINUM

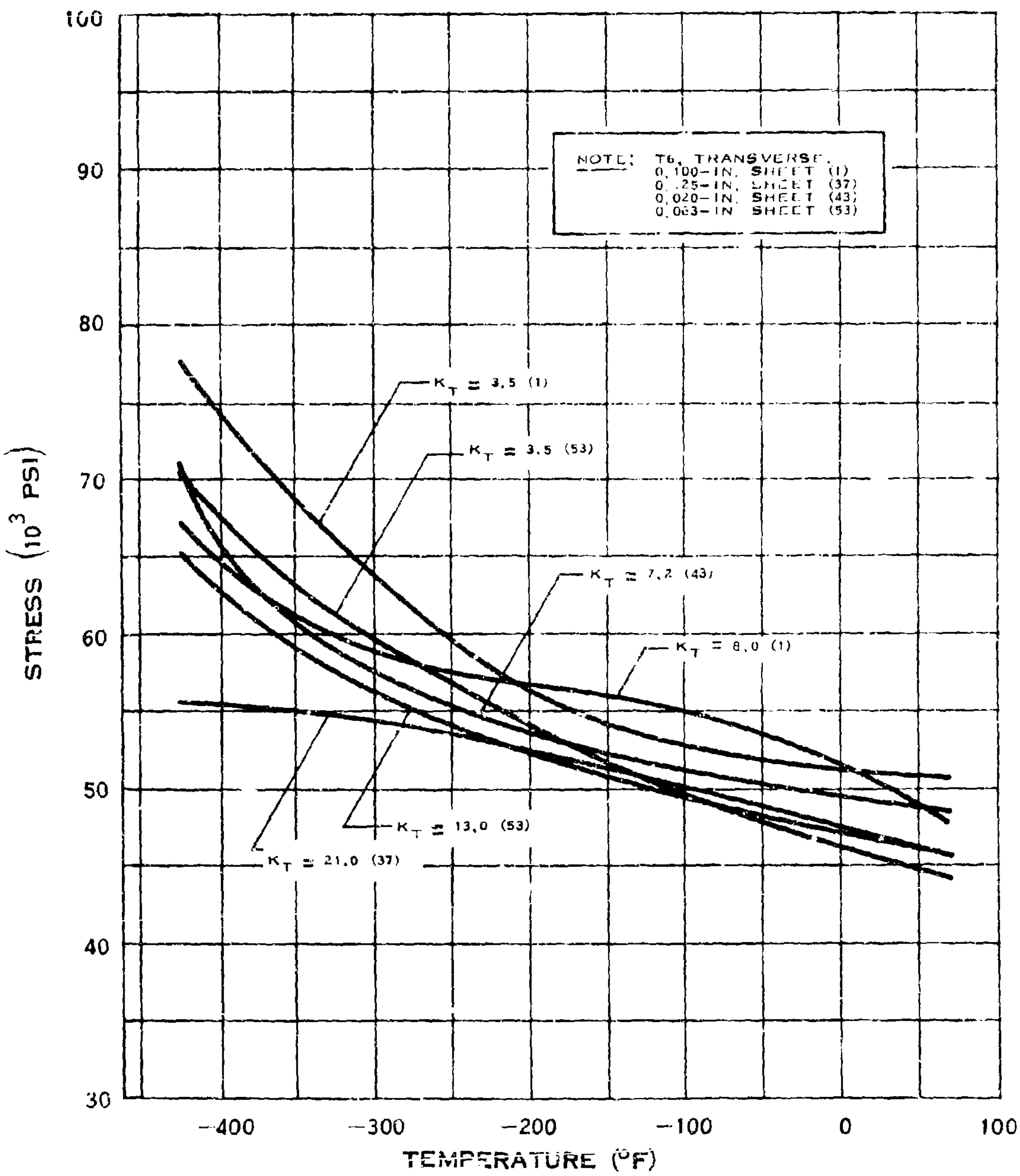
(7-64)

A.13.e-1



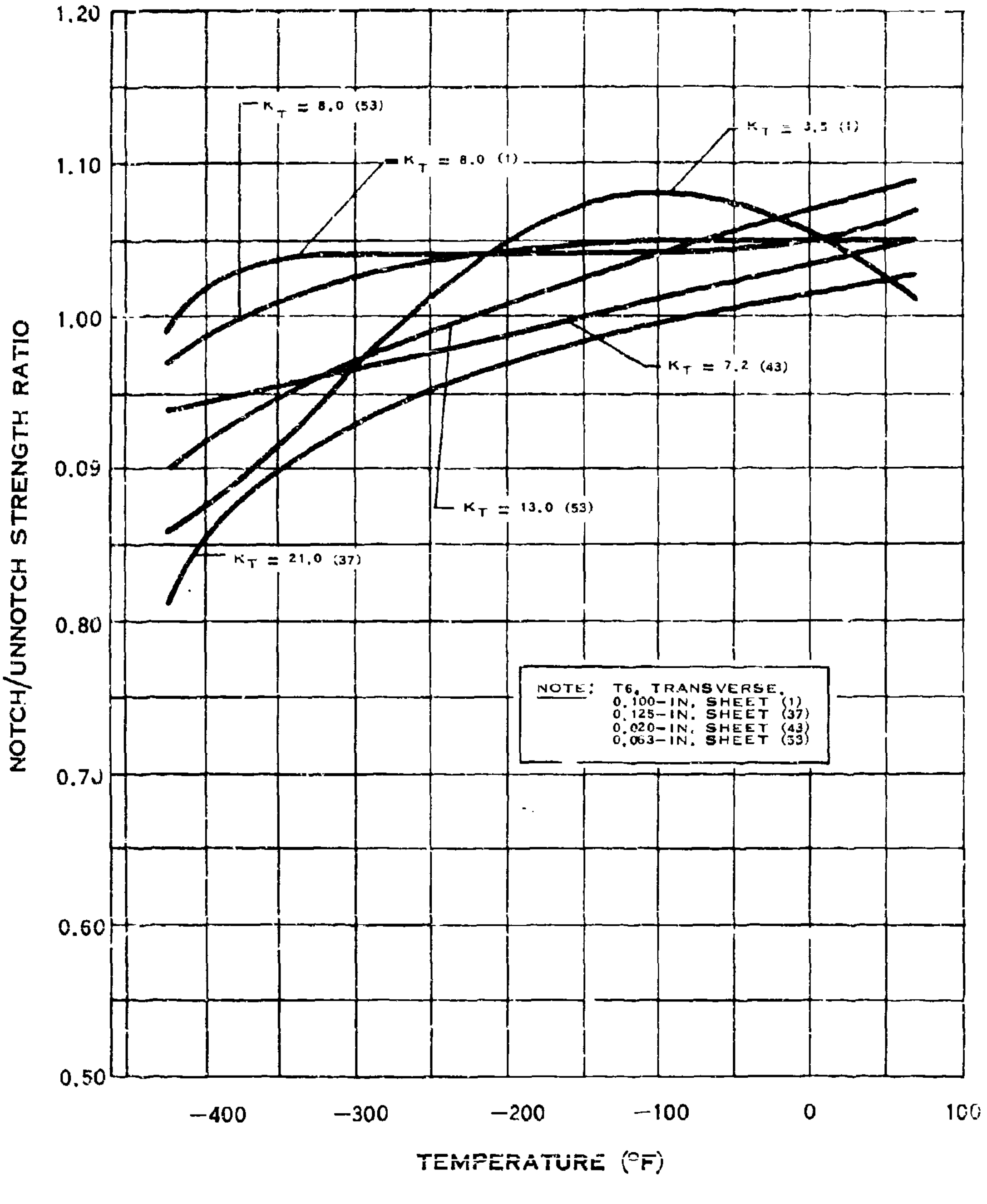
NOTCH STRENGTH RATIO OF 6061 ALUMINUM

A.13.e-2



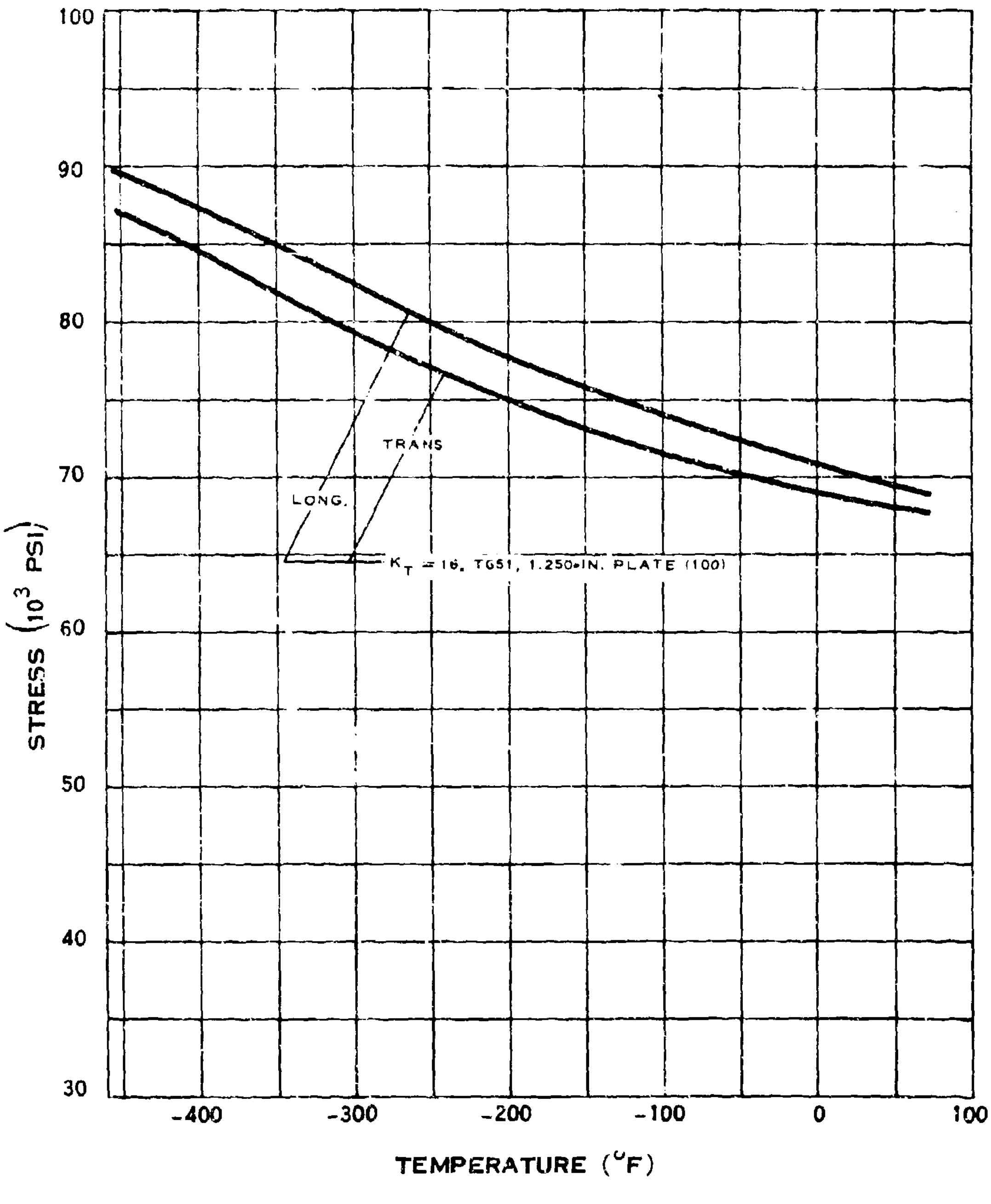
NOTCH TENSILE STRENGTH OF 6061 ALUMINUM

A.13.e-3



NOTCH STRENGTH RATIO OF 6061 ALUMINUM

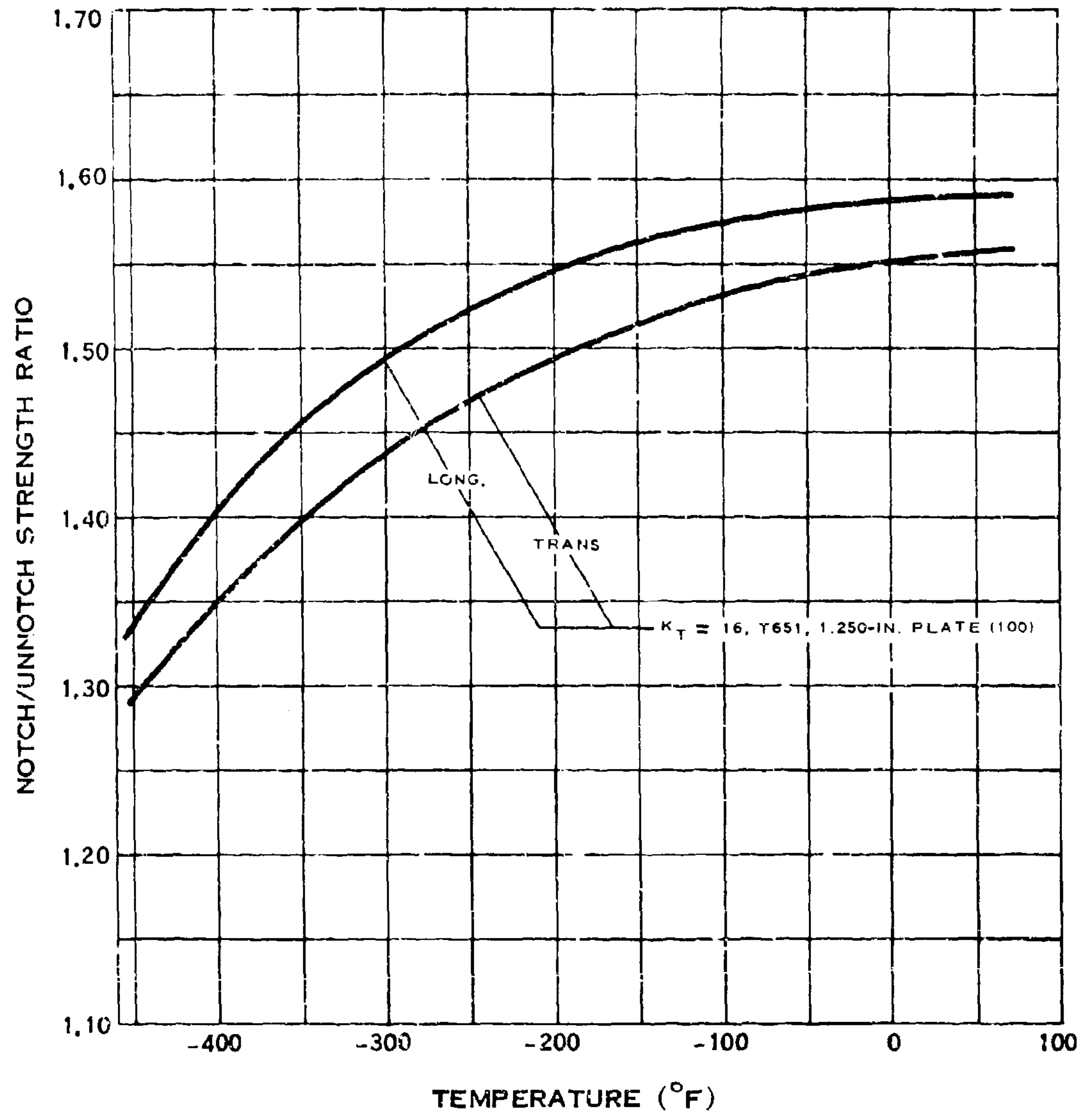
A.13.e-4



NOTCH TENSILE STRENGTH OF 6061 ALUMINUM

(6-68)

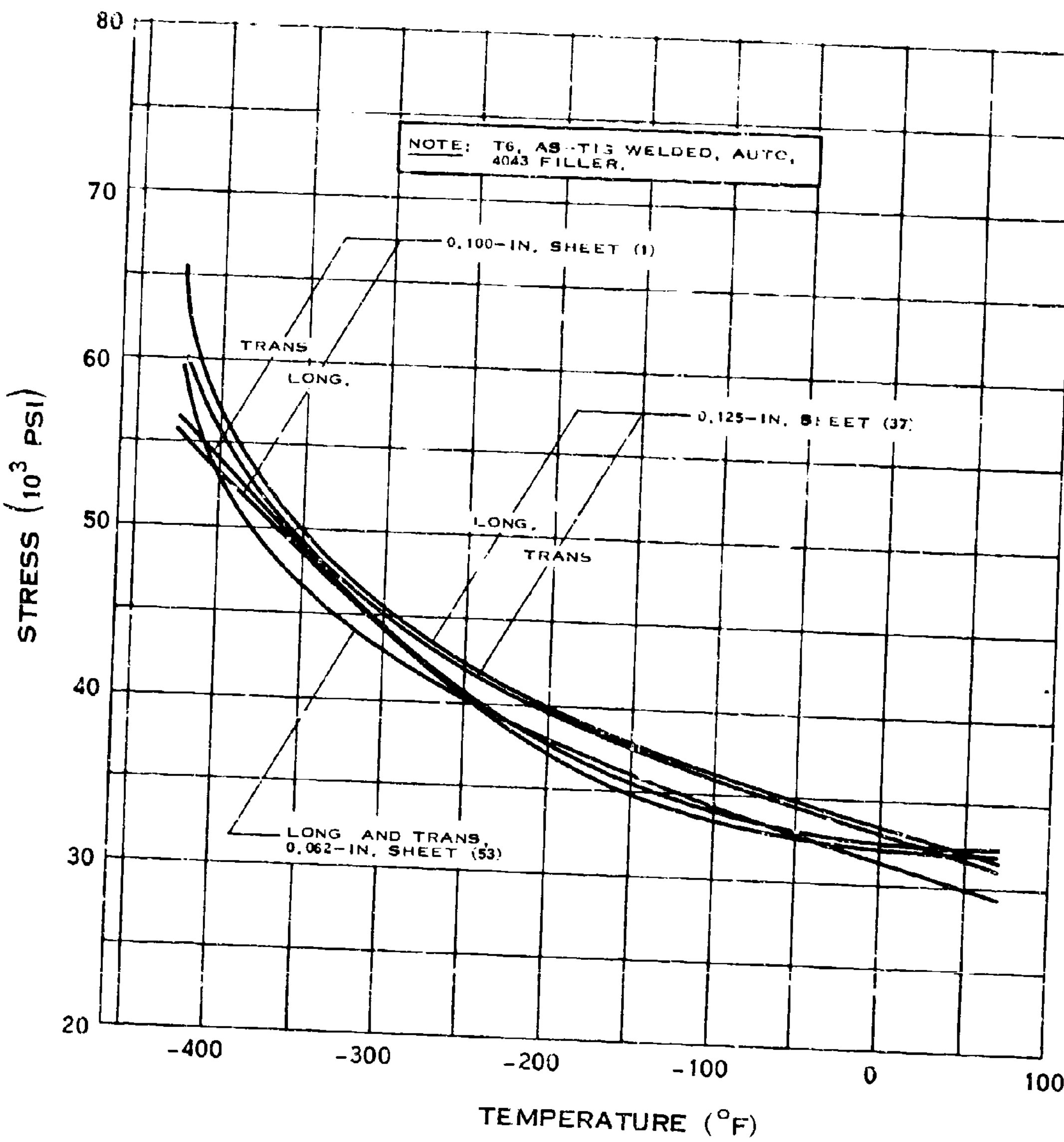
A.13.e-5



NOTCH STRENGTH RATIO OF 6061 ALUMINUM

(6-68)

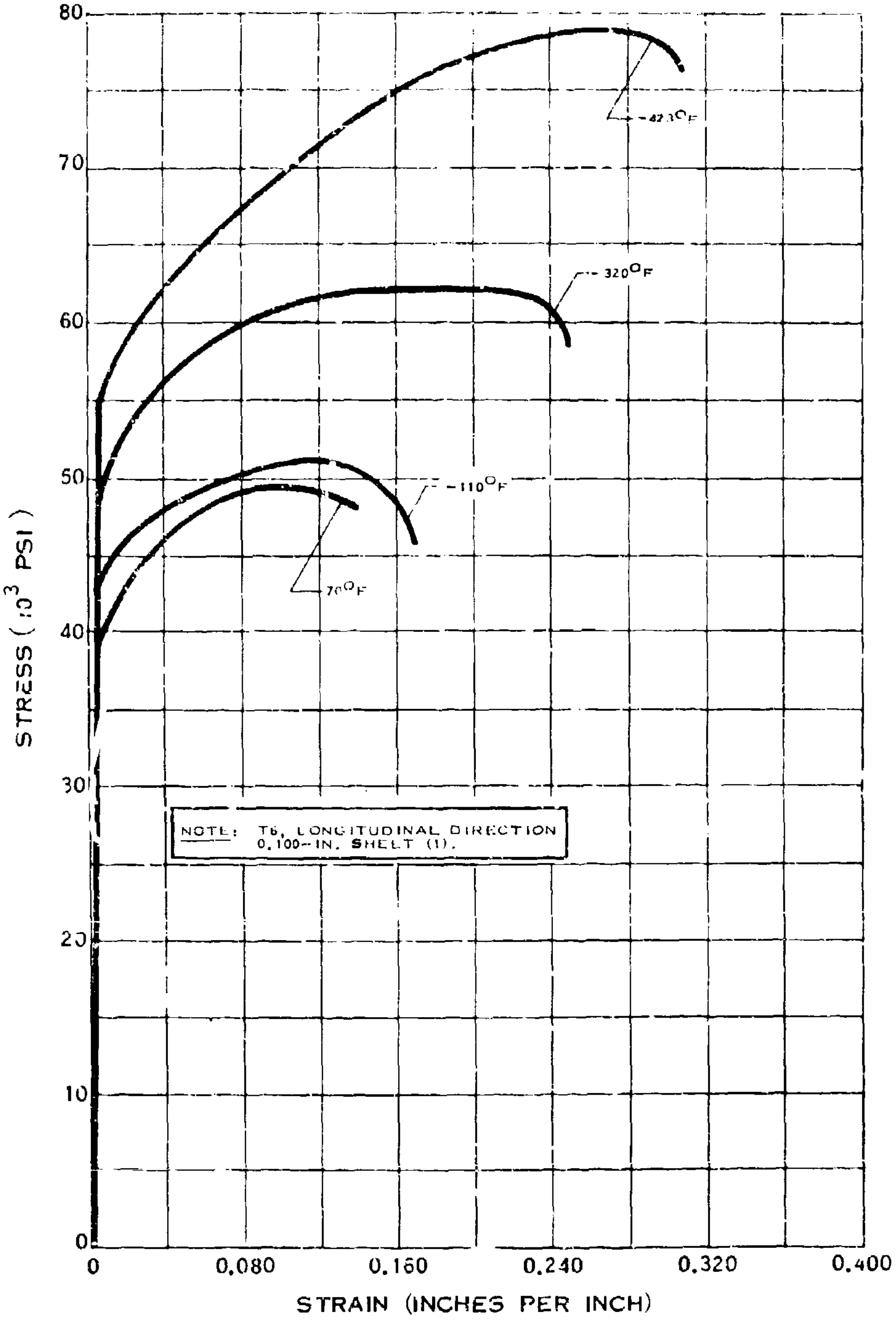
A.13.g



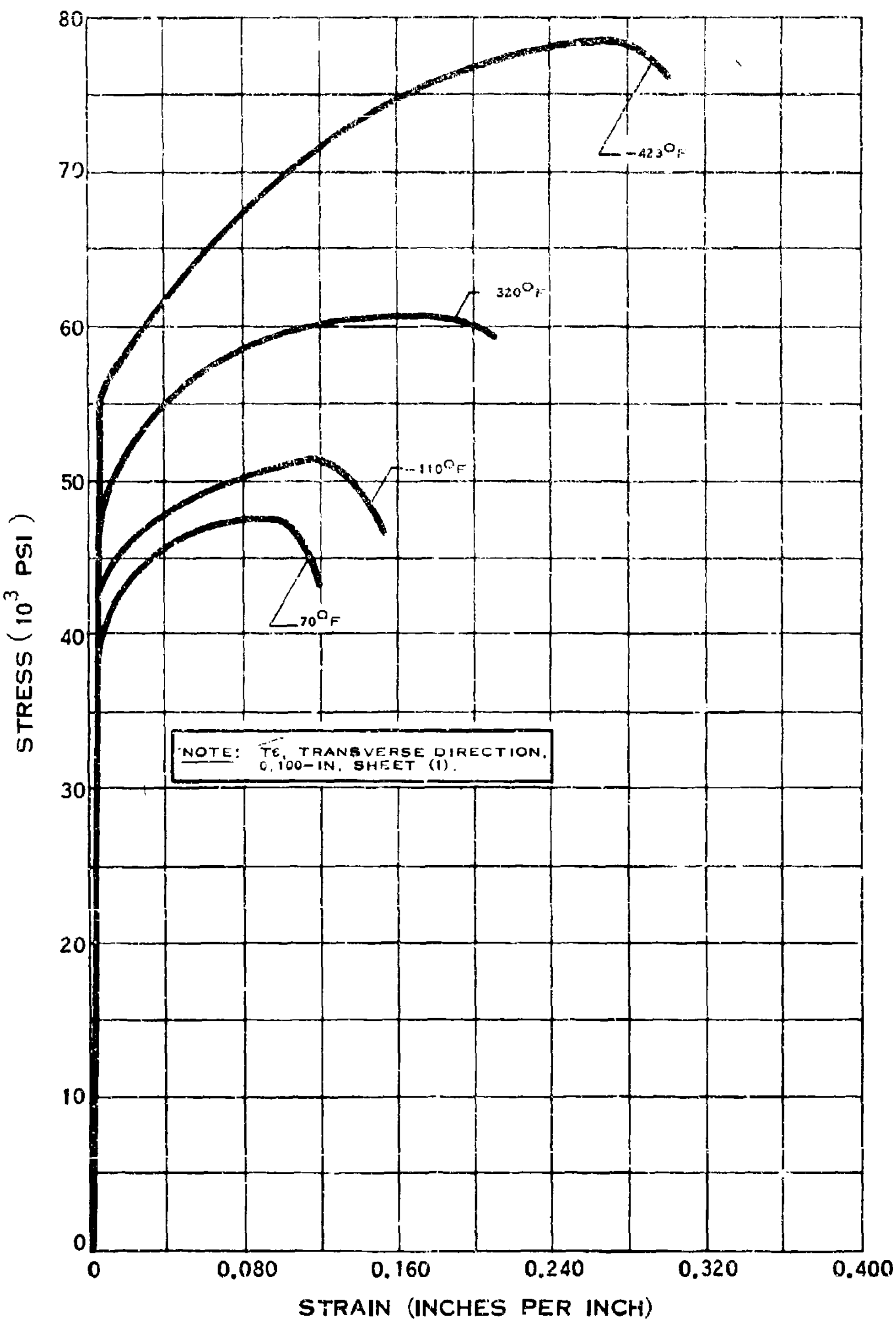
WELD TENSILE STRENGTH OF 6061 ALUMINUM

(7-64)

A.13.h

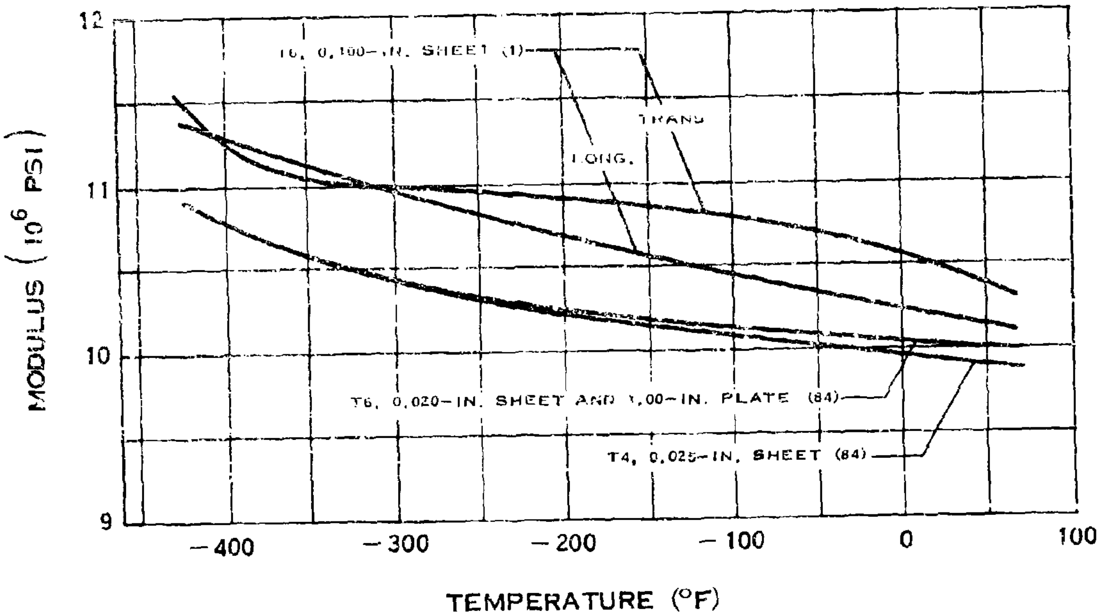


(1-65) **STRESS-STRAIN DIAGRAM FOR 6061 ALUMINUM**

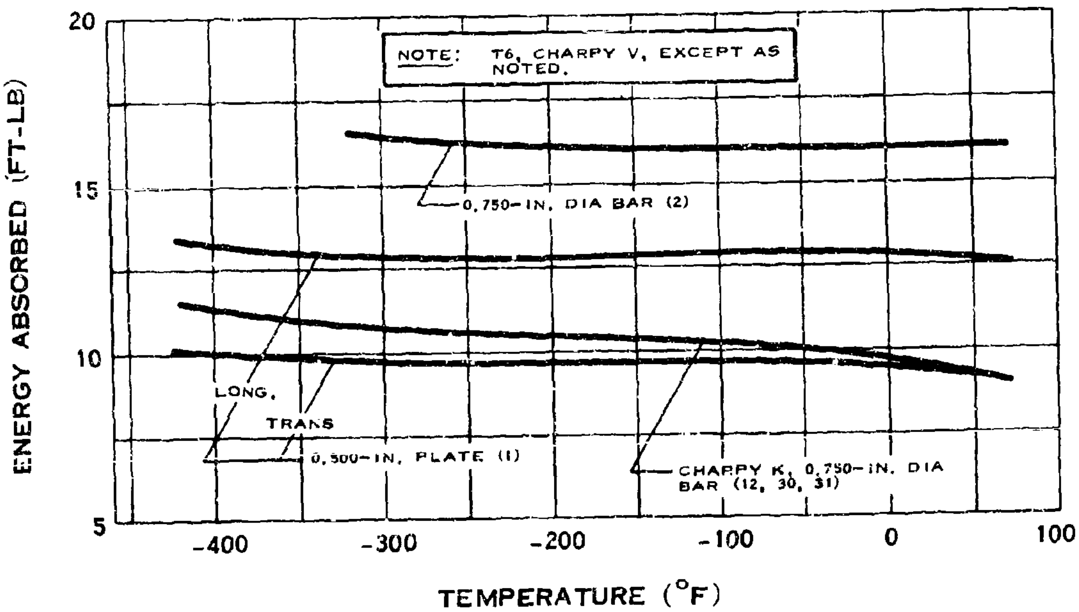


(1-65)

STRESS-STRAIN DIAGRAM FOR 6061 ALUMINUM

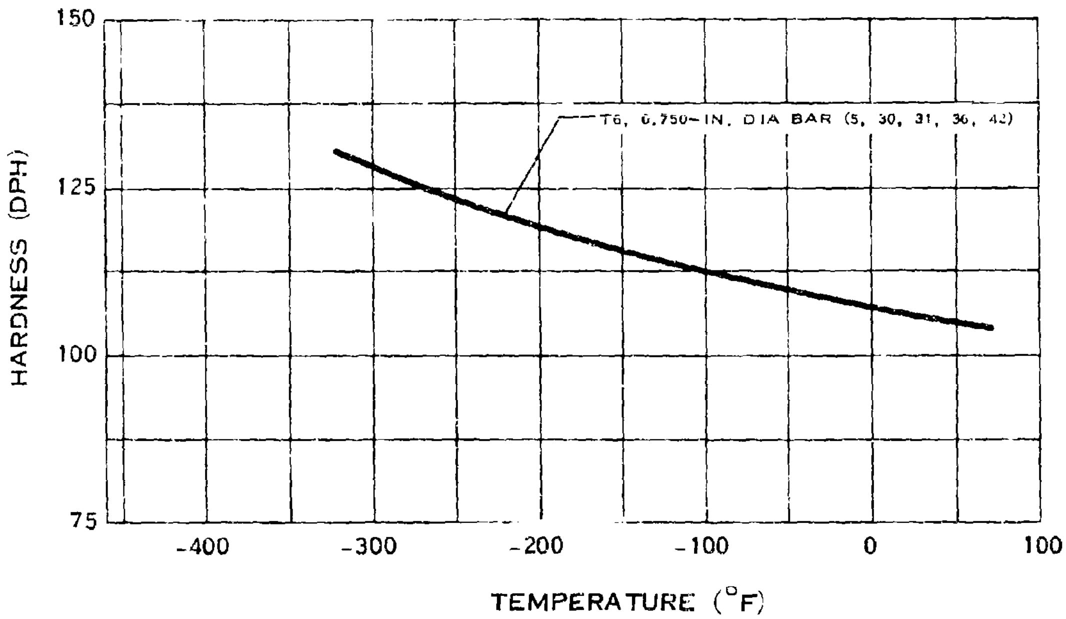


MODULUS OF ELASTICITY OF 6061 ALUMINUM



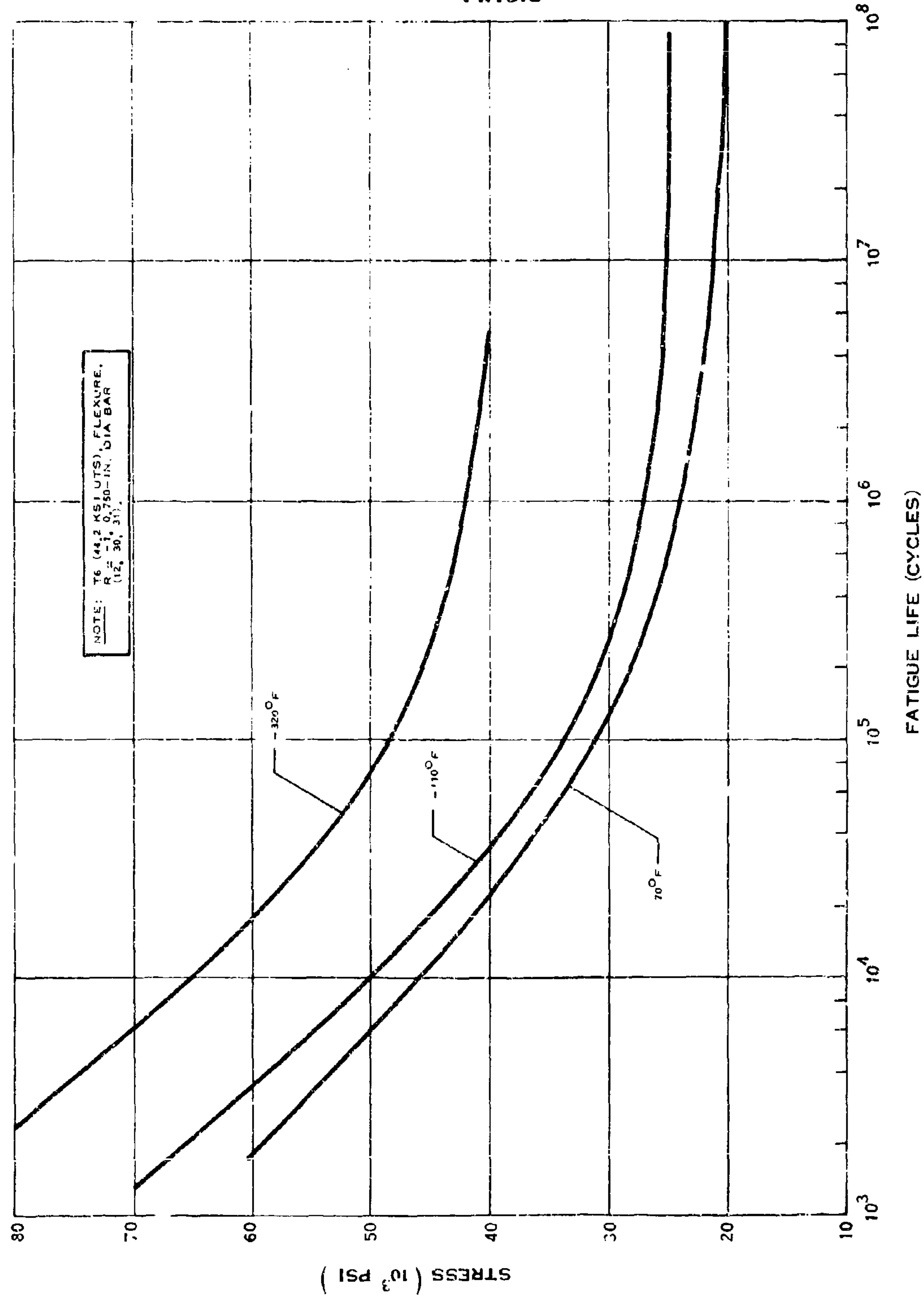
IMPACT STRENGTH OF 6061 ALUMINUM

A.13.k



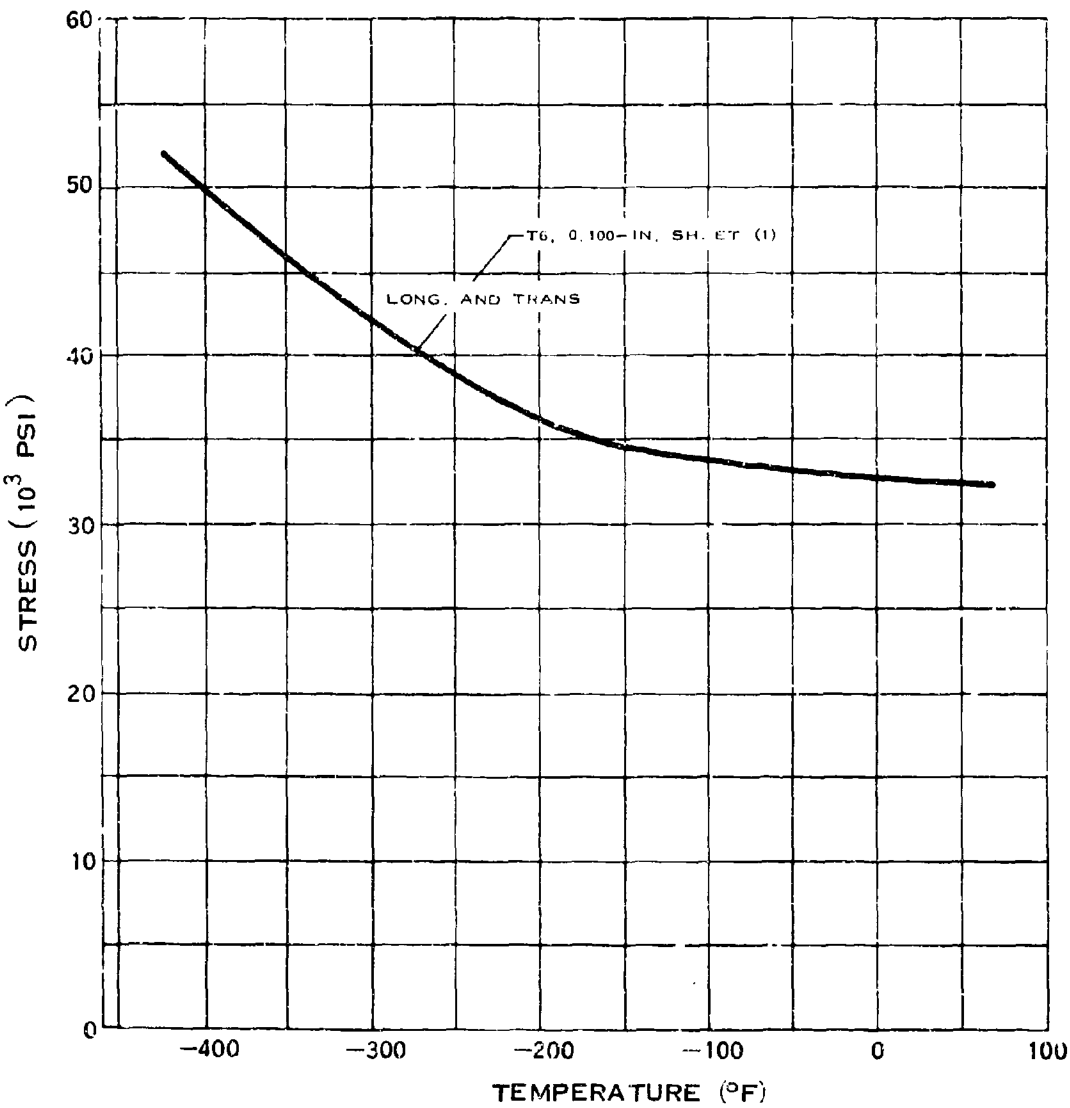
HARDNESS OF 6061 ALUMINUM

(7-64)



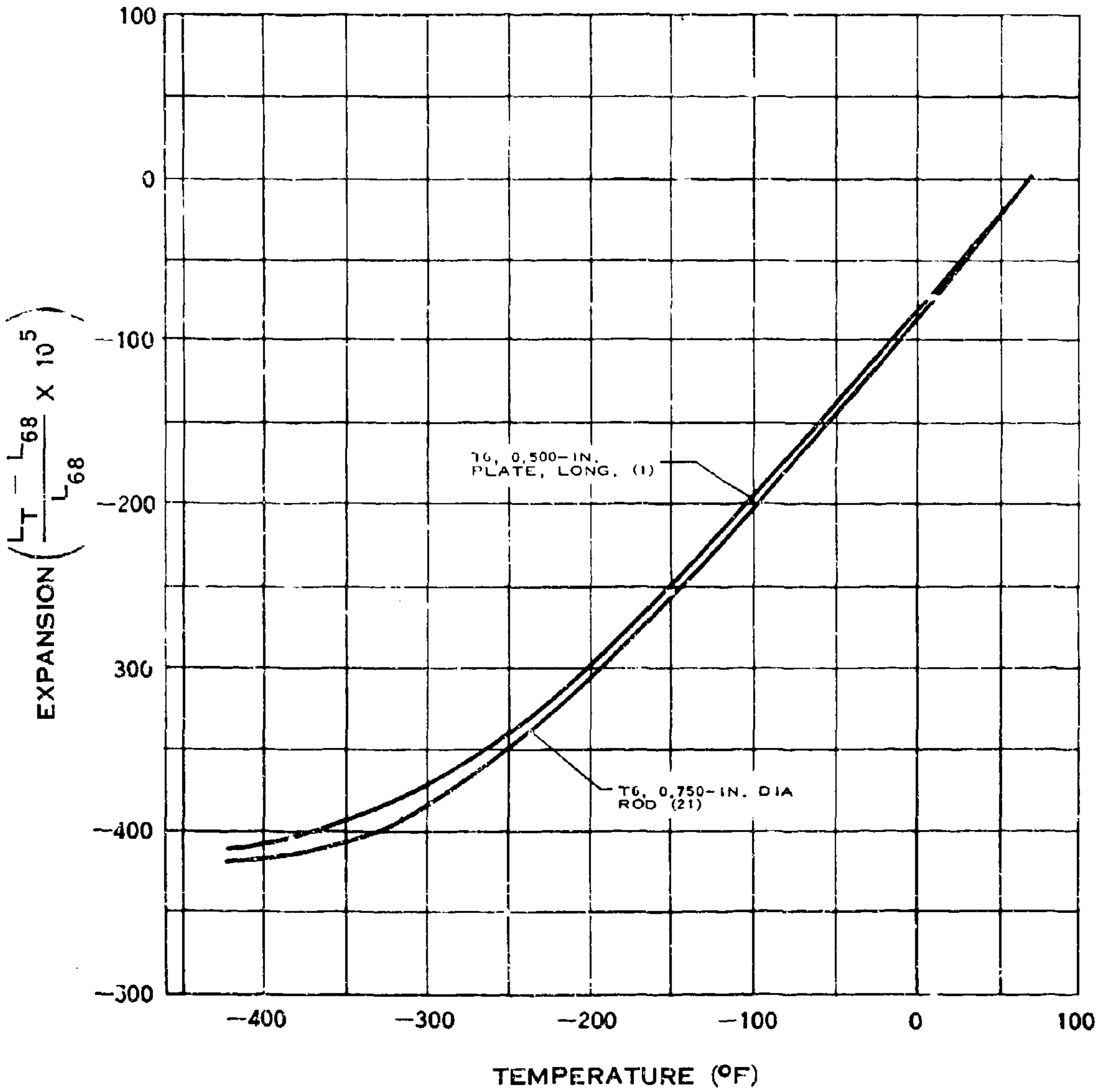
FATIGUE STRENGTH OF 6061 ALUMINUM

A.13.p



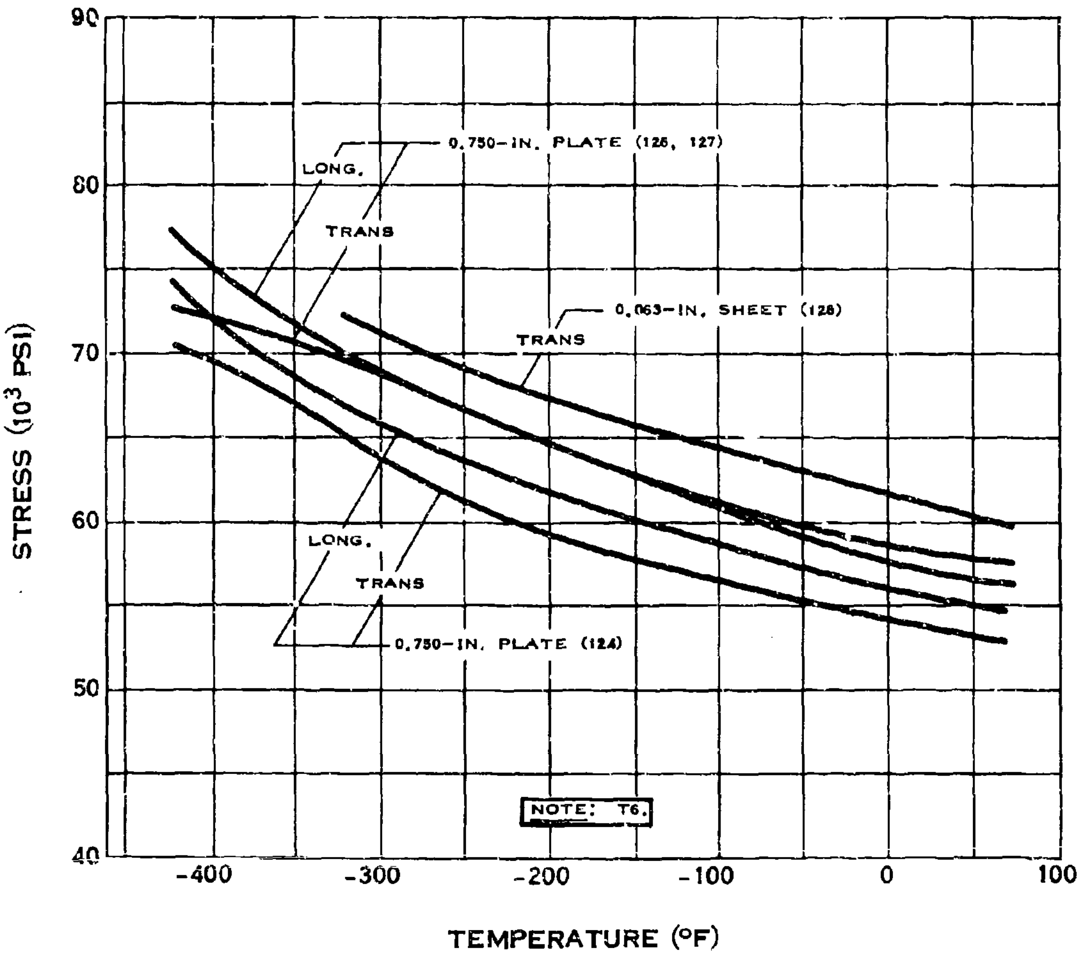
SHEAR STRENGTH OF 6061 ALUMINUM

A.13.t



THERMAL EXPANSION OF 6061 ALUMINUM

A.14.a



YIELD STRENGTH OF 7002 ALUMINUM

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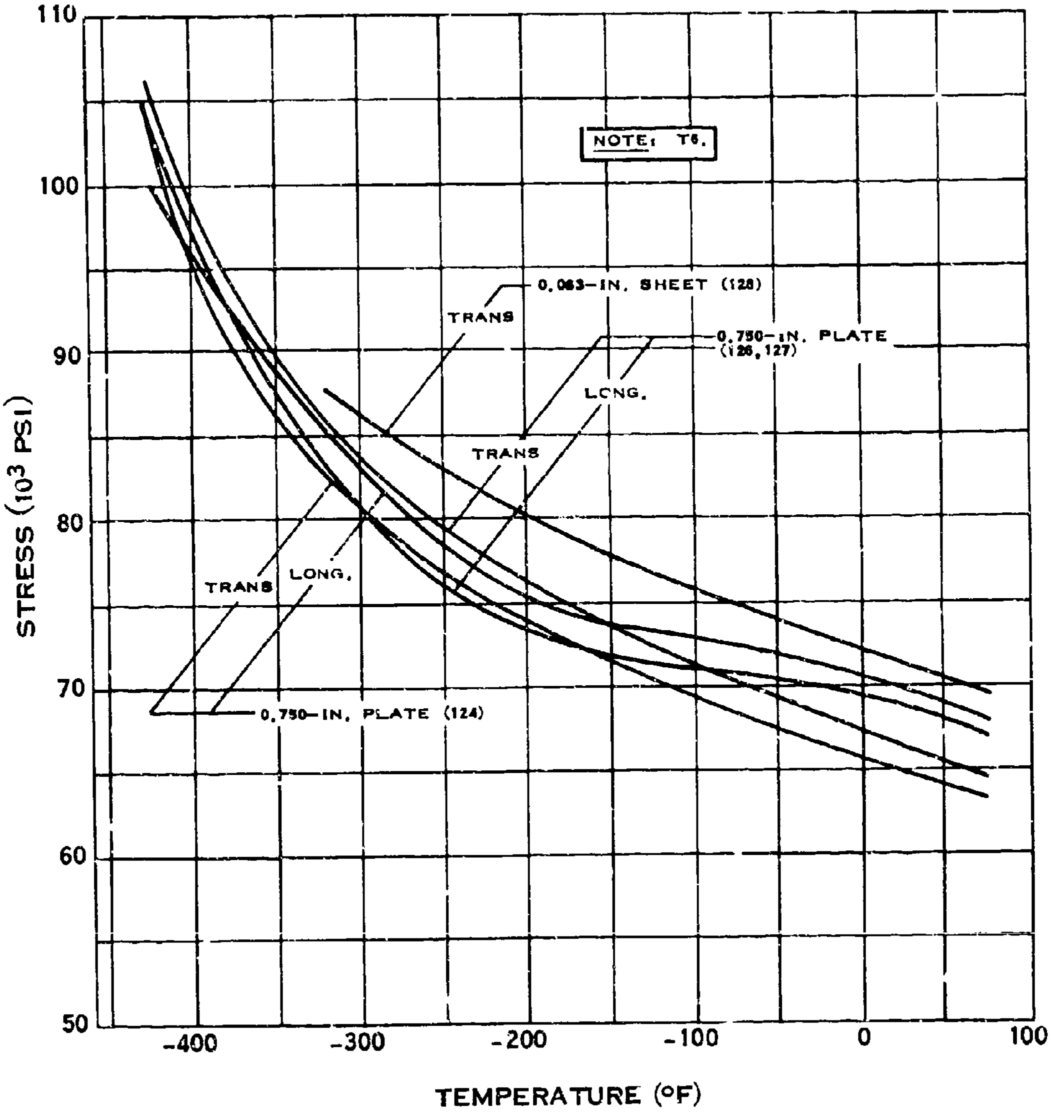
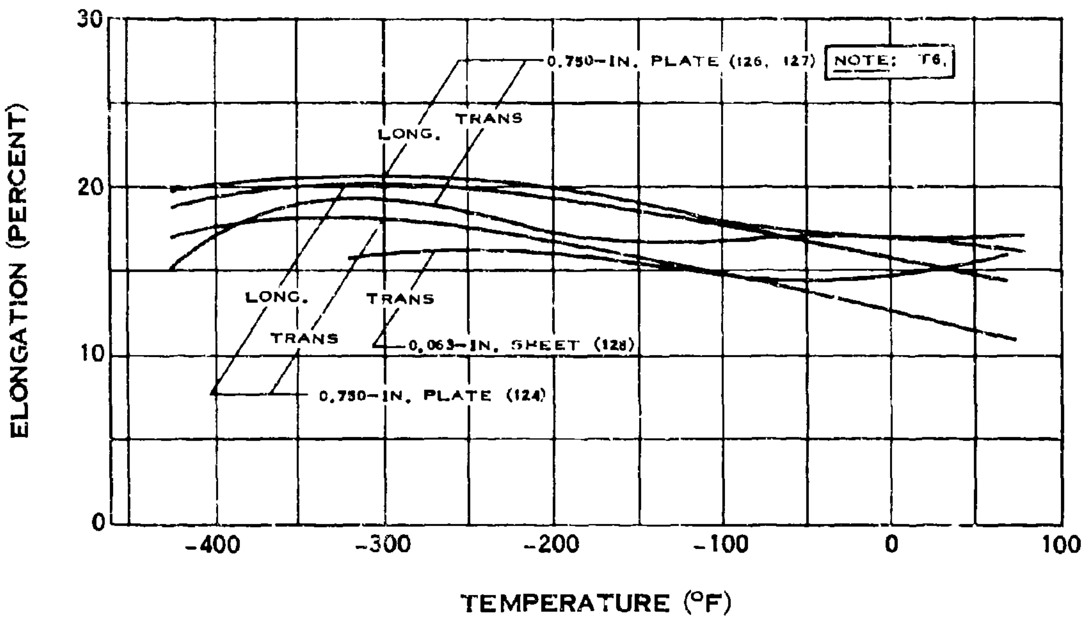
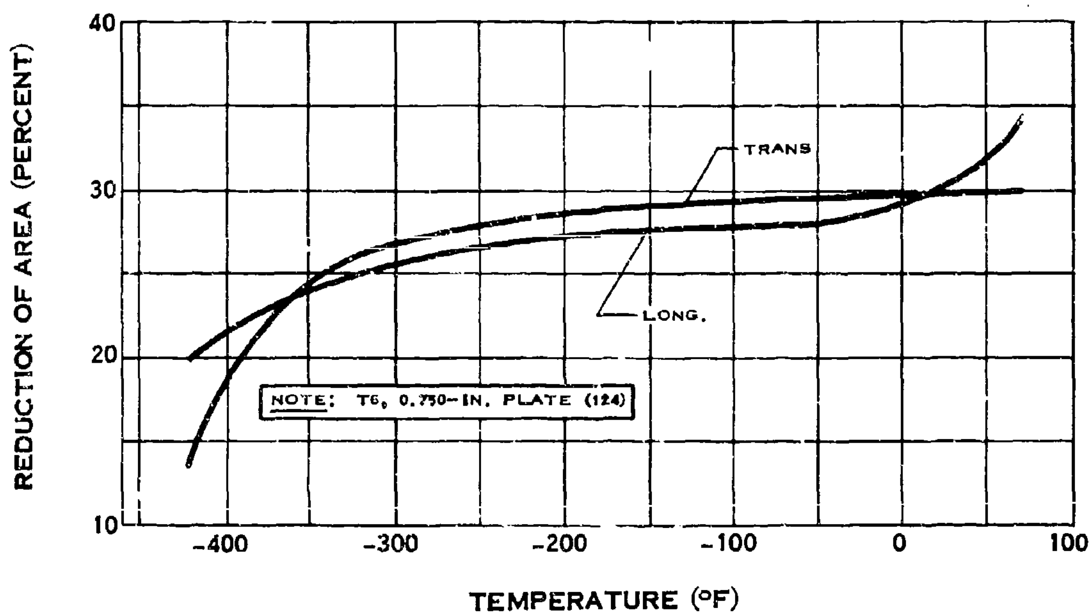
A.14.b



TENSILE STRENGTH OF 7002 ALUMINUM

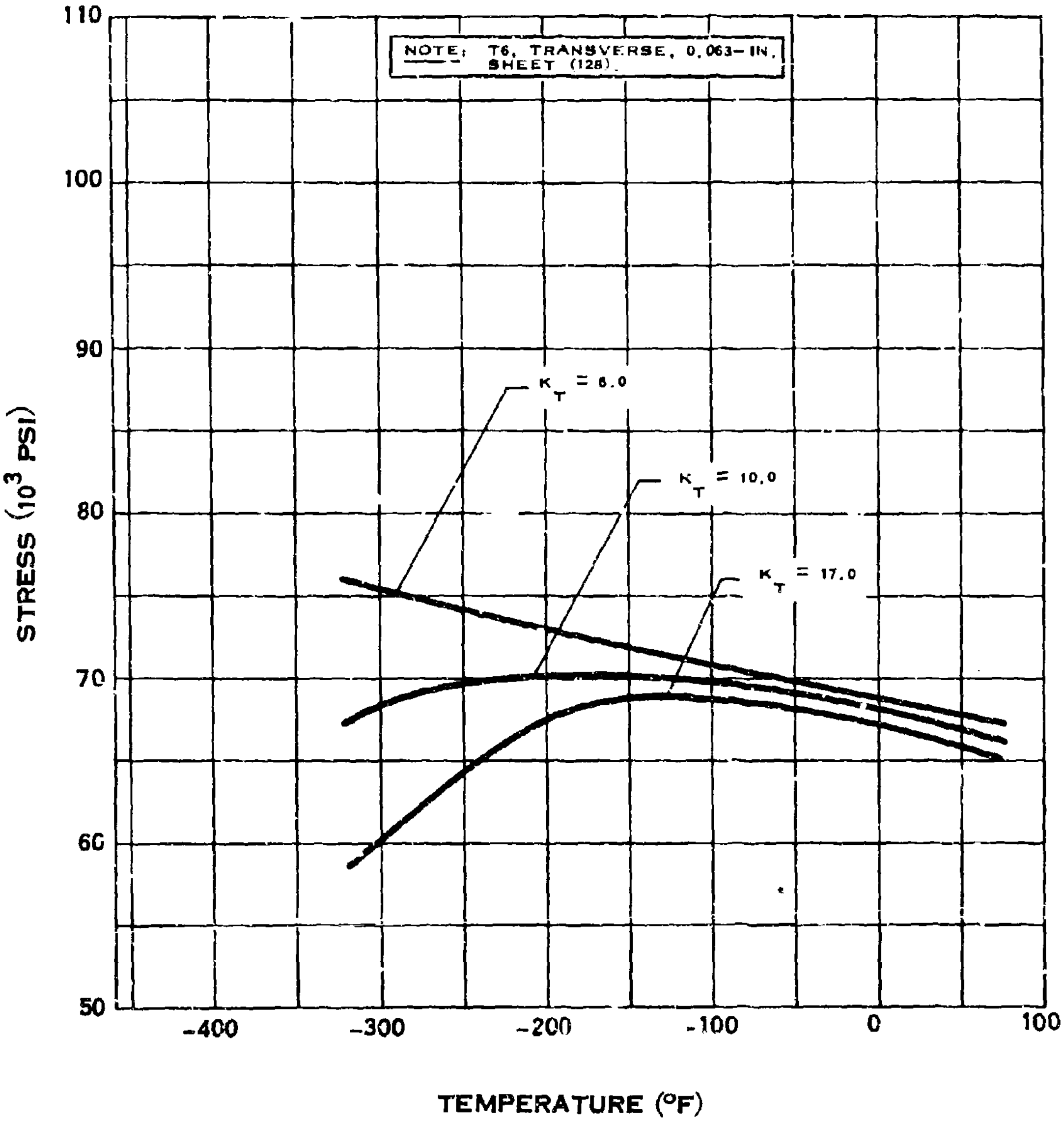


ELONGATION OF 7002 ALUMINUM

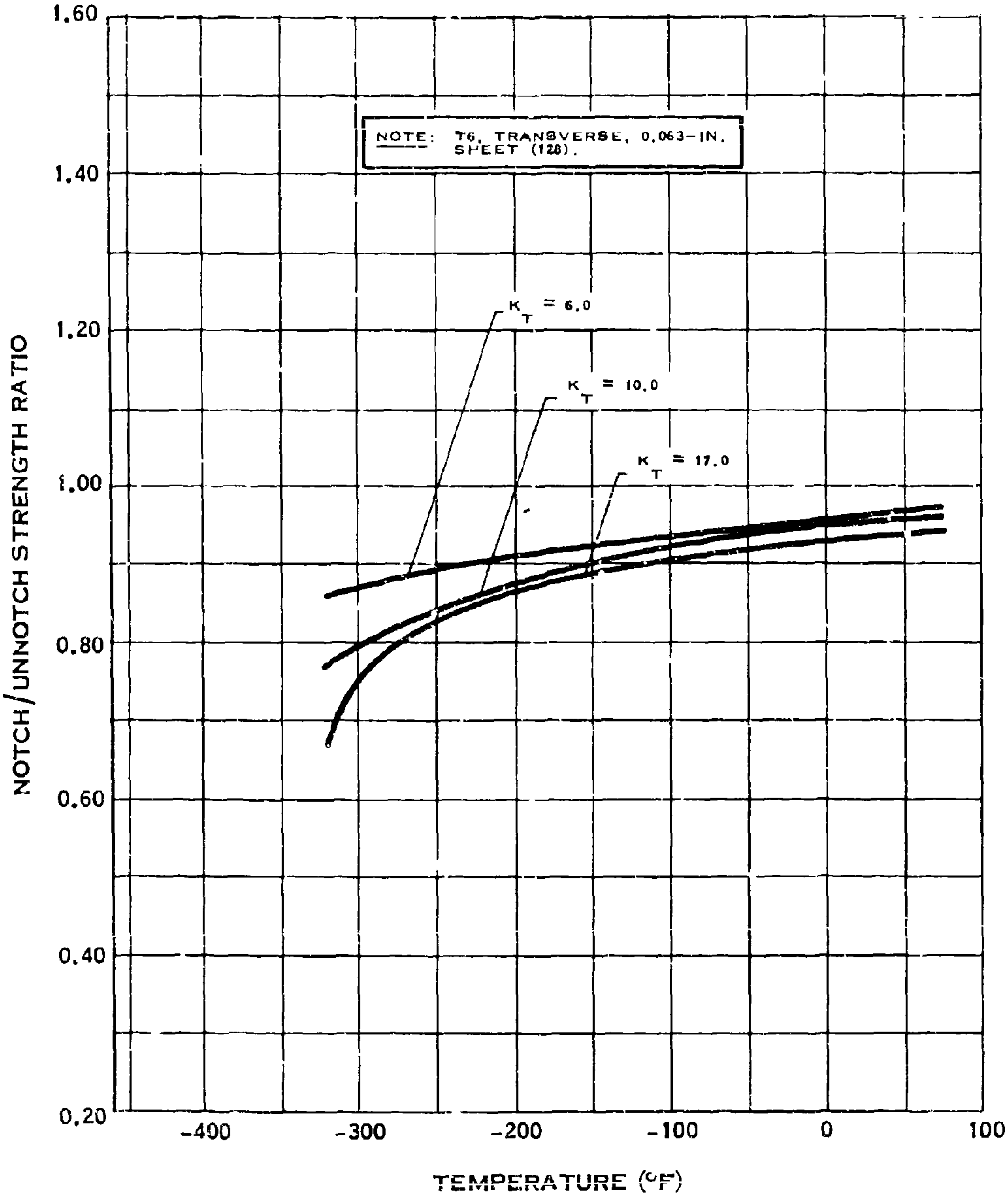


REDUCTION OF AREA OF 7002 ALUMINUM

A.14.e

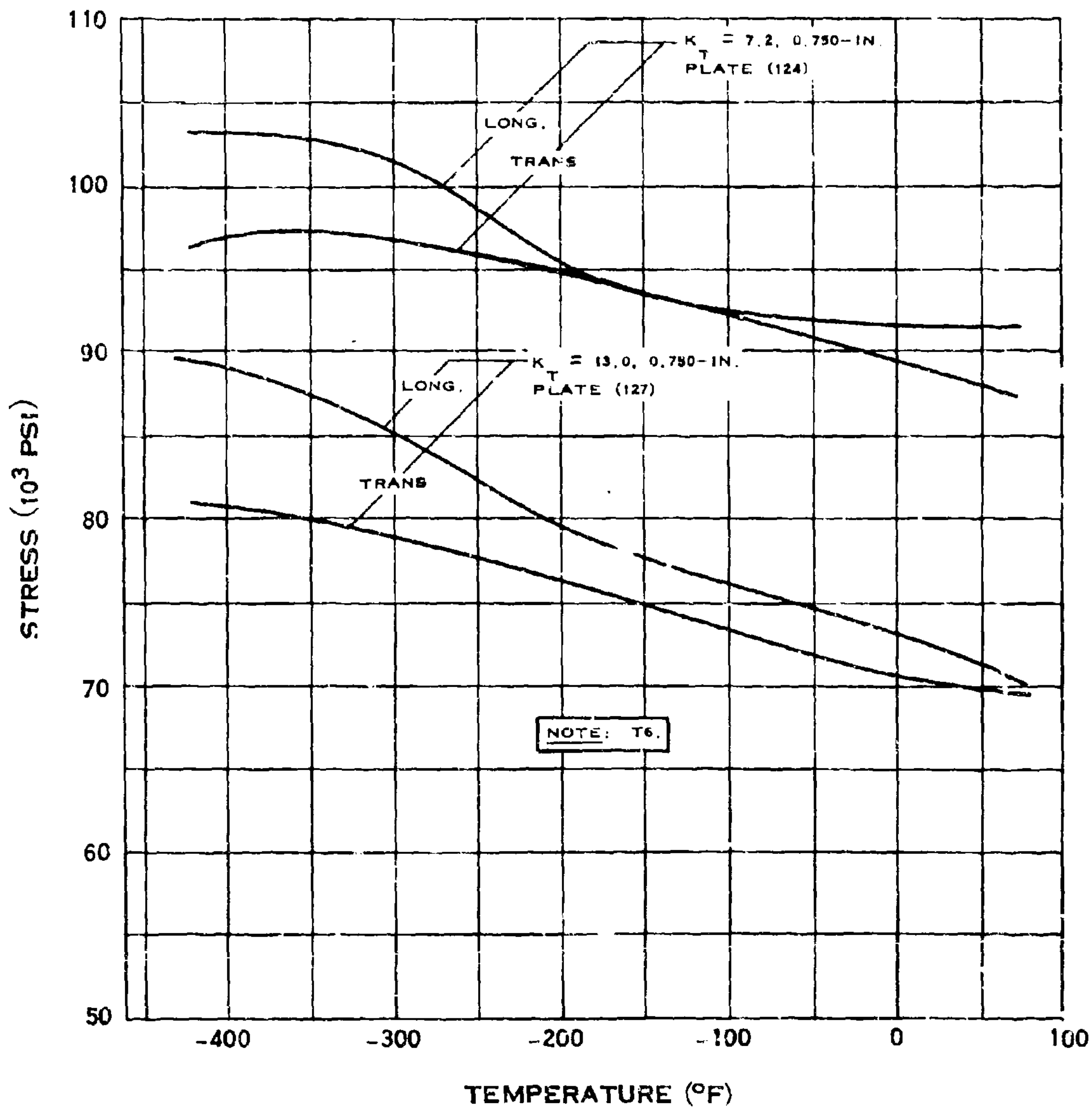


NOTCH TENSILE STRENGTH OF 7002 ALUMINUM

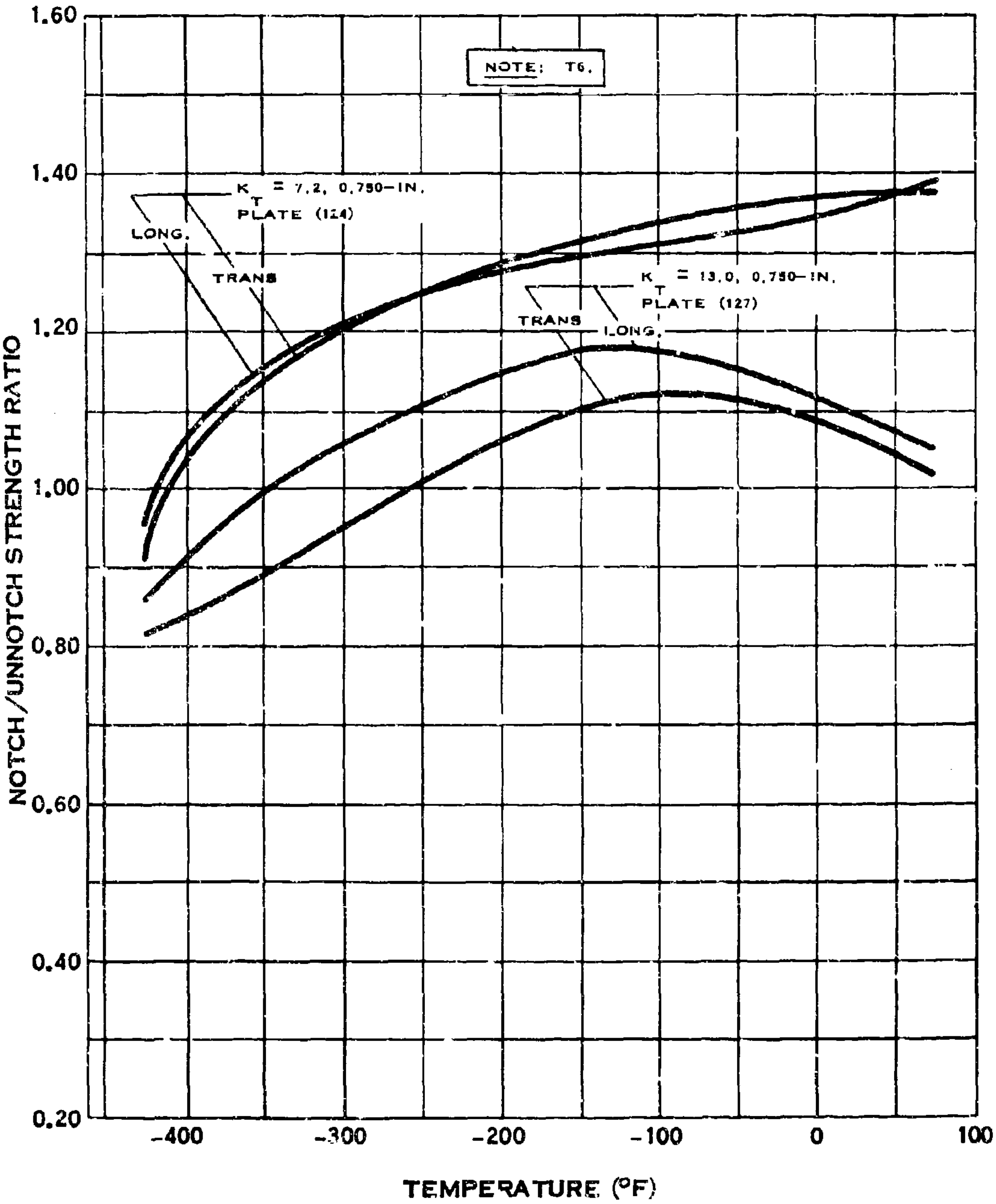


NOTCH STRENGTH RATIO OF 7002 ALUMINUM

A.14.e-2

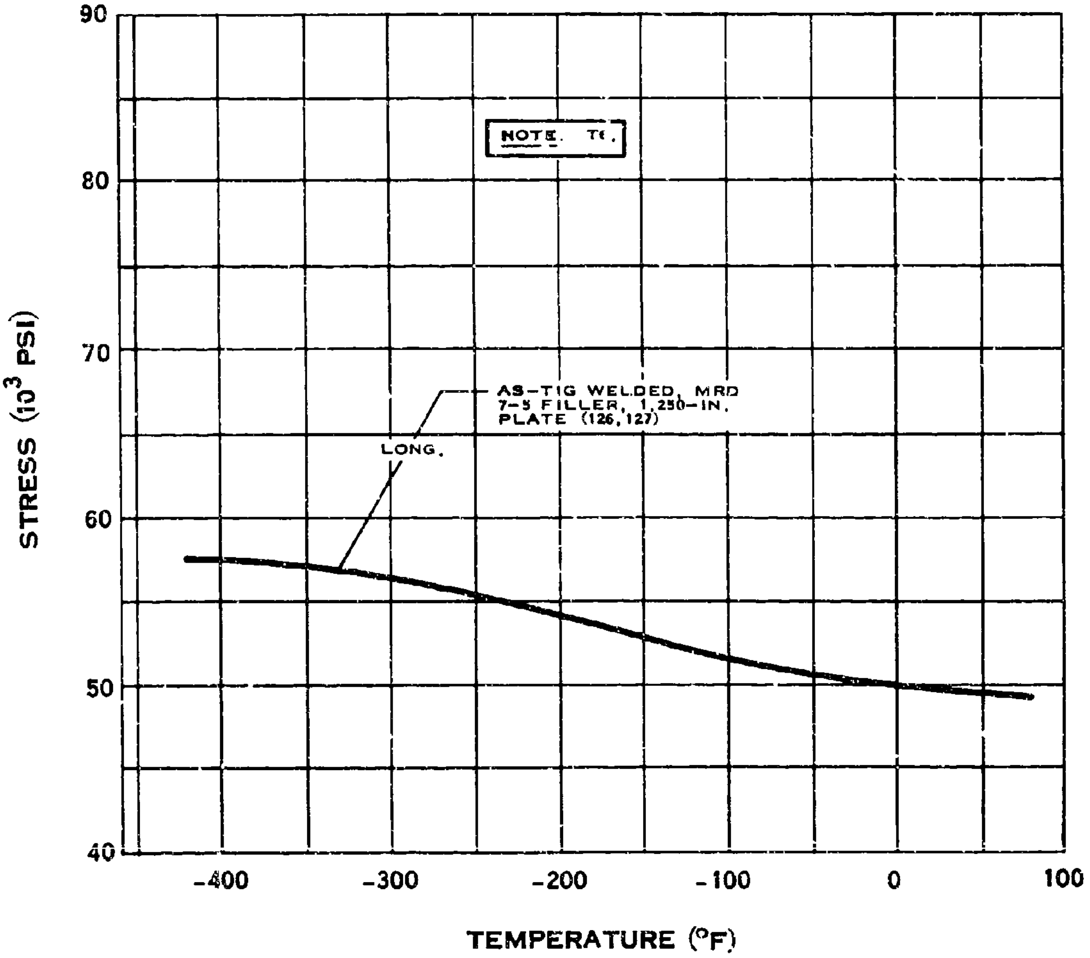


NOTCH TENSILE STRENGTH OF 7002 ALUMINUM

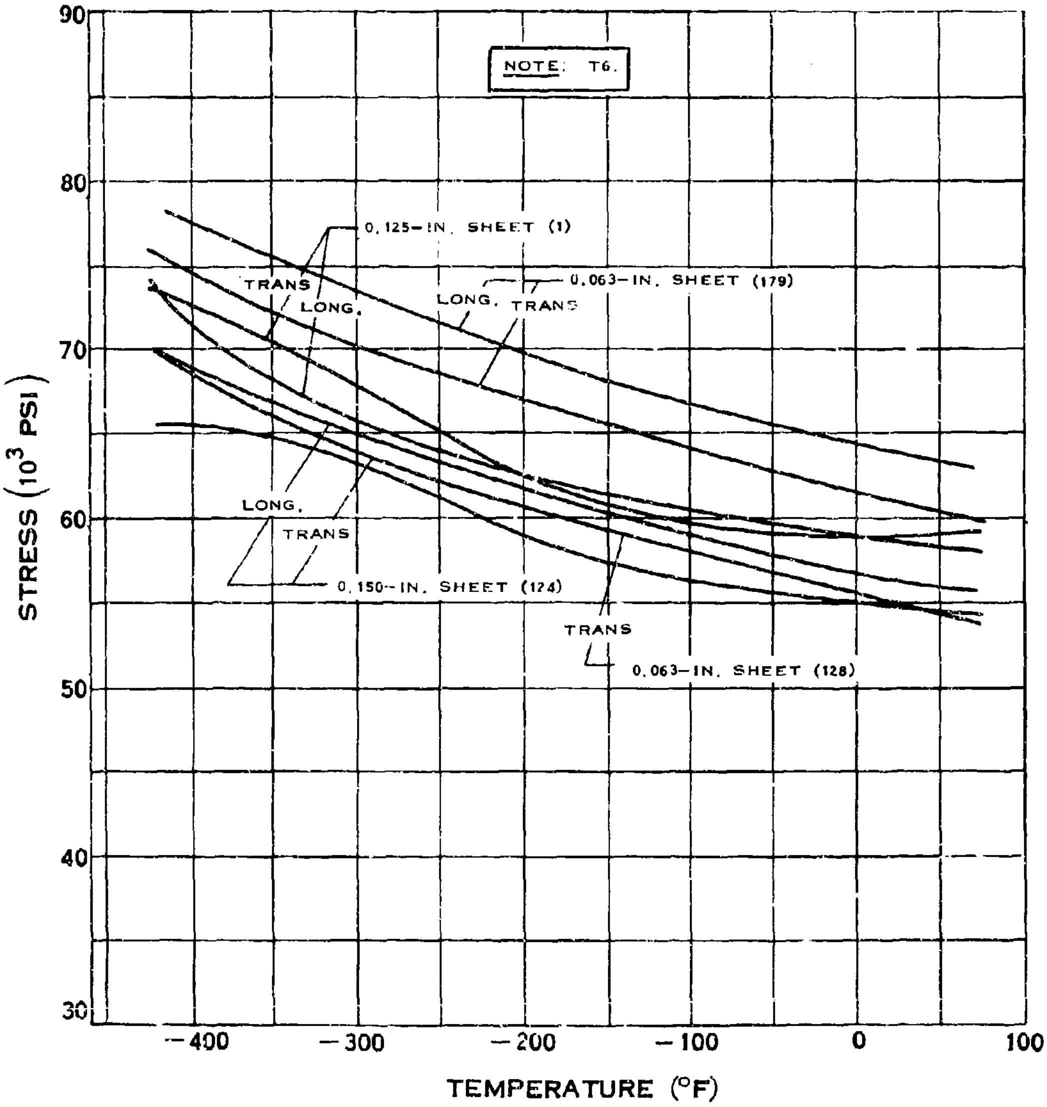


NOTCH STRENGTH RATIO OF 7002 ALUMINUM

A.14.g



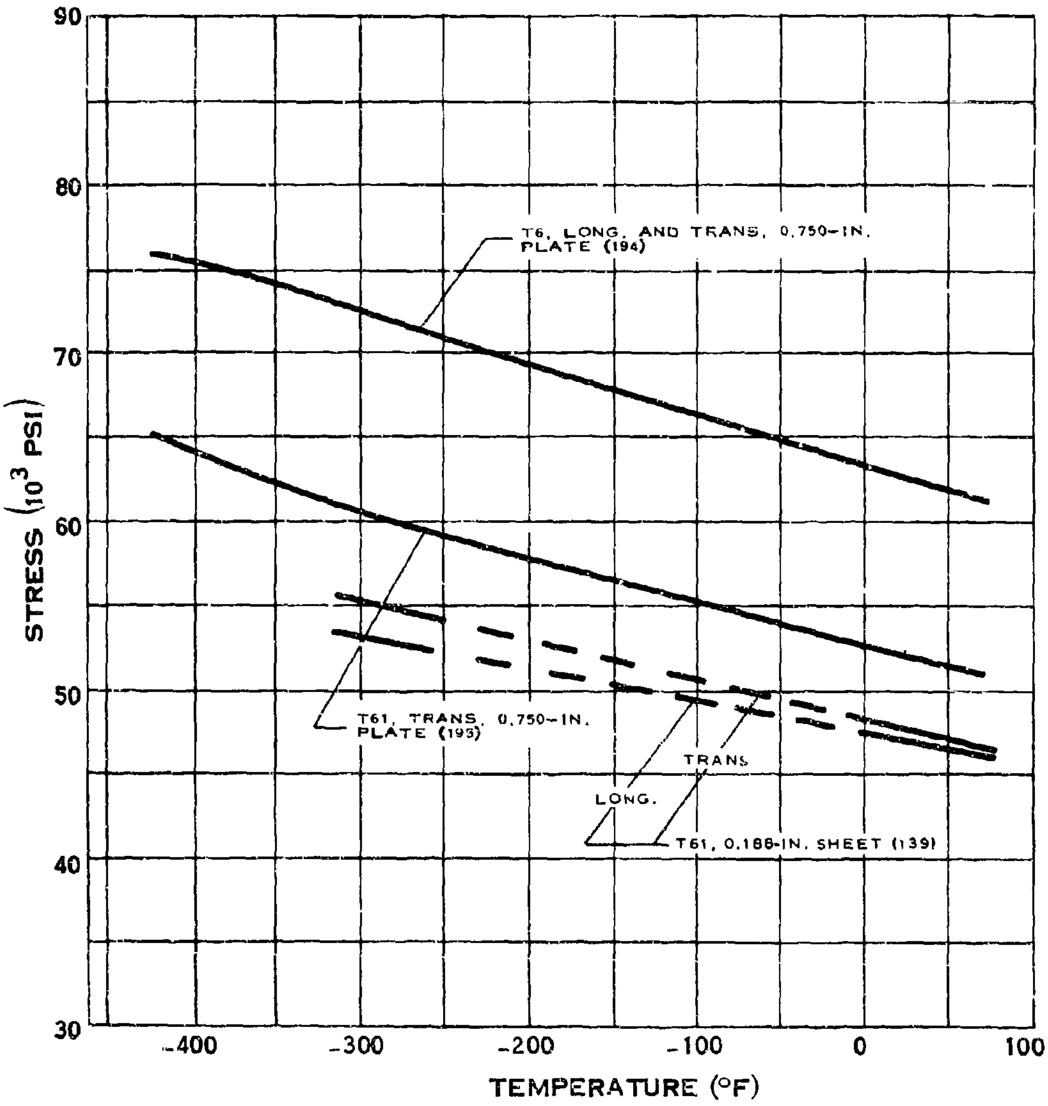
WELD TENSILE STRENGTH OF 7002 ALUMINUM



YIELD STRENGTH OF 7039 ALUMINUM

(3-66)

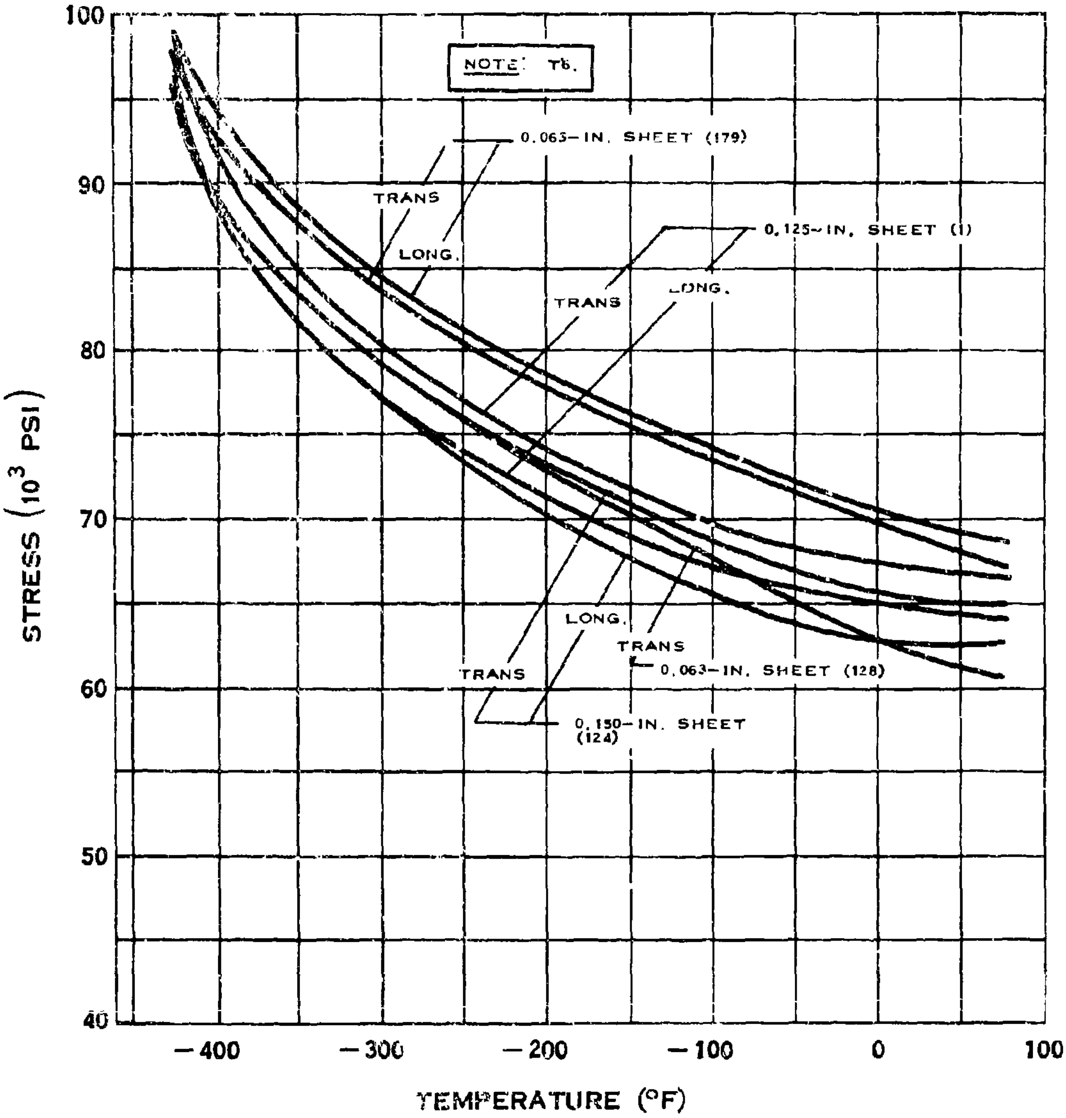
A.15.a-1



YIELD STRENGTH OF 7039 ALUMINUM

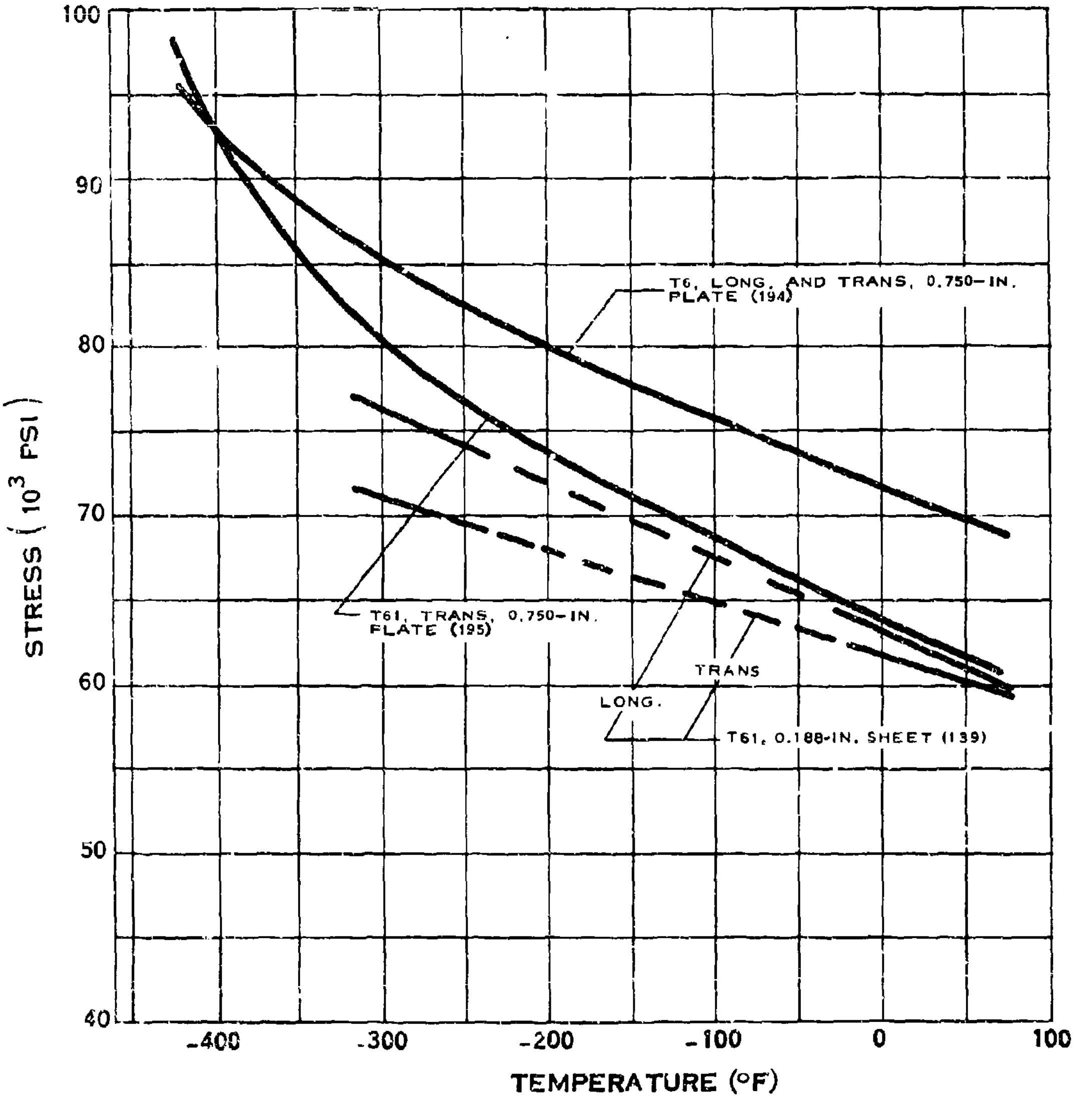
(6-68)

A.15.b



TENSILE STRENGTH OF 7039 ALUMINUM

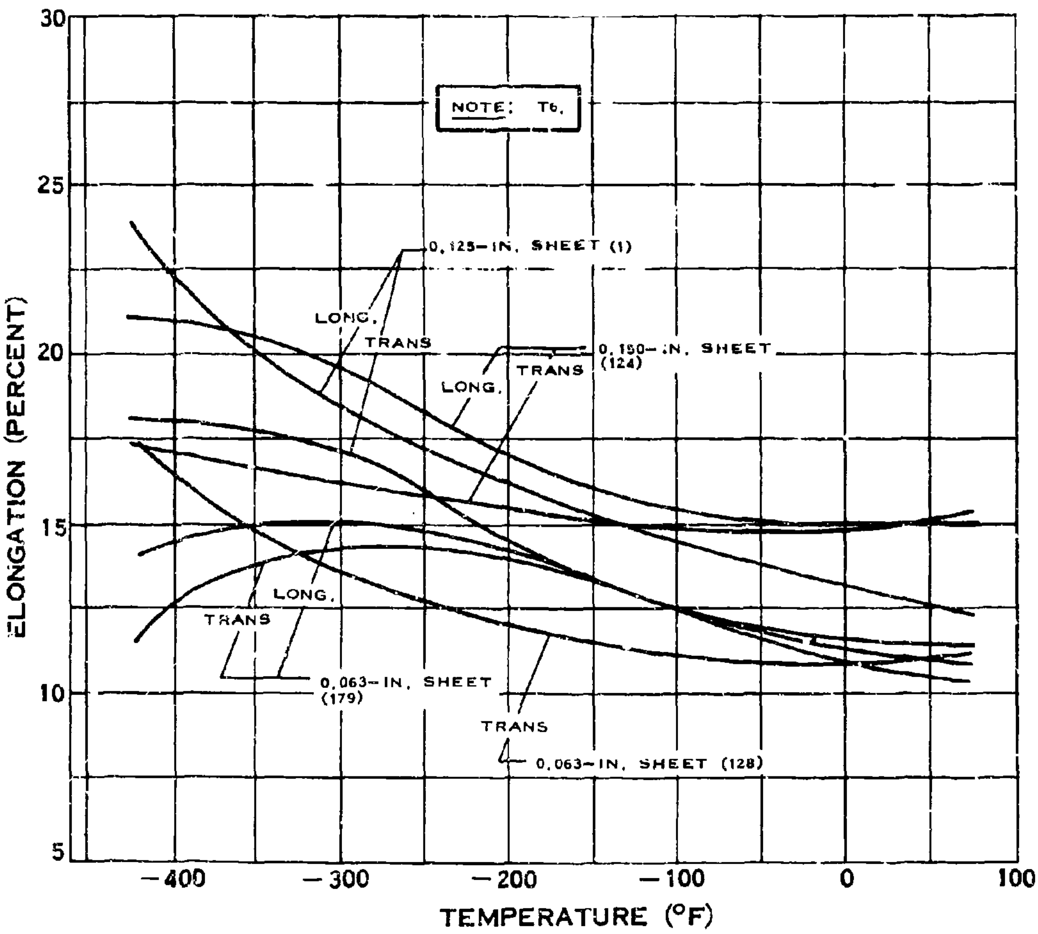
(3–66)



TENSILE STRENGTH OF 7039 ALUMINUM

(6-68)

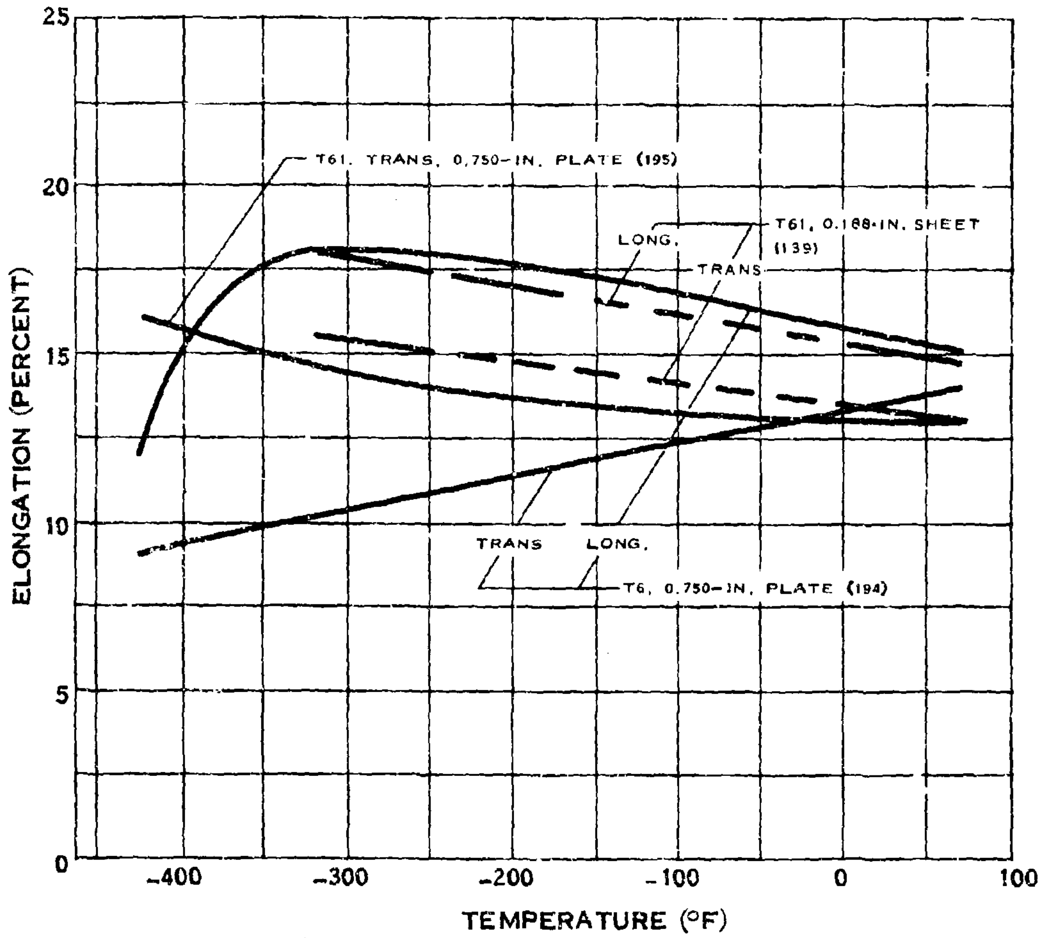
A.15.c



ELONGATION OF 7039 ALUMINUM

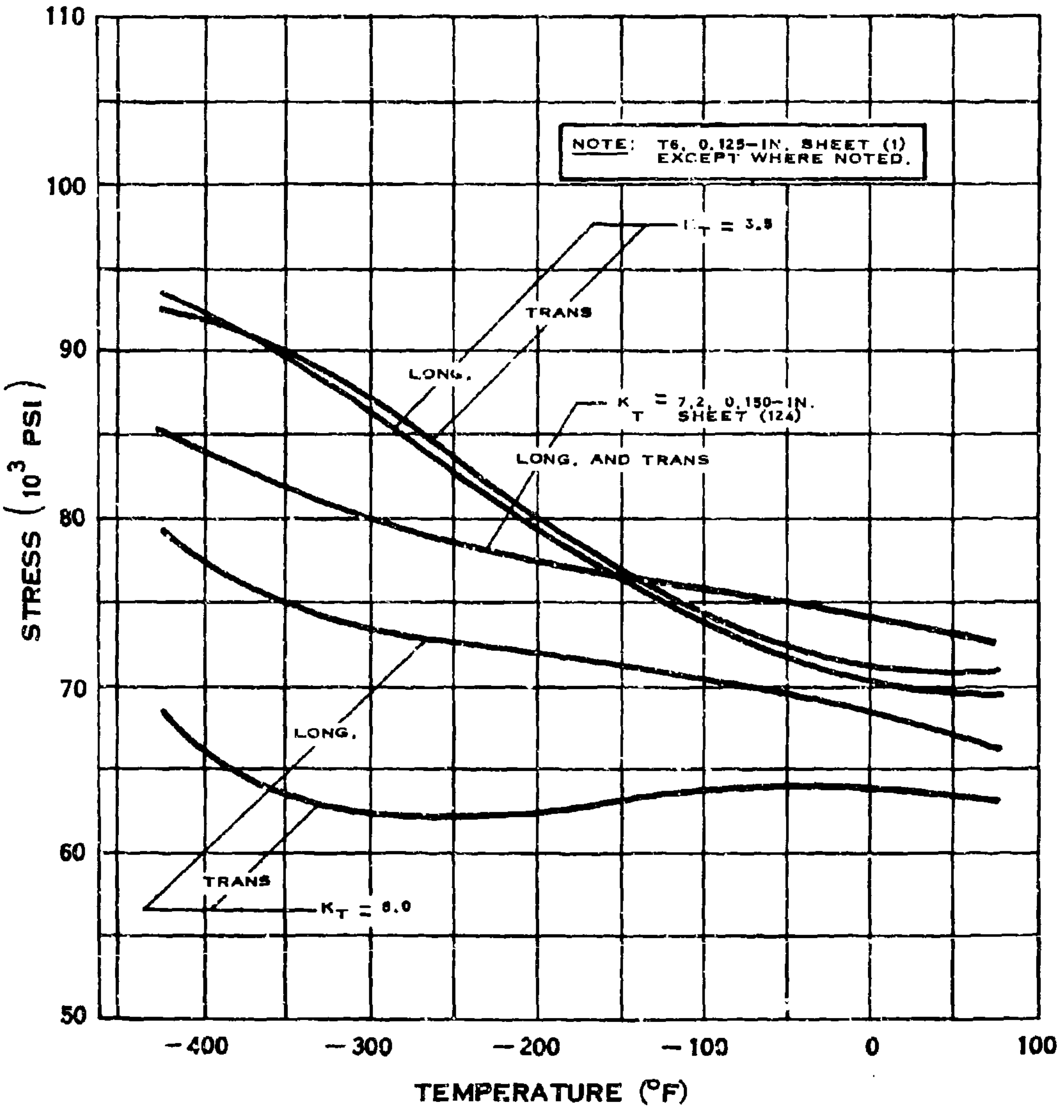
(3-66)

A.15.c-1



ELONGATION OF 7039 ALUMINUM

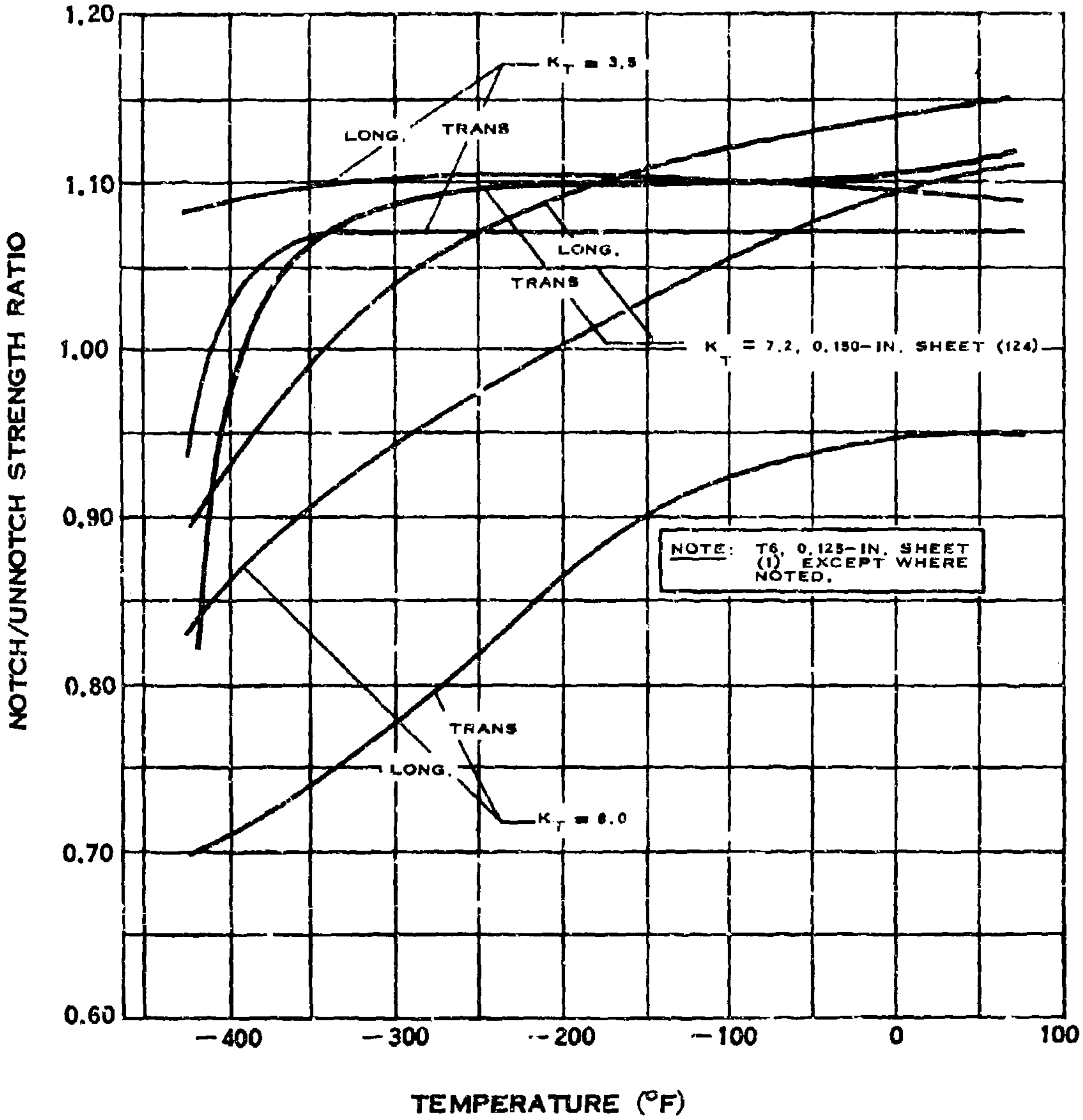
(6-68)



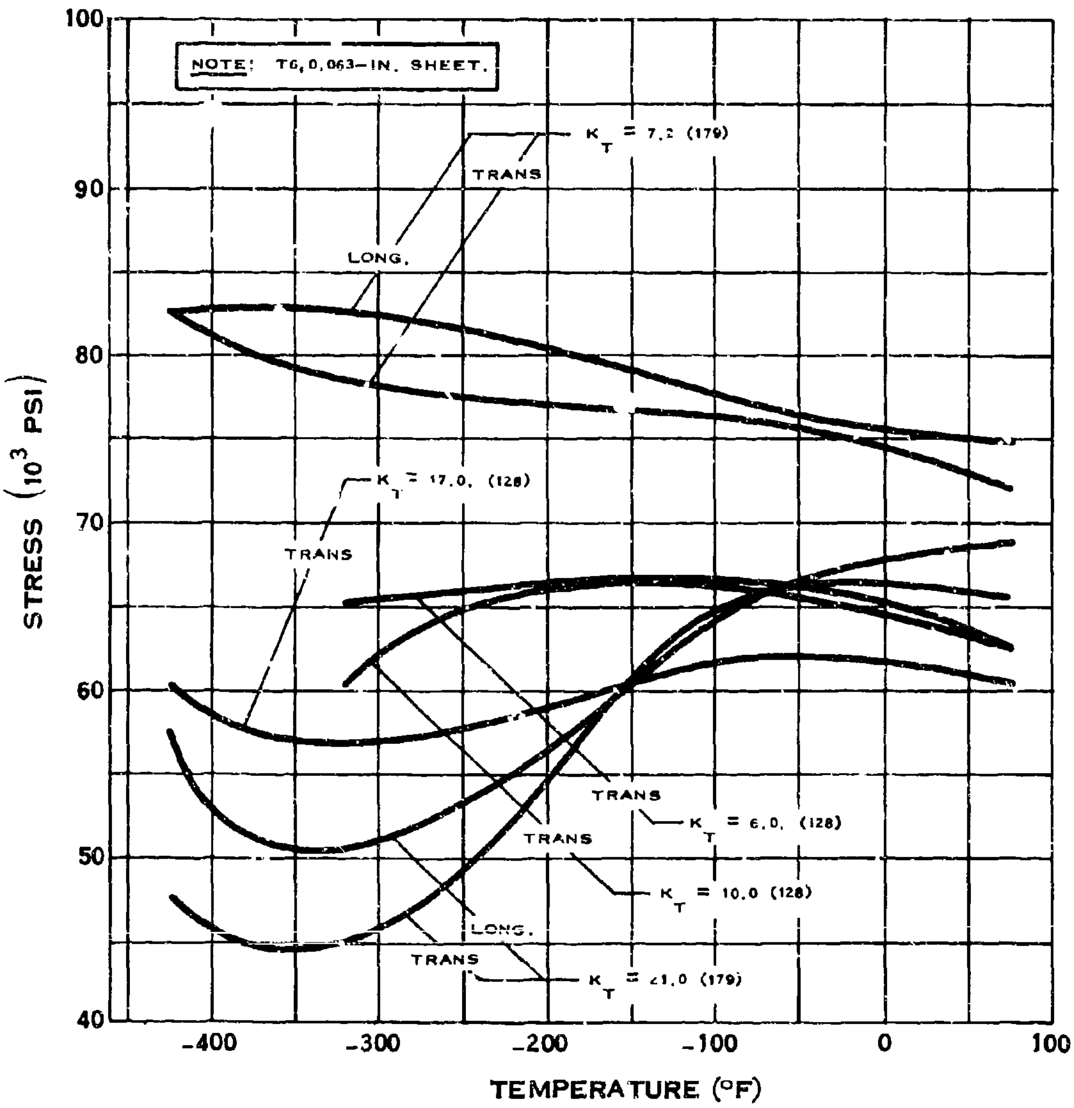
NOTCH TENSILE STRENGTH OF 7039 ALUMINUM

(?-66)

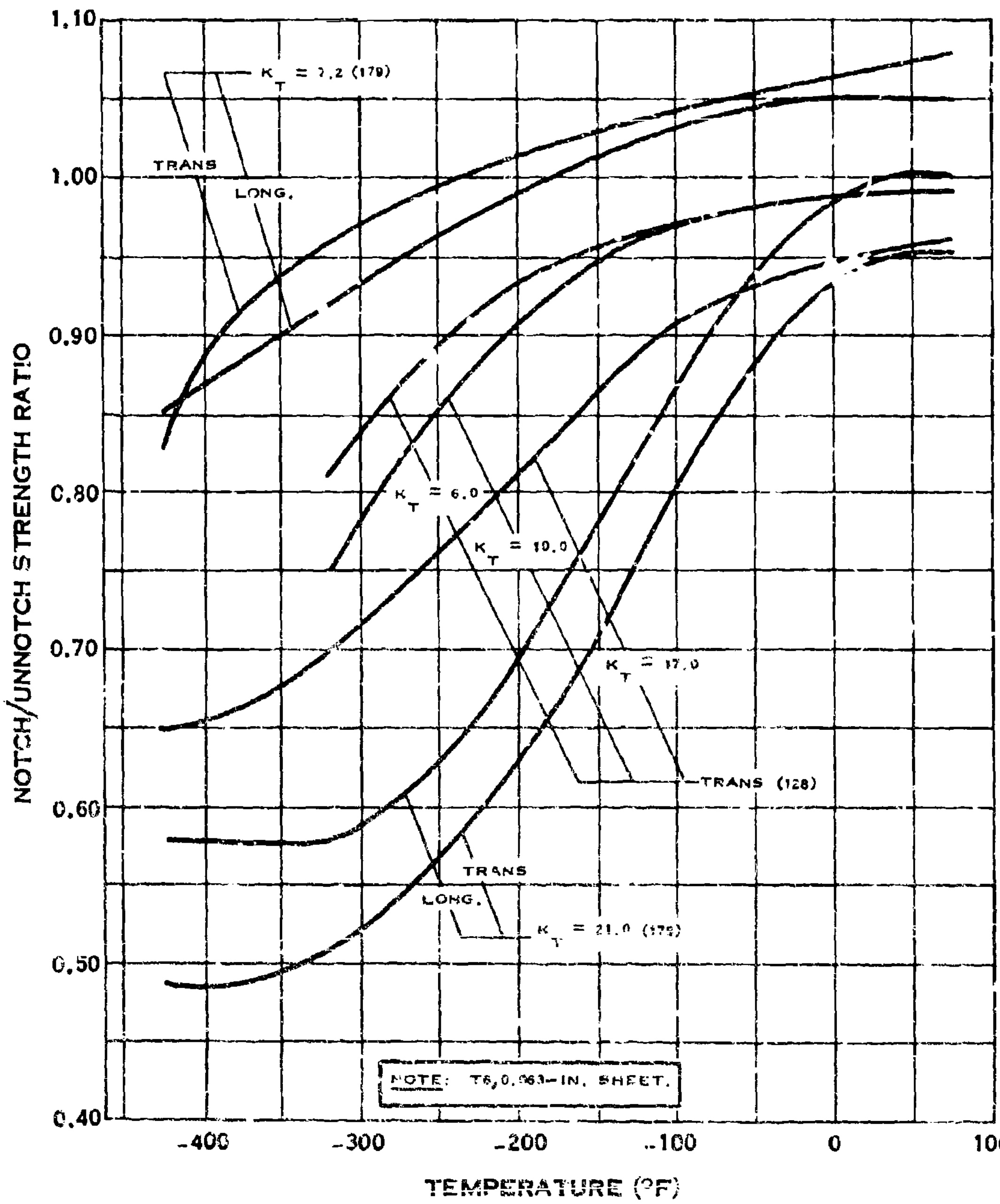
A.15.e-1



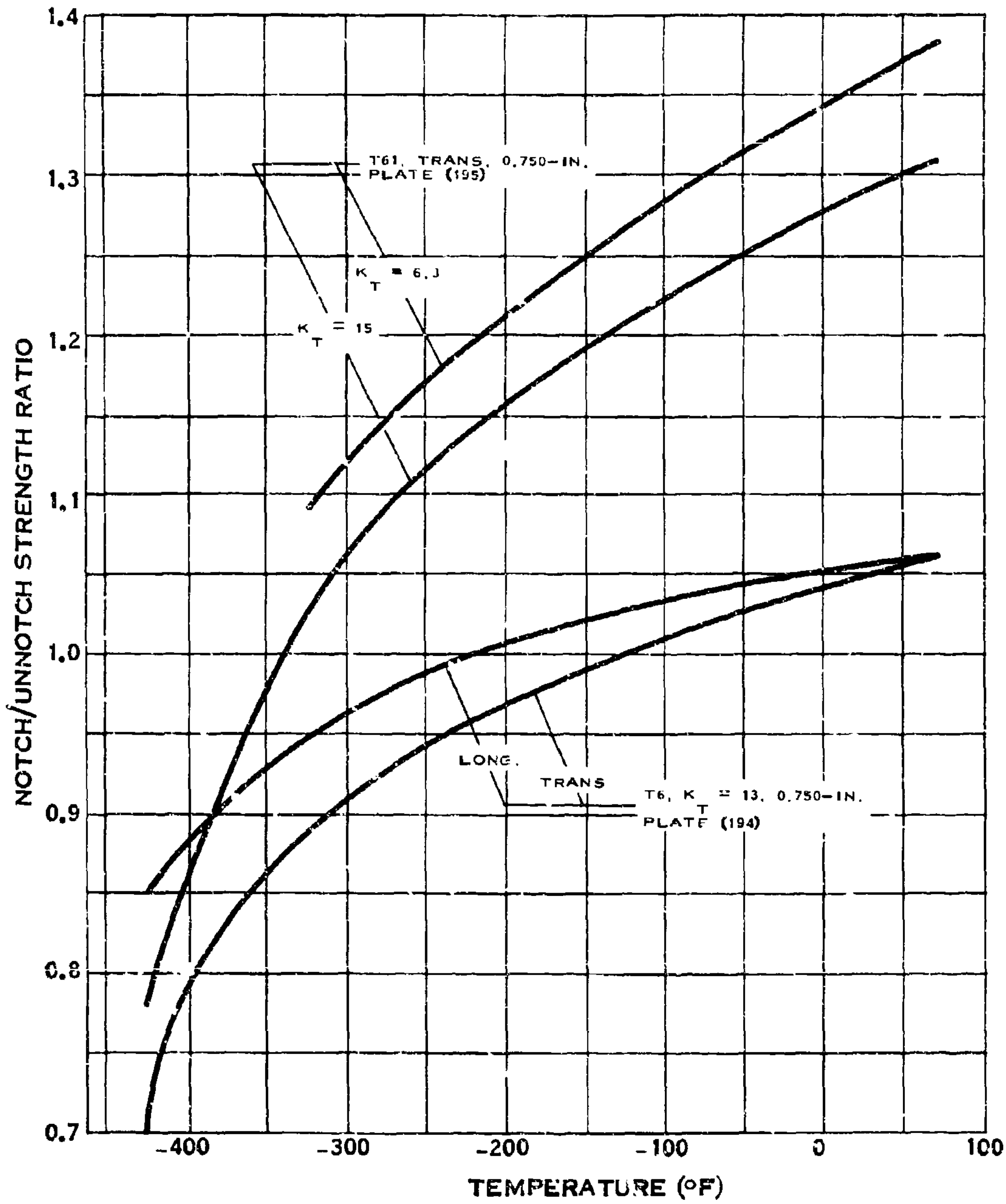
NOTCH STRENGTH RATIO OF 7039 ALUMINUM



NOTCH TENSILE STRENGTH OF 7039 ALUMINUM

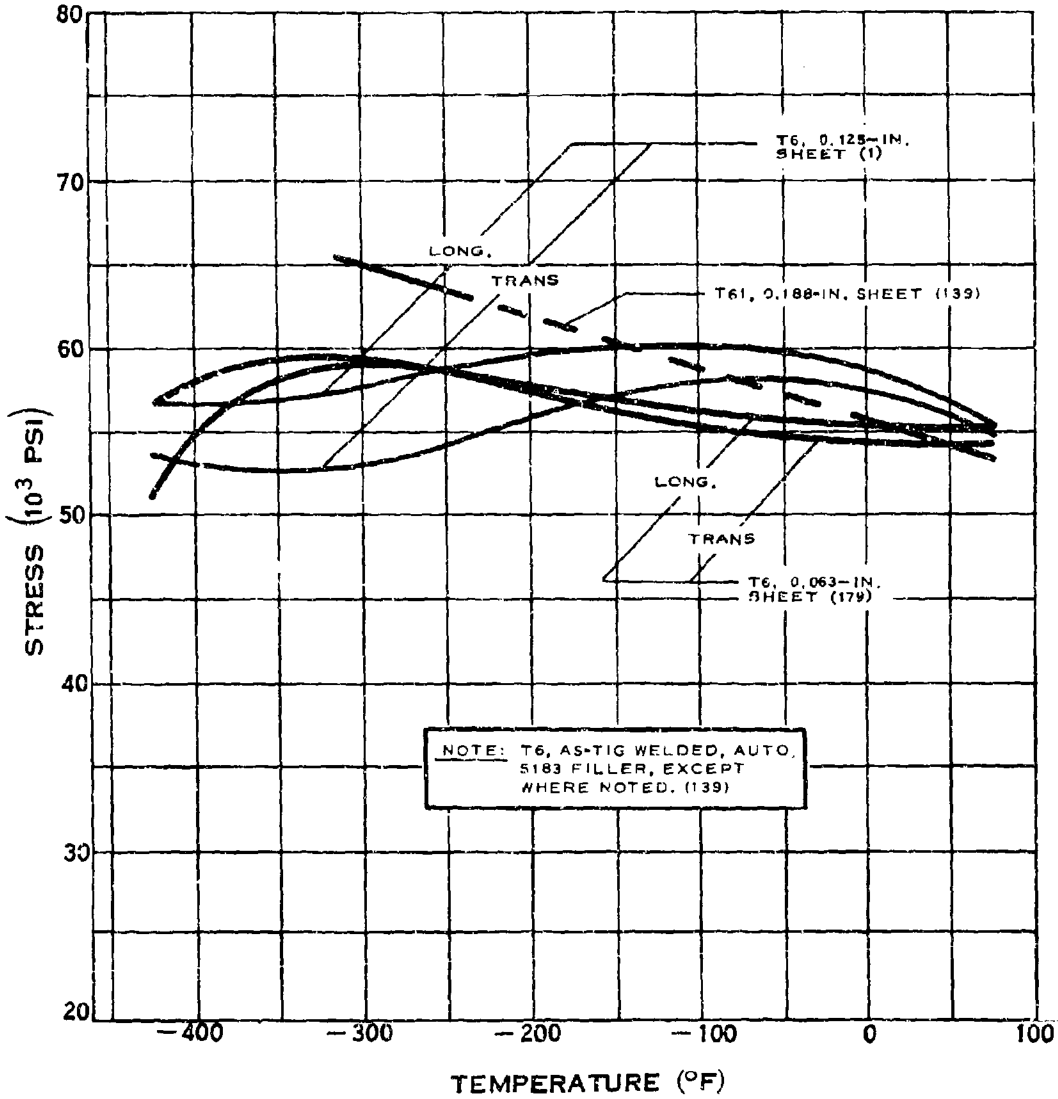


NOTCH STRENGTH RATIO OF 7039 ALUMINUM



NOTCH STRENGTH RATIO OF 7039 ALUMINUM

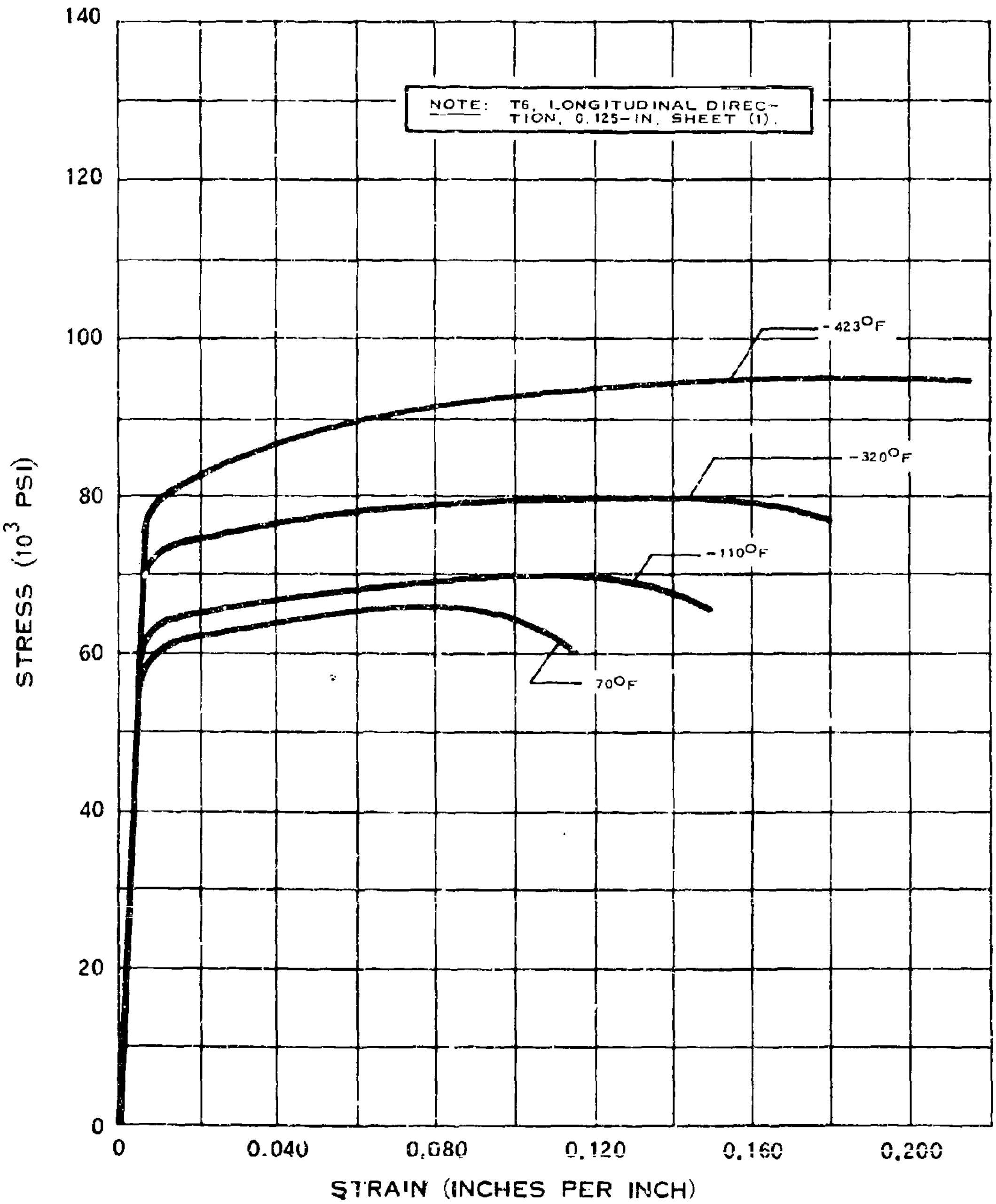
A.15.g



WELD TENSILE STRENGTH OF 7039 ALUMINUM

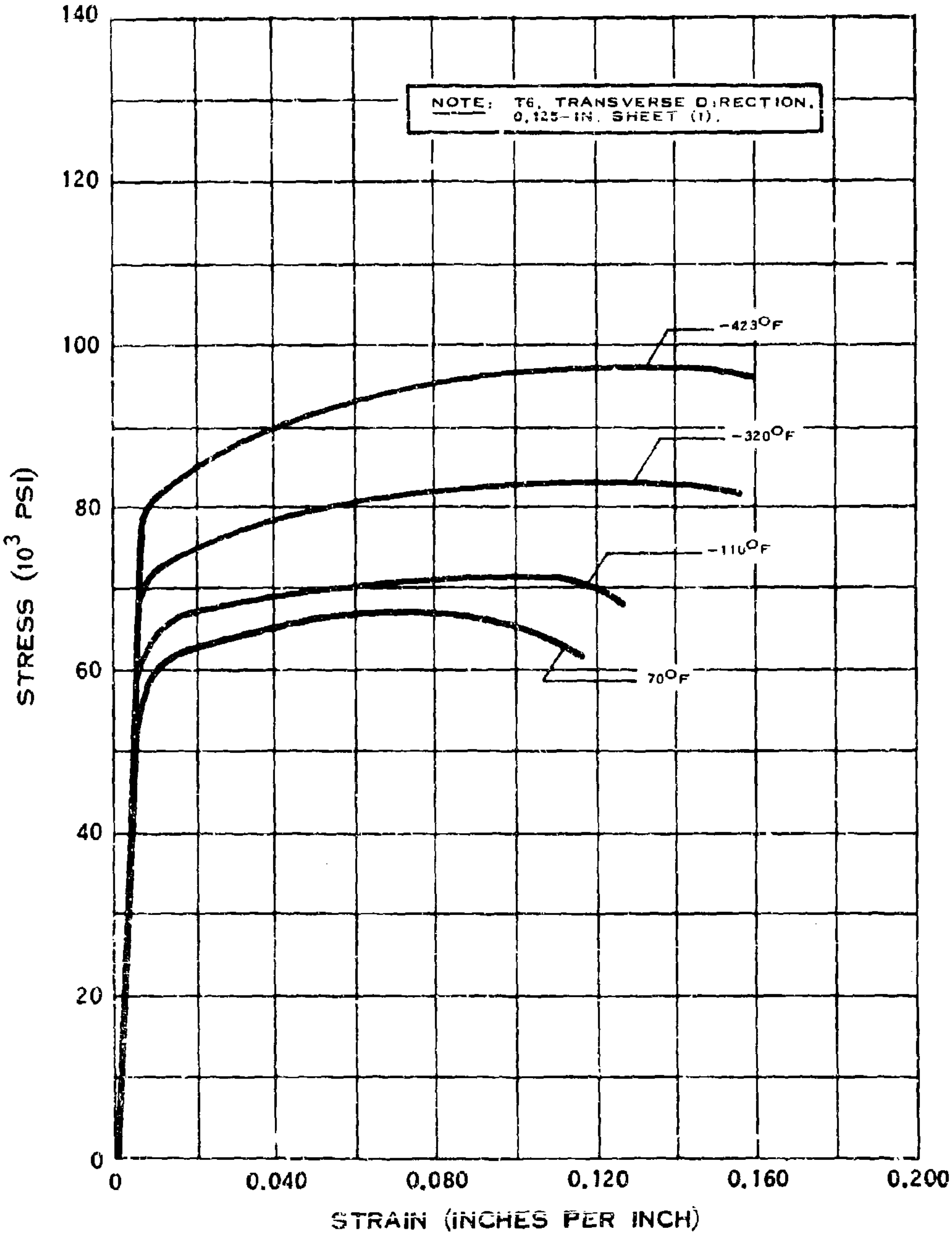
(6-68)

A.15.h



STRESS-STRAIN DIAGRAM FOR 7039 ALUMINUM

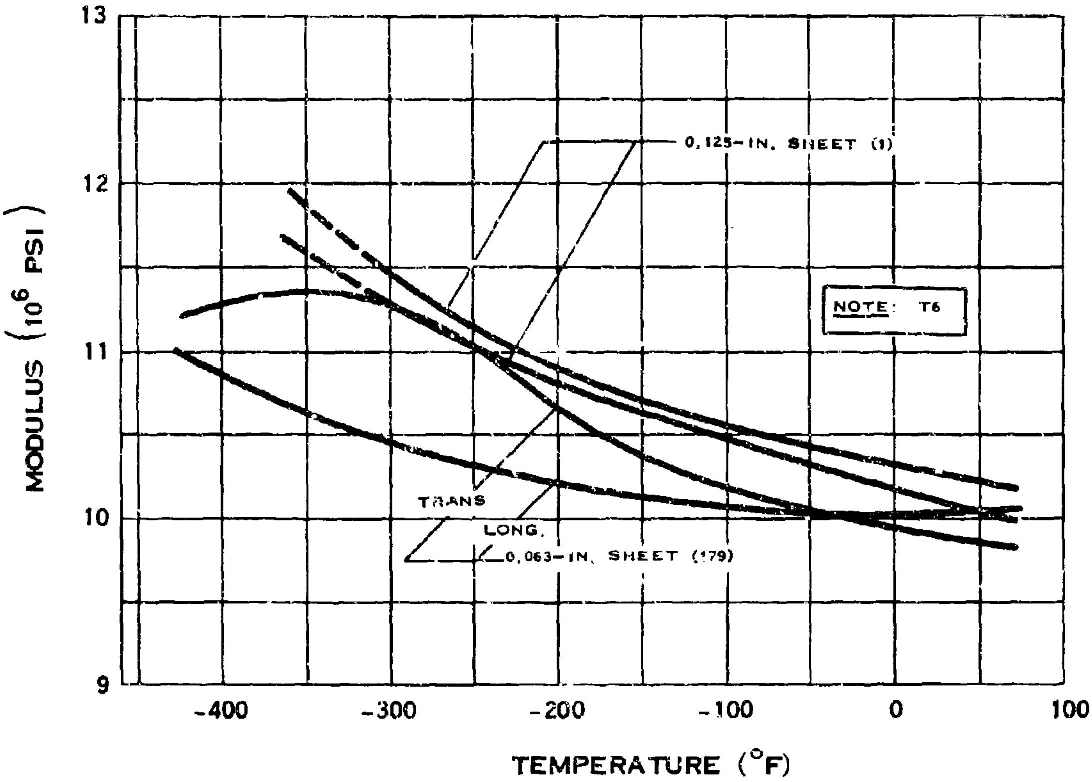
A.15.h-1



STRESS-STRAIN DIAGRAM FOR 7039 ALUMINUM

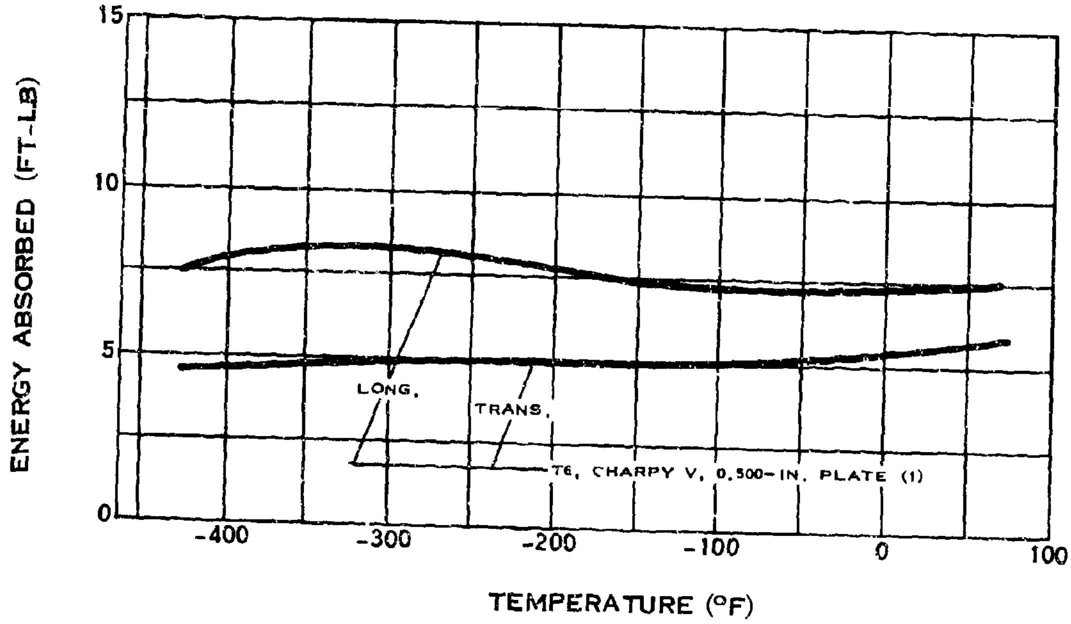
(1-65)

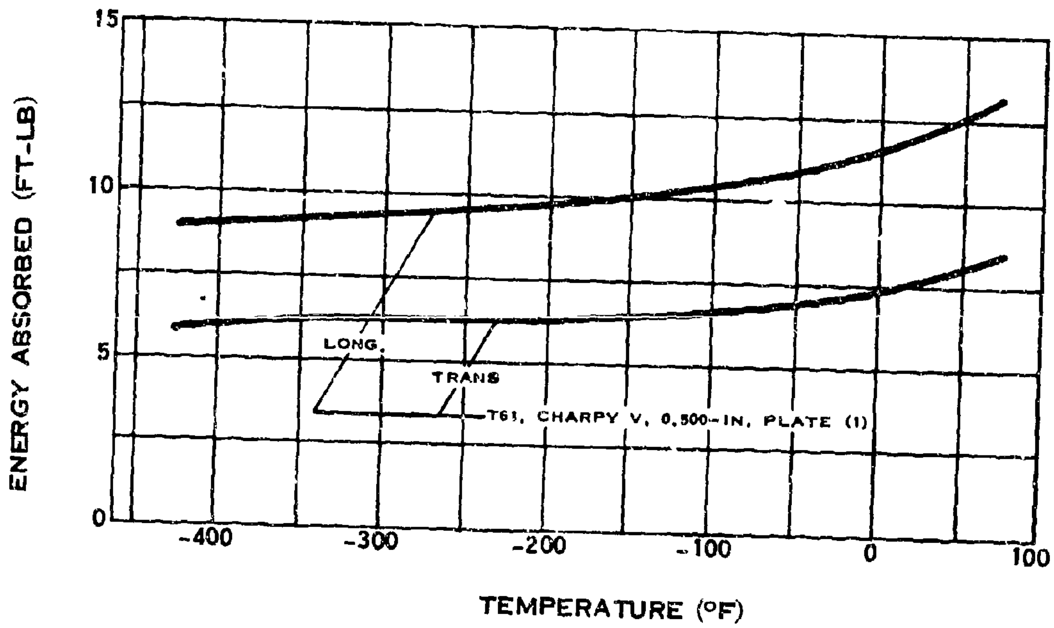
A.15.i



MODULUS OF ELASTICITY OF 7039 ALUMINUM

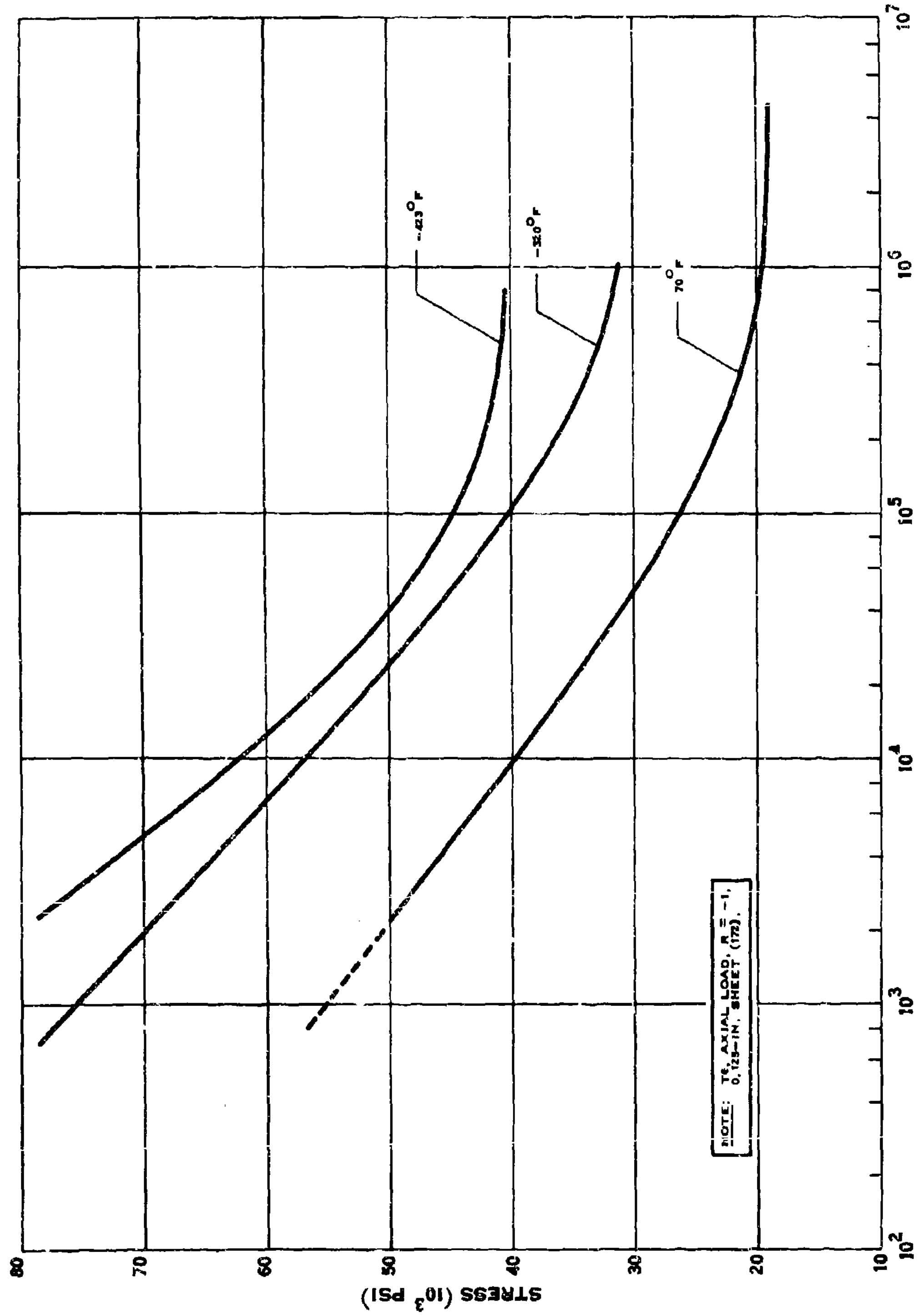
A.15.j





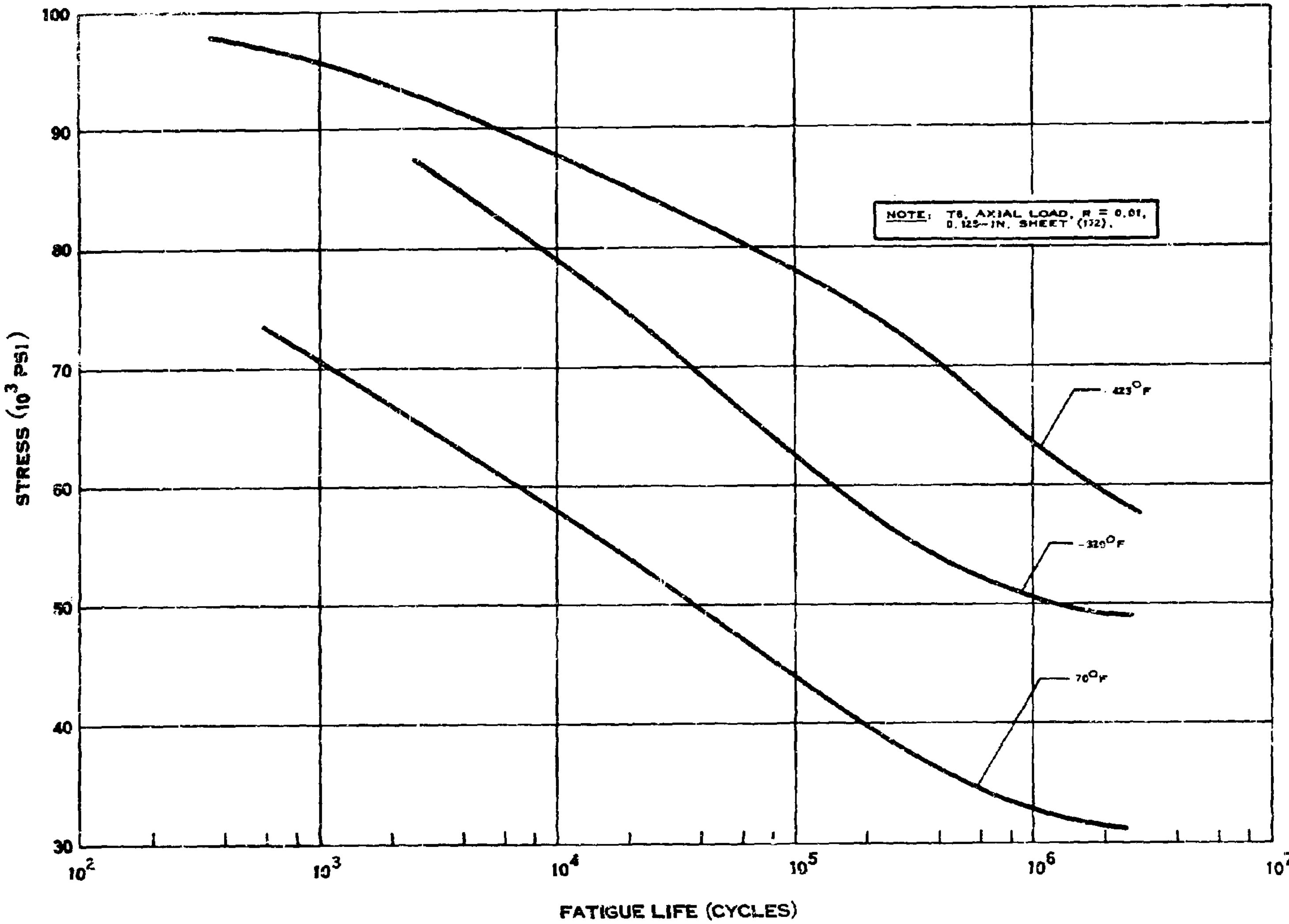
IMPACT STRENGTH OF 7039 ALUMINUM

A.15.a



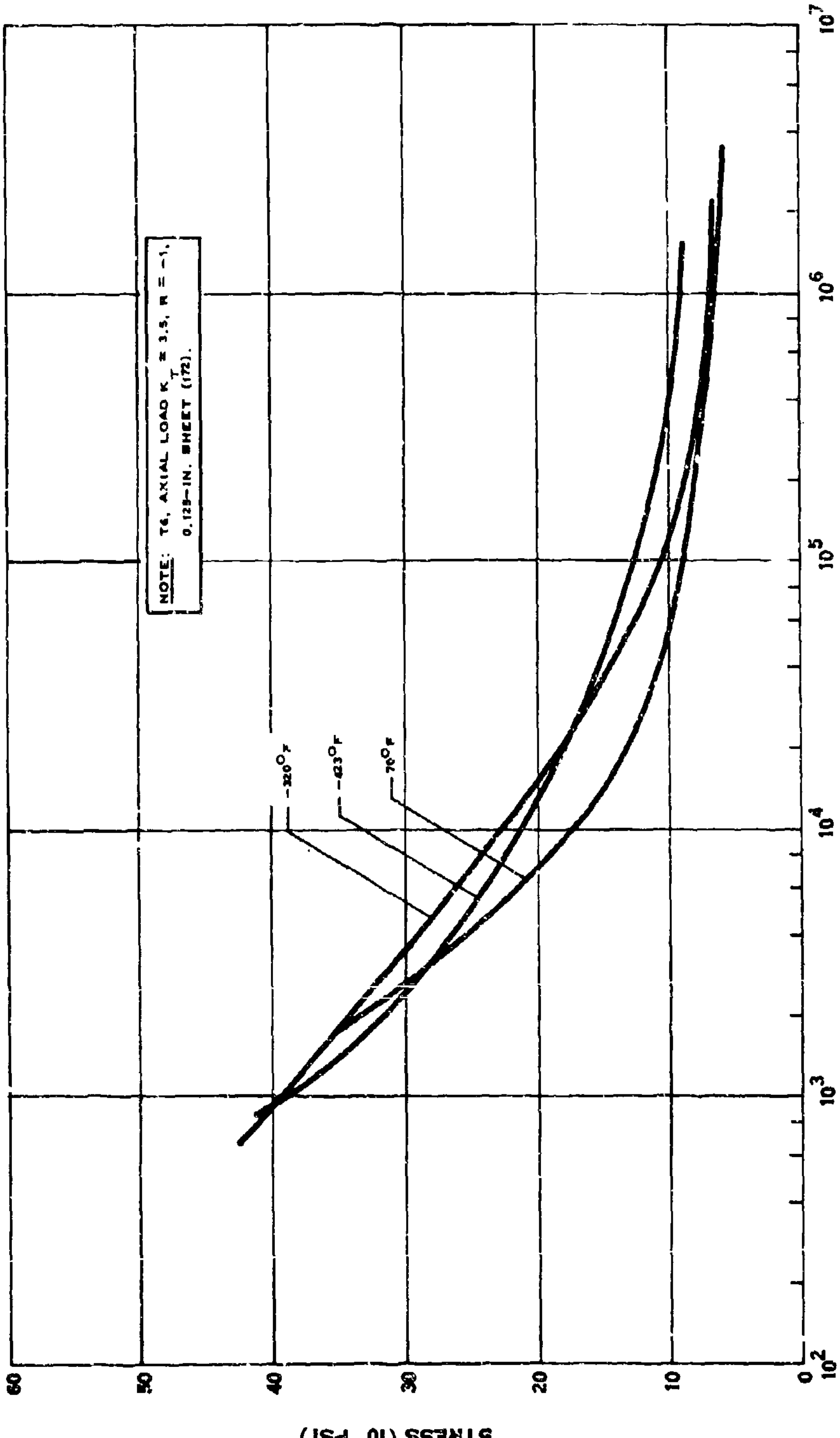
FATIGUE STRENGTH OF 7039 ALUMINUM

A.15.o-1

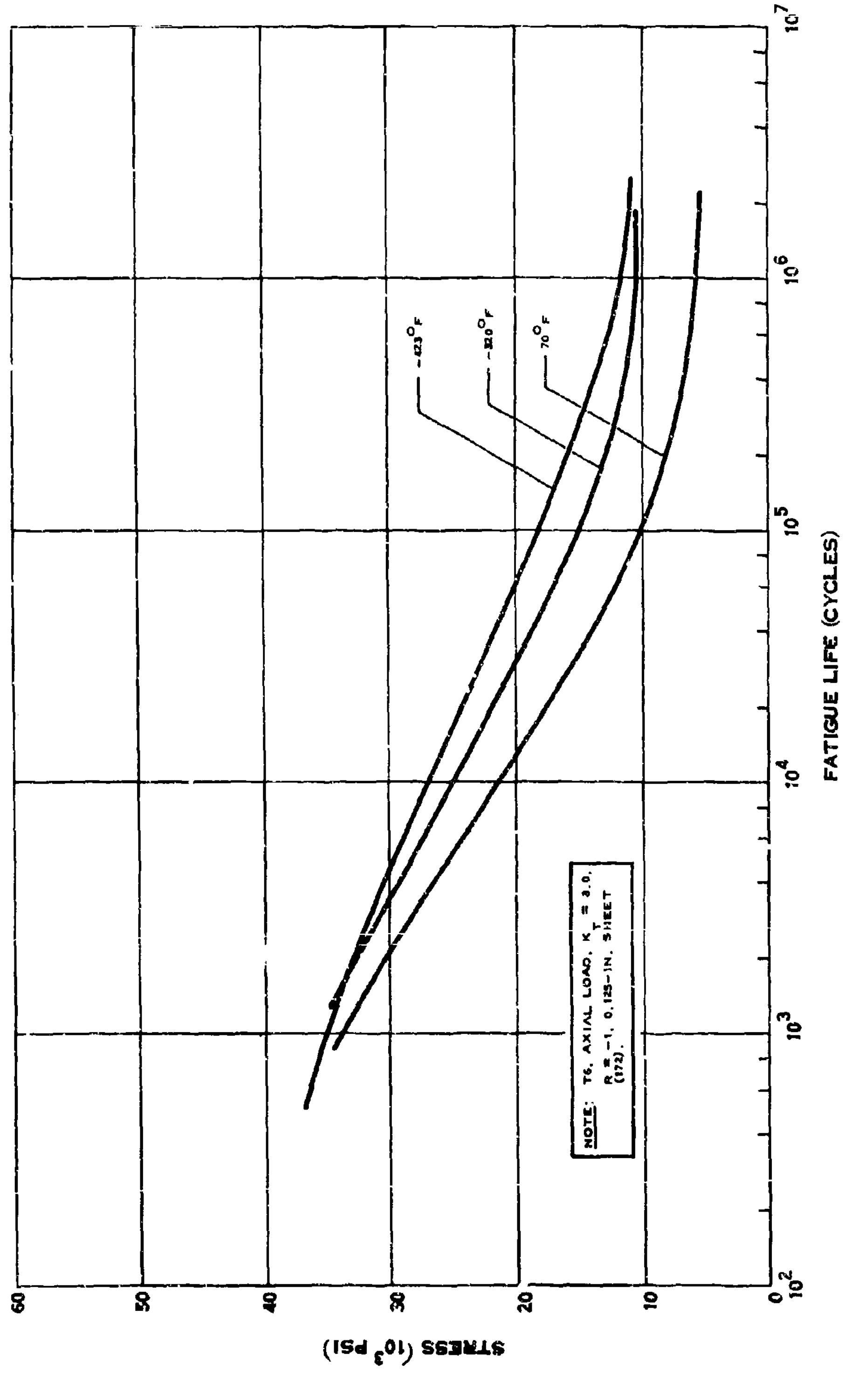


FATIGUE STRENGTH OF 7039 ALUMINUM

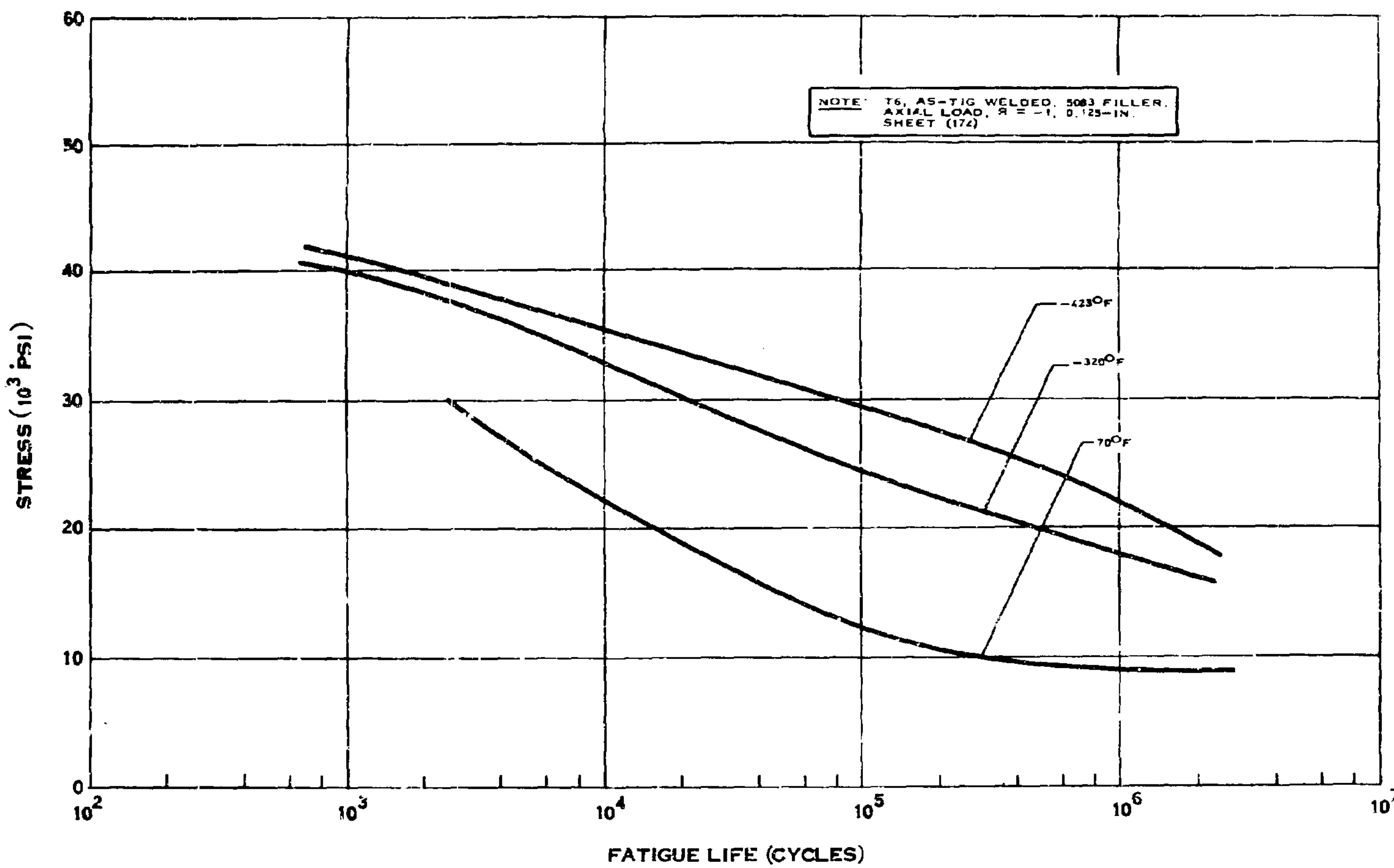
A.15.o-2



NOTCH FATIGUE STRENGTH OF 7039 ALUMINUM



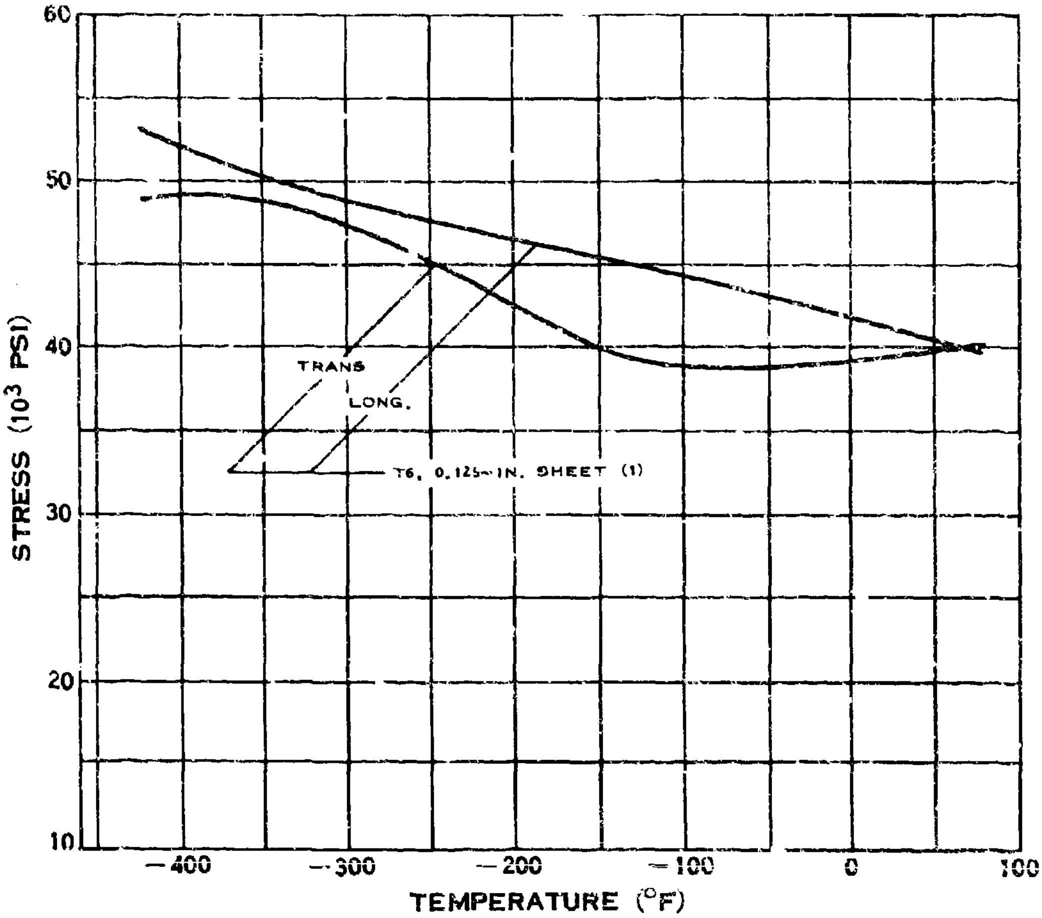
NOTCH FATIGUE STRENGTH OF 7039 ALUMINUM



WELD FATIGUE STRENGTH OF 7039 ALUMINUM

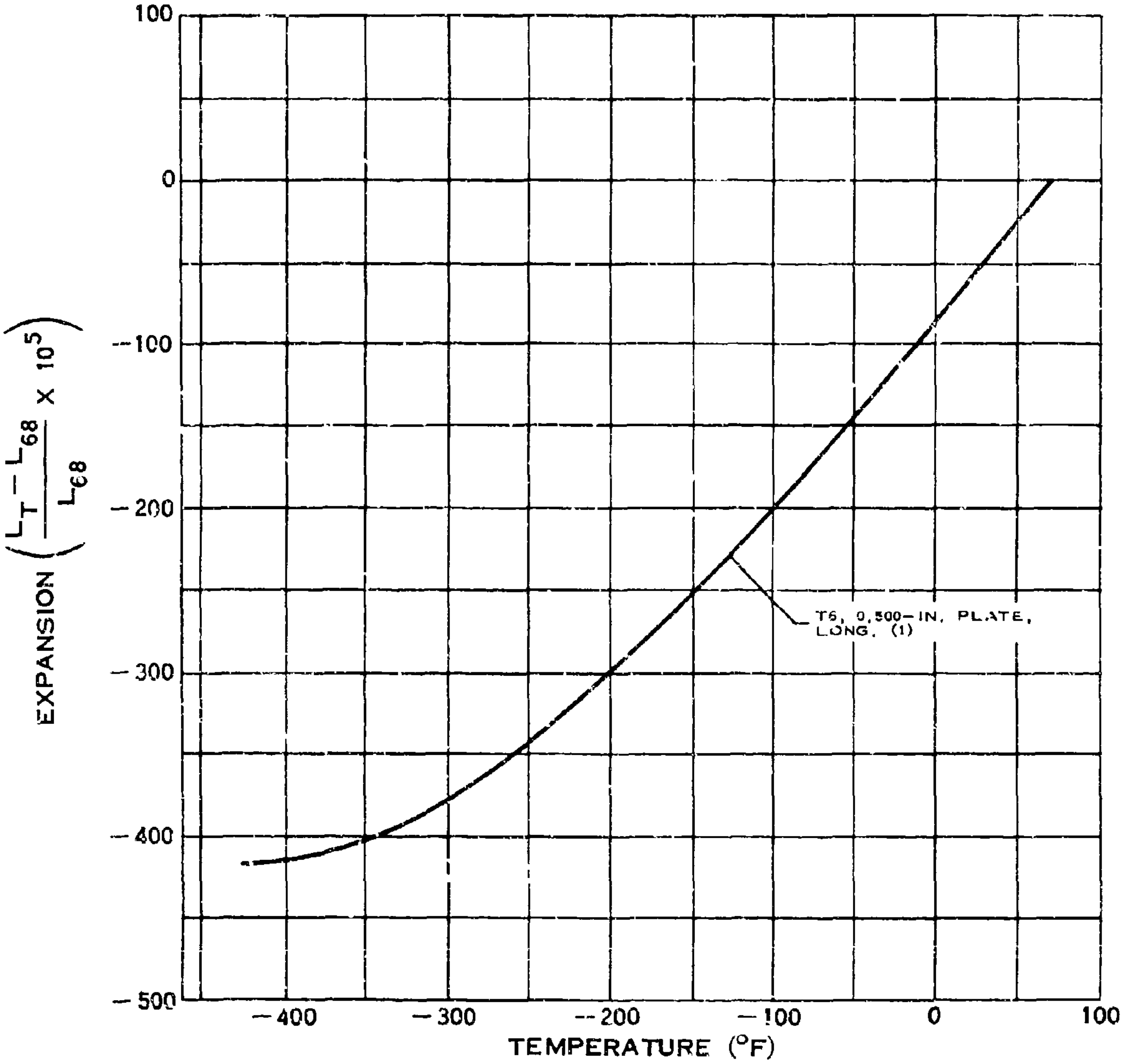
(3-66)

A.15.p



SHEAR STRENGTH OF 7039 ALUMINUM

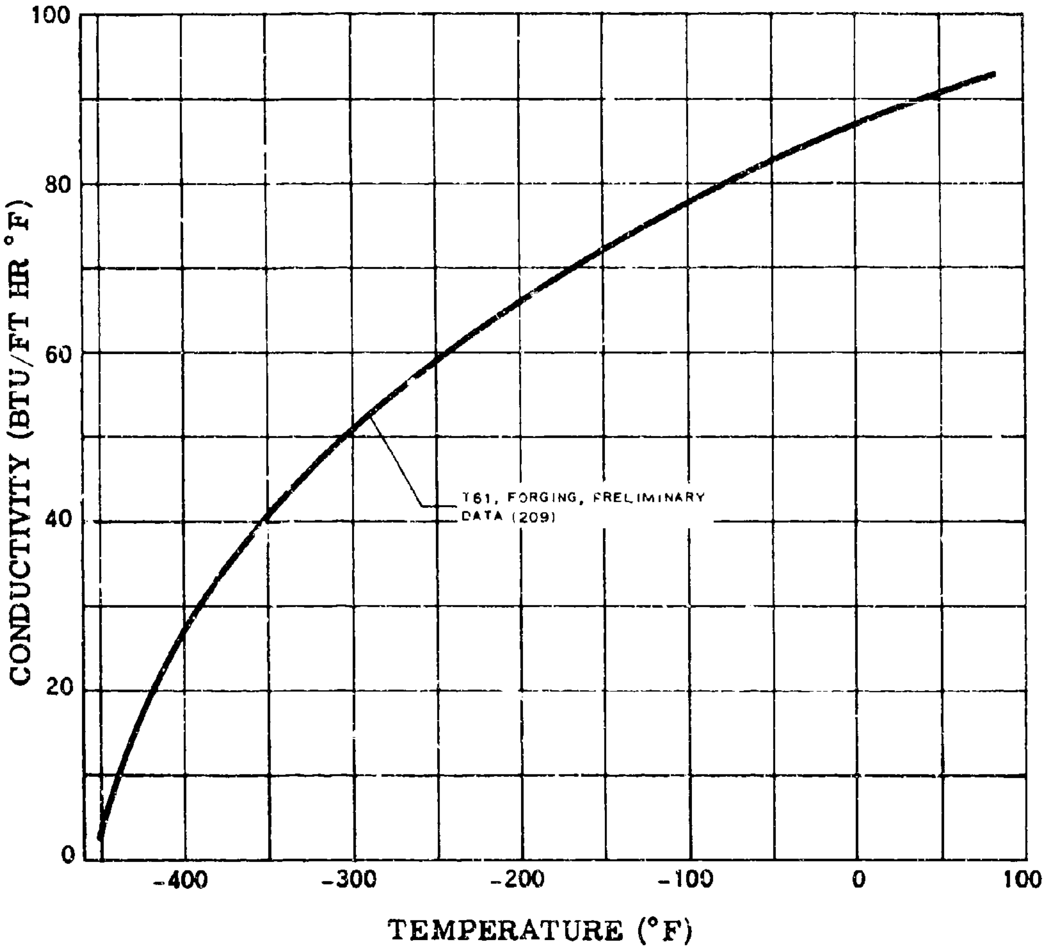
A.15.t



THERMAL EXPANSION OF 7039 ALUMINUM

(7-64)

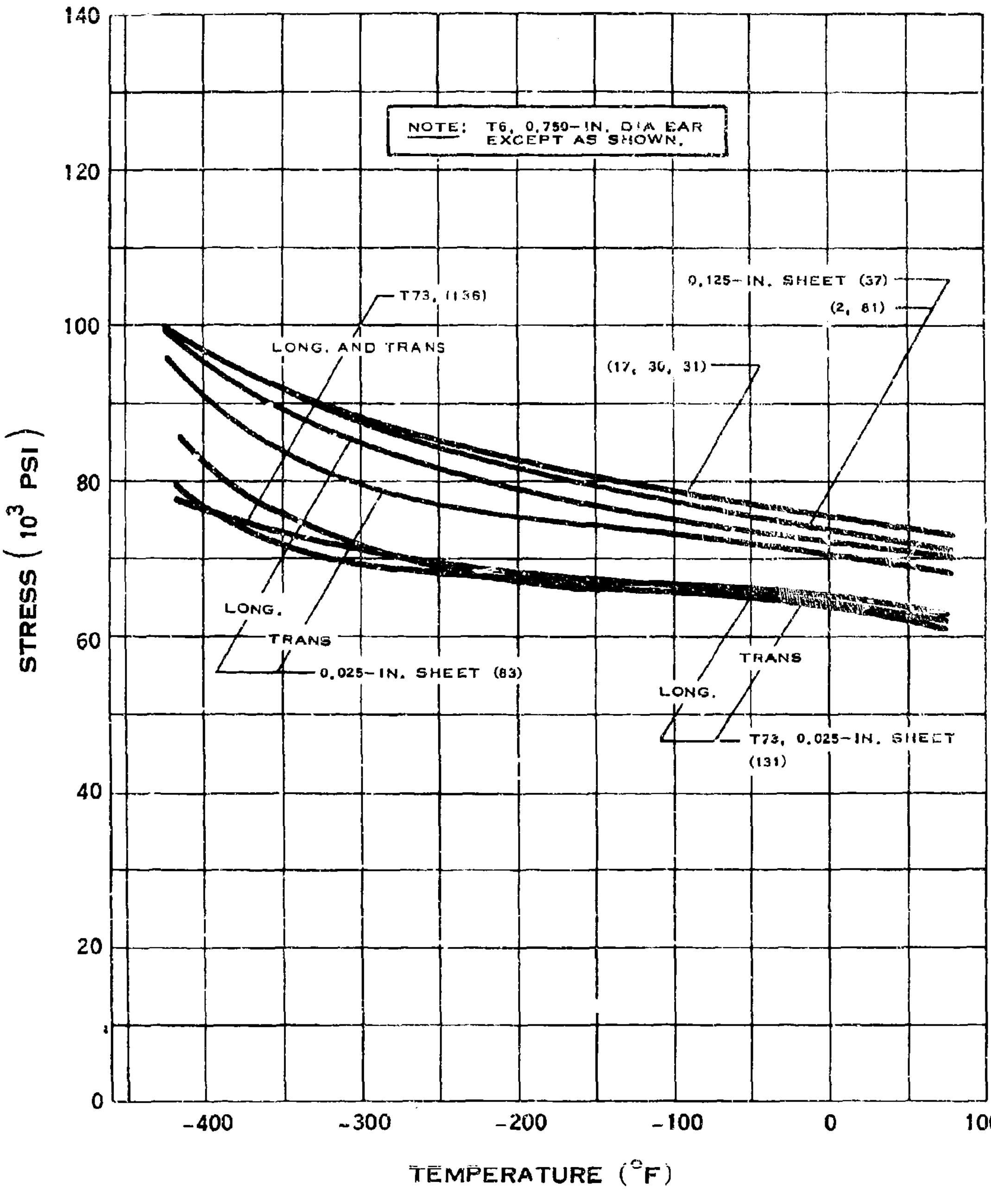
A.15.v



THERMAL CONDUCTIVITY OF 7039 ALUMINUM

(6-68)

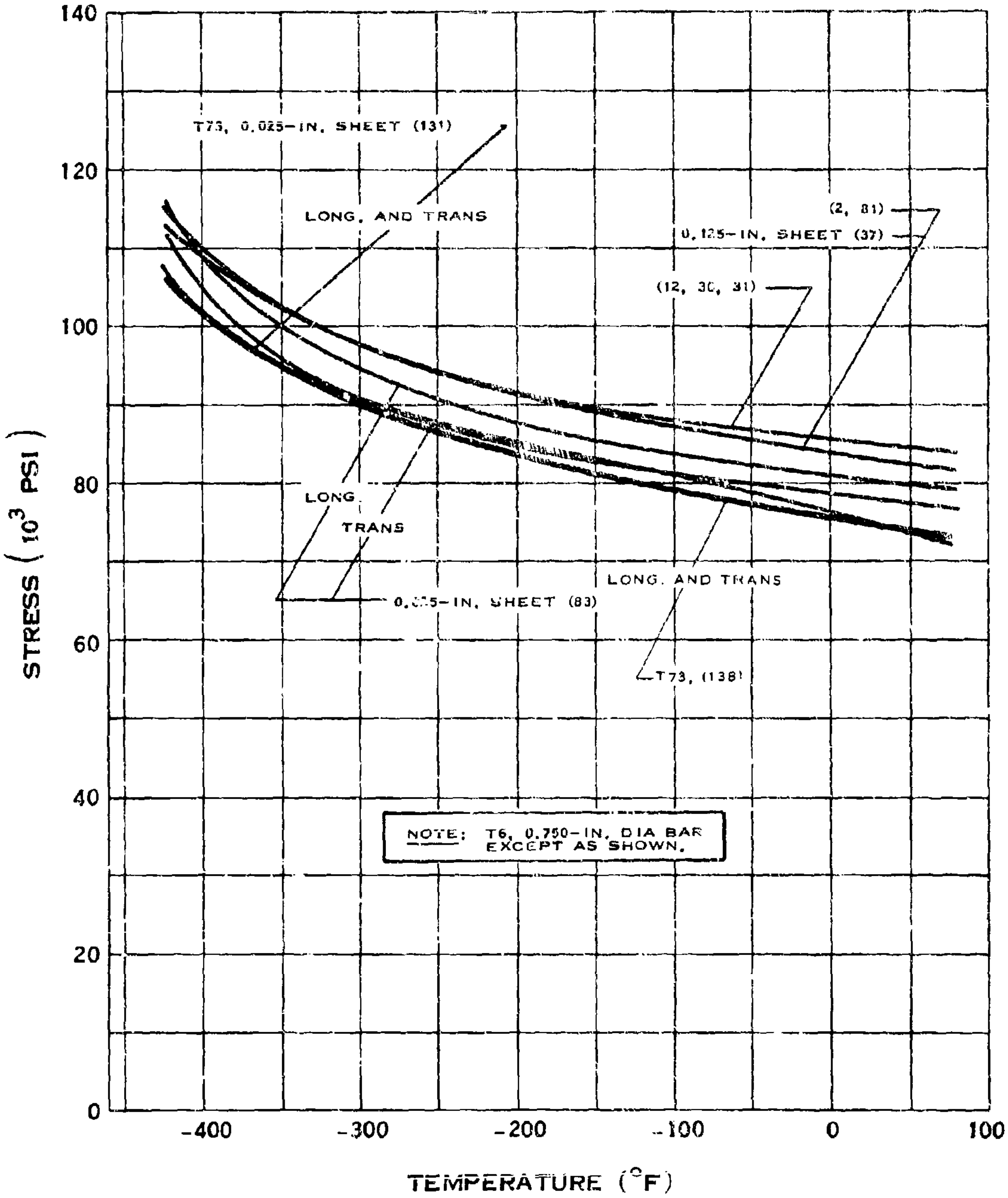
A.16.a



YIELD STRENGTH OF 7075 ALUMINUM

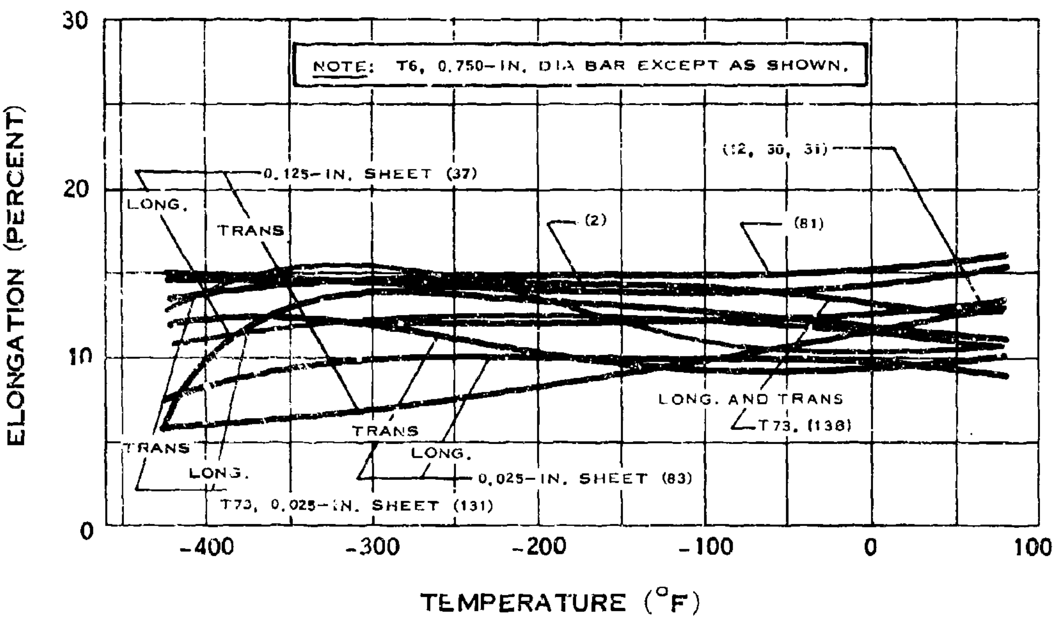
(6-68)

A.16.b

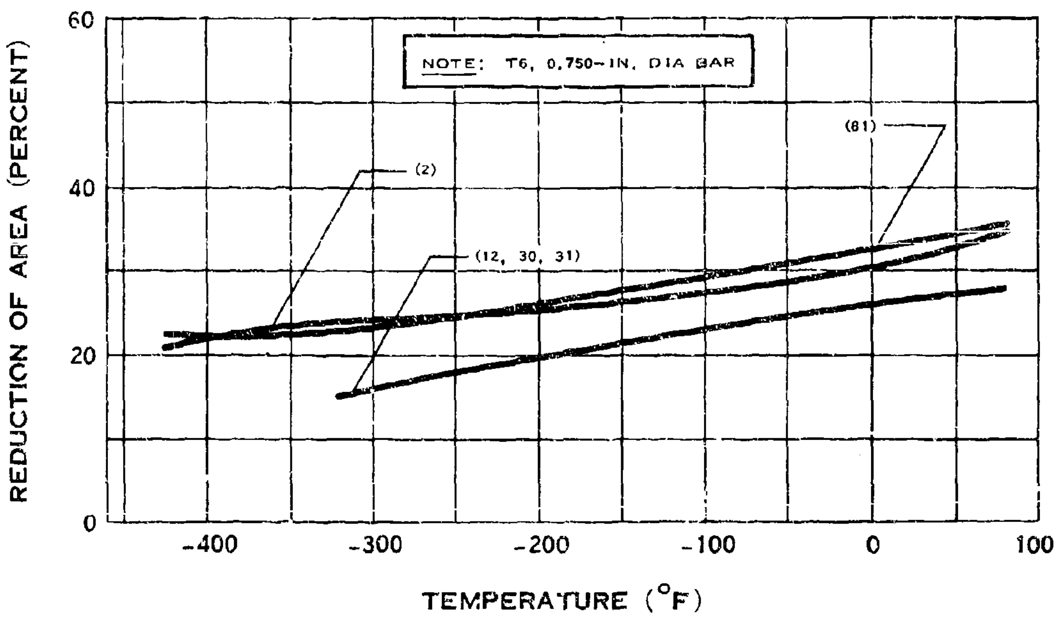


TENSILE STRENGTH OF 7075 ALUMINUM

(6-68)

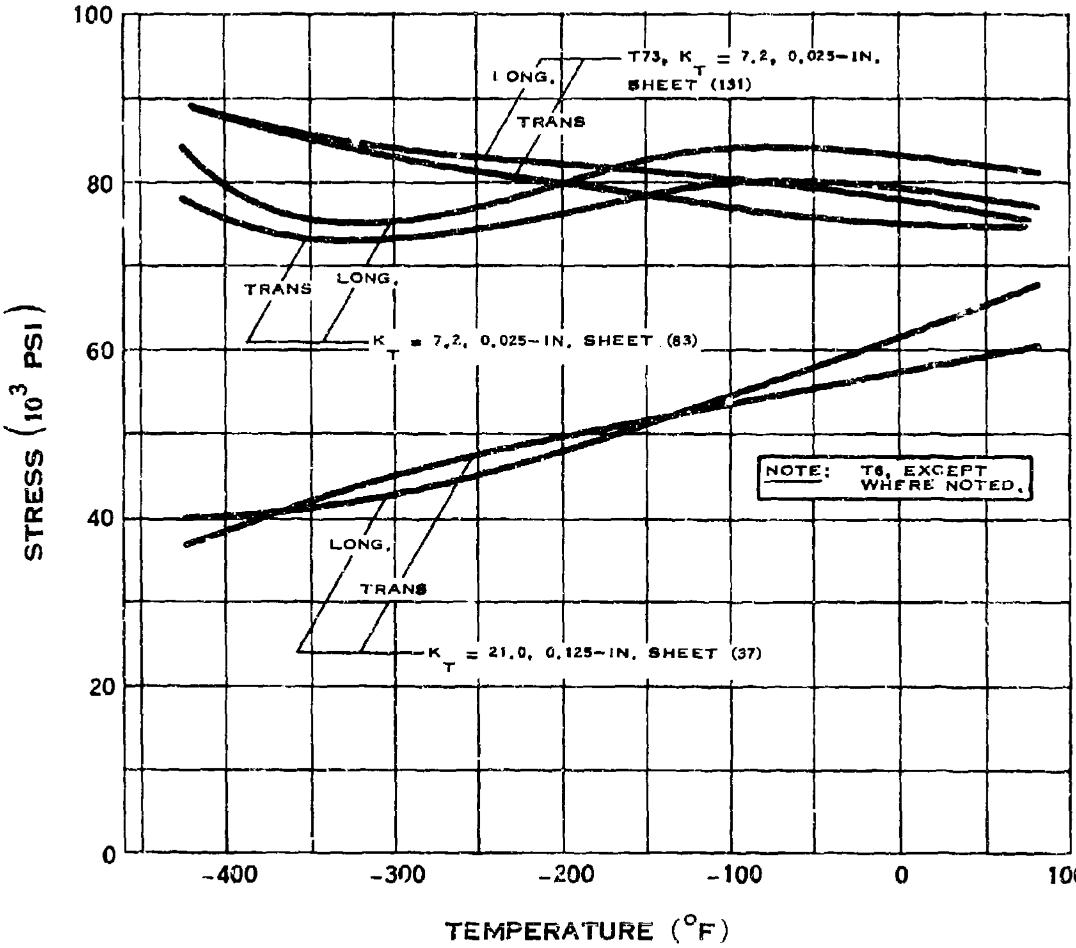


ELONGATION OF 7075 ALUMINUM



REDUCTION OF AREA OF 7075 ALUMINUM

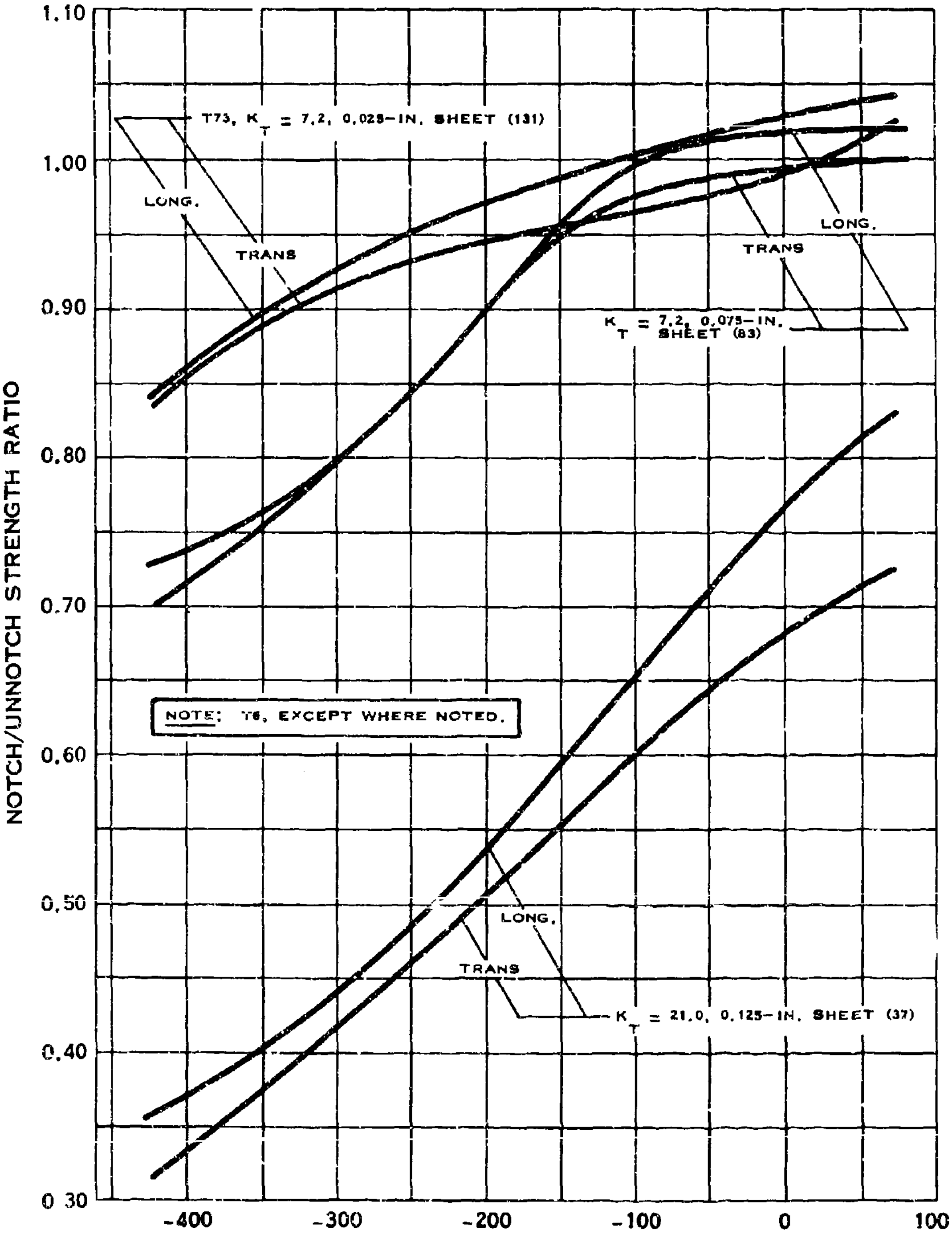
A.16.e



NOTCH TENSILE STRENGTH OF 7075 ALUMINUM

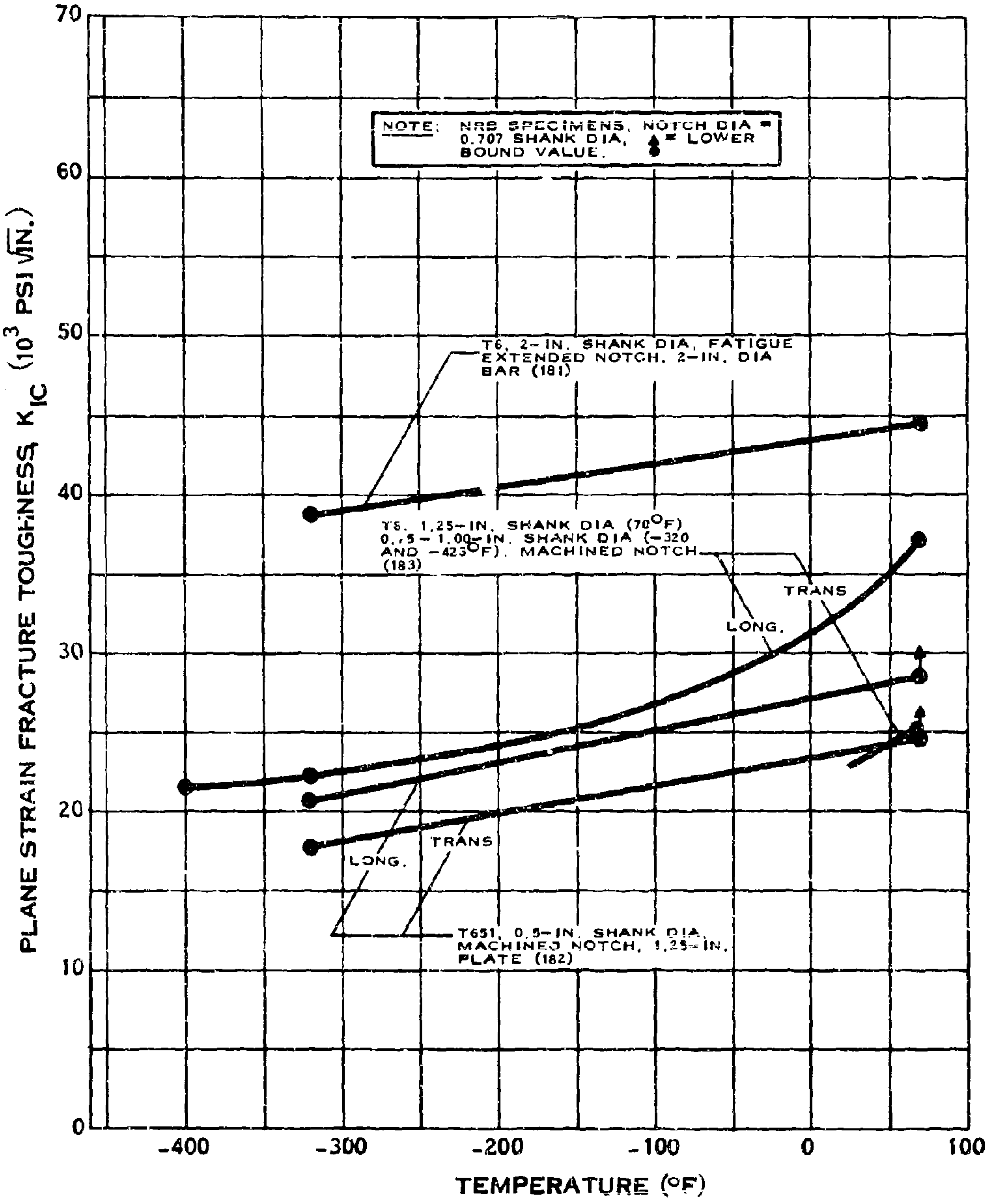
(7-65)

A.16.e-1



NOTCH STRENGTH RATIO OF 7075 ALUMINUM

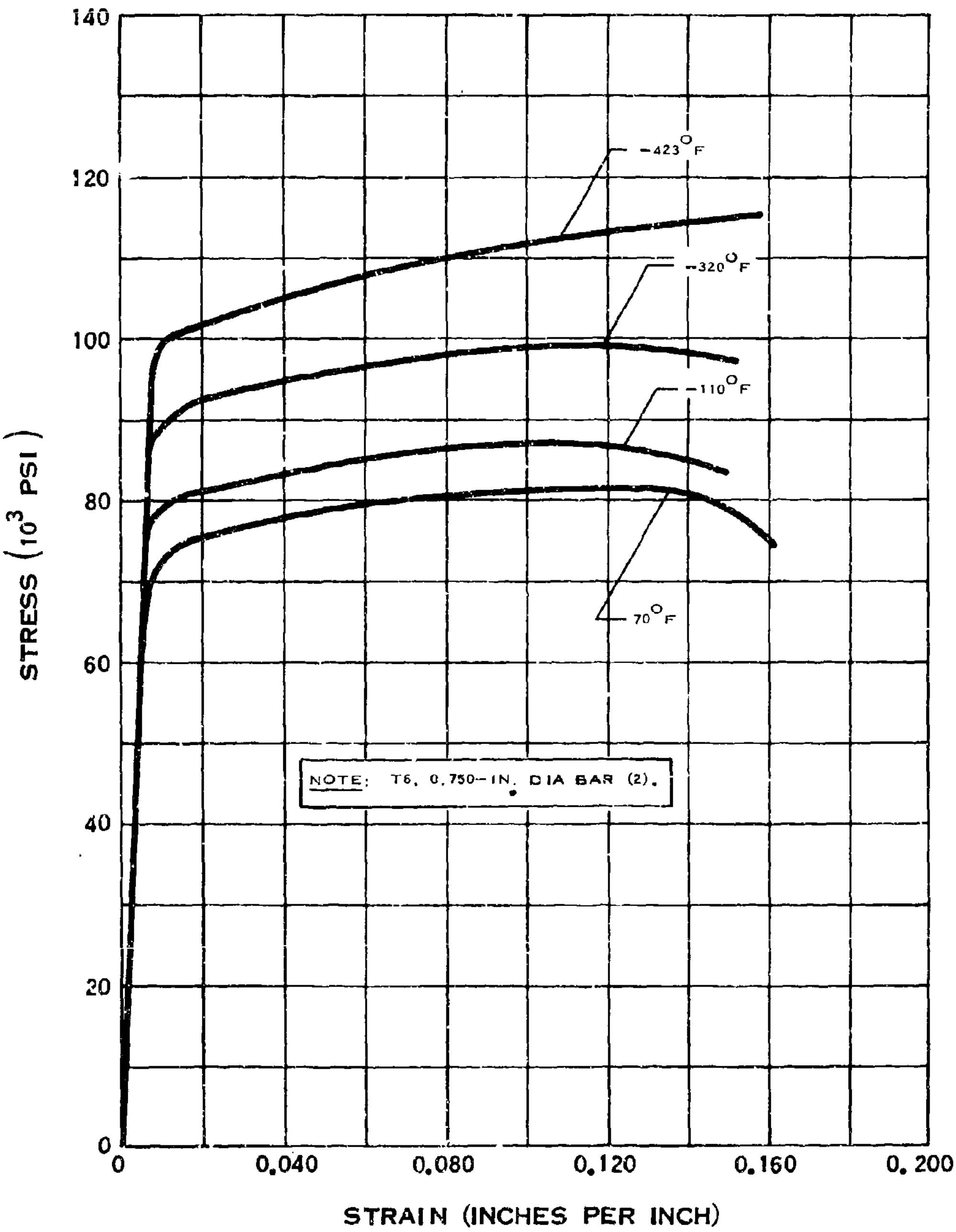
A.16.f



FRACTURE TOUGHNESS OF 7075 ALUMINUM

(3-66)

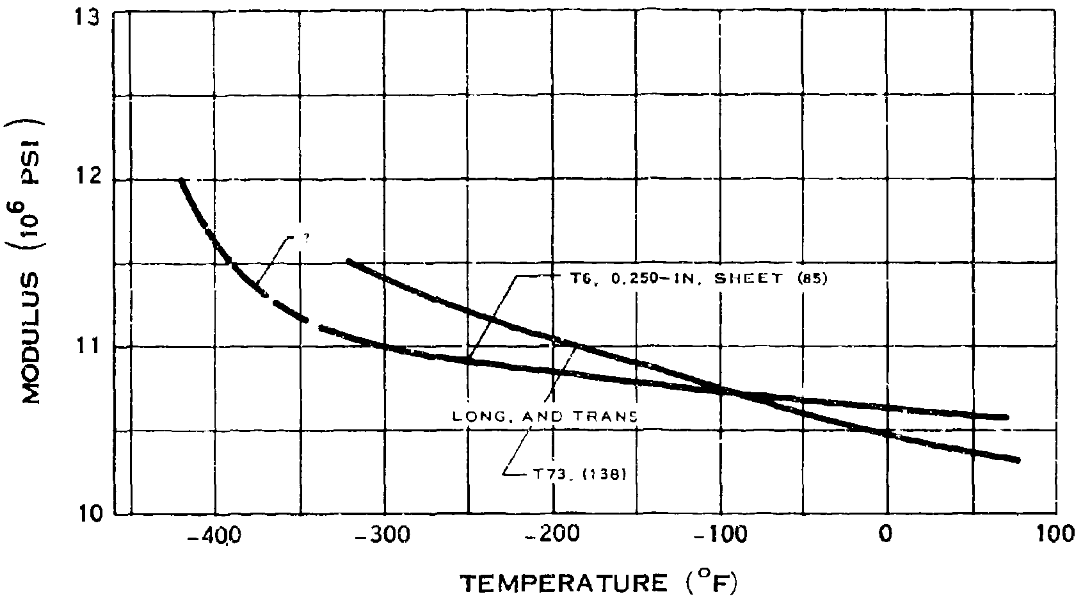
A.16.h



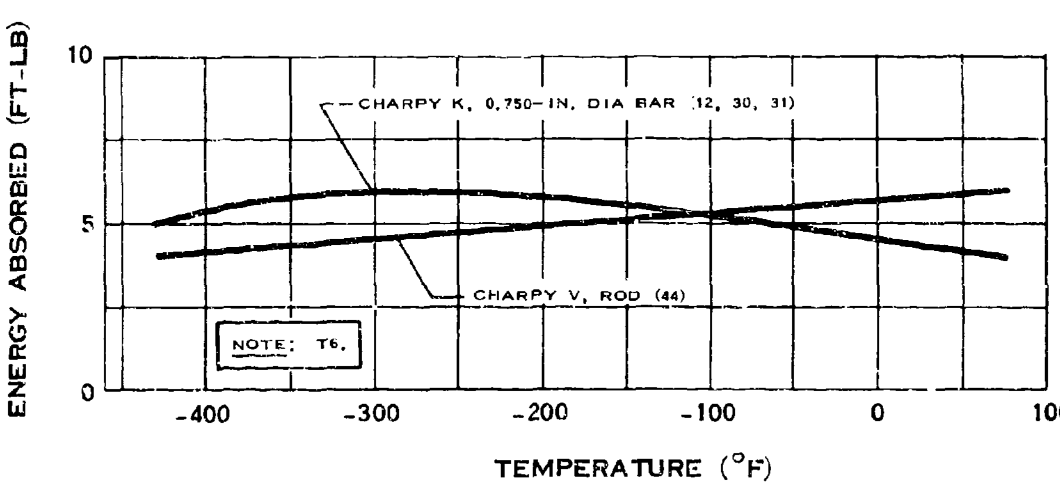
STRESS-STRAIN DIAGRAM FOR 7075 ALUMINUM

(7−64)

A.16.ij

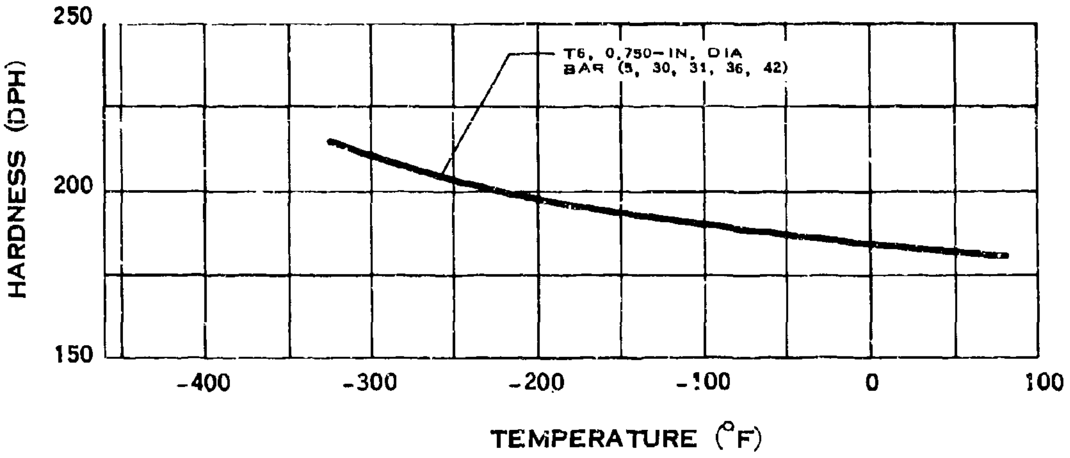


MODULUS OF ELASTICITY OF 7075 ALUMINUM



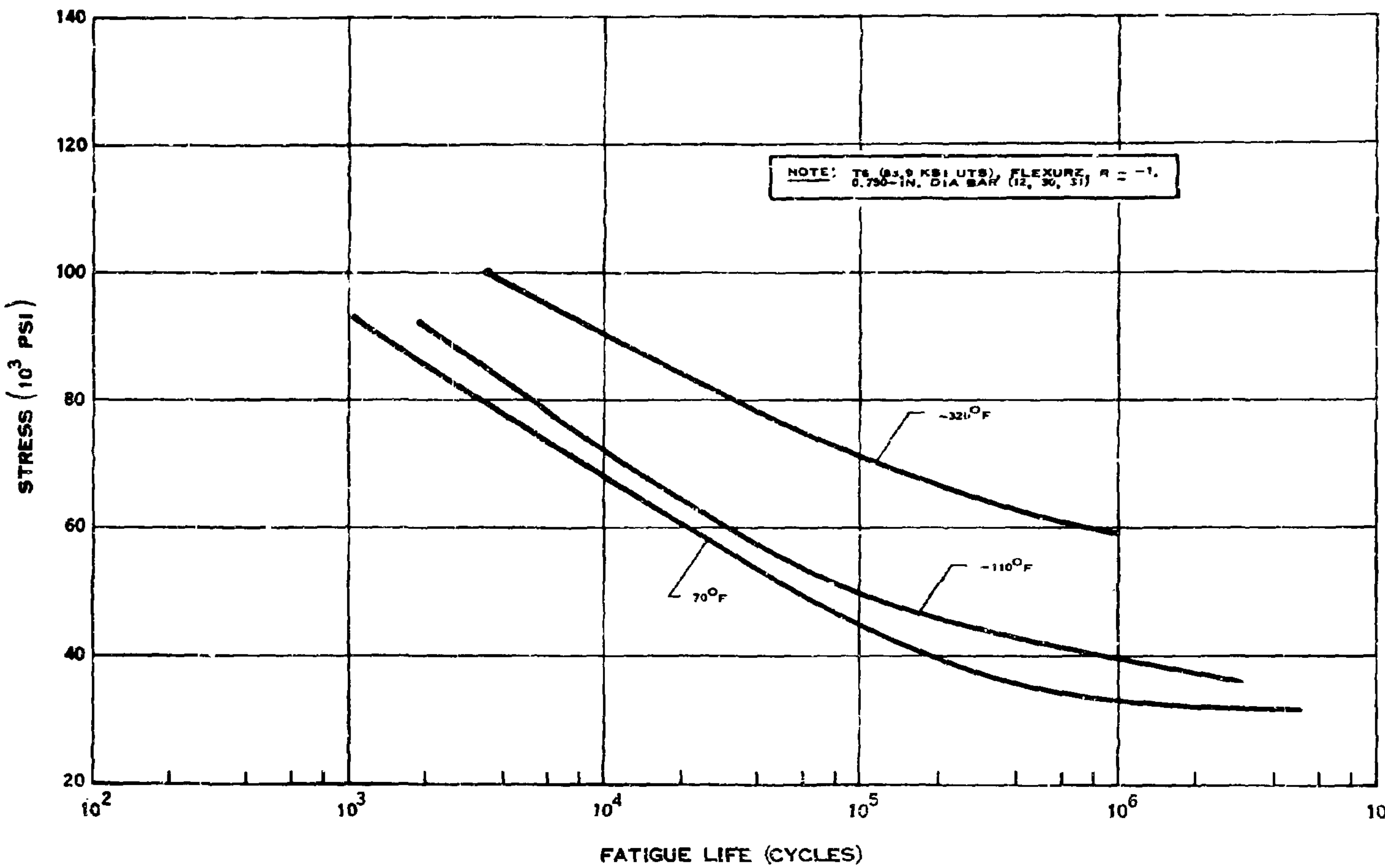
IMPACT STRENGTH OF 7075 ALUMINUM

A.16.k



HARDNESS OF 7075 ALUMINUM

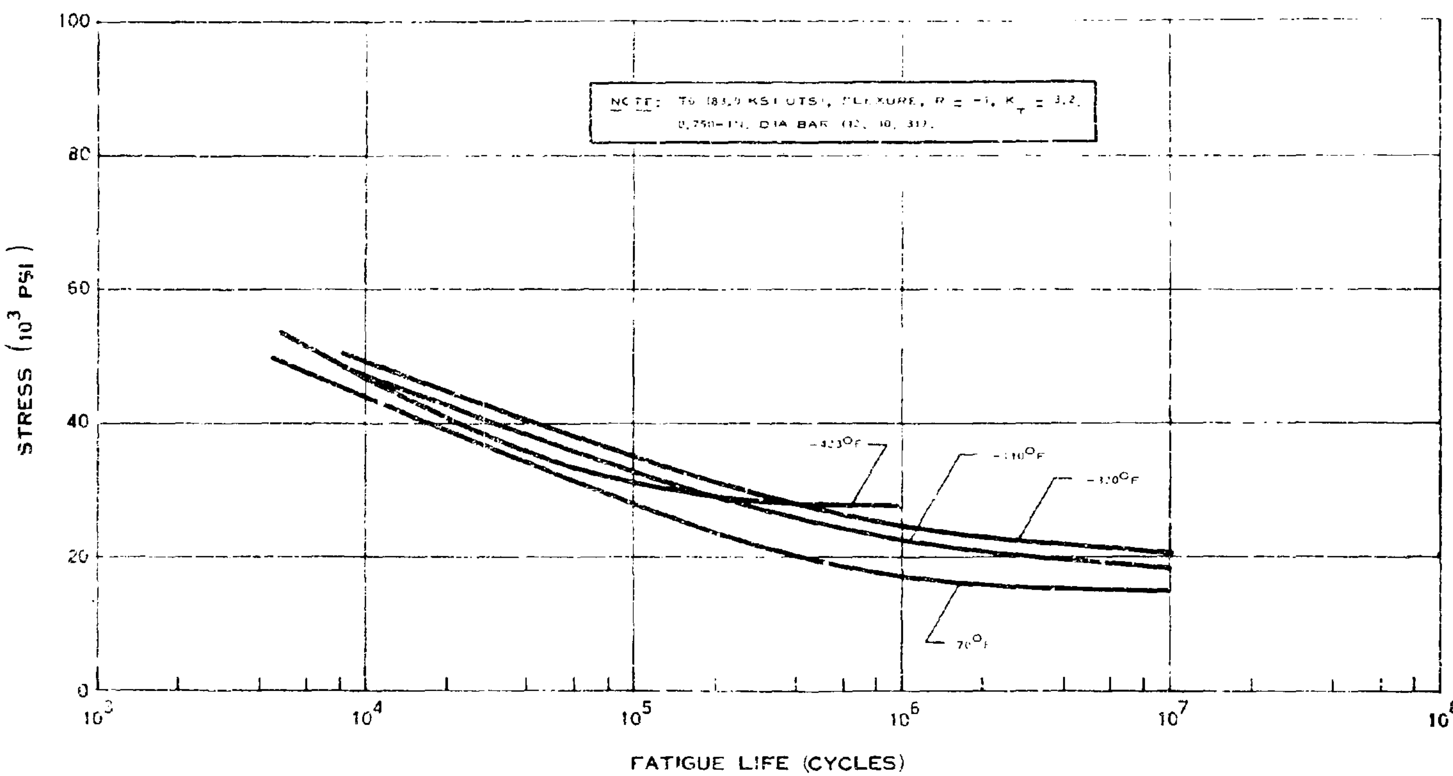
A.16.o



FATIGUE STRENGTH OF 7075 ALUMINUM

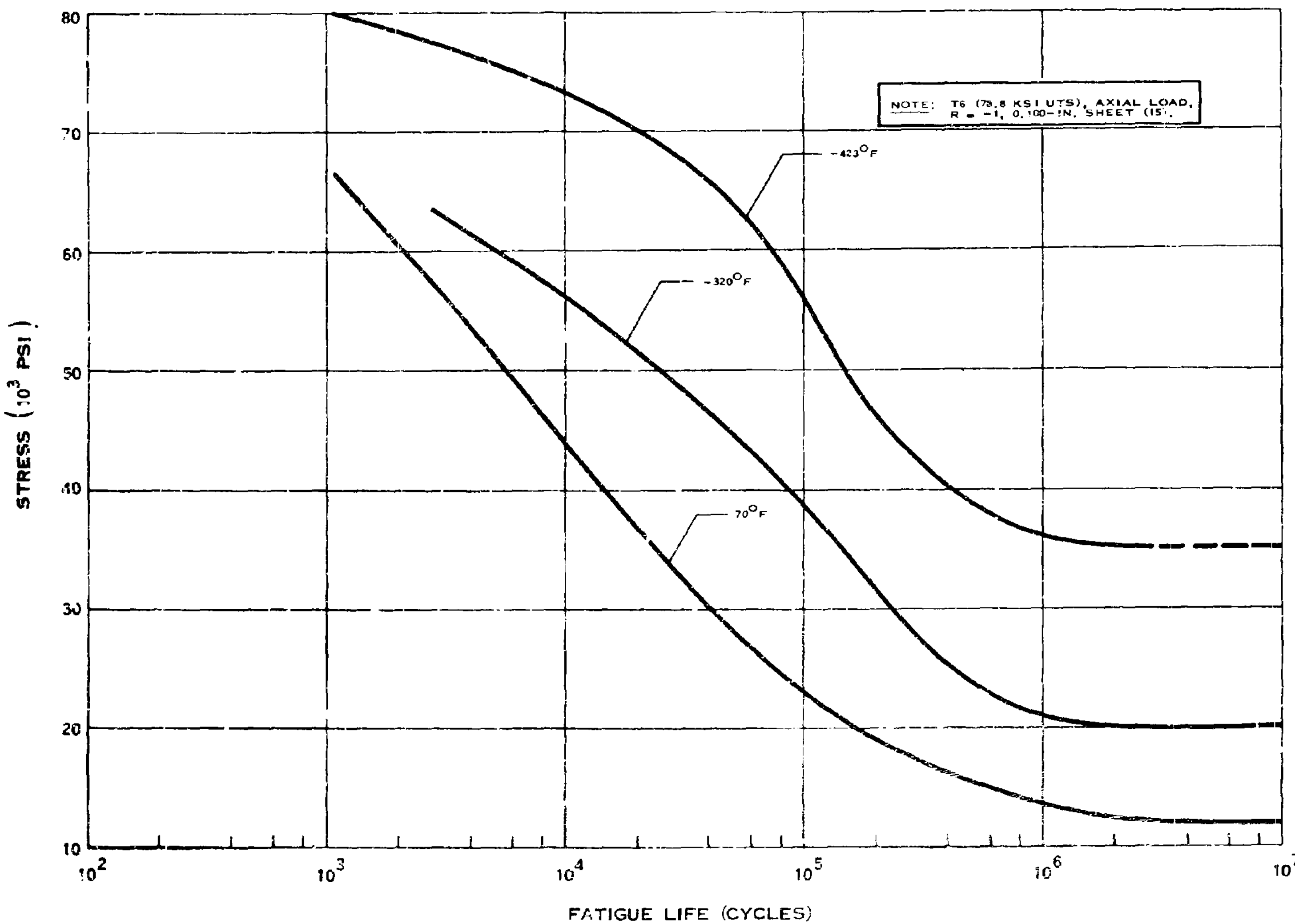
(1-65)

A.16.o-1



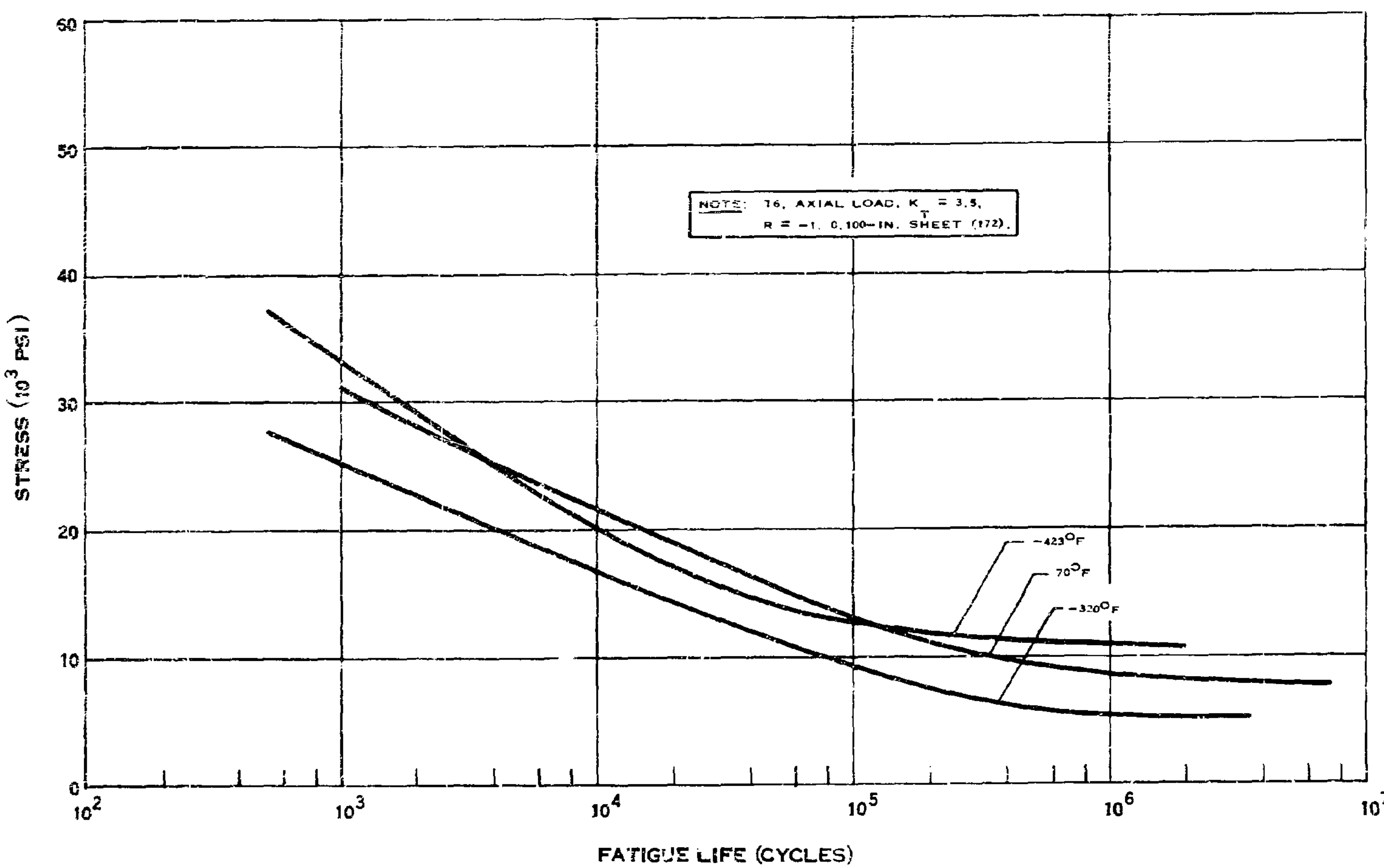
NOTCH FATIGUE STRENGTH OF 7075 ALUMINUM

A.16.o-2



FATIGUE STRENGTH OF 7075 ALUMINUM

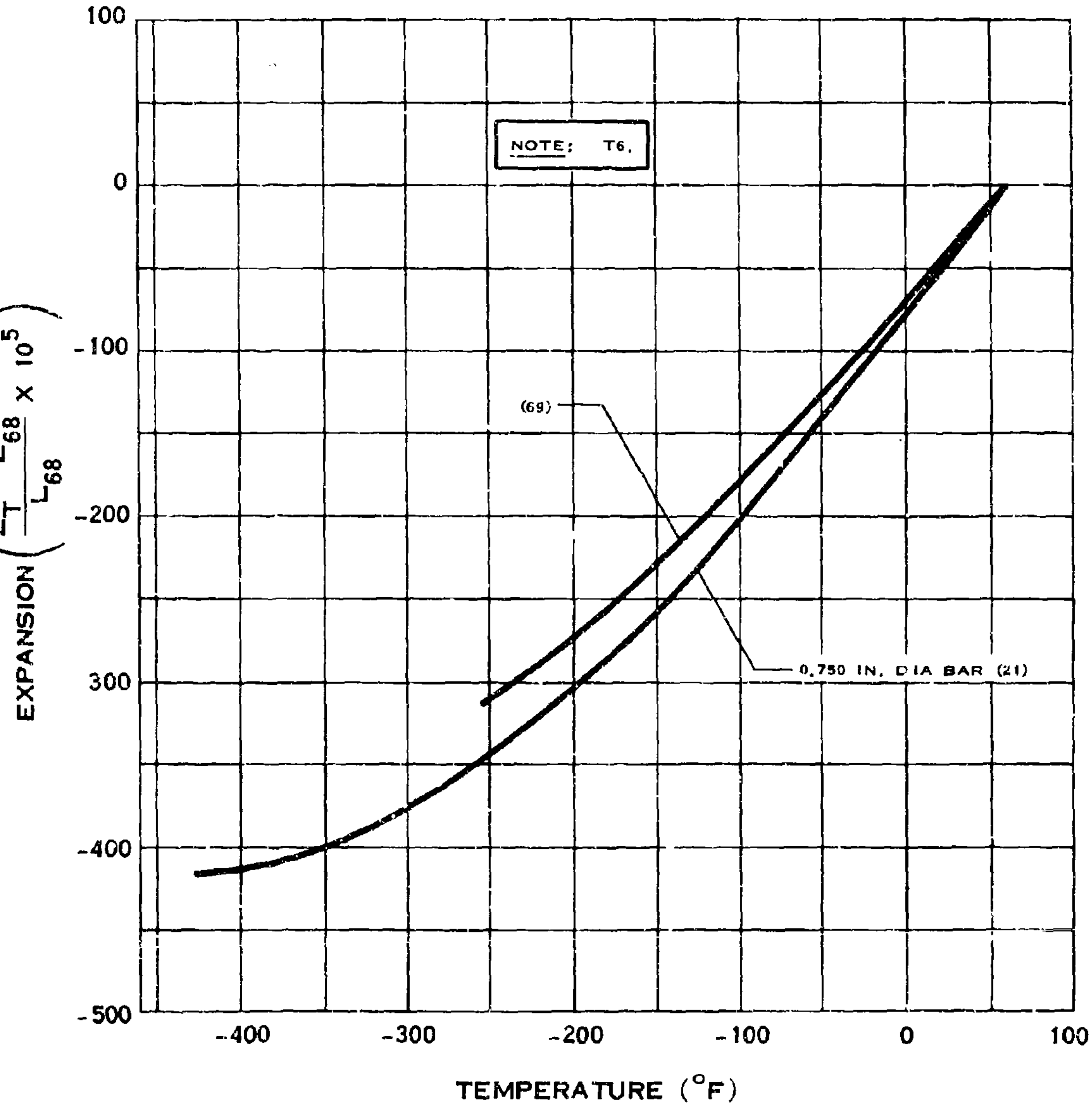
(7-64)



NOTCH FATIGUE STRENGTH OF 7075 ALUMINUM

(3-66)

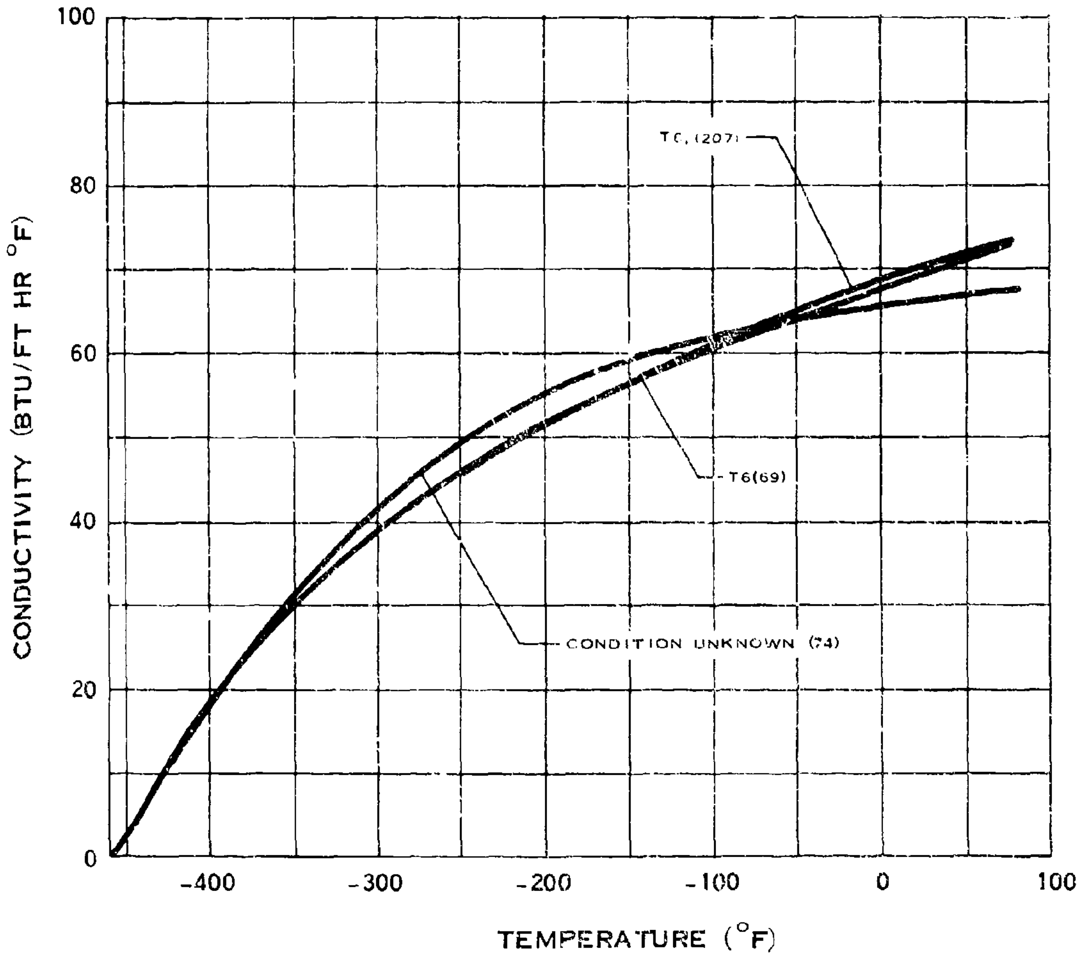
A.16.t



THERMAL EXPANSION OF 7075 ALUMINUM

(7-64)

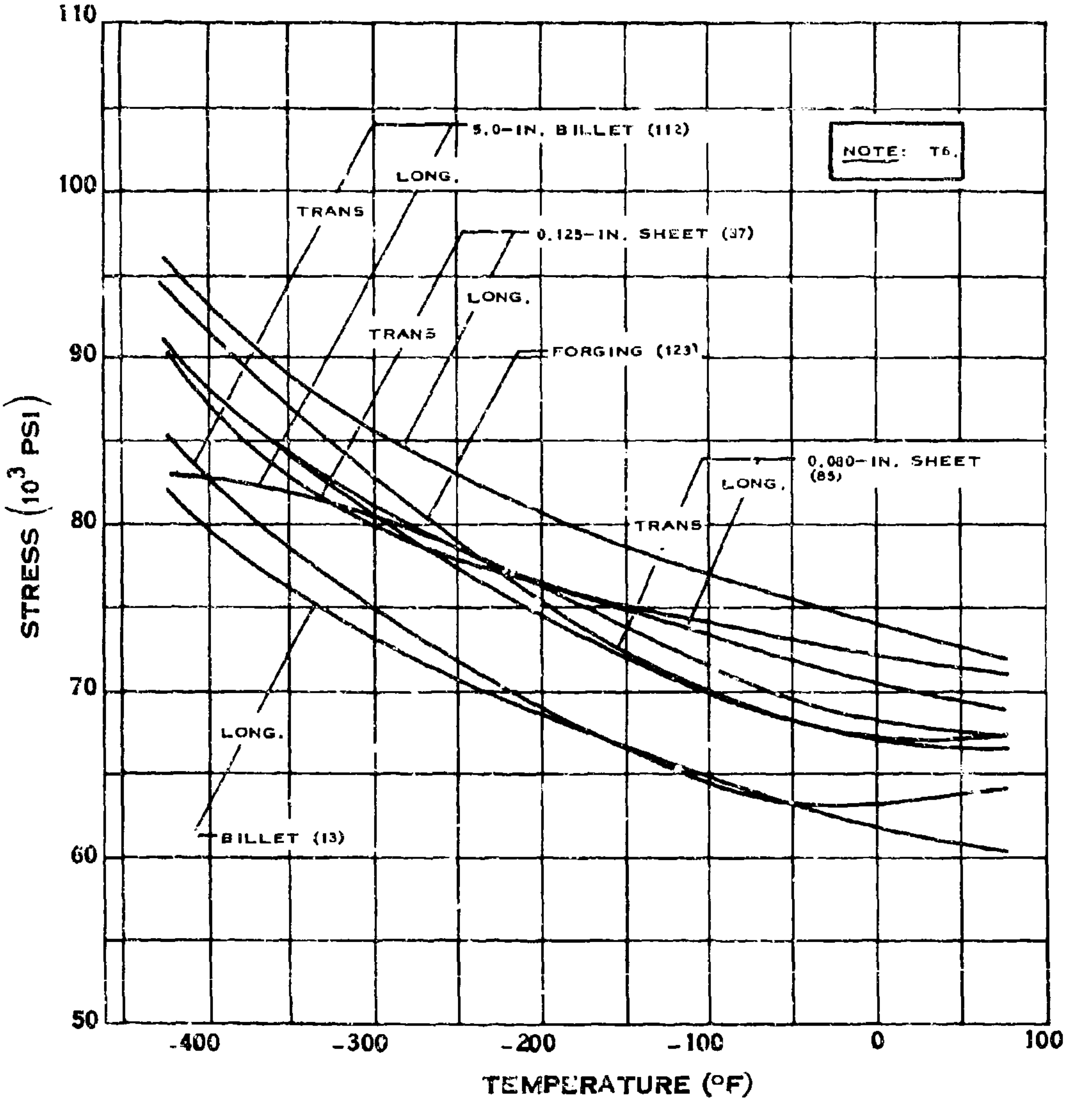
A.16.v



THERMAL CONDUCTIVITY OF 7075 ALUMINUM

(6-68)

A.17.a



YIELD STRENGTH OF 7079 ALUMINUM

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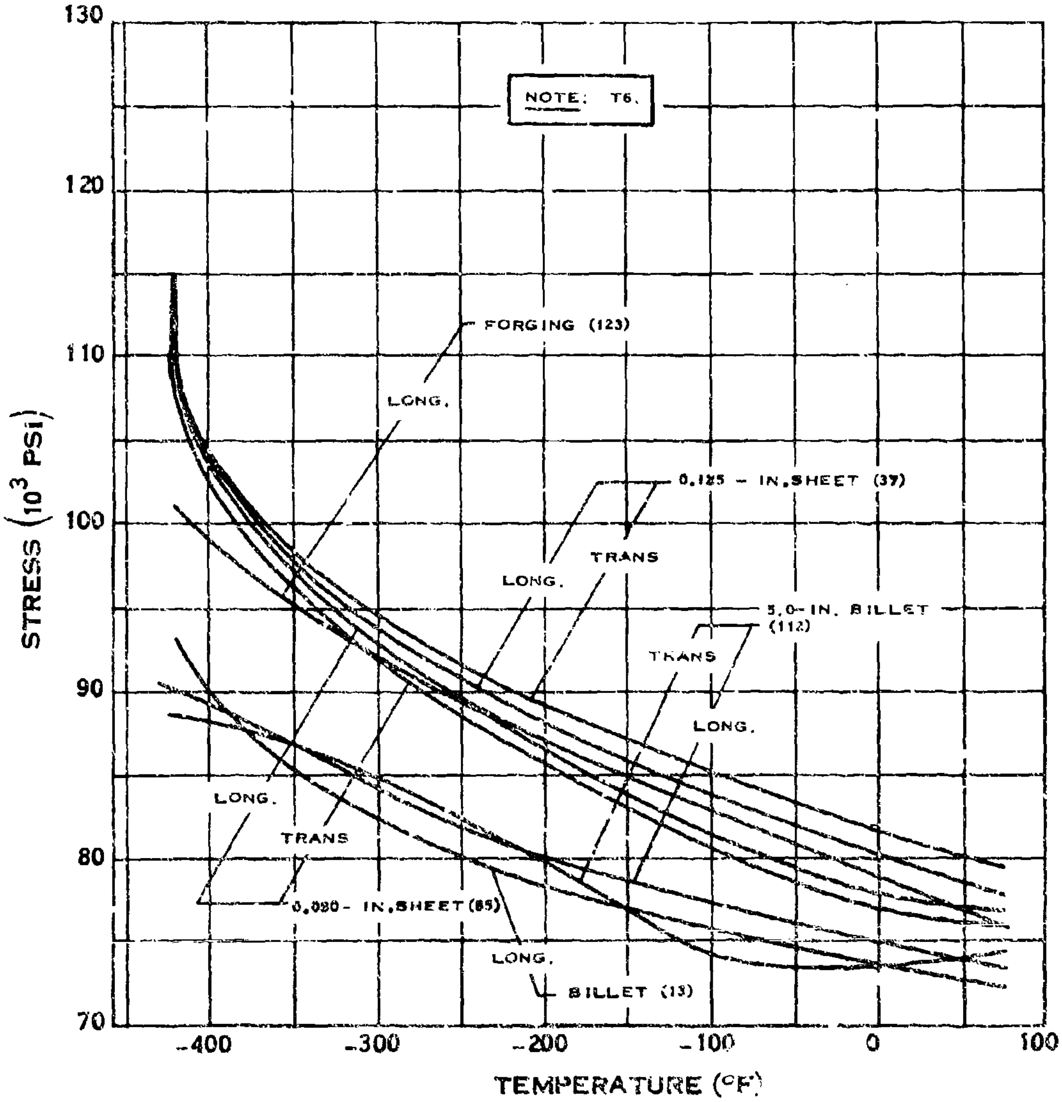
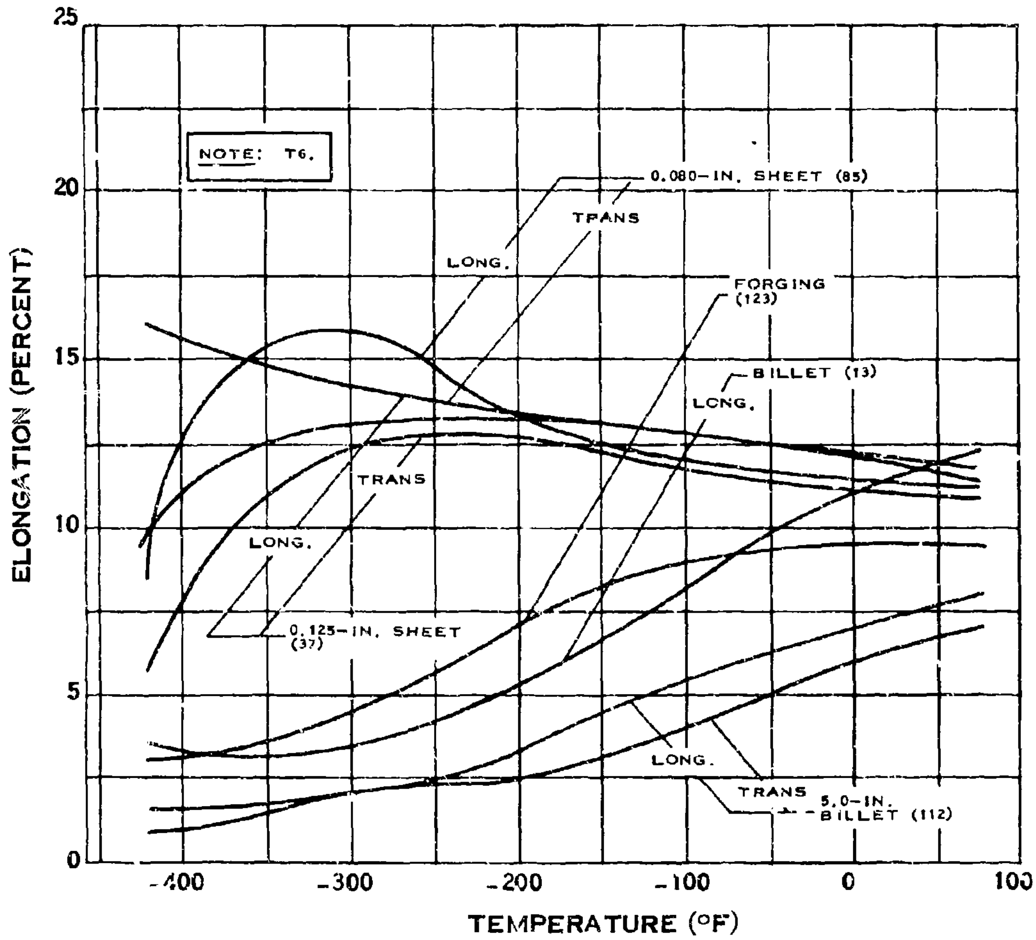
A.17.b



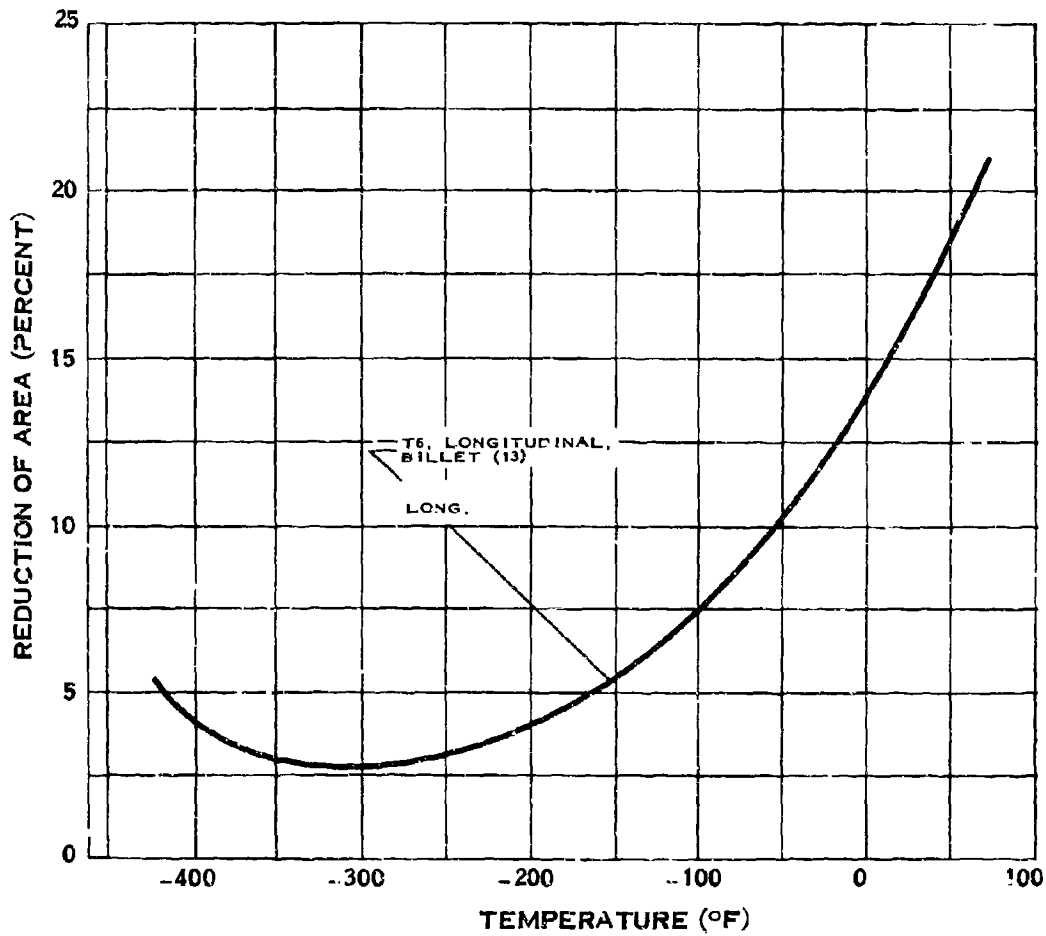
TENSILE STRENGTH OF 7079 ALUMINUM

A.17.c



ELONGATION OF 7079 ALUMINUM

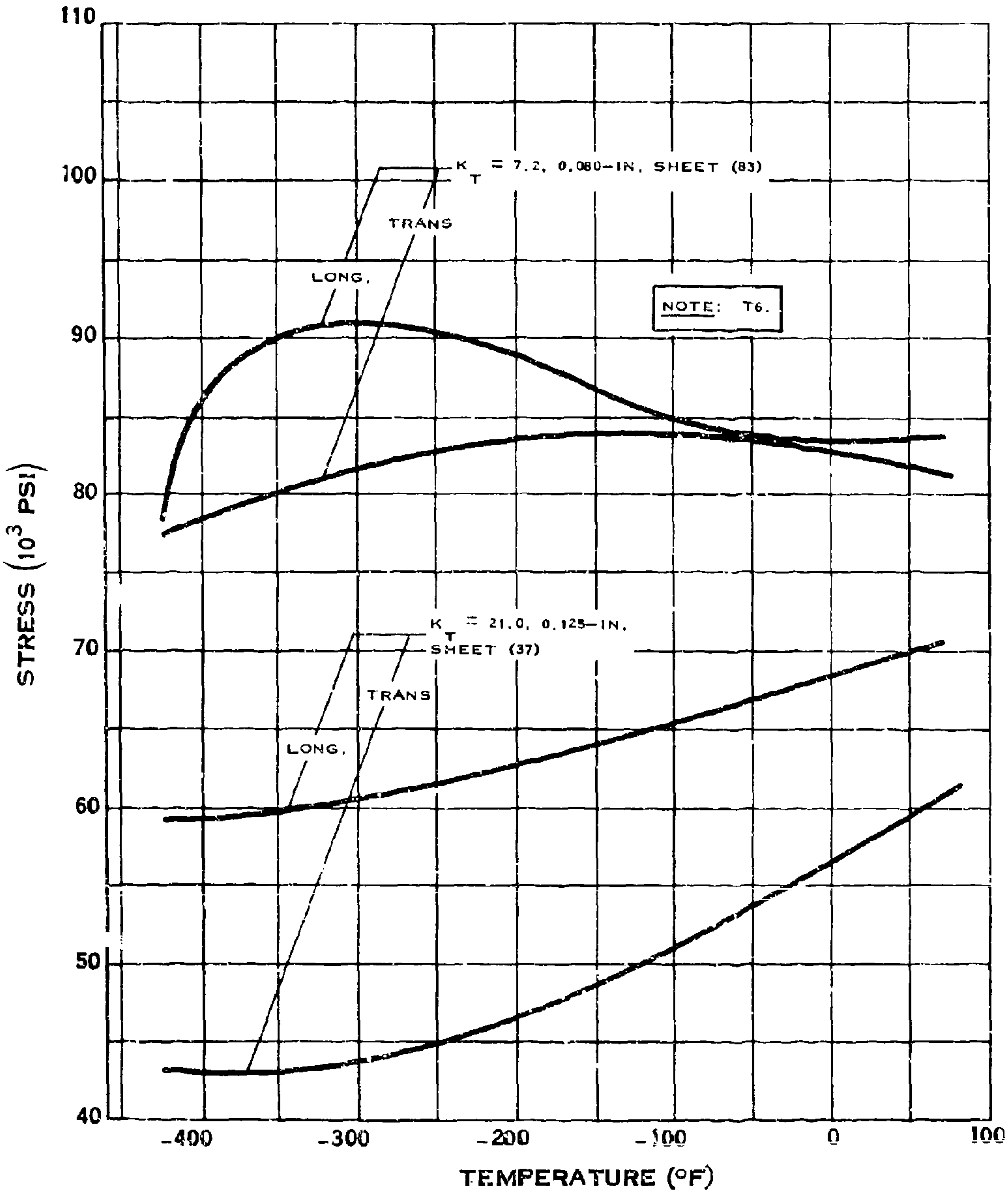
A.17.d



REDUCTION OF AREA OF 7079 ALUMINUM

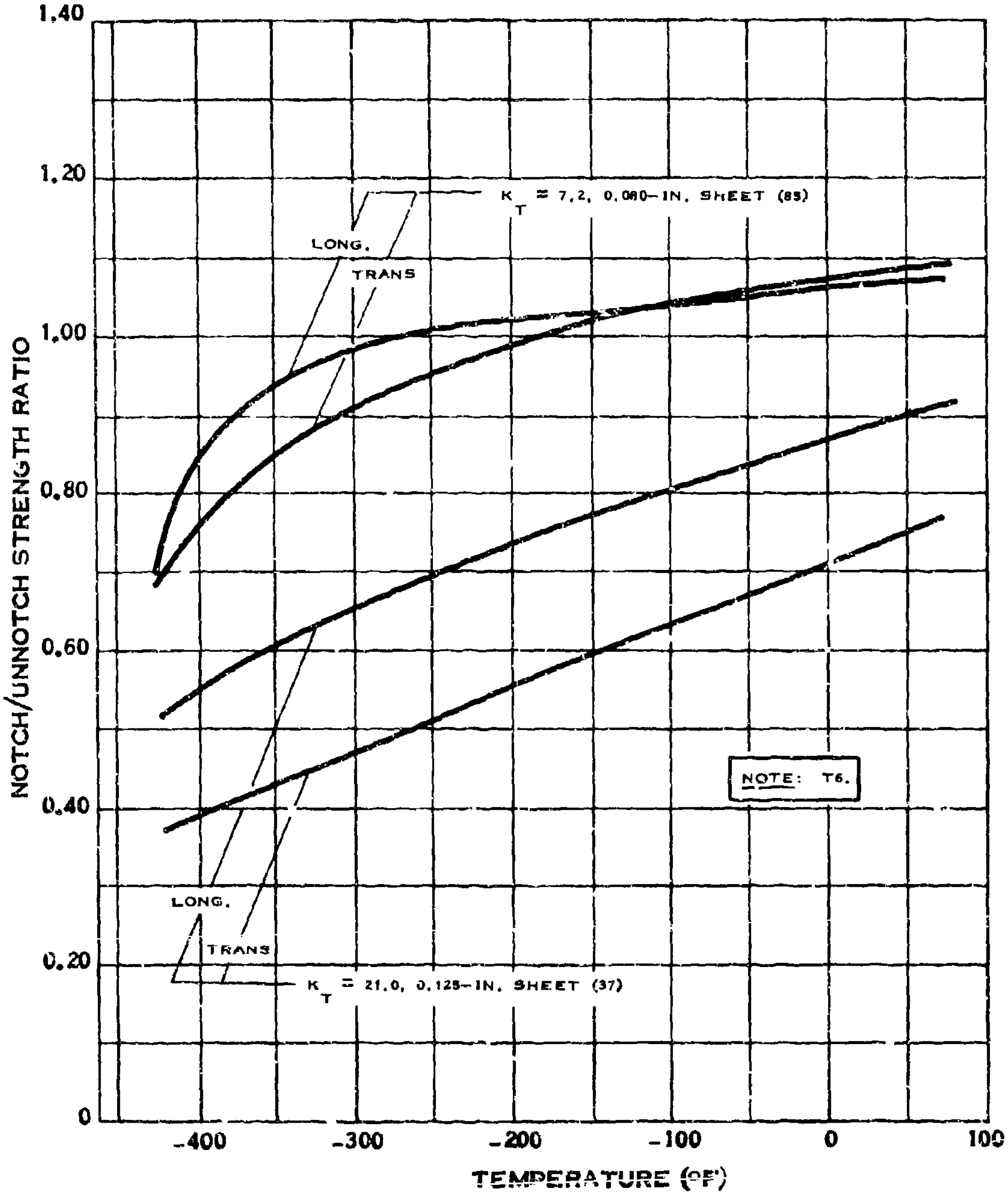
(3-66)

A.17.e



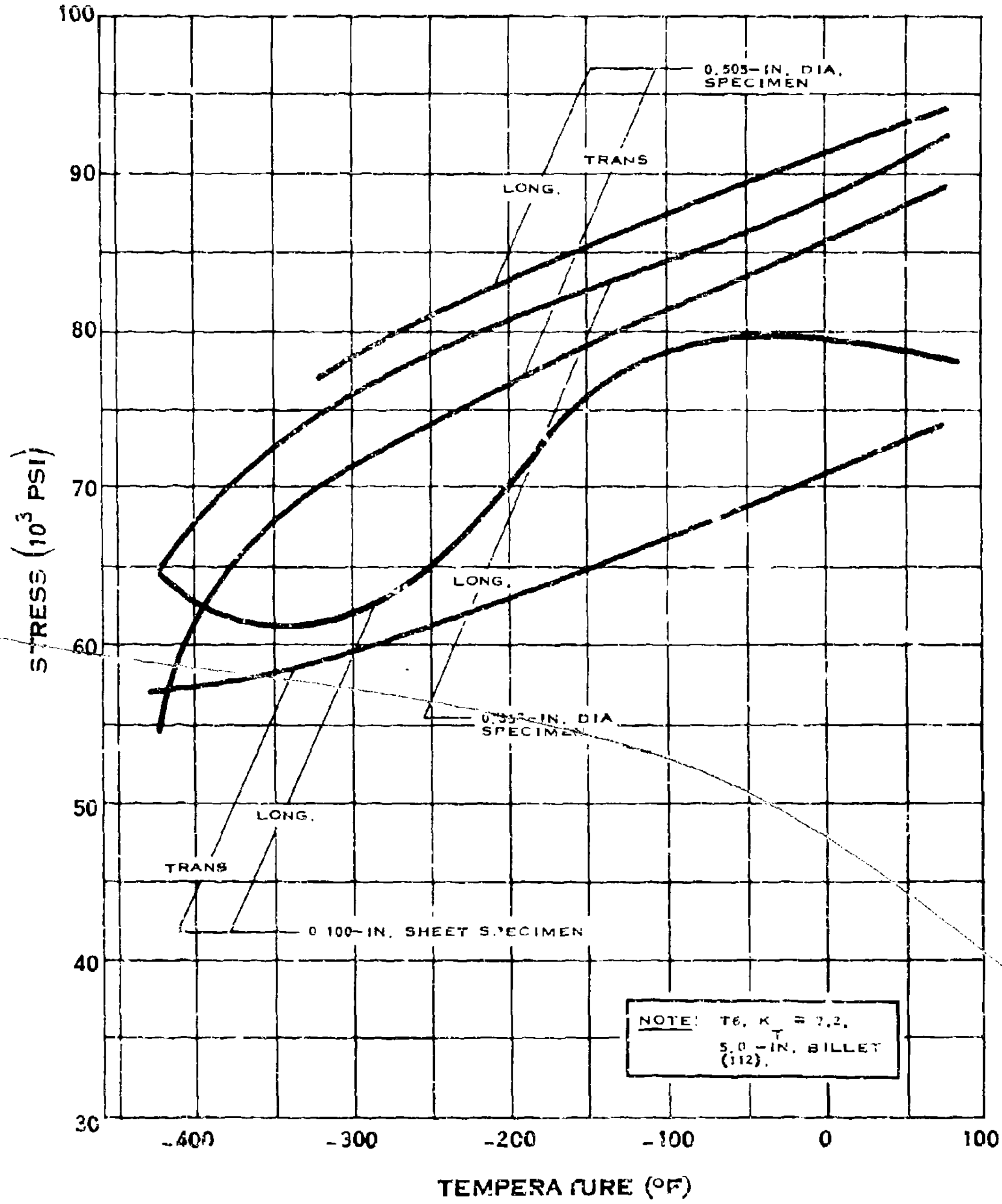
NOTCH TENSILE STRENGTH OF 7079 ALUMINUM

A.17.e-1



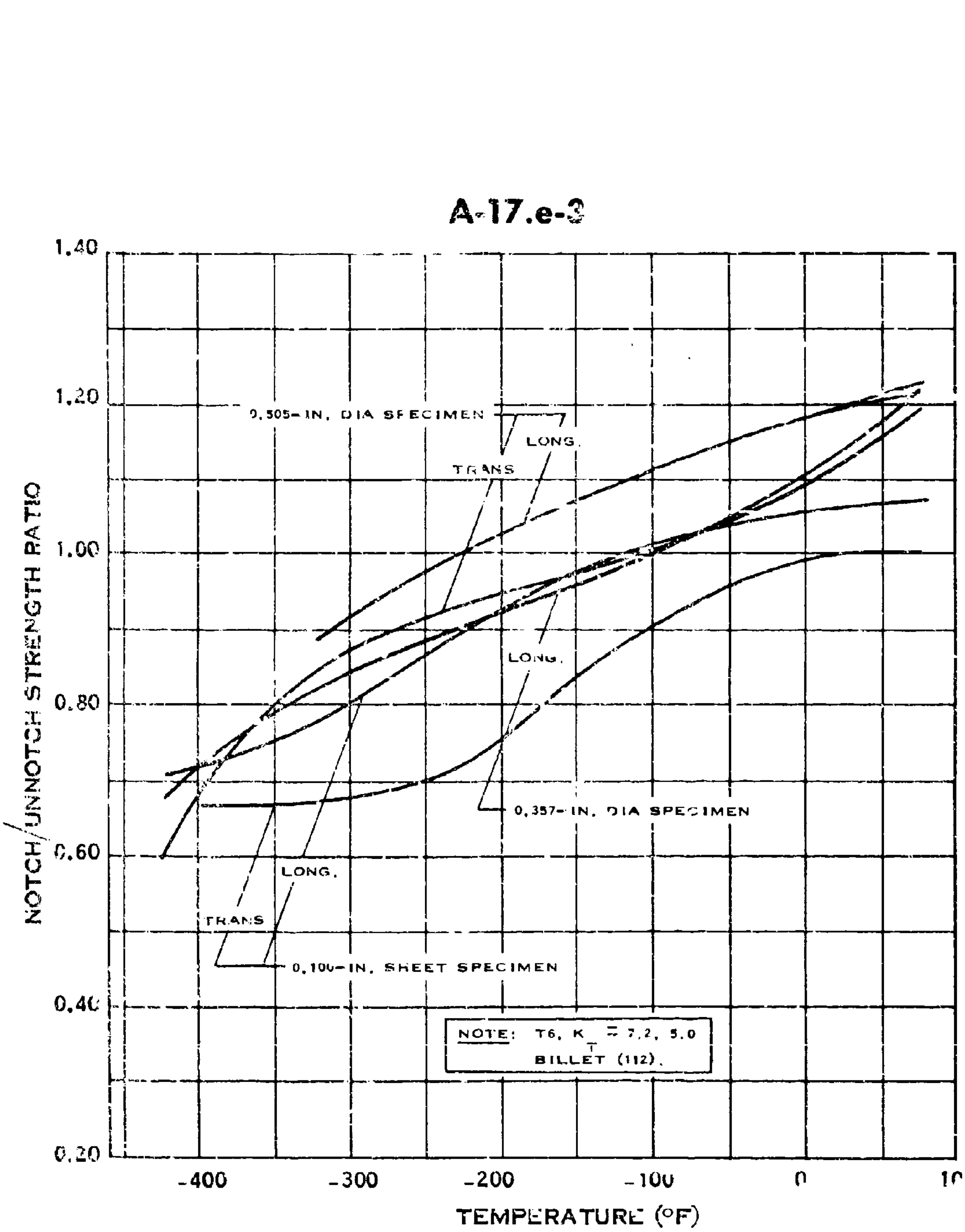
NOTCH STRENGTH RATIO OF 7079 ALUMINUM

A.17.e-2



NOTCH TENSILE STRENGTH OF 7079 ALUMINUM

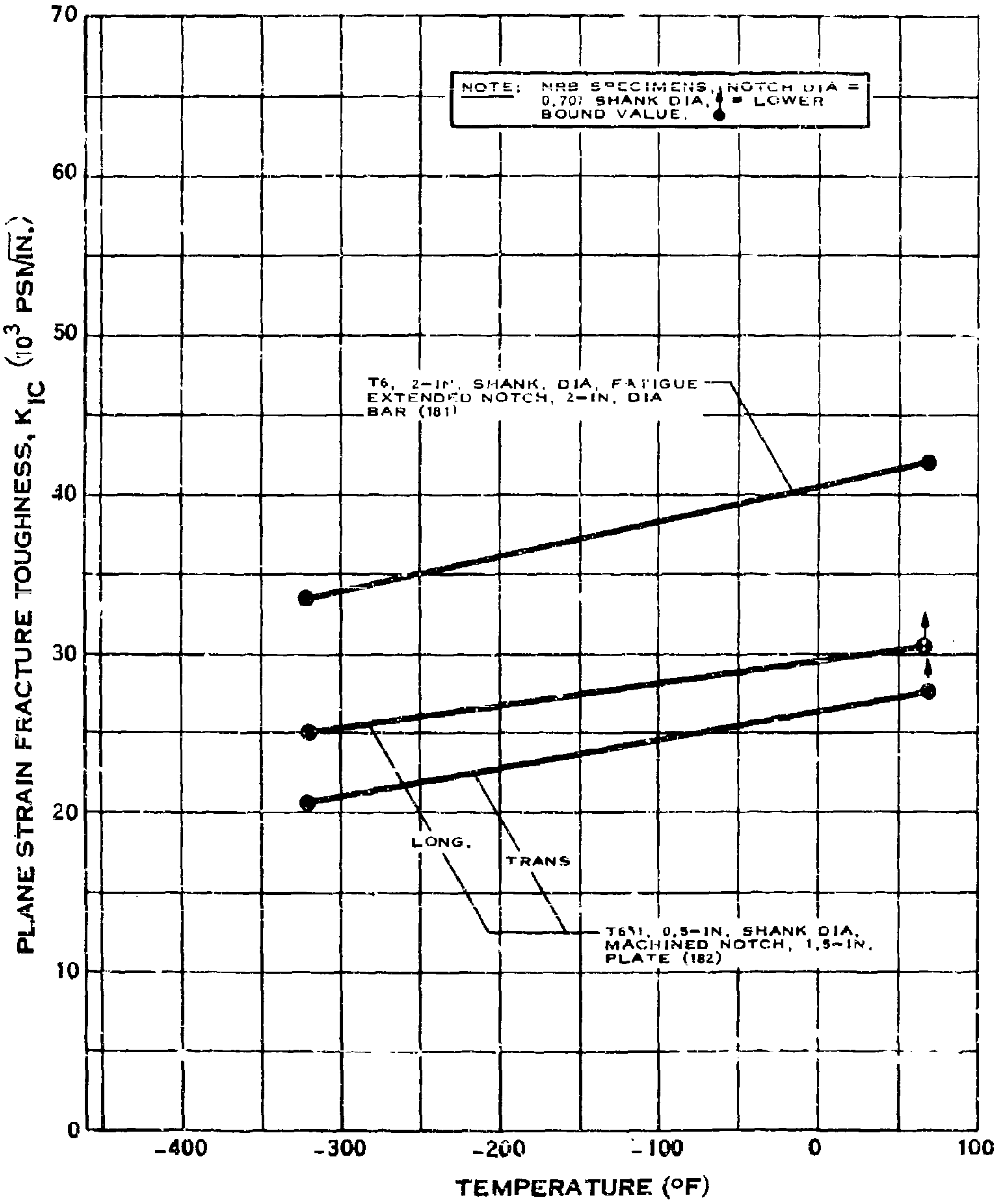
(3-66)



NOTCH STRENGTH RATIO OF 7079 ALUMINUM

(3-66)

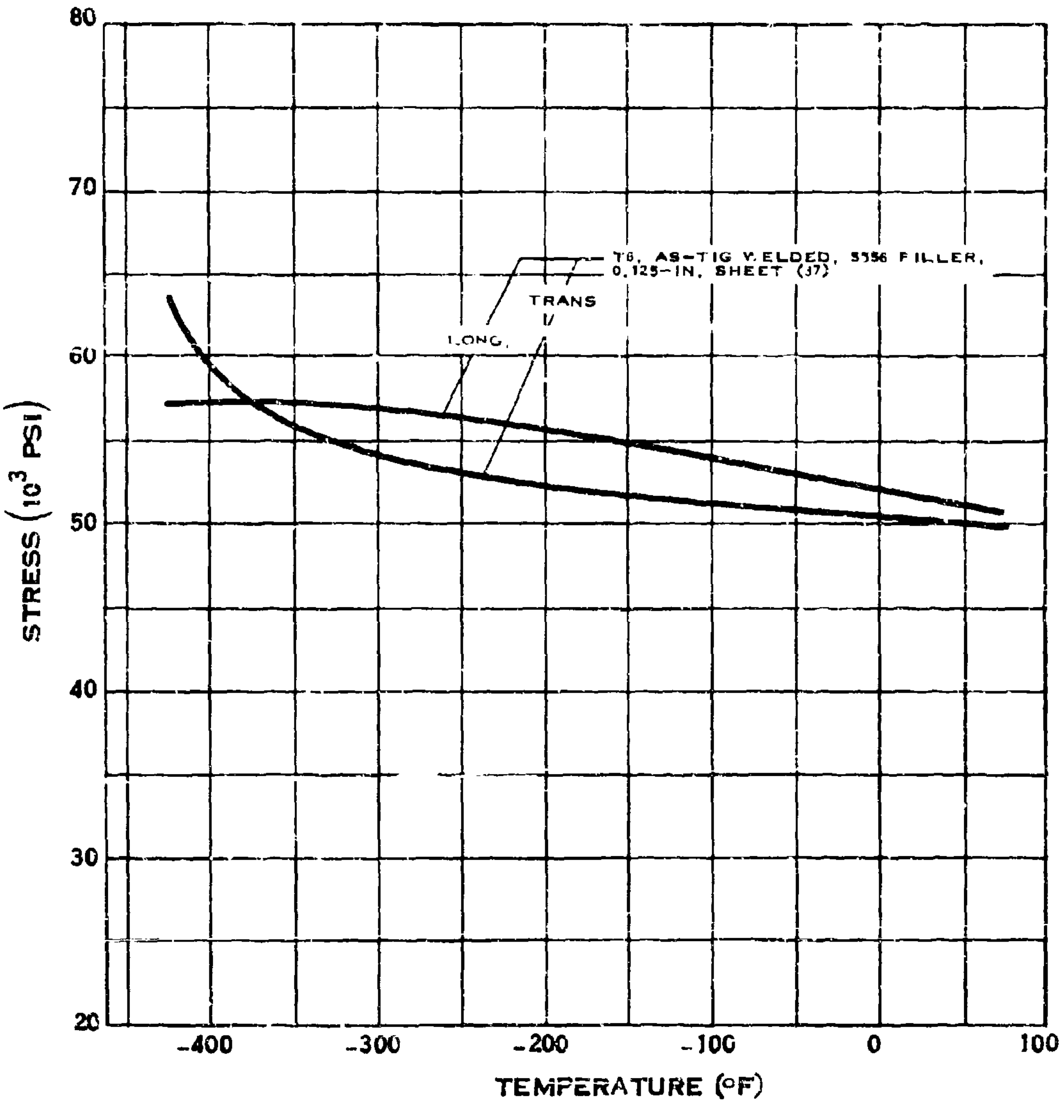
A.17.f



FRACTURE TOUGHNESS OF 7079 ALUMINUM

(3-66)

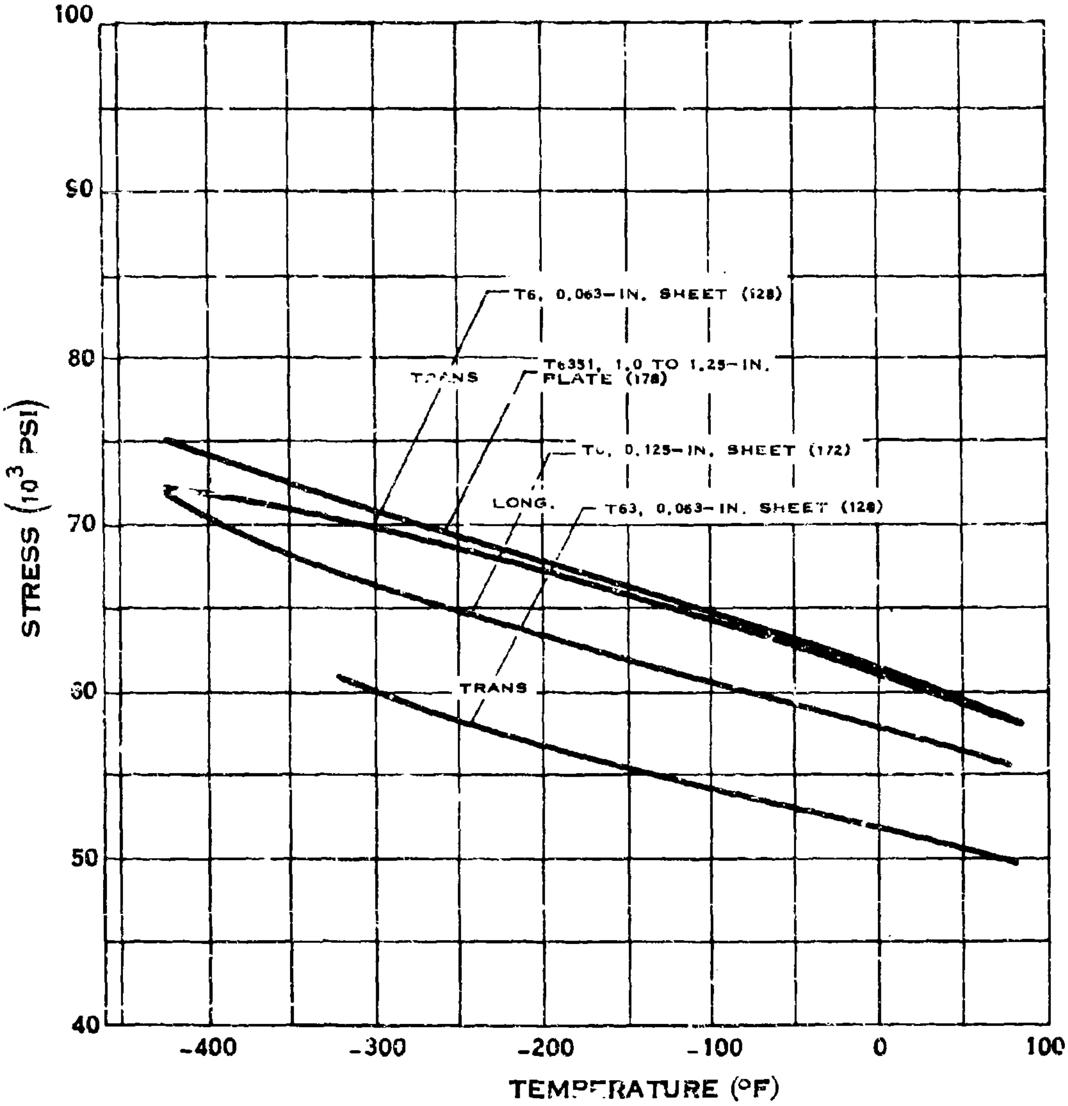
A.17.g



WELD TENSILE STRENGTH OF 7079 ALUMINUM

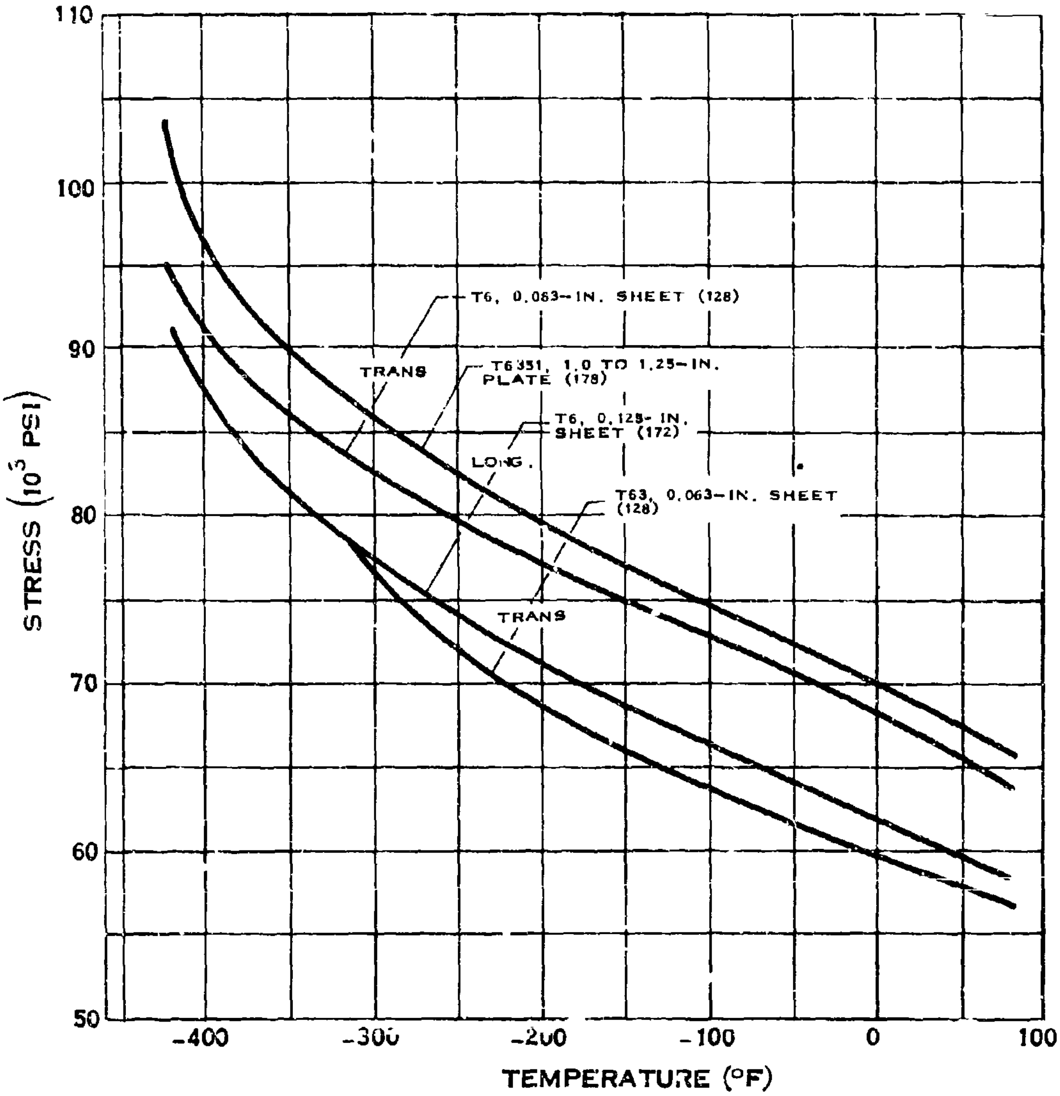
(3-66)

A.18.a



YIELD STRENGTH OF X7106 ALUMINUM

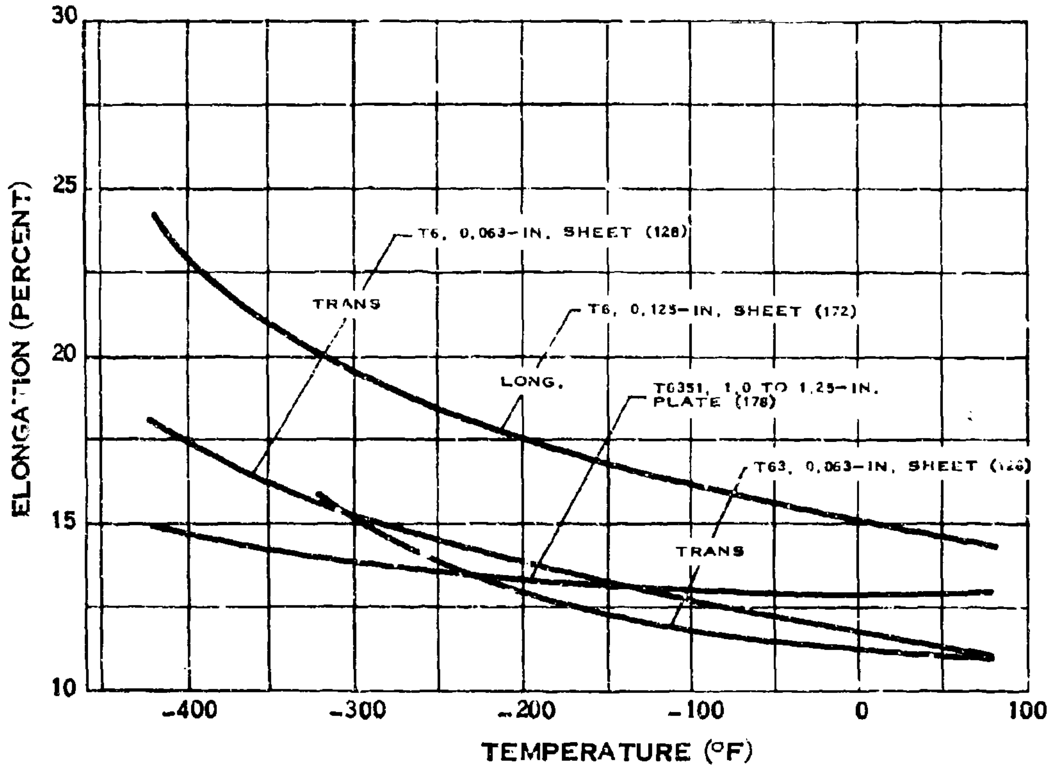
A-18.b



TENSILE STRENGTH OF X7106 ALUMINUM

(3-66)

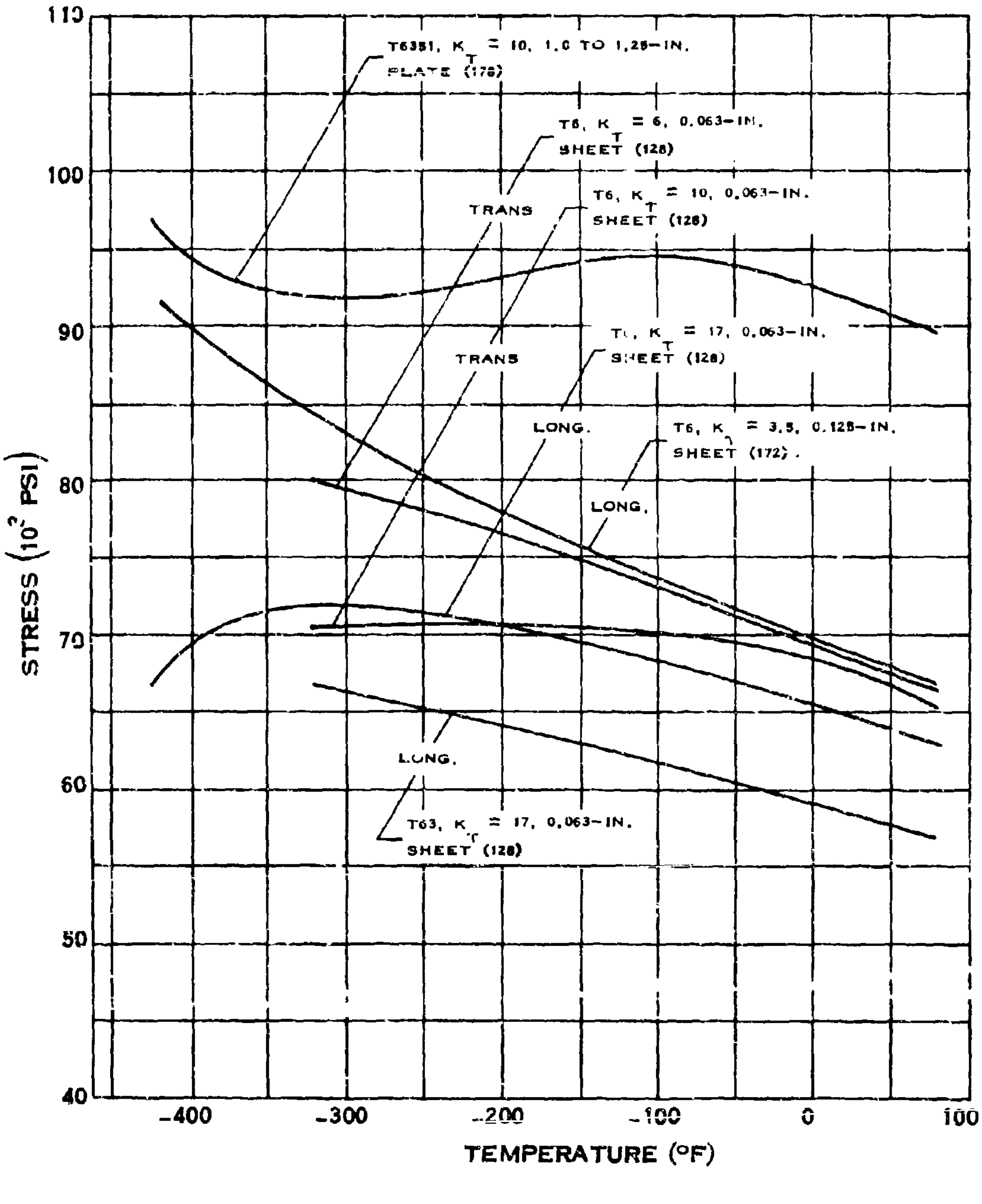
A.18.c



ELONGATION OF X7106 ALUMINUM

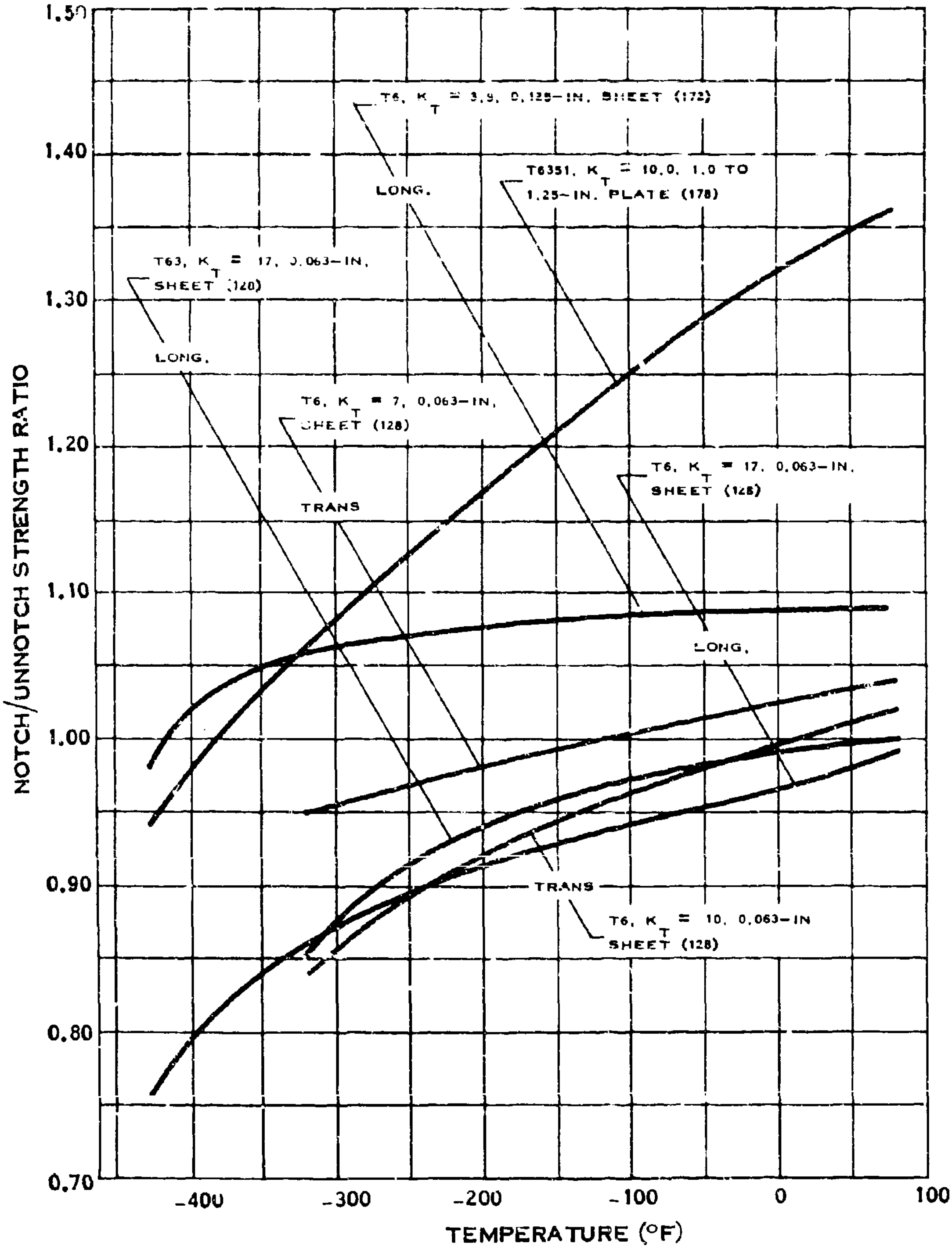
(3-66)

A.18.e



NOTCH TENSILE STRENGTH OF X7106 ALUMINUM

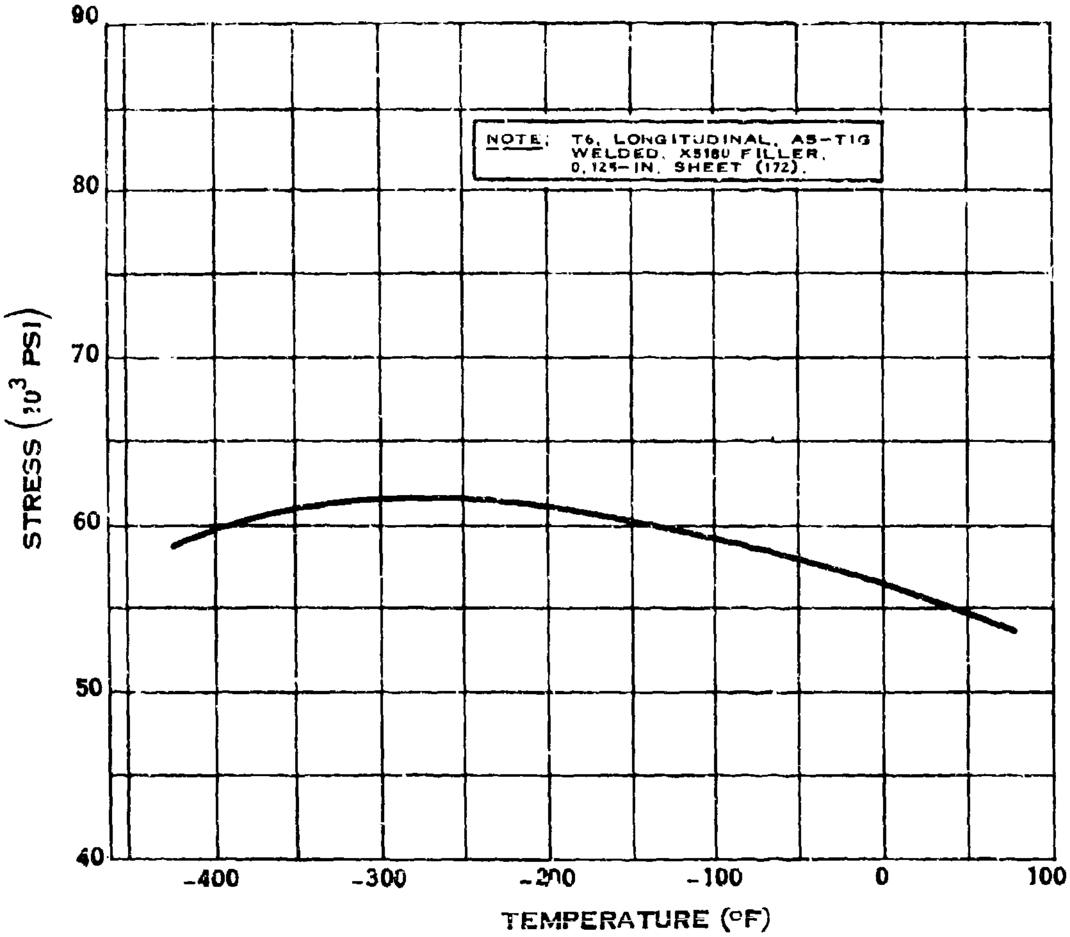
A.18.e-1



NOTCH STRENGTH RATIO OF X7106 ALUMINUM

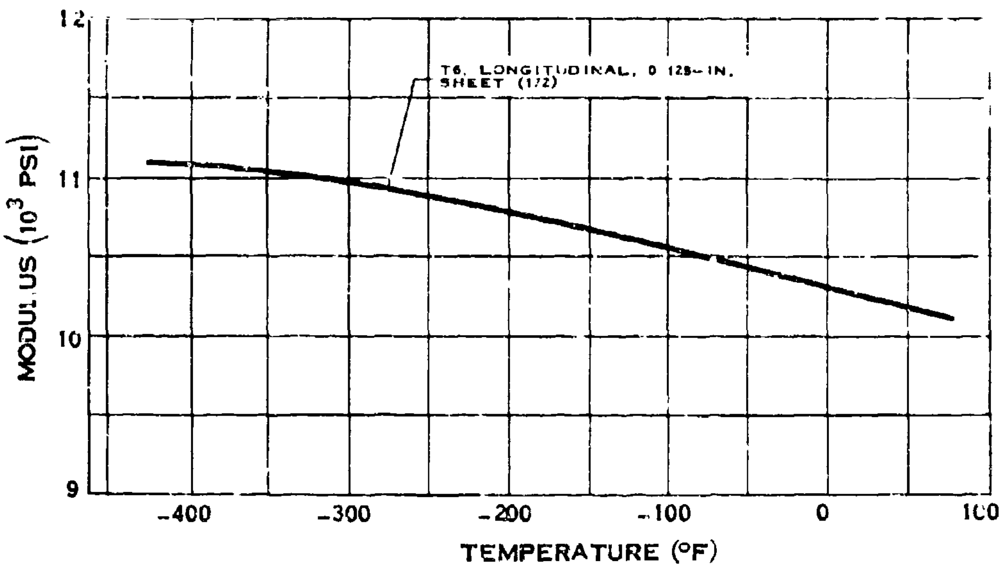
(3–66)

A.18.g



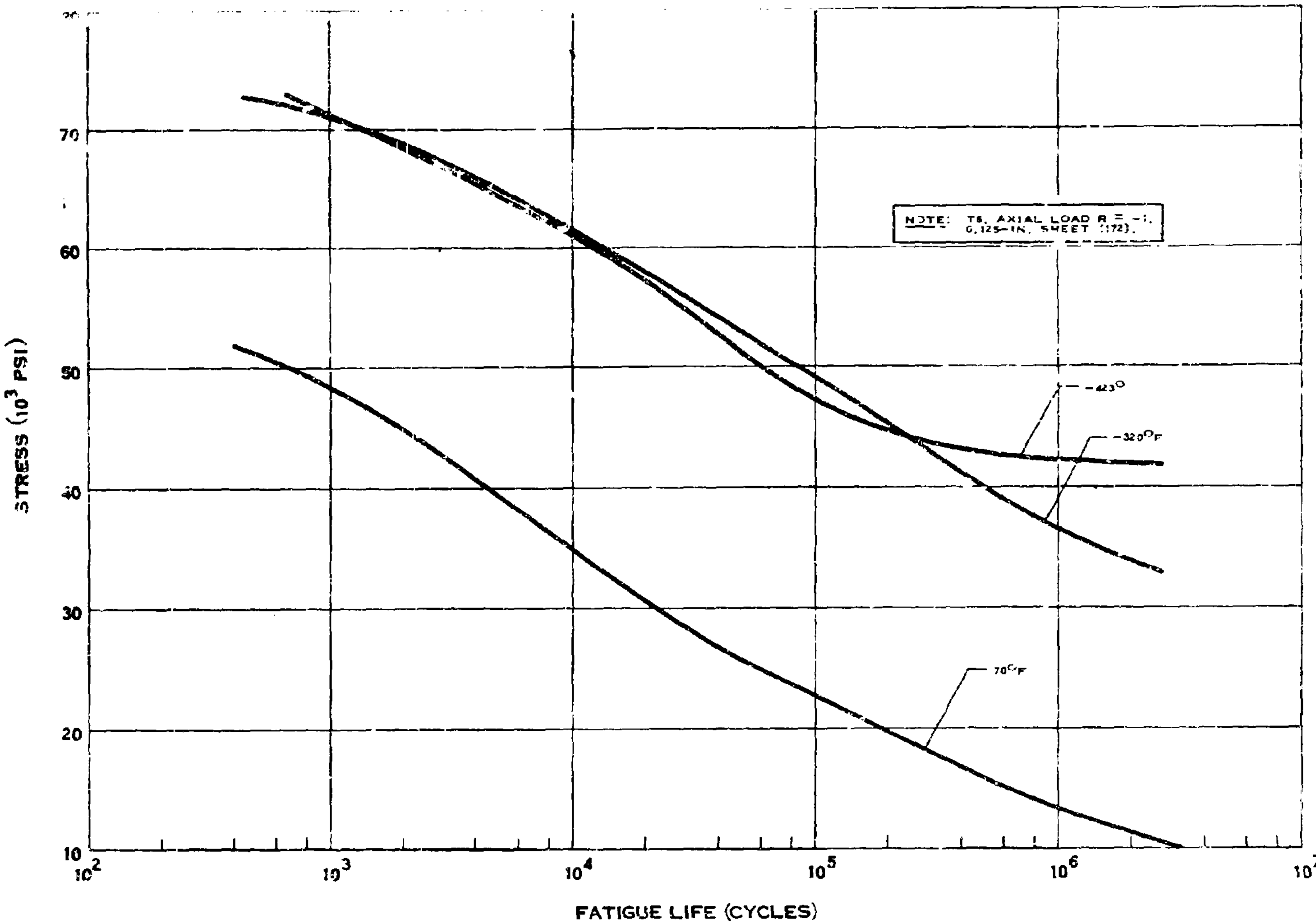
WELD TENSILE STRENGTH OF X7106 ALUMINUM

A.18.i



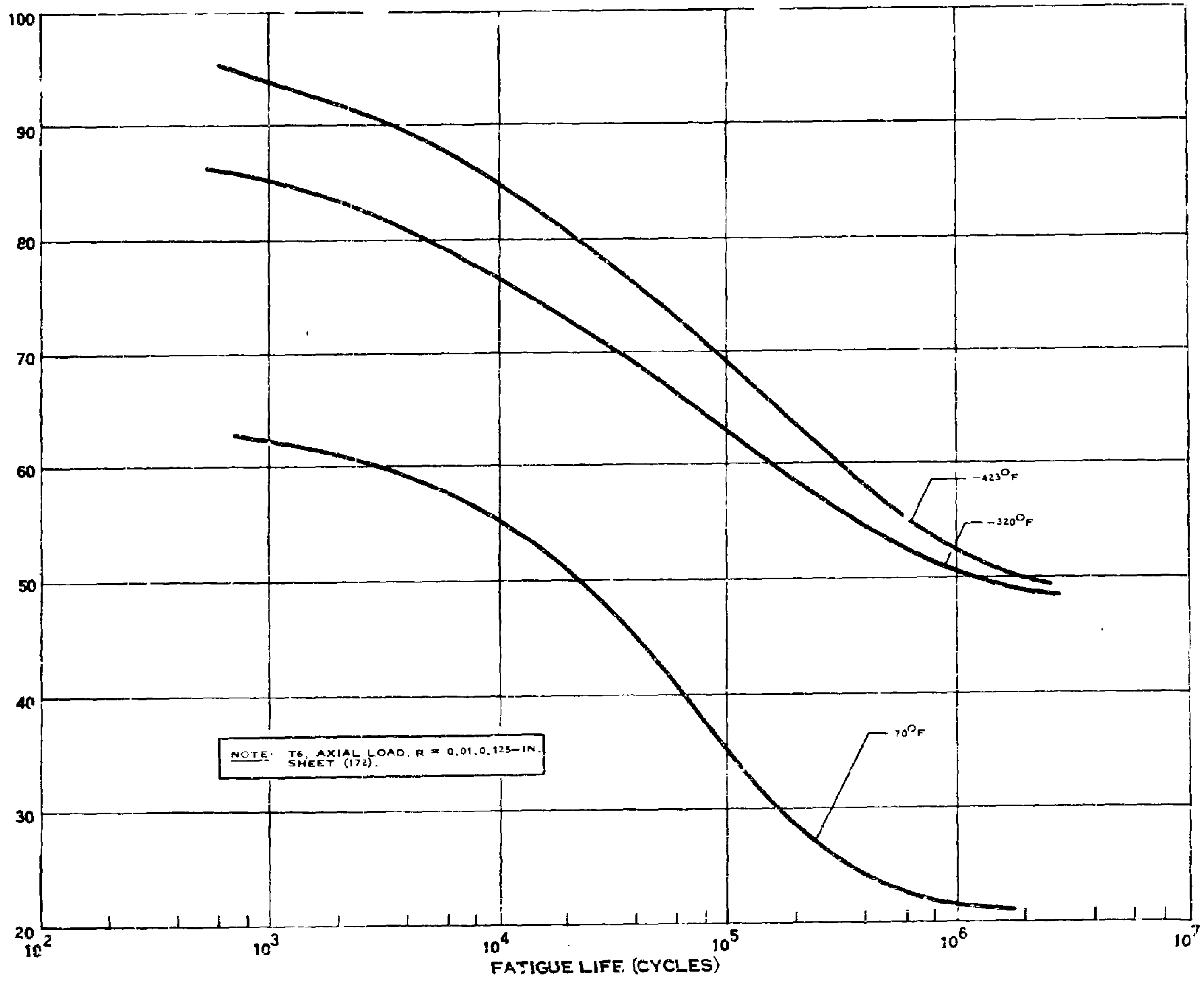
MODULUS OF ELASTICITY OF X7106 ALUMINUM

(3-66)

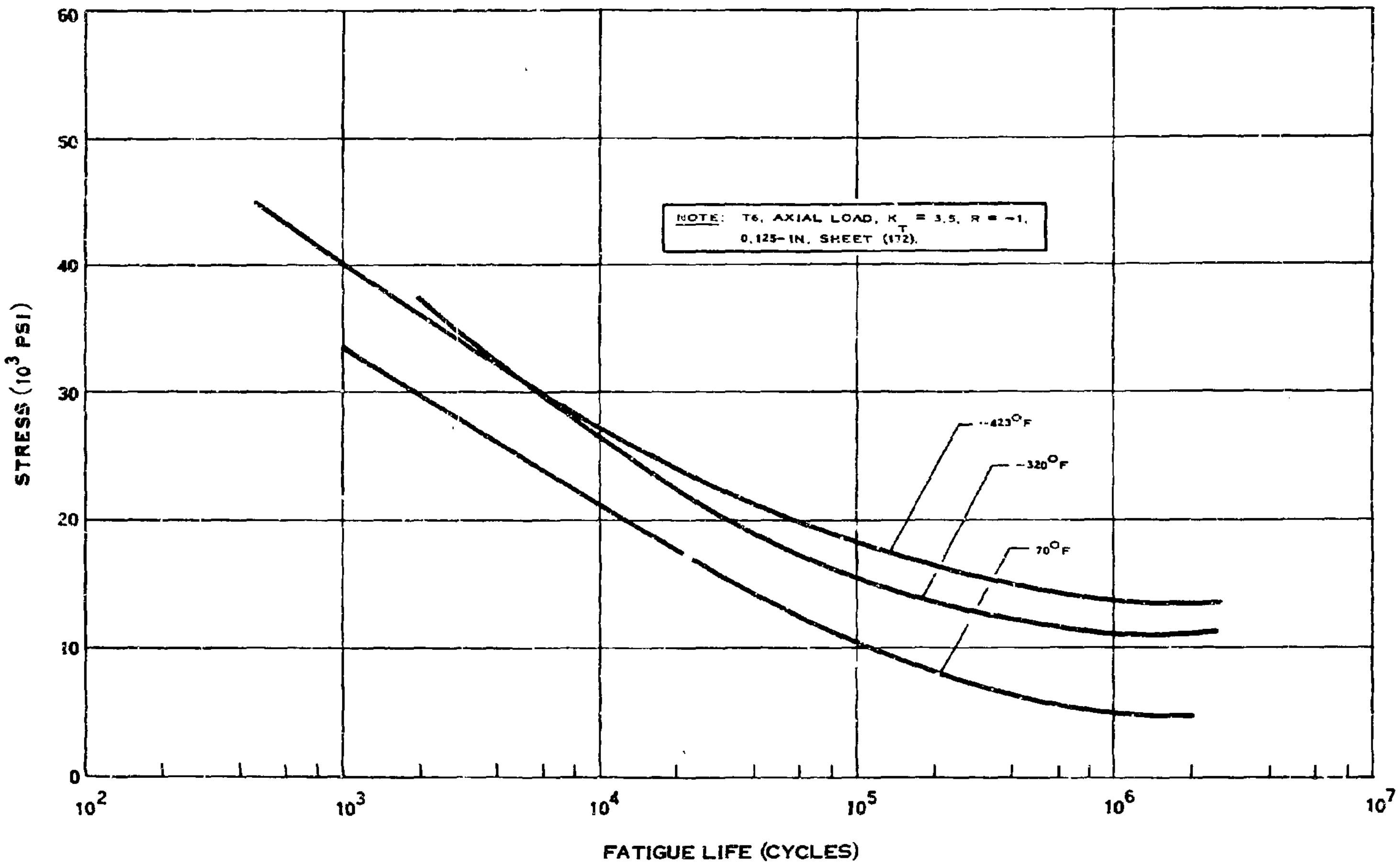


FATIGUE STRENGTH OF X7106 ALUMINUM

(3-66)

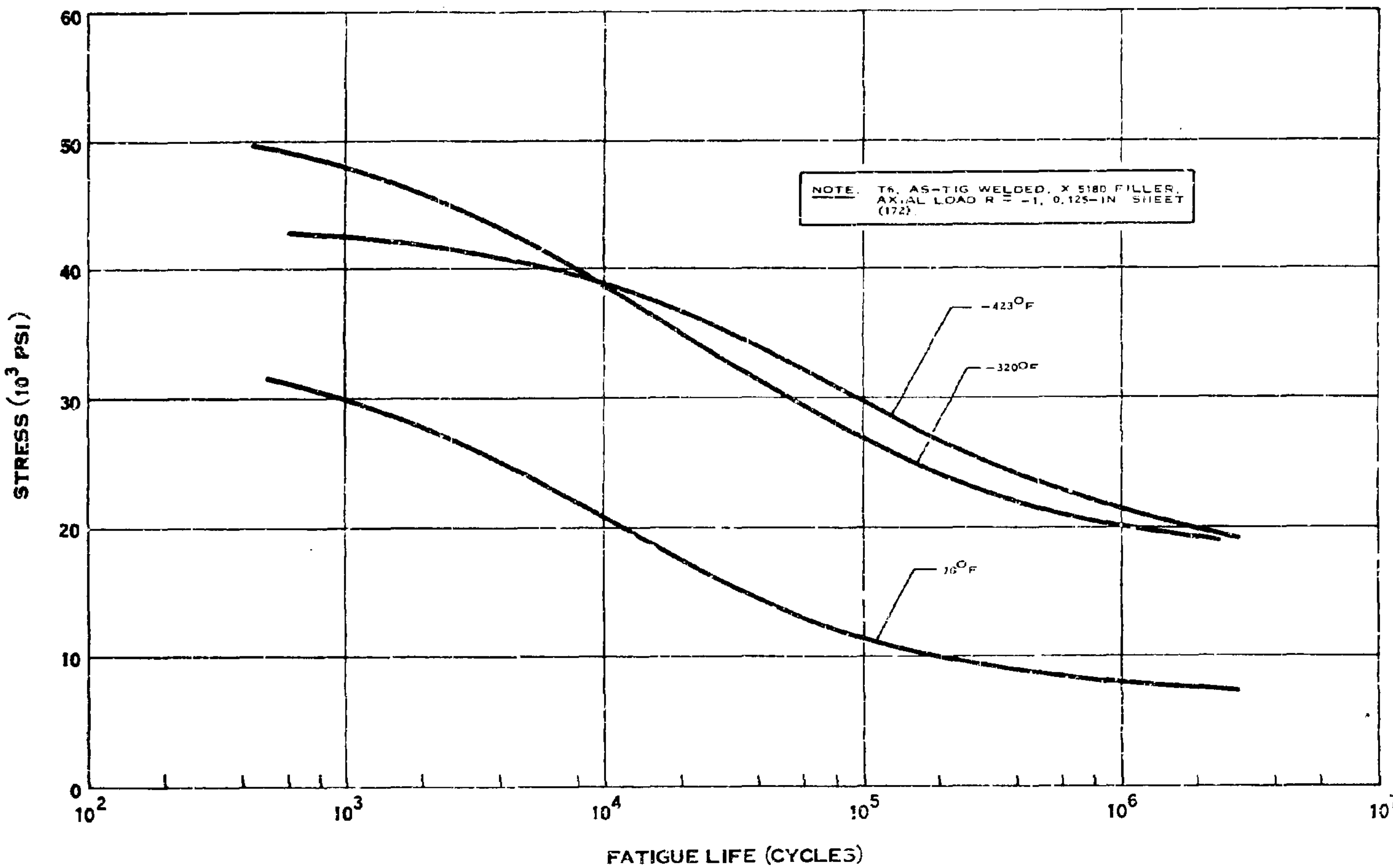


FATIGUE STRENGTH OF X7106 ALUMINUM



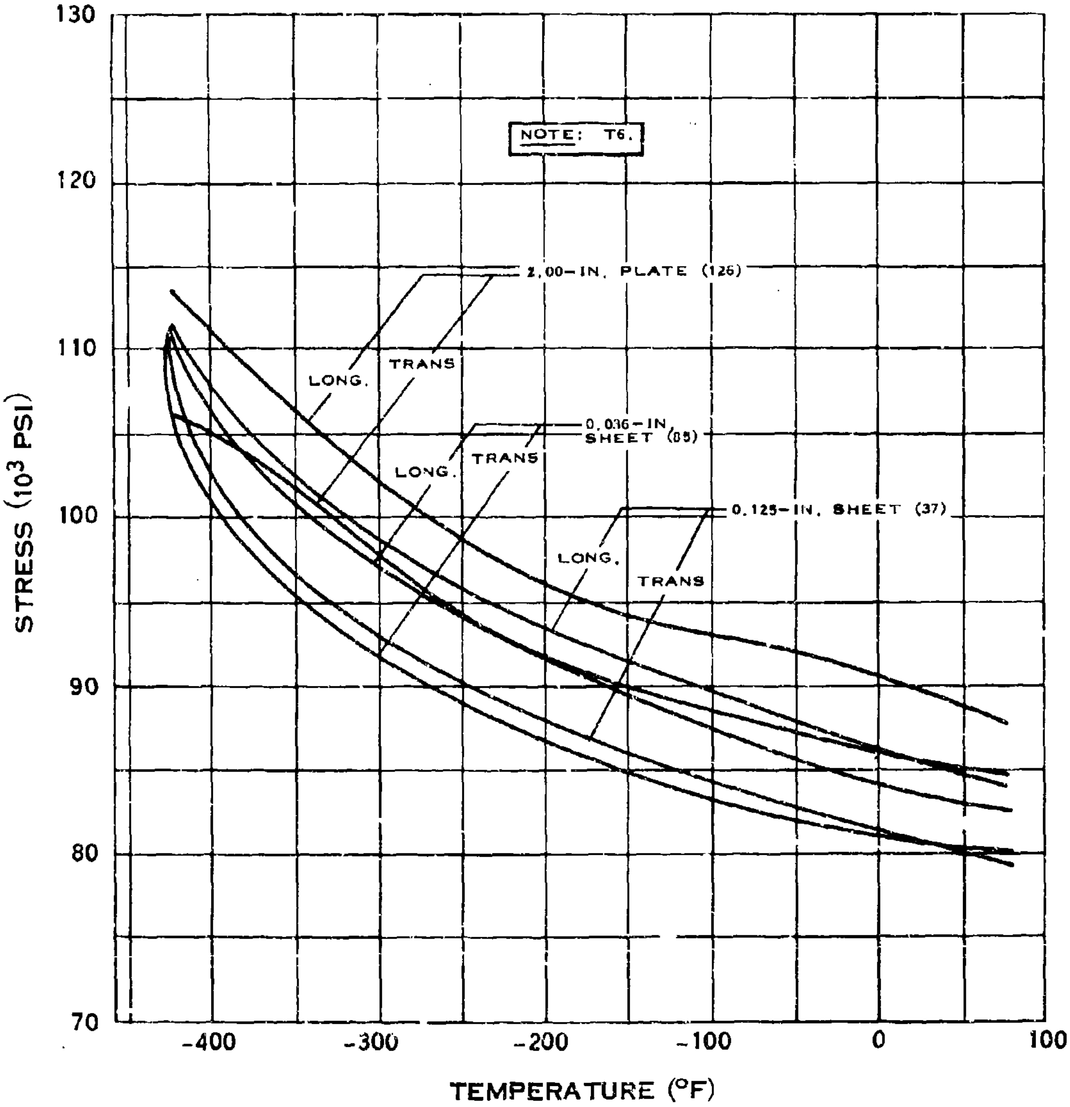
NOTCH FATIGUE STRENGTH OF X7106 ALUMINUM

(3-66)



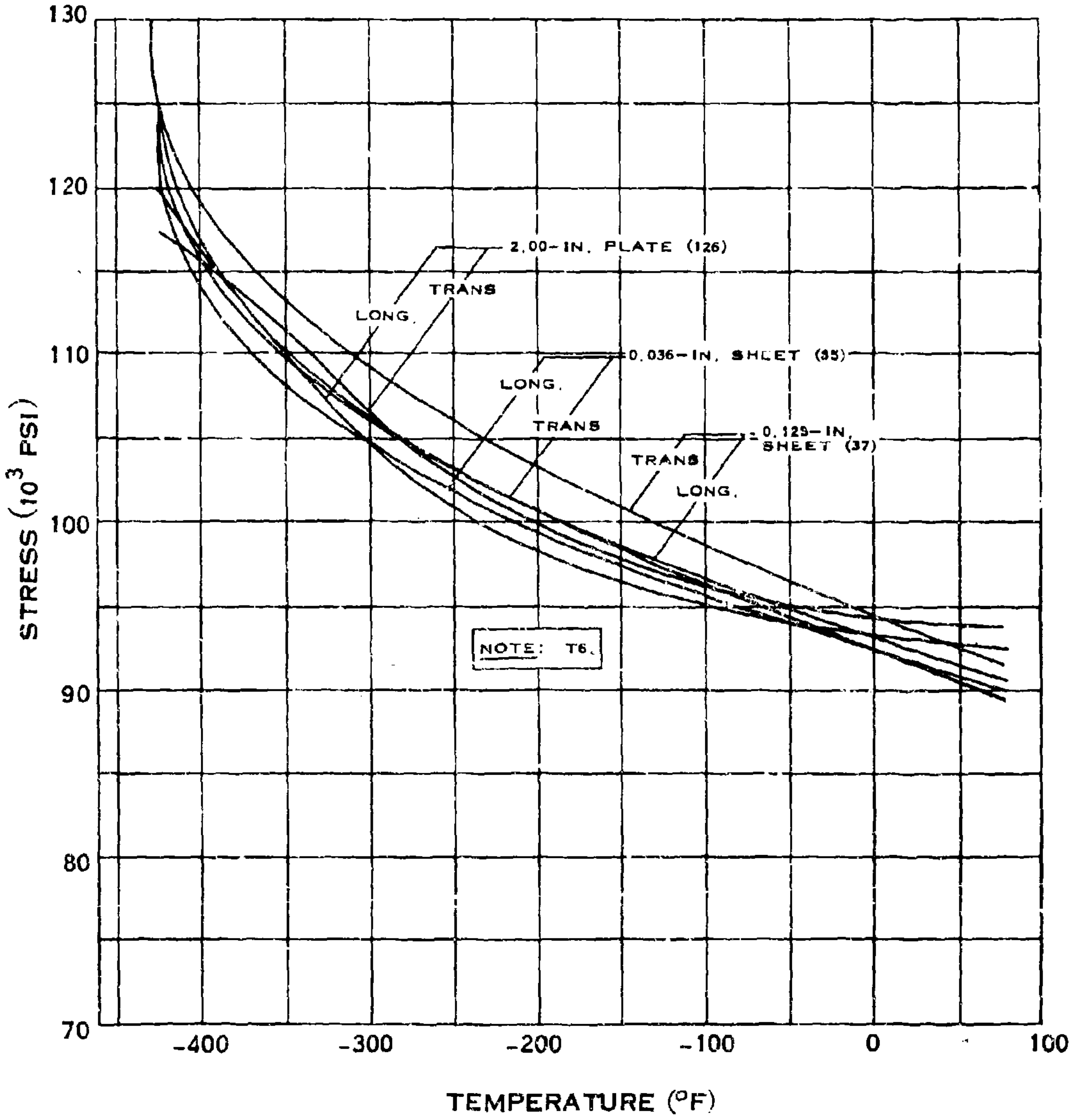
WELD FATIGUE STRENGTH OF X7106 ALUMINUM

A.19.a



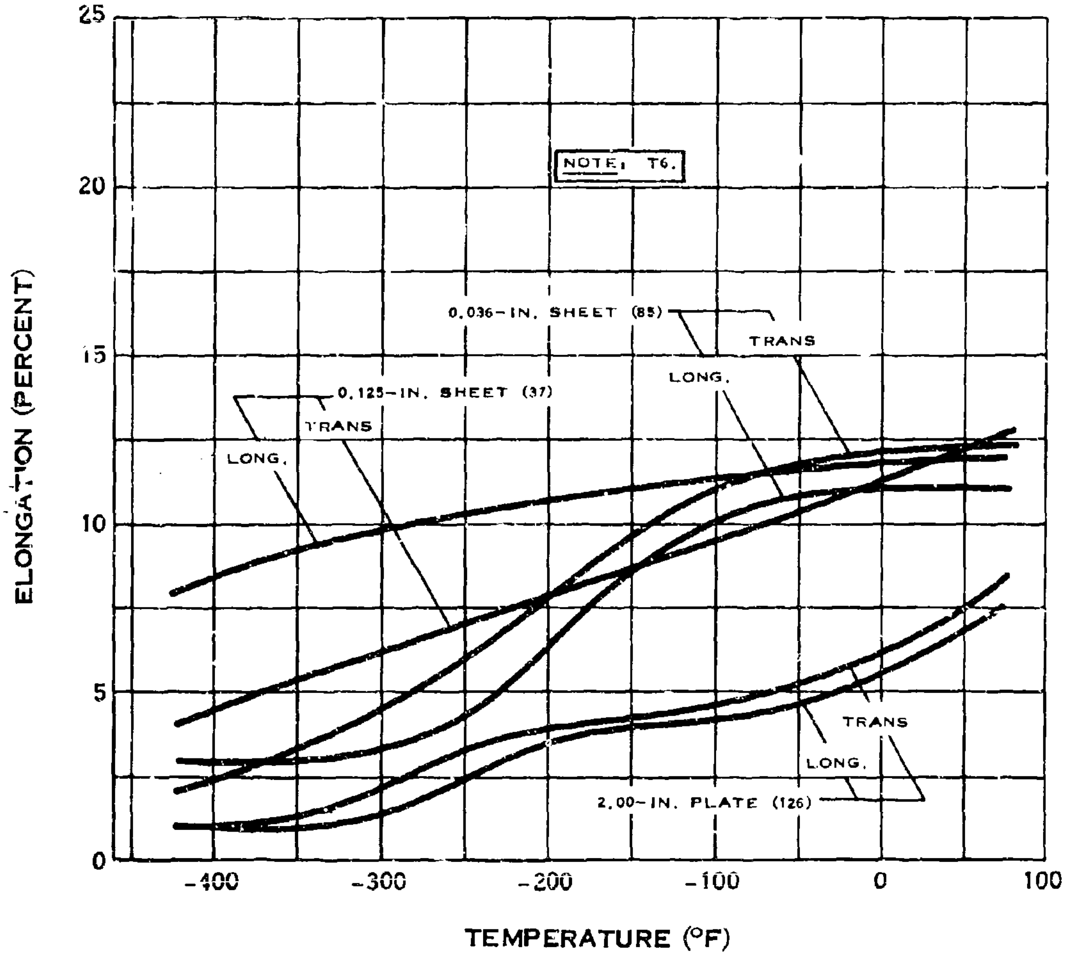
YIELD STRENGTH OF 7178 ALUMINUM

A.19.b



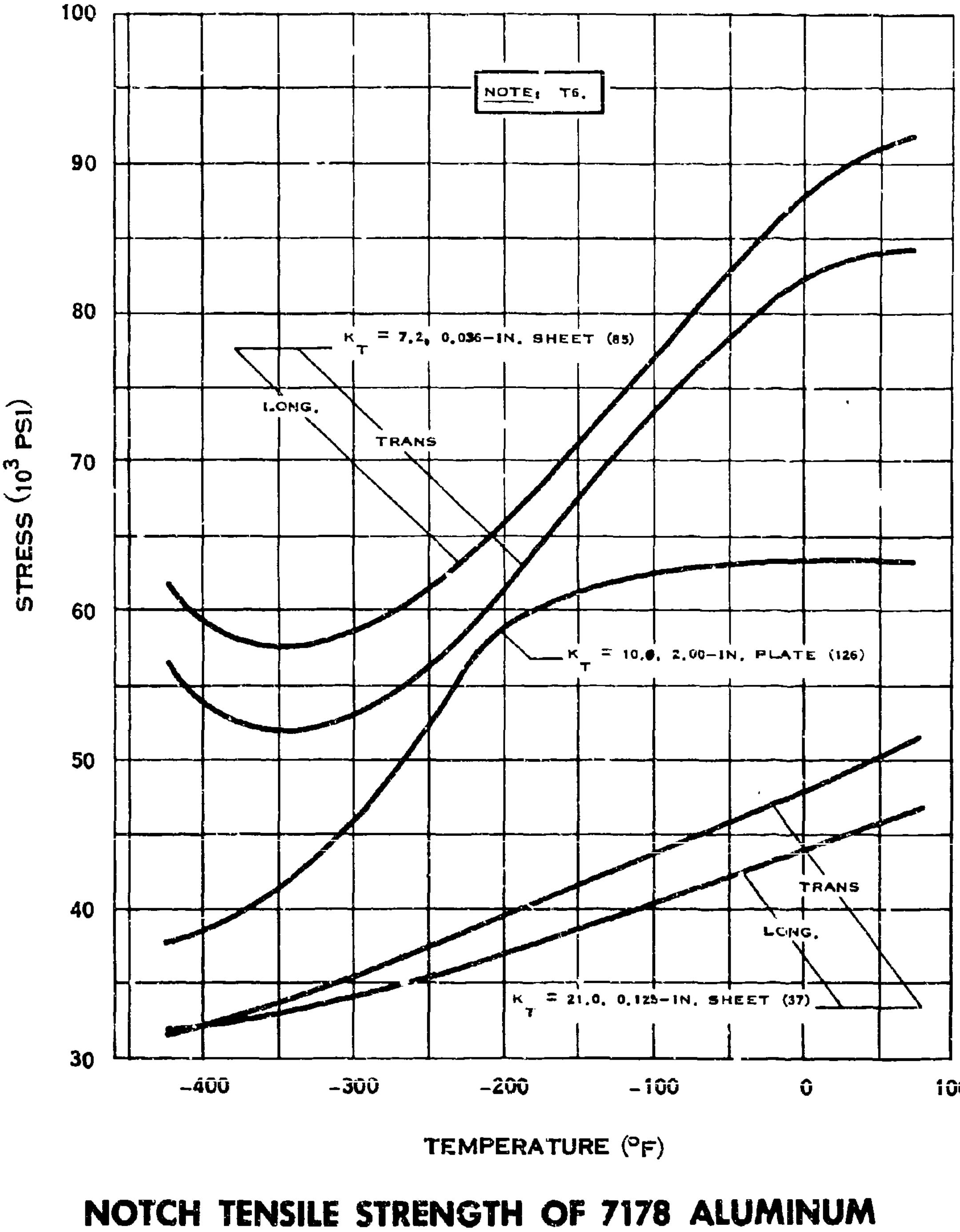
TENSILE STRENGTH OF 7178 ALUMINUM

A.19.c



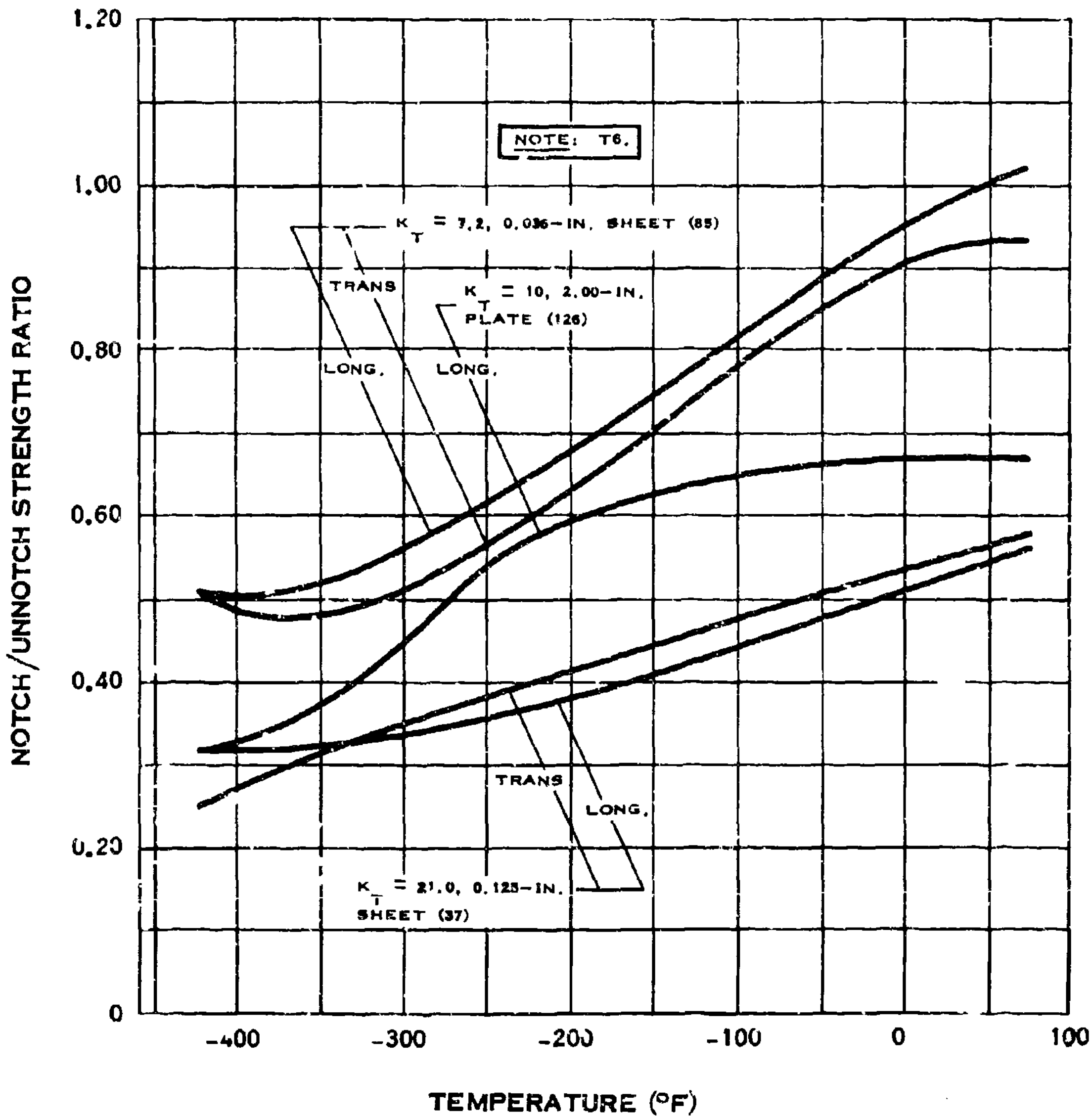
ELONGATION OF 7178 ALUMINUM

A.19.e



NOTCH TENSILE STRENGTH OF 7178 ALUMINUM

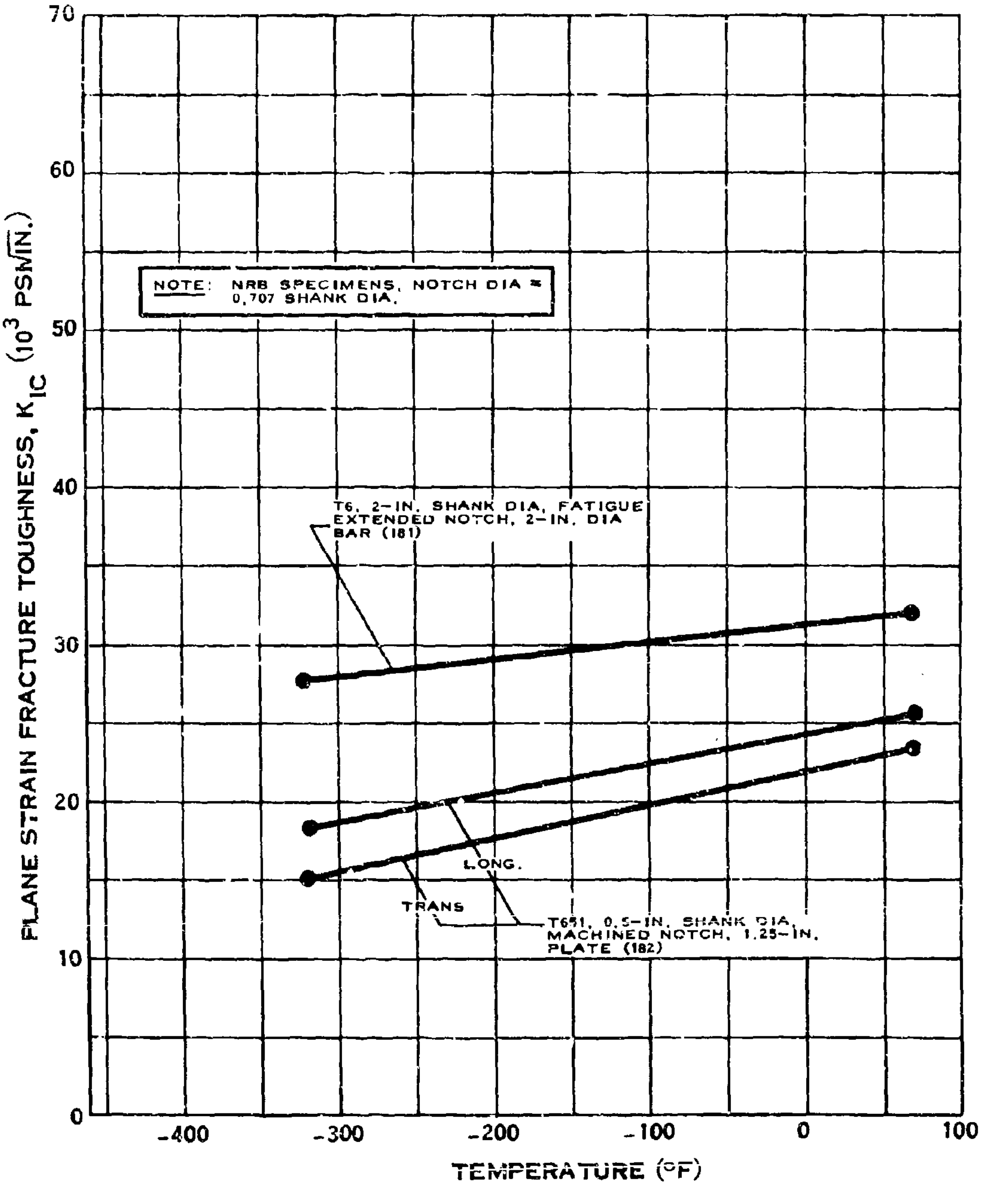
A.19.e-1



NOTCH STRENGTH RATIO OF 7178 ALUMINUM

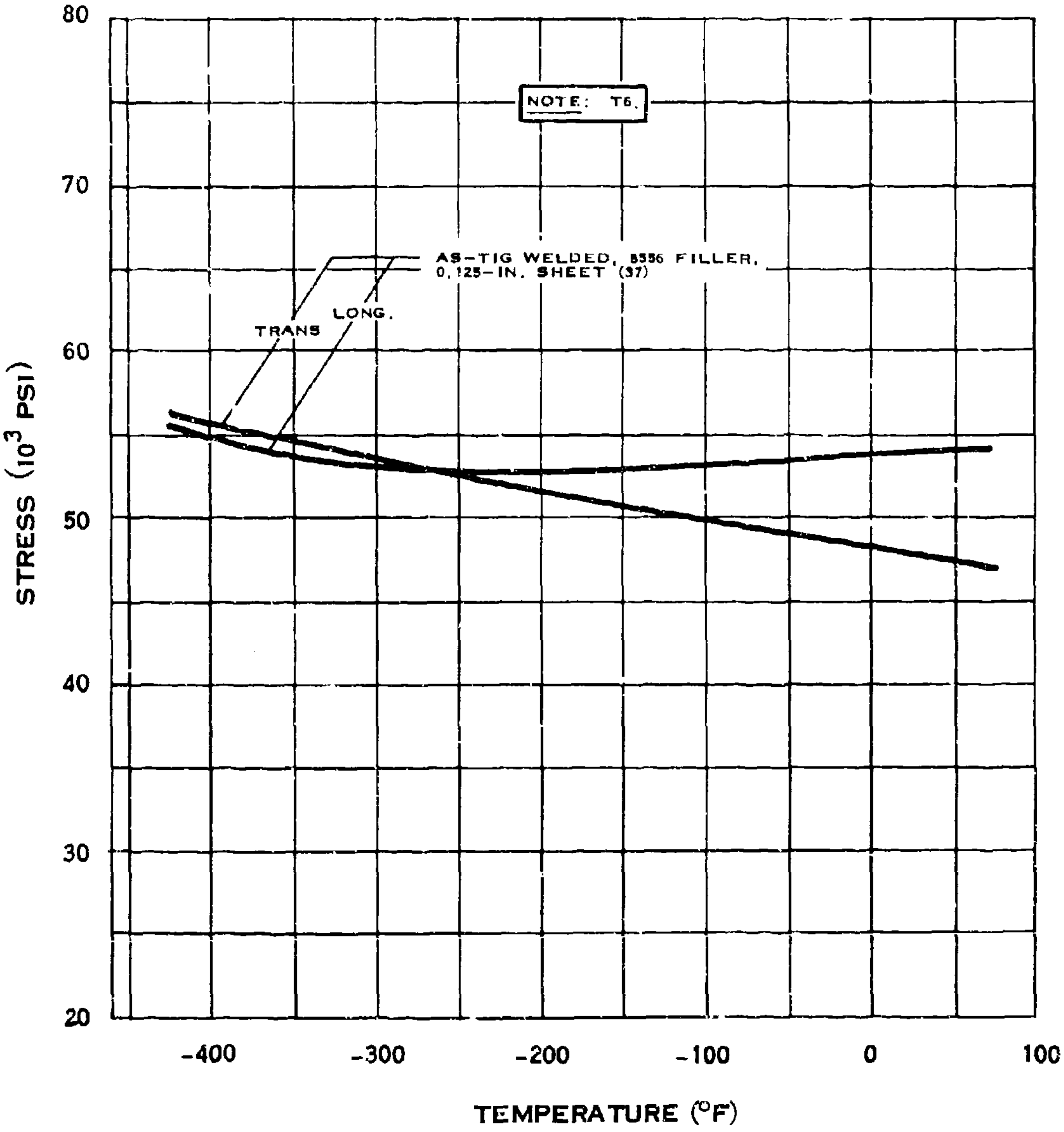
(7-65)

A.19.f



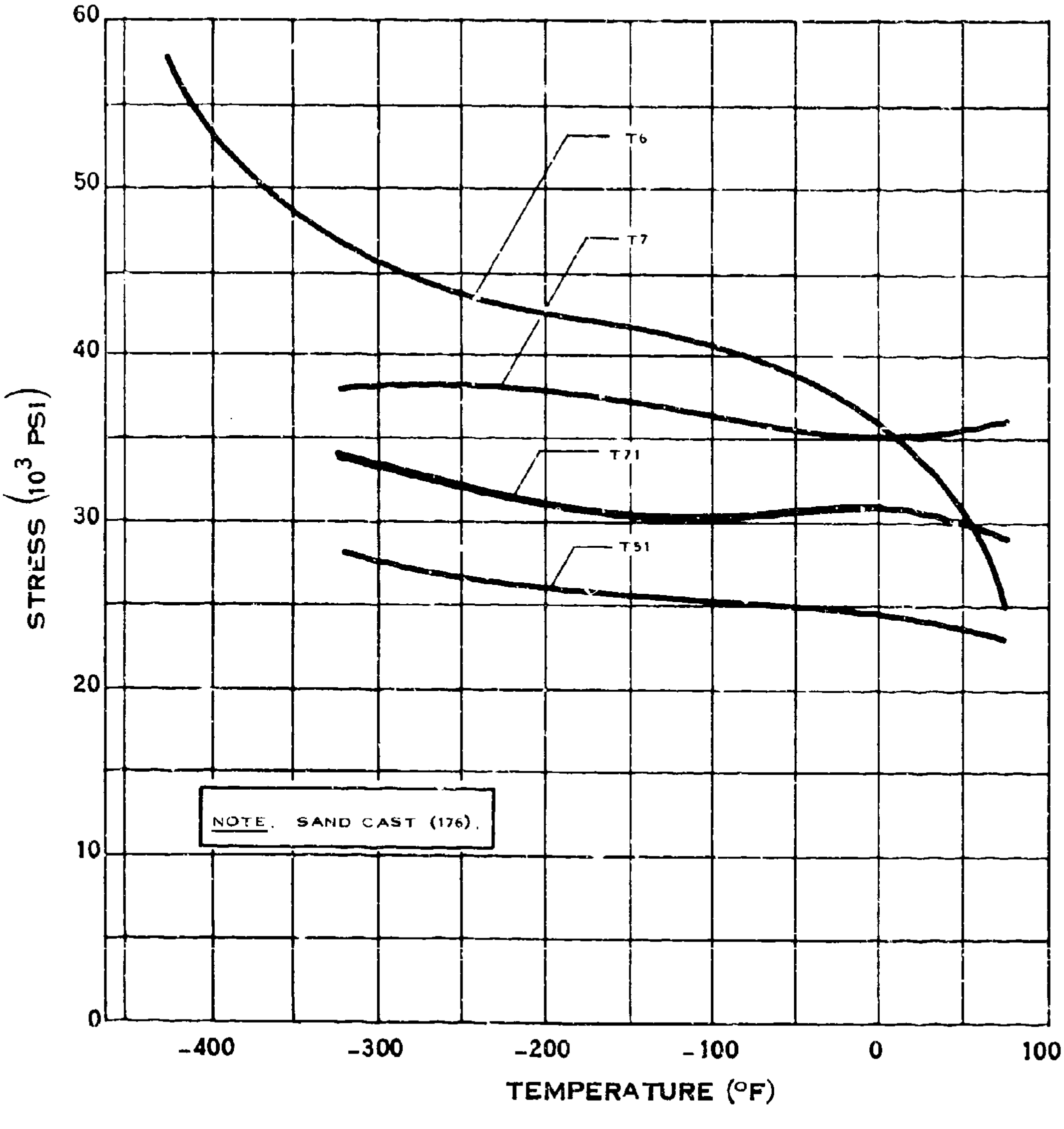
FRACTURE TOUGHNESS OF 7178 ALUMINUM

A.19.g



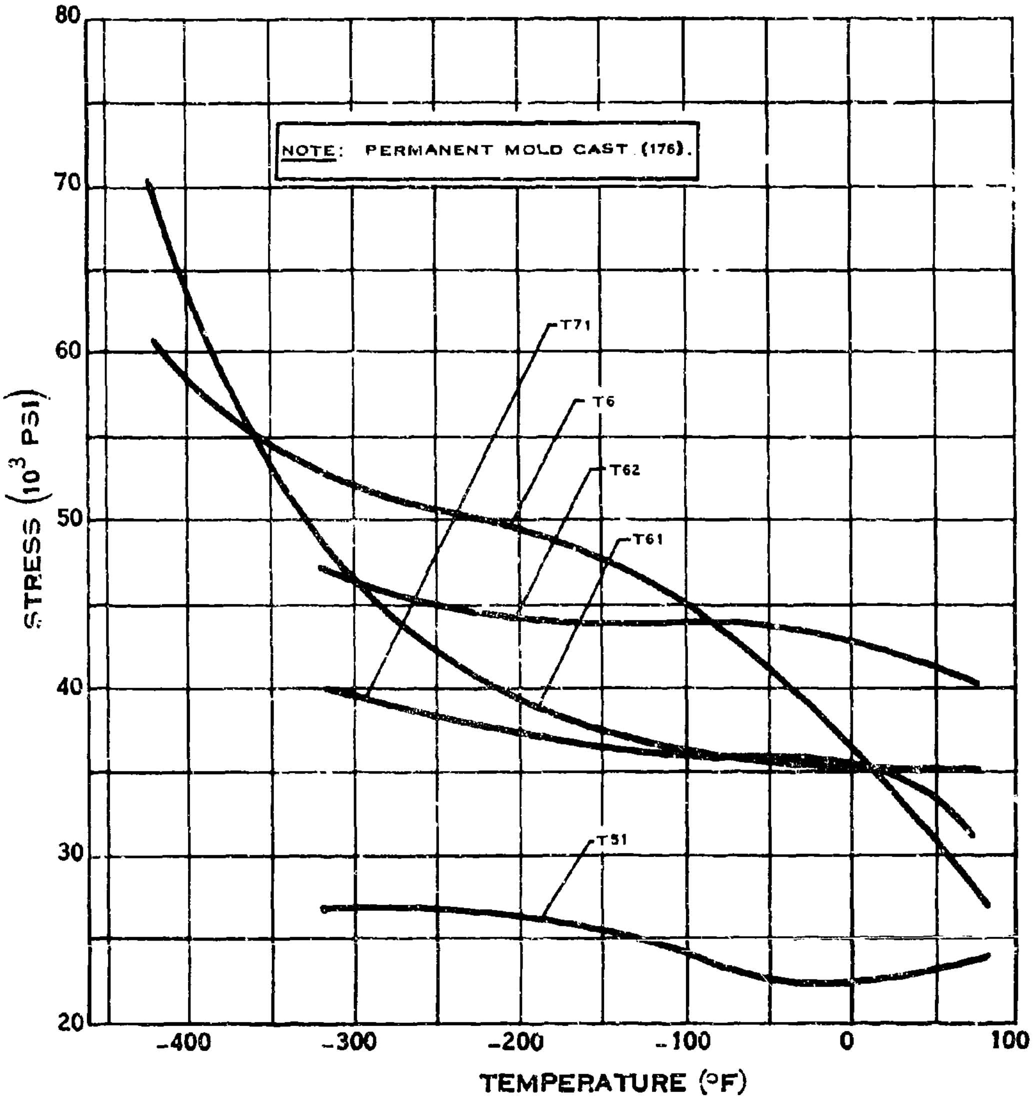
WELD TENSILE STRENGTH OF 7178 ALUMINUM

A.20.a



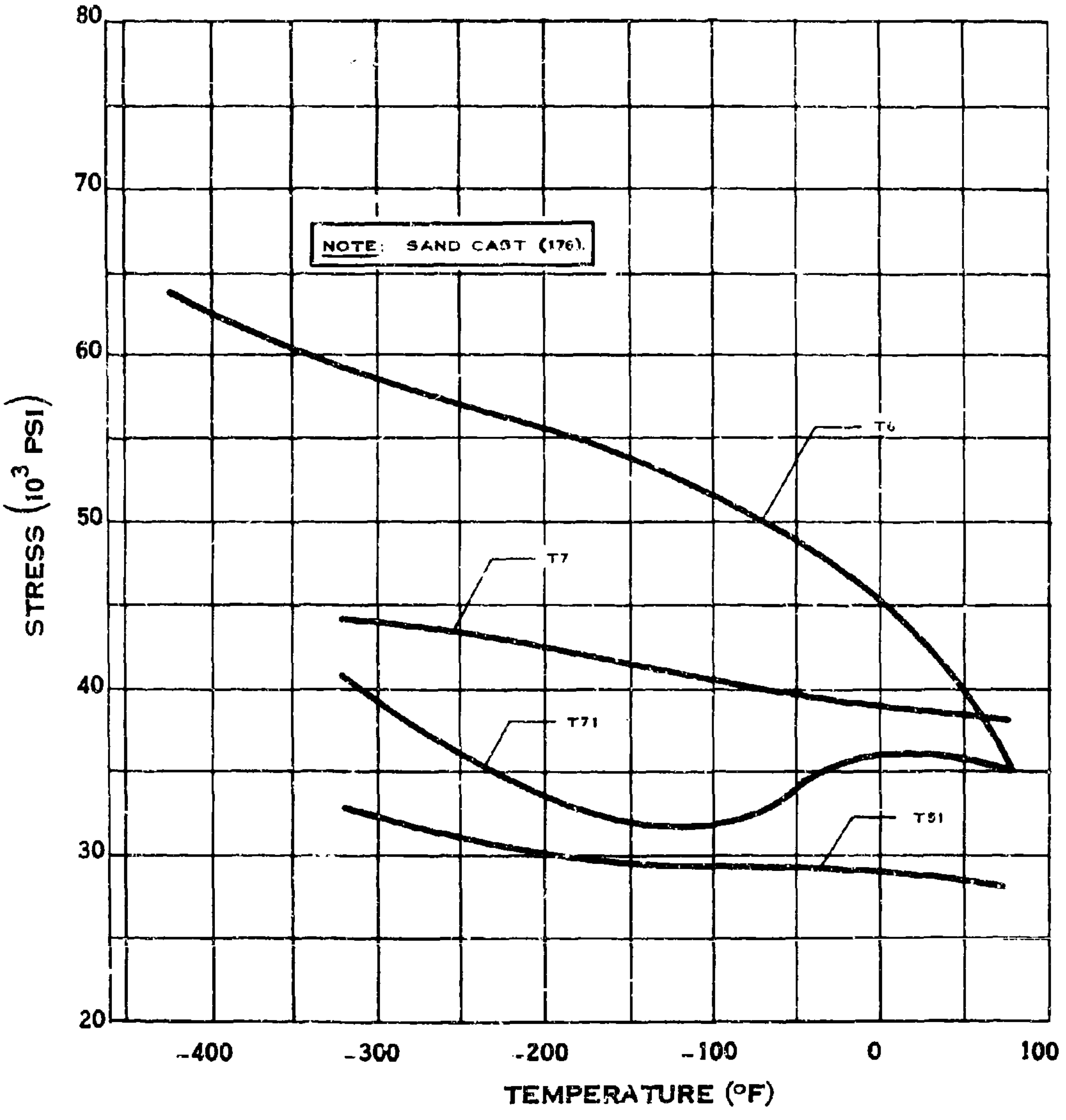
YIELD STRENGTH OF 355 ALUMINUM

A.20.a-1



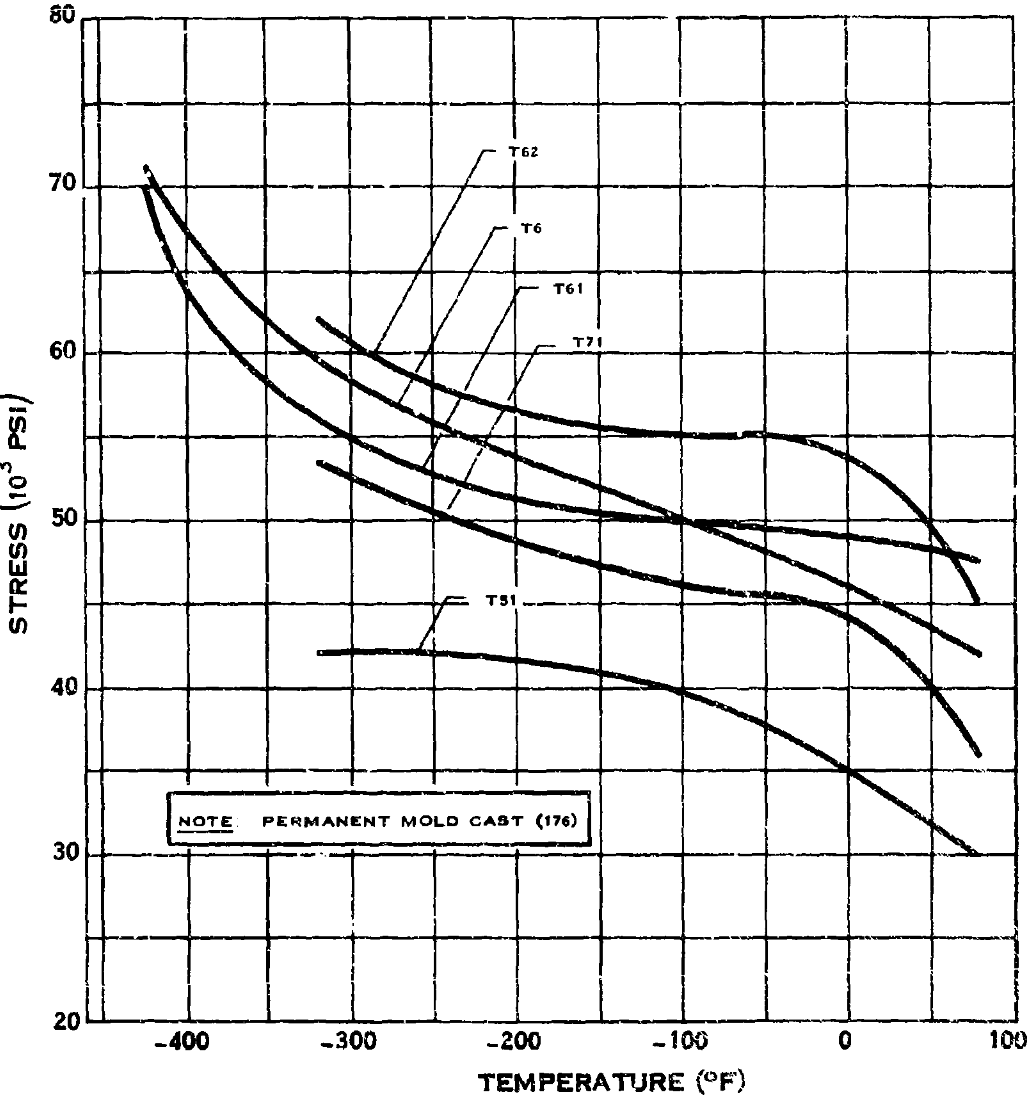
YIELD STRENGTH OF 355 ALUMINUM

A.20.b



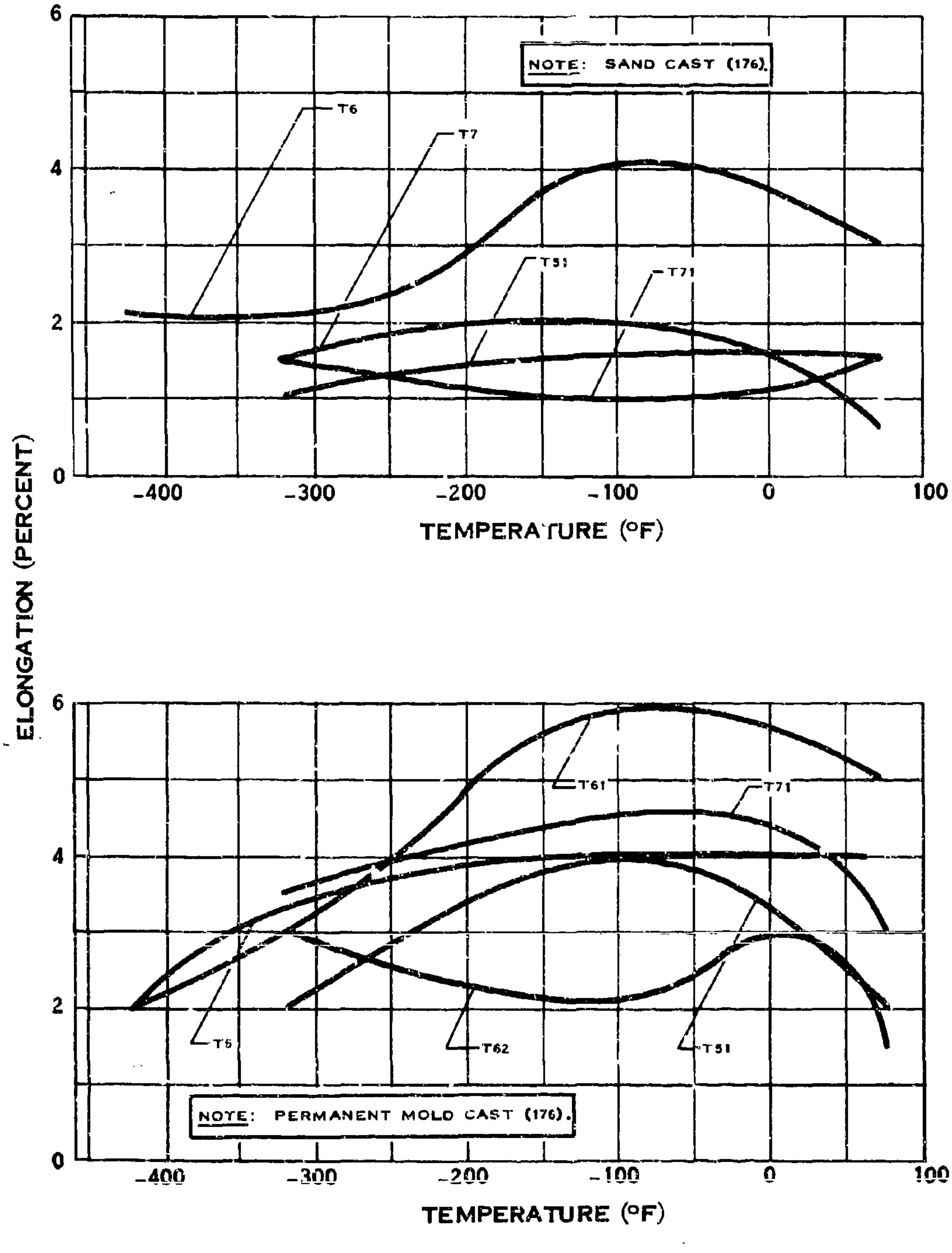
TENSILE STRENGTH OF 355 ALUMINUM

A.20.b-1



TENSILE STRENGTH OF 355 ALUMINUM

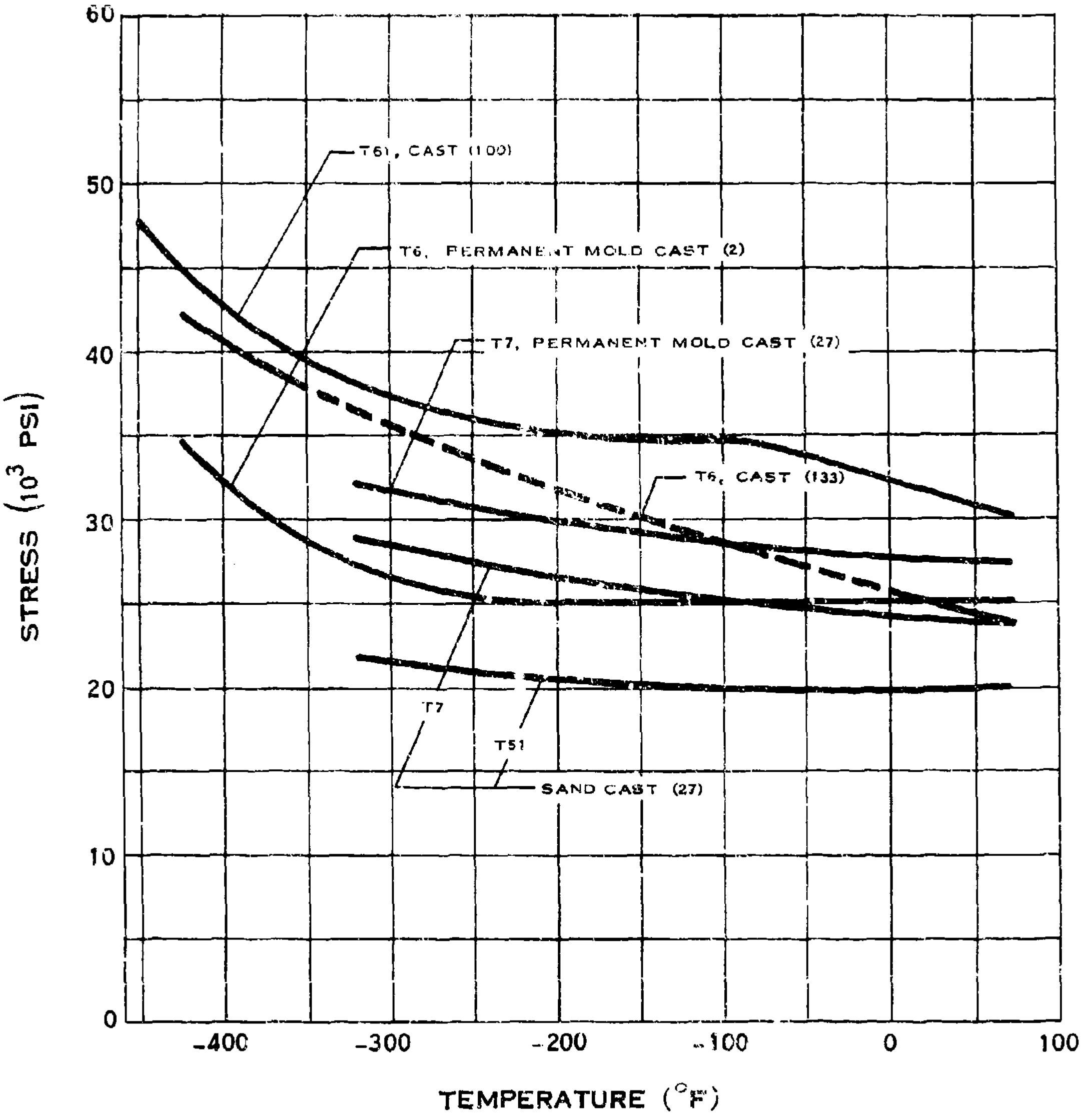
A.20.c



ELONGATION OF 355 ALUMINUM

(3-65)

A.21.a



YIELD STRENGTH OF 356 ALUMINUM

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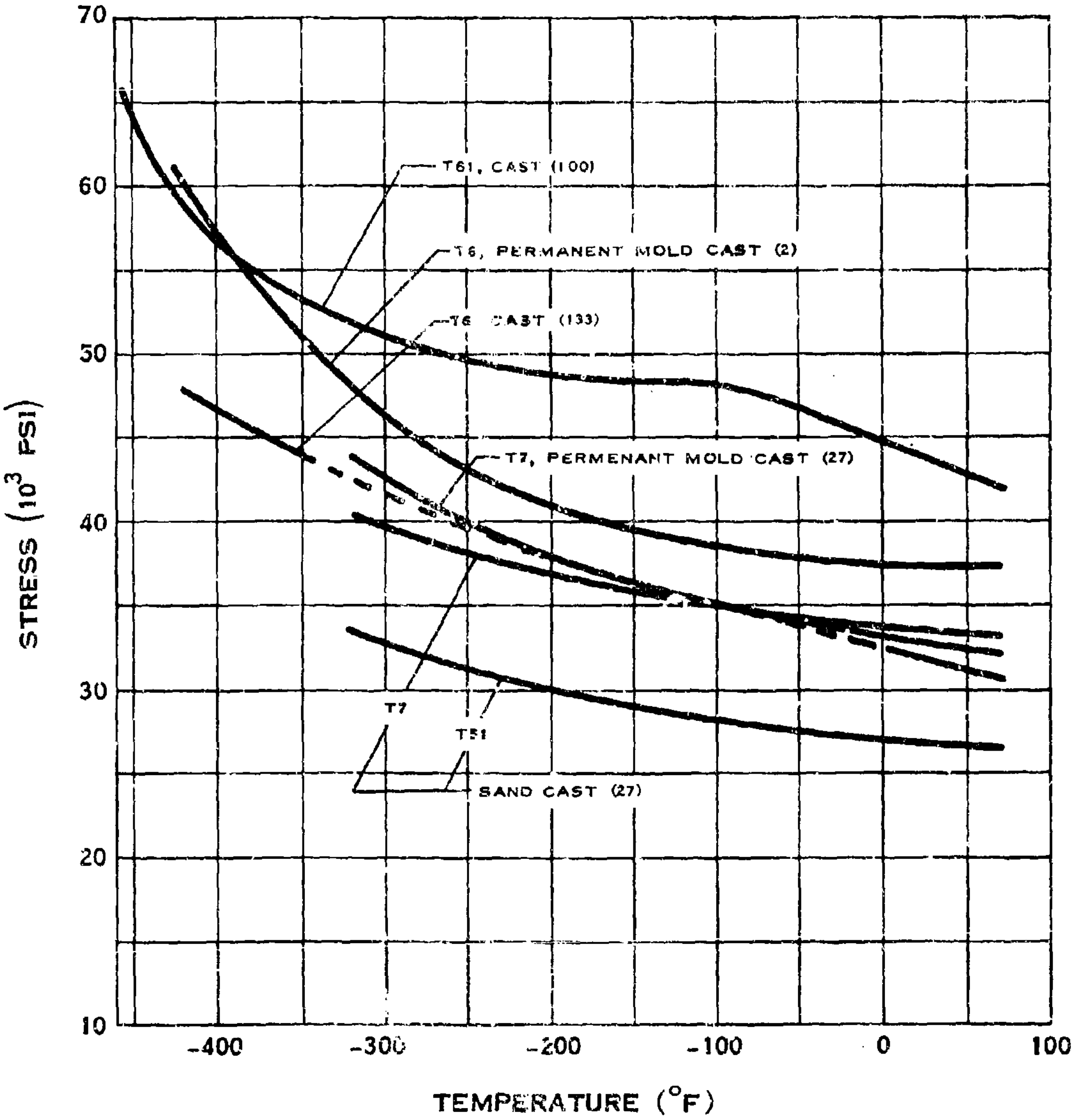
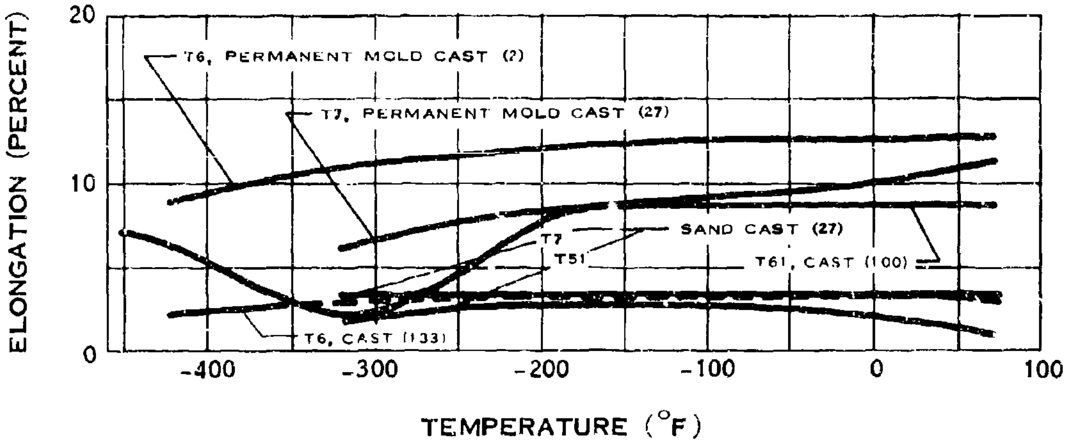
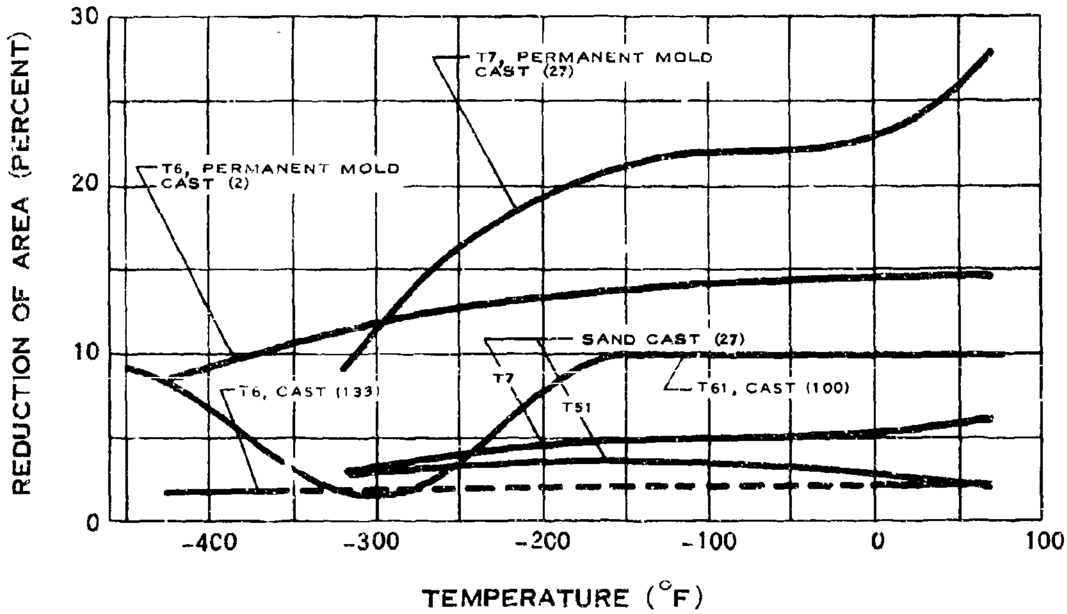
A.21.b



TENSILE STRENGTH OF 356 ALUMINUM



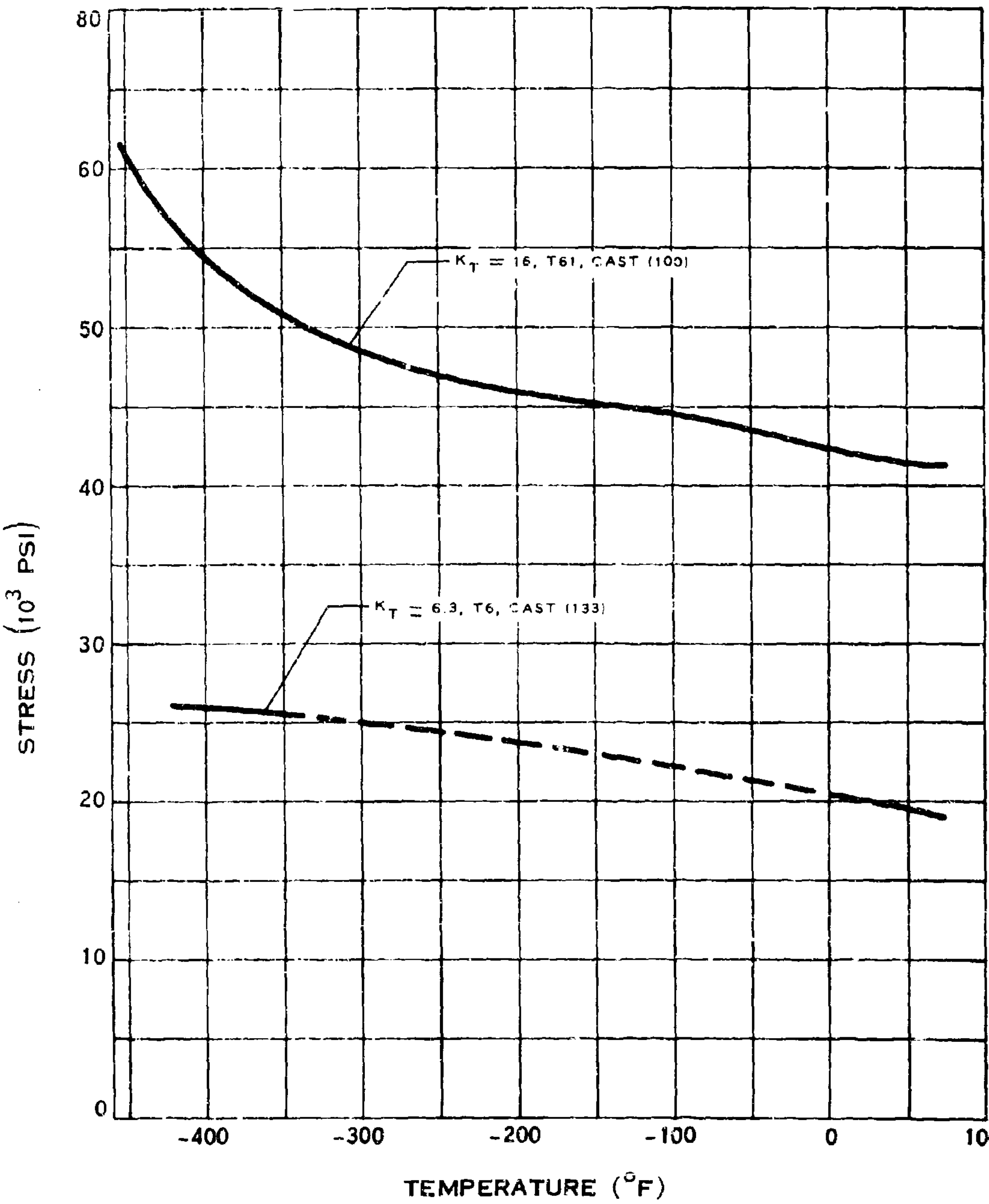
ELONGATION OF 356 ALUMINUM



REDUCTION OF AREA OF 356 ALUMINUM

(6-68)

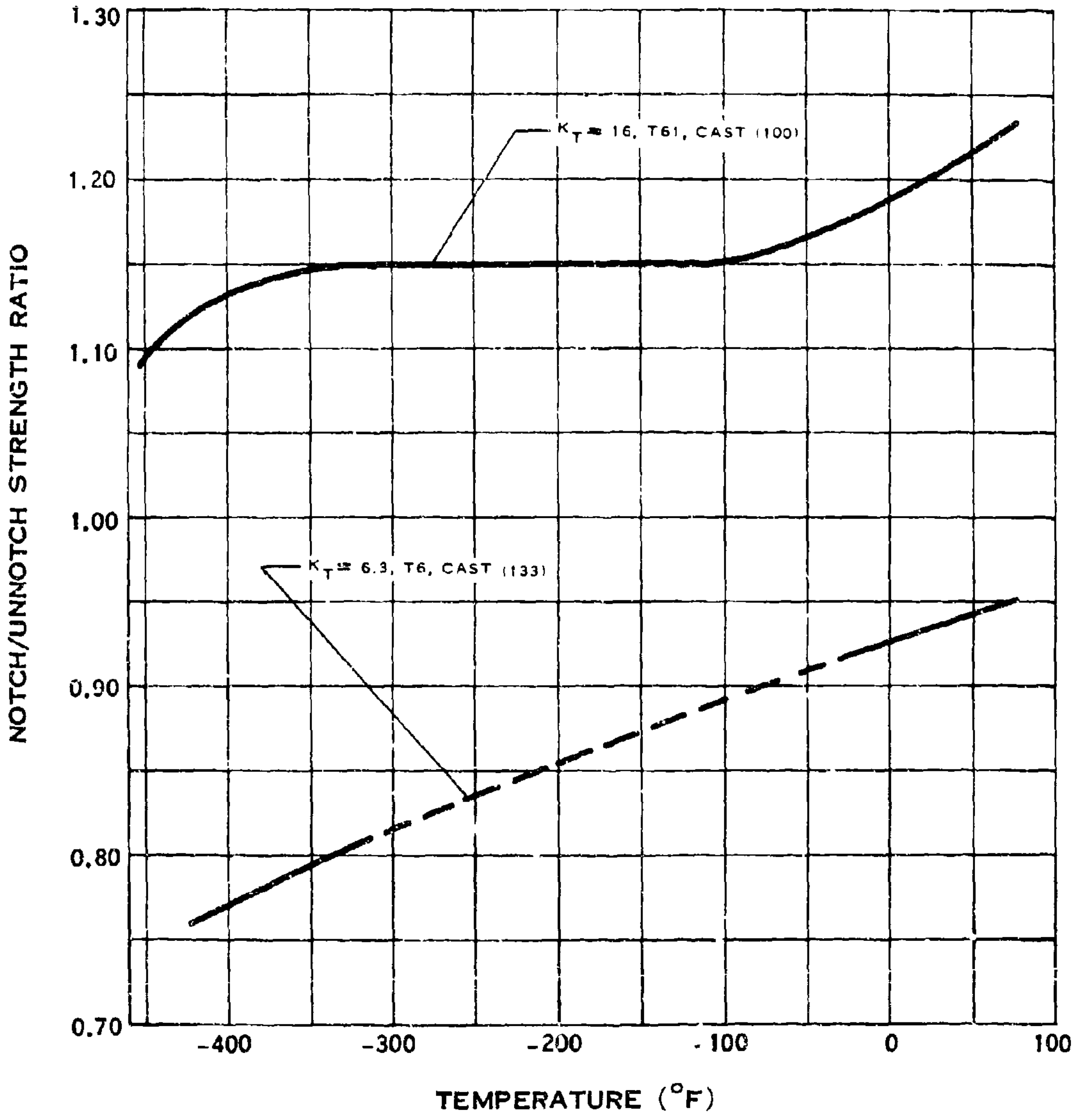
A.21.e



NOTCH TENSILE STRENGTH OF 356 ALUMINUM

(6-68)

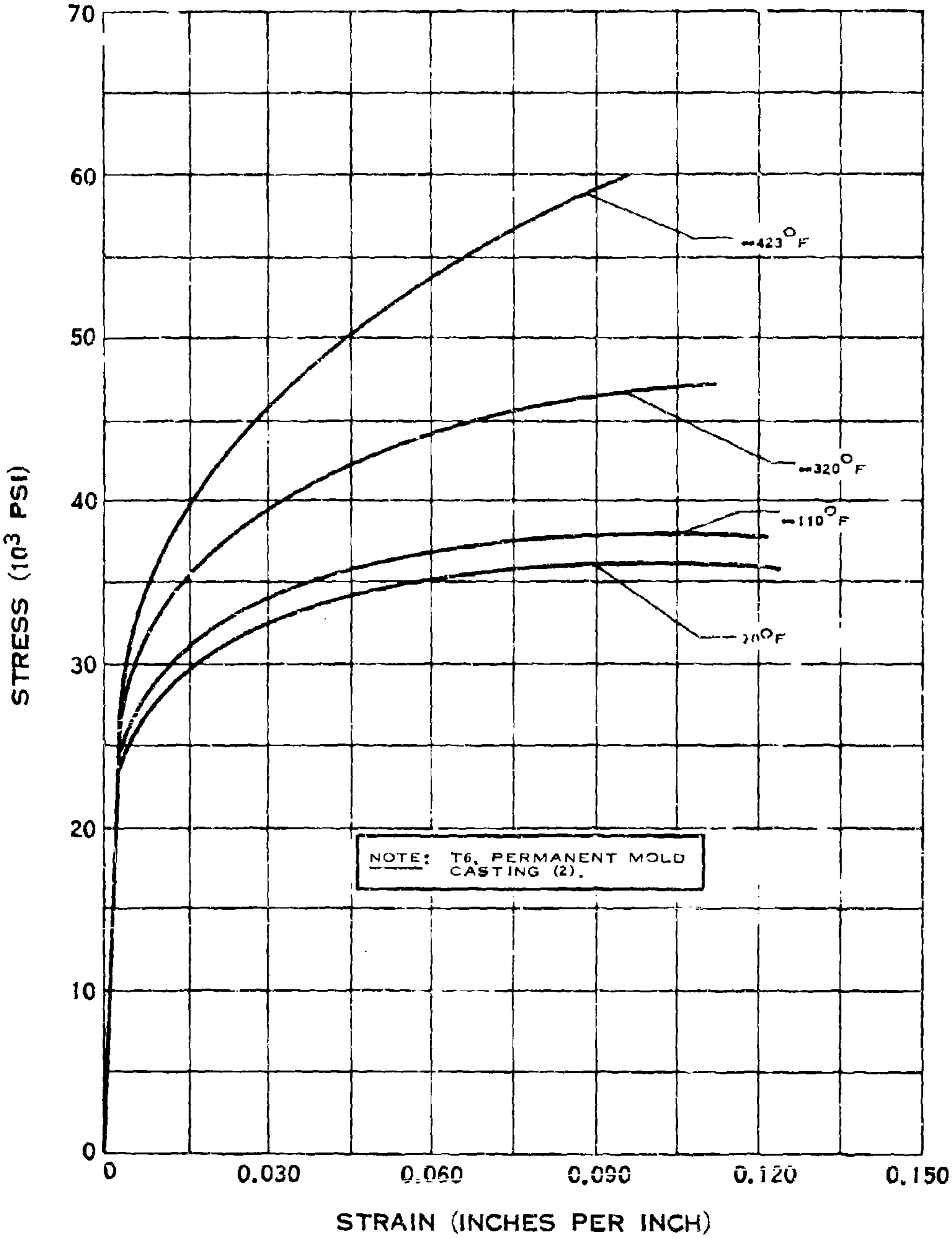
A.21.e-1



NOTCH STRENGTH RATIO OF 356 ALUMINUM

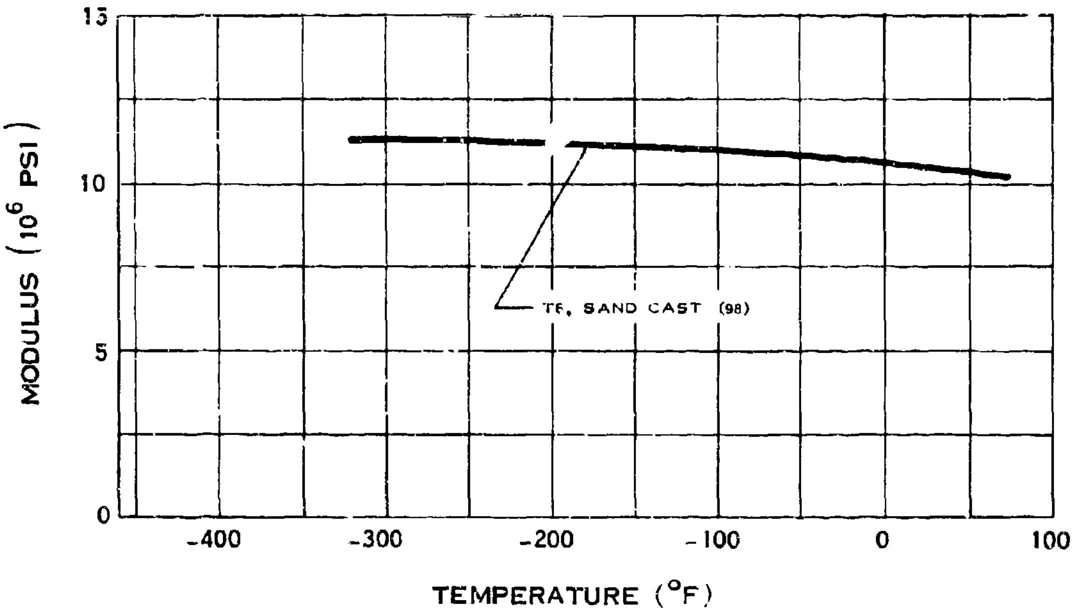
(6-68)

A.21.h

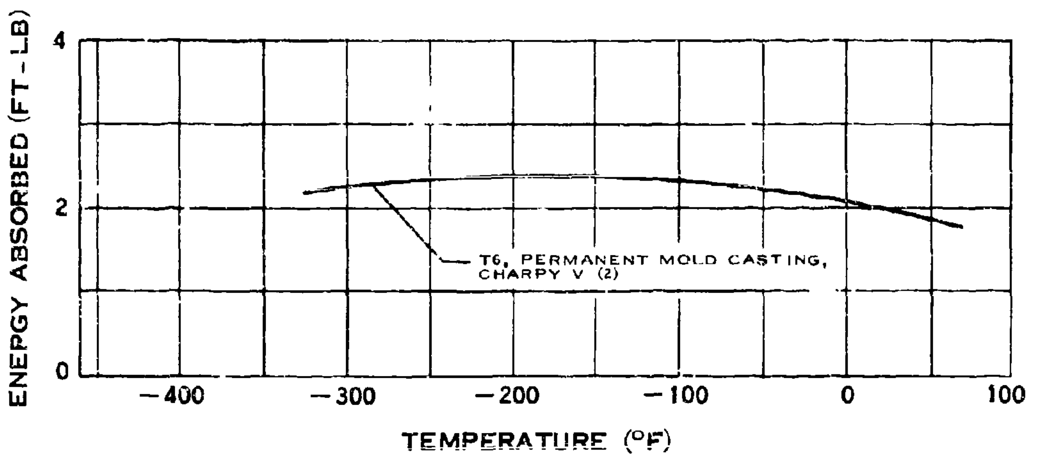


STRESS-STRAIN DIAGRAM FOR 356 ALUMINUM

(7-64)

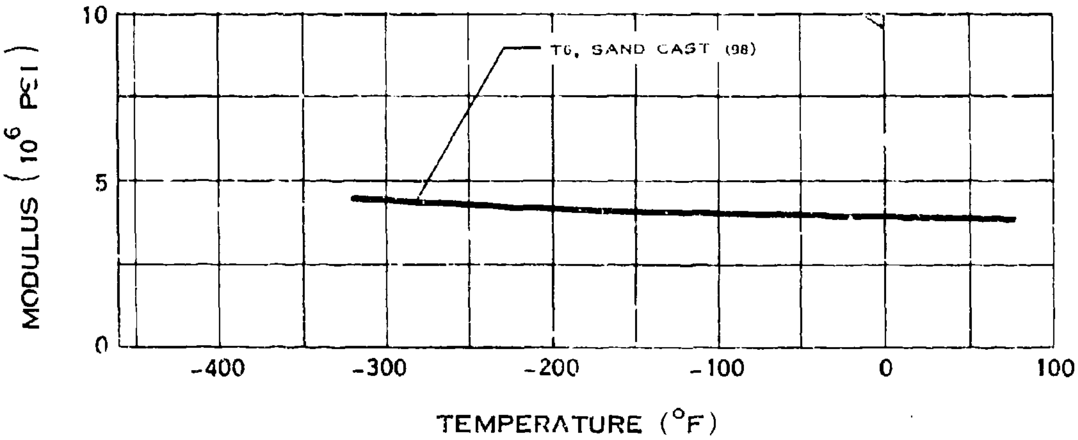


MODULUS OF ELASTICITY OF 356 ALUMINUM



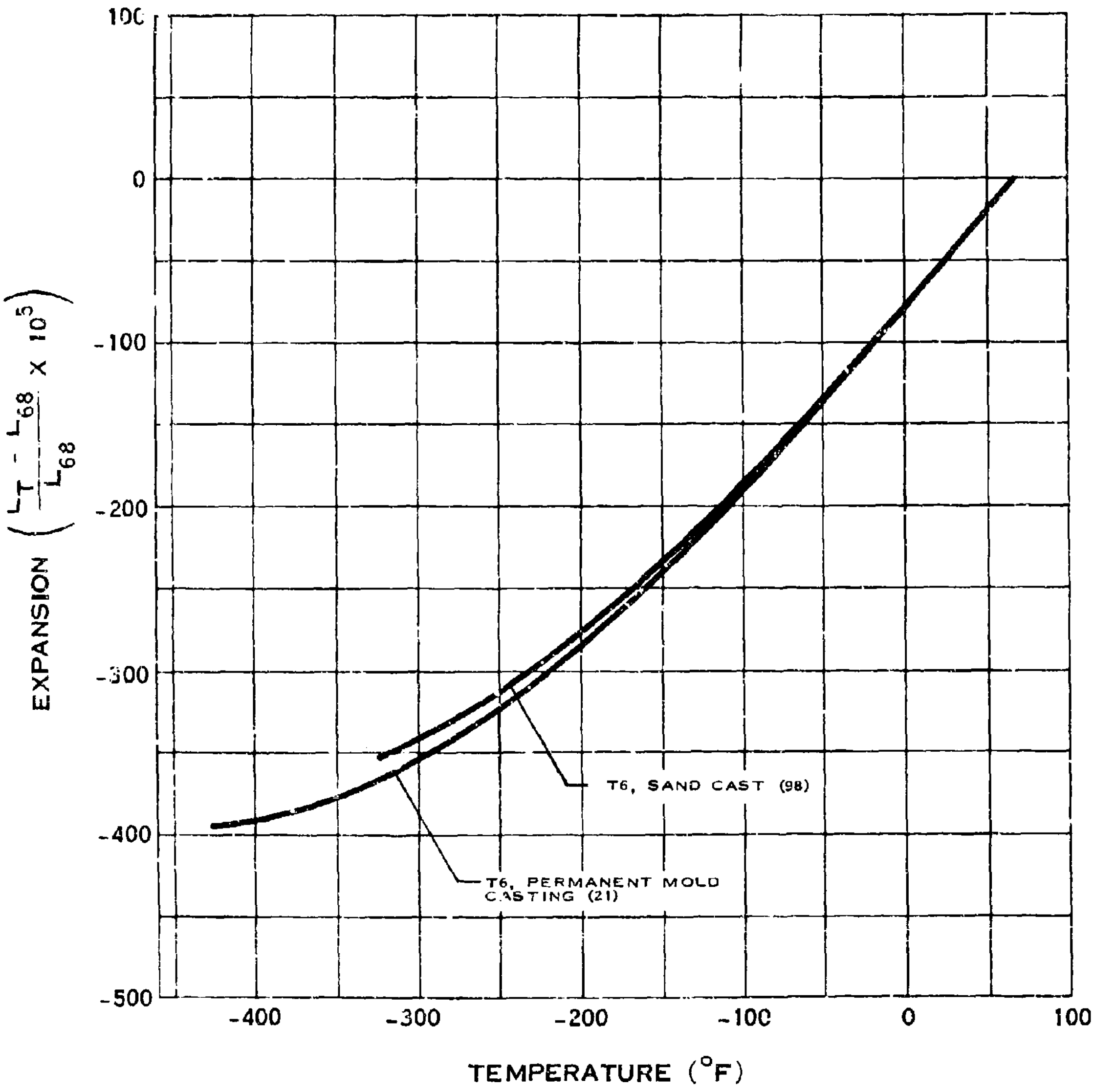
IMPACT STRENGTH OF 356 ALUMINUM

A.21.ℓ



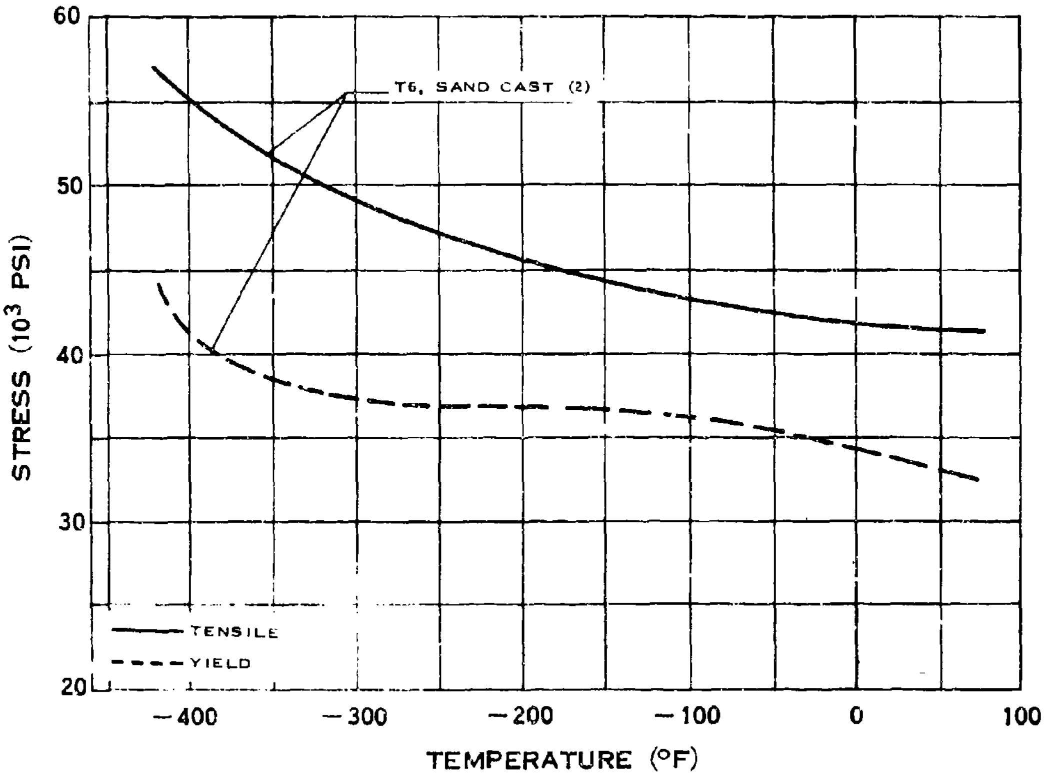
MODULUS OF RIGIDITY OF 356 ALUMINUM

A.21.t



THERMAL EXPANSION OF 356 ALUMINUM

A.22.ab



STRENGTH OF TENS-50 ALUMINUM*

*T.M.
ROCKETDYNE, DIV OF NORTH AMERICAN AVIATION INC.

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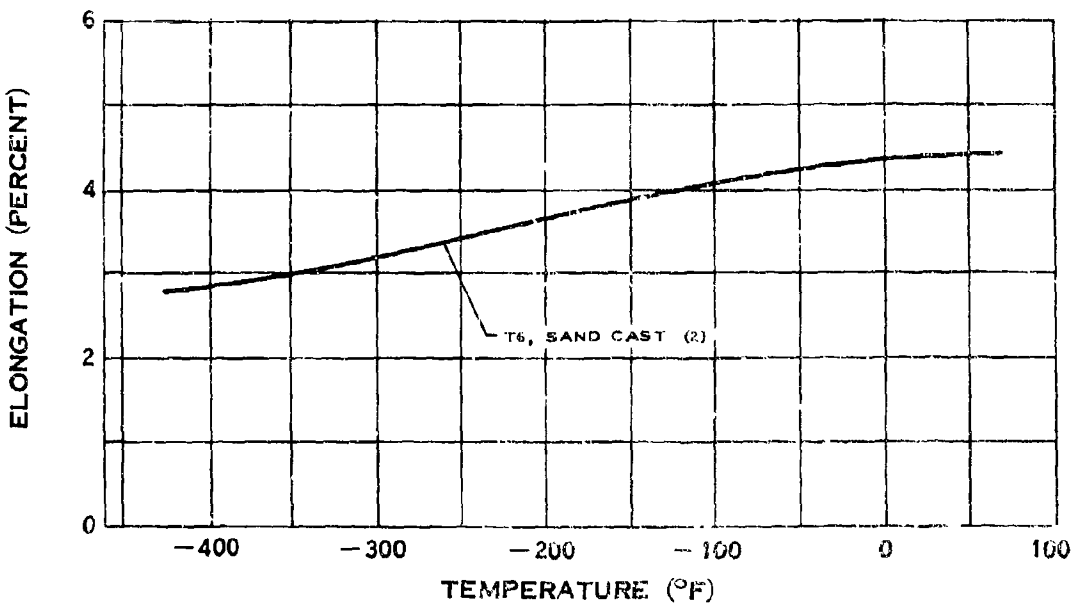
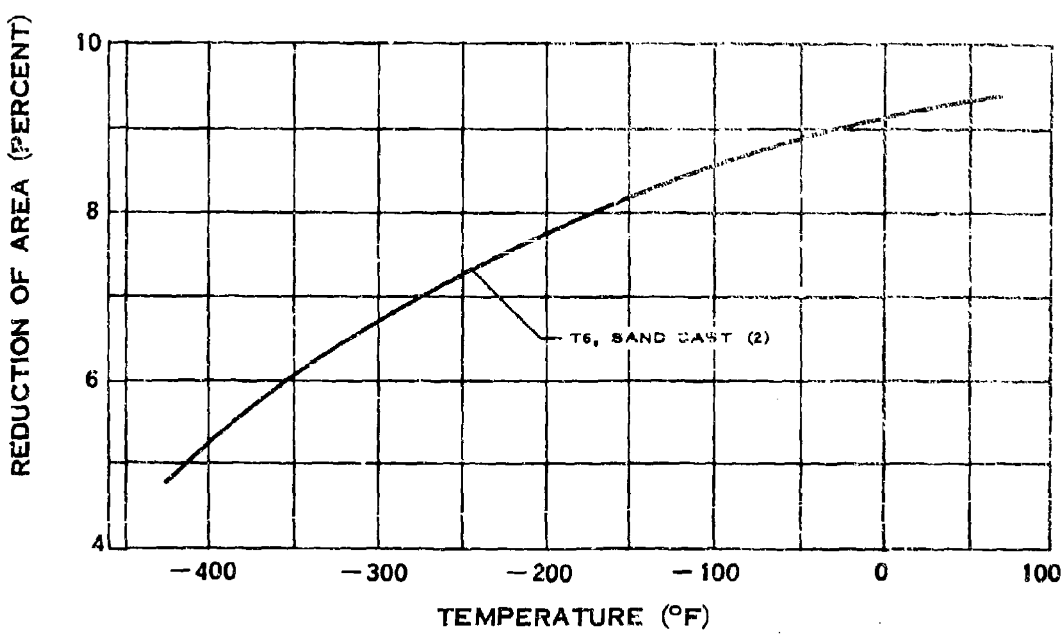
(7-64)

A.22.cd



ELONGATION OF TENS-50 ALUMINUM*

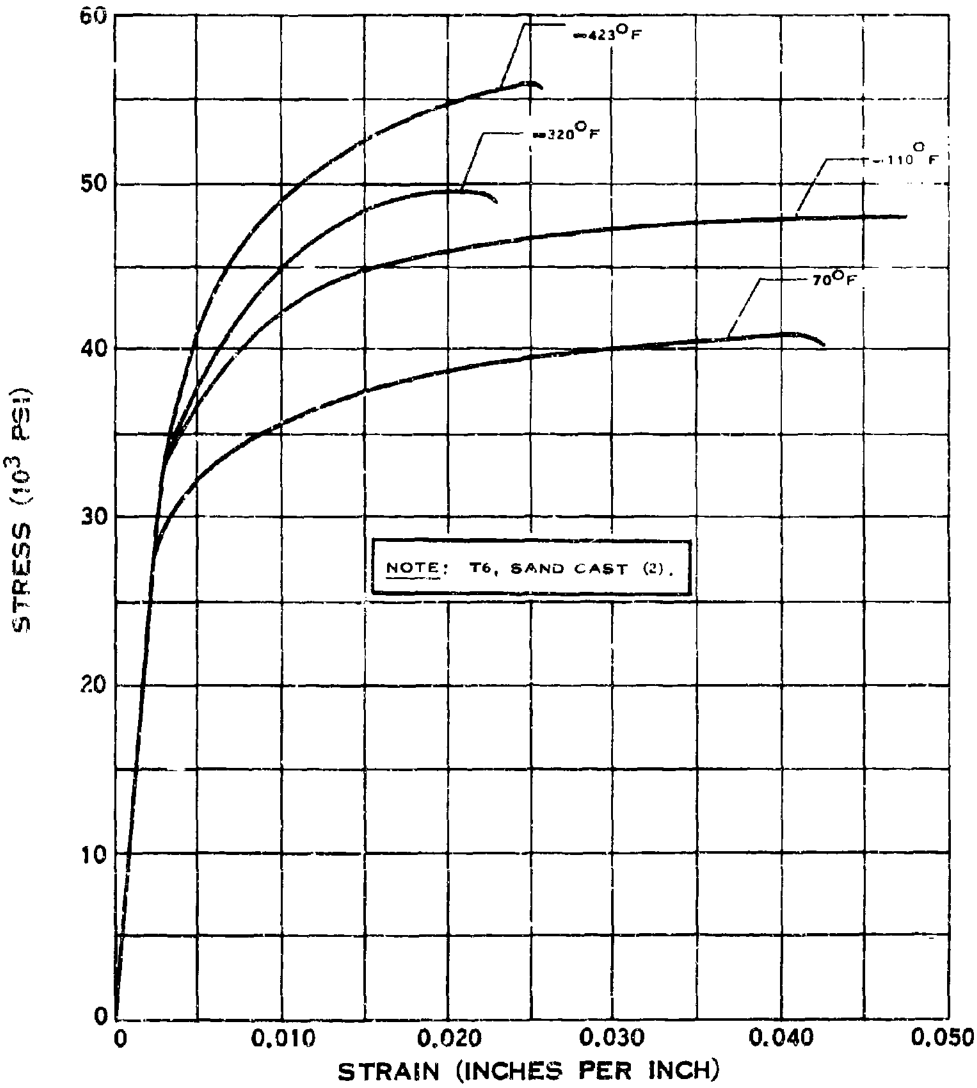


REDUCTION OF AREA OF TENS-50 ALUMINUM*

*T.M. ROCKETDYNE, DIV OF NORTH AMERICAN AVIATION INC

(7-64)

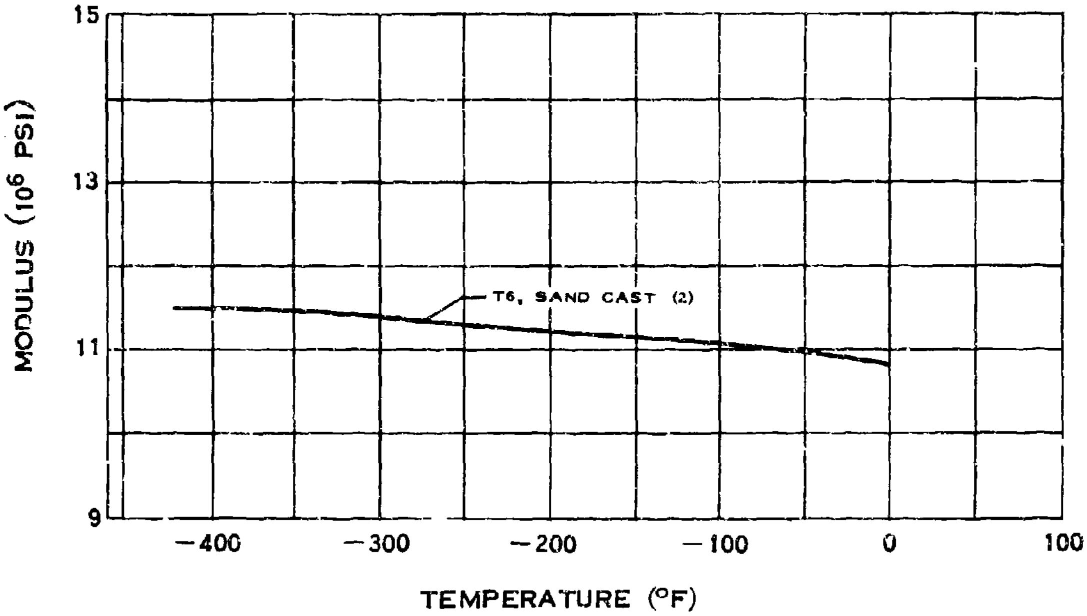
A.22.h



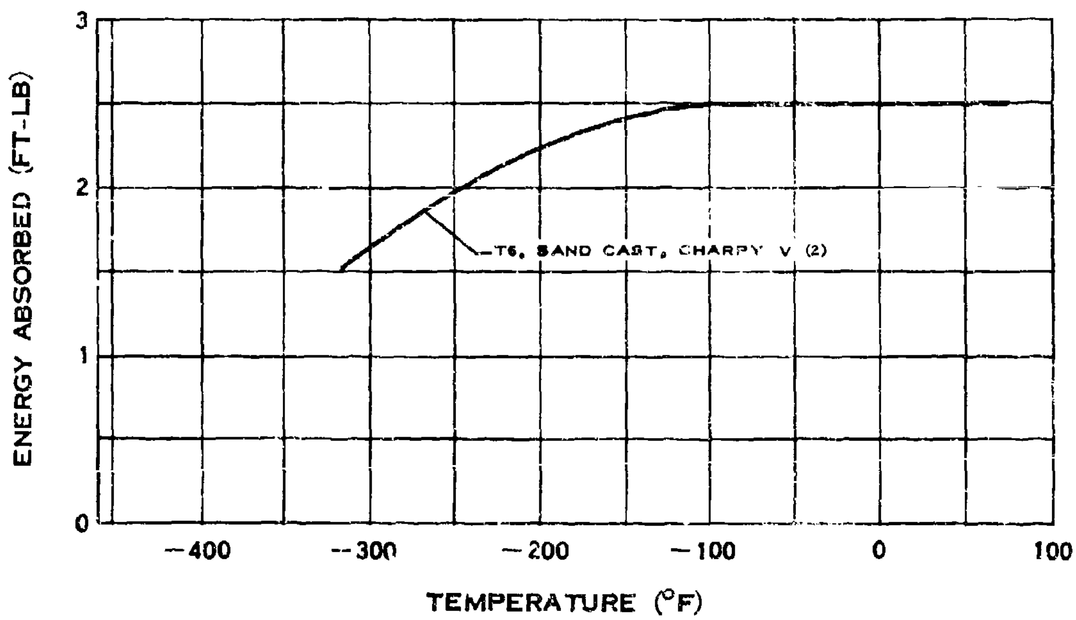
STRESS-STRAIN DIAGRAM FOR TENS-50 ALUMINUM*

* T.M.
ROCKETDYNE, DIV OF NORTH AMERICAN AVIATION INC.

(7-64)



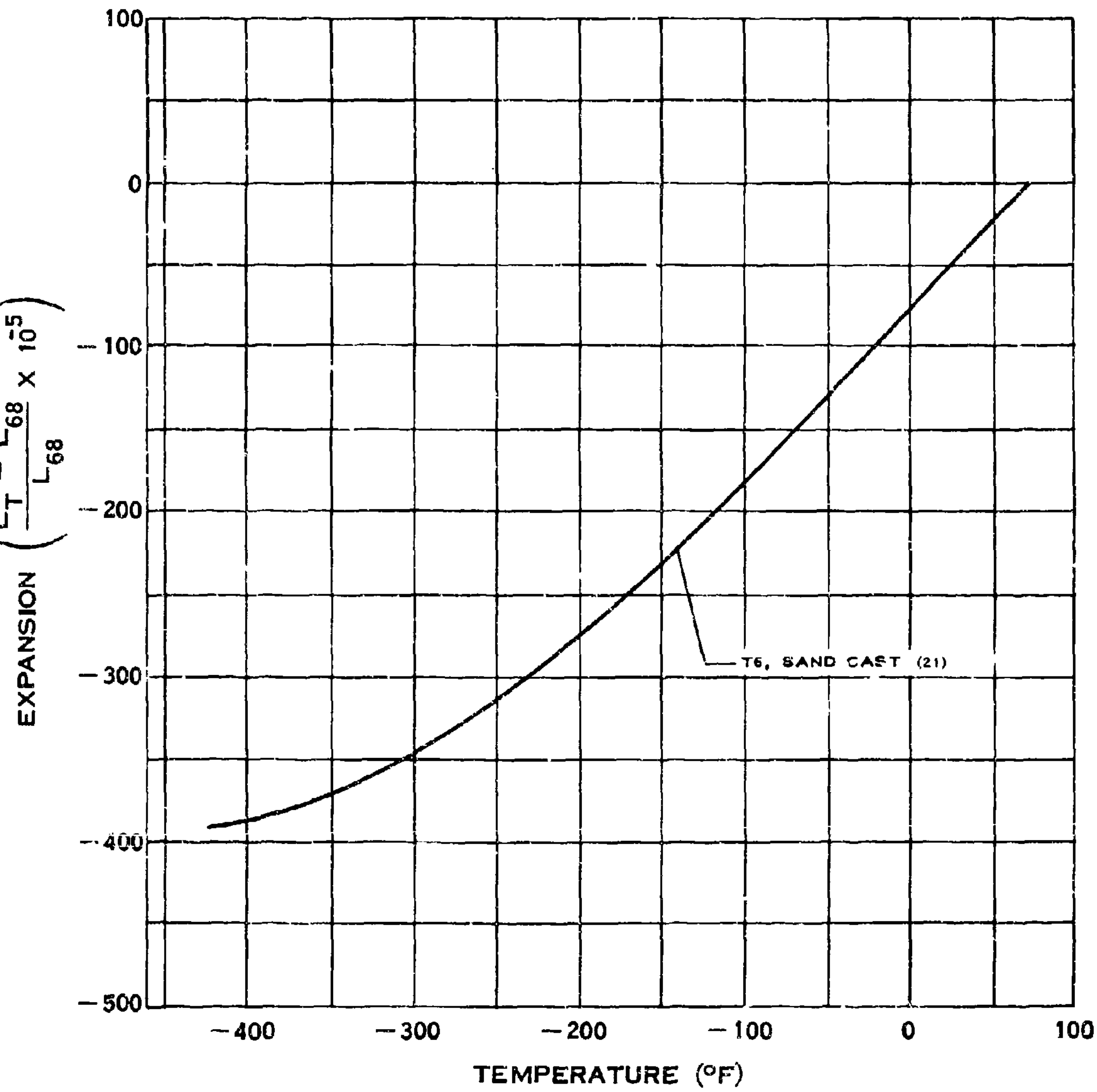
MODULUS OF ELASTICITY OF TENS-50 ALUMINUM*



IMPACT STRENGTH OF TENS-50 ALUMINUM*

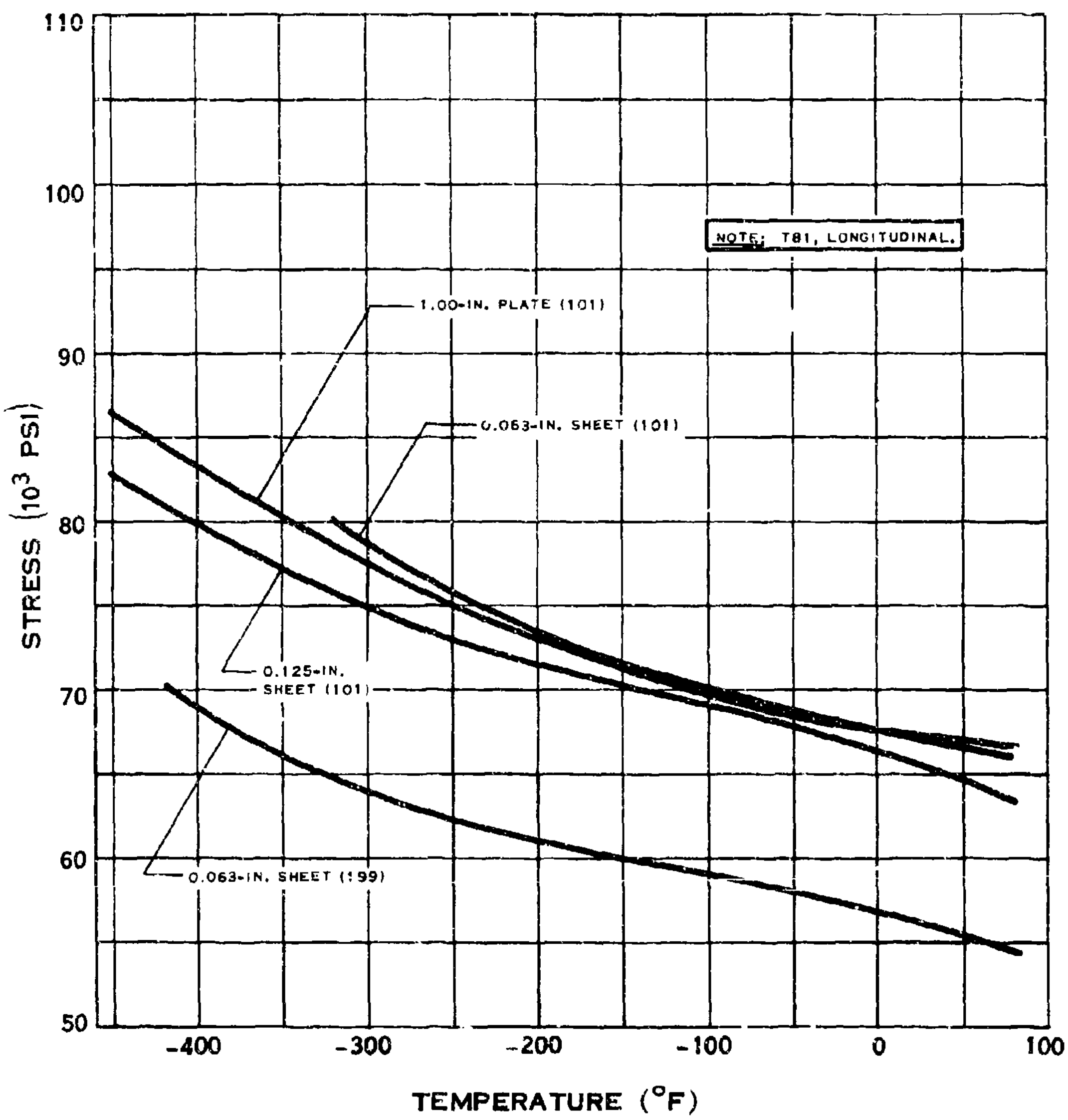
*T.M. ROCKETDYNE, DIV OF NORTH AMERICAN AVIATION INC.

A.22.t



THERMAL EXPANSION OF TENS-50 ALUMINUM

A.23.a



YIELD STRENGTH OF X2021 ALUMINUM

(6-68)

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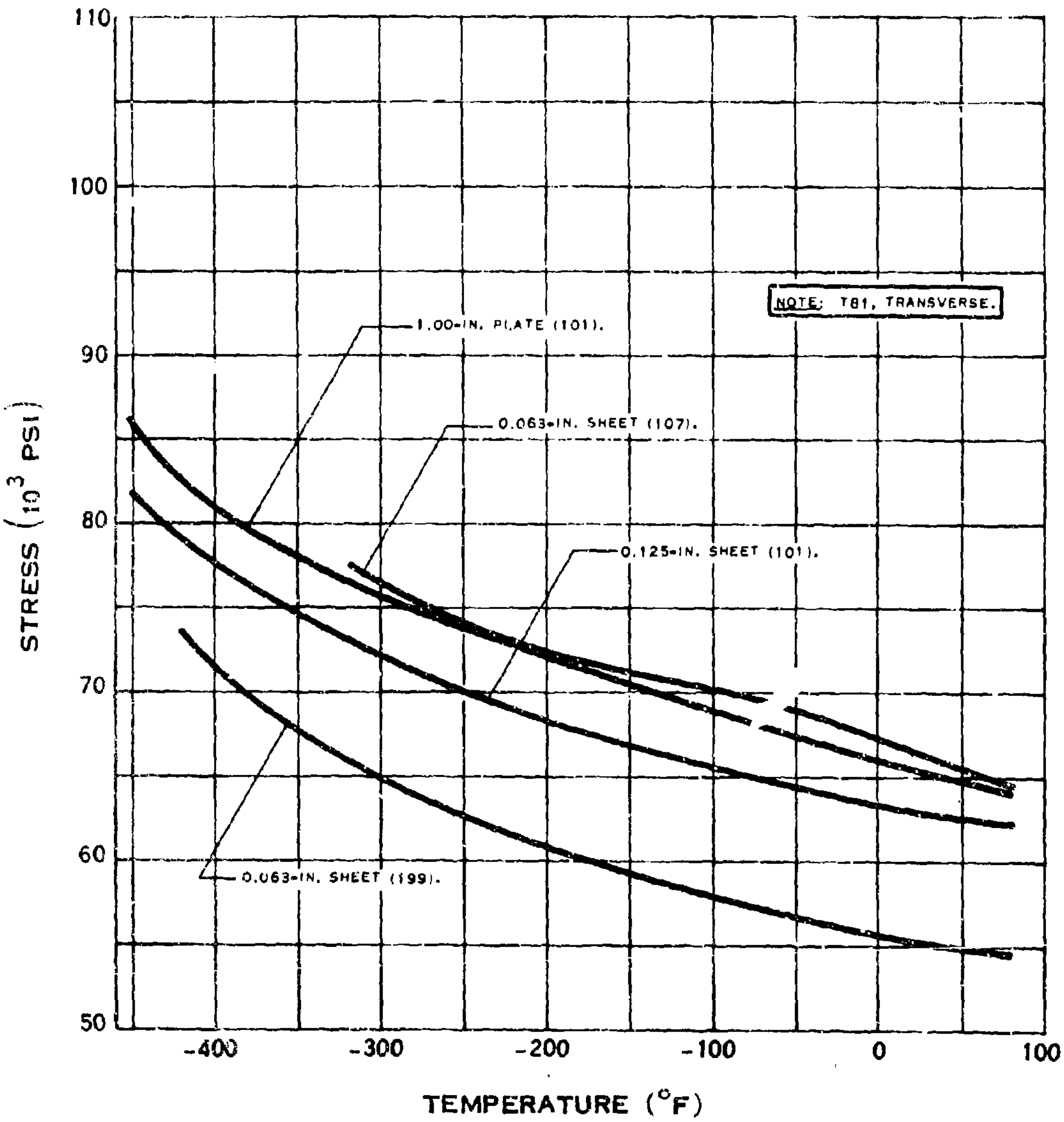
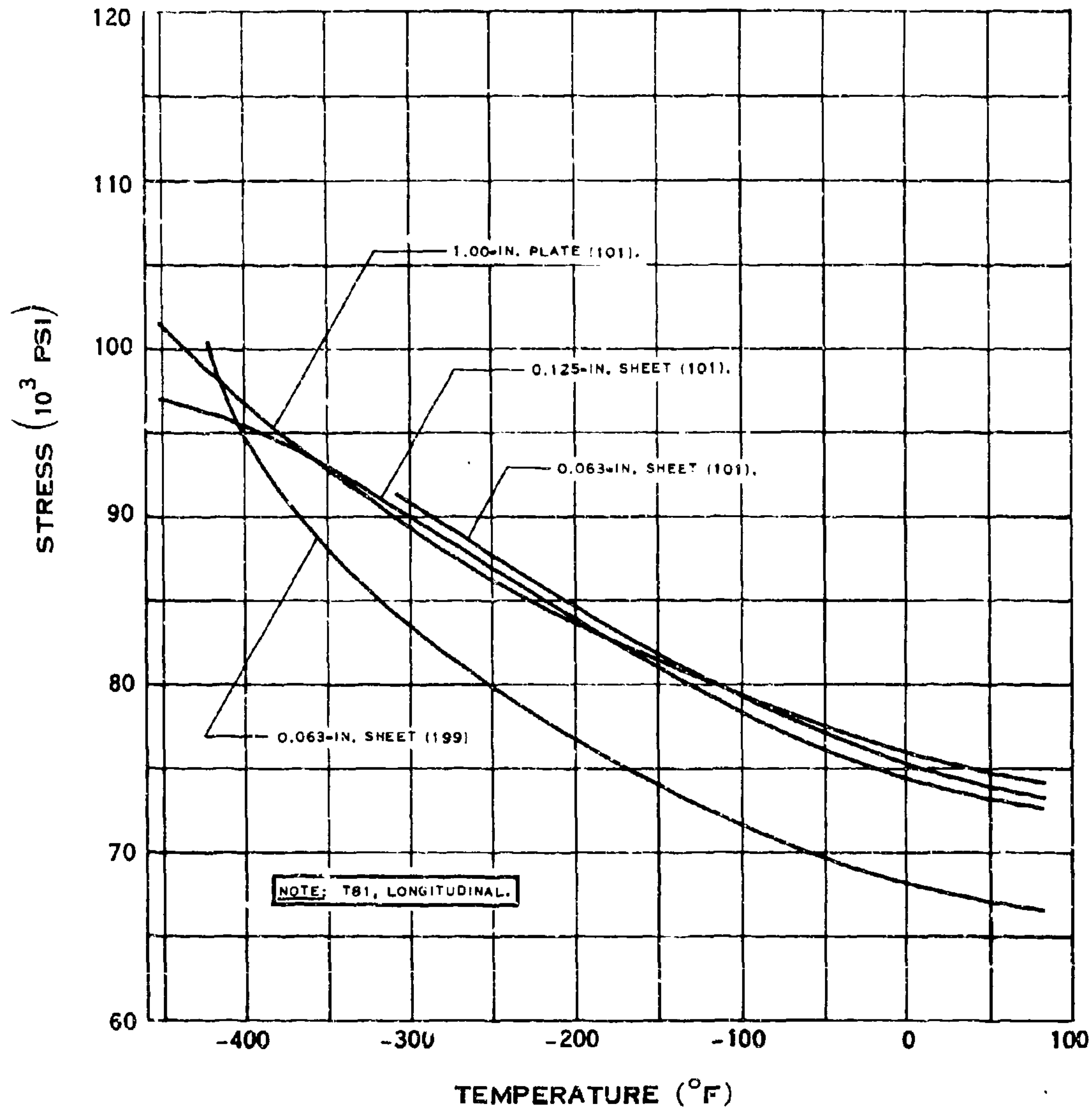
A.23.a-1



YIELD STRENGTH OF X2021 ALUMINUM

(6-68)

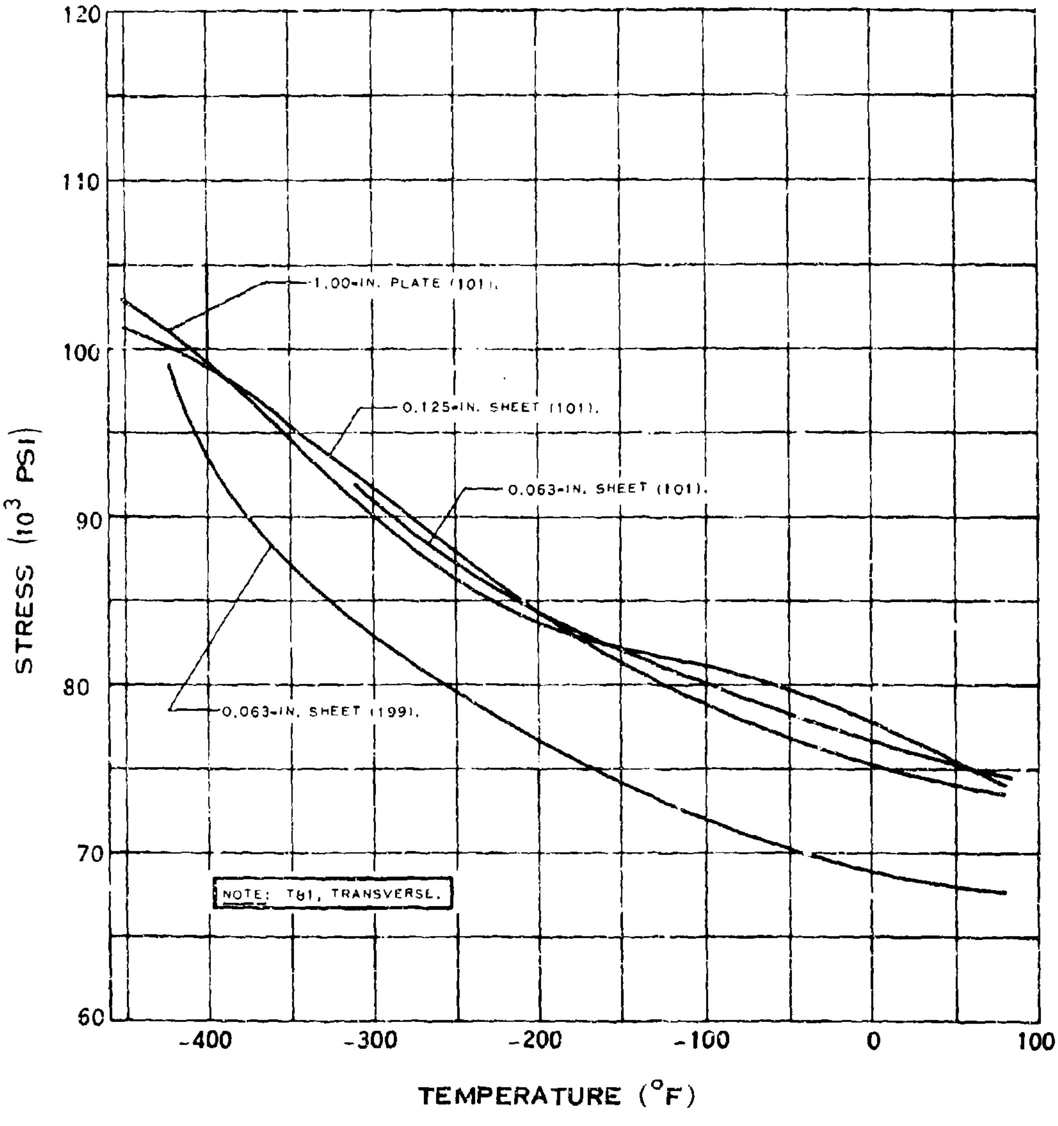
A.23.b



TENSILE STRENGTH OF X2021 ALUMINUM

(6-68)

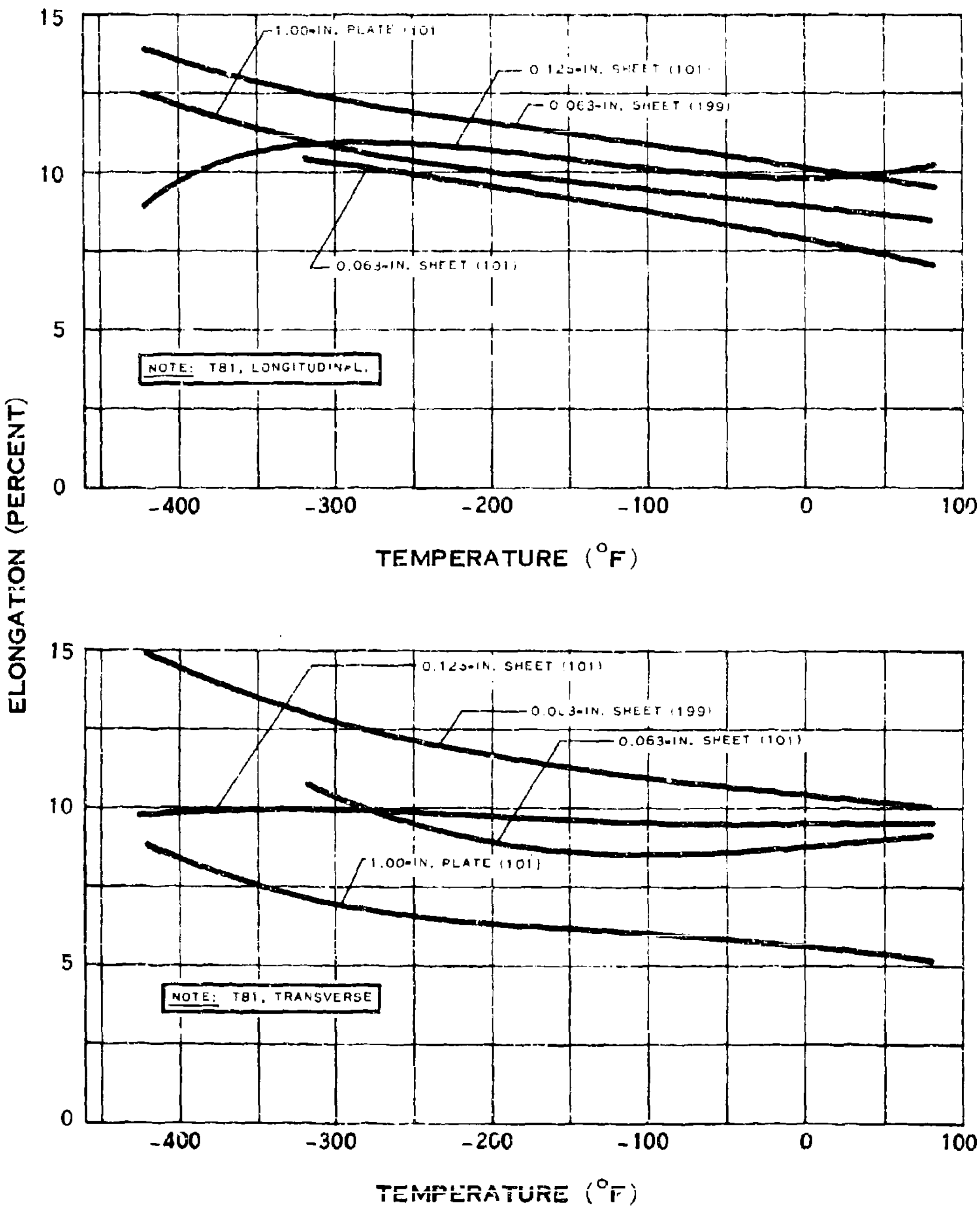
A.23.b-1



TENSILE STRENGTH OF X2021 ALUMINUM

(6-68)

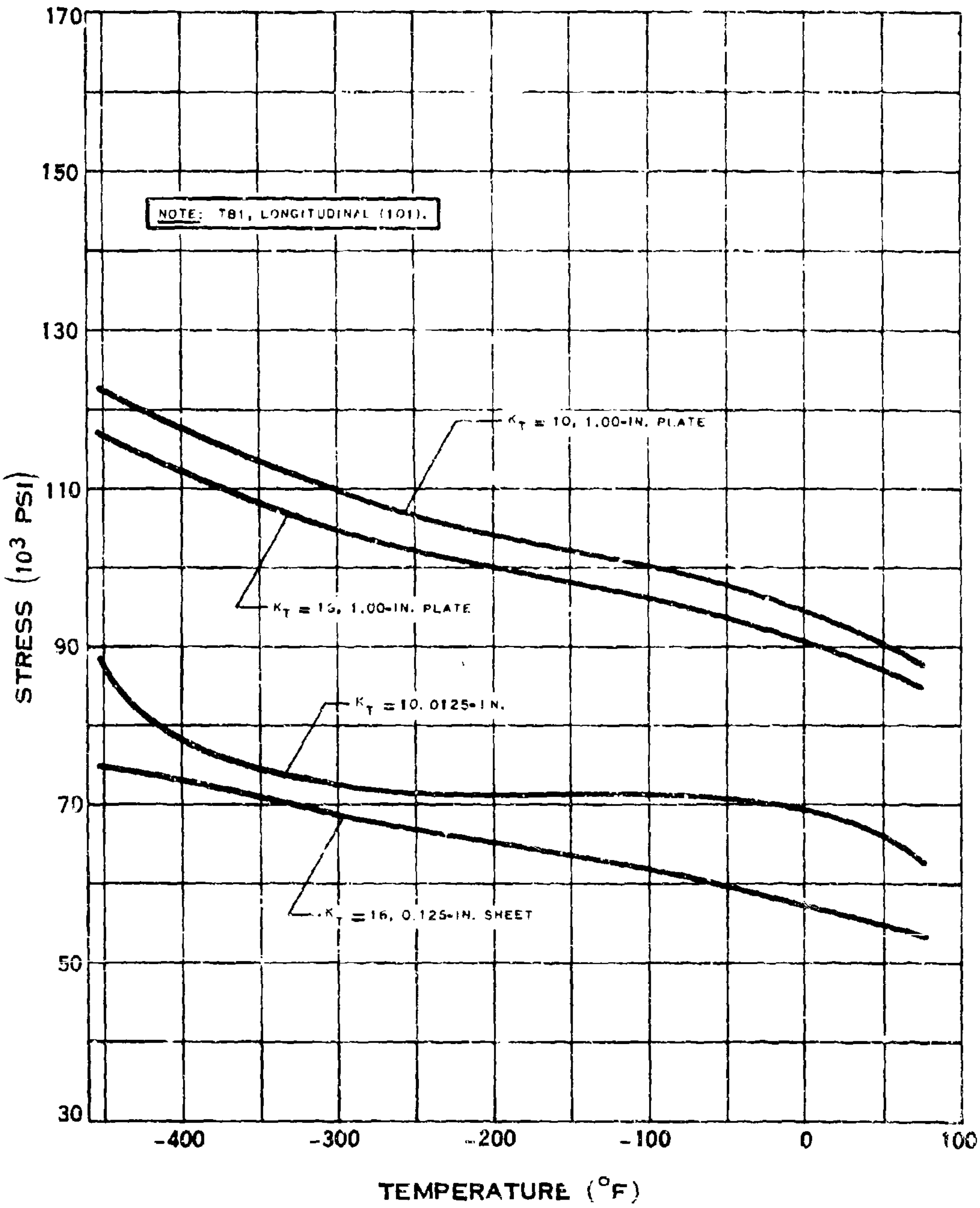
A.23.c



ELONGATION OF X2021 ALUMINUM

(6-68)

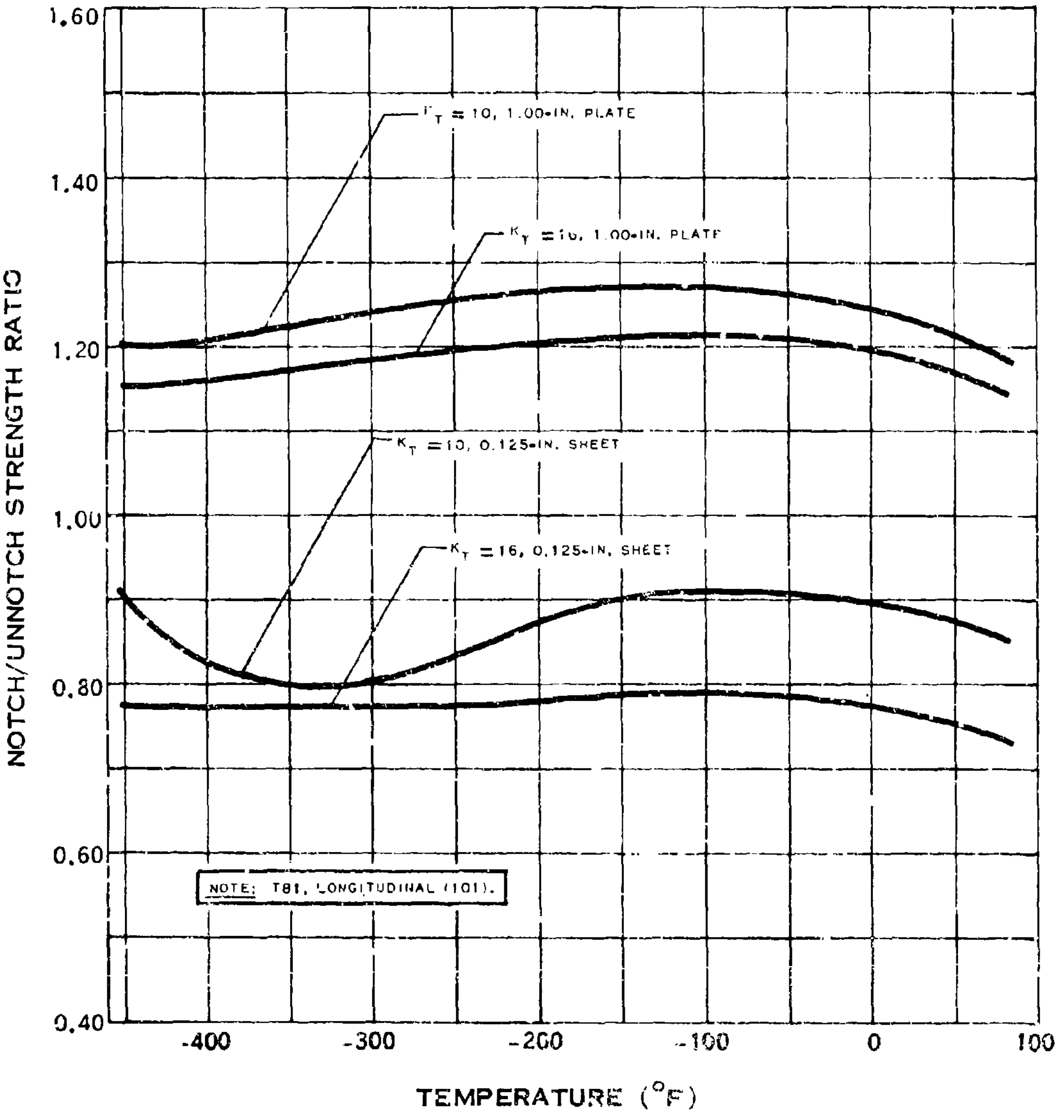
A.23.e



NOTCH TENSILE STRENGTH OF X2021 ALUMINUM

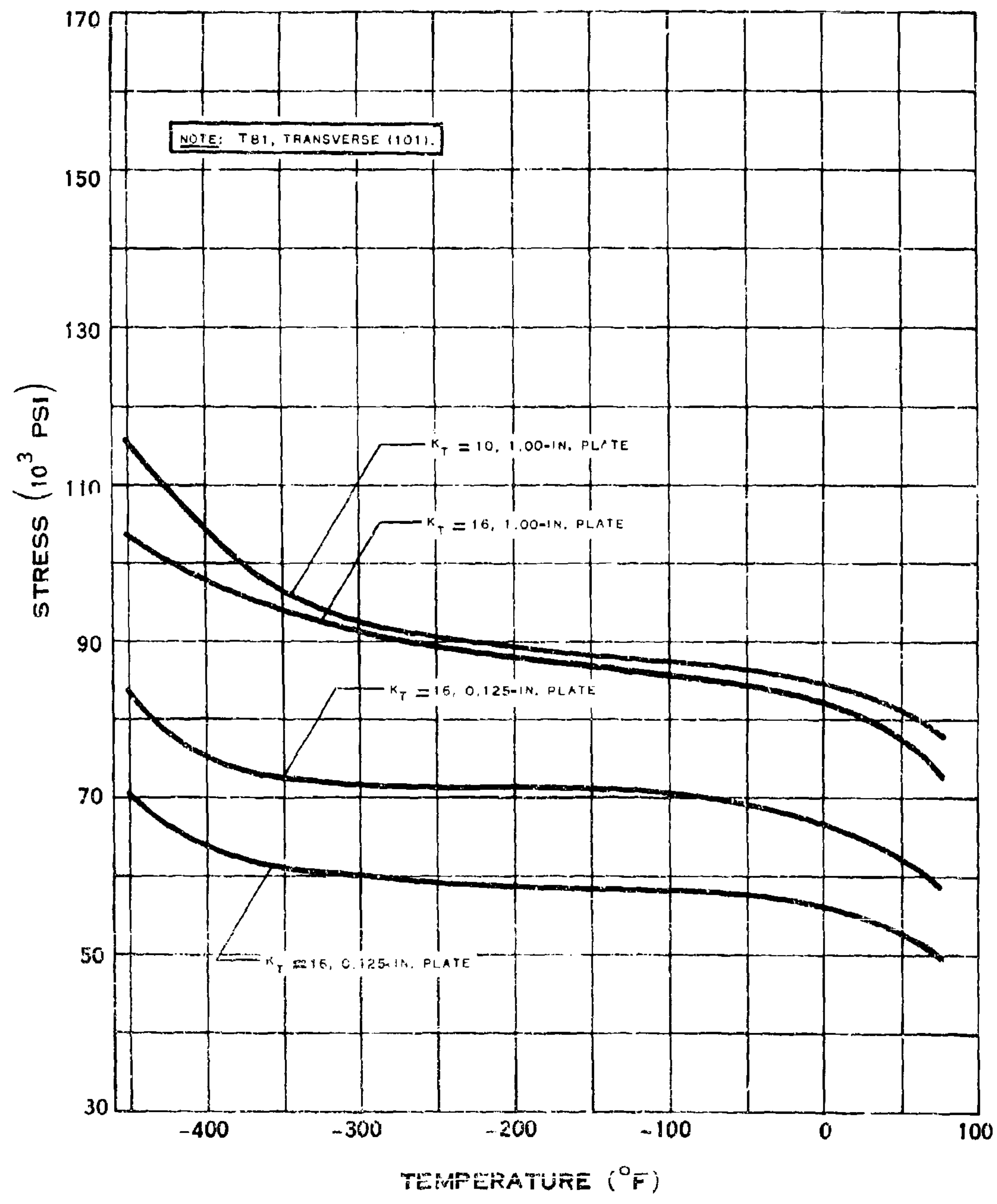
(6-68)

A.23.e-1



NOTCH STRENGTH RATIO OF X2021 ALUMINUM

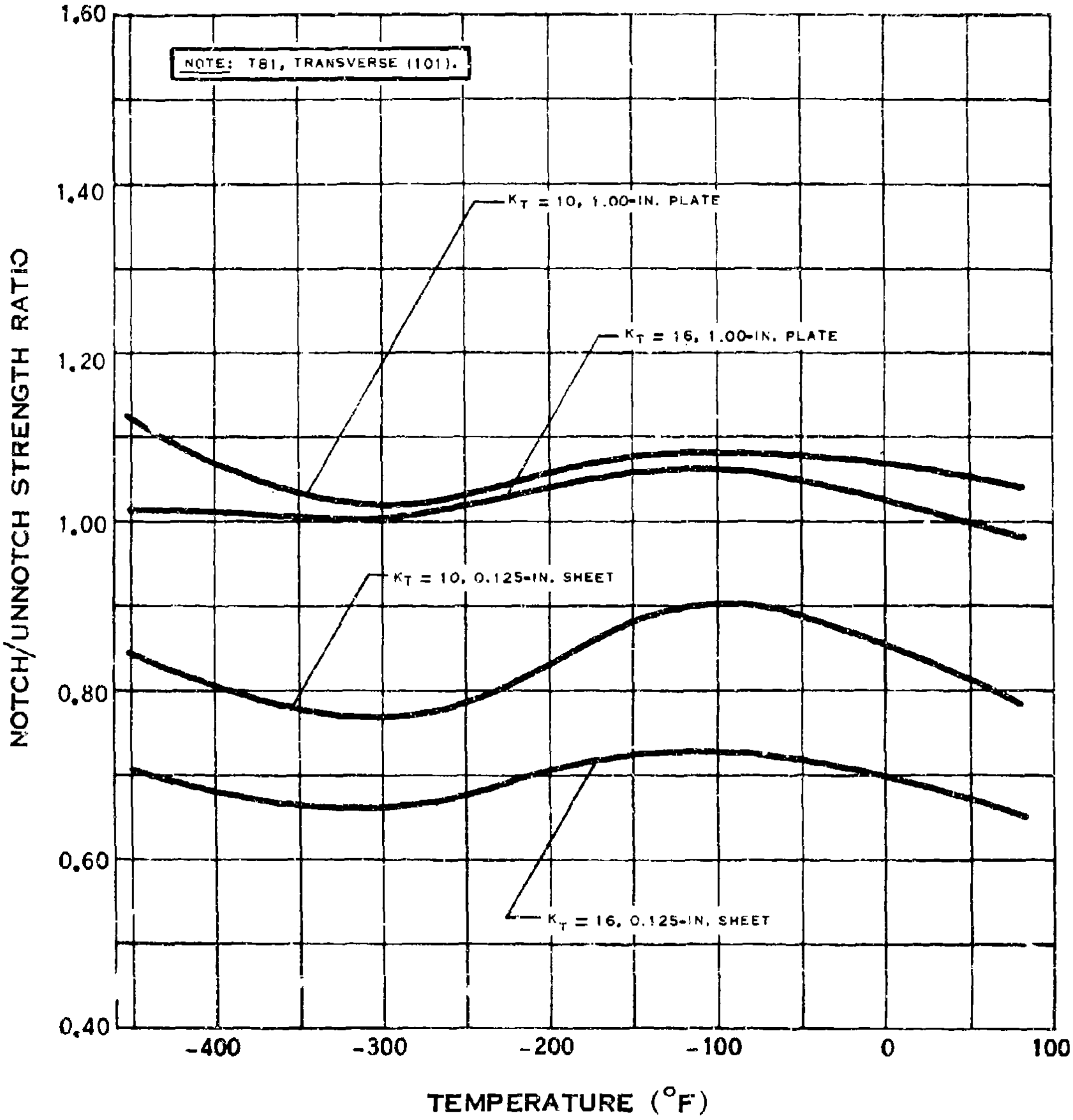
A.23.e-2



NOTCH TENSILE STRENGTH OF X2021 ALUMINUM

(6-68)

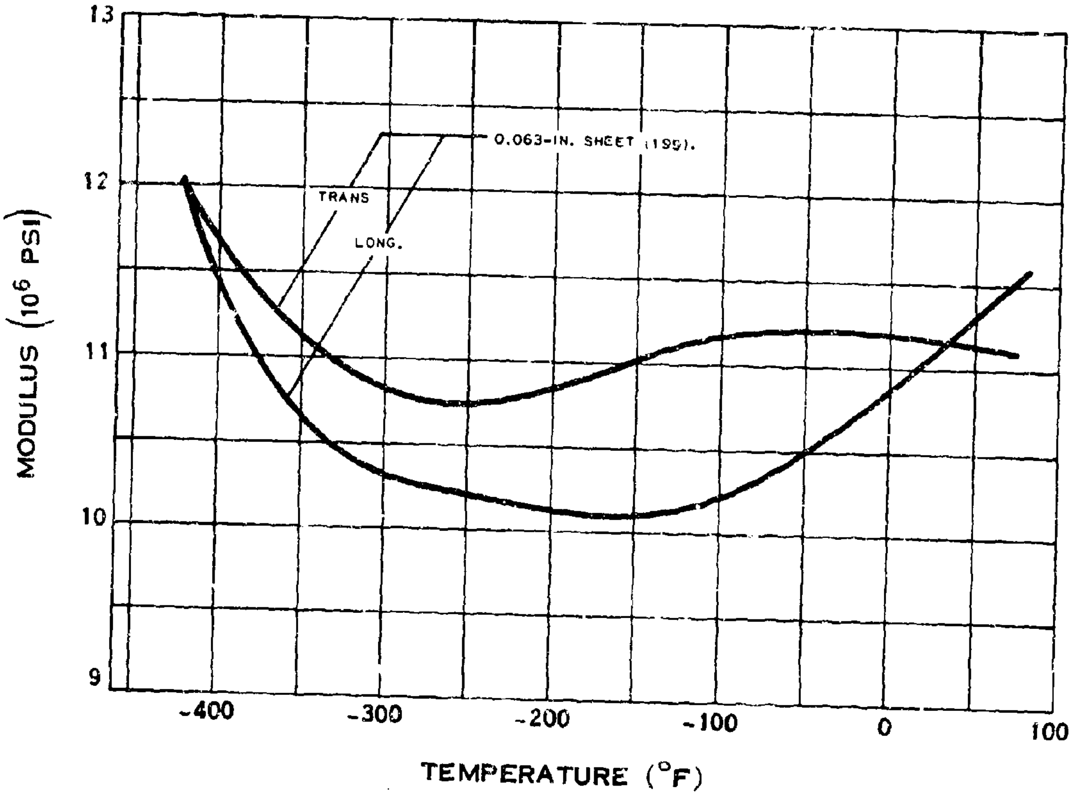
A.23.e-3



NOTCH STRENGTH RATIO OF X2021 ALUMINUM

(6-68)

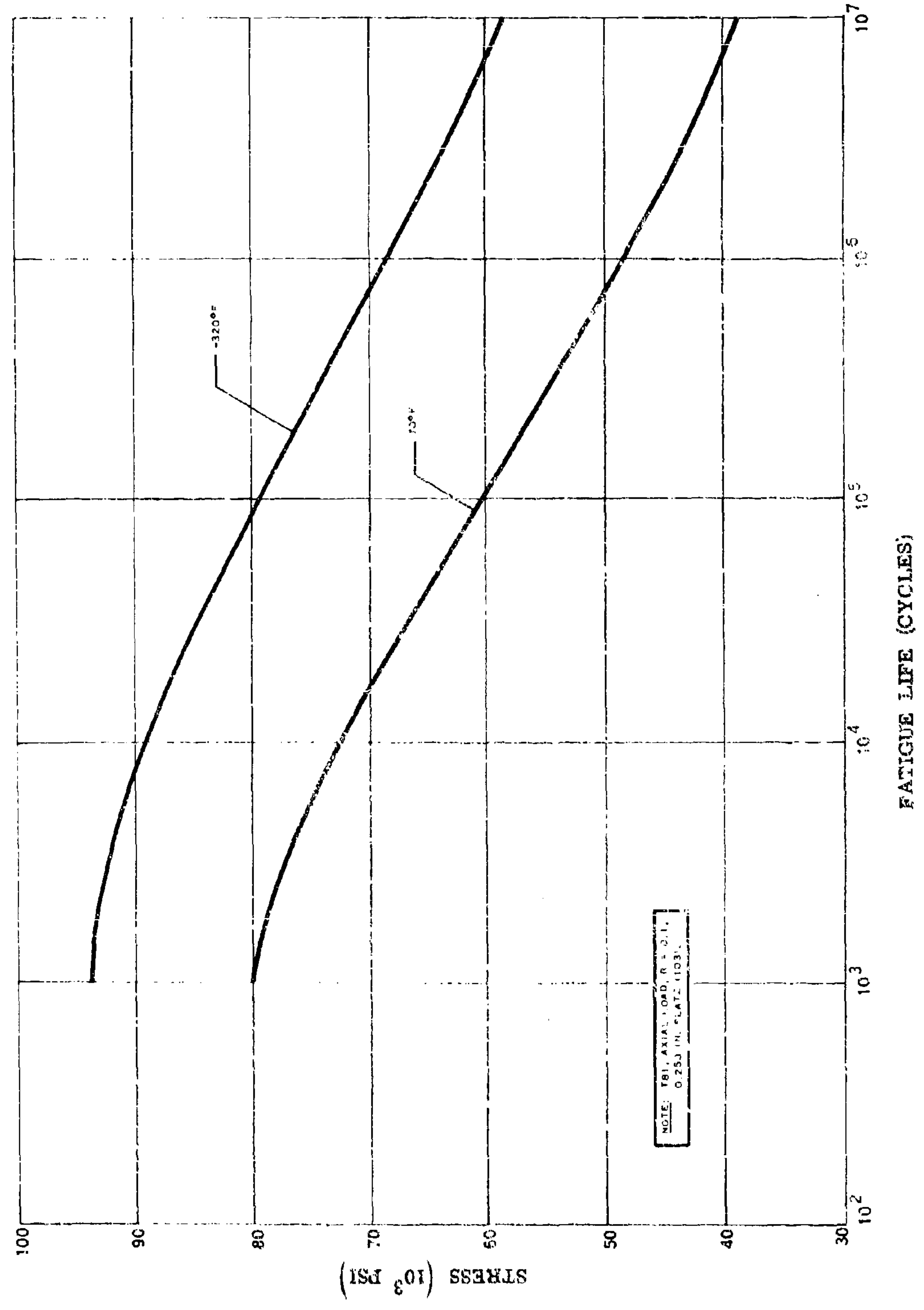
A.23.i



MODULUS OF ELASTICITY OF X2021 ALUMINUM

(6-68)

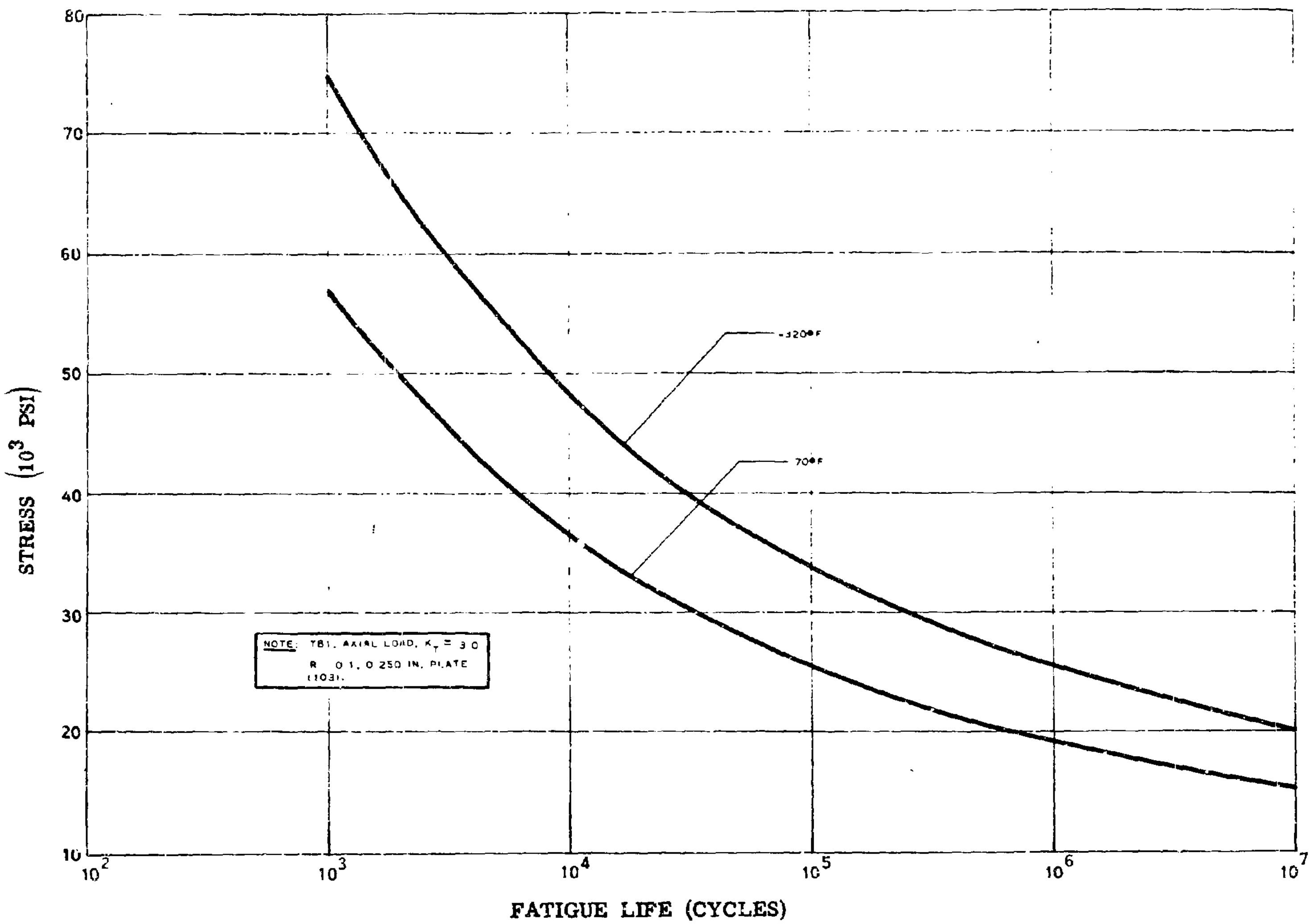
A.23.o



FATIGUE STRENGTH OF X2021 ALUMINUM

(6-68)

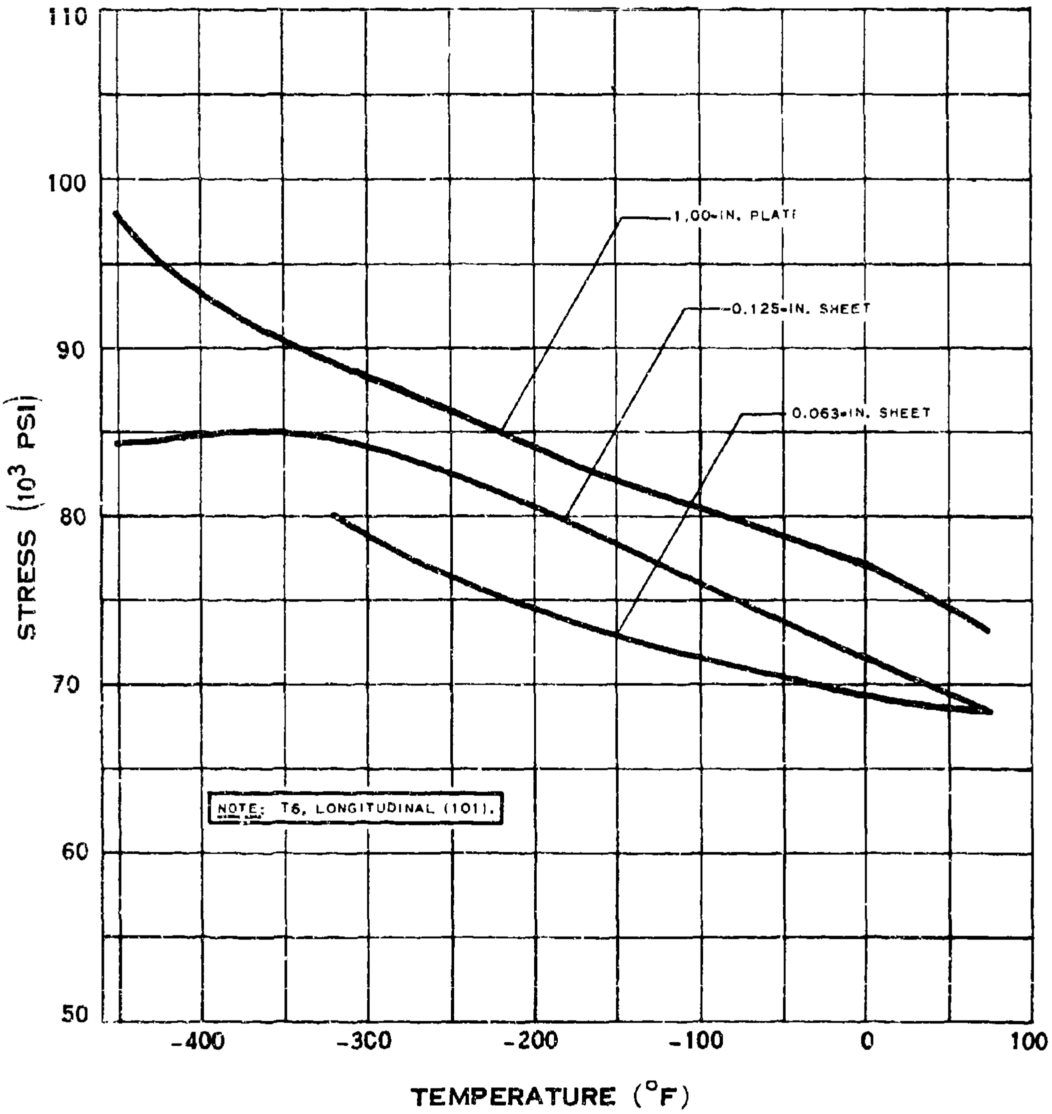
A.23.o-1



NOTCH STRENGTH OF X2021 ALUMINUM

(6-68)

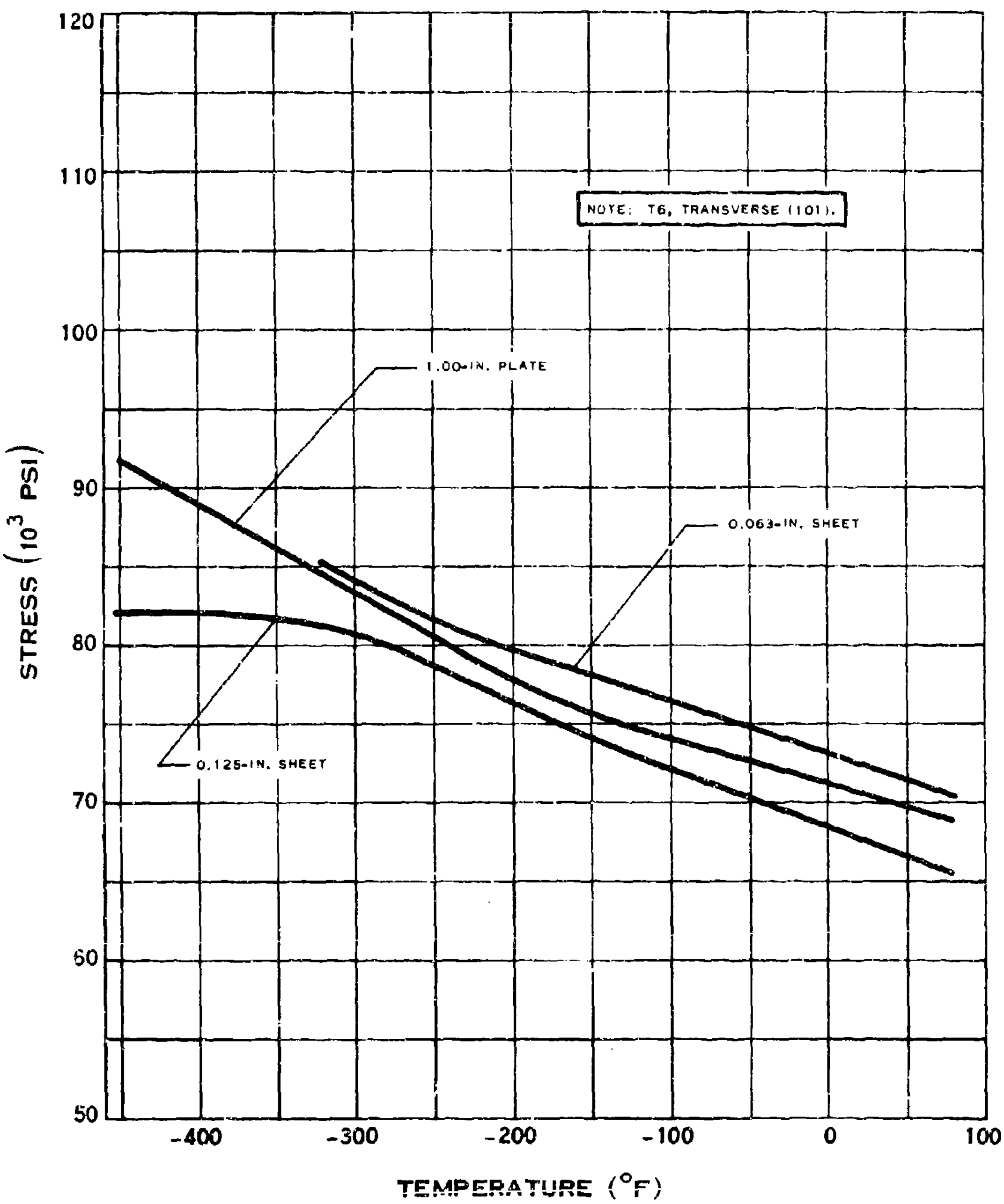
A.24.a



YIELD STRENGTH O.· X7007 ALUMINUM

(6-68)

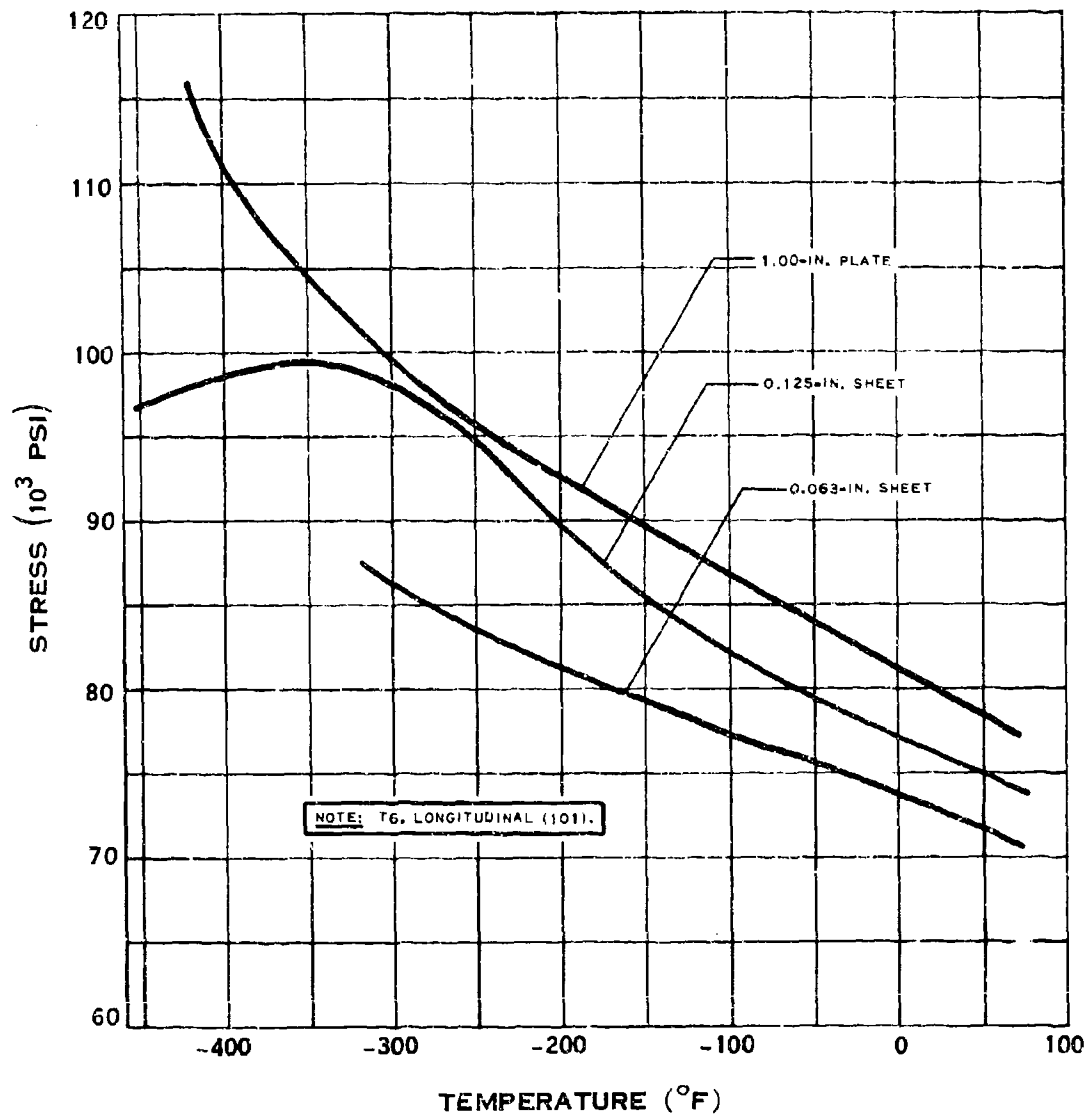
A.24.a-1



YIELD STRENGTH OF X7007 ALUMINUM

(6-68)

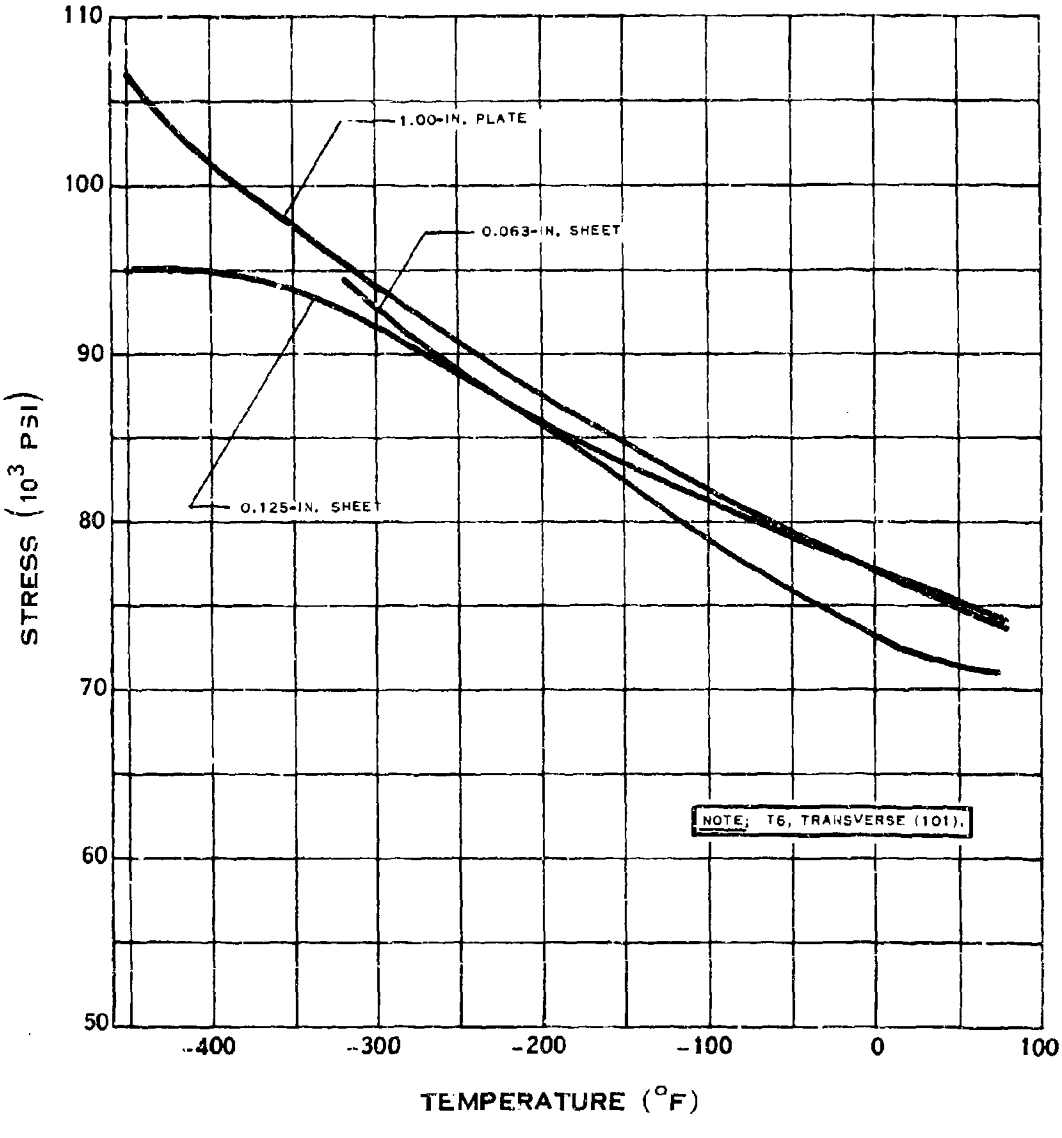
A.24.b



TENSILE STRENGTH OF X7007 ALUMINUM

(6-68)

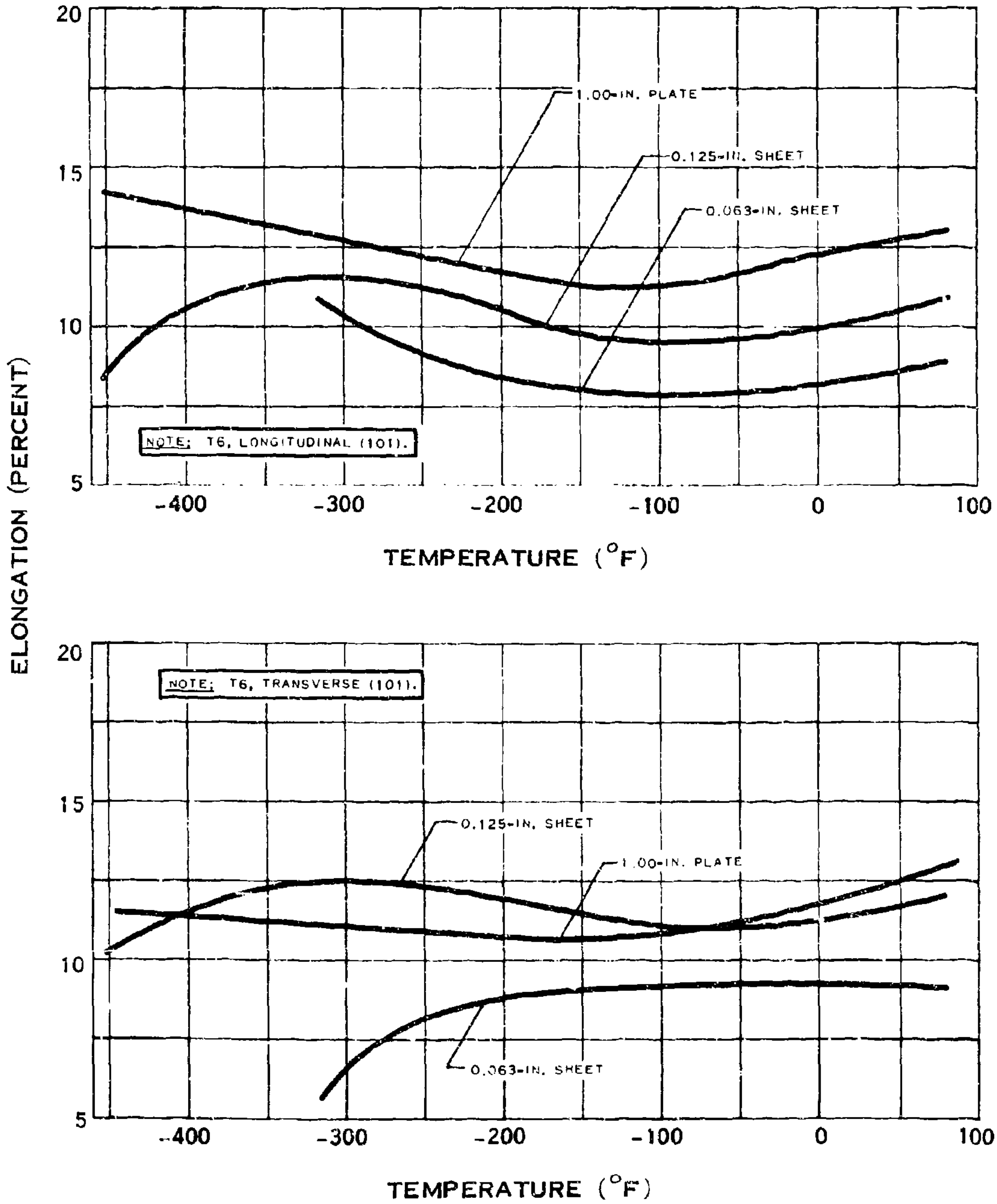
A.24.b-1



TENSILE STRENGTH OF X7007 ALUMINUM

(6-68)

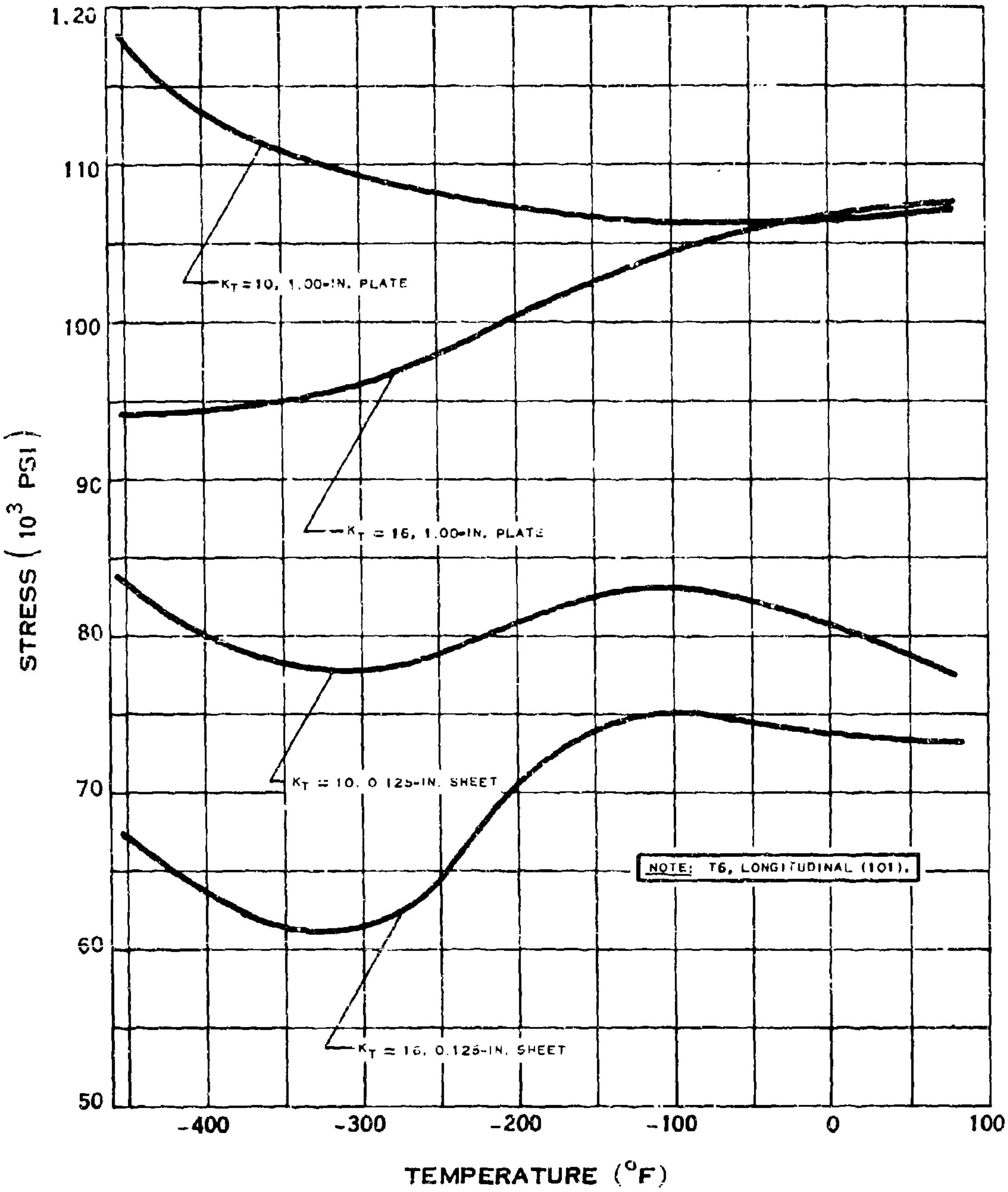
A.24.c



ELONGATION OF X7007 ALUMINUM

(G-68)

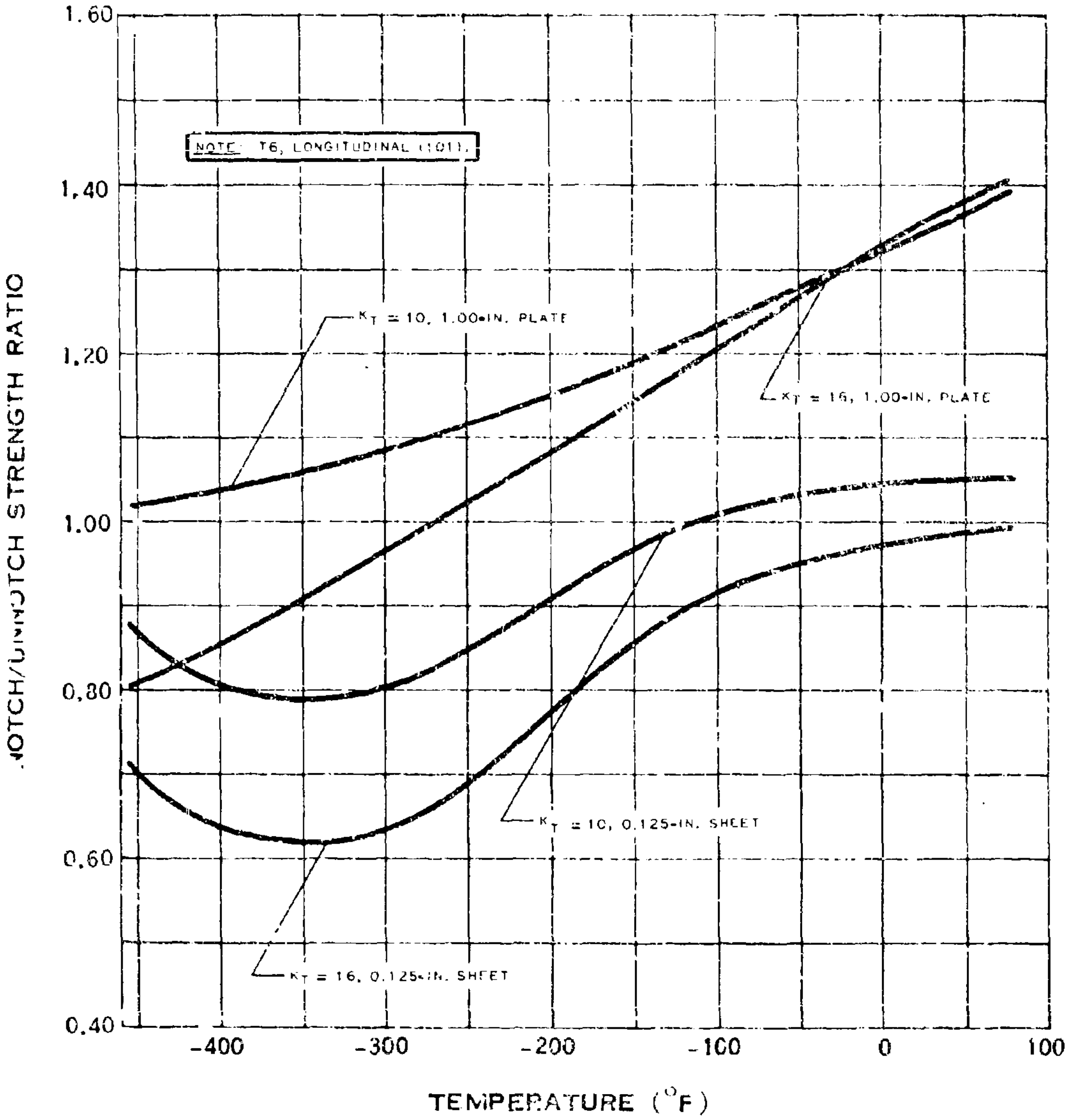
A.24.e



NOTCH TENSILE STRENGTH OF X7007 ALUMINUM

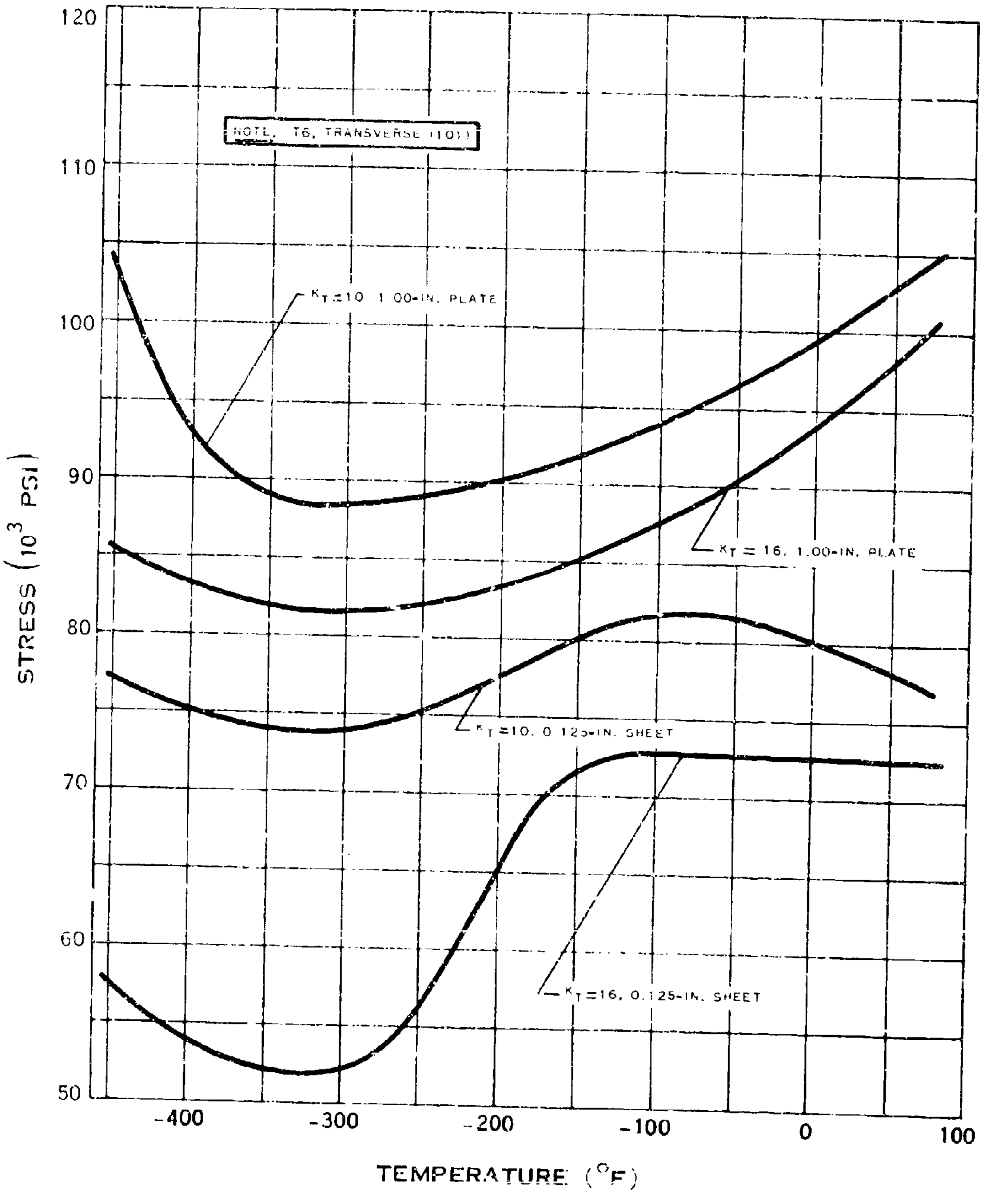
(6-68)

A.24.e-1



NOTCH STRENGTH RATIO OF X7007 ALUMINUM

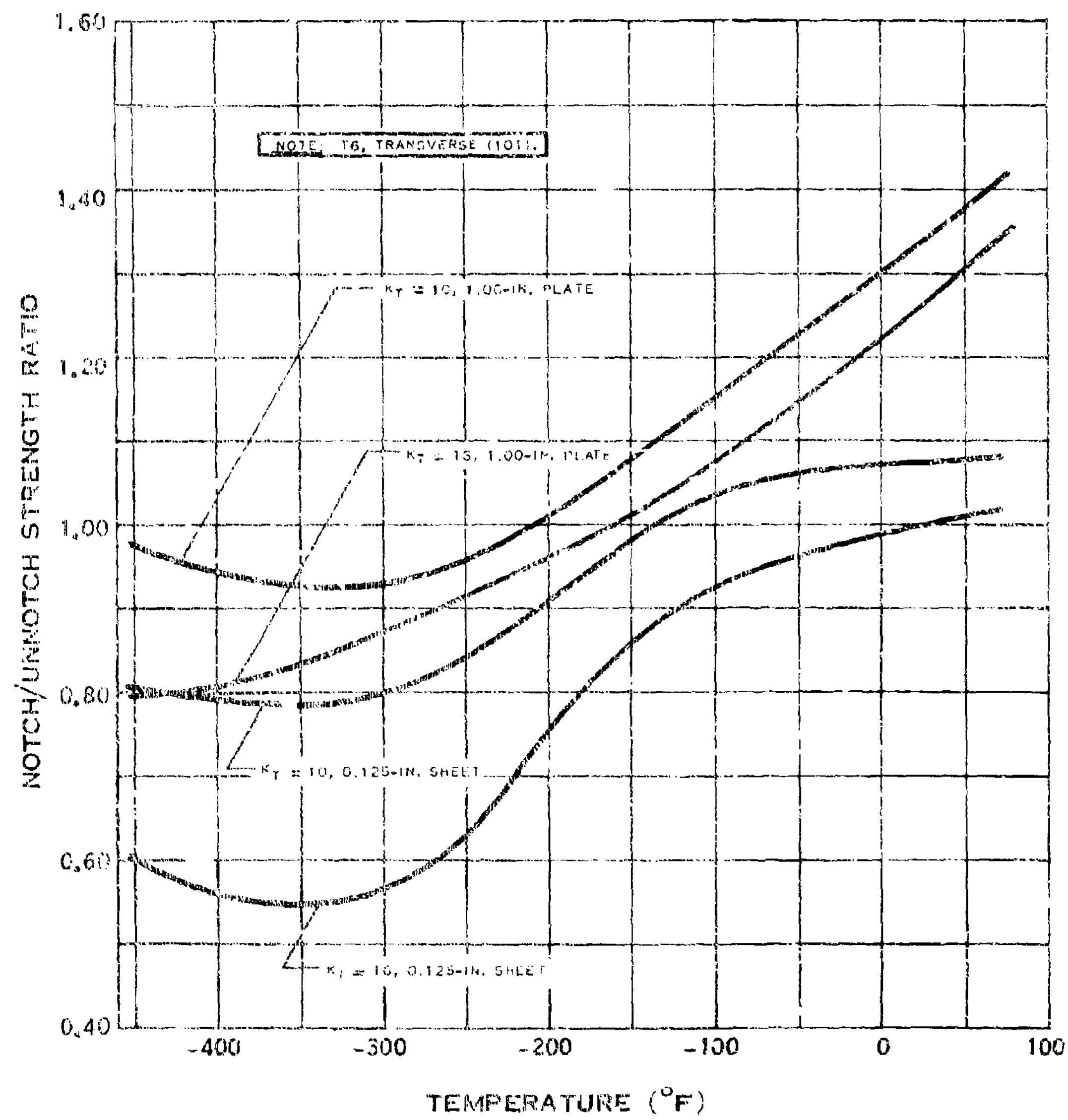
A.24.e-2



NOTCH TENSILE STRENGTH OF X7007 ALUMINUM

(6-68)

A.24.e-3

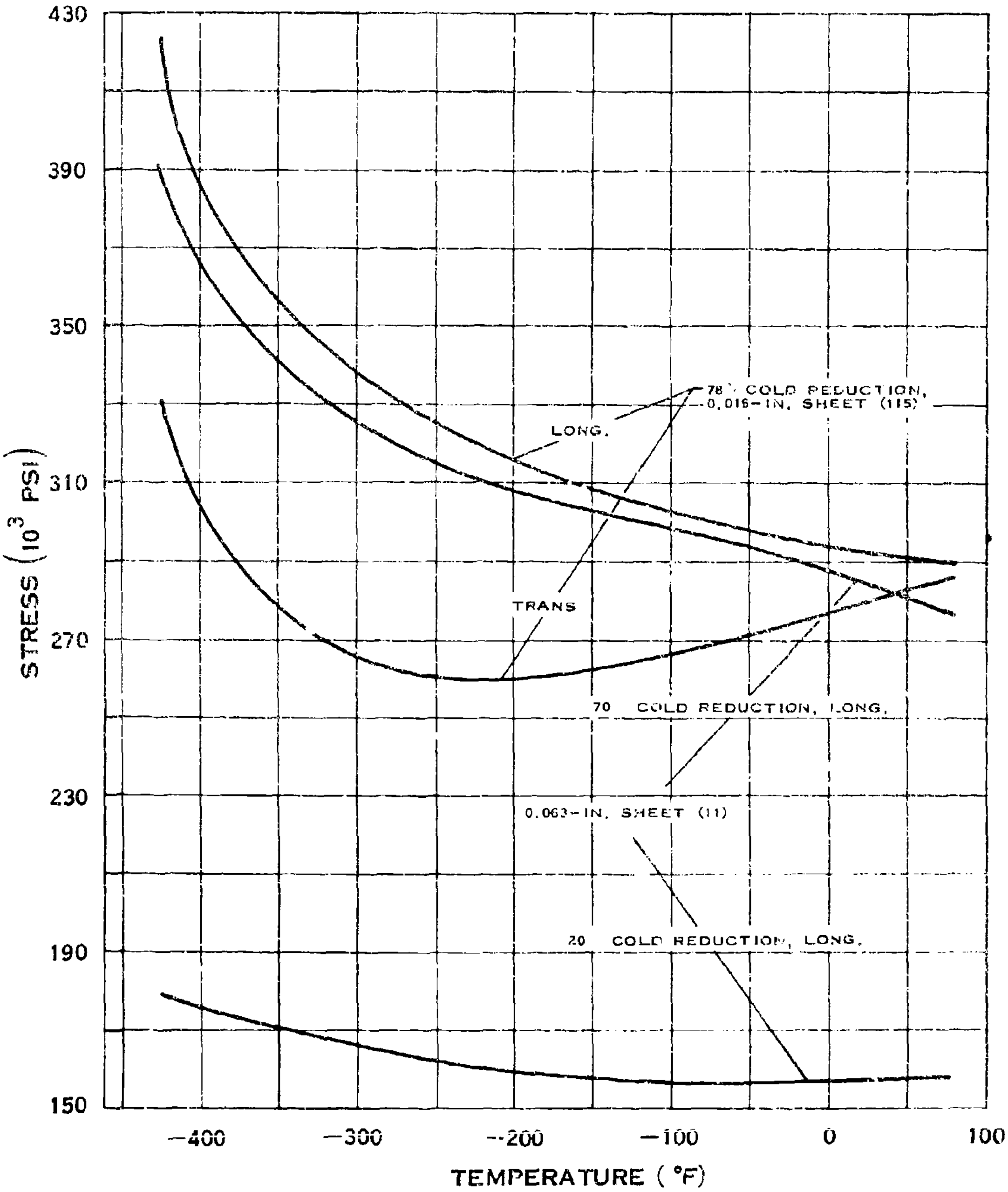


NOTCH STRENGTH RATIO OF X7007 ALUMINUM

(6-68)

B - STAINLESS STEEL

B.1.a



YIELD STRENGTH OF 301 STAINLESS STEEL

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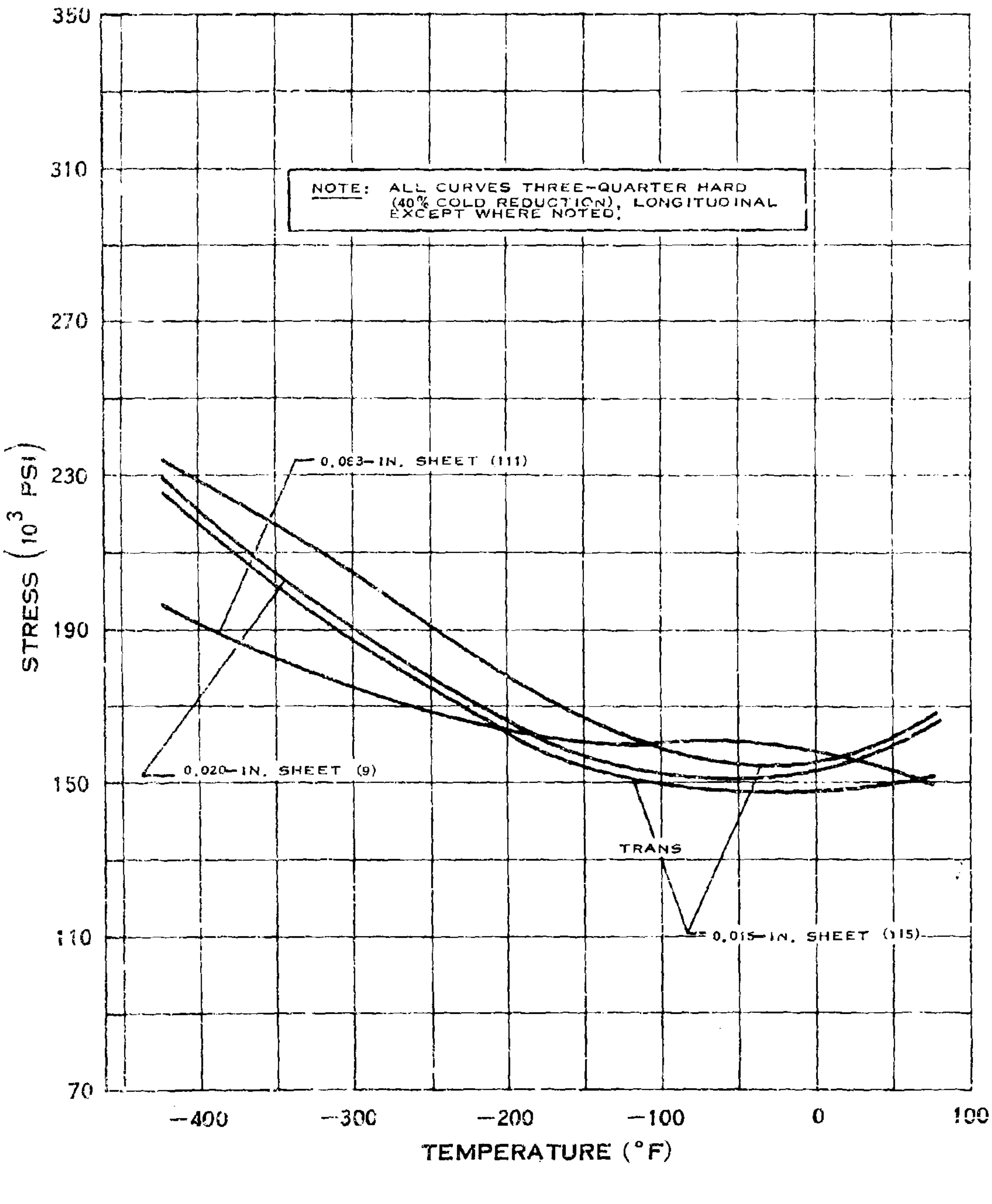
(7-64)

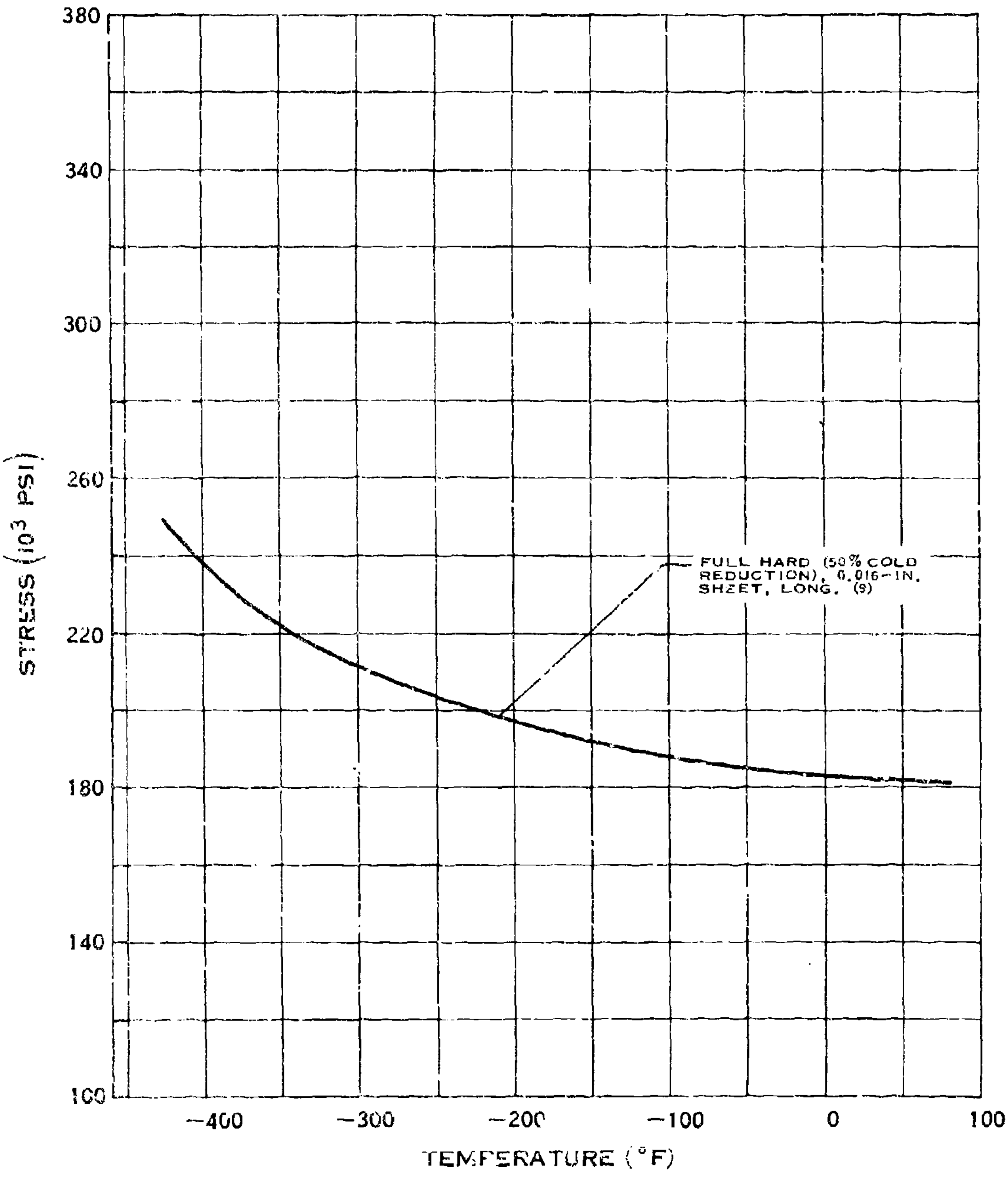
B.1.a-1



YIELD STRENGTH OF 301 STAINLESS STEEL

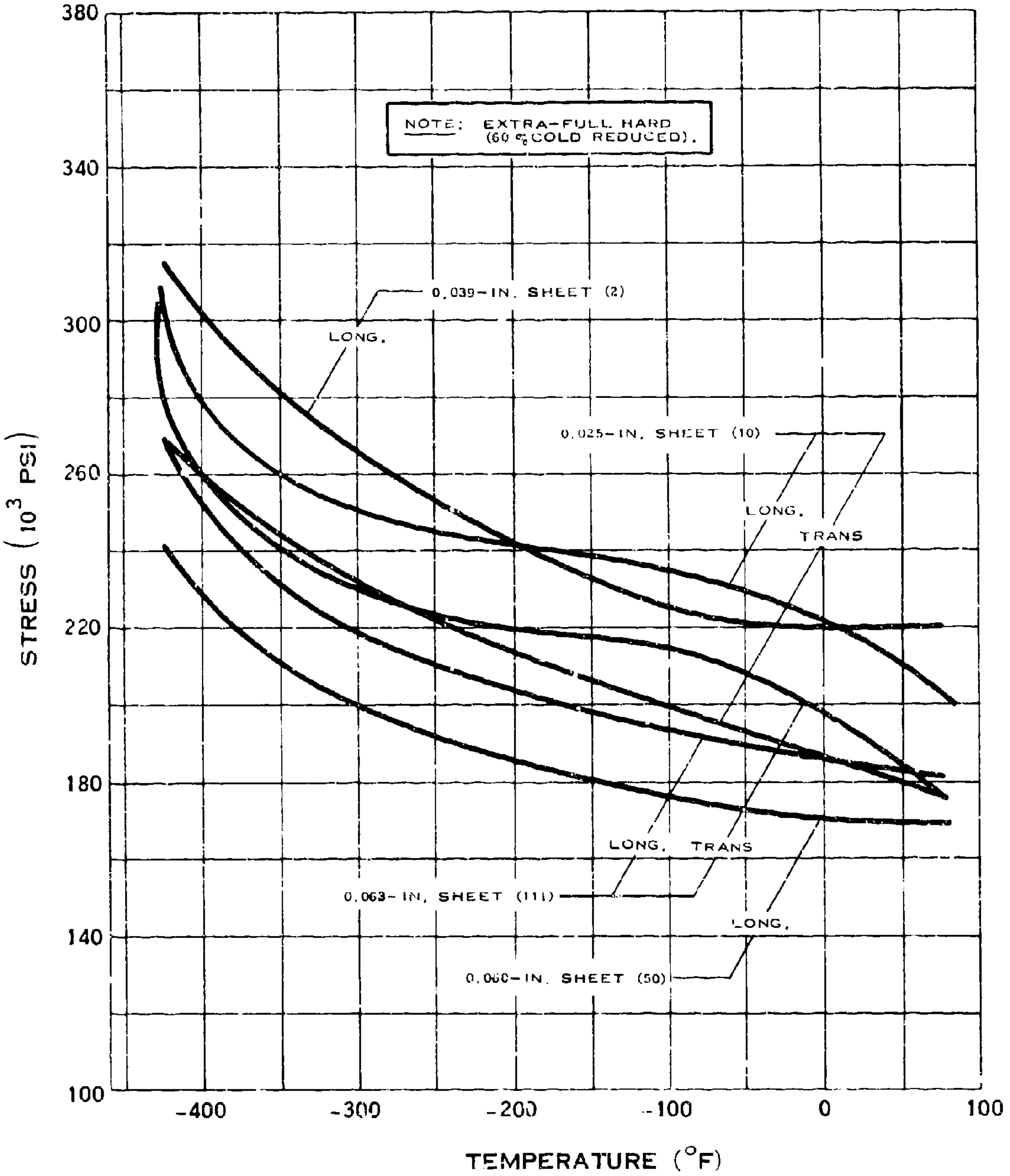
(7-64)

B.1.a-2



YIELD STRENGTH OF 301 STAINLESS STEEL

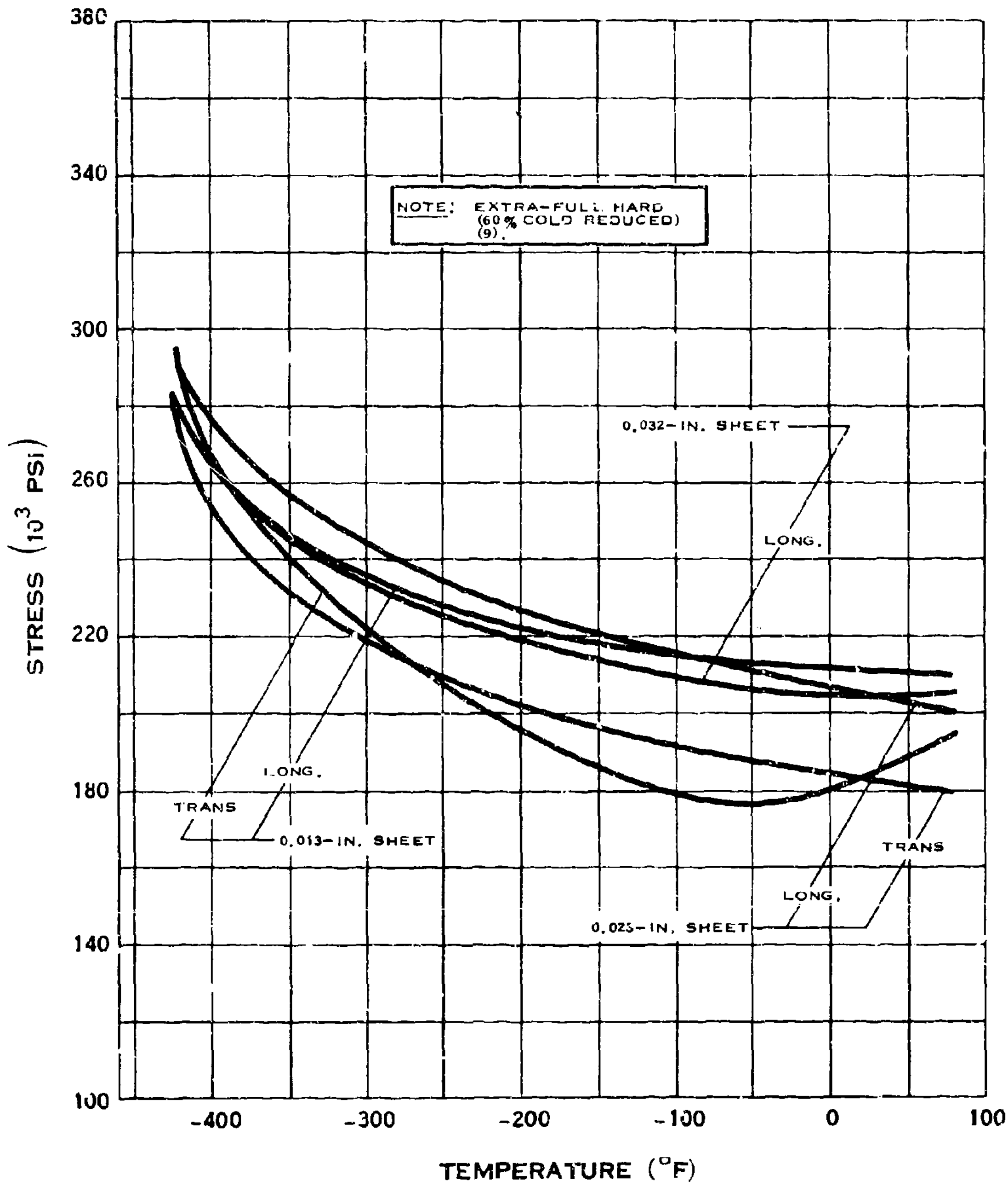
B.1.a-3



YIELD STRENGTH OF 301 STAINLESS STEEL

(7-64)

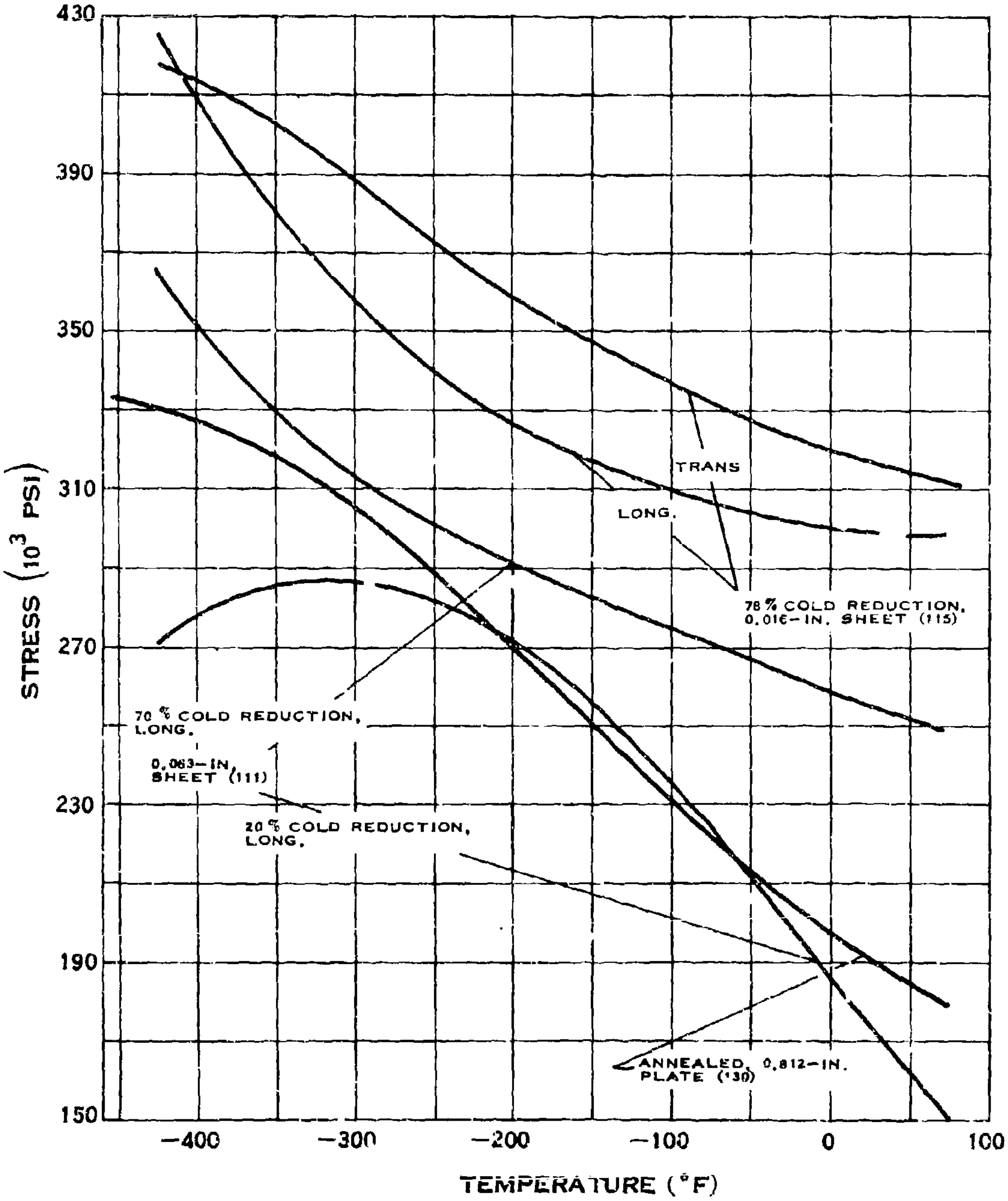
B.1.a-4



YIELD STRENGTH OF 301 STAINLESS STEEL

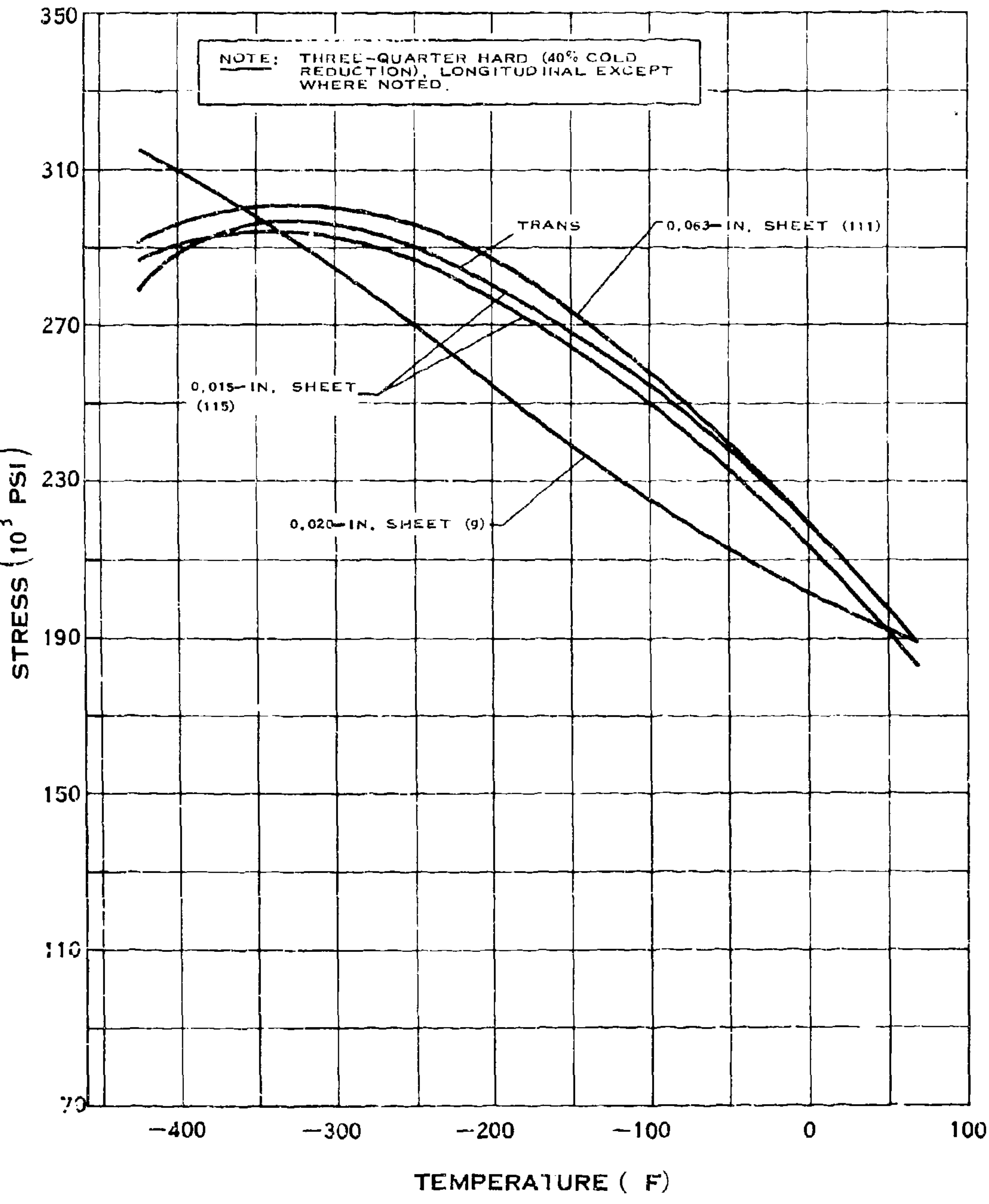
(7-64)

B.1.b



TENSILE STRENGTH OF 301 STAINLESS STEEL

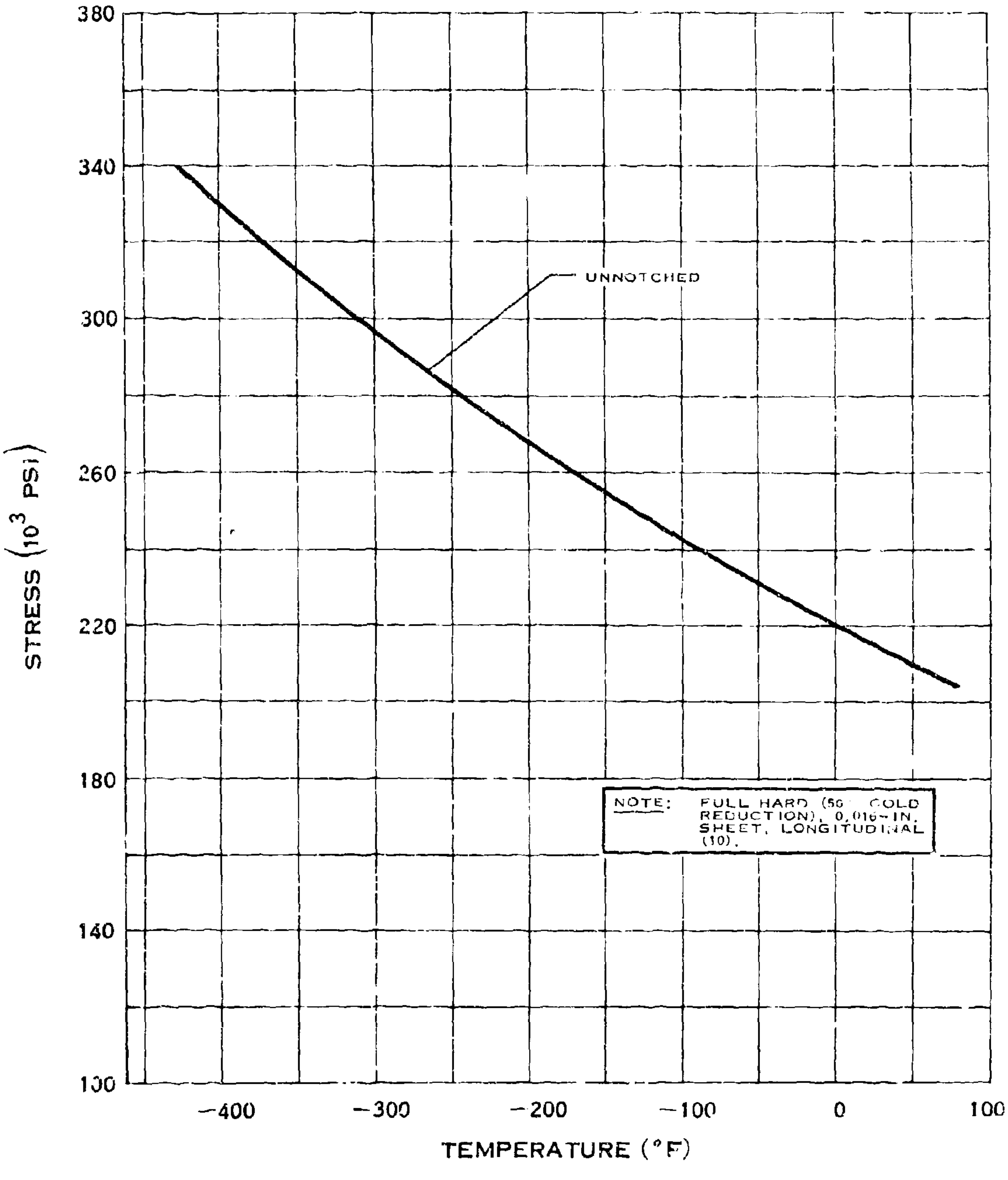
B.1.b-1



TENSILE STRENGTH OF 301 STAINLESS STEEL

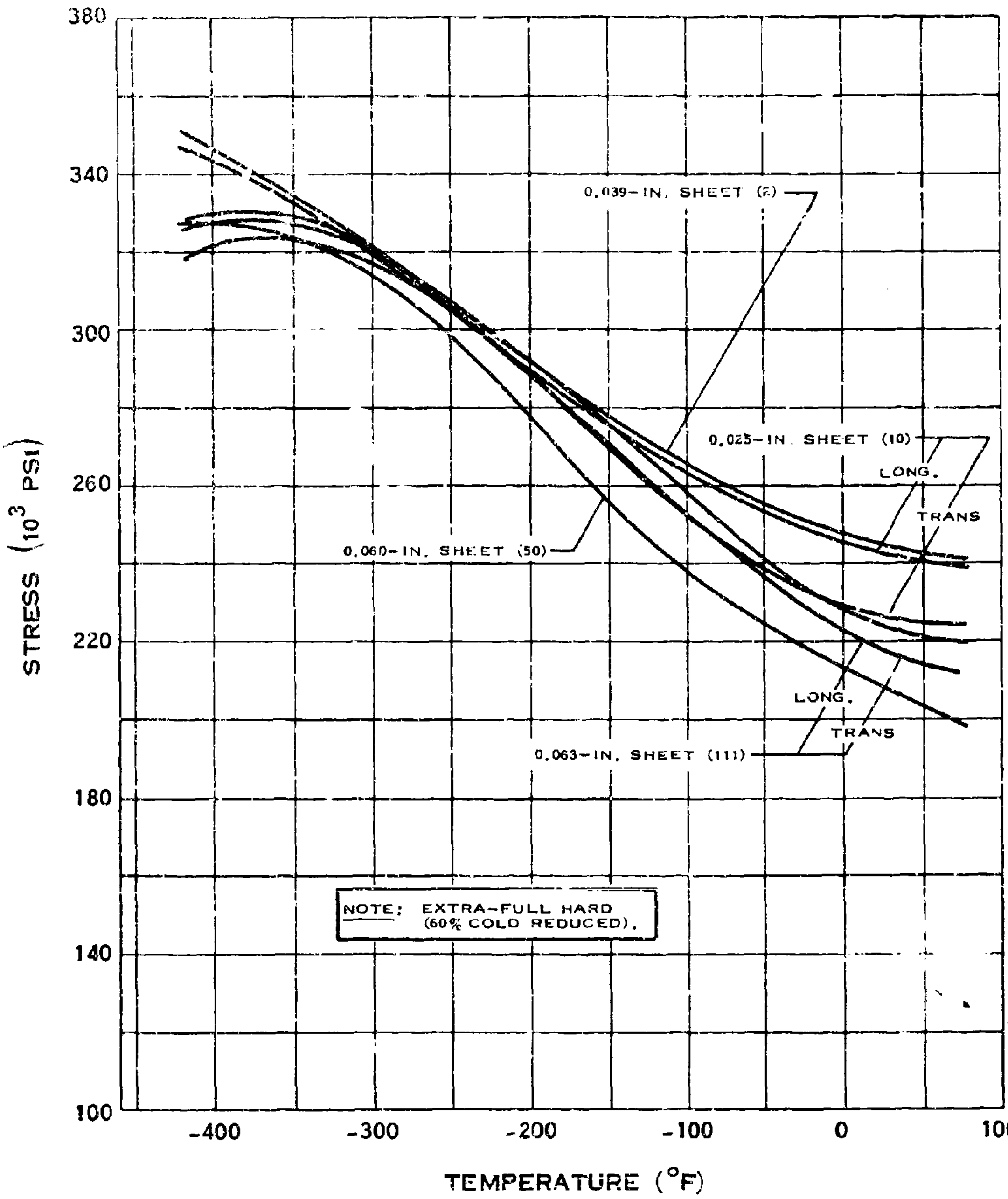
(7-64)

B.1.b-2

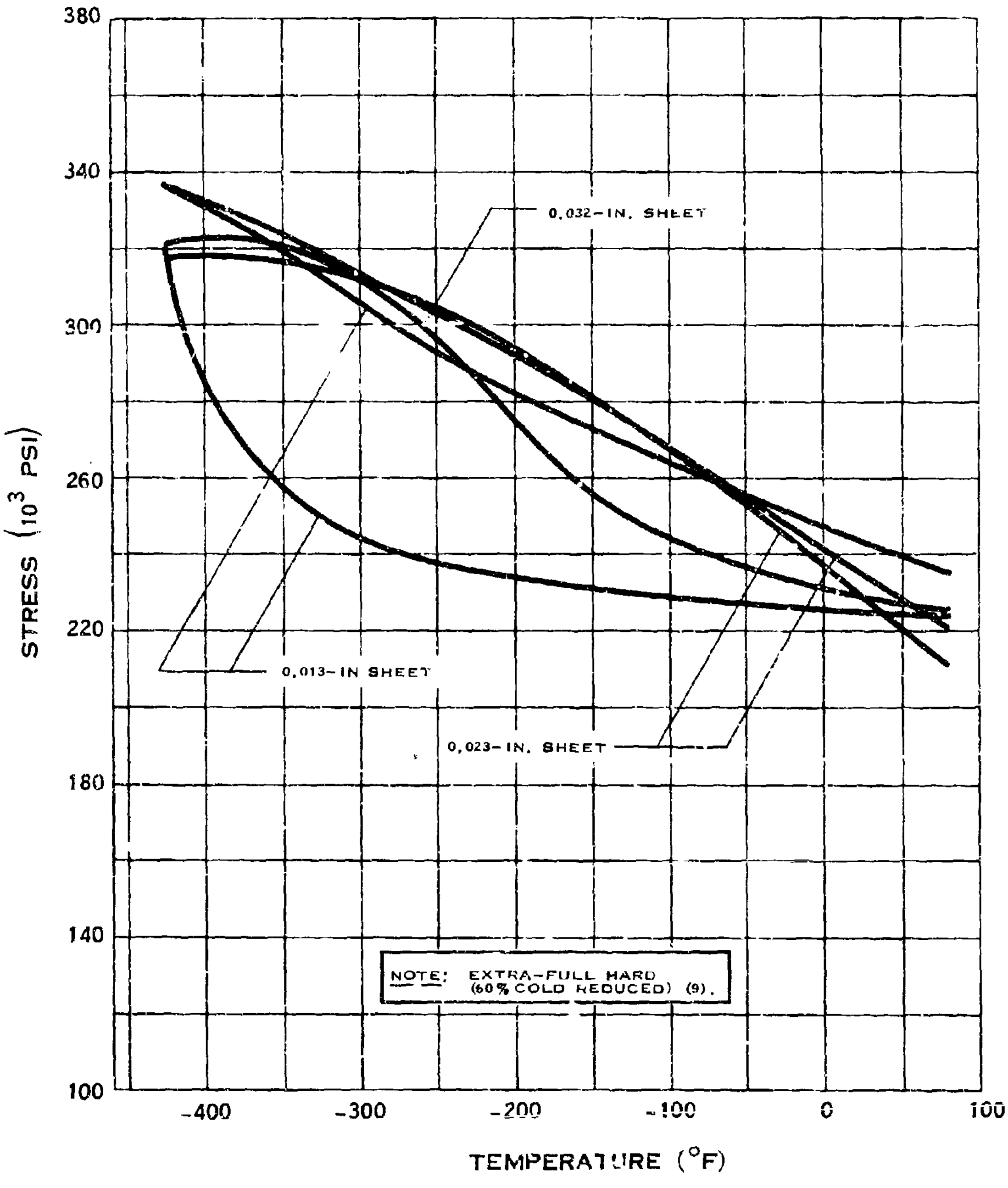


TENSILE STRENGTH OF 301 STAINLESS STEEL

(7-64)

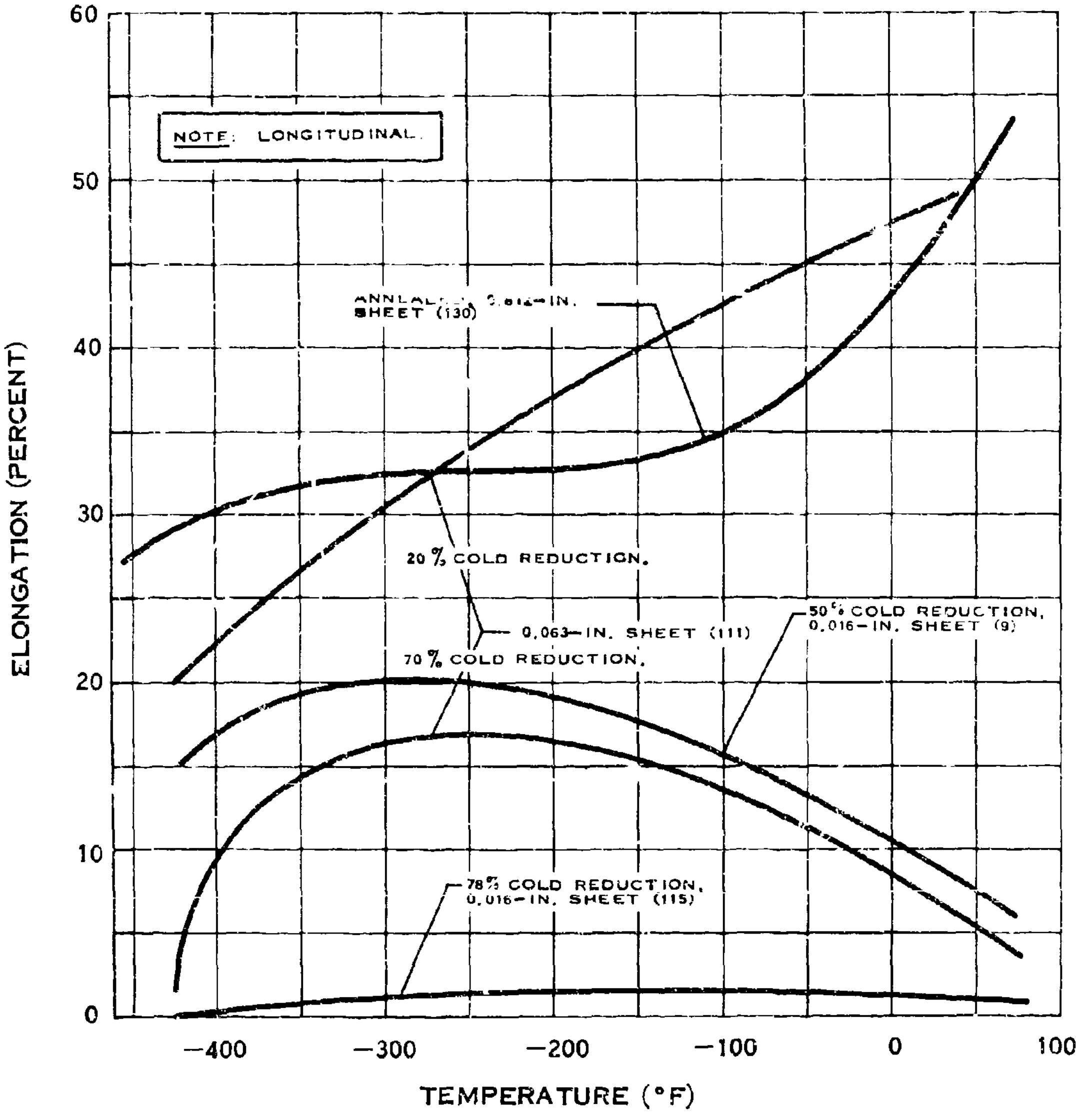


TENSILE STRENGTH OF 301 STAINLESS STEEL



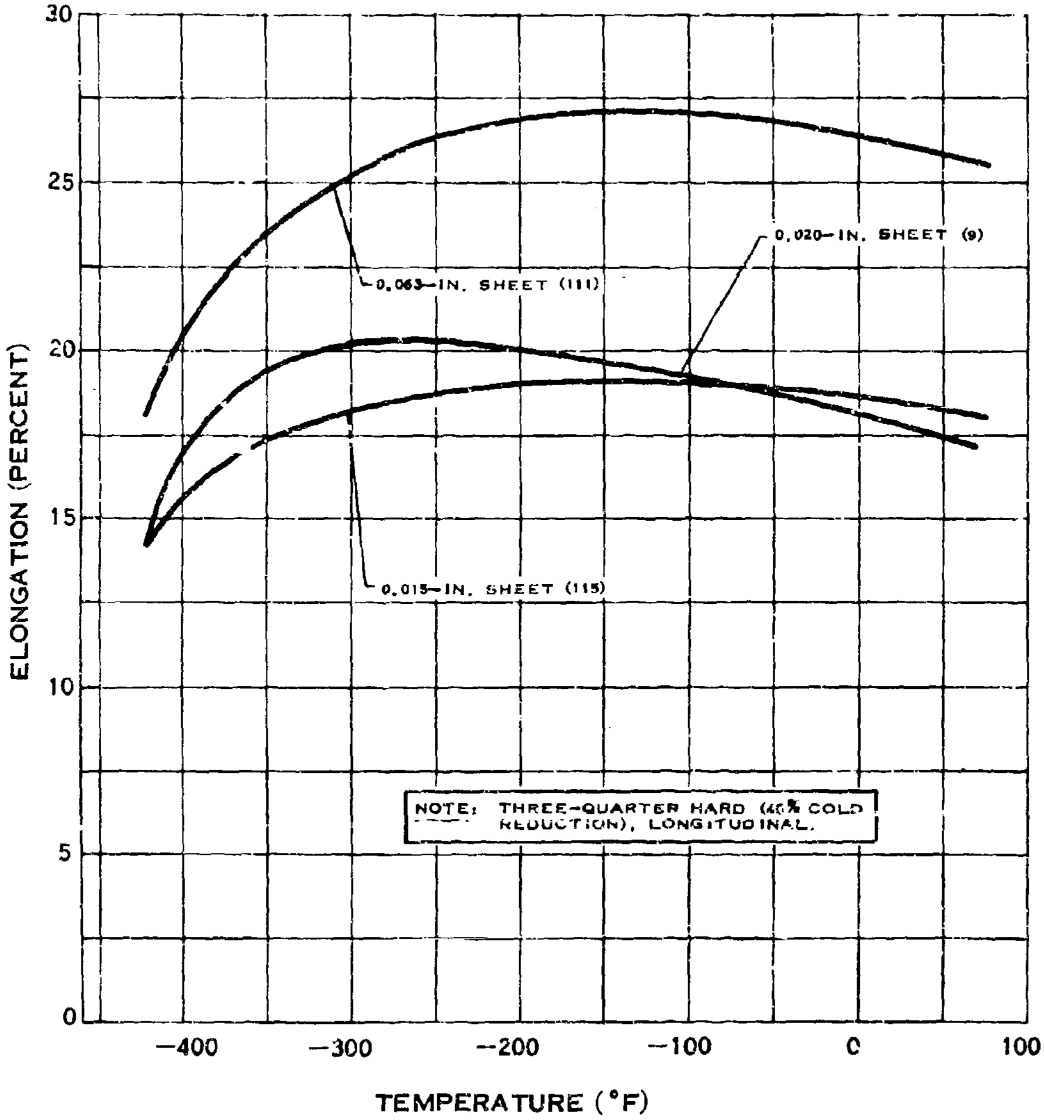
TENSILE STRENGTH OF 301 STAINLESS STEEL

B.1.c

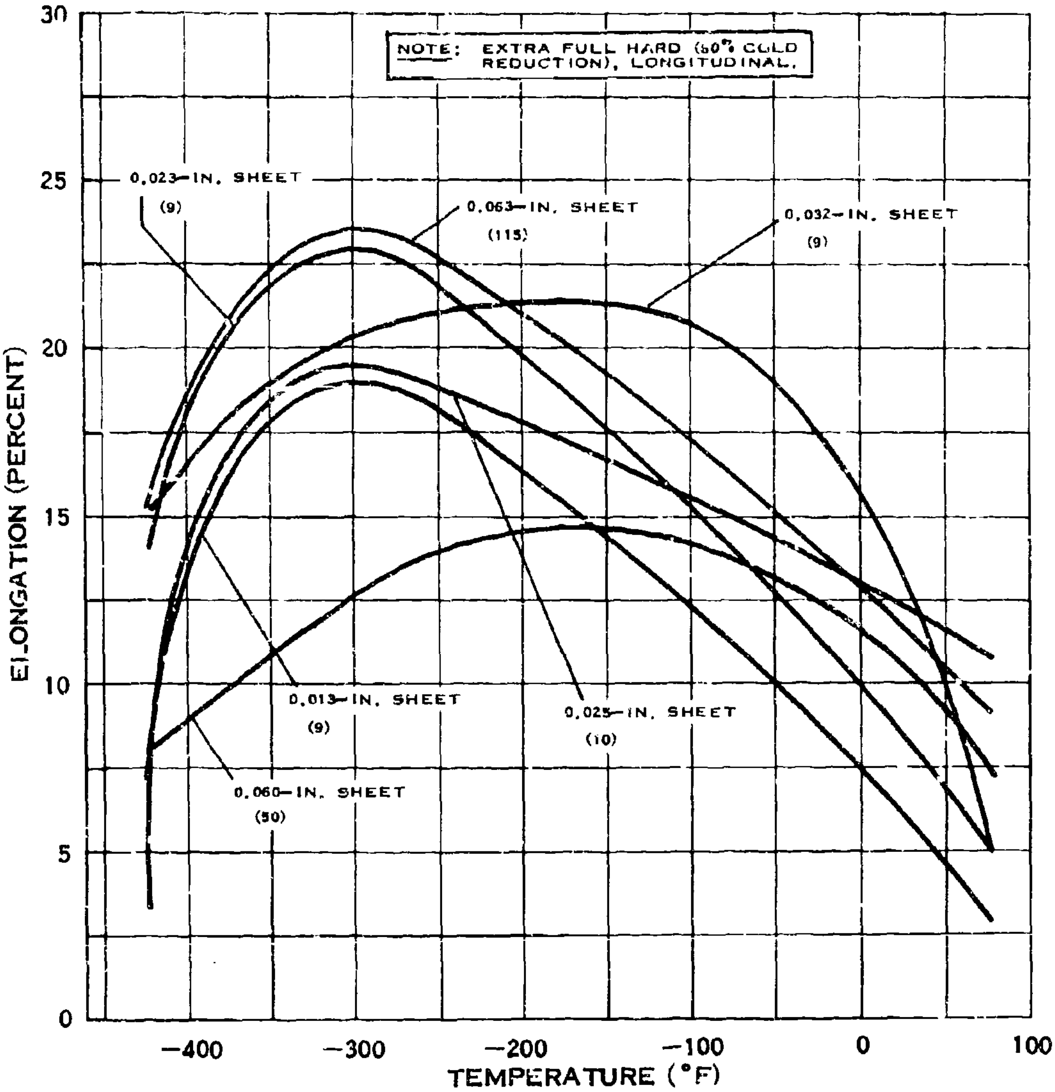


ELONGATION OF 301 STAINLESS STEEL

B.1.c-1

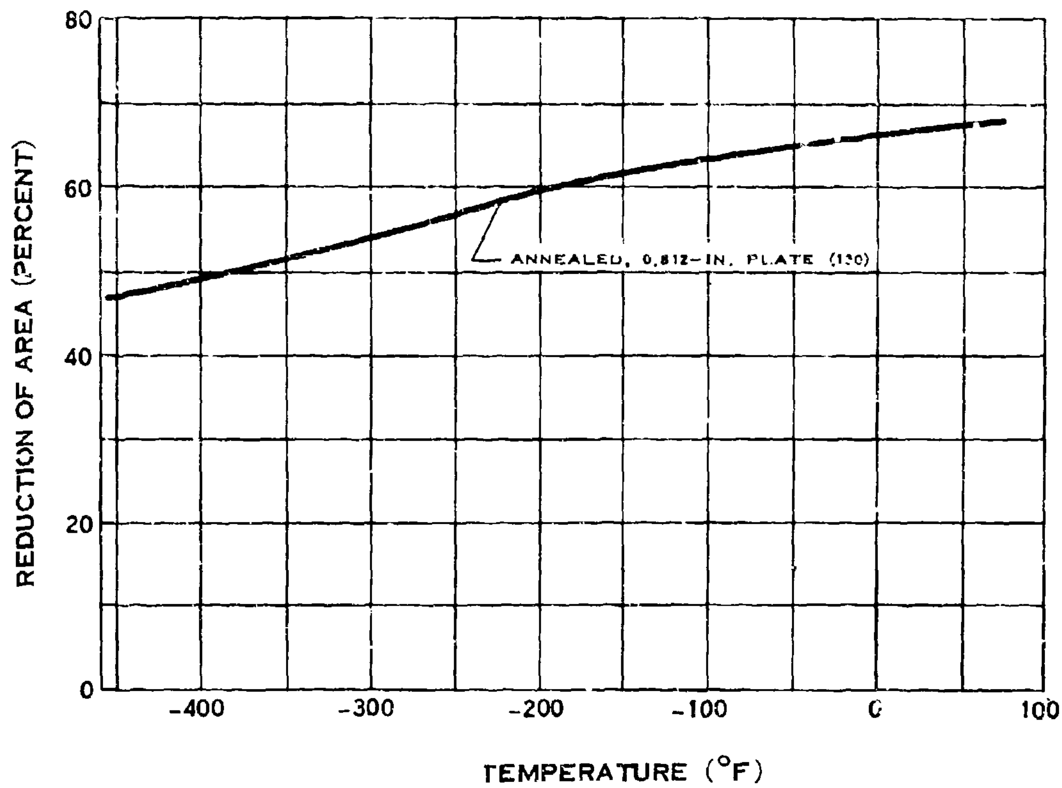


ELONGATION OF 301 STAINLESS STEEL



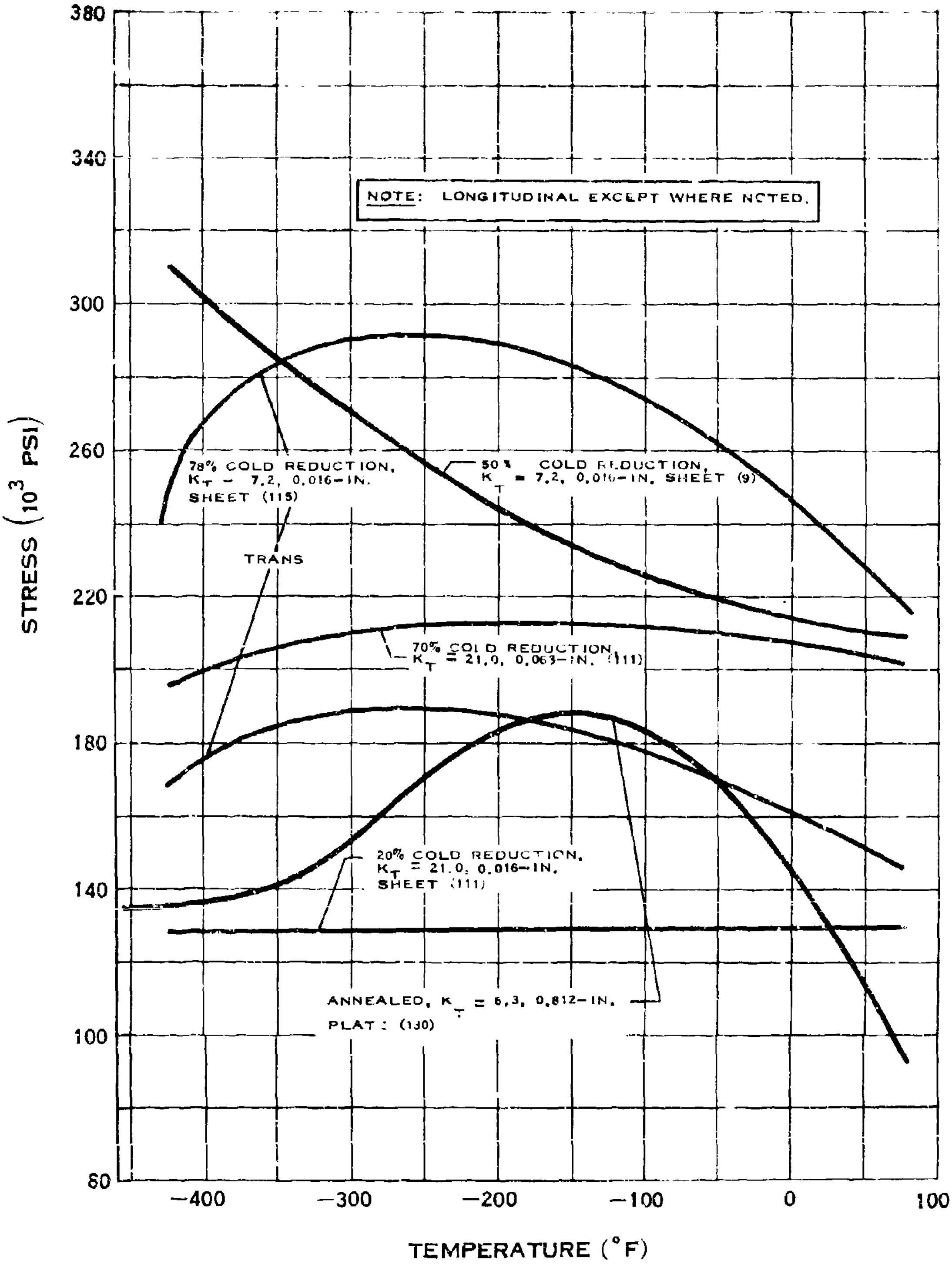
ELONGATION OF 301 STAINLESS STEEL

B.1.d



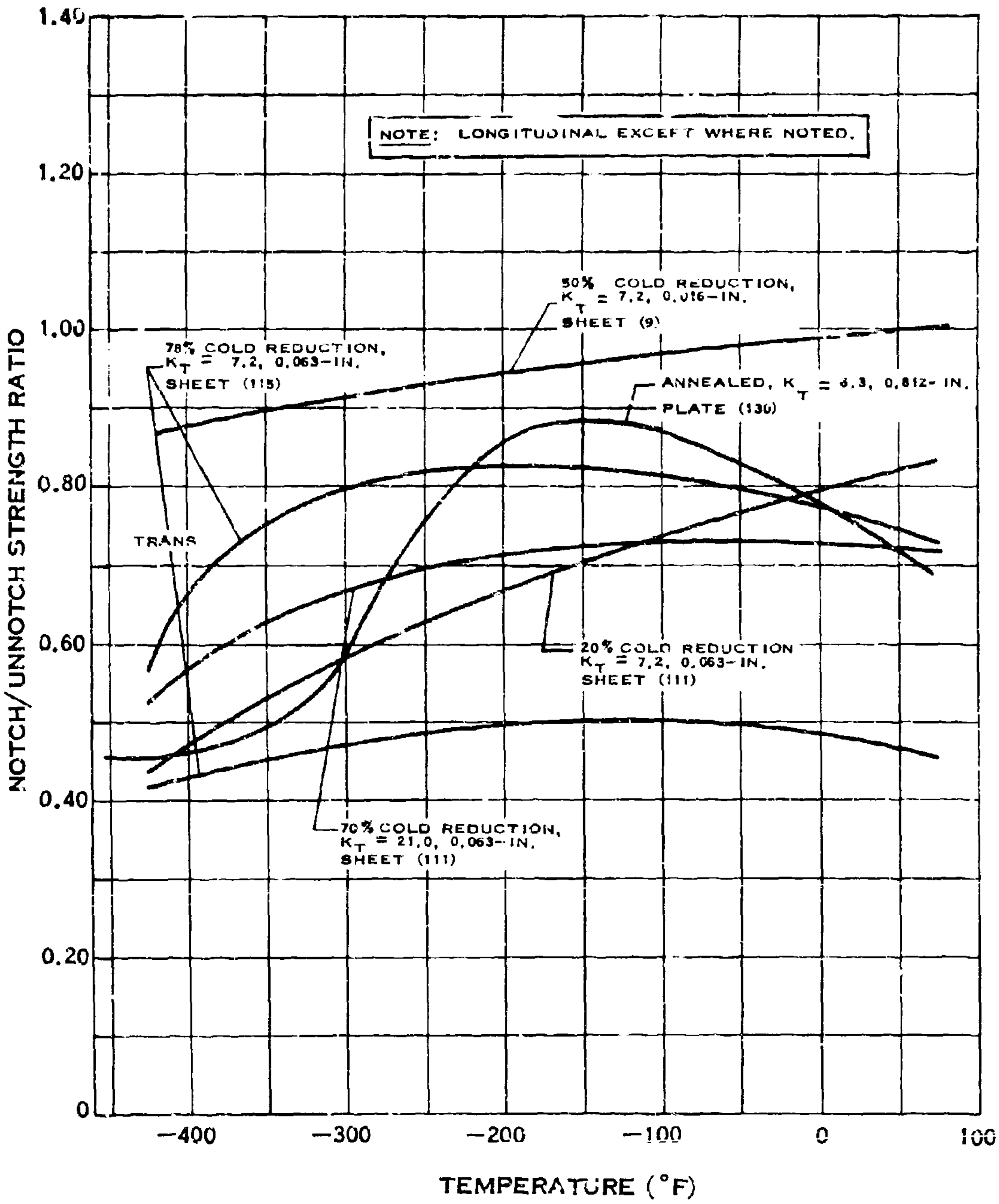
REDUCTION OF AREA OF 301 STAINLESS STEEL

B.1.e

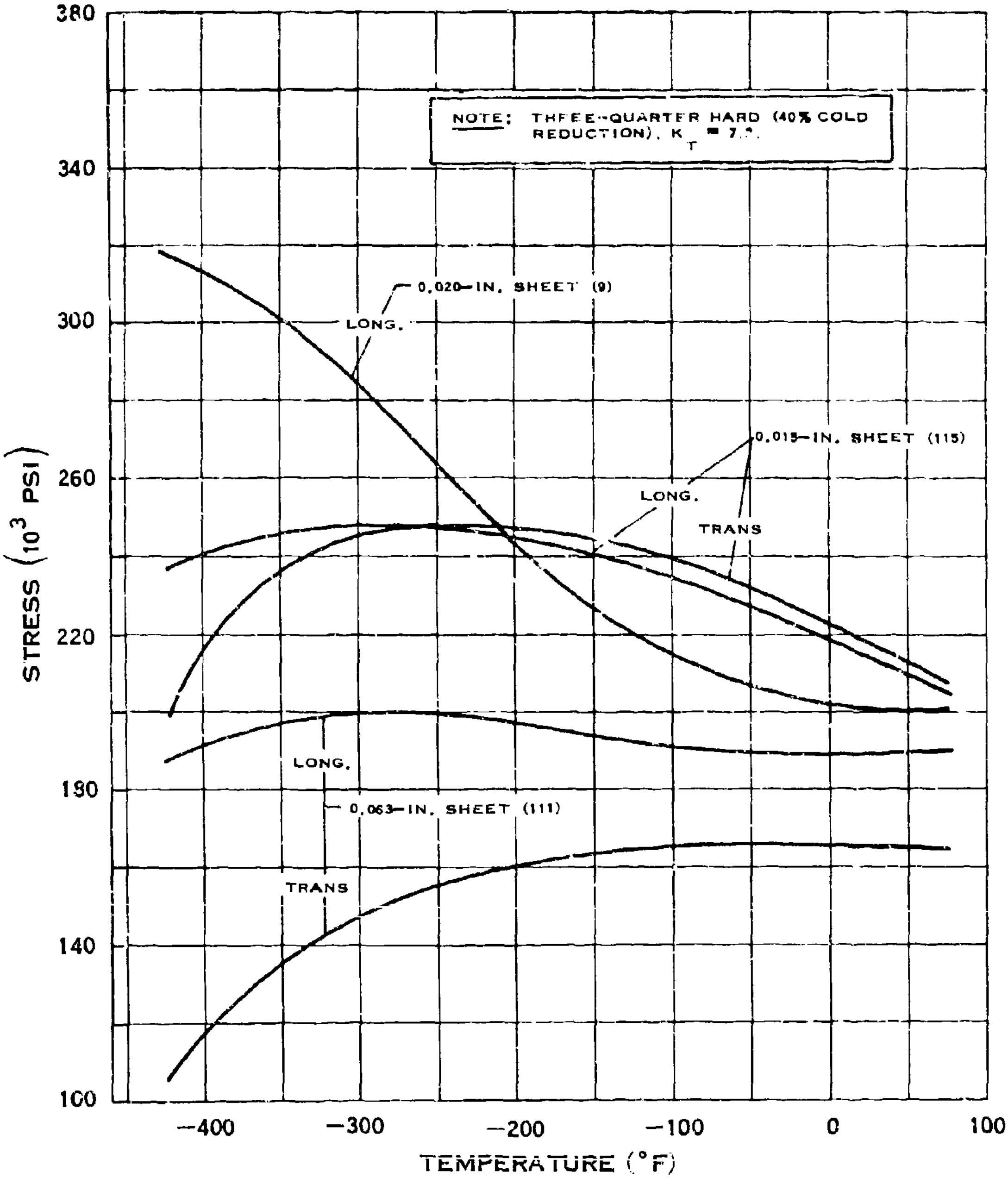


NOTCH TENSILE STRENGTH OF 301 STAINLESS STEEL

(7-65)

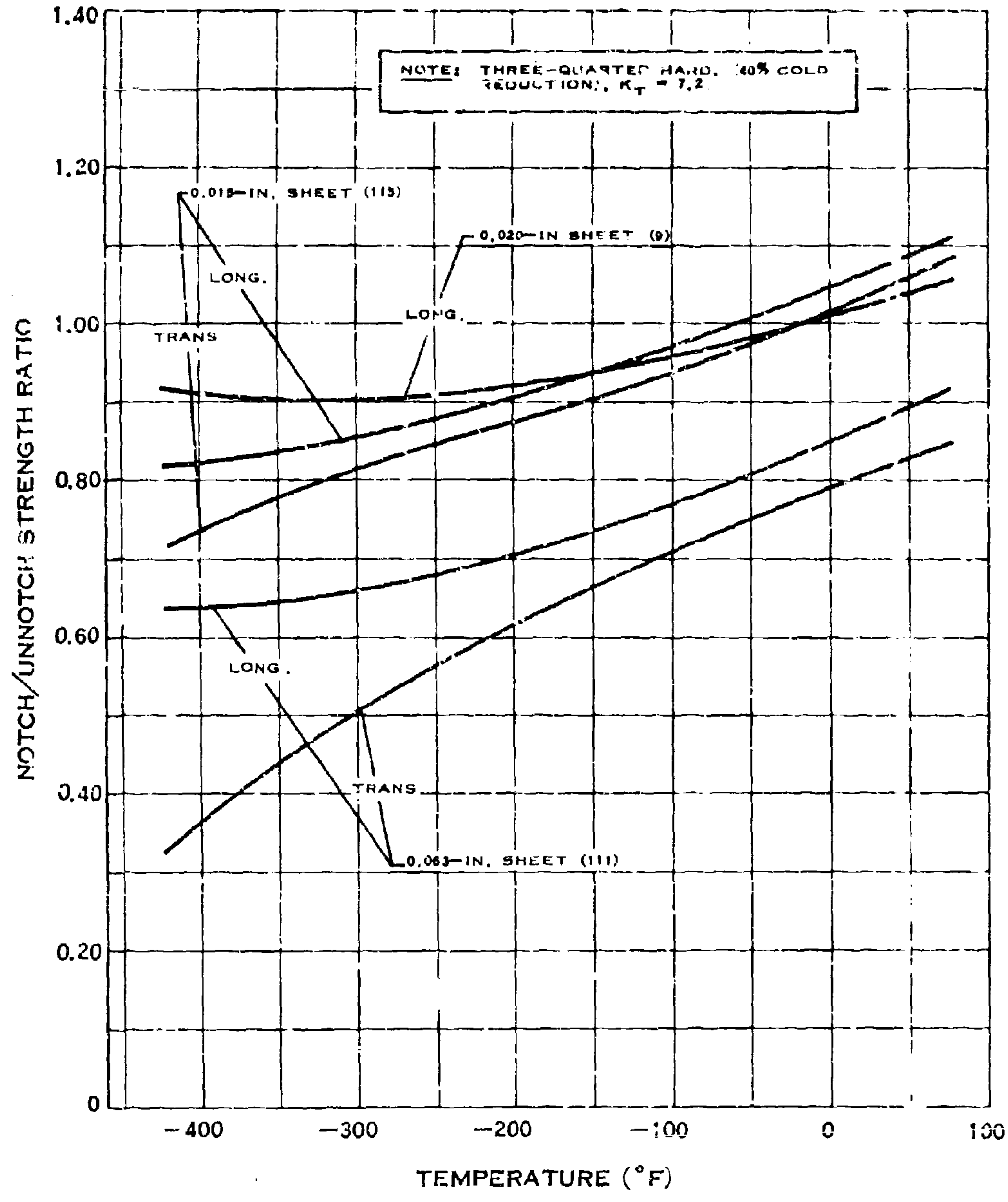


NOTCH STRENGTH RATIO OF 301 STAINLESS STEEL



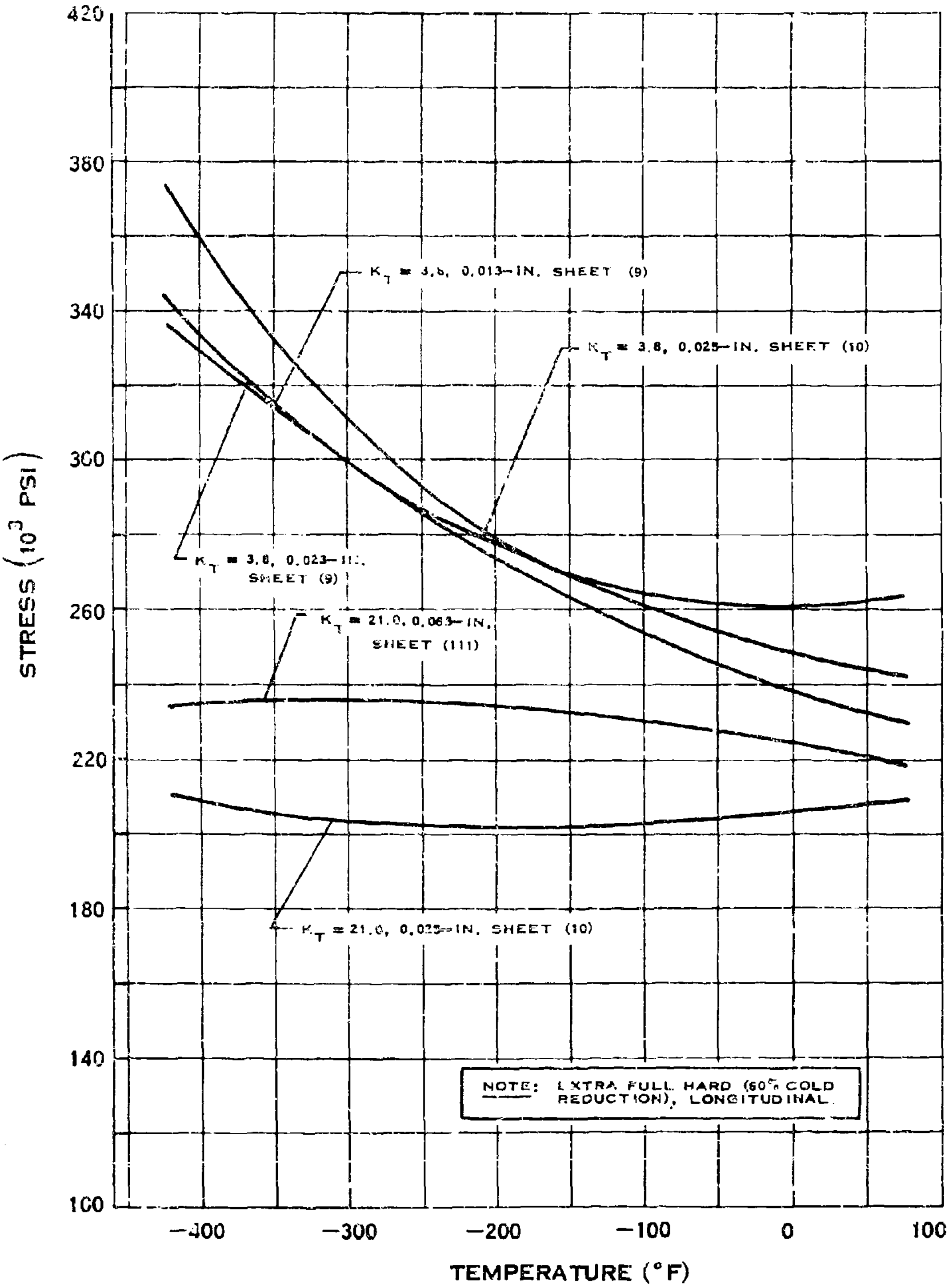
NOTCH TENSILE STRENGTH OF 301 STAINLESS STEEL

B.1.e-3



NOTCH STRENGTH OF 301 STAINLESS STEEL

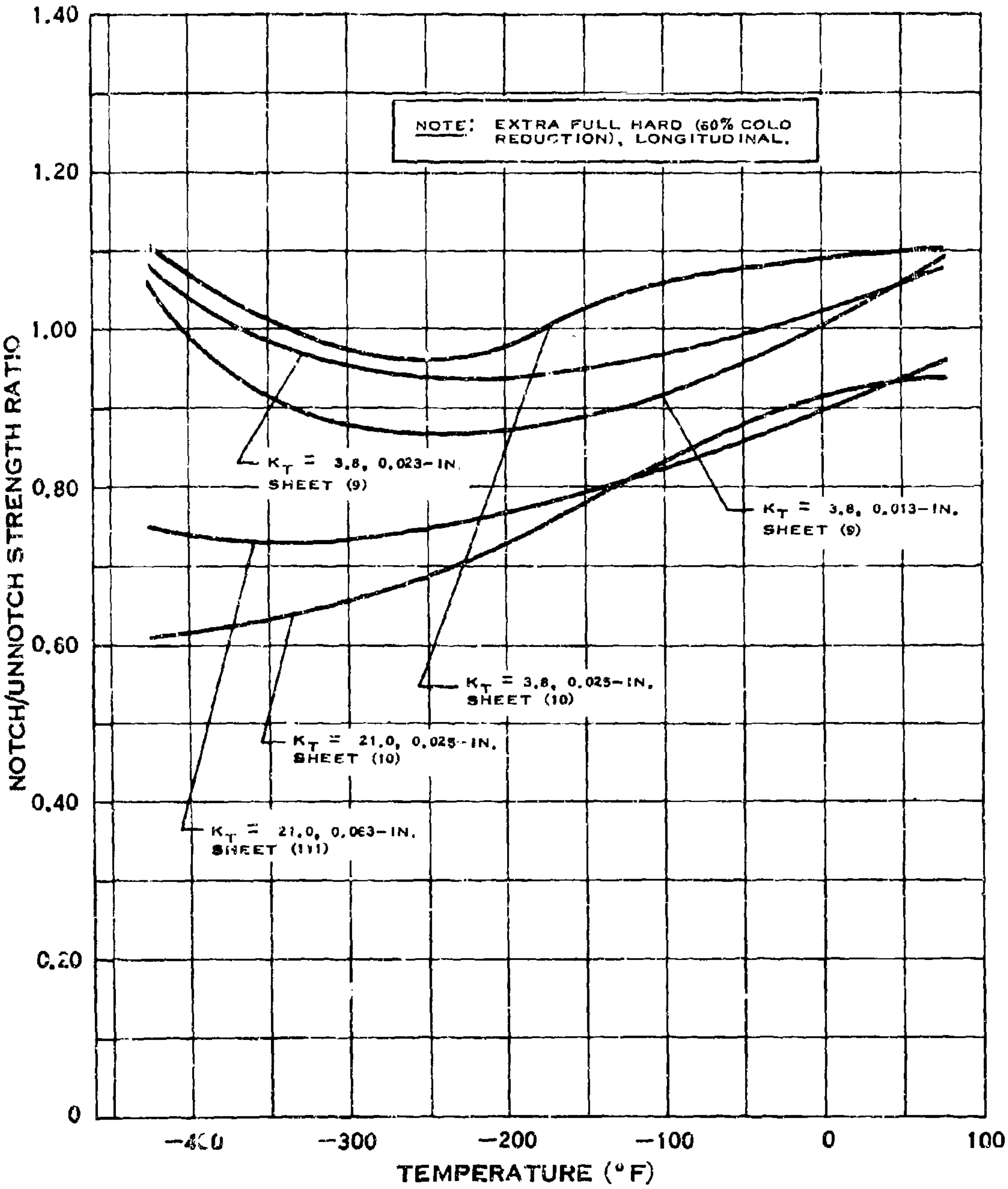
(7−65)



NOTCH TENSILE STRENGTH OF 301 STAINLESS STEEL

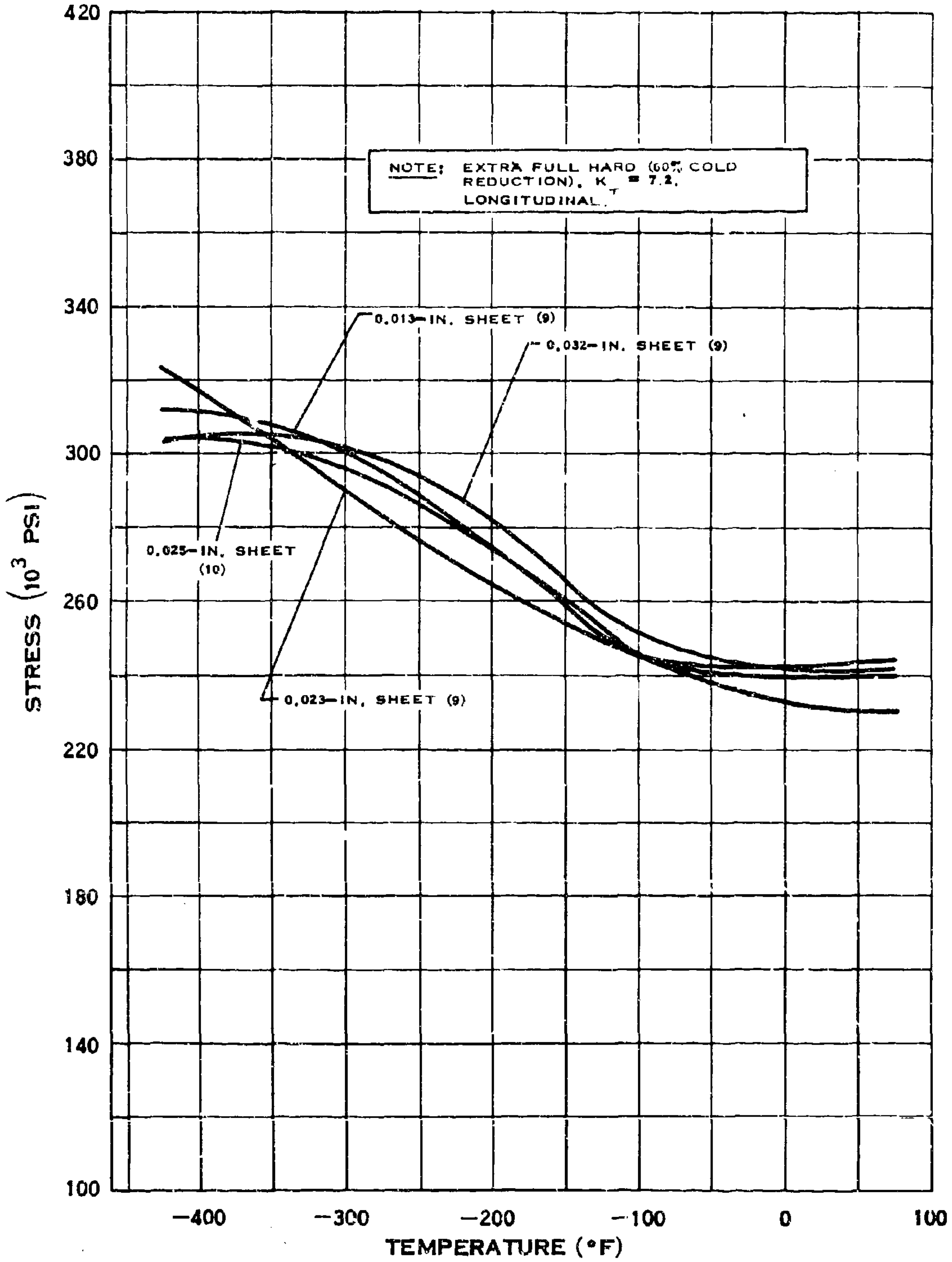
(7-65)

B.1.e-5



NOTCH STRENGTH RATIO OF 301 STAINLESS STEEL

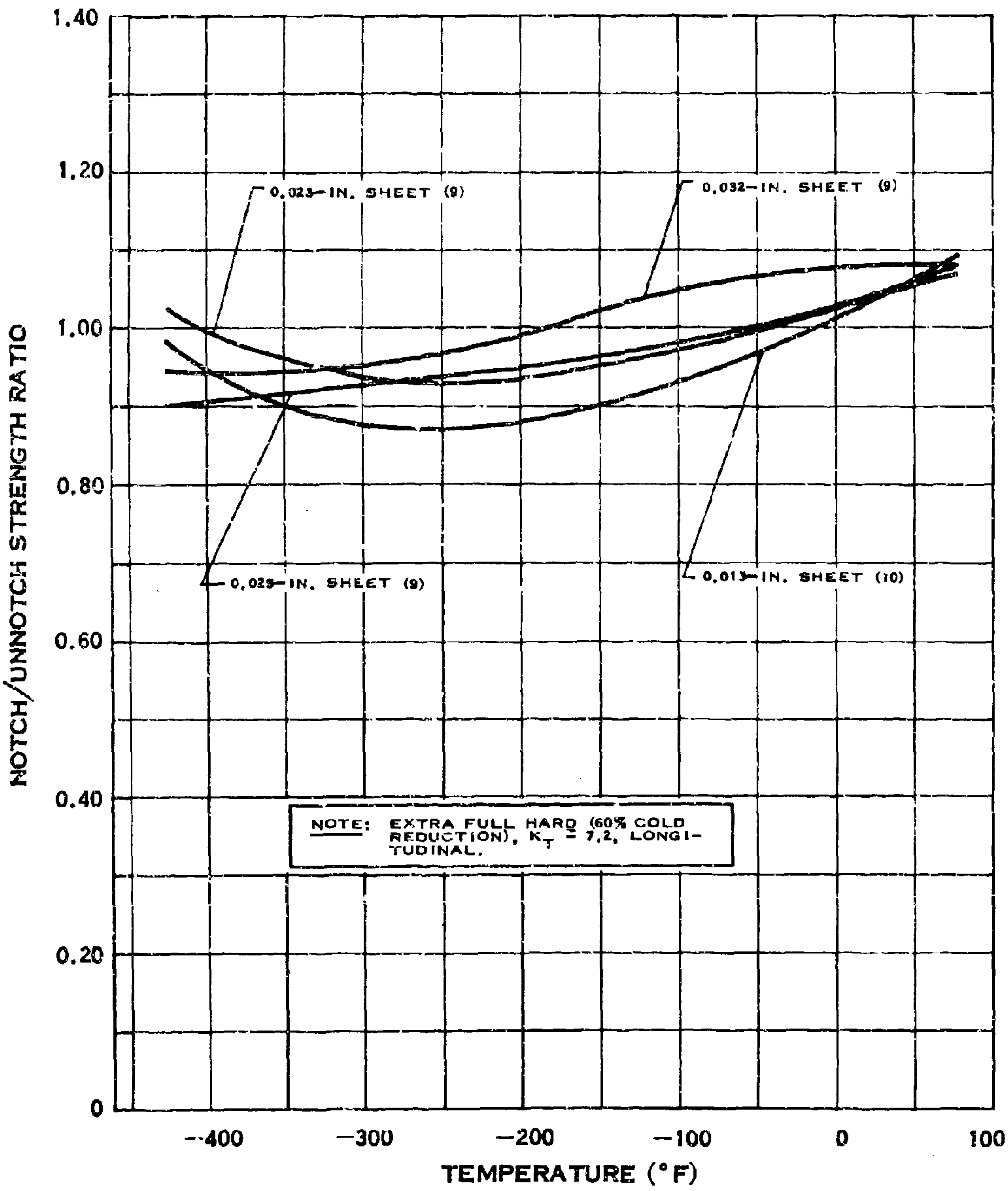
(7-64)



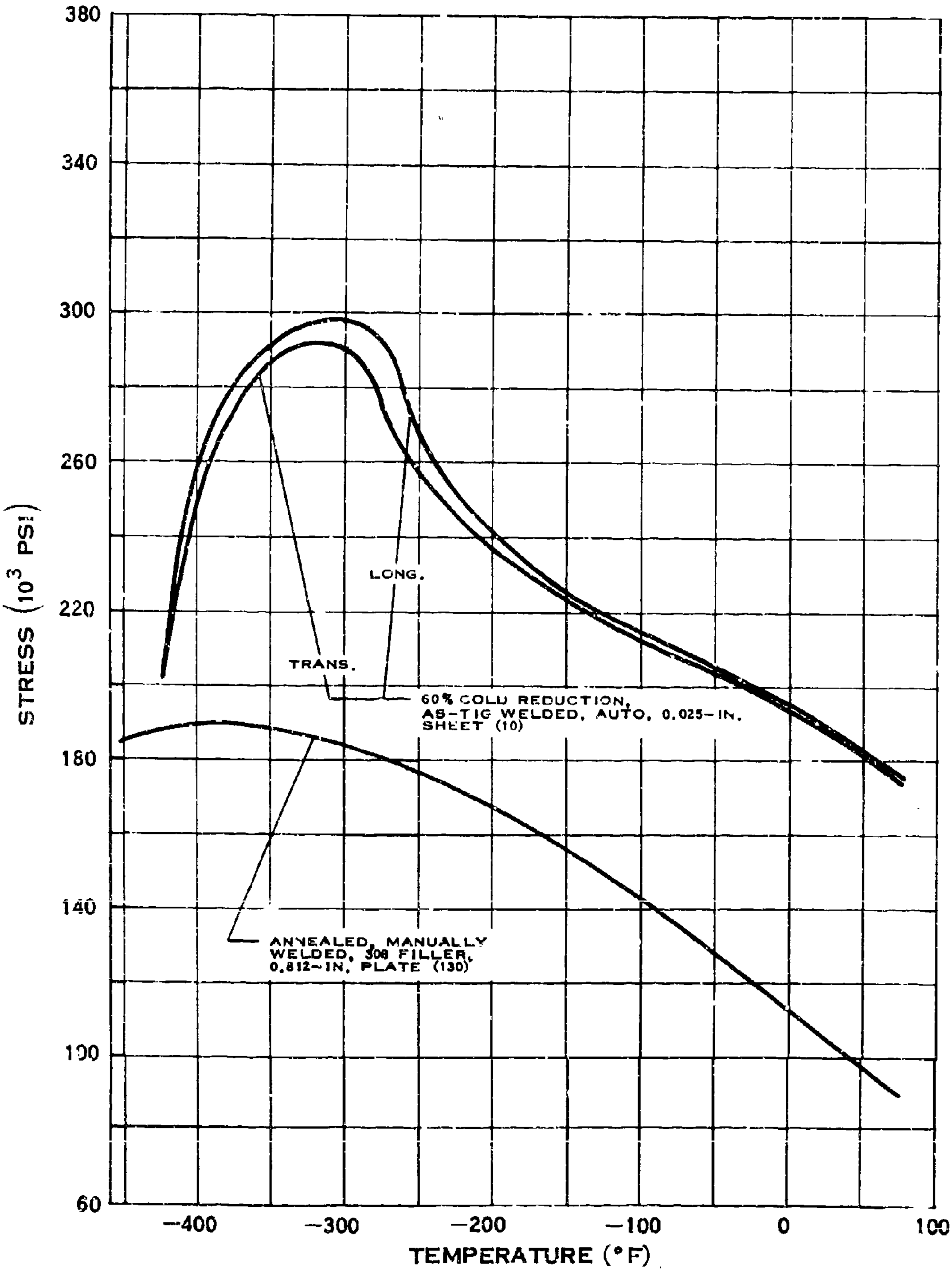
NOTCH TENSILE STRENGTH OF 301 STAINLESS STEEL

(7-65)

B.1.e-7



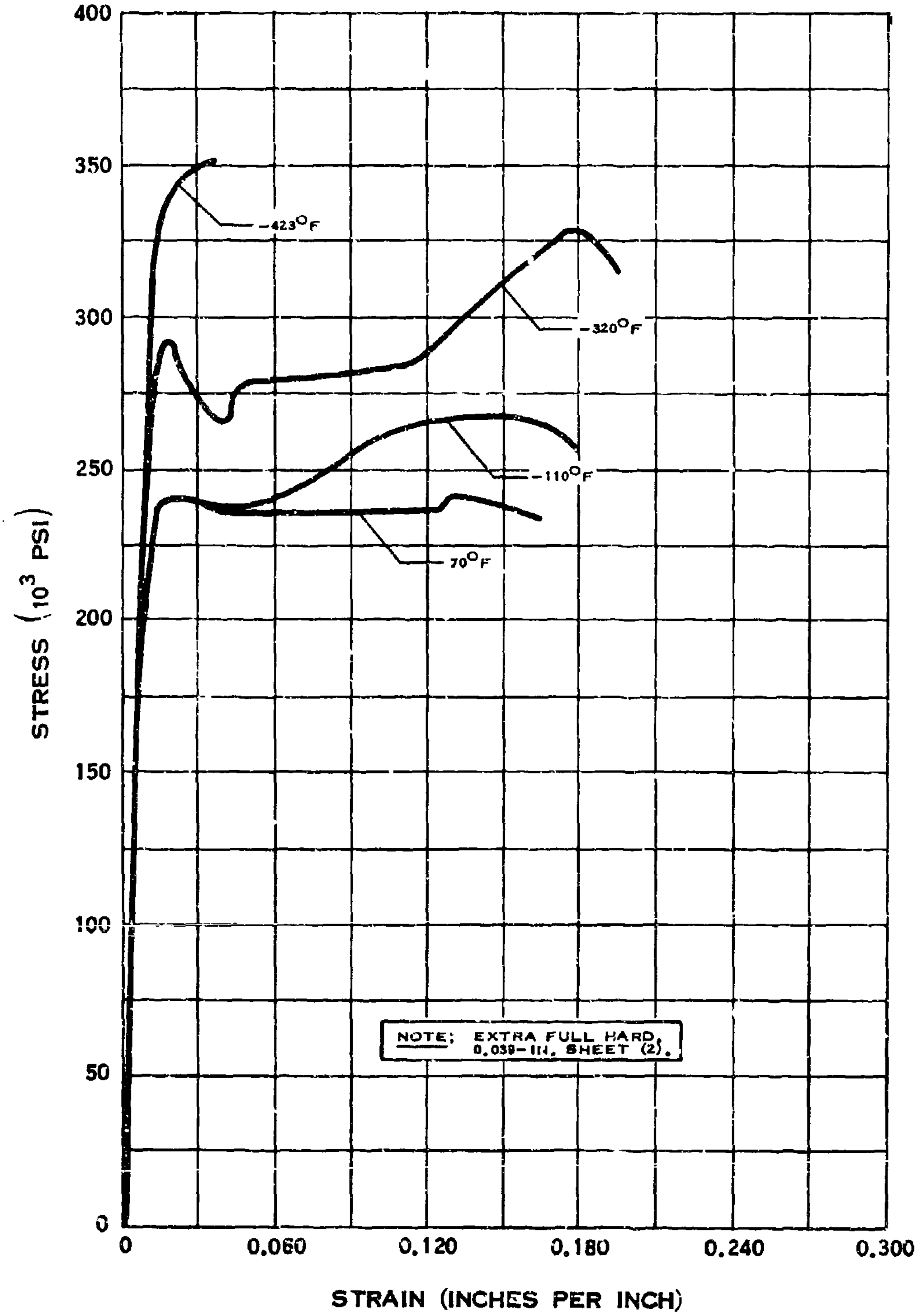
NOTCH STRENGTH RATIO OF 301 STAINLESS STEEL



WELD TENSILE STRENGTH OF 301 STAINLESS STEEL

(7-65)

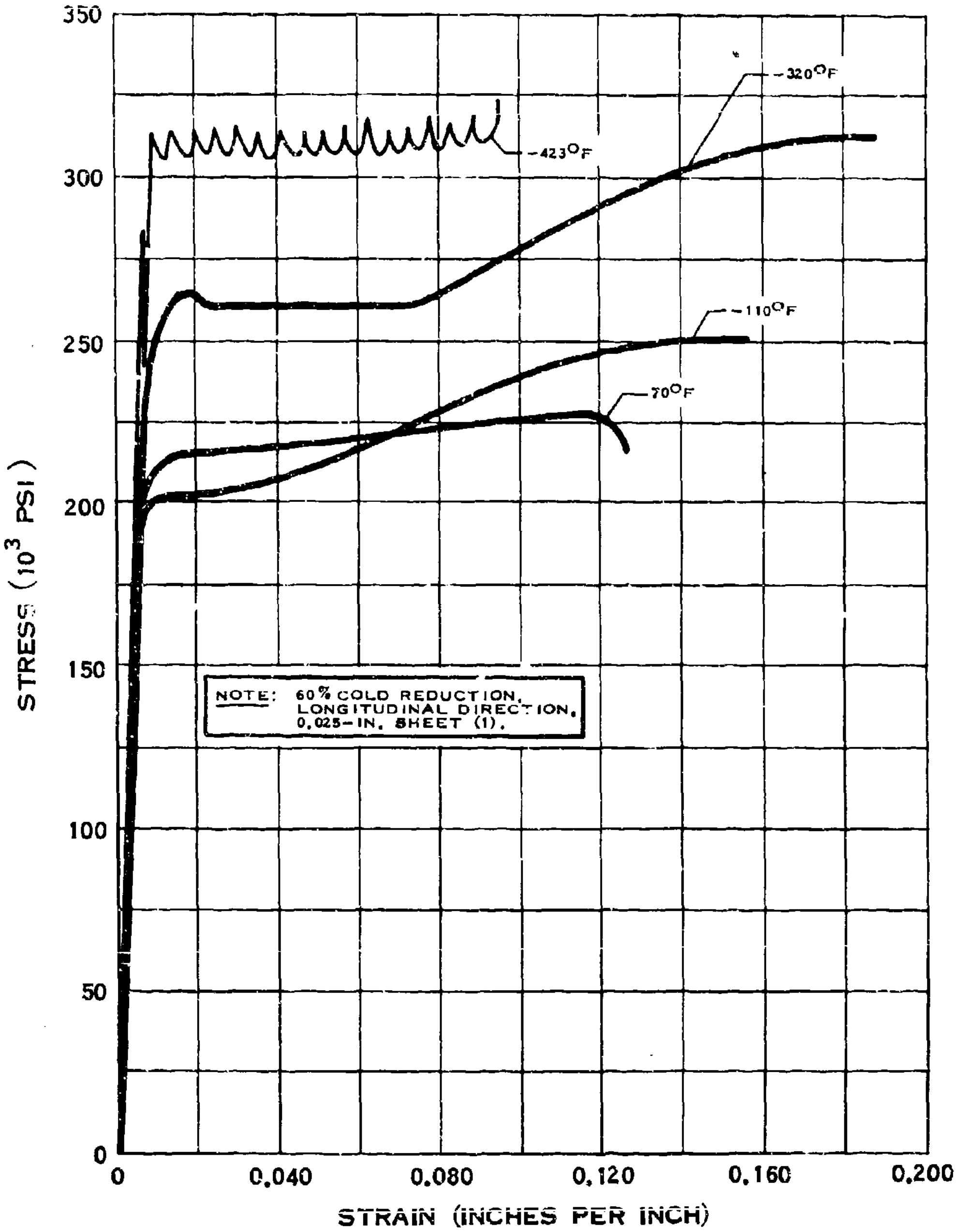
B.1.h



STRESS-STRAIN DIAGRAM FOR 301 STAINLESS STEEL

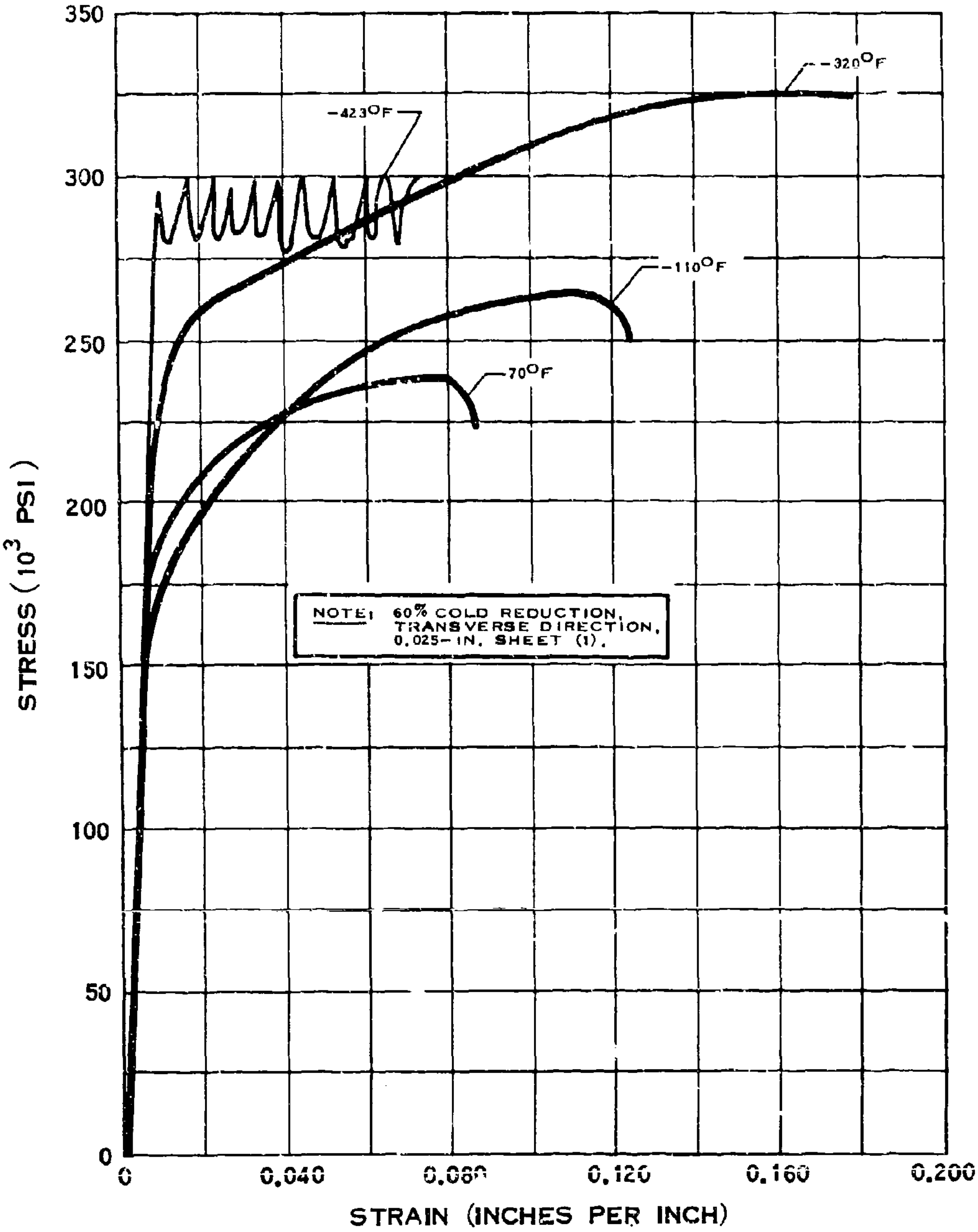
(7-64)

B.1.h-1



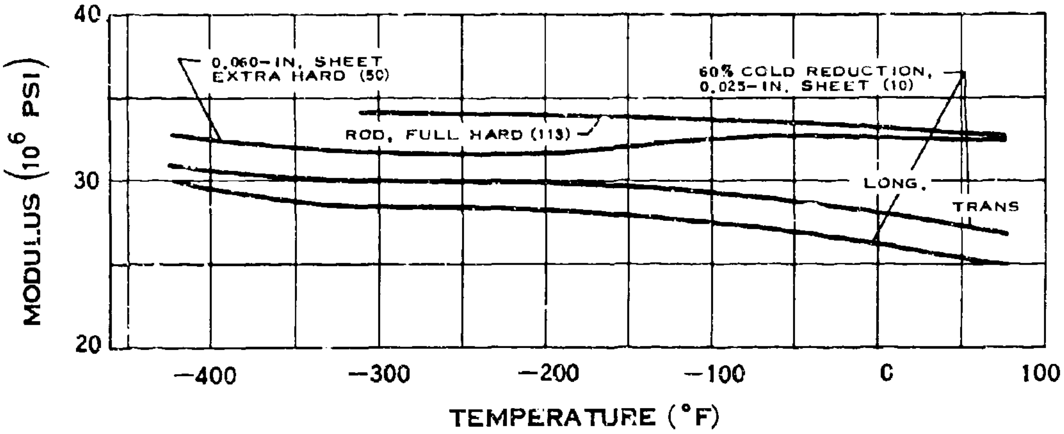
STRESS-STRAIN DIAGRAM FOR 301 STAINLESS STEEL

(1-65)



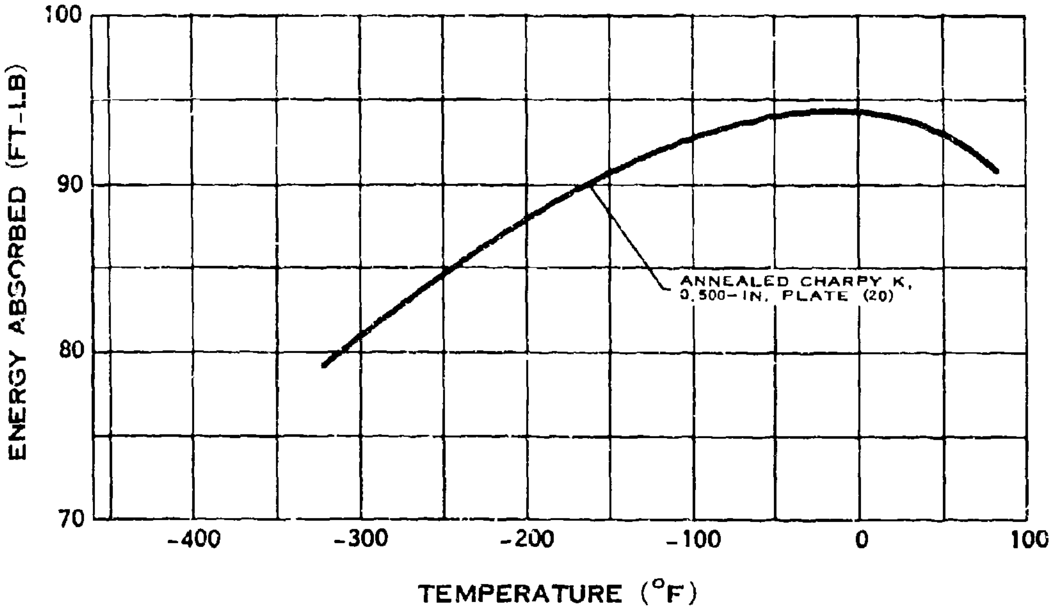
STRESS-STRAIN DIAGRAM FOR 301 STAINLESS STEEL

B.1.i

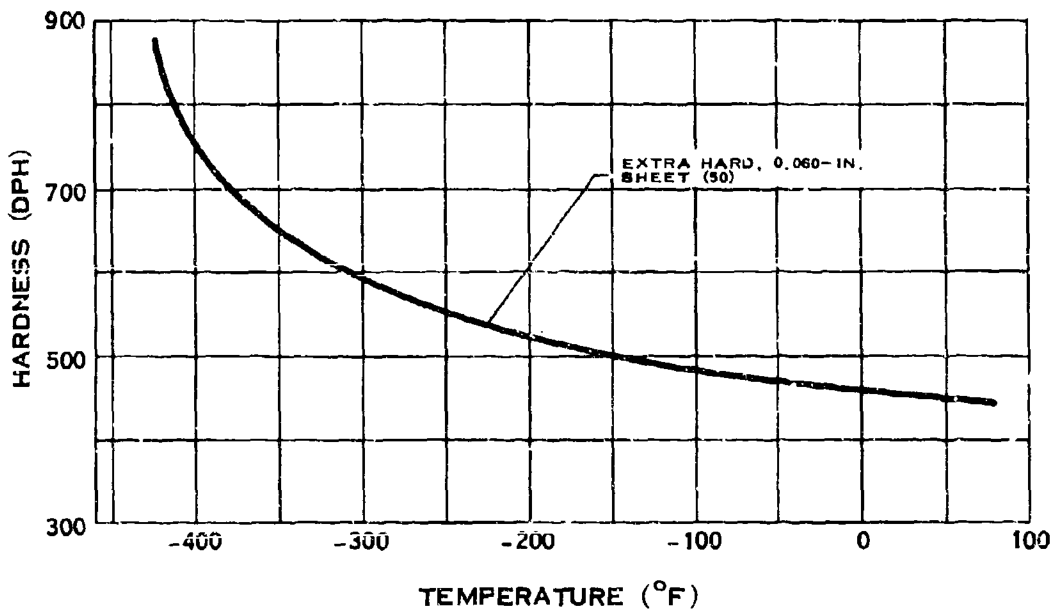


MODULUS OF ELASTICITY OF 301 STAINLESS STEEL

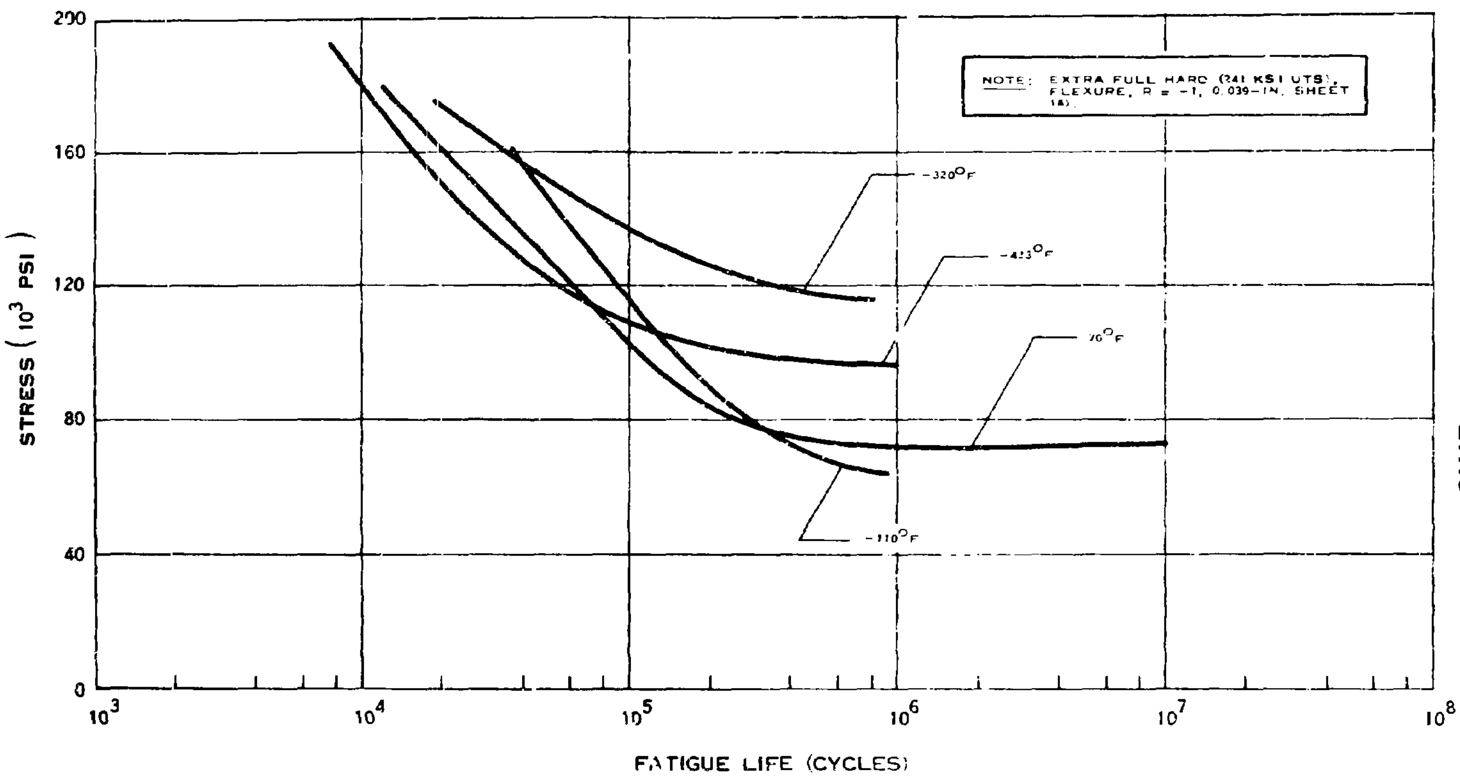
B.1.jk



IMPACT STRENGTH OF 301 STAINLESS STEEL

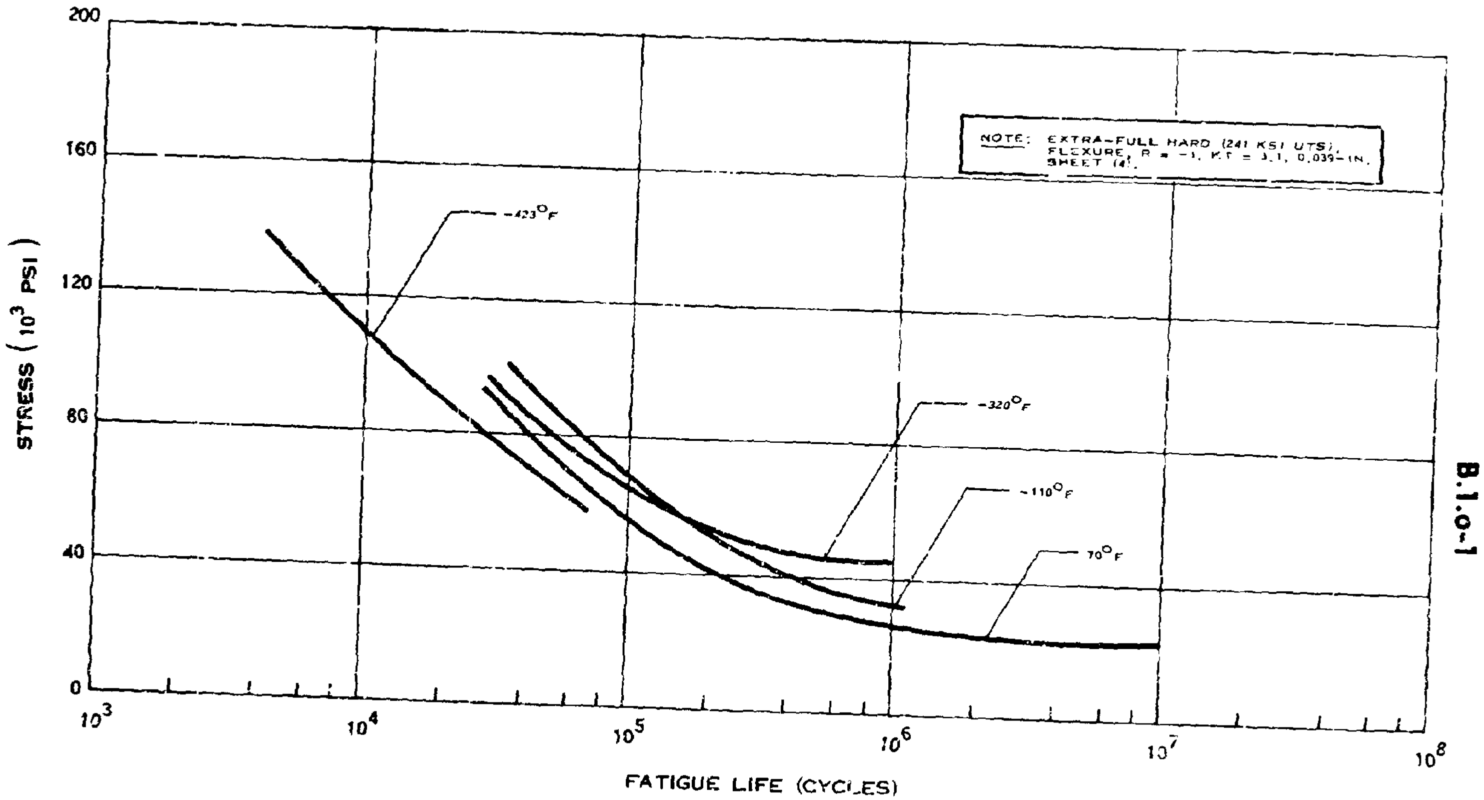


HARDNESS OF 301 STAINLESS STEEL



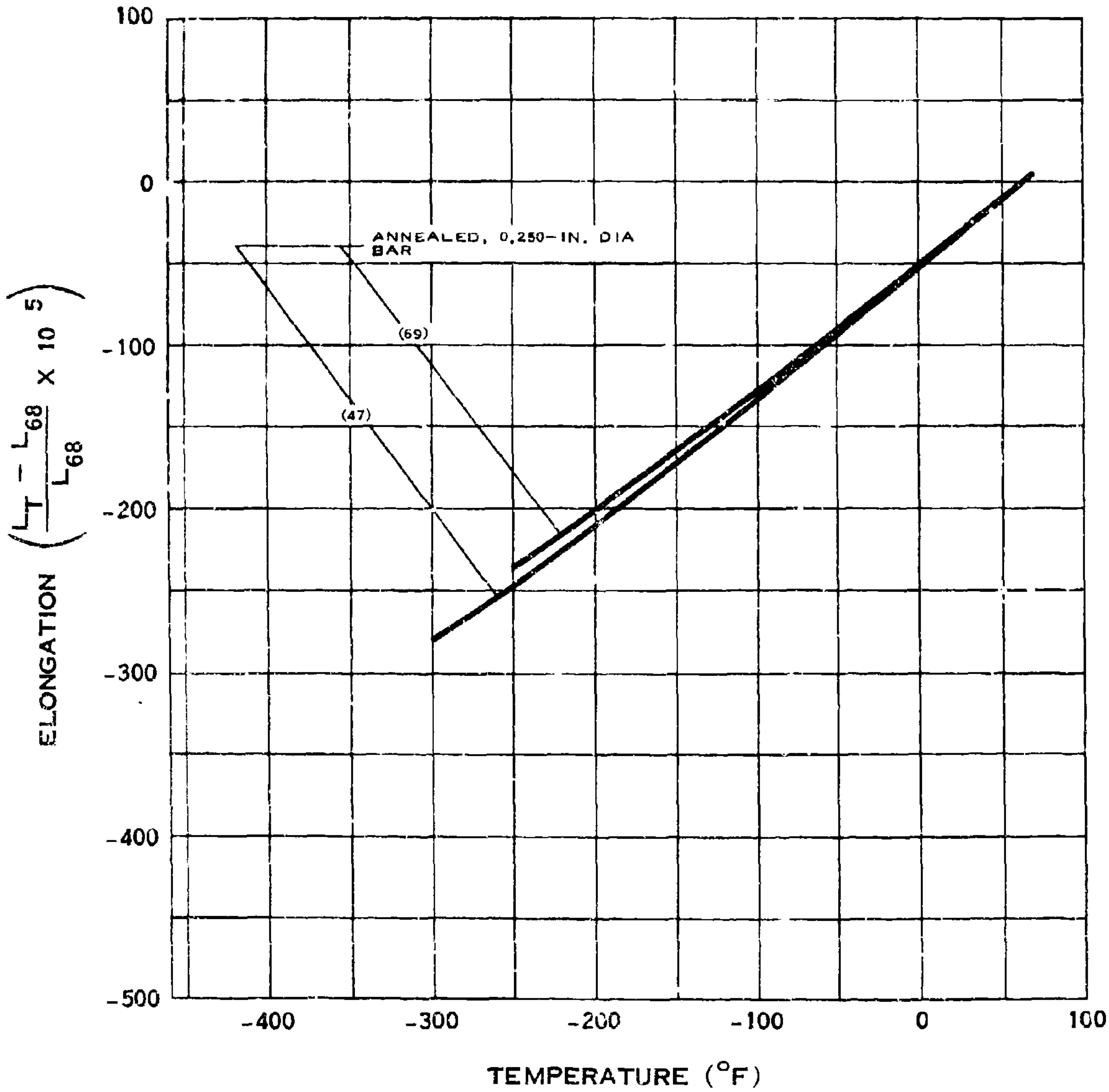
FATIGUE STRENGTH OF 301 STAINLESS STEEL

(7-64)



NOTCH FATIGUE STRENGTH OF 301 STAINLESS STEEL

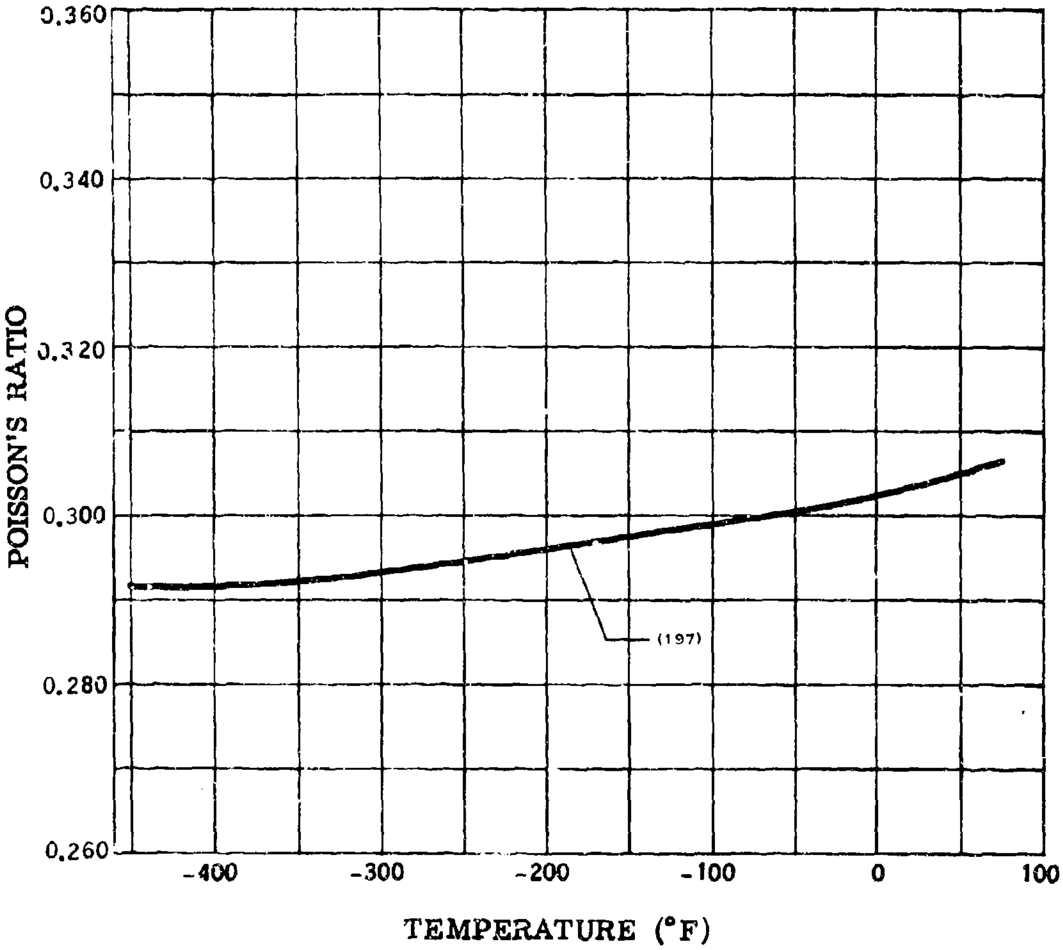
B.1.f



THERMAL EXPANSION OF 301 STAINLESS STEEL

(7-64)

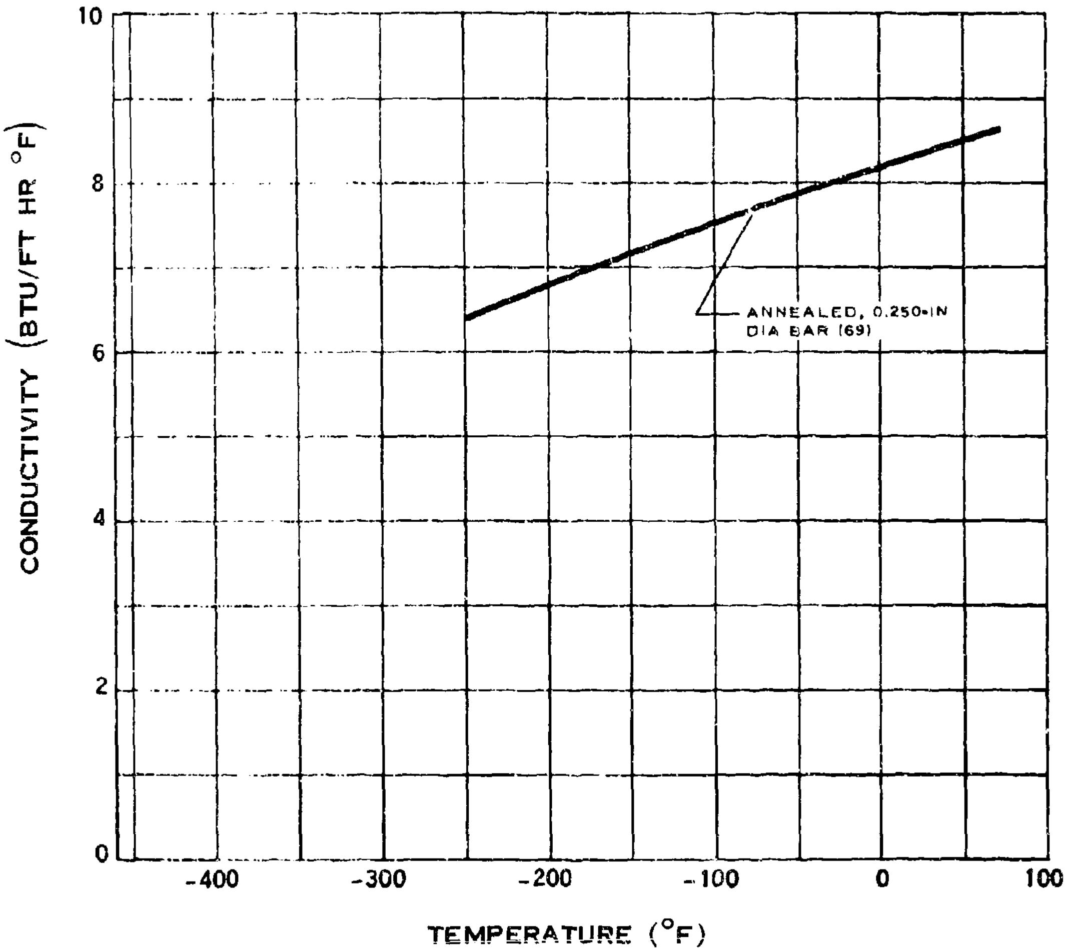
B.1.u



POISSON'S RATIO OF 301 STAINLESS STEEL

(6-68)

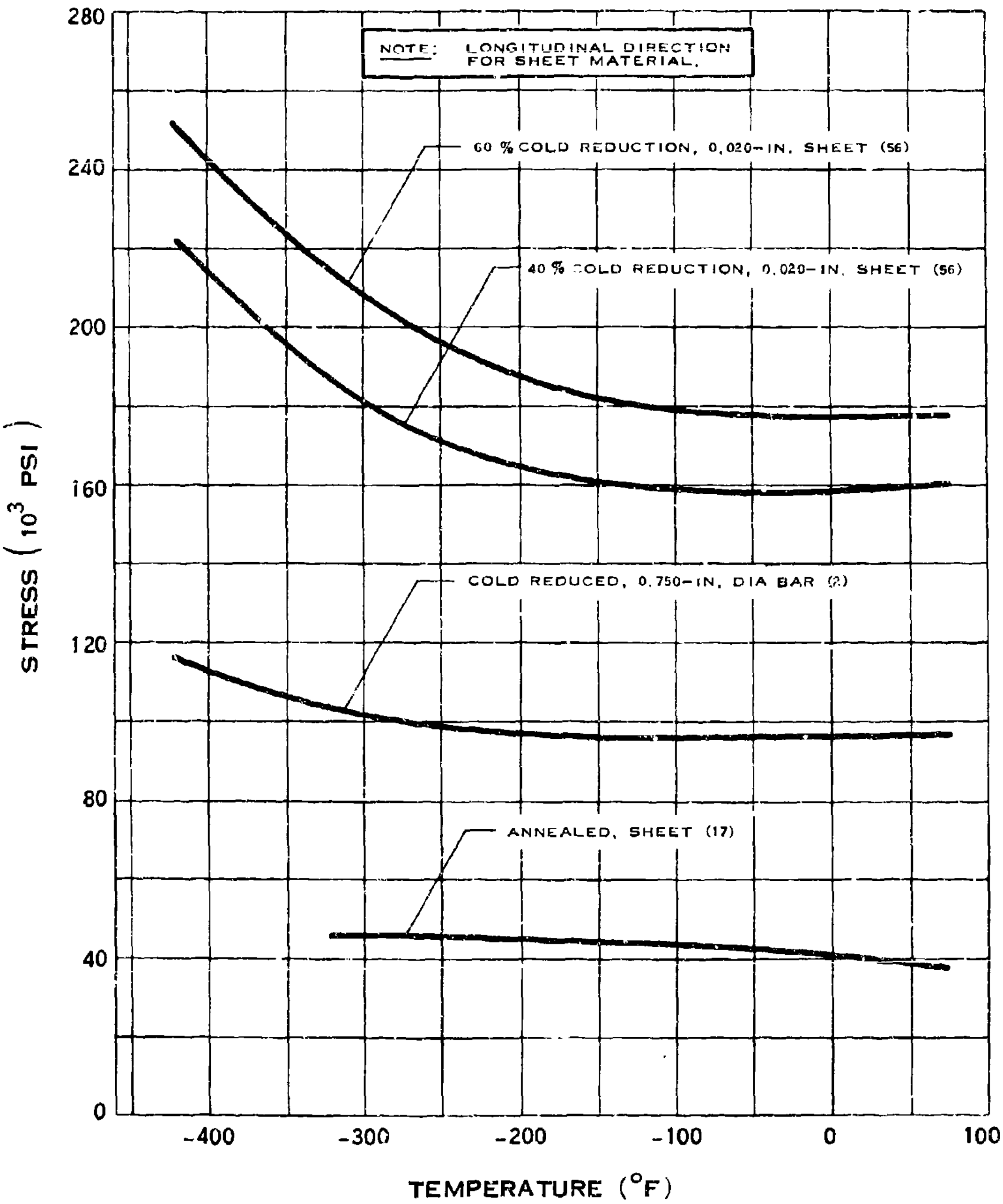
B.1.v



THERMAL CONDUCTIVITY OF 301 STAINLESS STEEL

(6-68)

B.2.a



YIELD STRENGTH OF 302 STAINLESS STEEL

(7-64)

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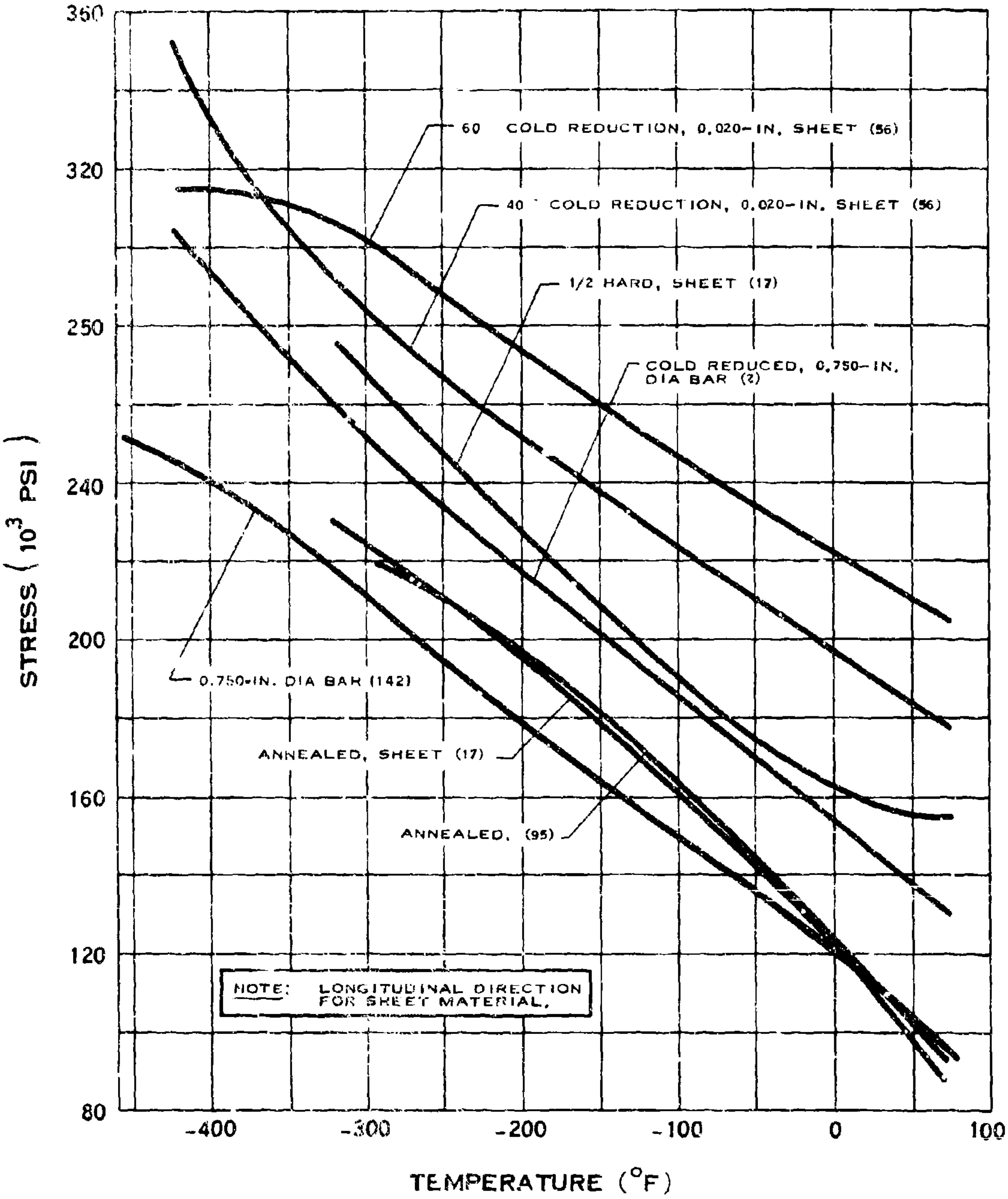
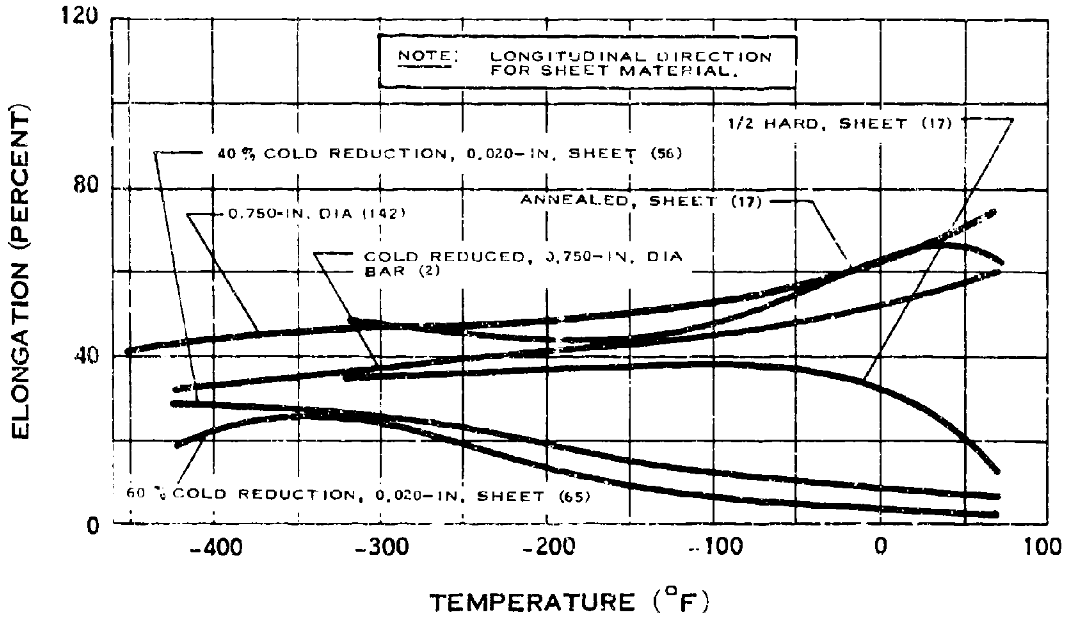
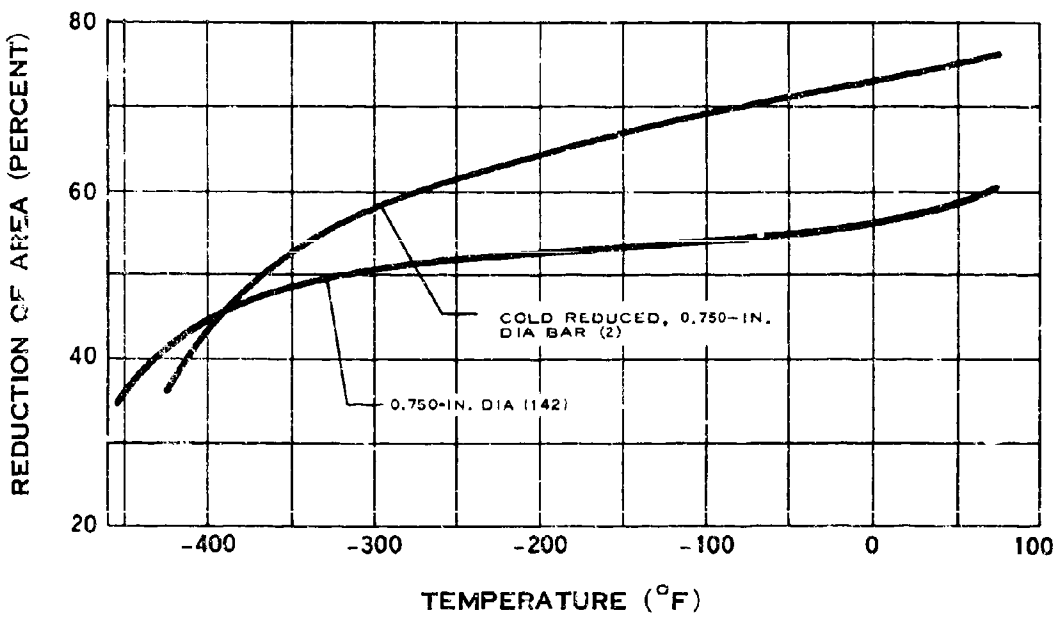
B.2.b



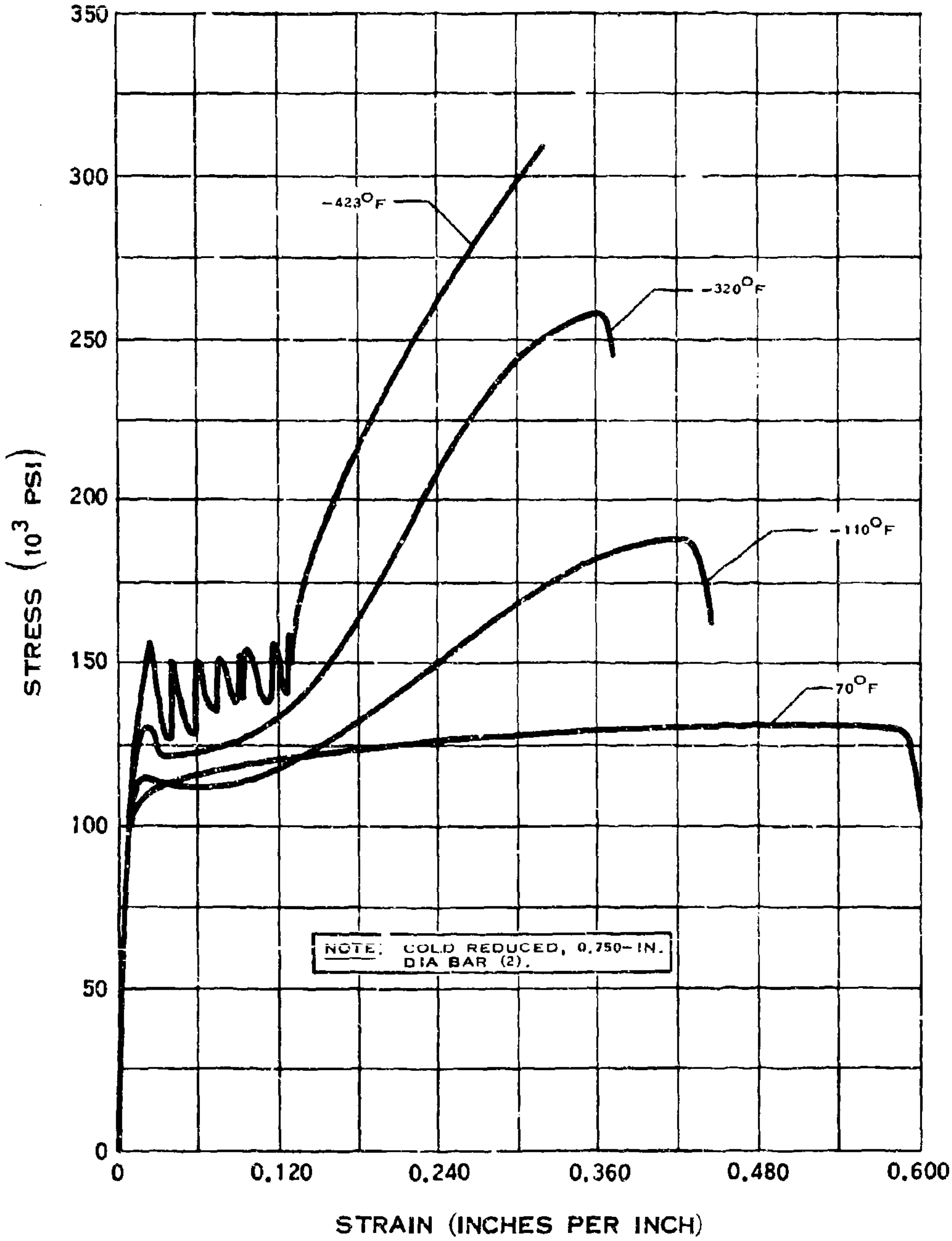
TENSILE STRENGTH OF 302 STAINLESS STEEL



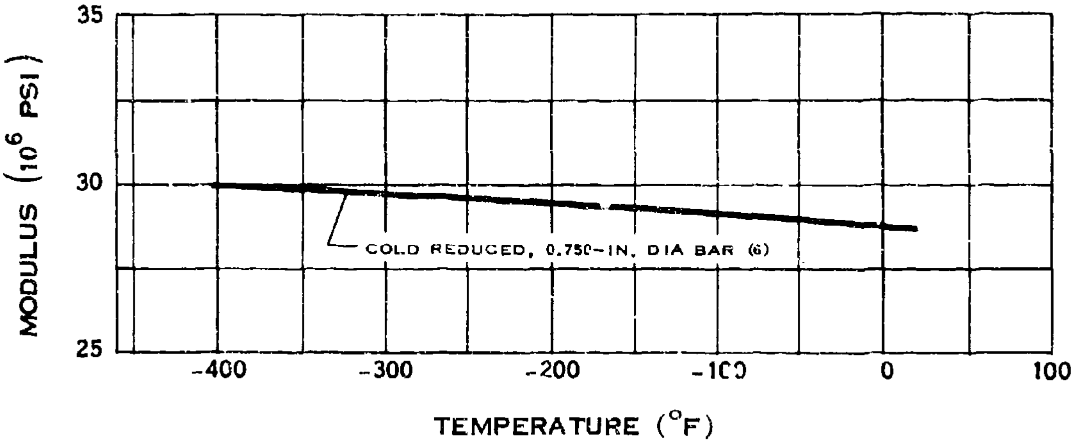
ELONGATION OF 302 STAINLESS STEEL



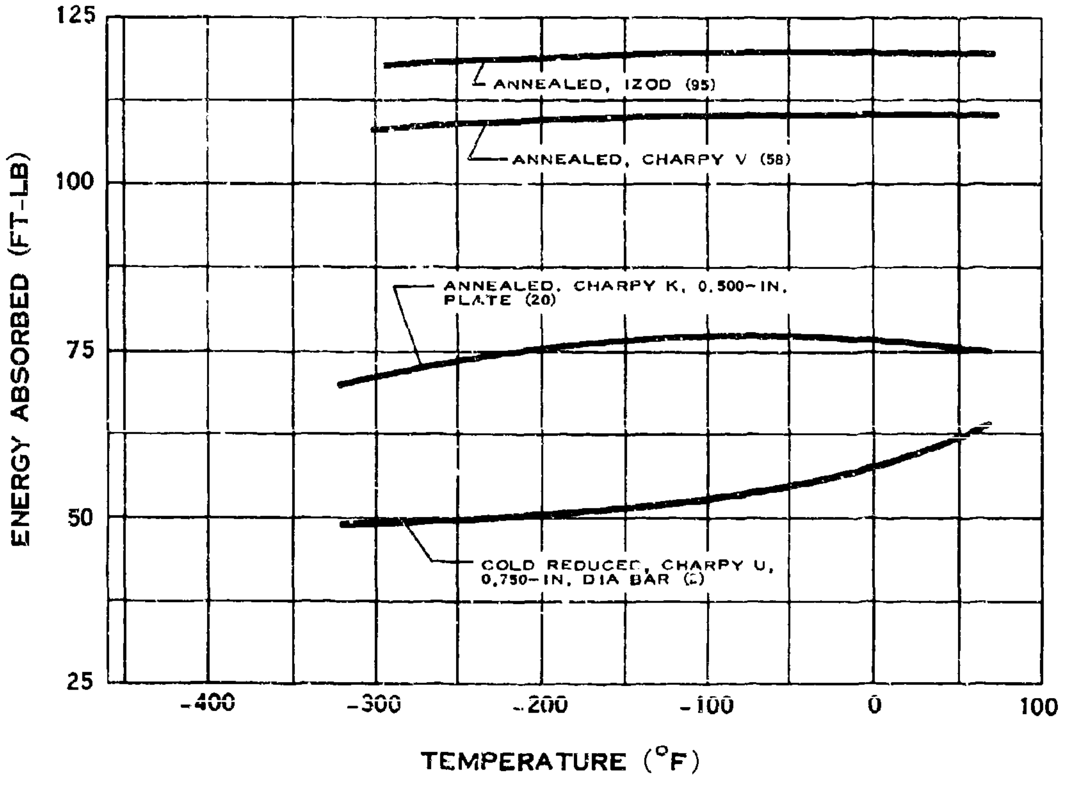
REDUCTION OF AREA OF 302 STAINLESS STEEL



STRESS-STRAIN DIAGRAM FOR 302 STAINLESS STEEL

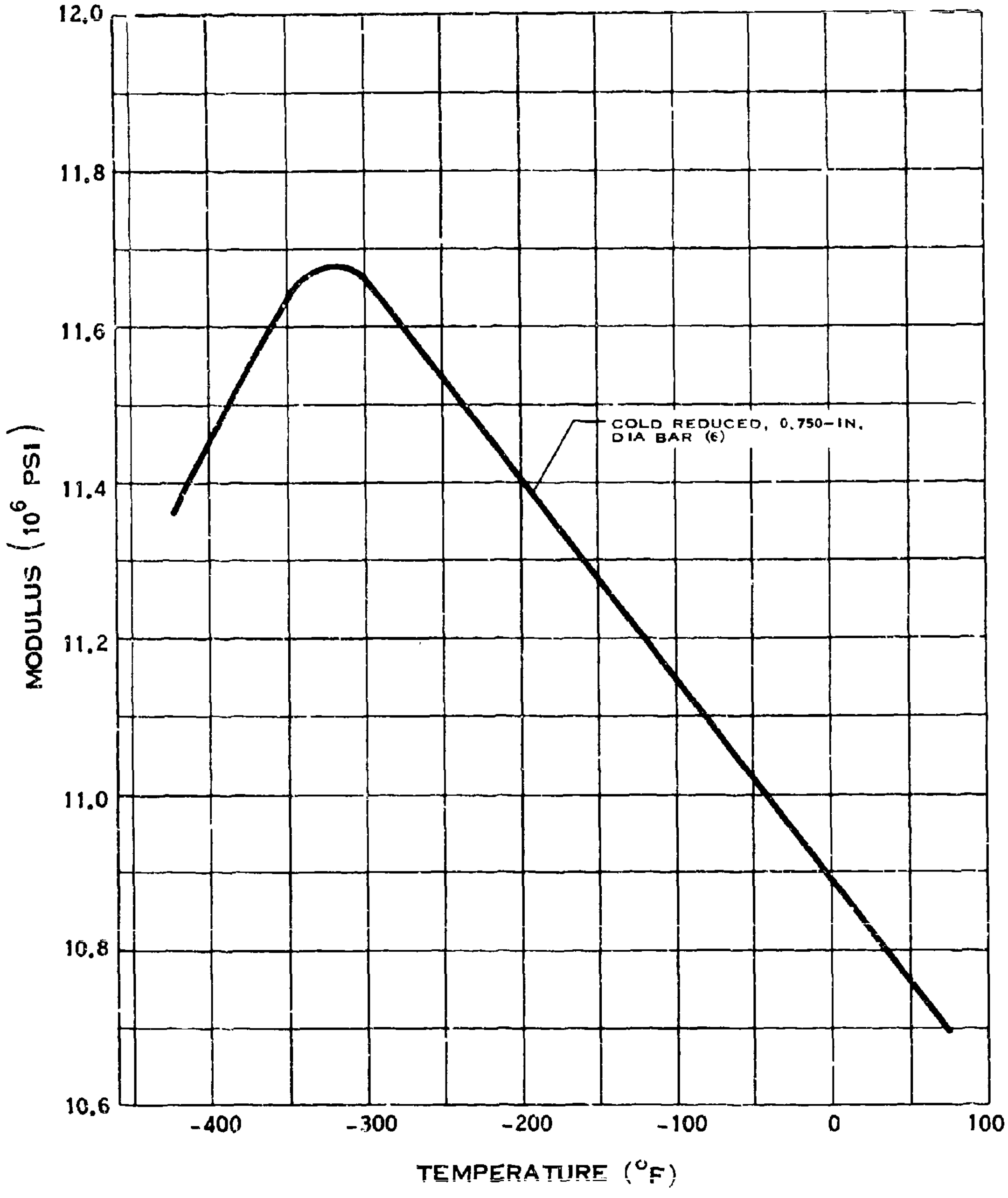


MODULUS OF ELASTICITY OF 302 STAINLESS STEEL

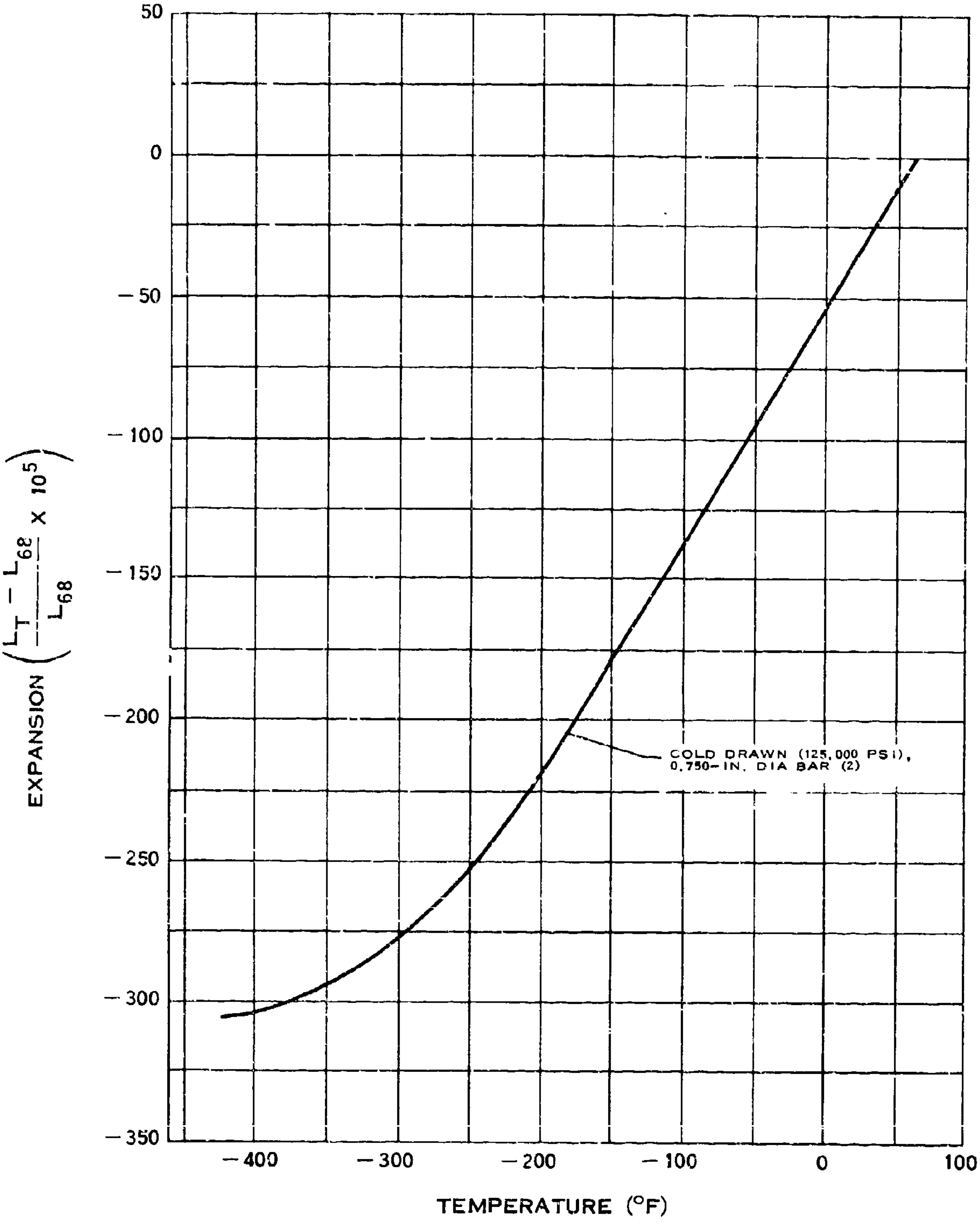


IMPACT STRENGTH OF 302 STAINLESS STEEL

B.2.ℓ



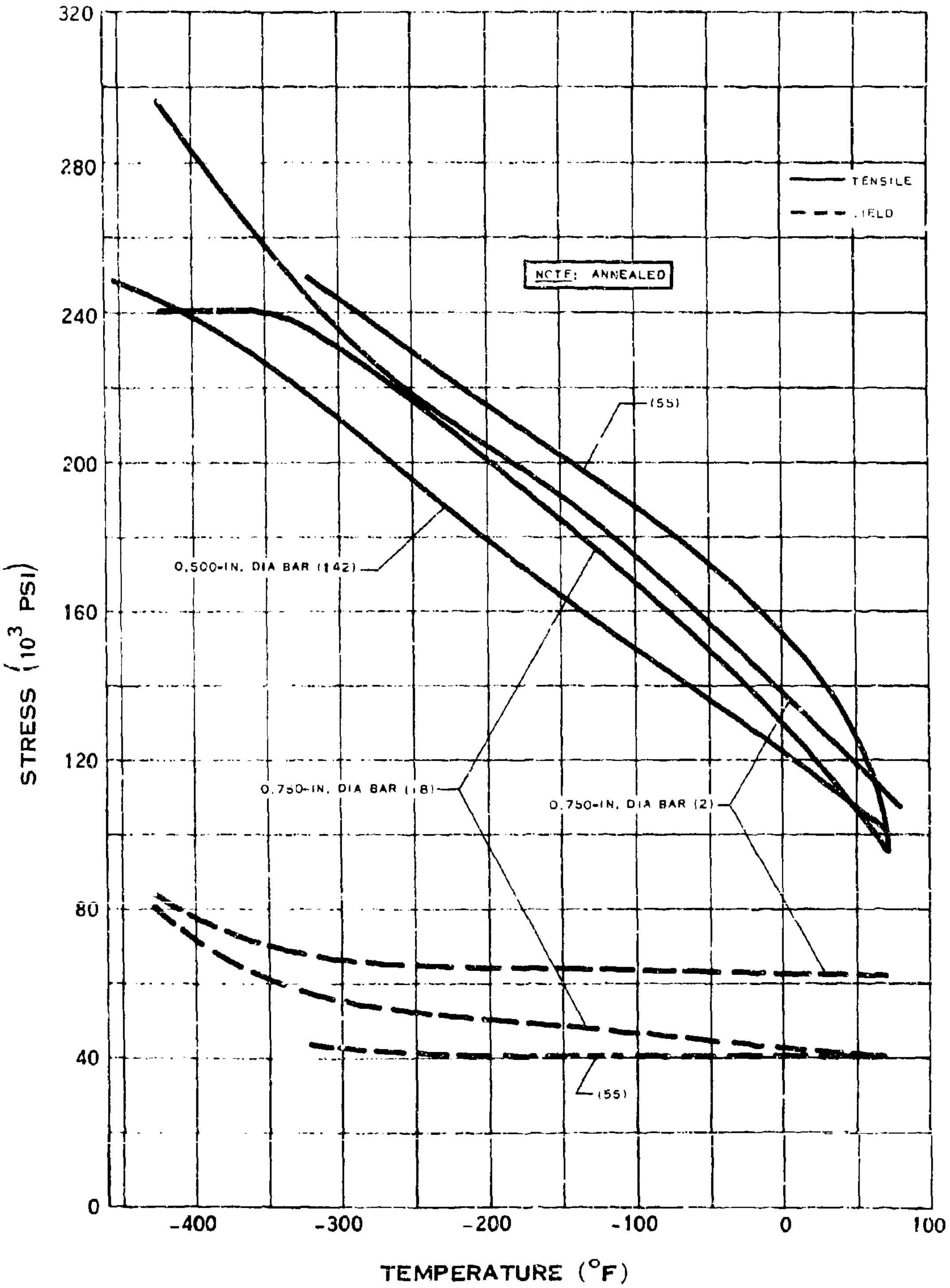
MODULUS OF RIGIDITY OF 302 STAINLESS STEEL



THERMAL EXPANSION OF 302 STAINLESS STEEL

(7-64)

B.3.ab



STRENGTH OF 303 STAINLESS STEEL

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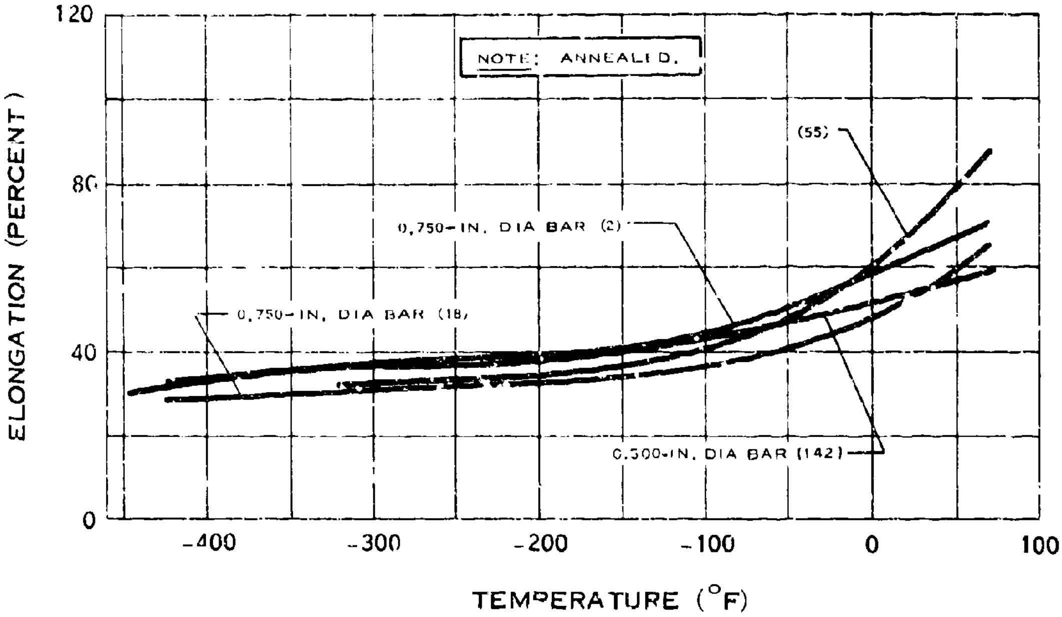
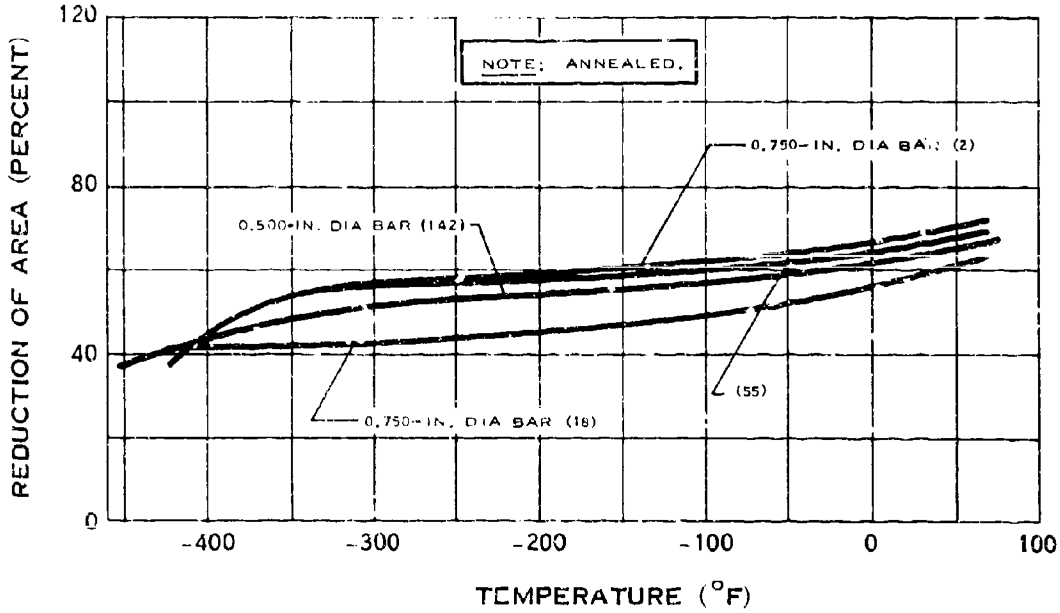
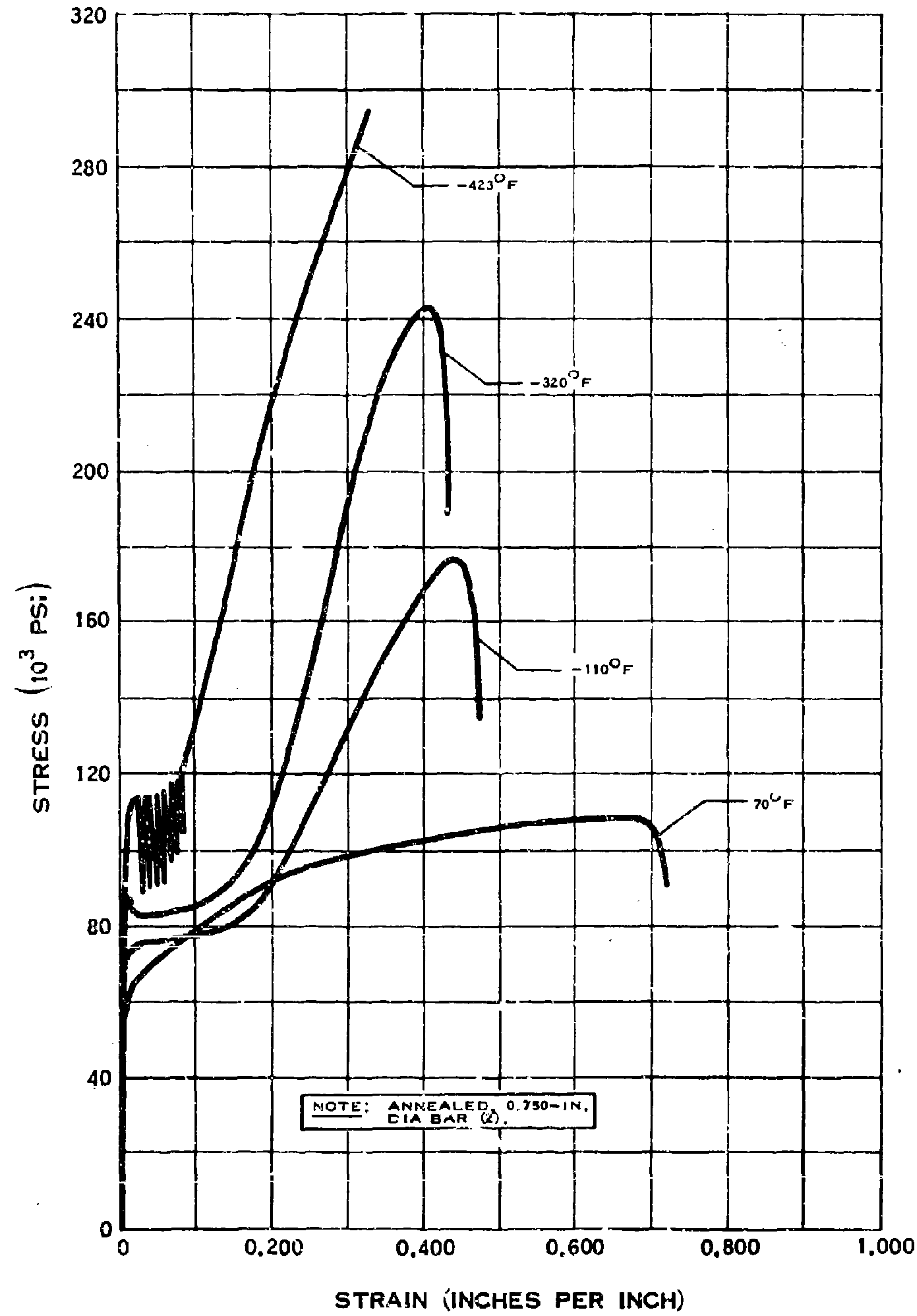


ELONGATION OF 303 STAINLESS STEEL



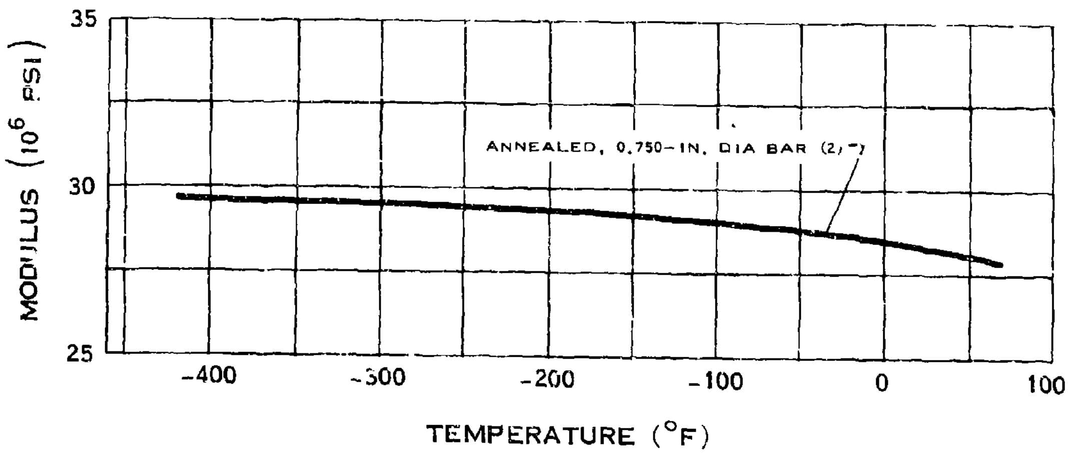
REDUCTION OF AREA OF 303 STAINLESS STEEL

B.3.h

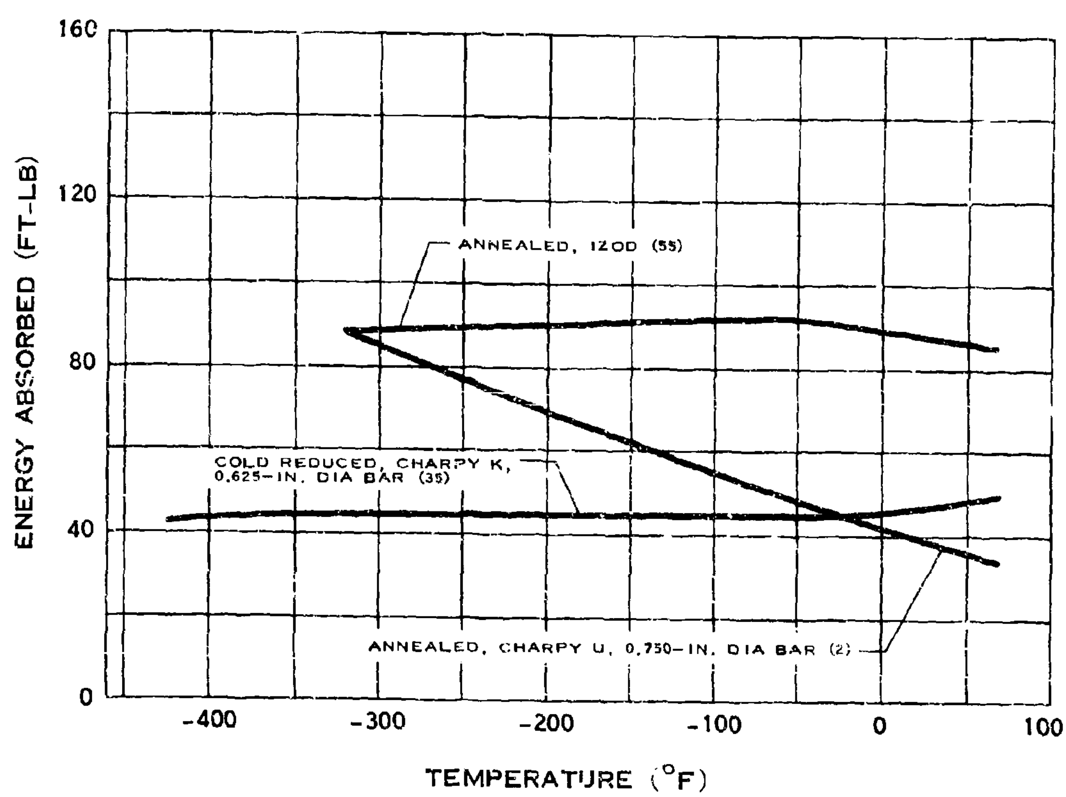


STRESS-STRAIN DIAGRAM FOR 303 STAINLESS STEEL

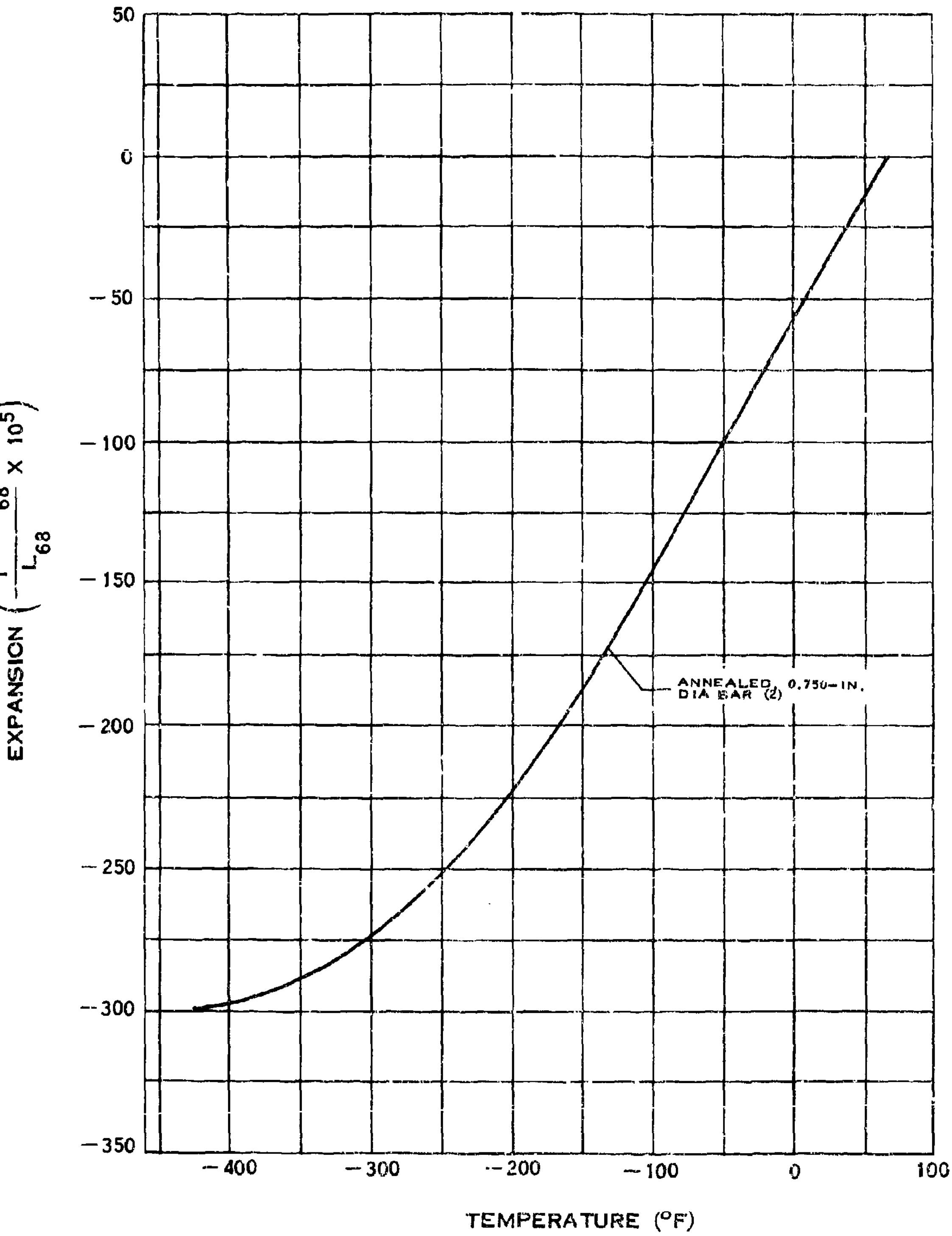
(7-64)



MODULUS OF ELASTICITY OF 303 STAINLESS STEEL

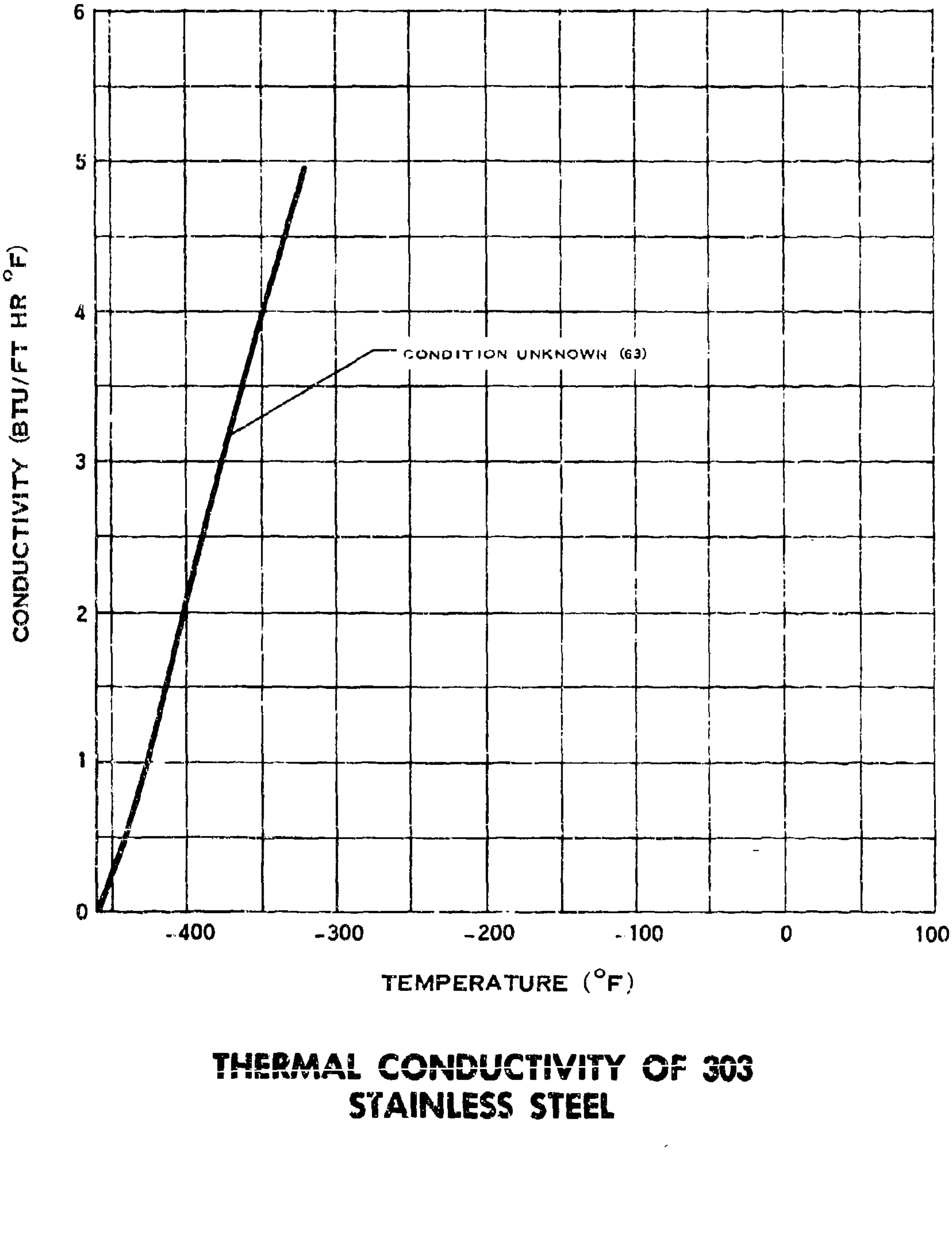


IMPACT STRENGTH OF 303 STAINLESS STEEL



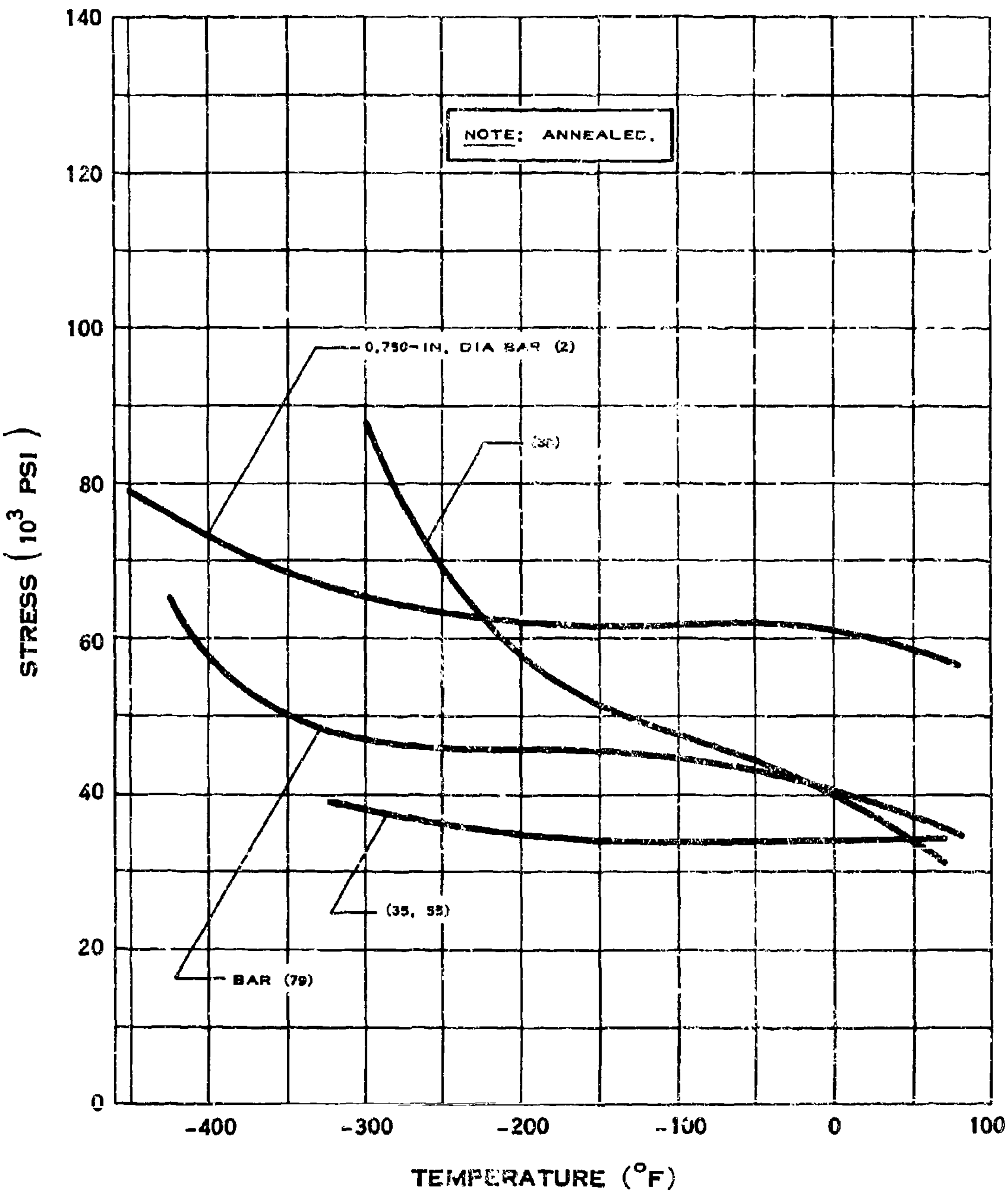
THERMAL EXPANSION OF 303 STAINLESS STEEL

(7-64)



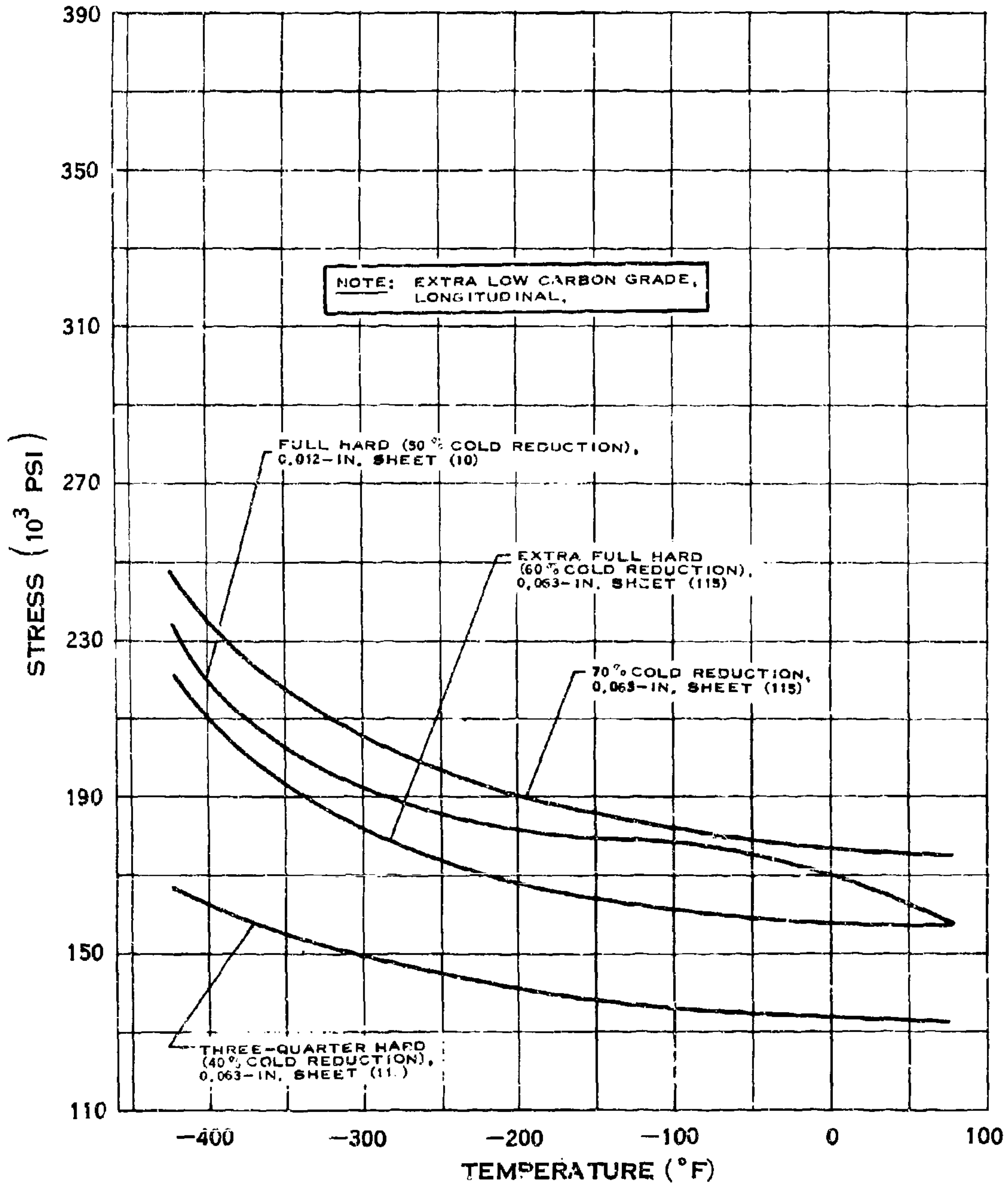
THERMAL CONDUCTIVITY OF 303 STAINLESS STEEL

B.4.a



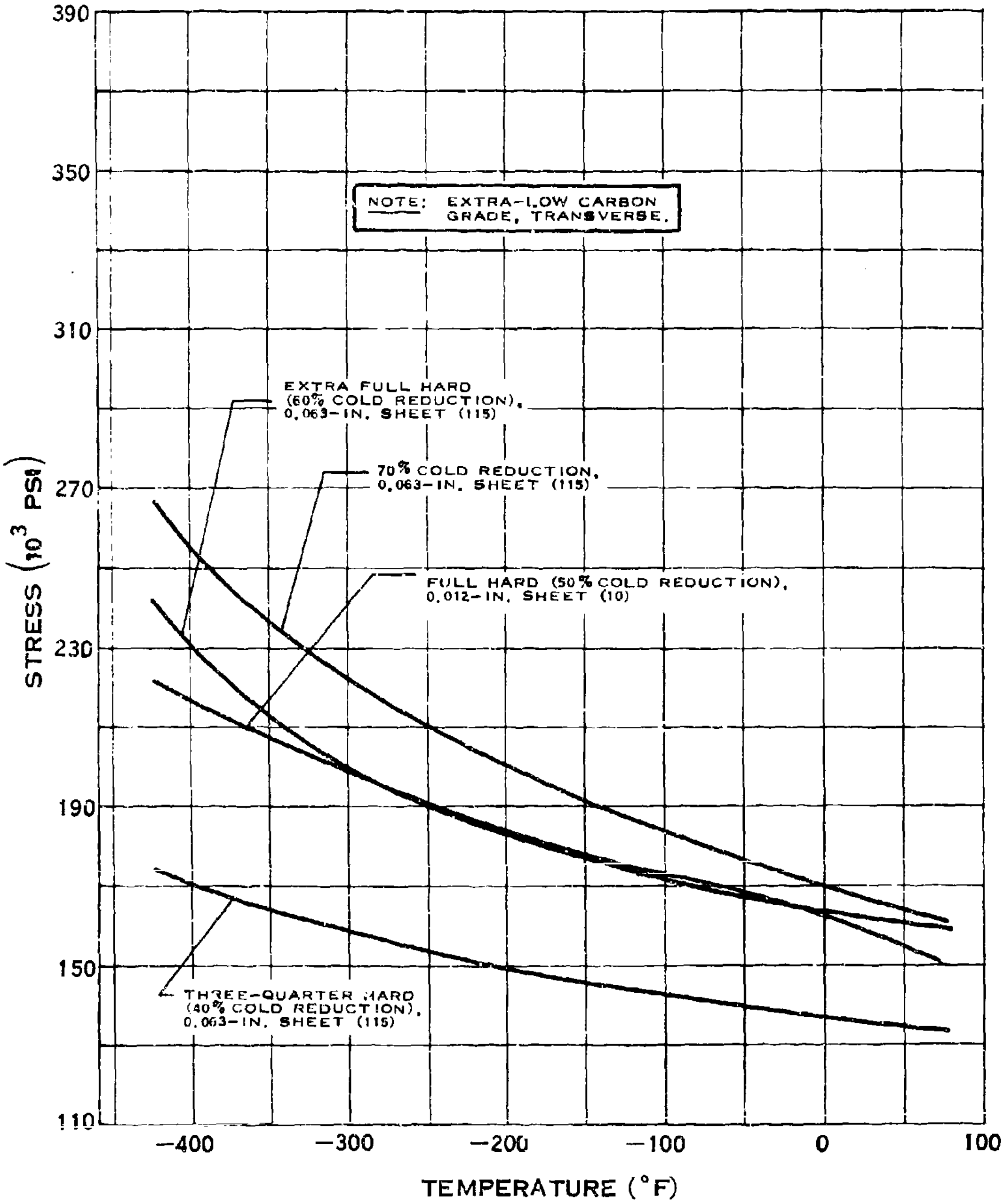
YIELD STRENGTH OF 304 STAINLESS STEEL

B.4.a-1



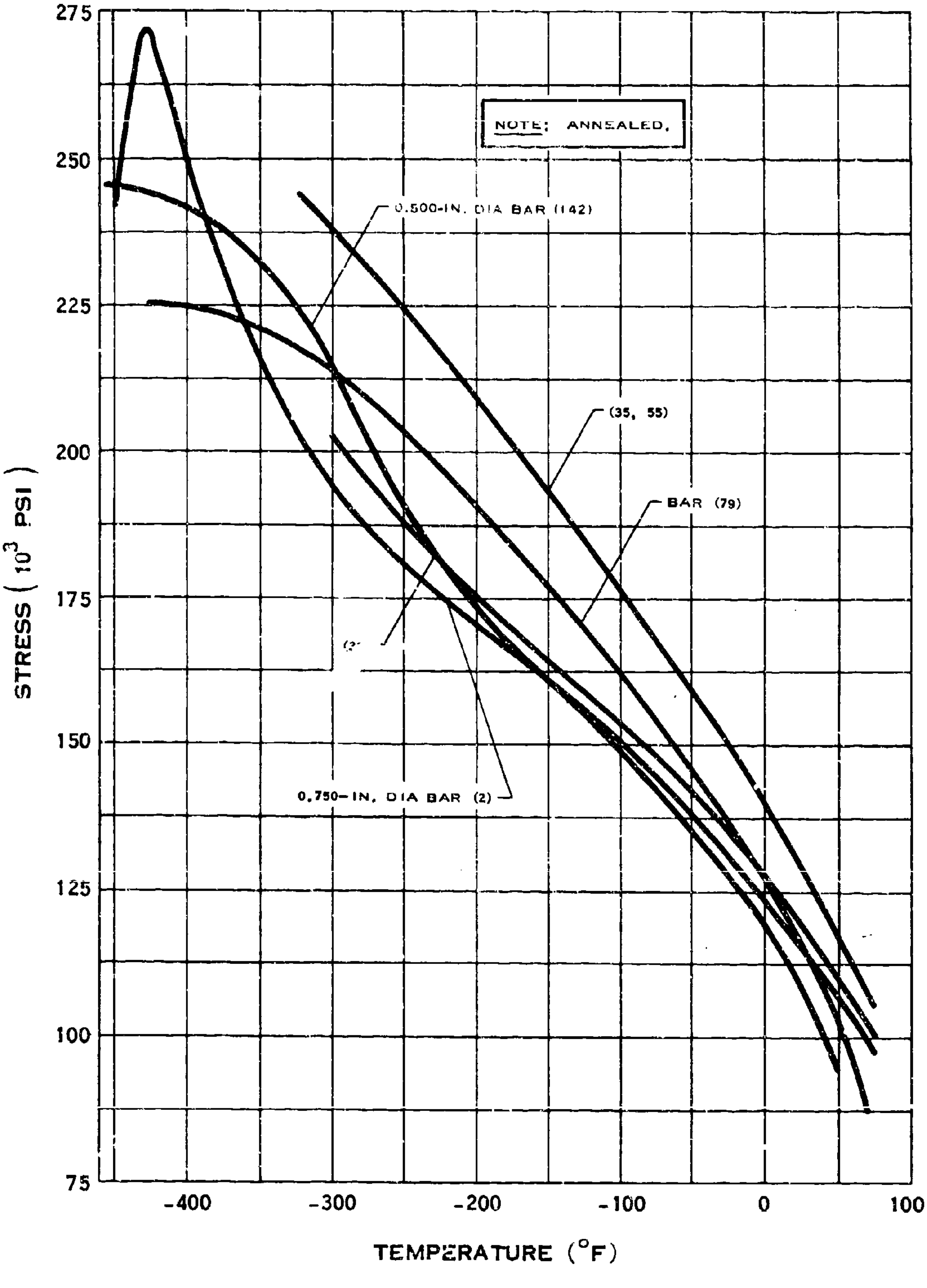
YIELD STRENGTH OF 304 STAINLESS STEEL

(7-64)



YIELD STRENGTH OF 304 STAINLESS STEEL

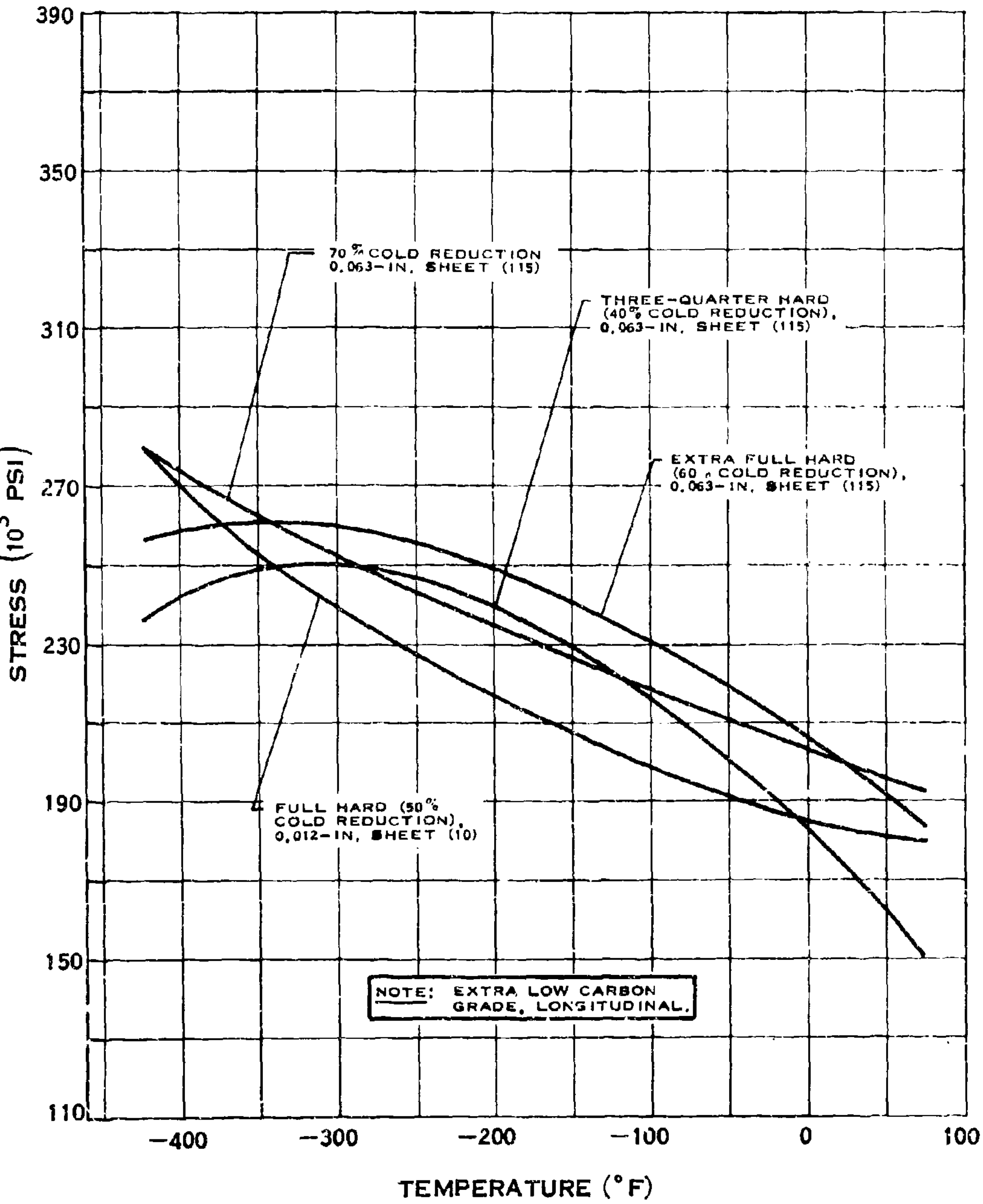
B.4.b



TENSILE STRENGTH OF 304 STAINLESS STEEL

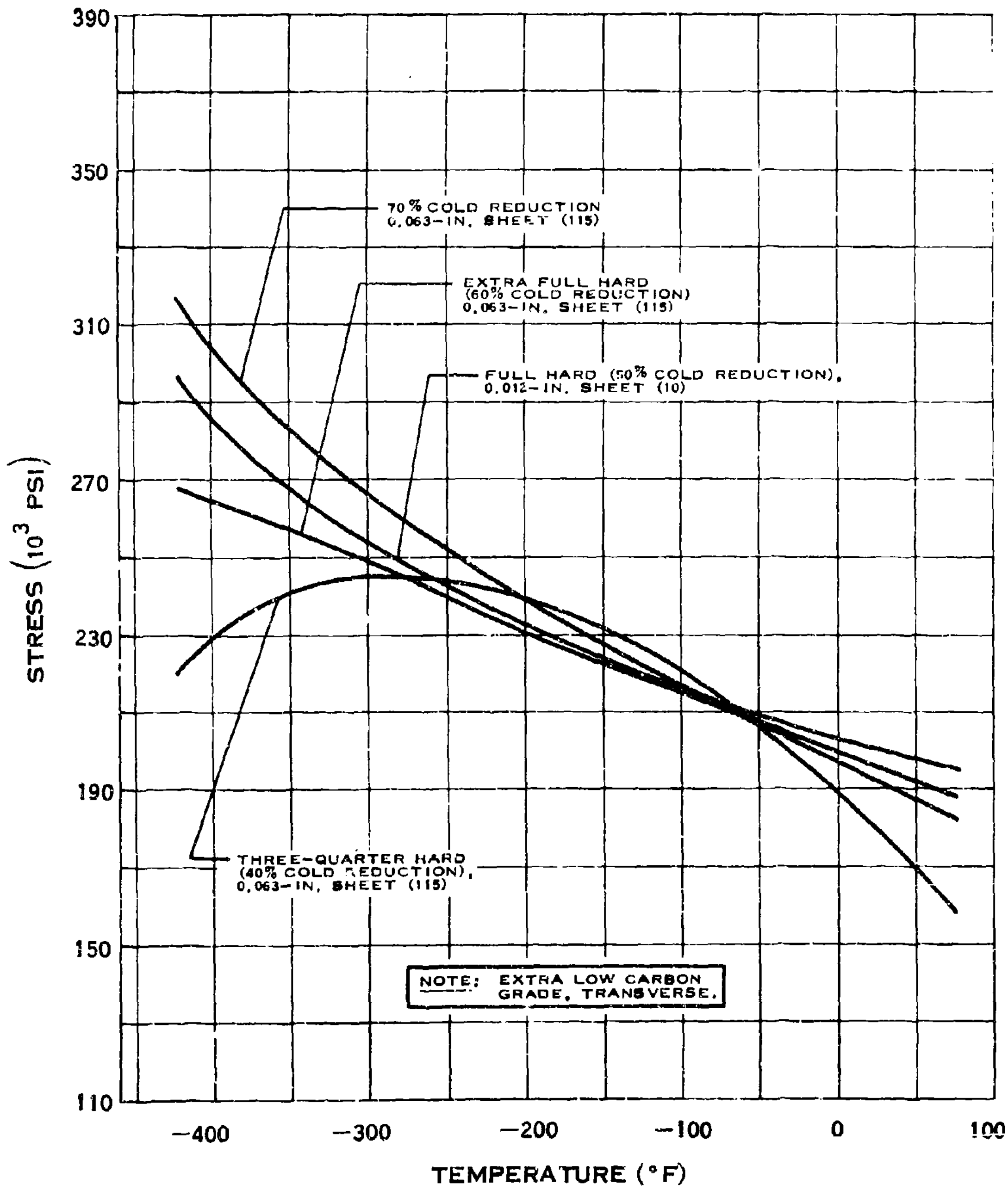
(6-63)

B.4.b-1

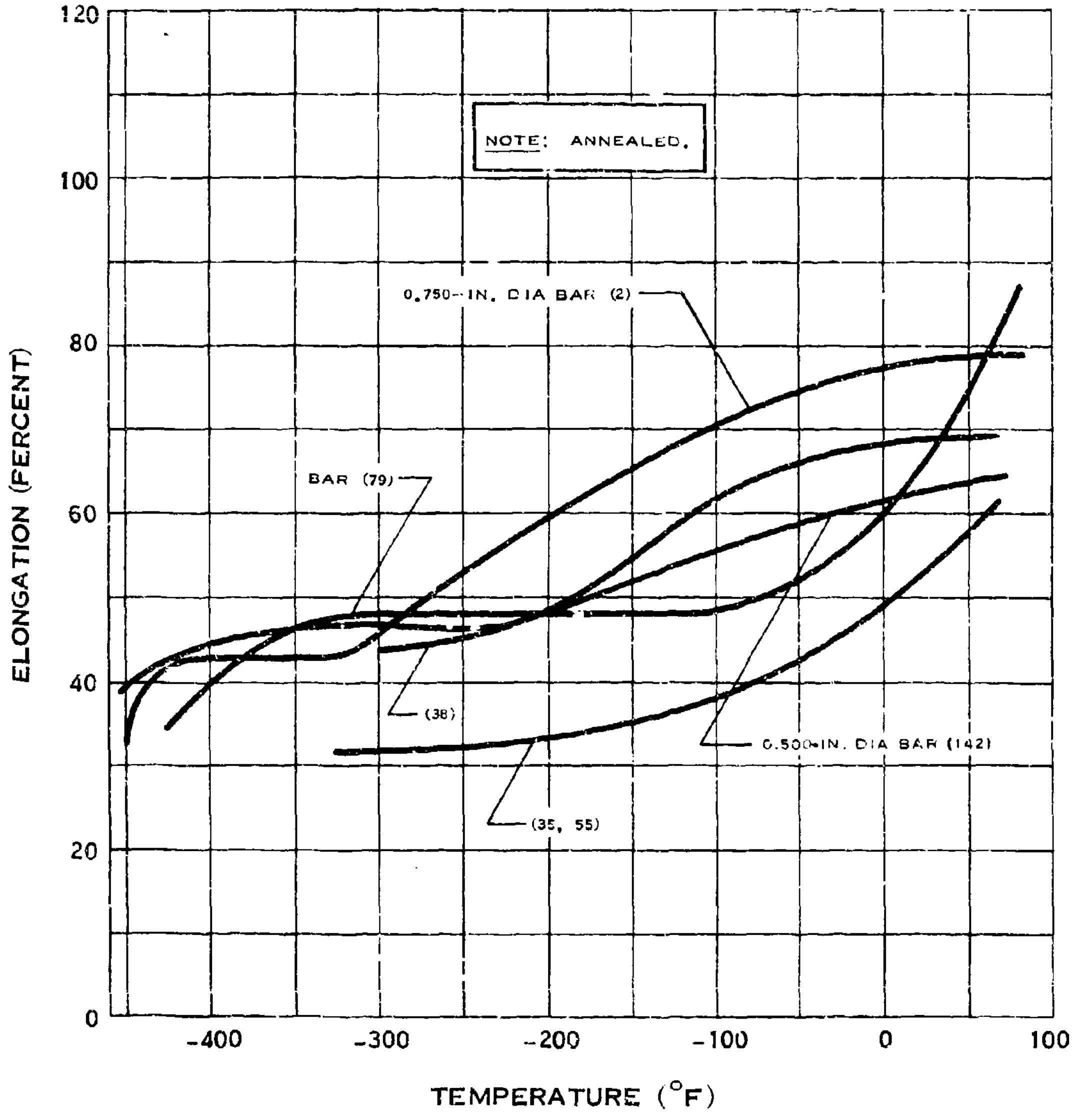


TENSILE STRENGTH OF 304 STAINLESS STEEL

B.4.b-2

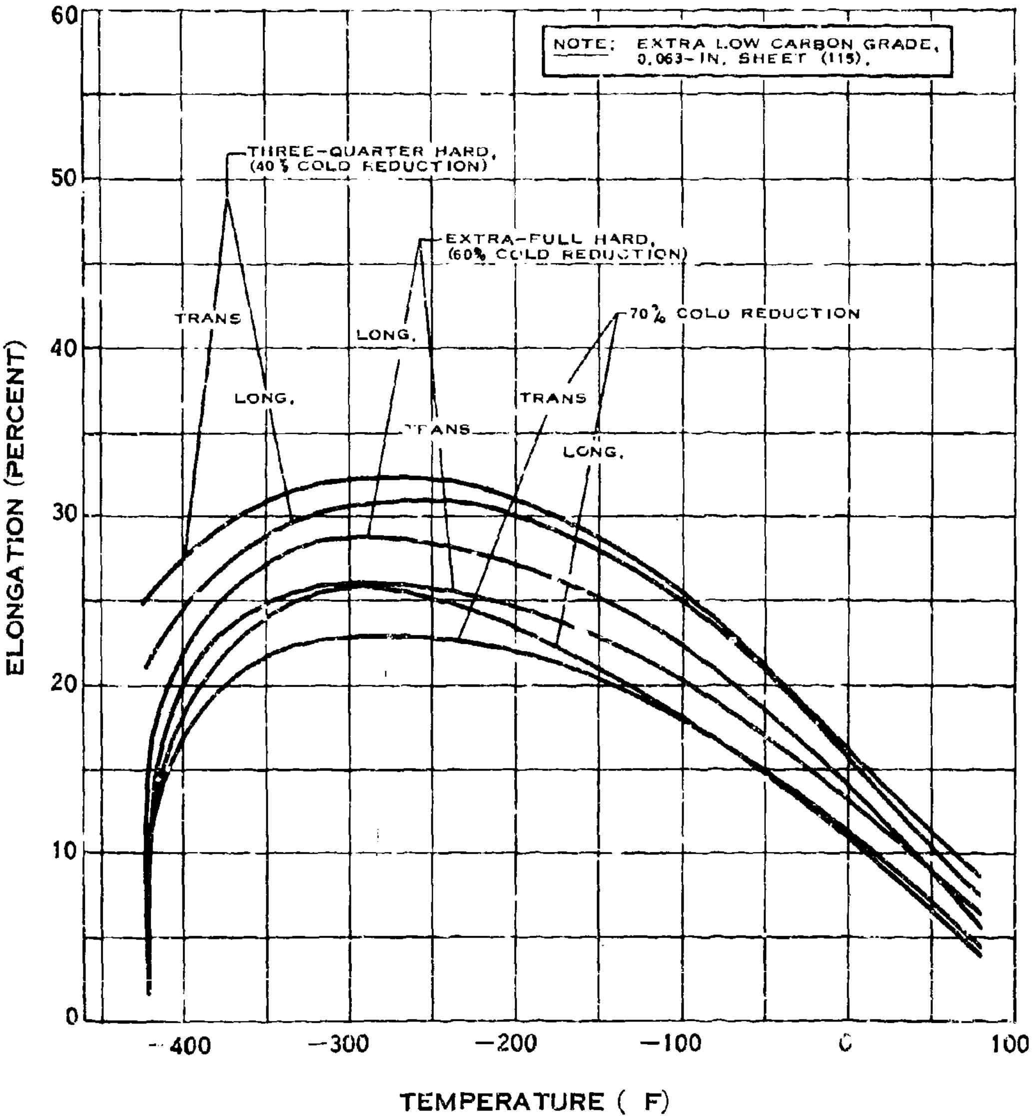


TENSILE STRENGTH OF 304 STAINLESS STEEL

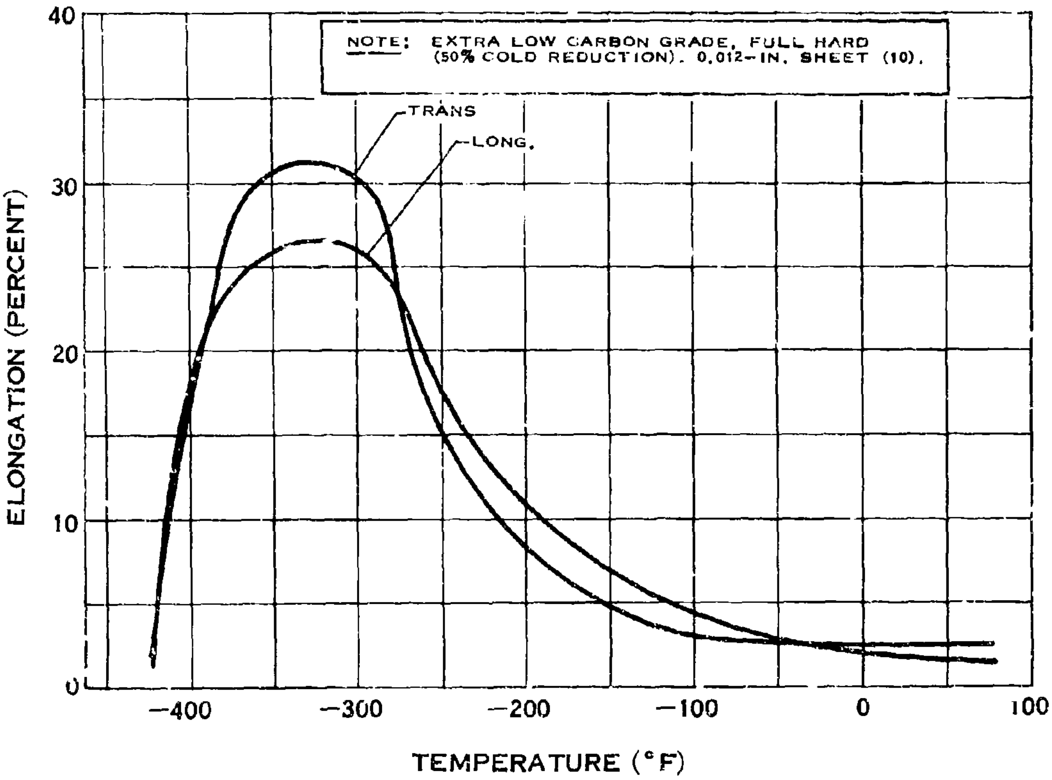


ELONGATION OF 304 STAINLESS STEEL

B.4.c-1



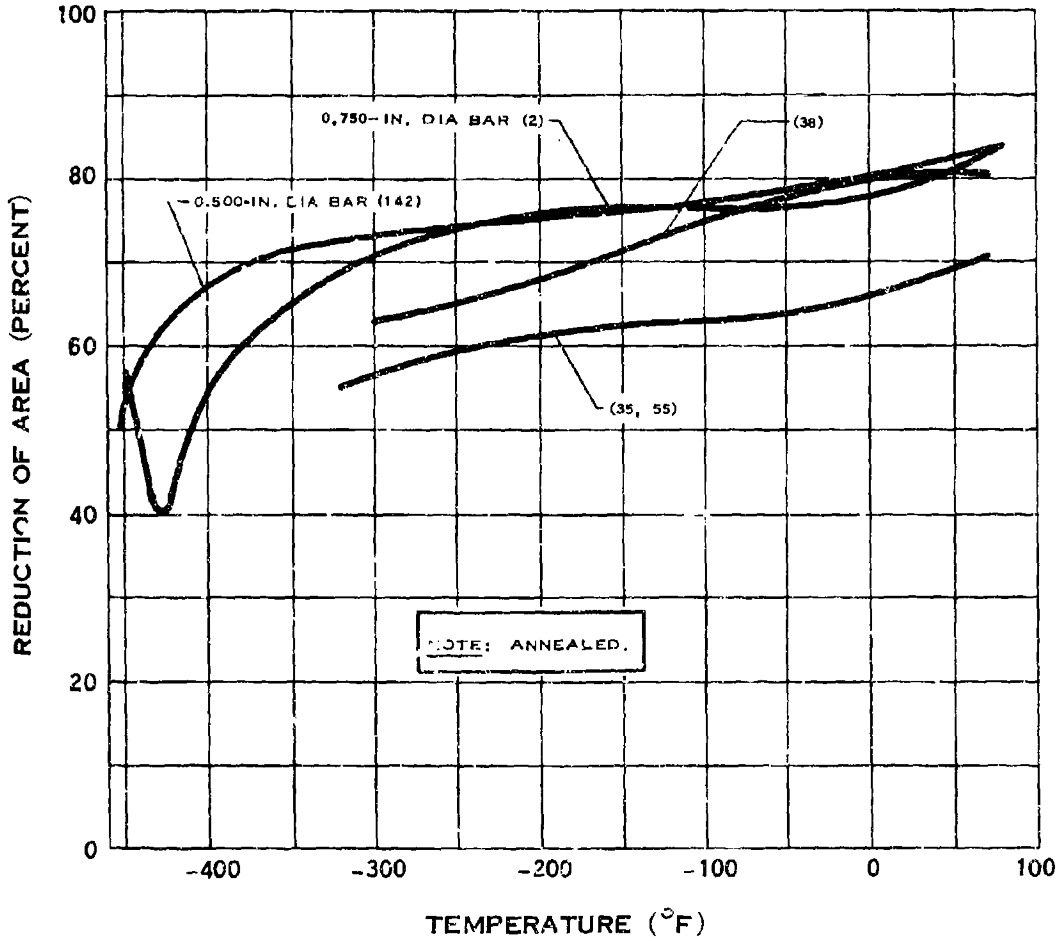
ELONGATION OF 304 STAINLESS STEEL



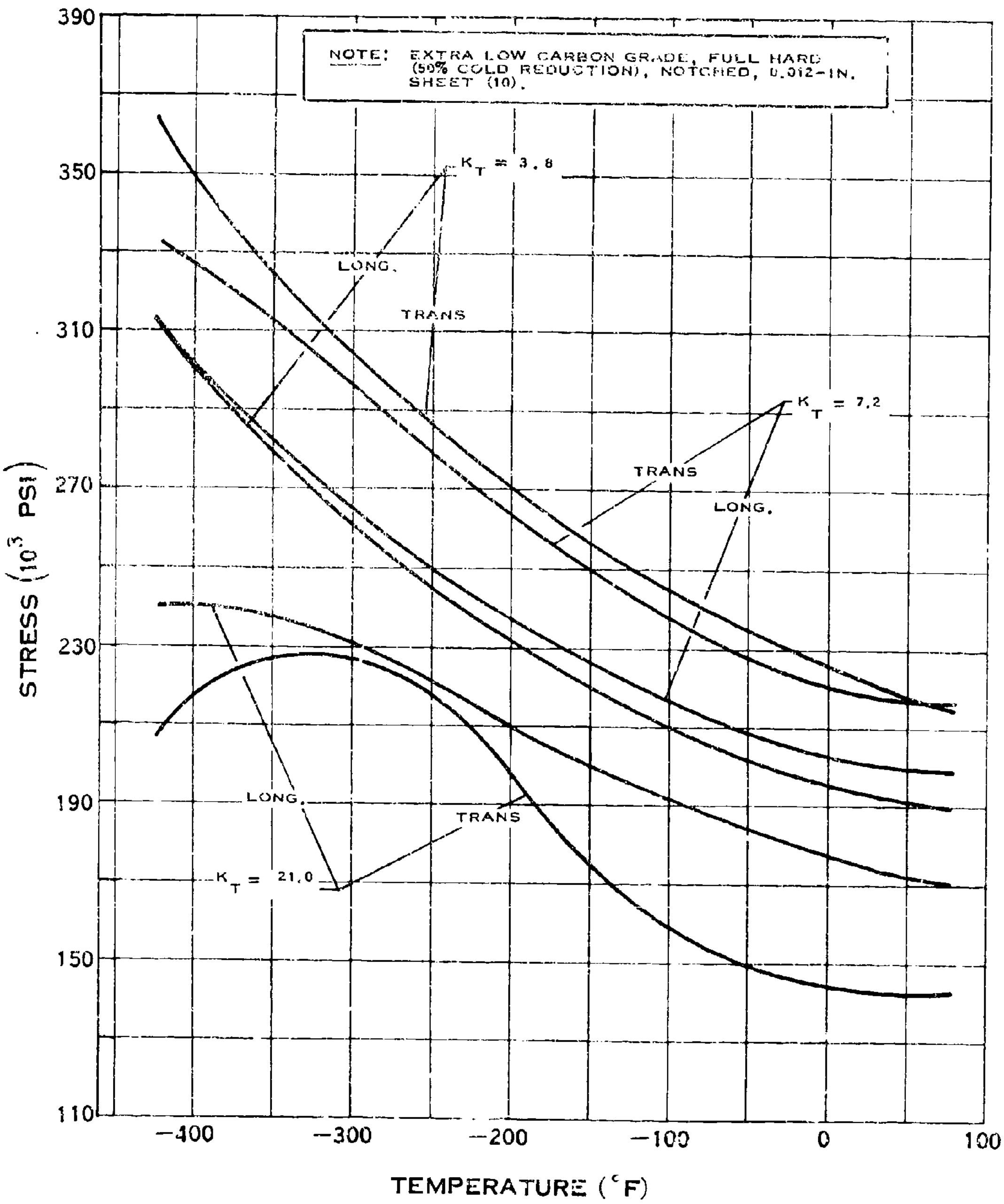
ELONGATION OF 304 STAINLESS STEEL

(7-64)

B.4.d

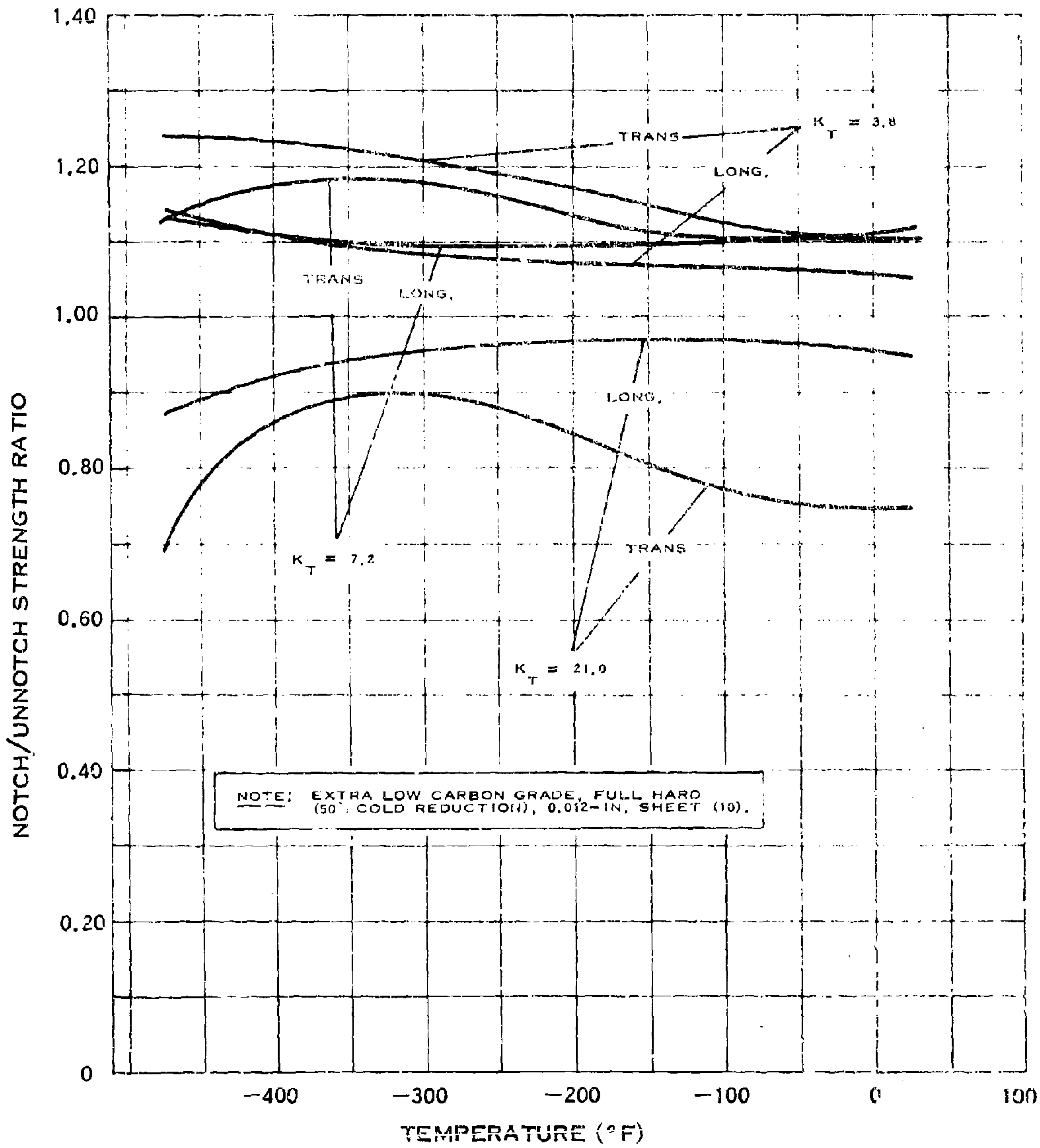


REDUCTION OF AREA OF 304 STAINLESS STEEL



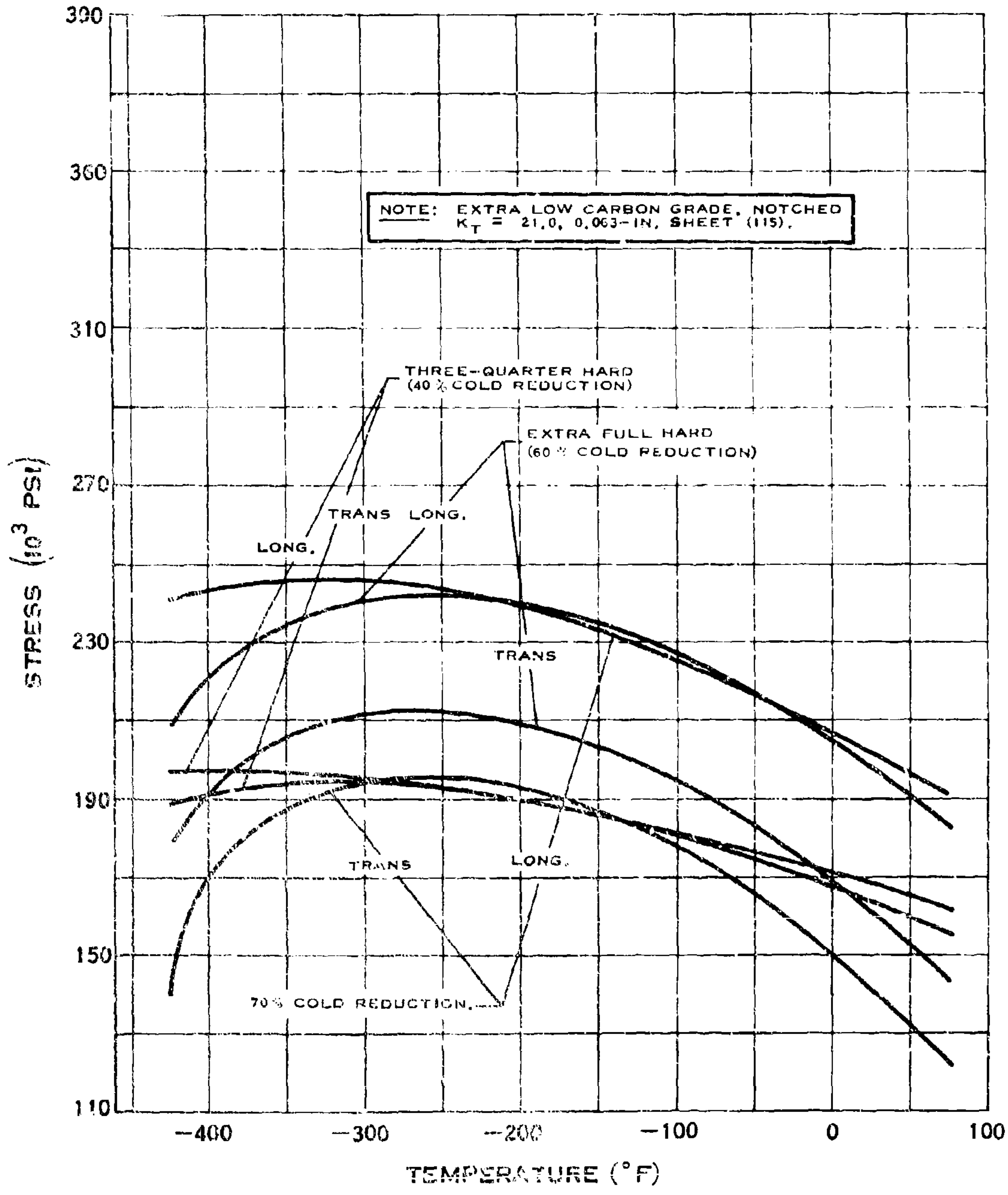
NOTCH TENSILE STRENGTH OF 304 STAINLESS STEEL

B.4.e-1



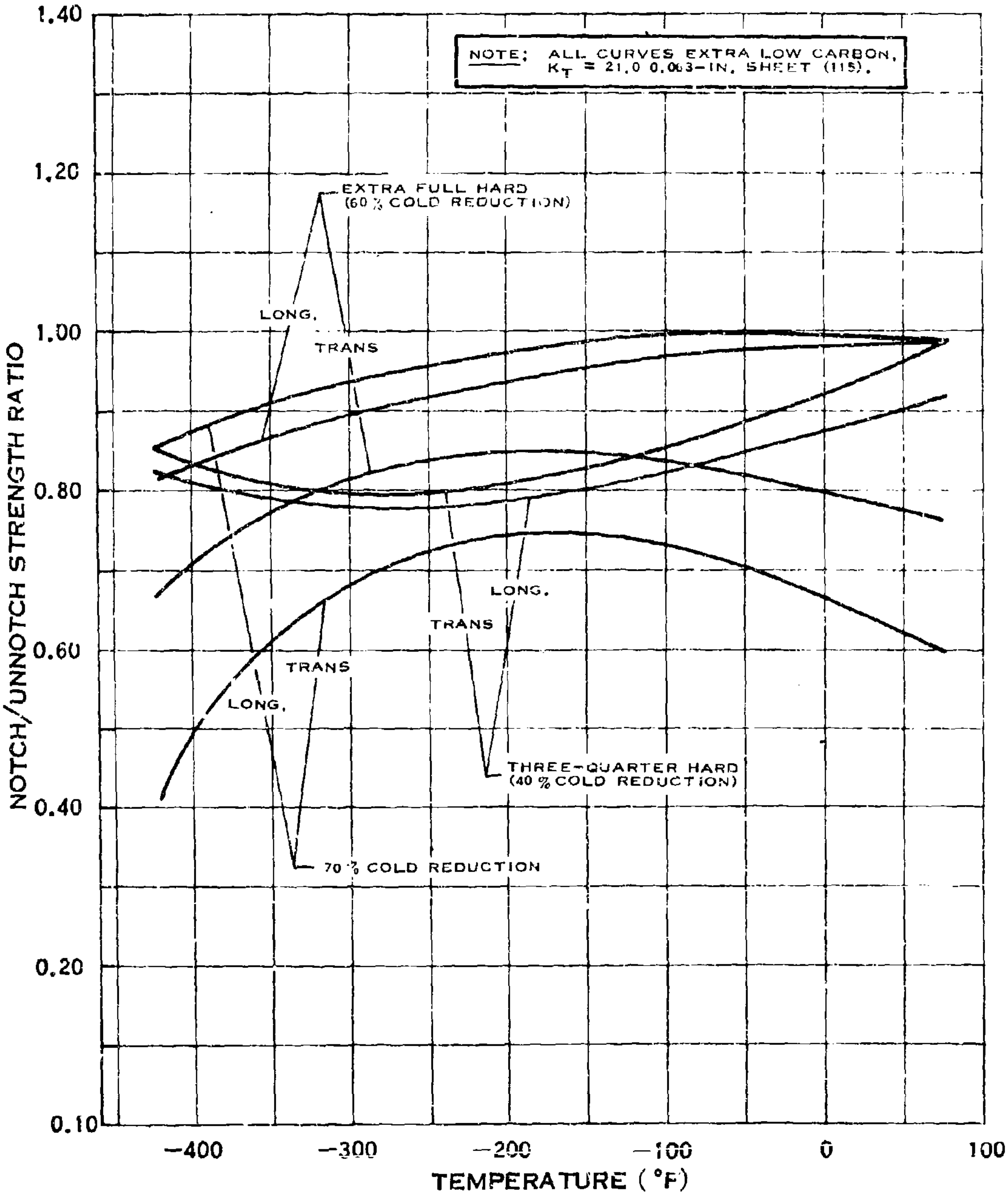
NOTCH STRENGTH RATIO OF 304 STAINLESS STEEL

B.4.e-2



NOTCH TENSILE STRENGTH OF 304 STAINLESS STEEL

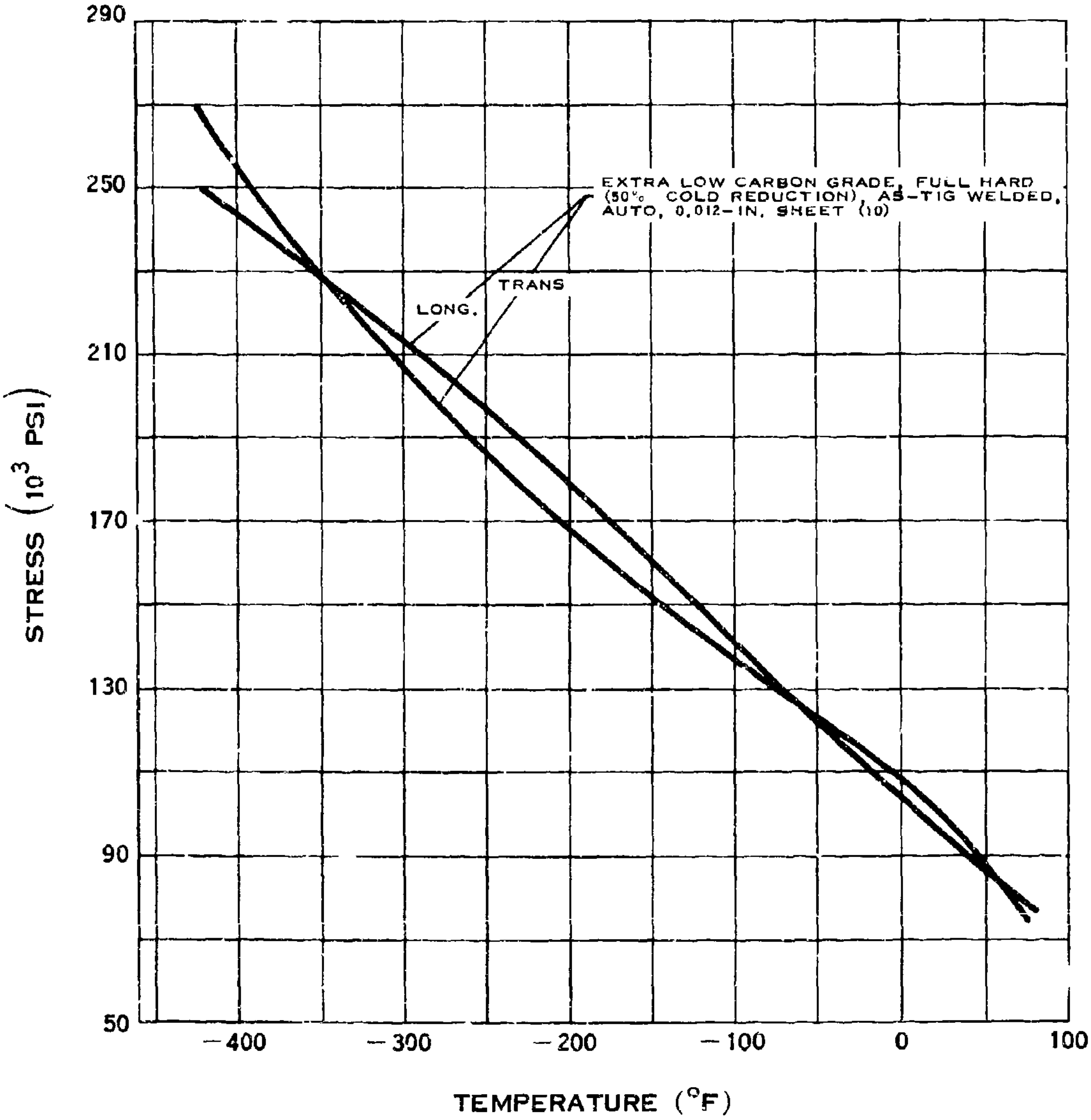
B.4.e-3



NOTCH STRENGTH RATIO OF 304 STAINLESS STEEL

(7-64)

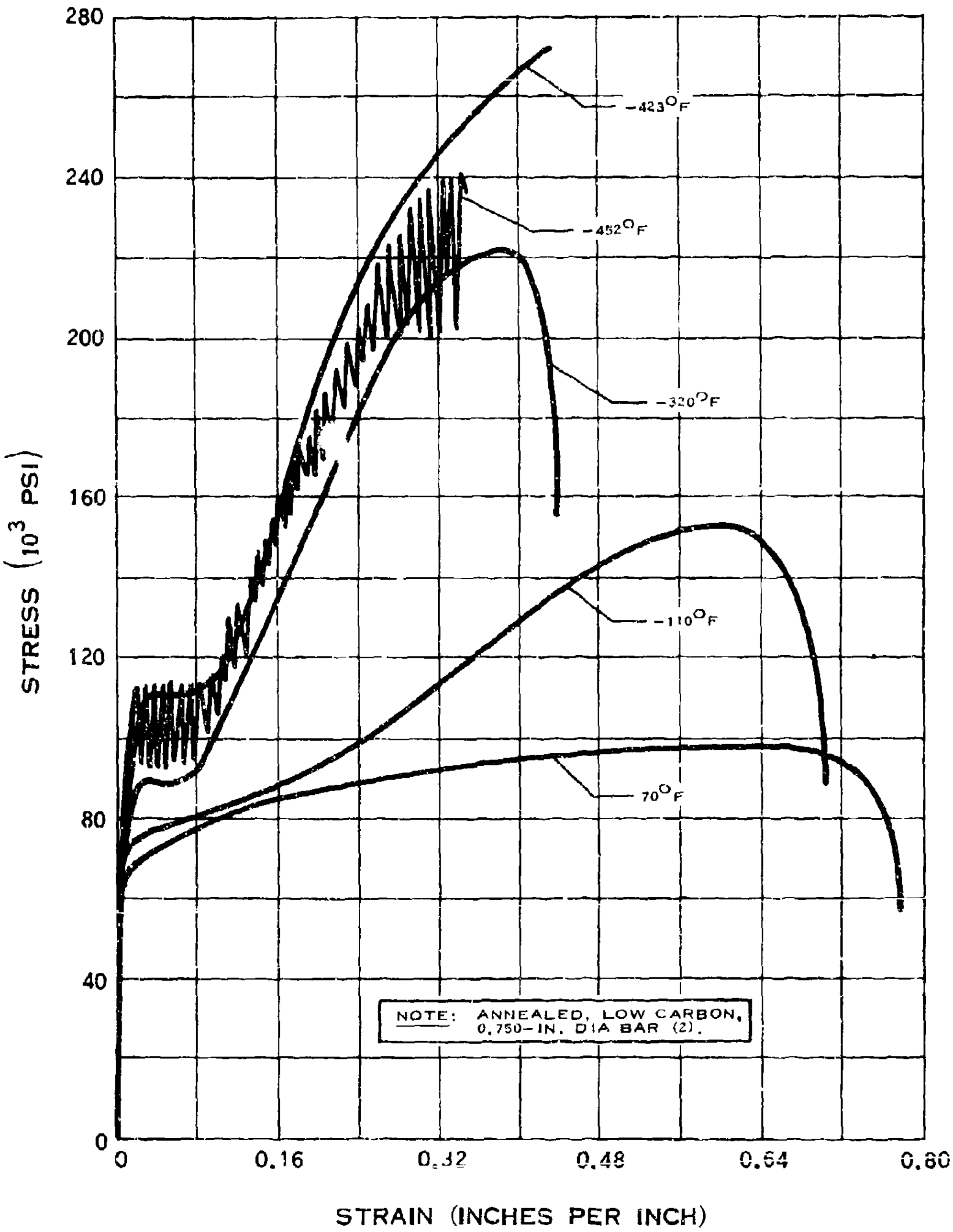
B.4.g



WELD TENSILE STRENGTH OF 304 STAINLESS STEEL

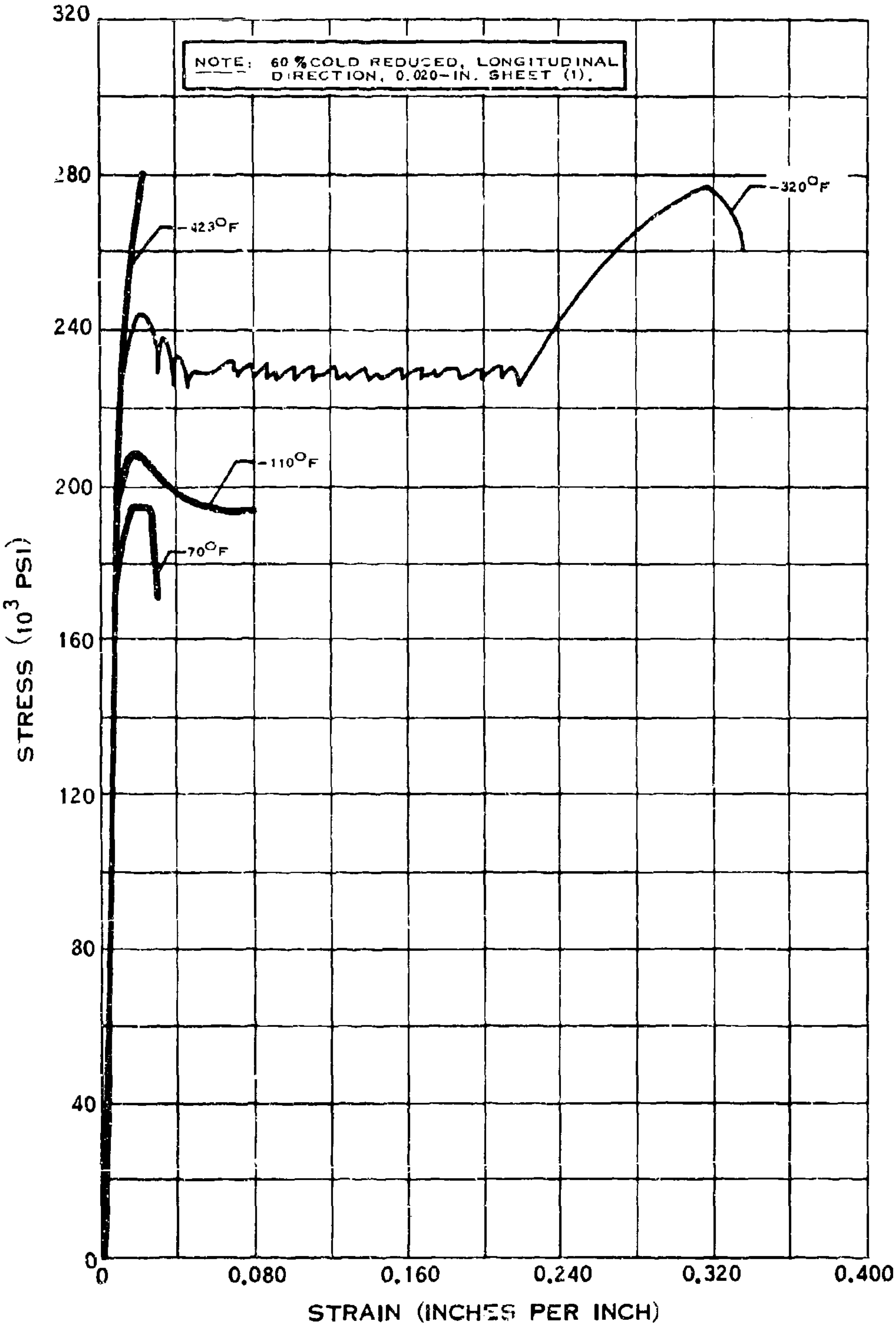
(7-64)

B.4.h



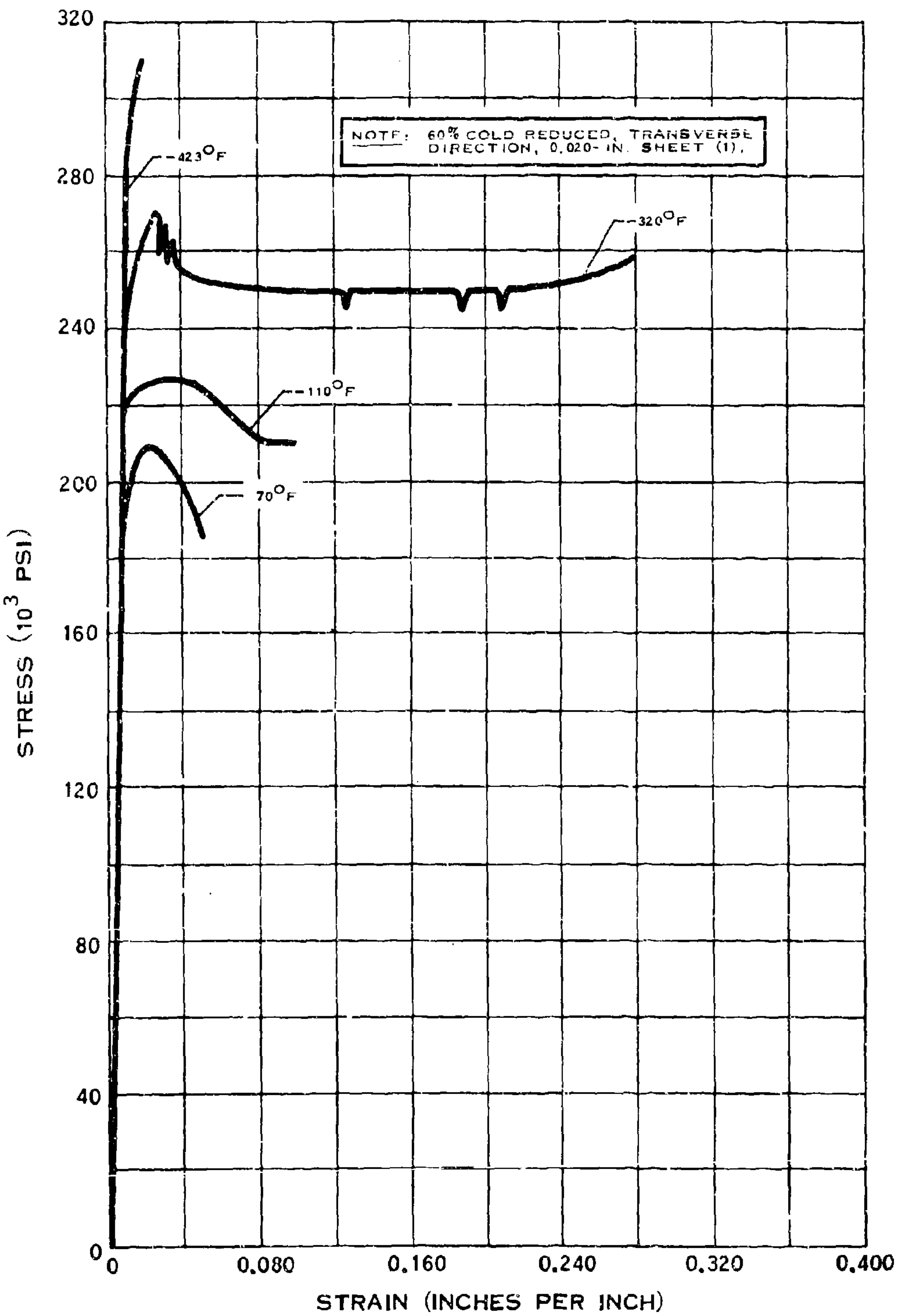
STRESS-STRAIN DIAGRAM FOR 304 STAINLESS STEEL

B.4.h-1



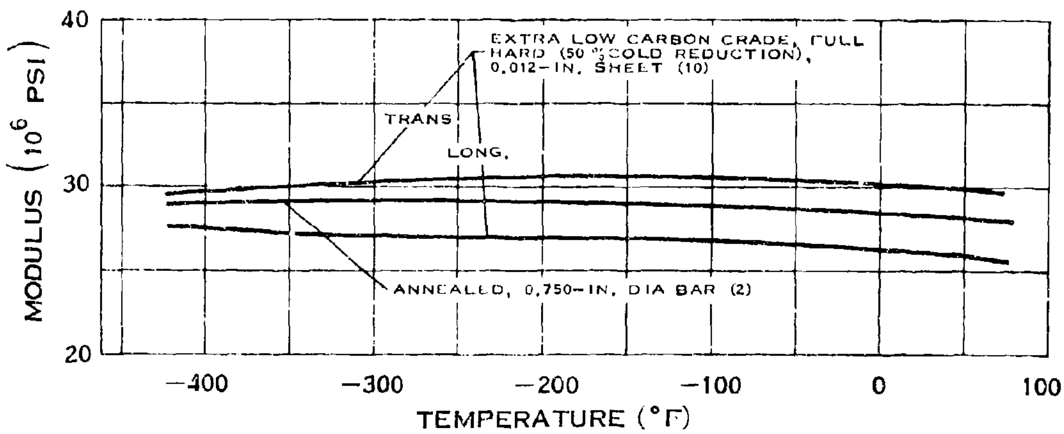
(1-65) **STRESS-STRAIN DIAGRAM FOR 304 STAINLESS STEEL**

B.4.h-2



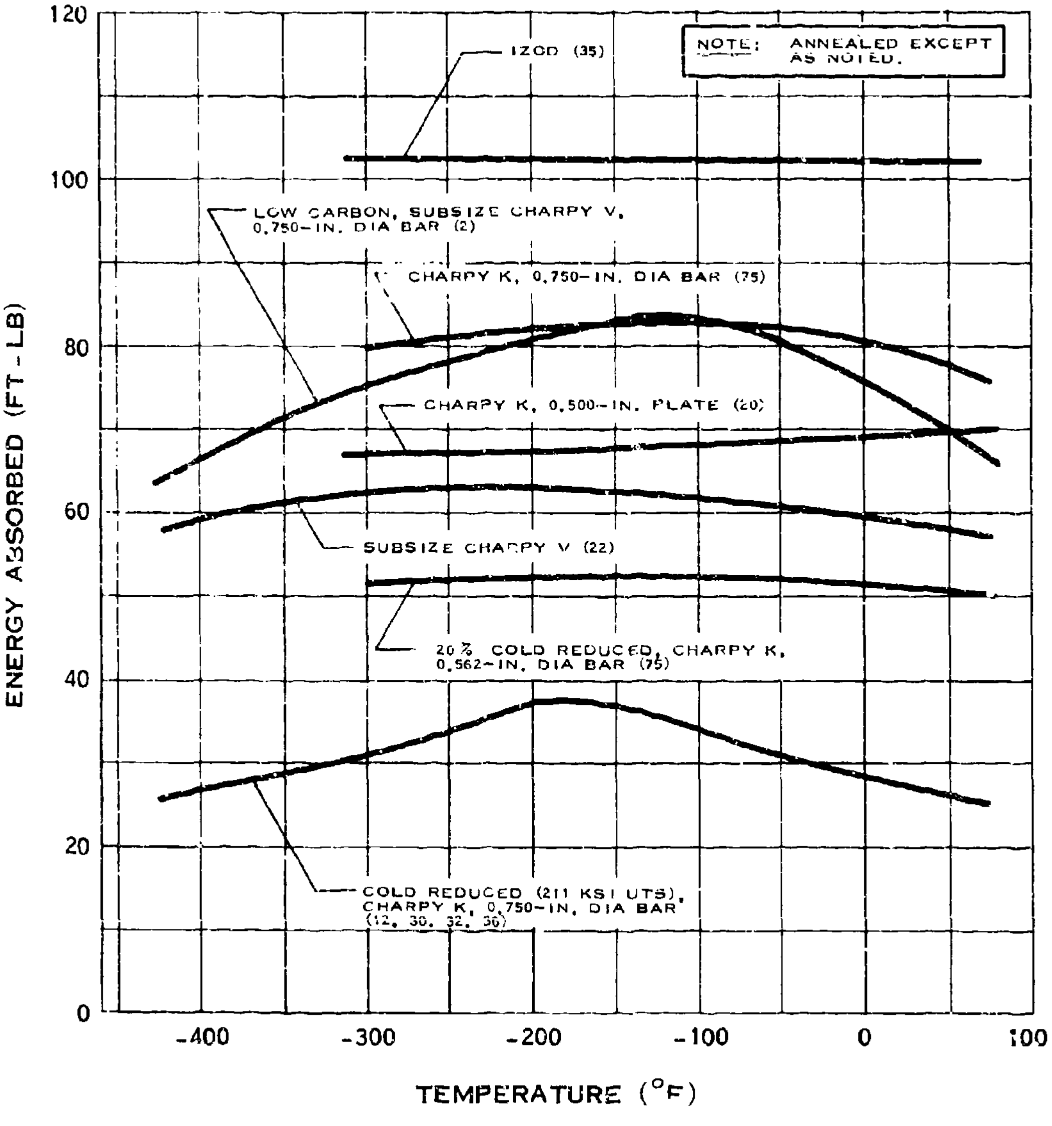
(1-65) **STRESS-STRAIN DIAGRAM FOR 304 STAINLESS STEEL**

B.4.i



MODULUS OF ELASTICITY OF 304 STAINLESS STEEL

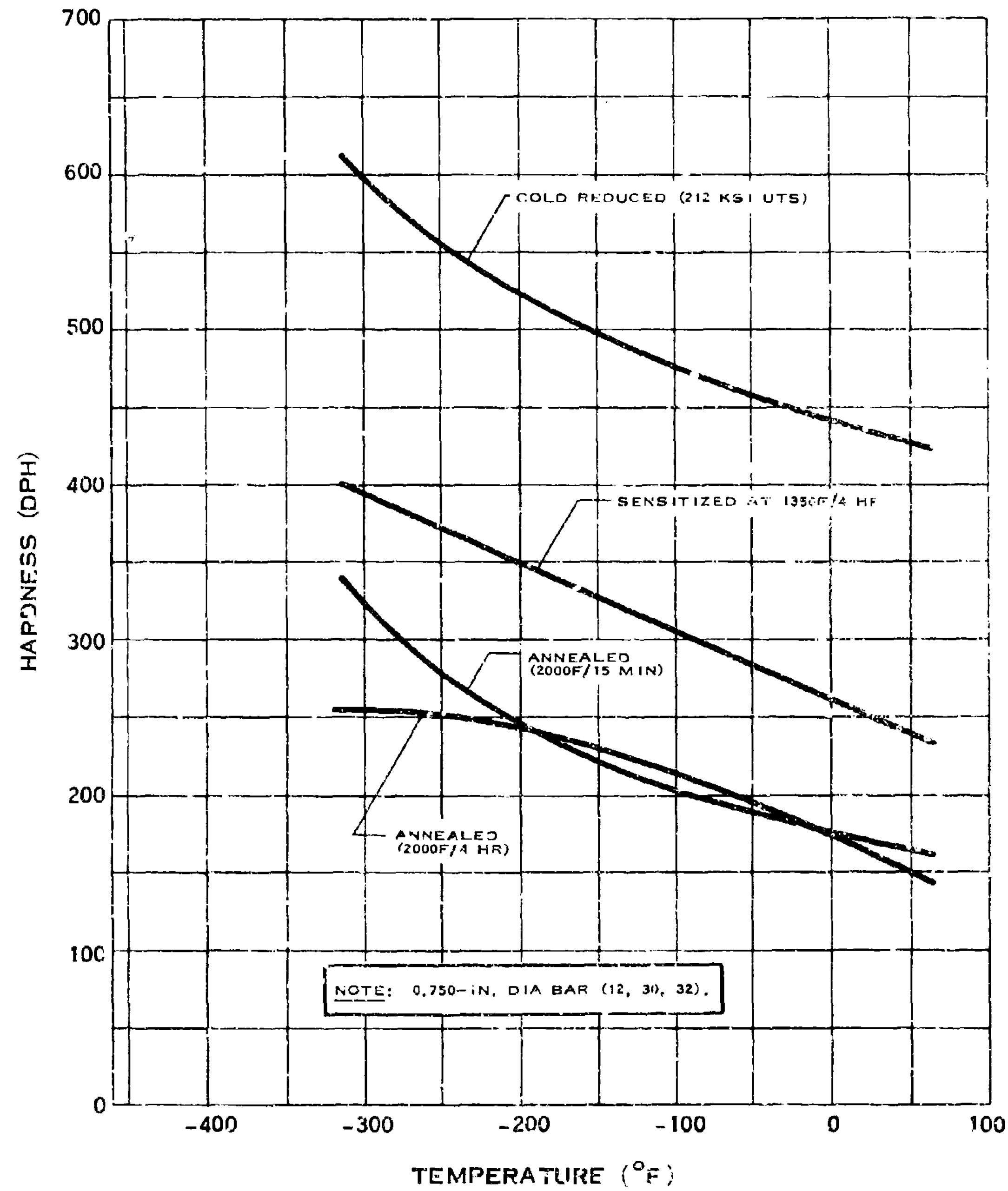
B.4.j



IMPACT STRENGTH OF 304 STAINLESS STEEL

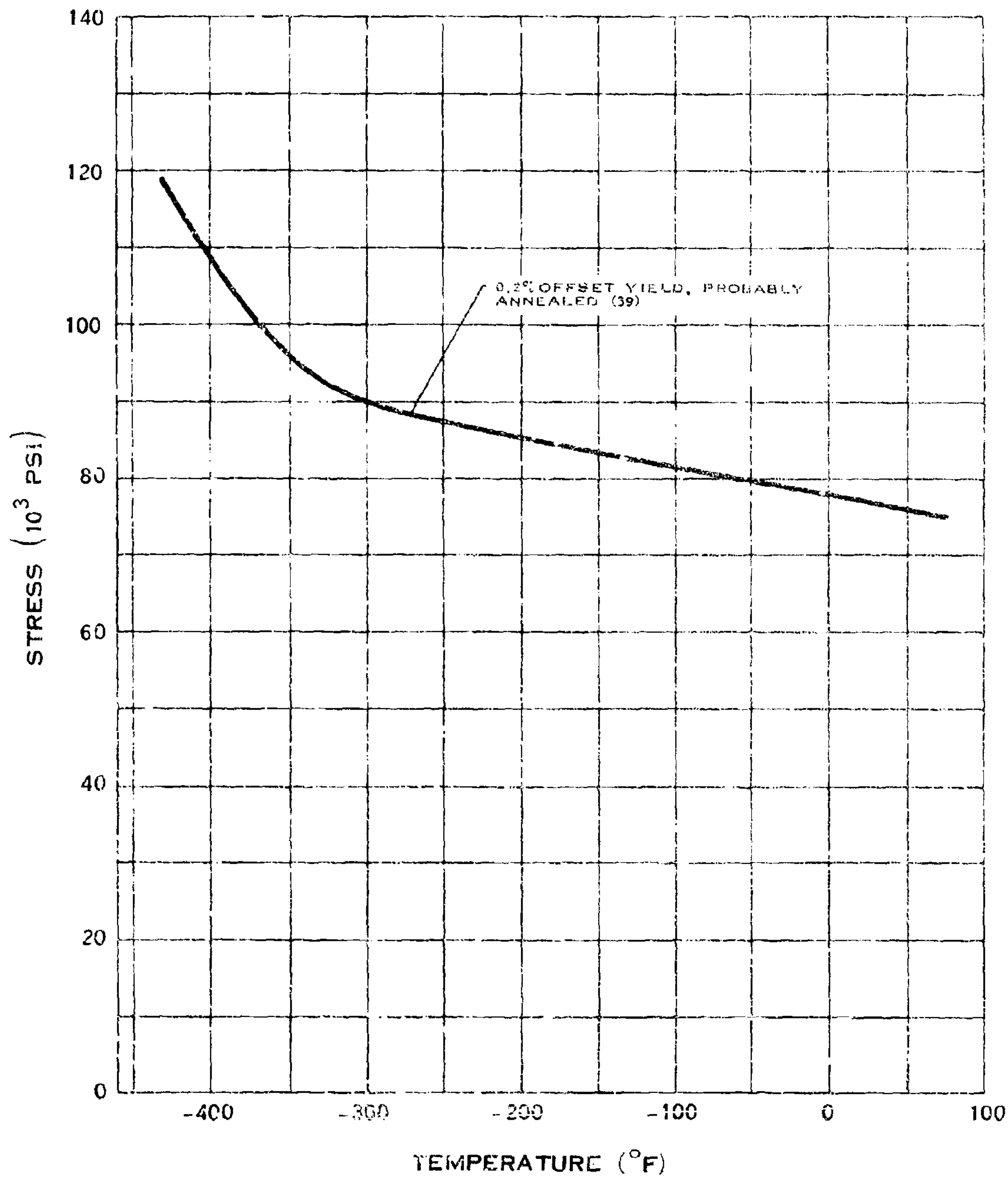
(7-64)

B.4.k



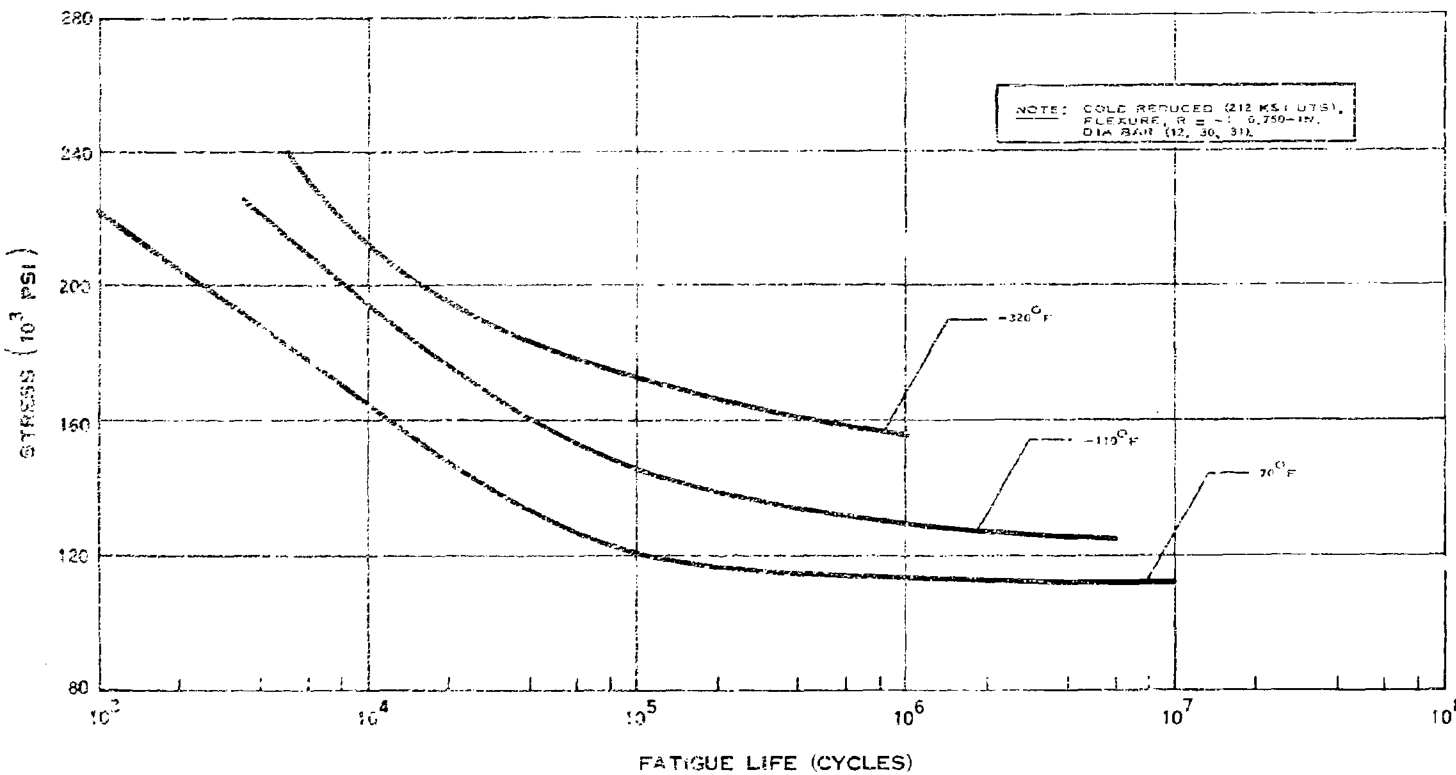
HARDNESS OF 304 STAINLESS STEEL

B.4.m



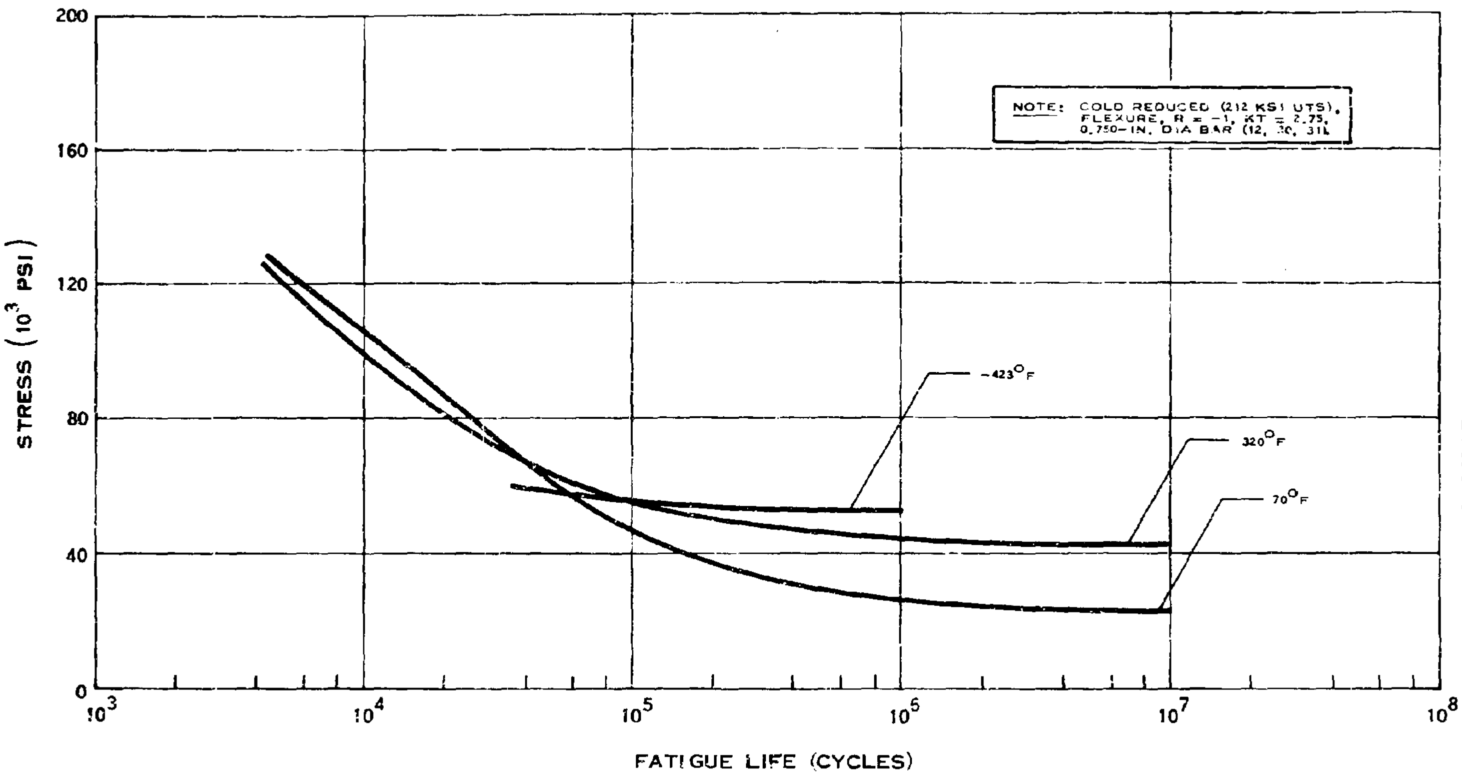
COMPRESSIVE STRENGTH OF 304 STAINLESS STEEL

(7-64)



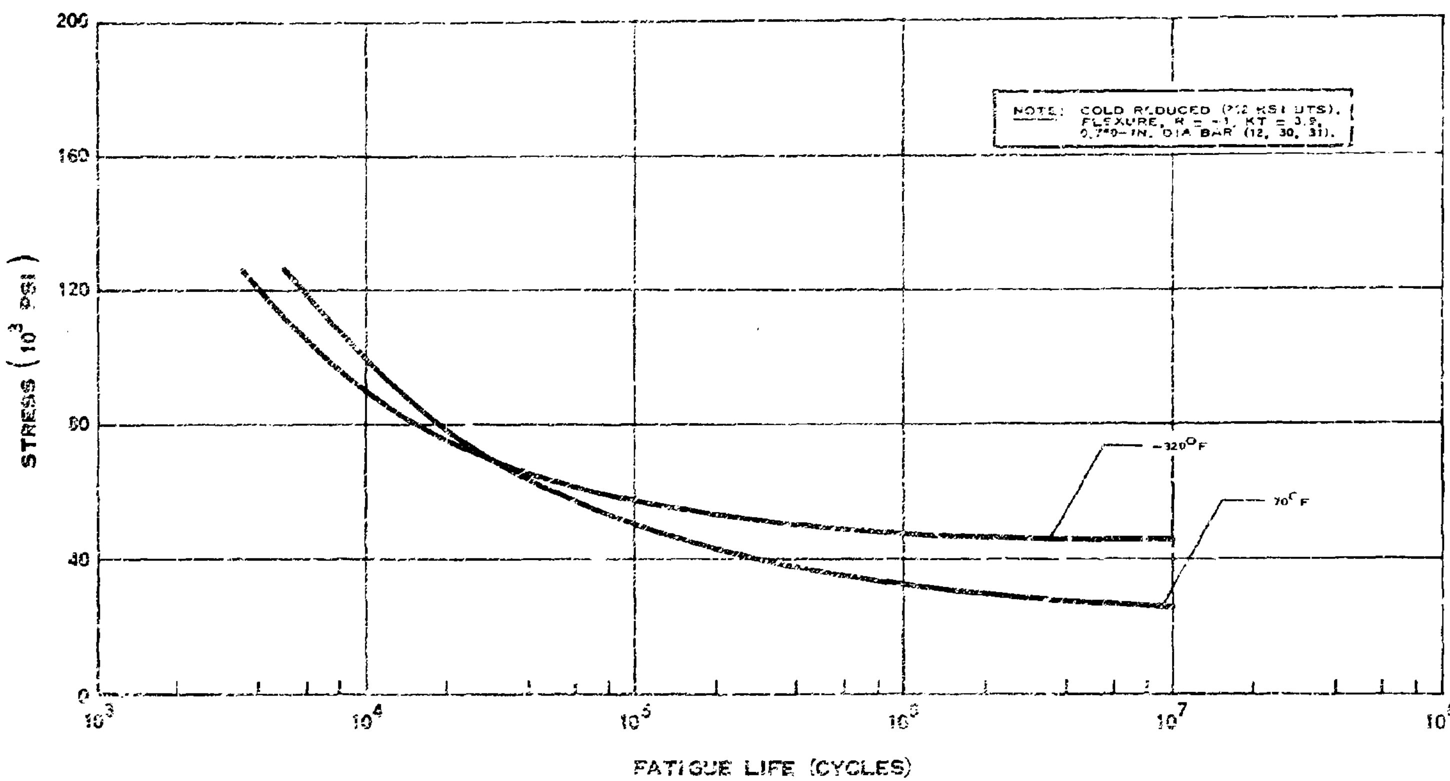
FATIGUE STRENGTH OF 304 STAINLESS STEEL

(7-64)

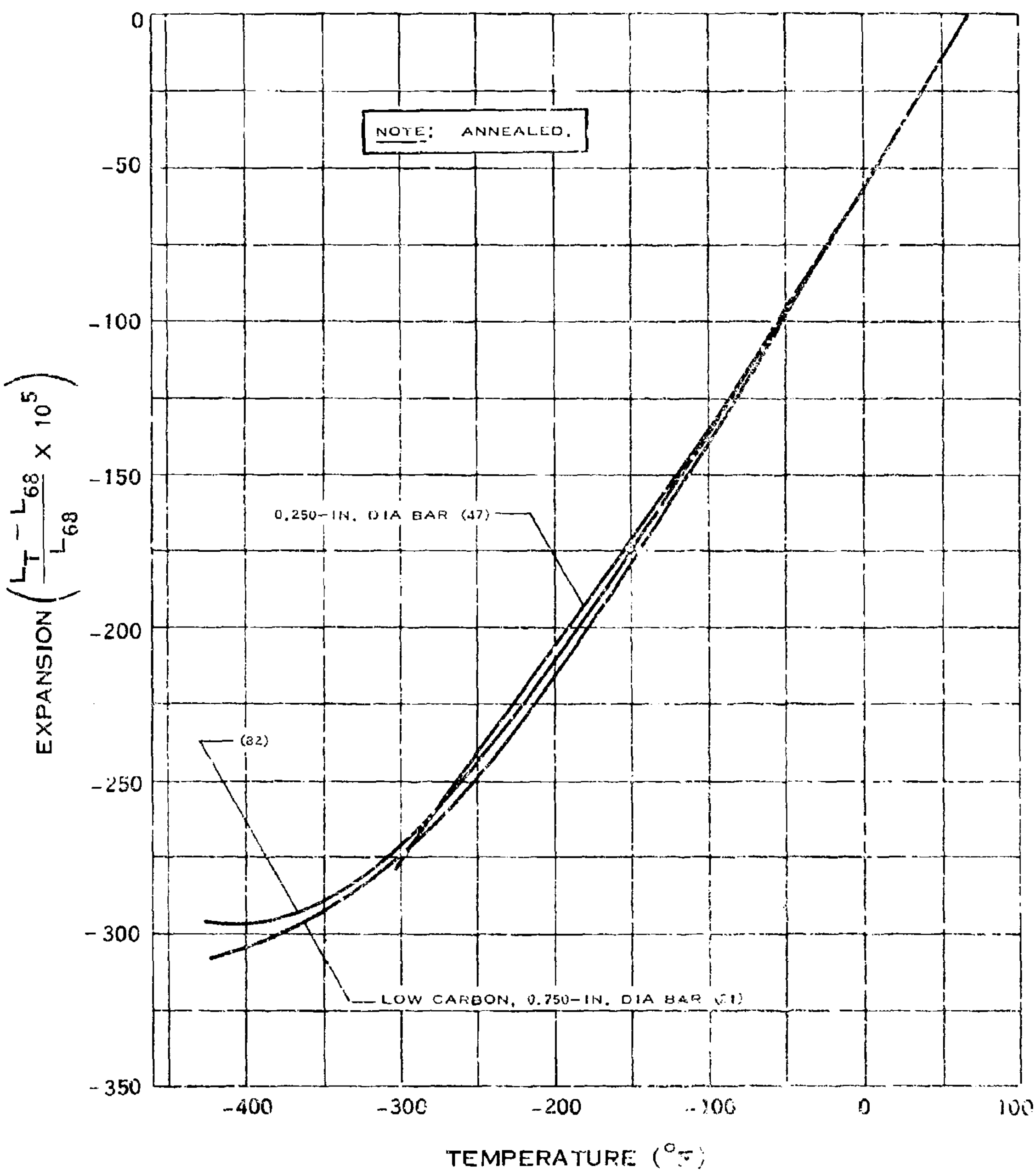


NOTCH FATIGUE STRENGTH OF 304 STAINLESS STEEL

(7-64)

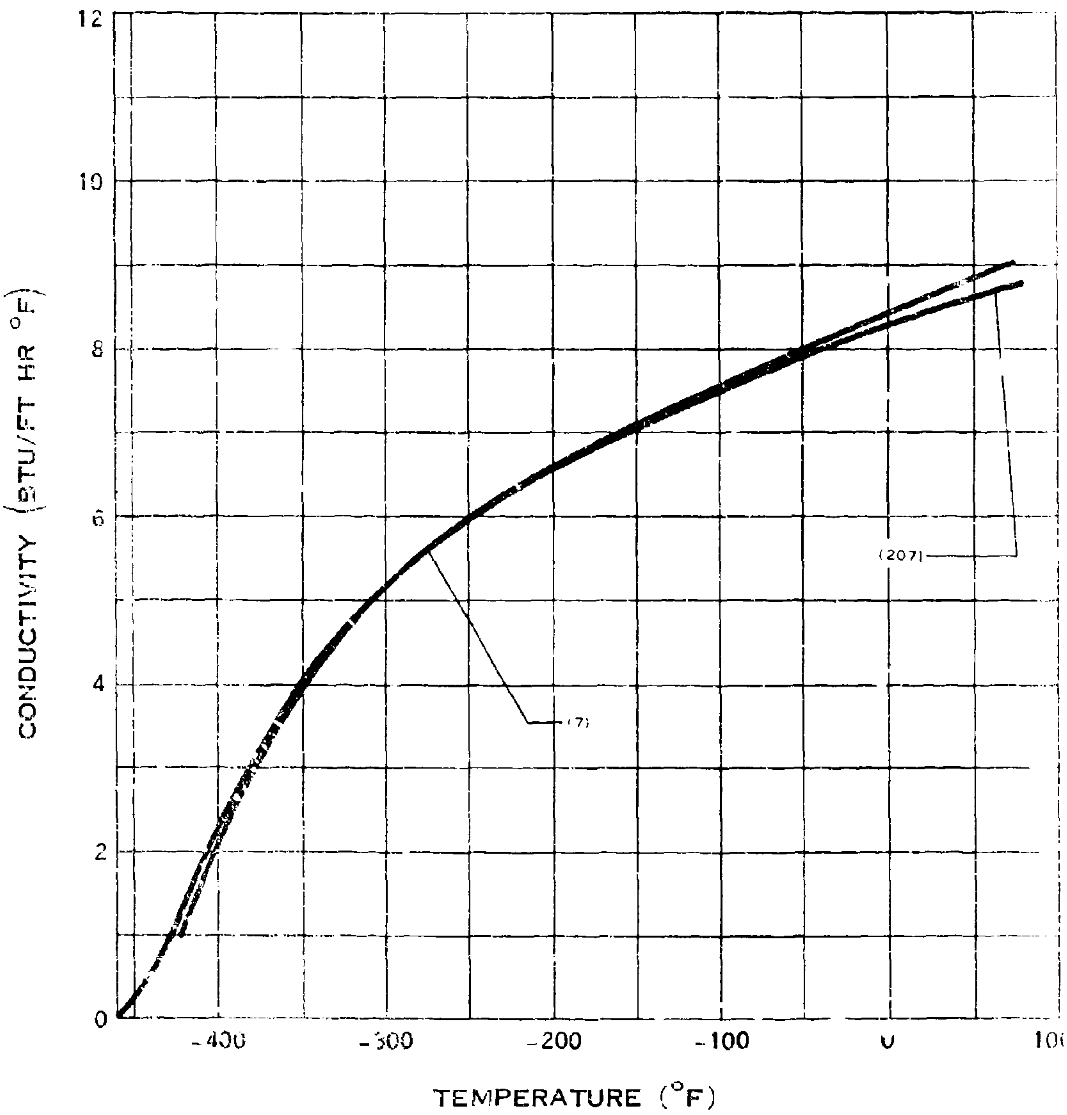


NOTCH FATIGUE STRENGTH OF 304 STAINLESS STEEL



THERMAL EXPANSION OF 304 STAINLESS STEEL

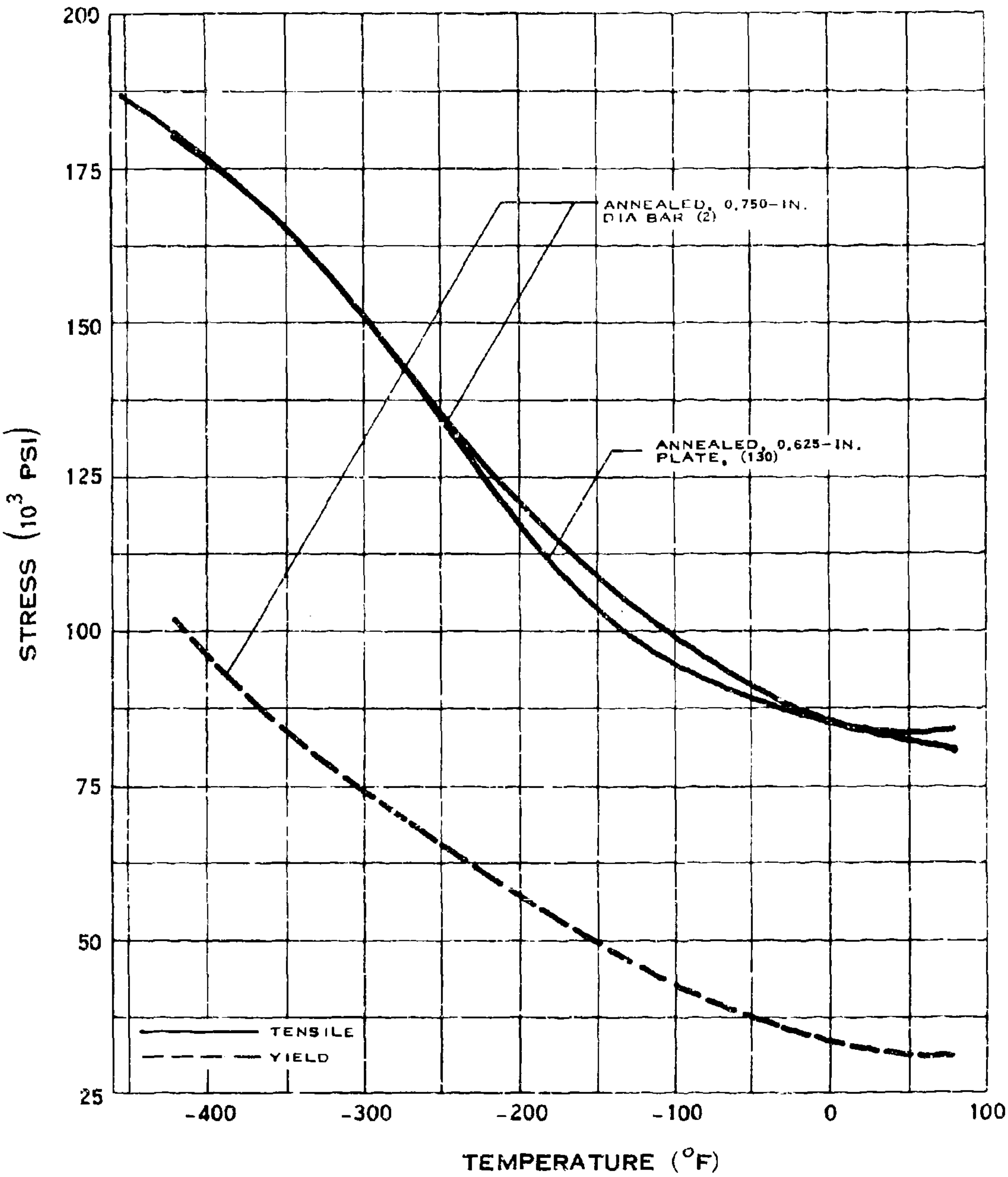
B.4.v



THERMAL CONDUCTIVITY OF 304 STAINLESS STEEL

(6-68)

B.5.ab



STRENGTH OF 310 STAINLESS STEEL

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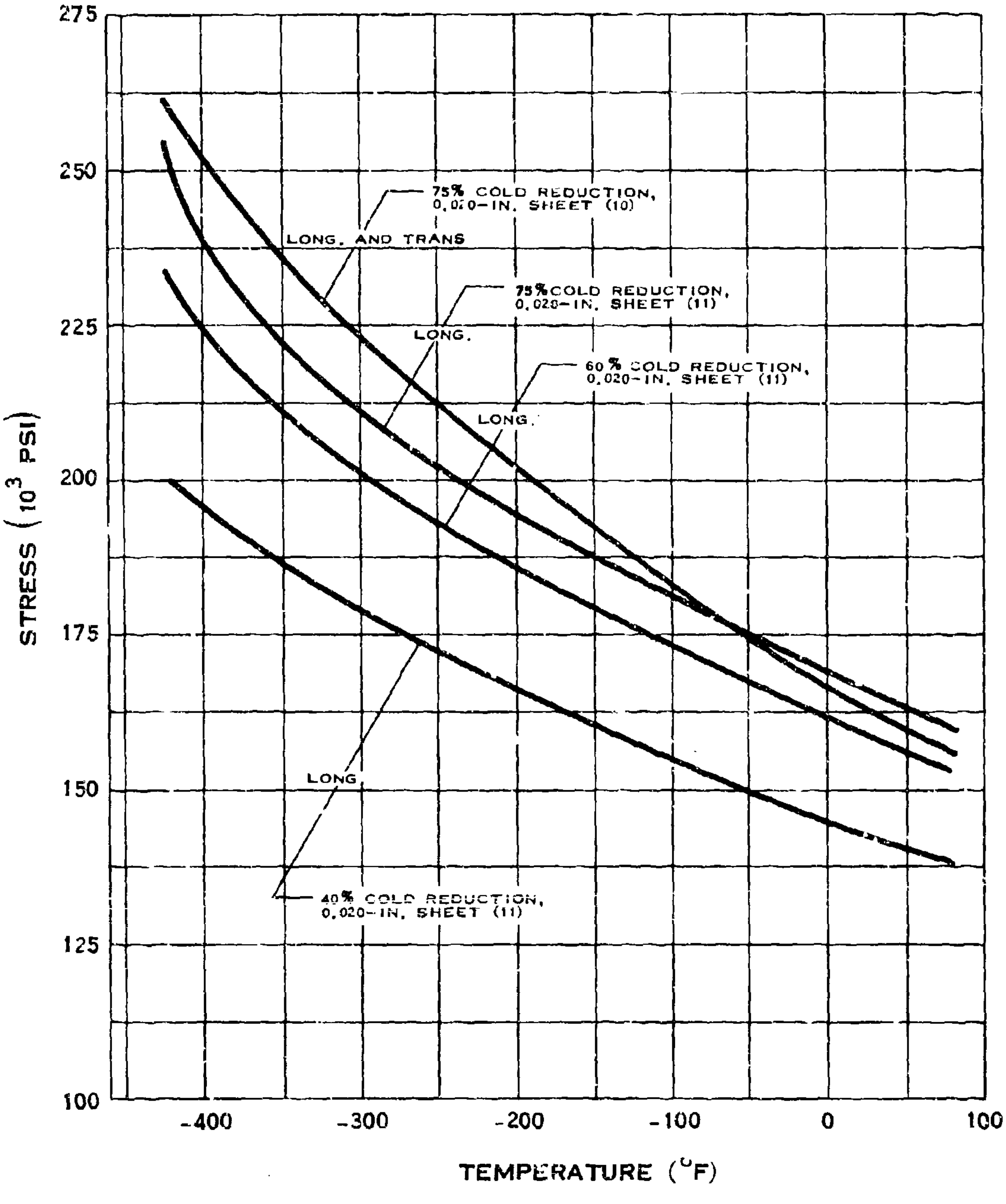
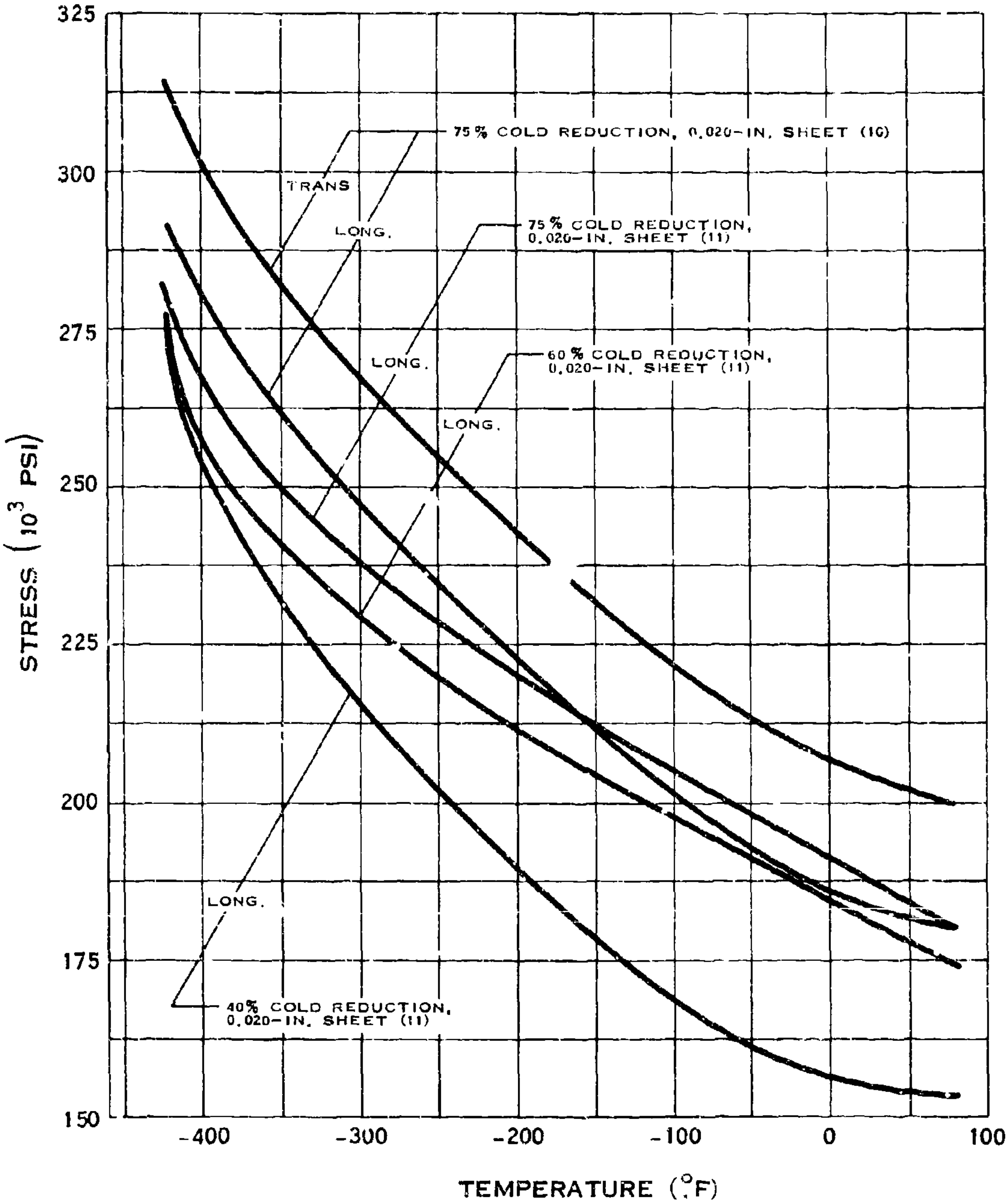
B.5.a



YIELD STRENGTH OF 310 STAINLESS STEEL

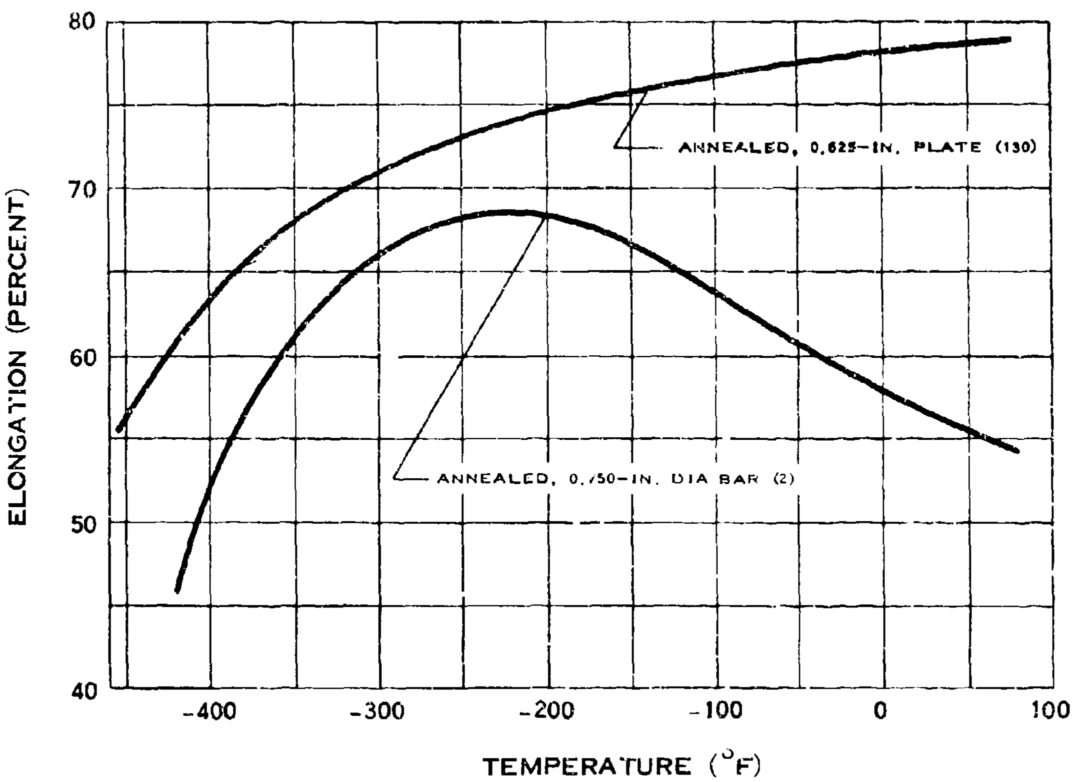
B.5.b



TENSILE STRENGTH OF 310 STAINLESS STEEL

(7-64)

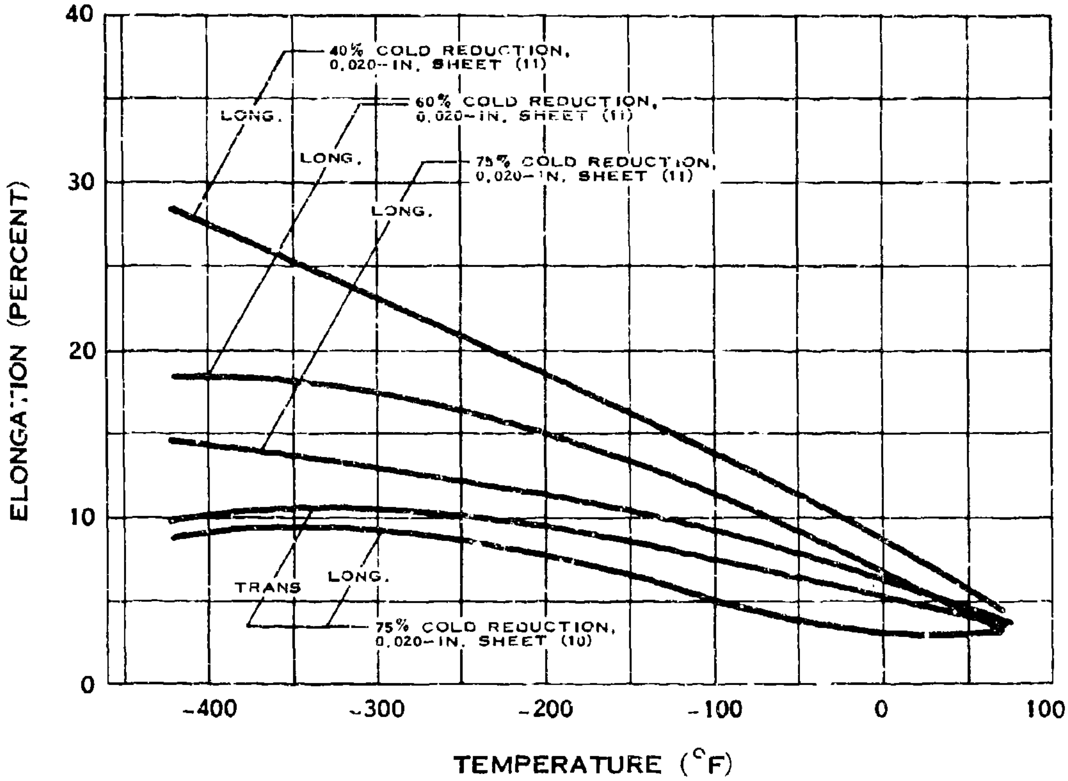
B.5.c



ELONGATION OF 310 STAINLESS STEEL

(7-68)

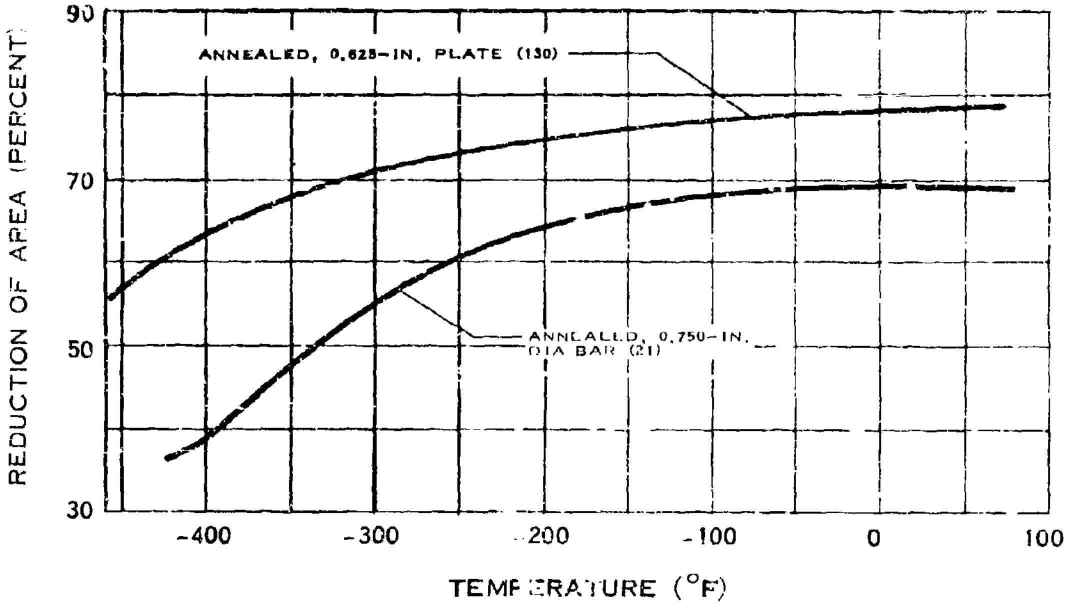
B.5.c-1



ELONGATION OF 310 STAINLESS STEEL

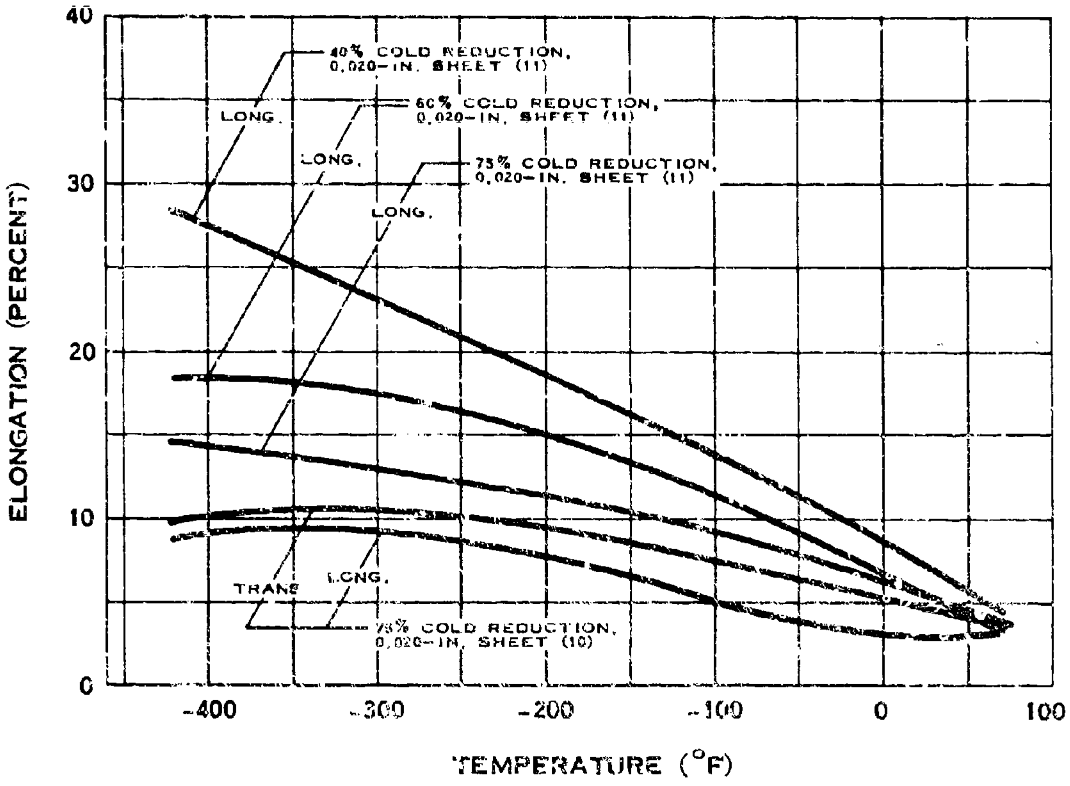
(7-64)

B.5.d



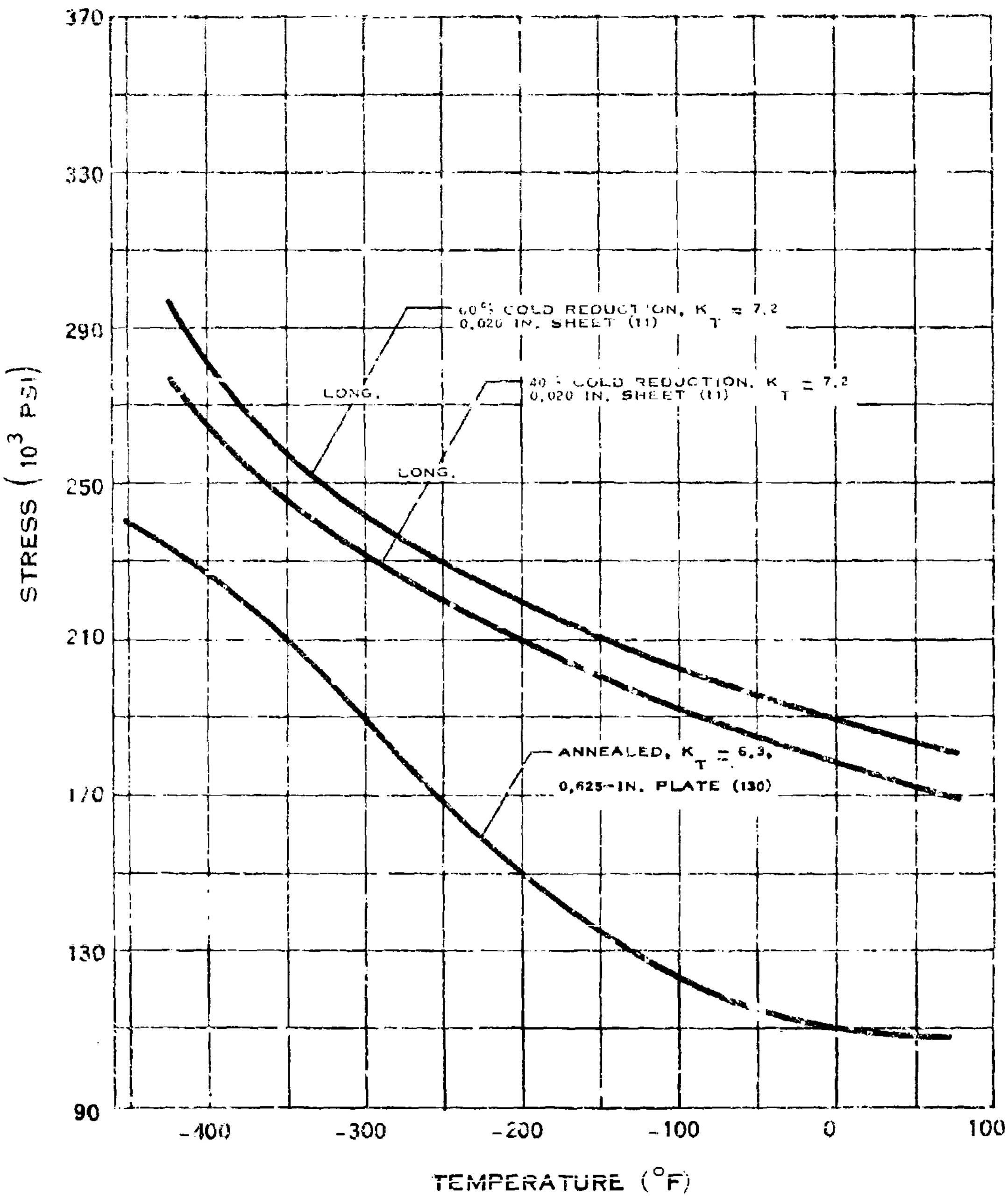
REDUCTION OF AREA OF 310 STAINLESS STEEL

(7-63)



ELONGATION OF 310 STAINLESS STEEL

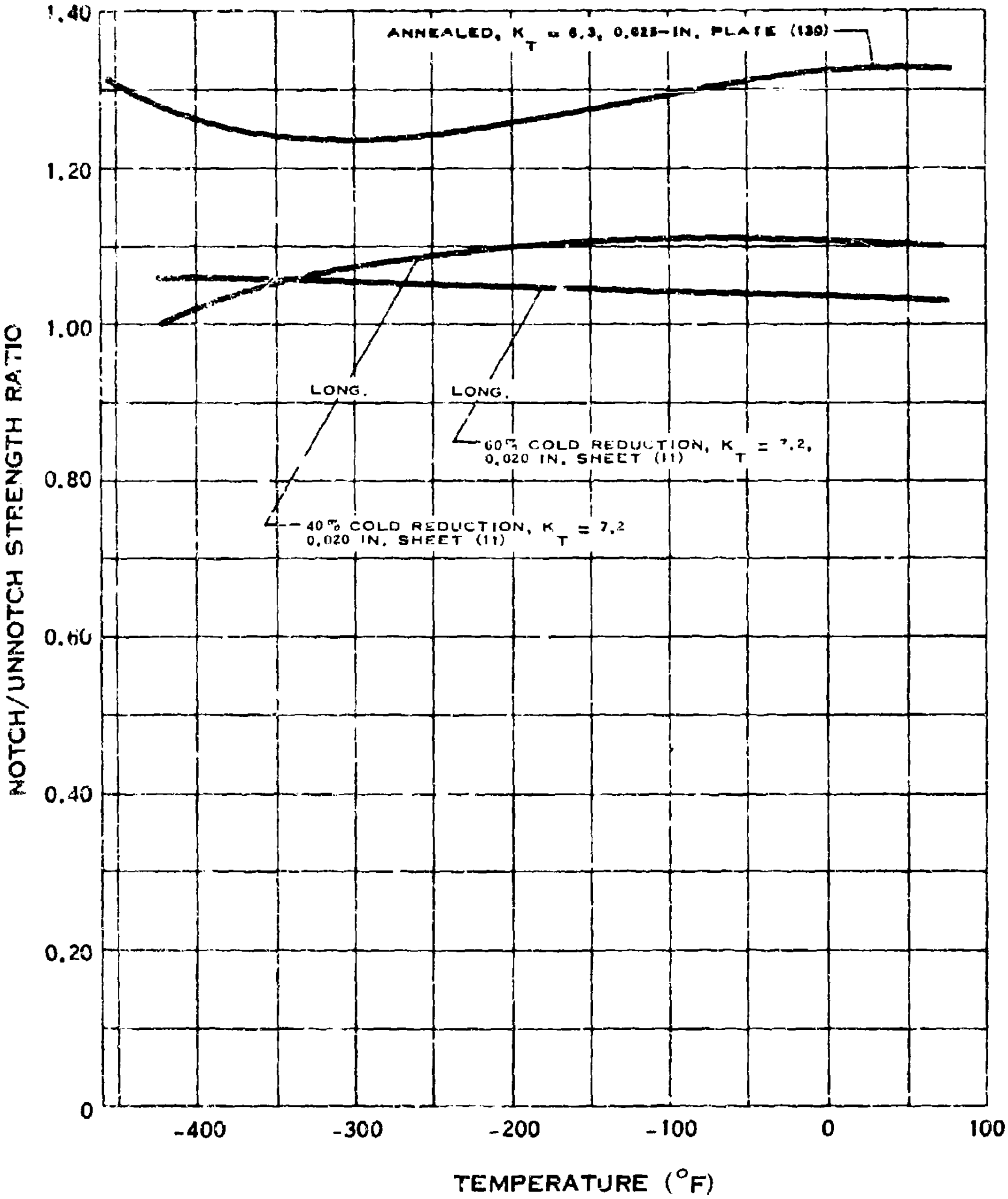
(7-64)



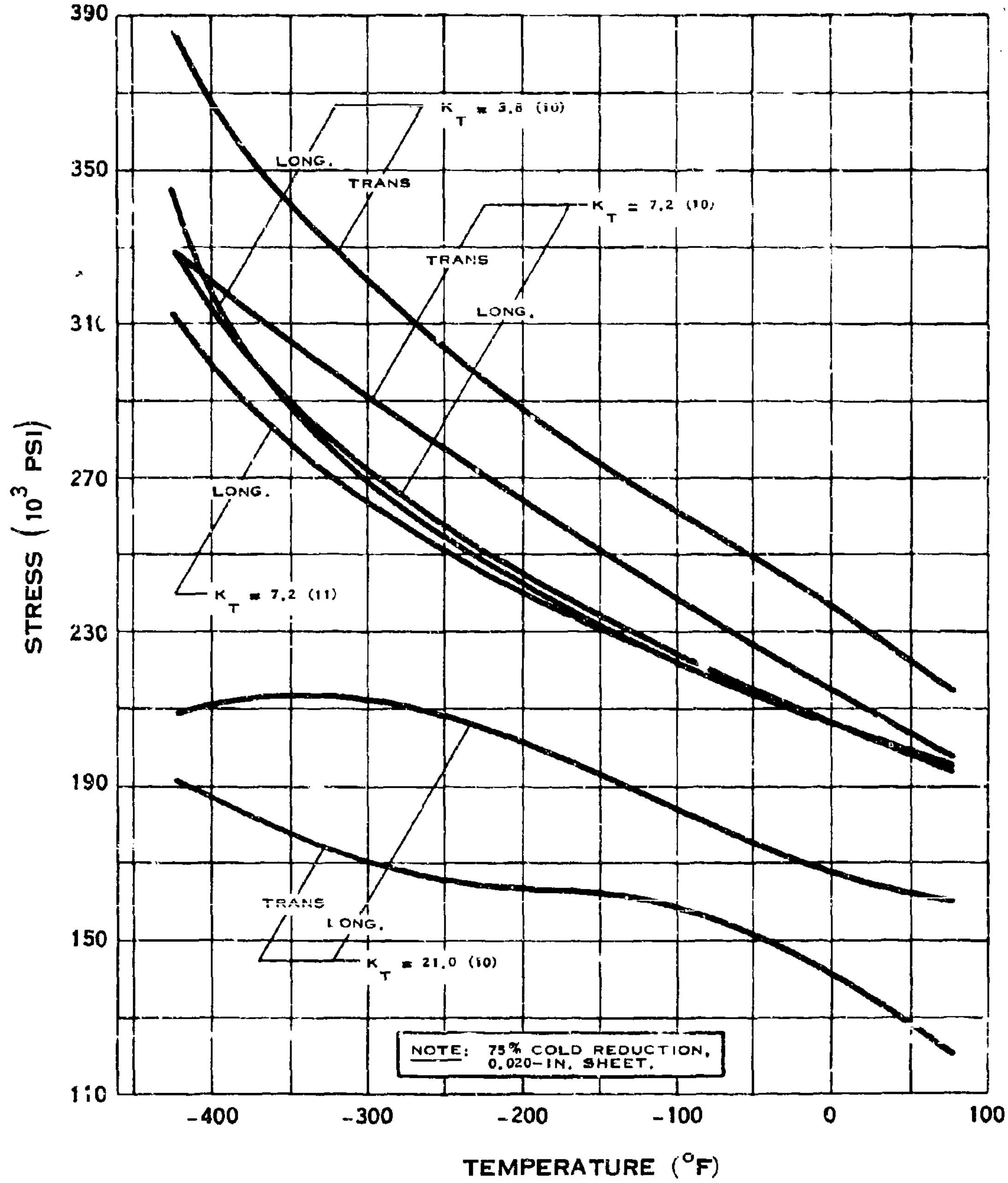
NOTCH TENSILE STRENGTH OF 310 STAINLESS STEEL

(7-65)

B.5.e-1

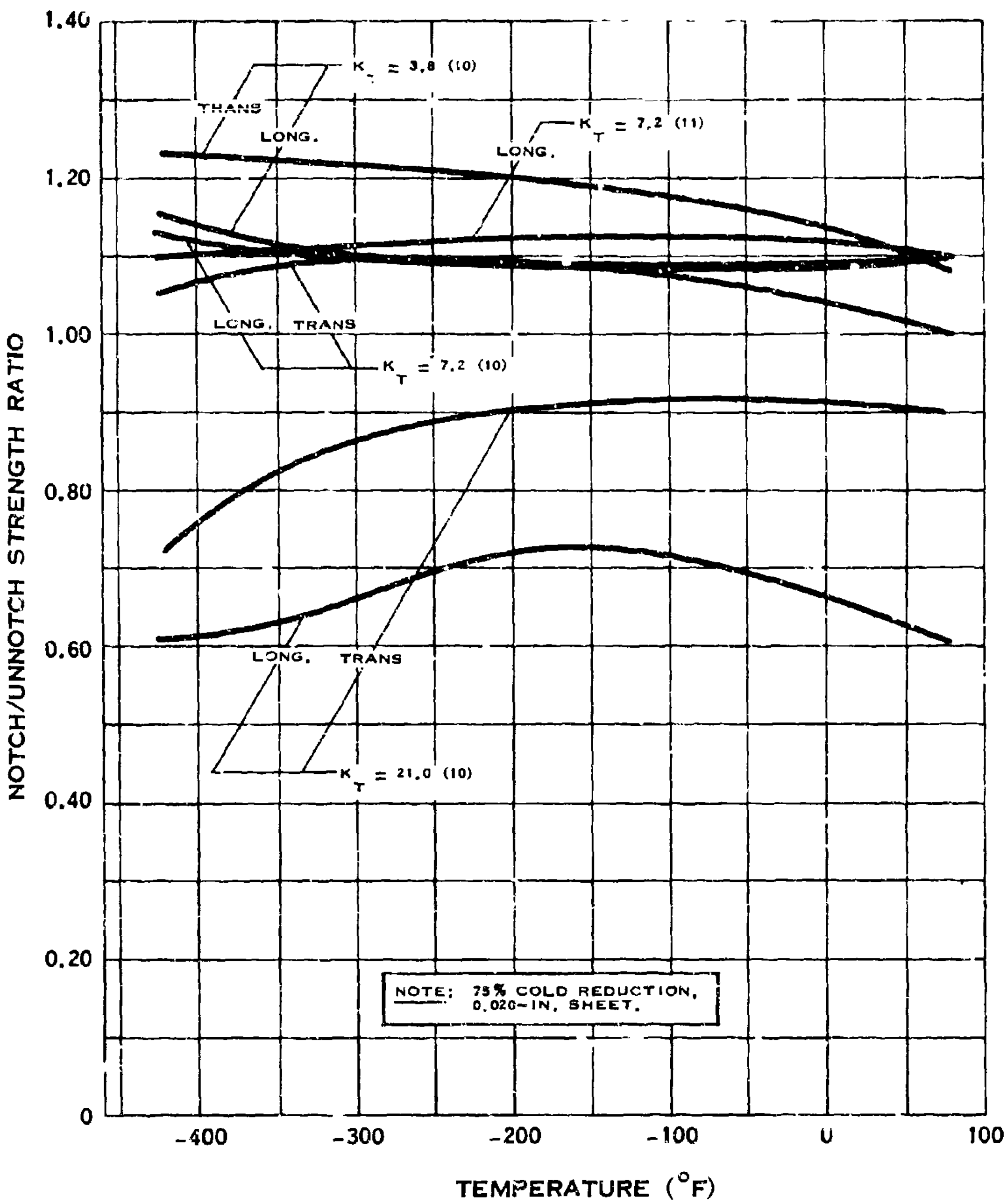


NOTCH STRENGTH RATIO OF 310 STAINLESS STEEL

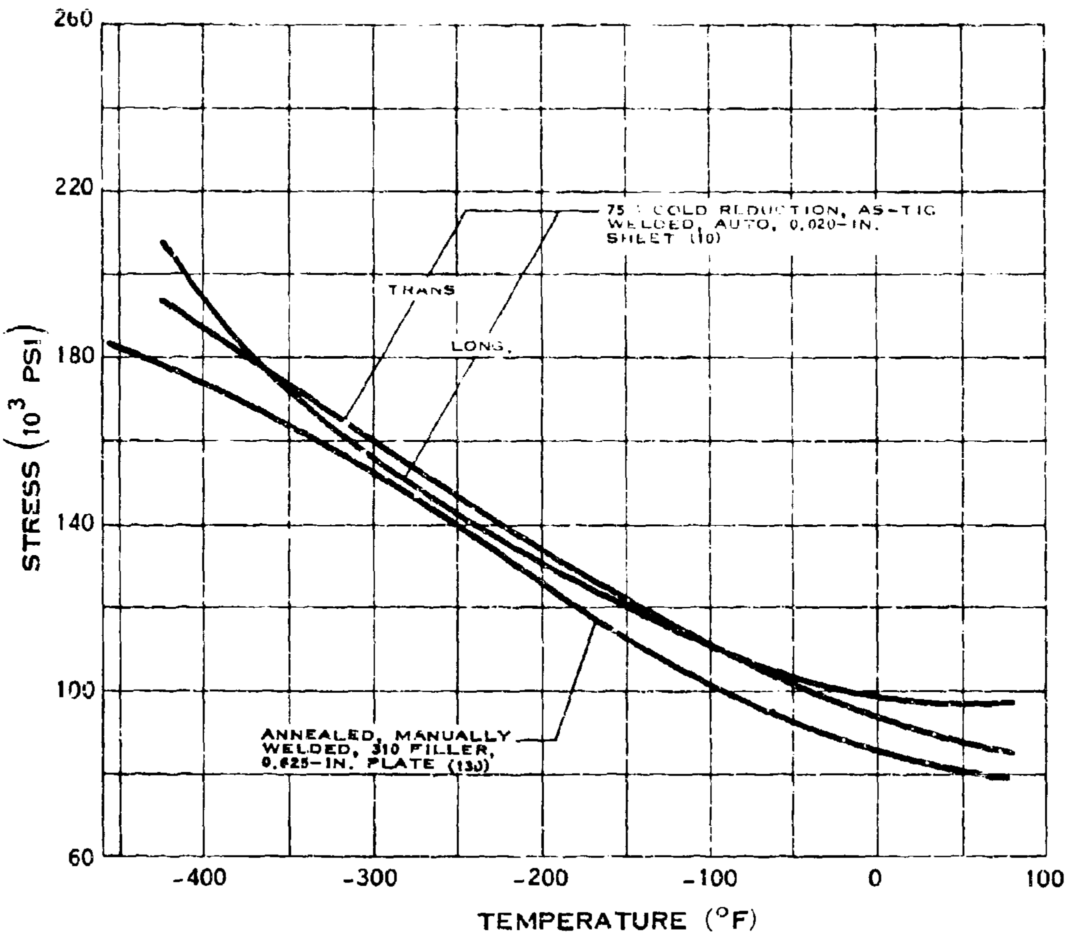


NOTCH TENSILE STRENGTH OF 310 STAINLESS STEEL

(7-64)

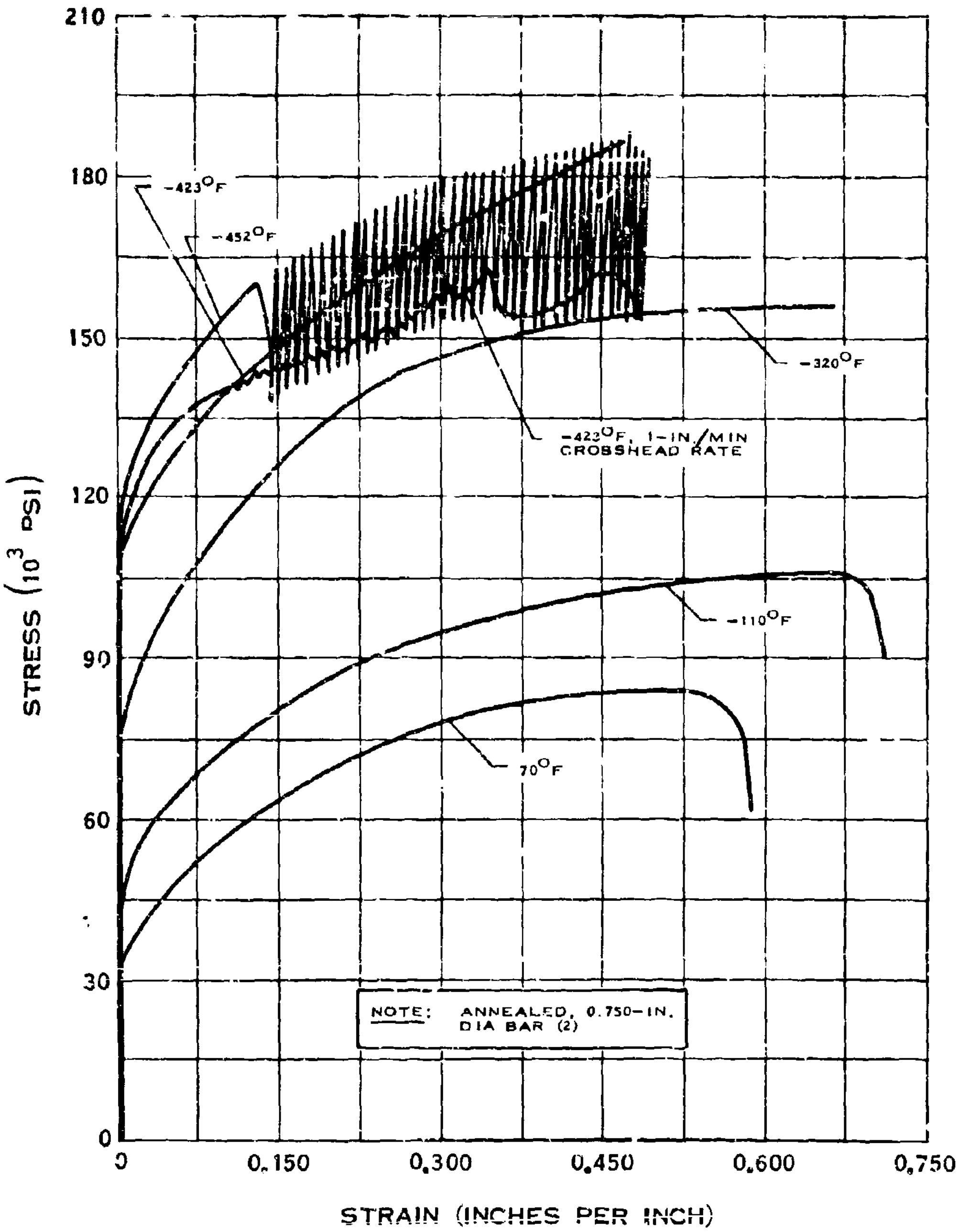


NOTCH STRENGTH RATIO OF 310 STAINLESS STEEL



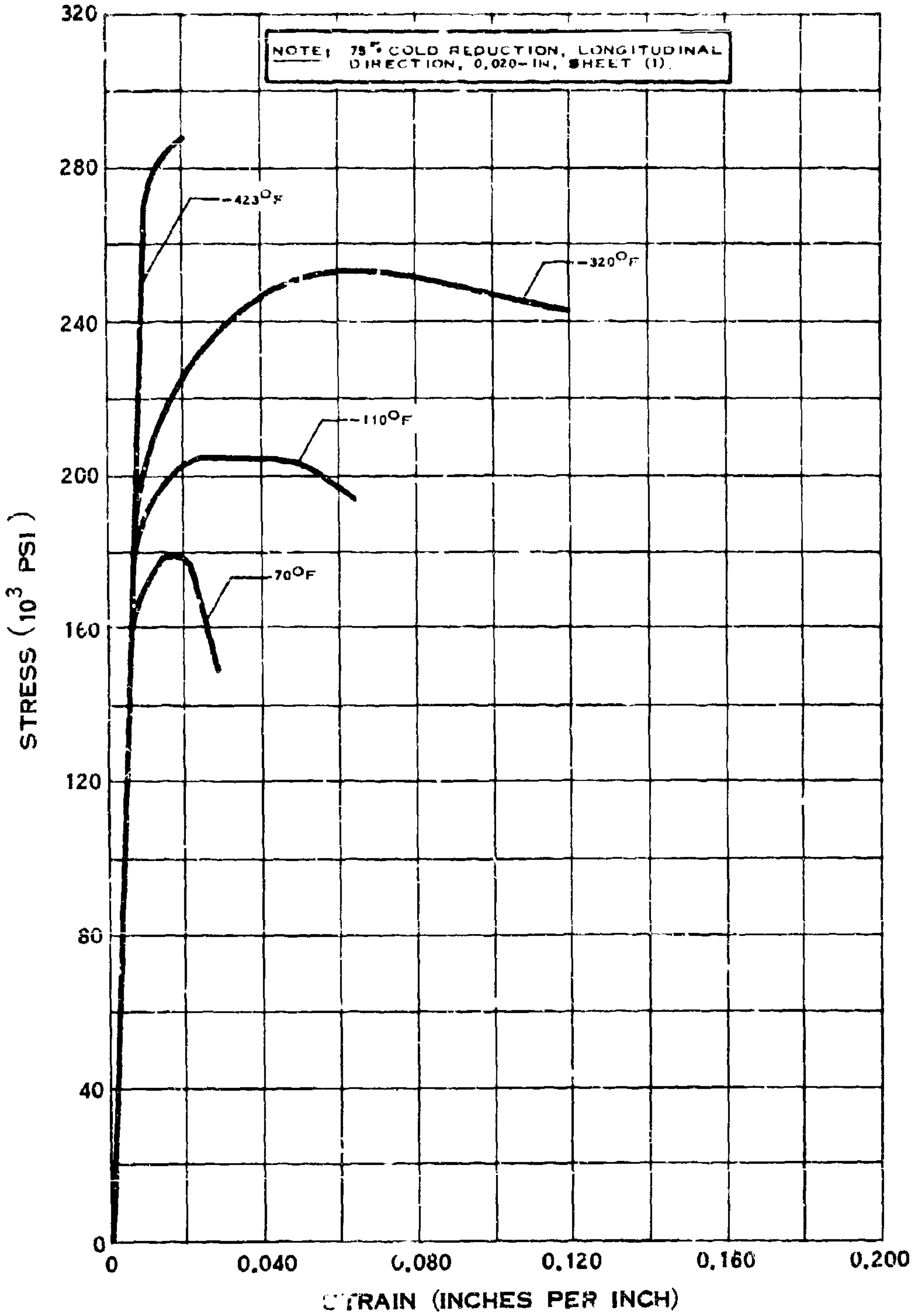
WELD TENSILE STRENGTH OF 310 STAINLESS STEEL

B.5.h



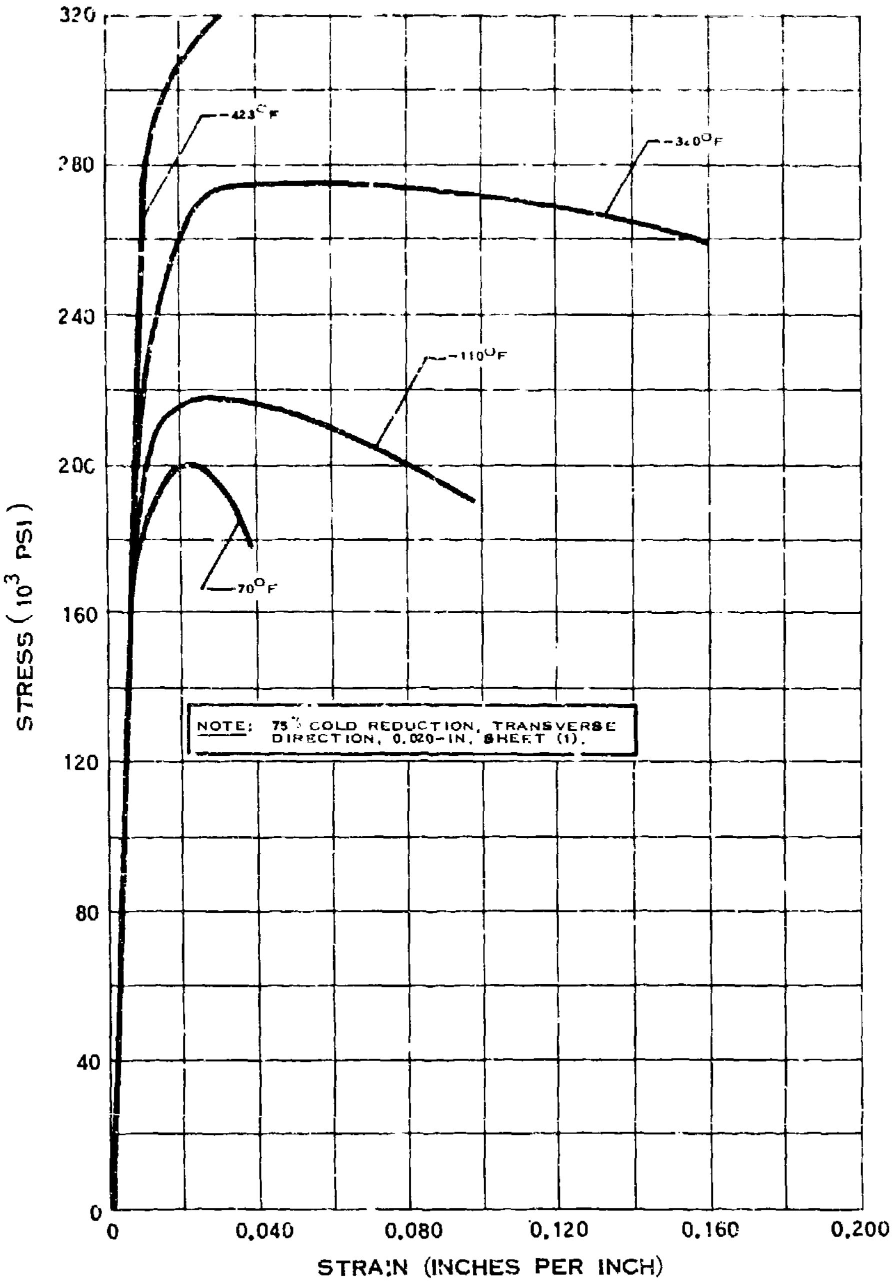
STRESS-STRAIN DIAGRAM FOR 310 STAINLESS STEEL

(7-64)



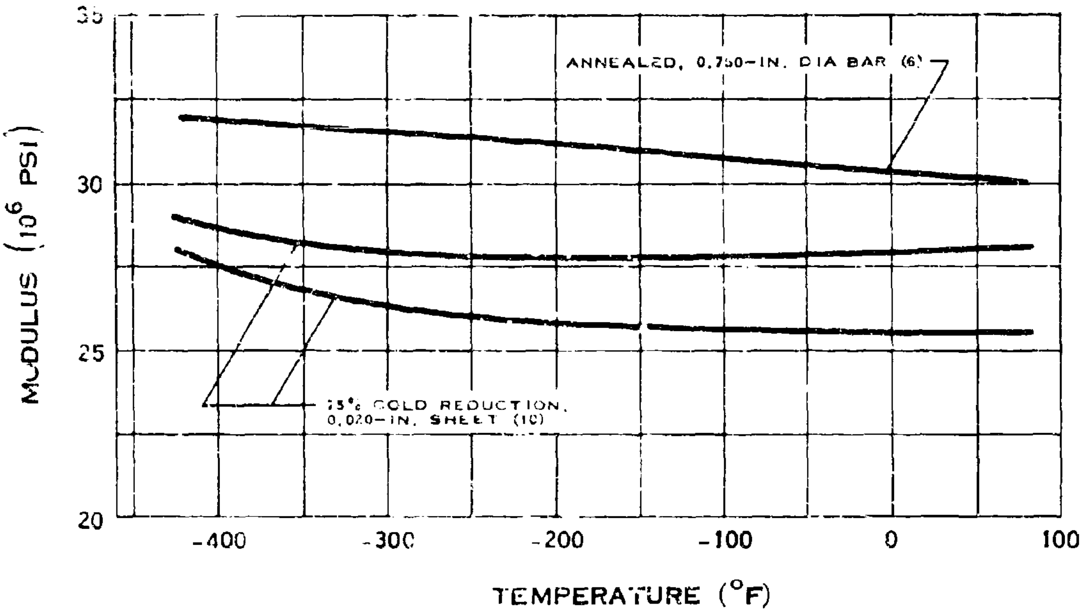
(1-65) **STRESS-STRAIN DIAGRAM FOR 310 STAINLESS STEEL**

B.5.h-2

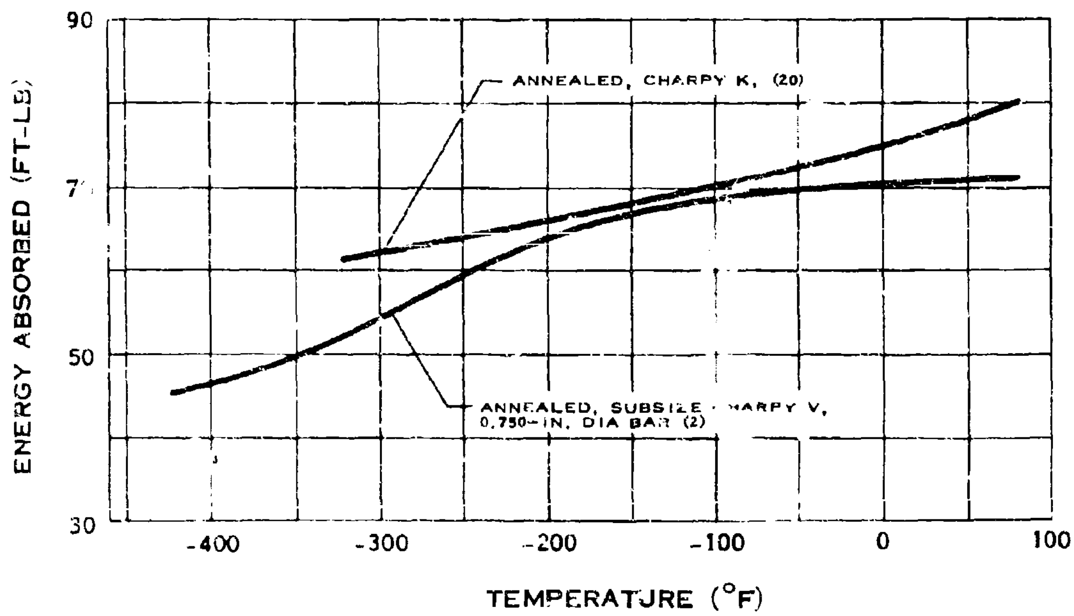


(1-65) **STRESS-STRAIN DIAGRAM FOR 310 STAINLESS STEEL**

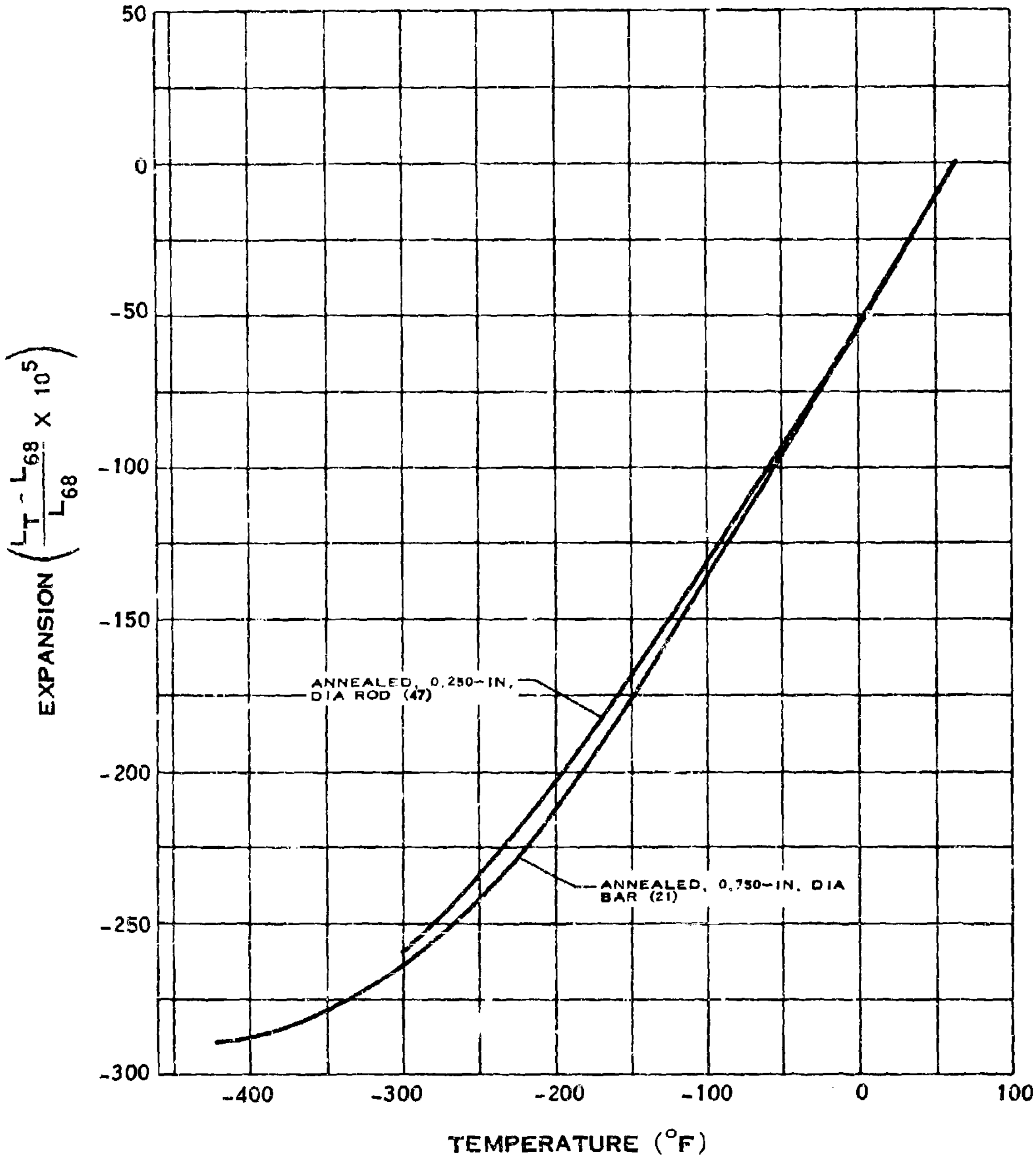
B.5.ij



MODULUS OF ELASTICITY OF 310 STAINLESS STEEL



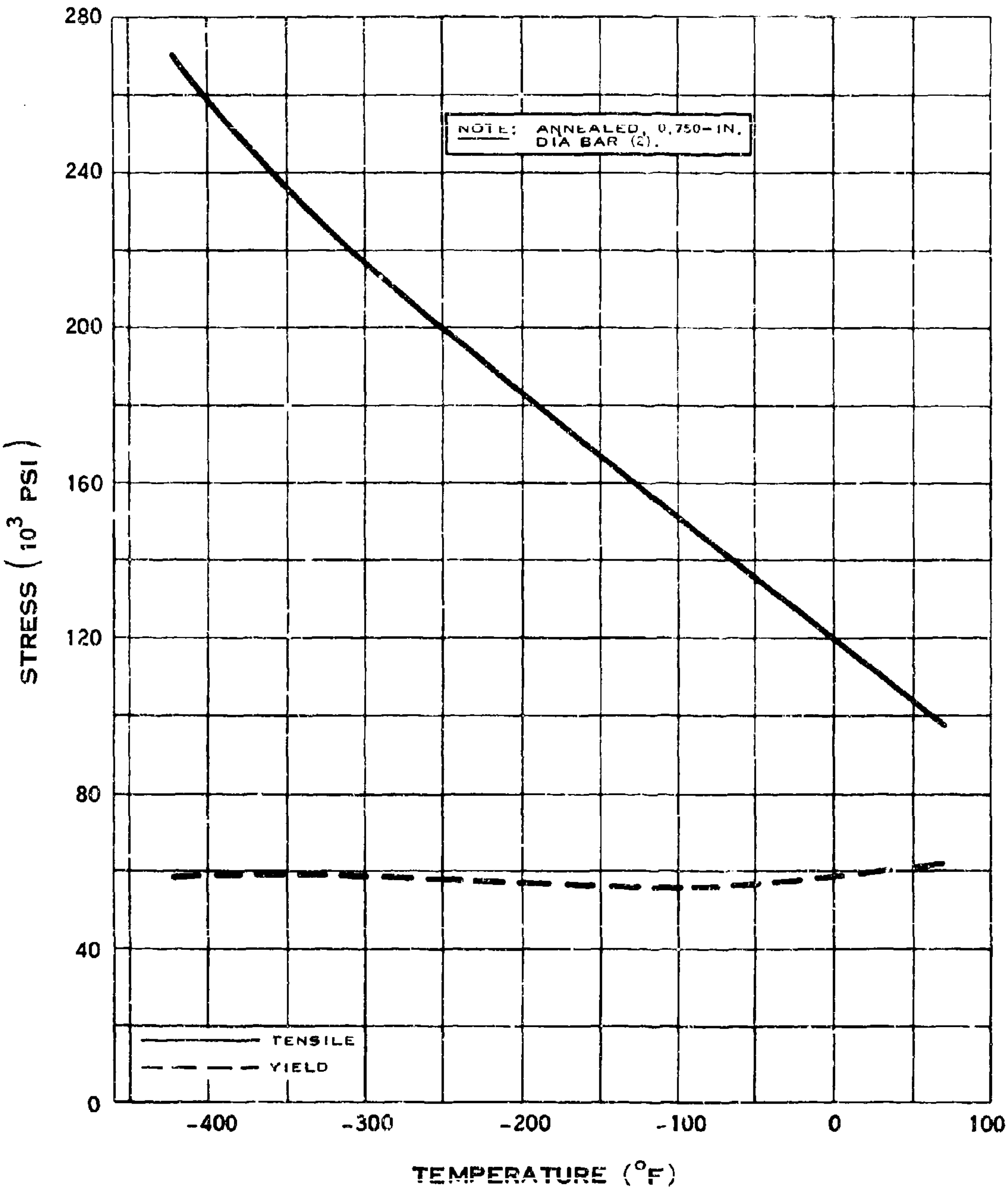
IMPACT STRENGTH OF 310 STAINLESS STEEL



THERMAL EXPANSION OF 310 STAINLESS STEEL

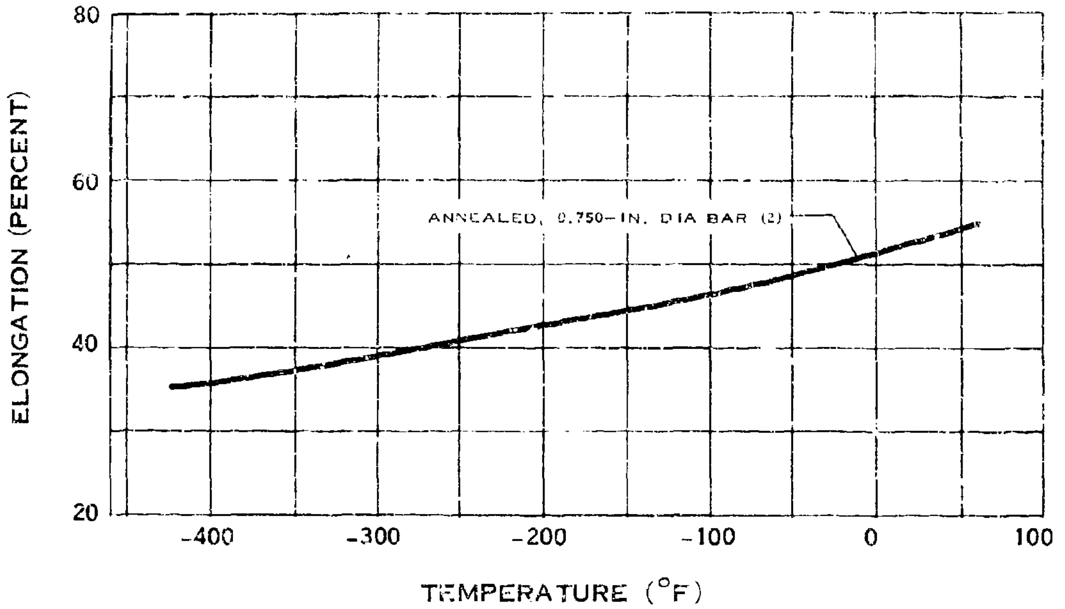
(7-64)

B.6.ab

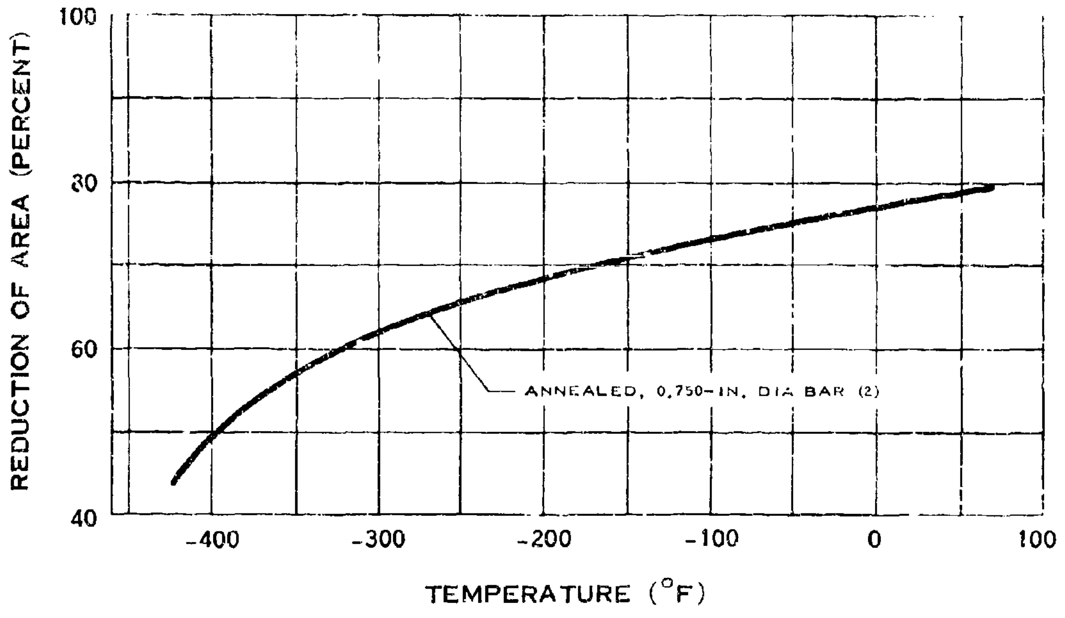


STRENGTH OF 321 STAINLESS STEEL

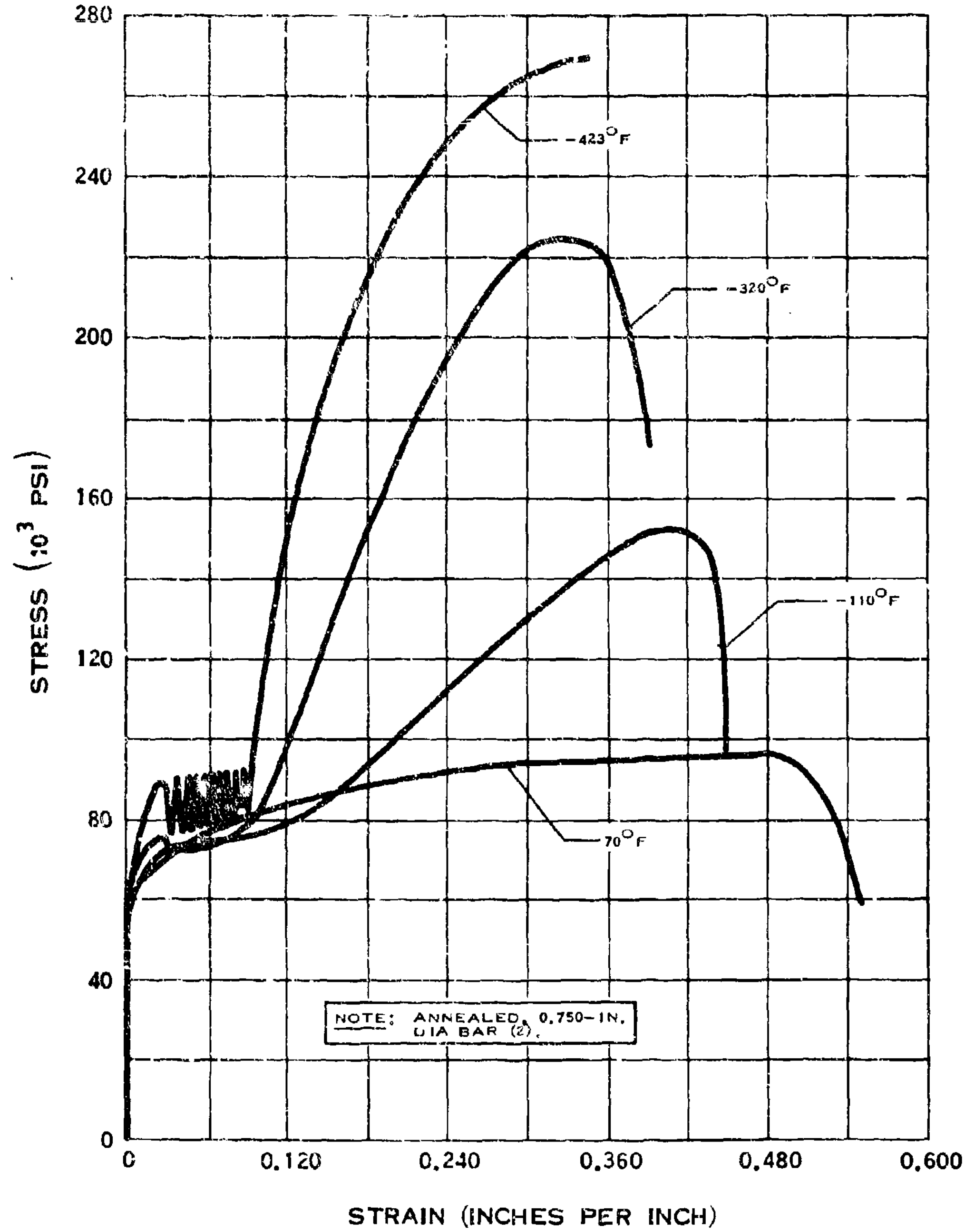
(7-64)



ELONGATION OF 321 STAINLESS STEEL

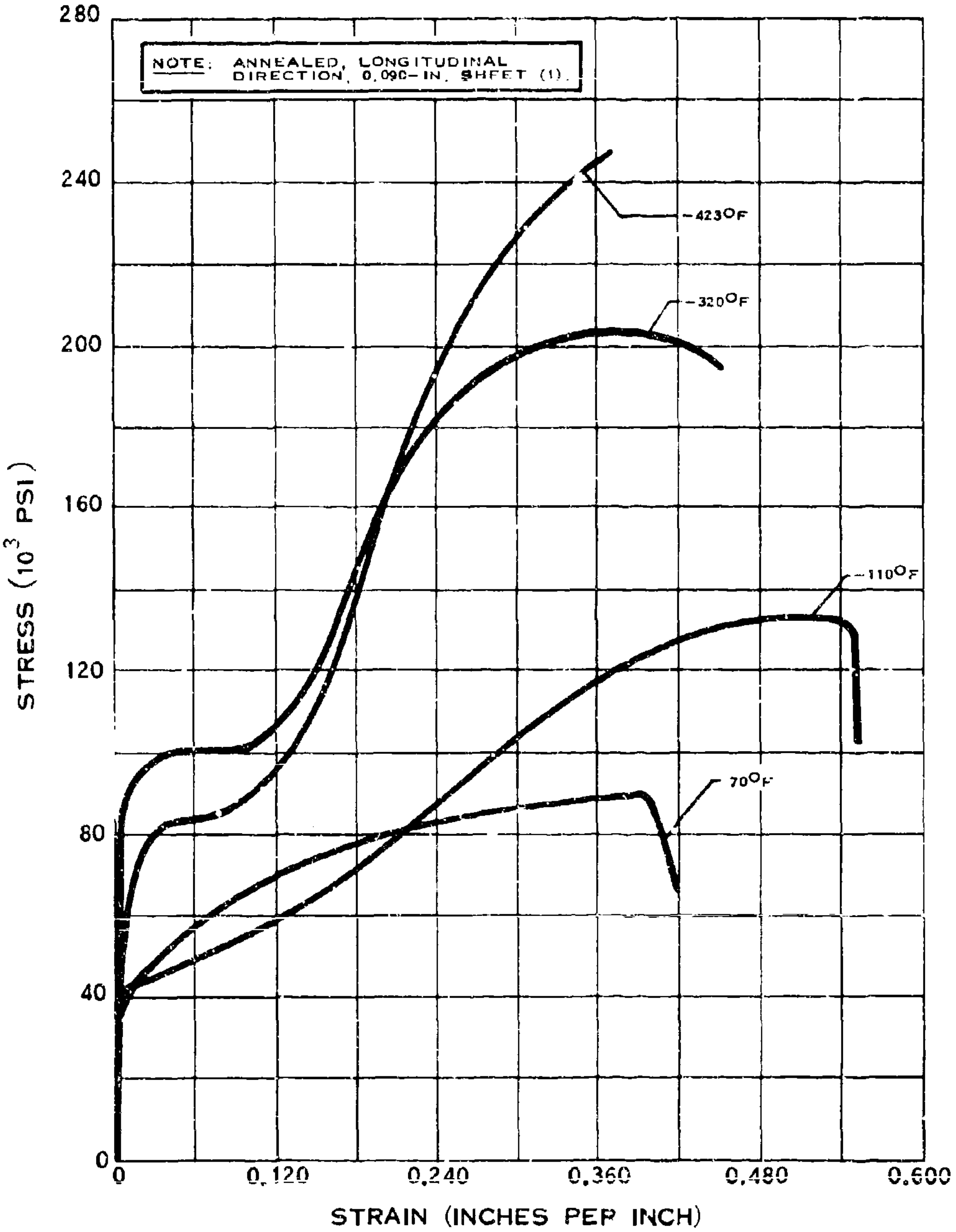


REDUCTION OF AREA OF 321 STAINLESS STEEL



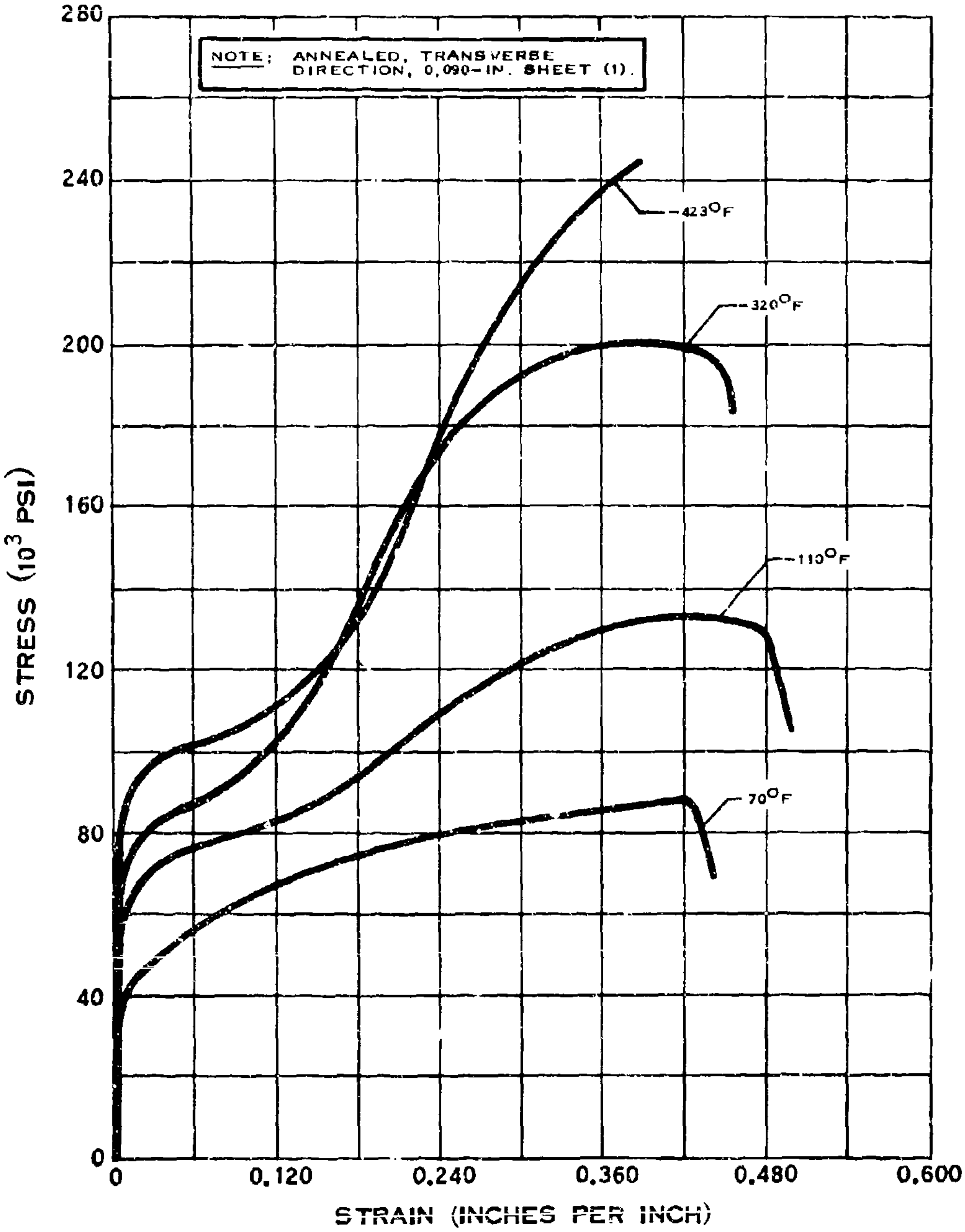
STRESS-STRAIN DIAGRAM FOR 321 STAINLESS STEEL

B.6.h-1

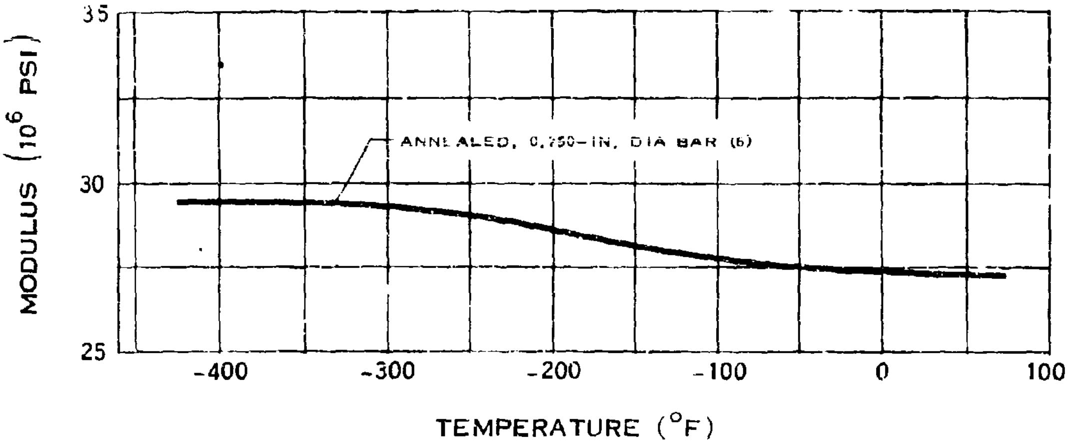


STRESS-STRAIN DIAGRAM FOR 321 STAINLESS STEEL

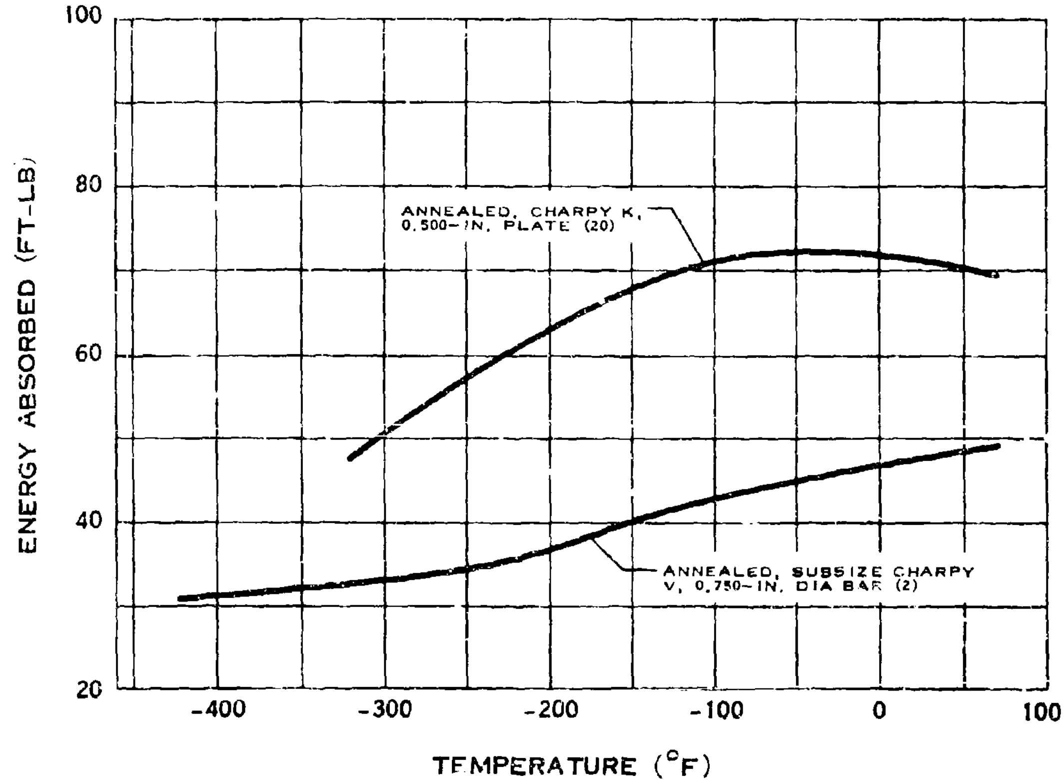
B.6.h-2



STRESS-STRAIN DIAGRAM FOR 321 STAINLESS STEEL

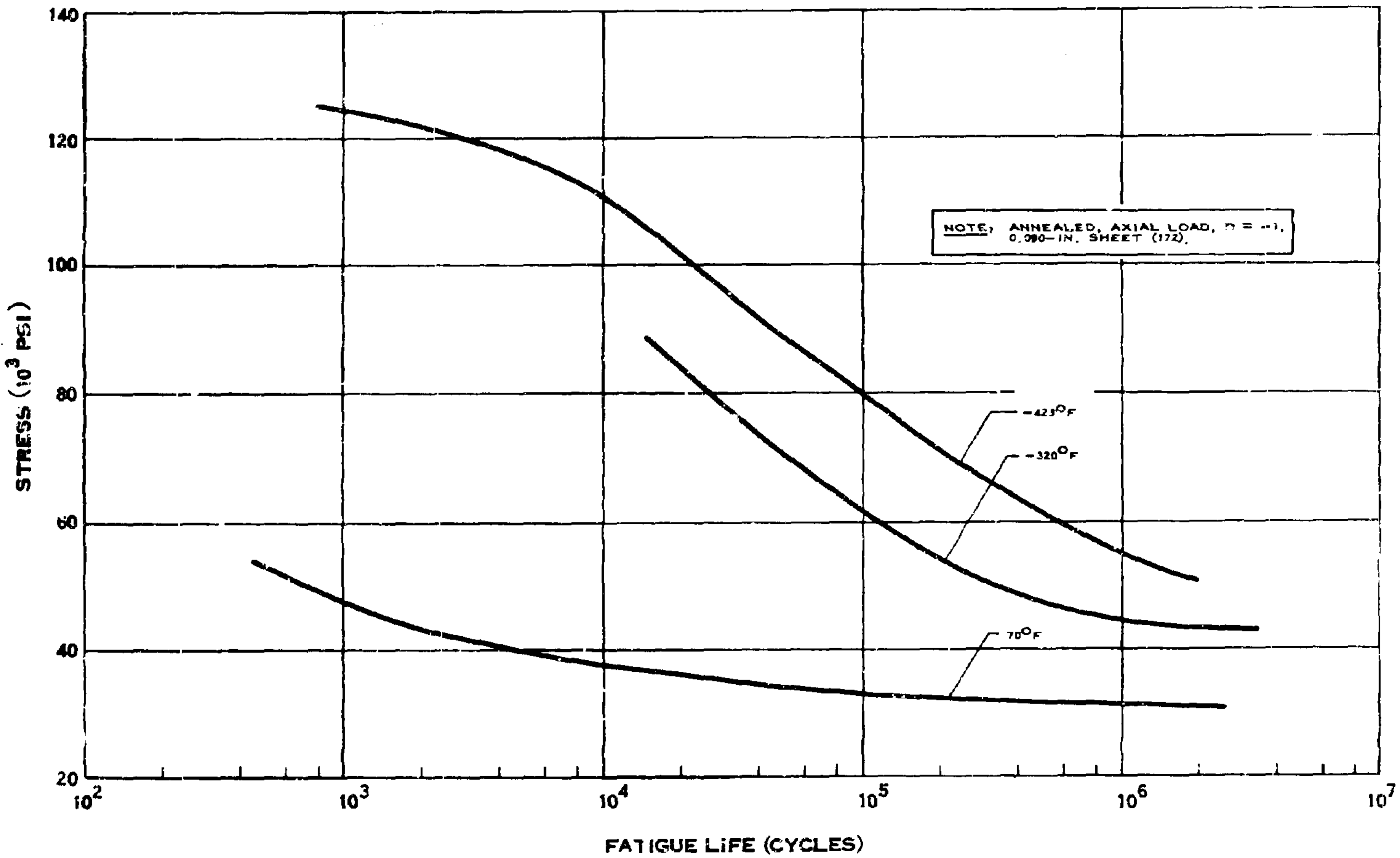


MODULUS OF ELASTICITY OF 321 STAINLESS STEEL



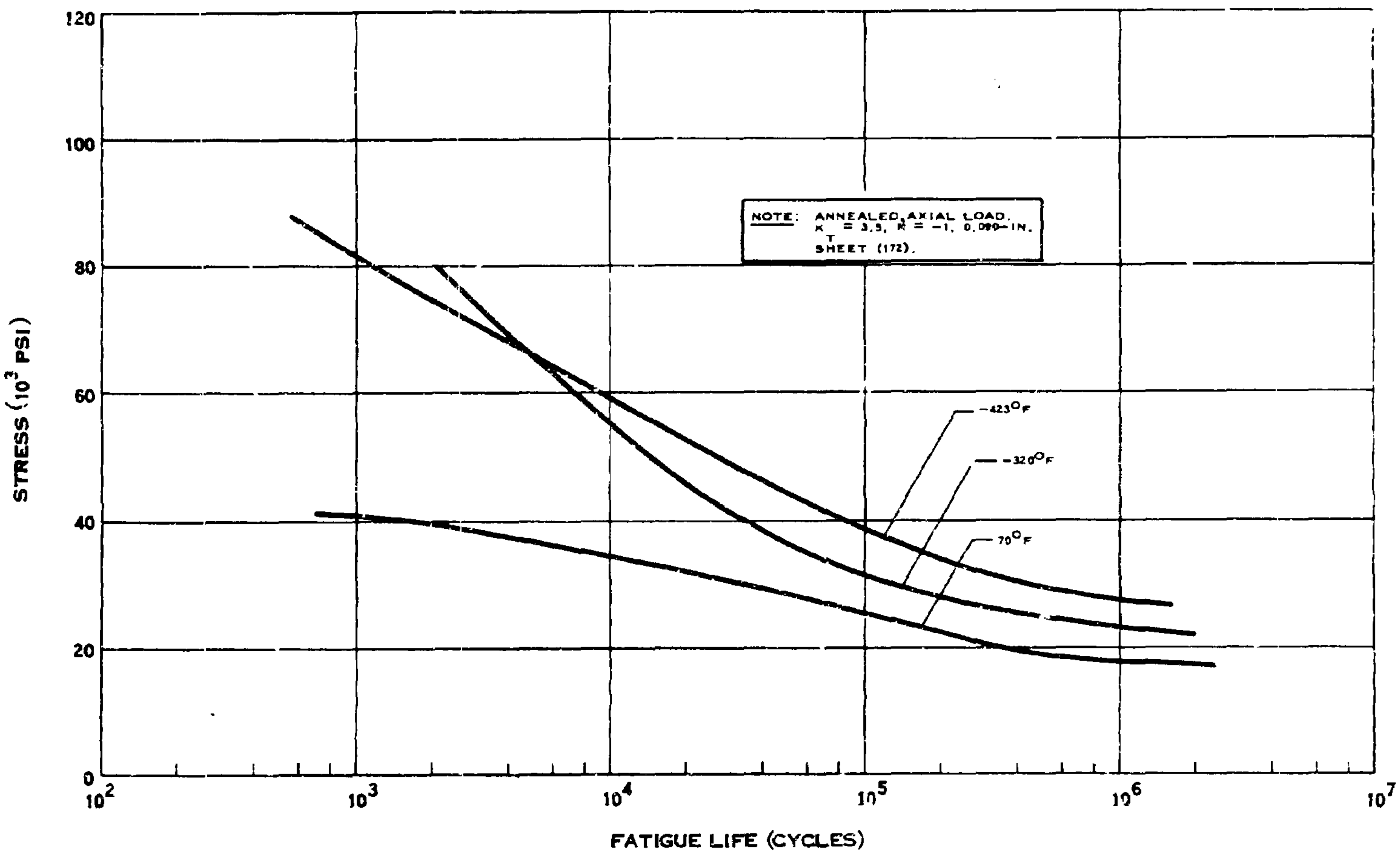
IMPACT STRENGTH OF 321 STAINLESS STEEL

(7-64)



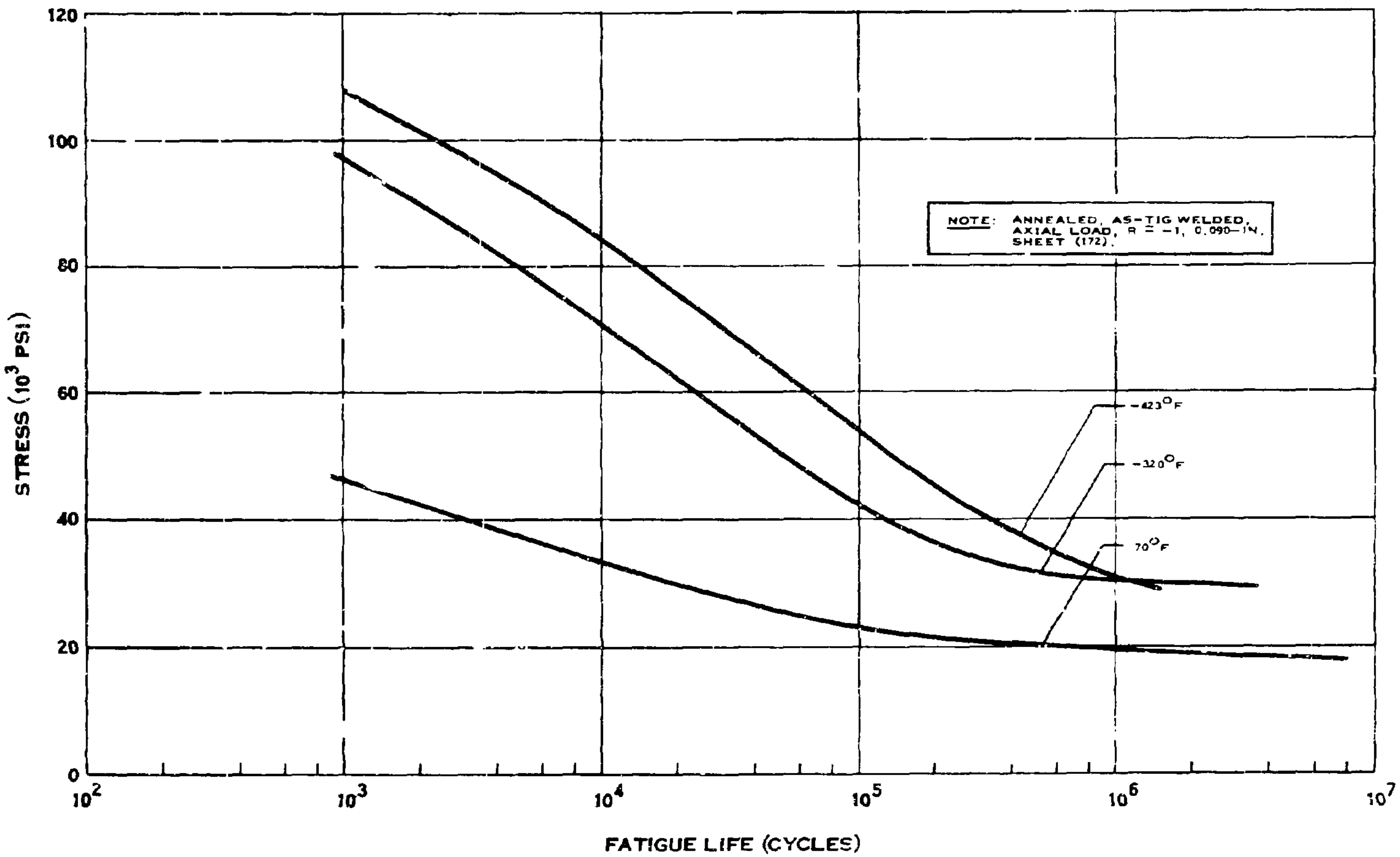
FATIGUE STRENGTH OF 321 STAINLESS STEEL

(3-66)



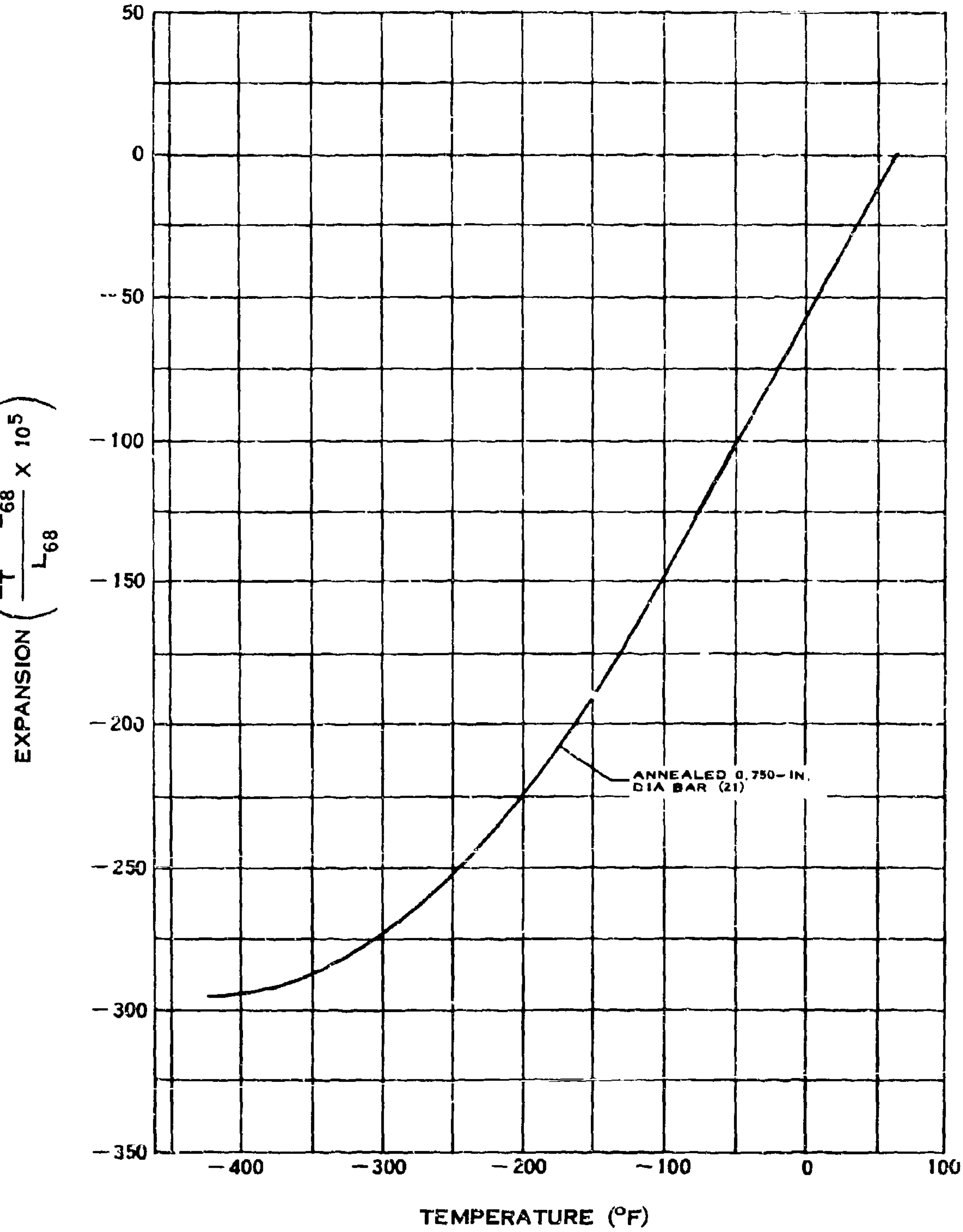
NOTCH FATIGUE STRENGTH OF 321 STAINLESS STEEL

(3-66)



WELD FATIGUE STRENGTH OF 321 STAINLESS STEEL

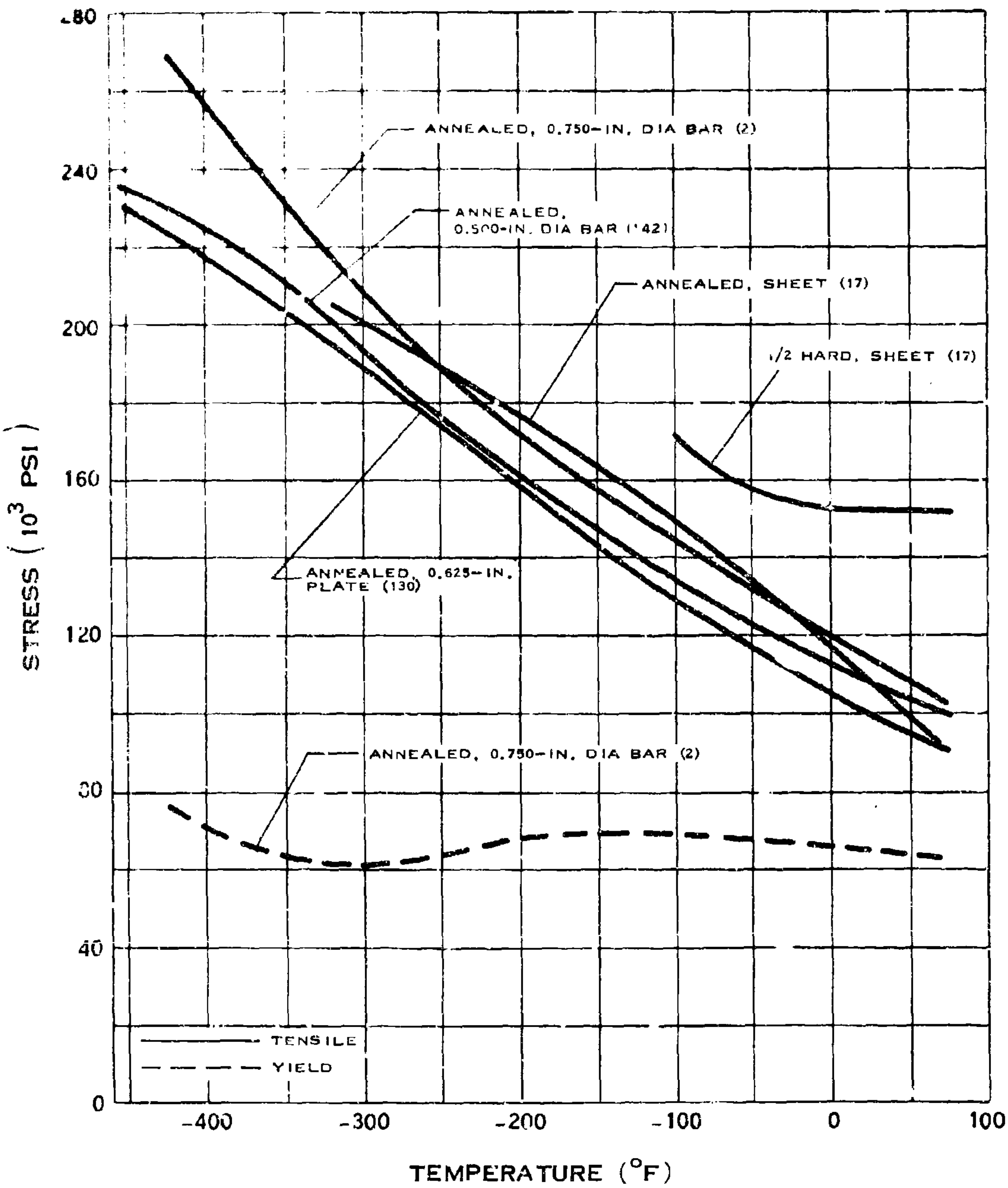
B.6.t



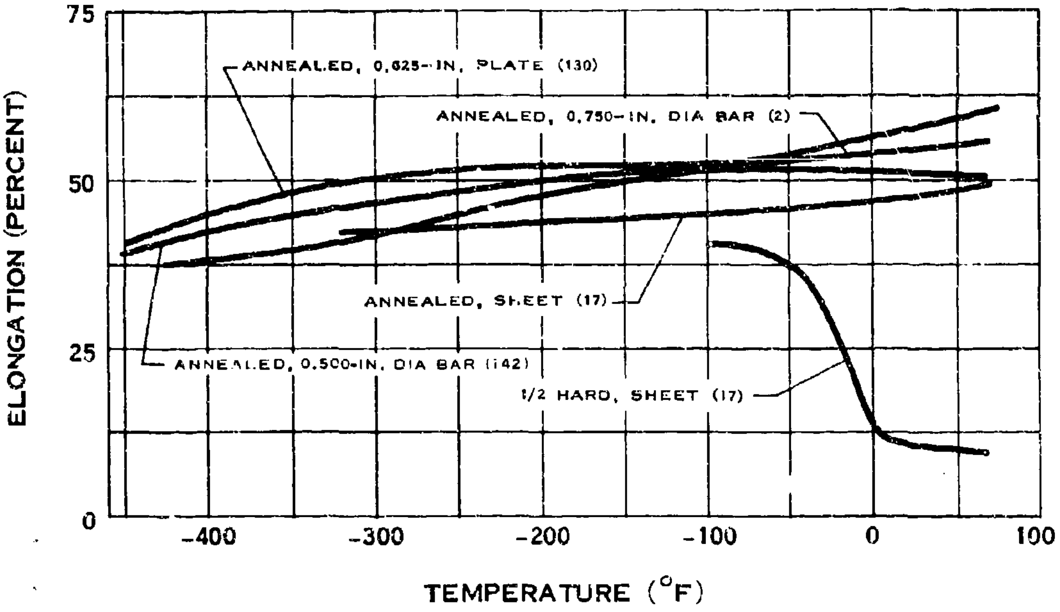
THERMAL EXPANSION OF 321 STAINLESS STEEL

(7-64)

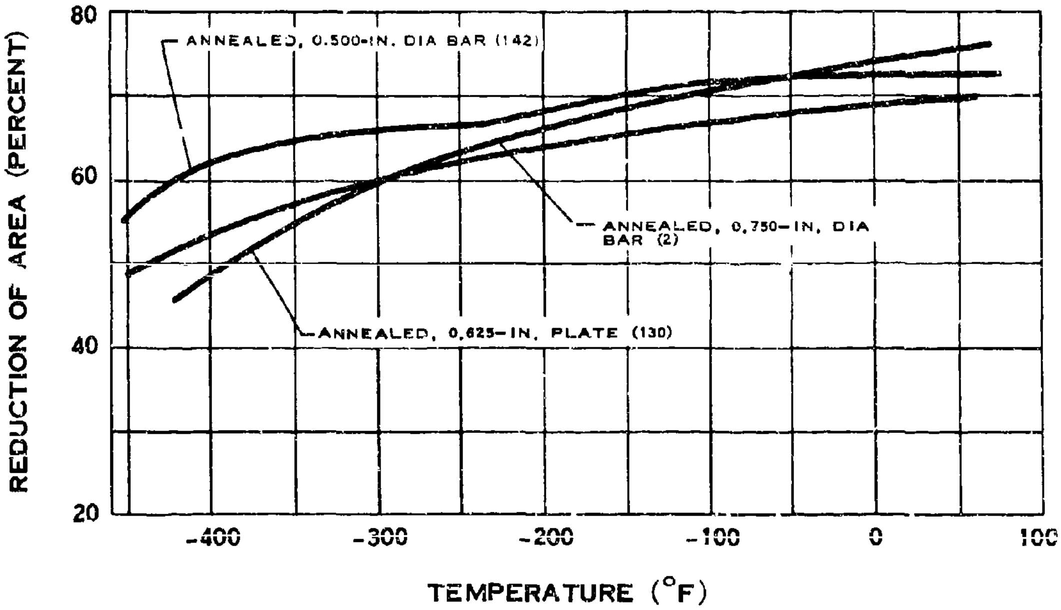
B.7.ab



STRENGTH OF 347 STAINLESS STEEL

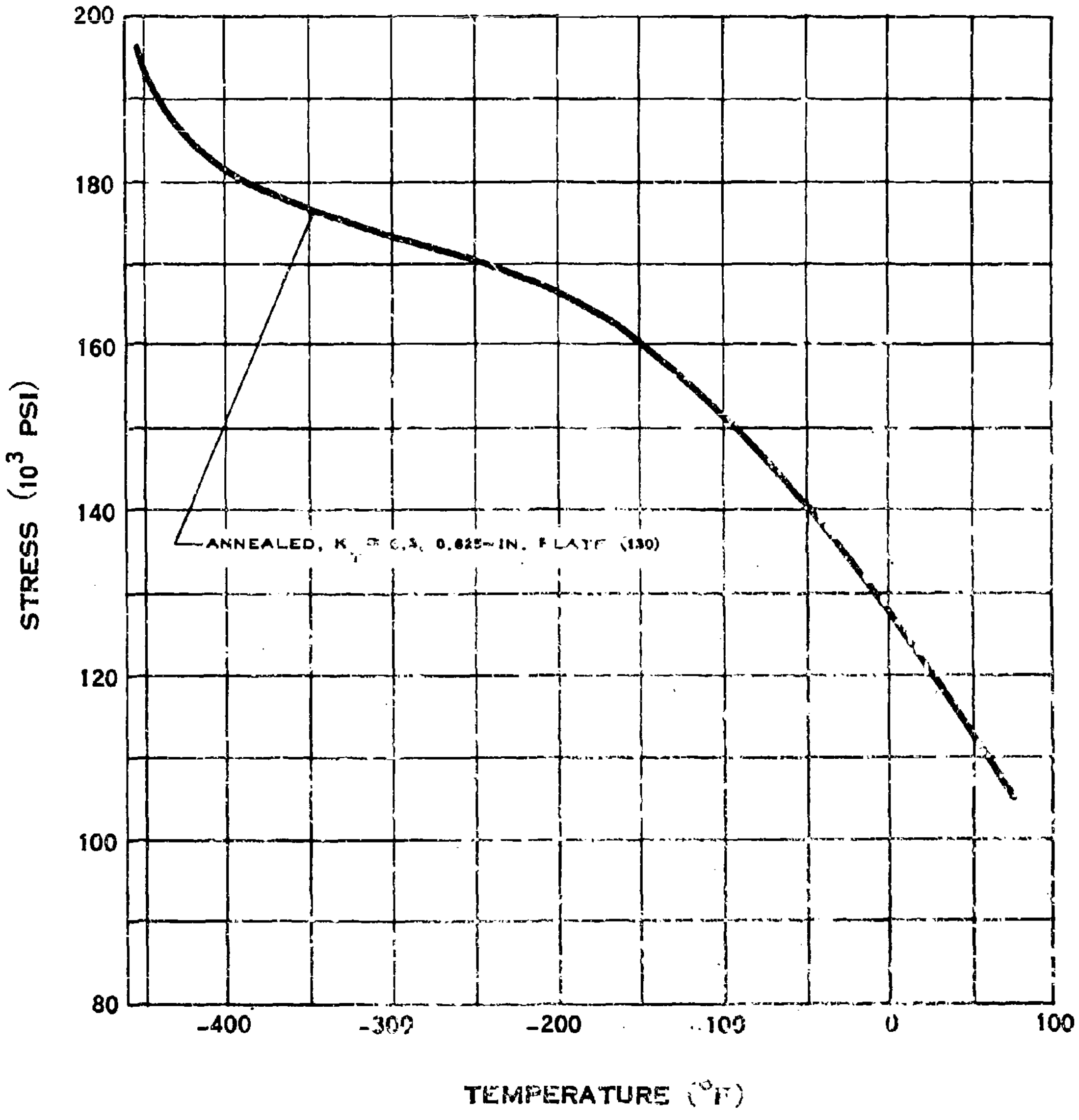


ELONGATION OF 347 STAINLESS STEEL



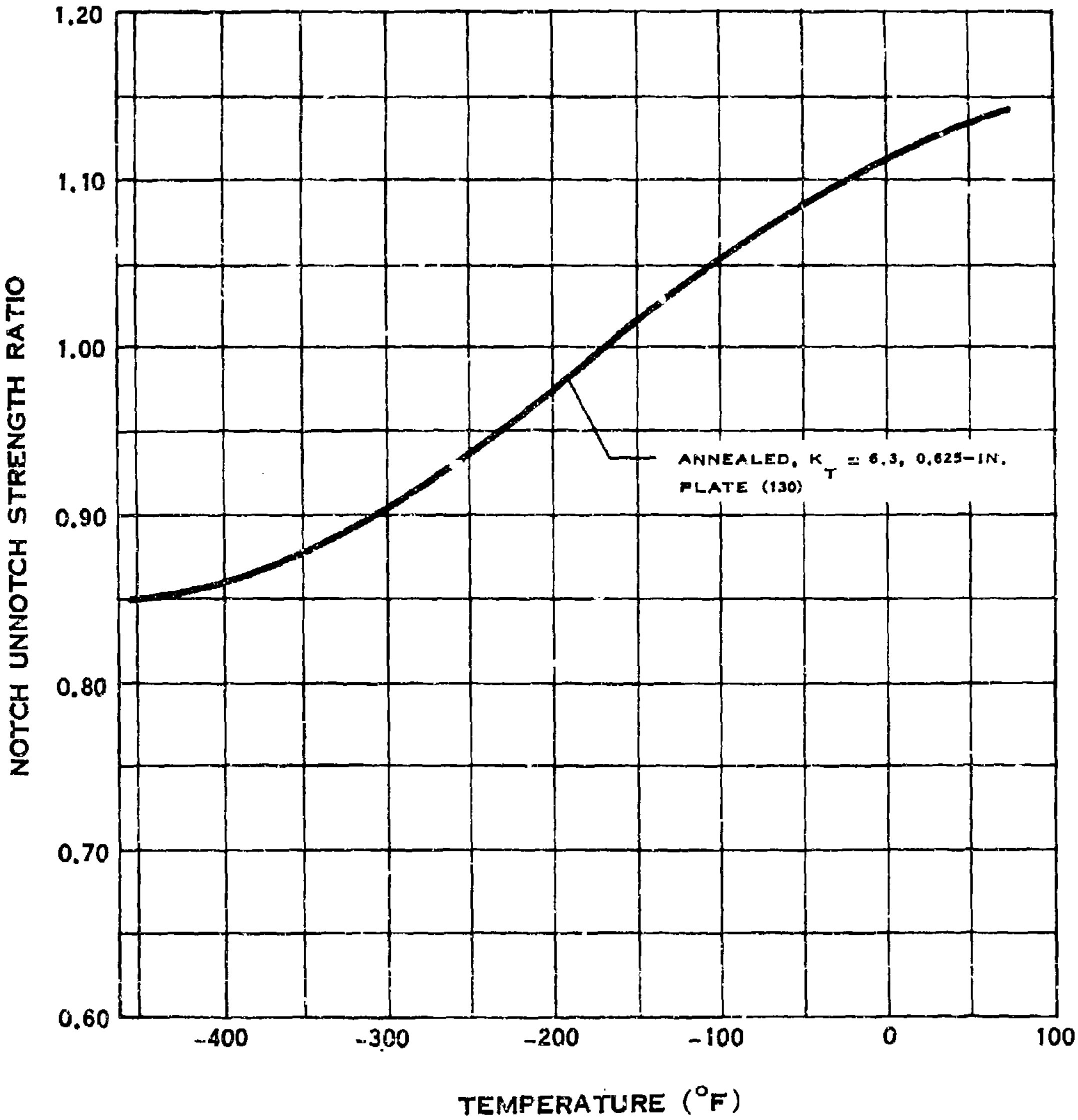
REDUCTION OF AREA OF 347 STAINLESS STEEL

B.7.e

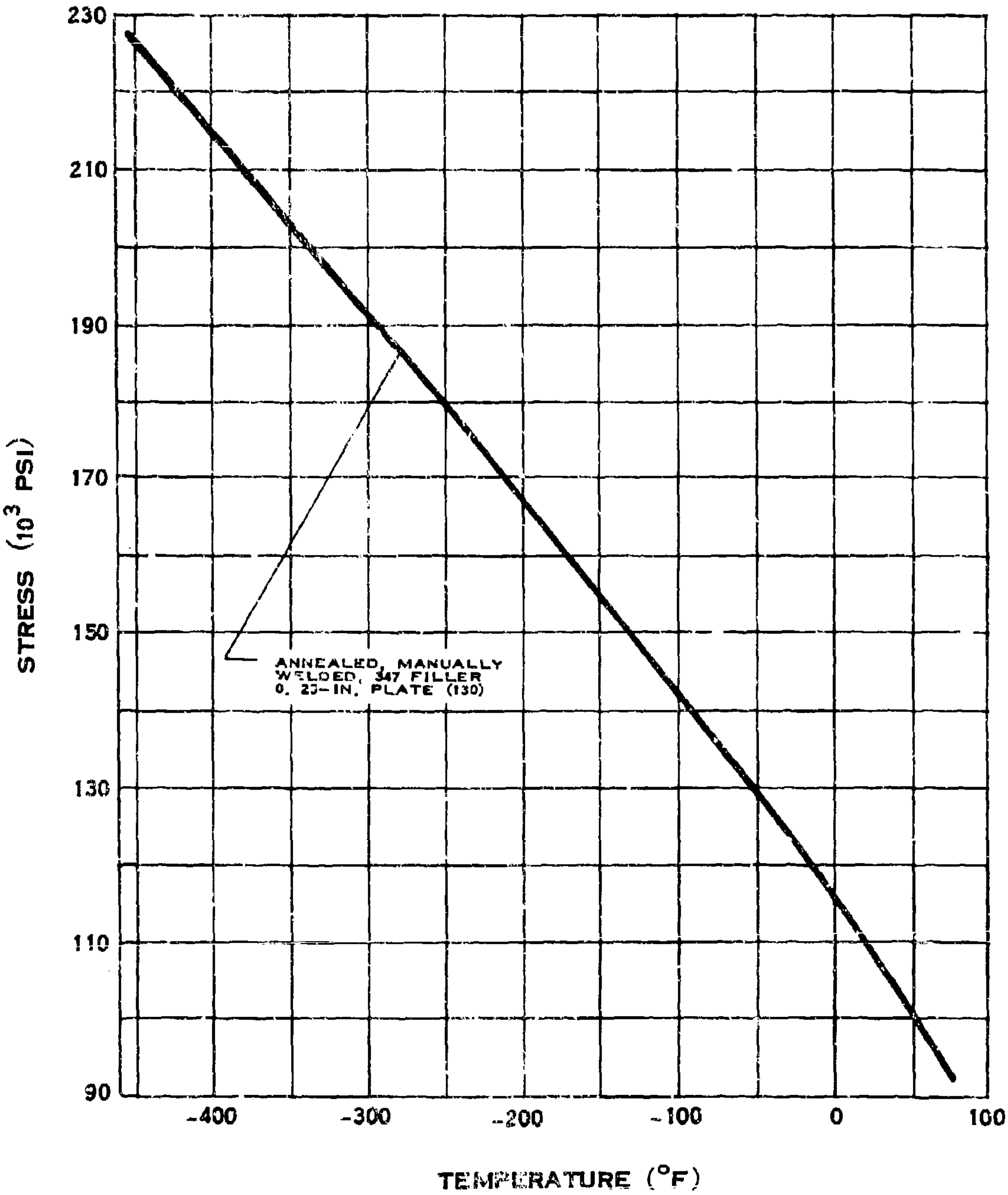


NOTCH TENSILE STRENGTH OF 347 STAINLESS STEEL

B.7.e-1

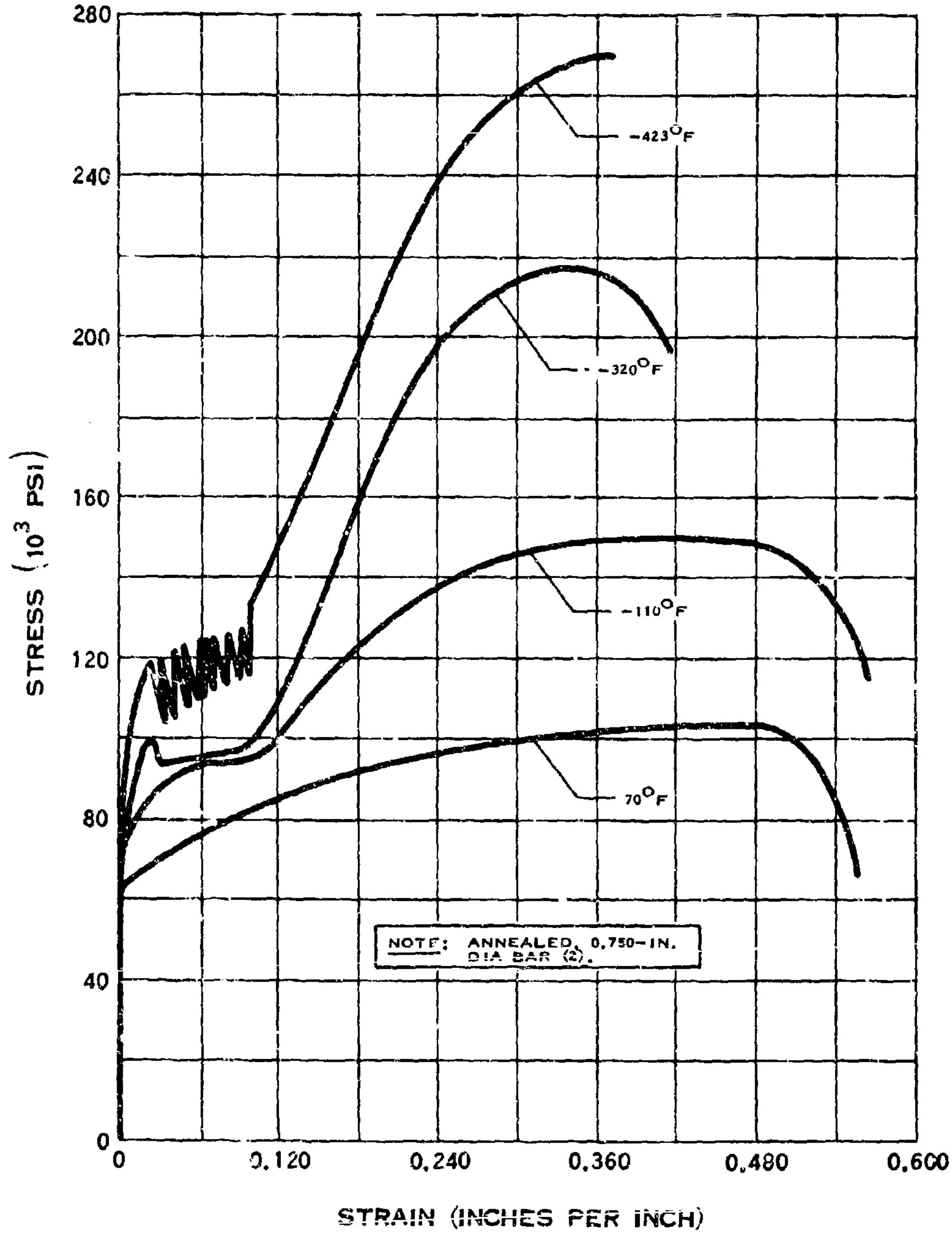


NOTCH STRENGTH RATIO OF 347 STAINLESS STEEL



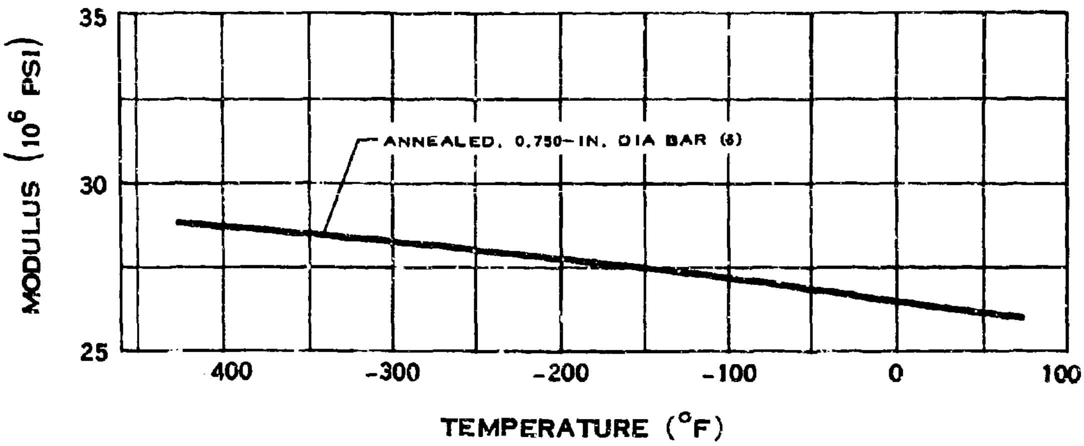
WELD TENSILE STRENGTH OF 347 STAINLESS STEEL

B.7.h

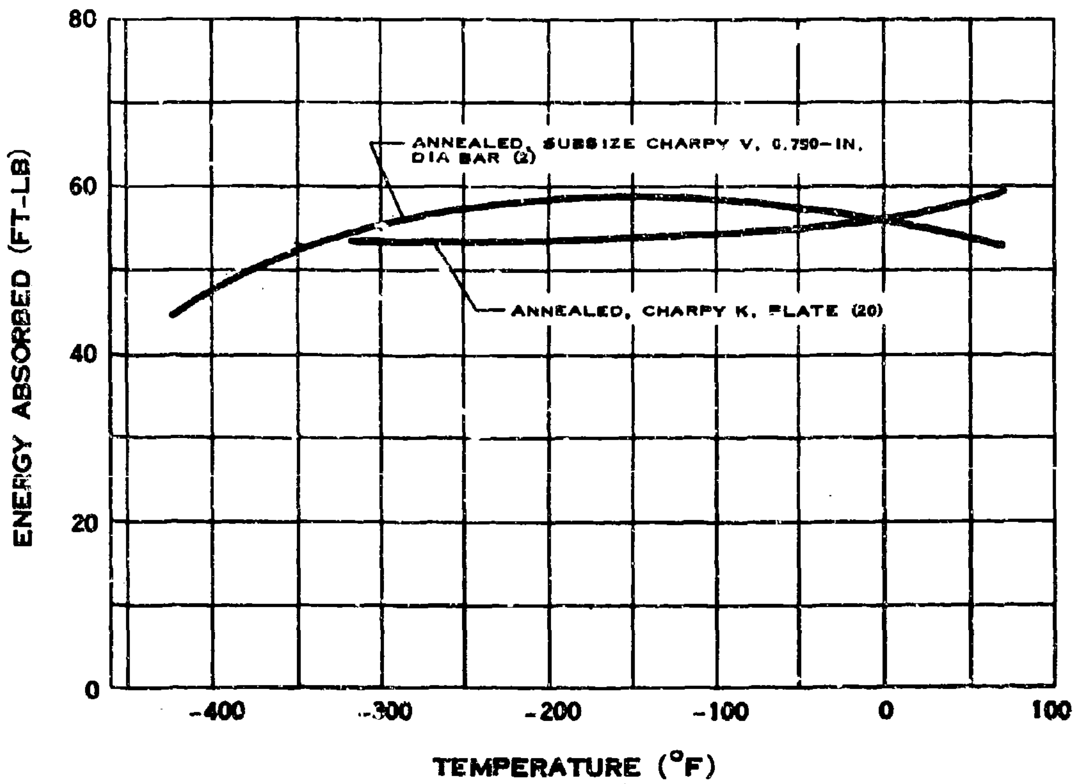


STRESS-STRAIN DIAGRAM FOR 347 STAINLESS STEEL

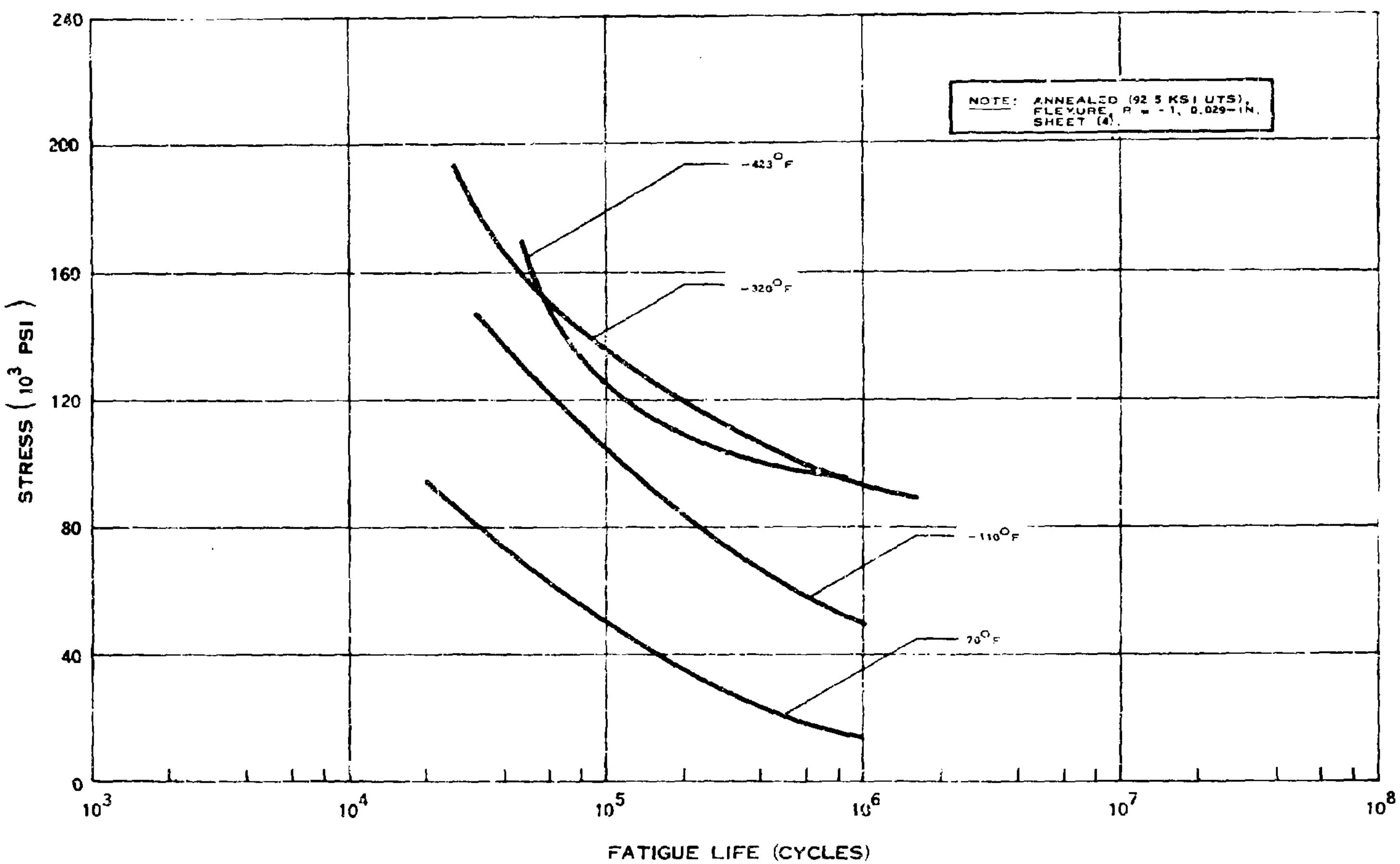
(7-64)



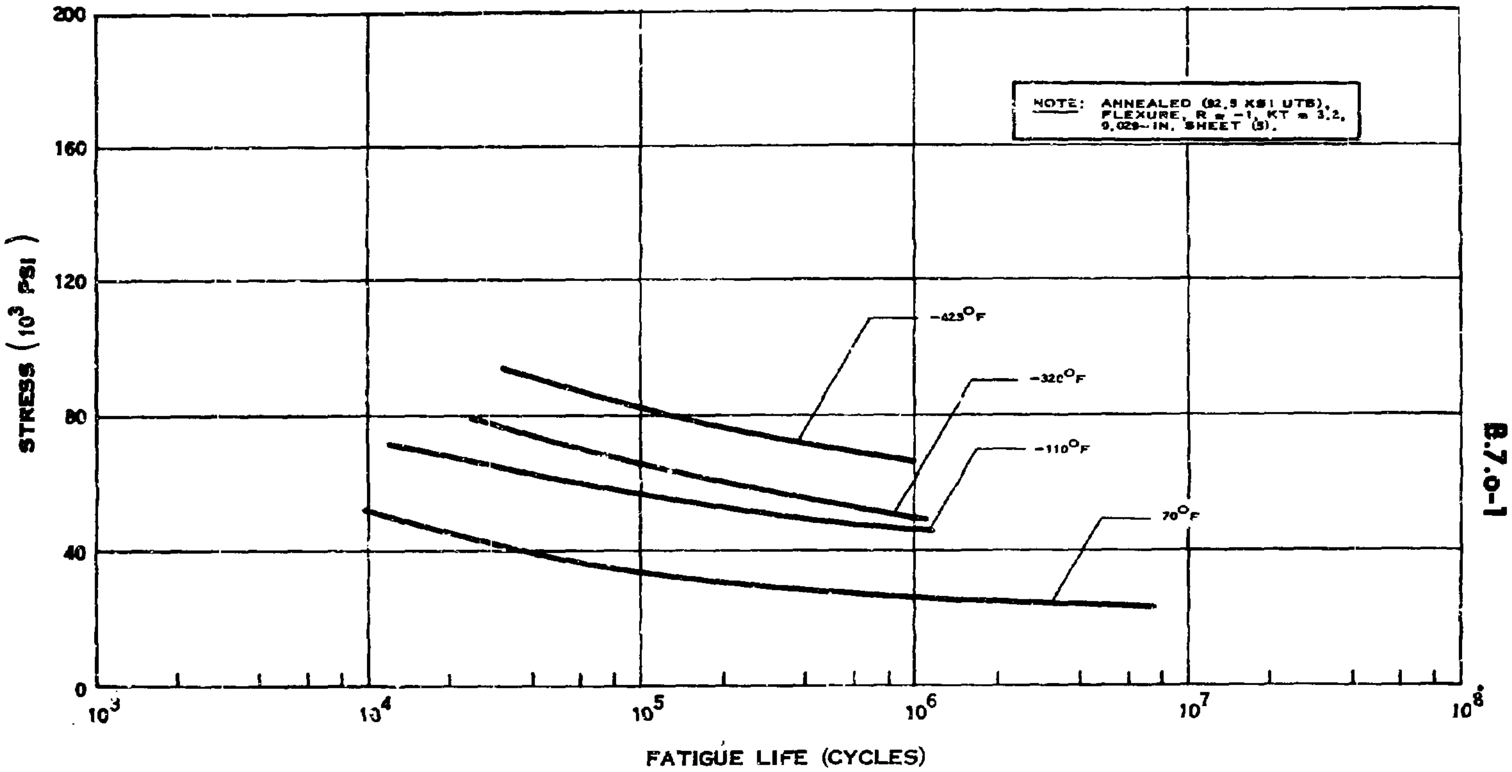
MODULUS OF ELASTICITY OF 347 STAINLESS STEEL



IMPACT STRENGTH OF 347 STAINLESS STEEL



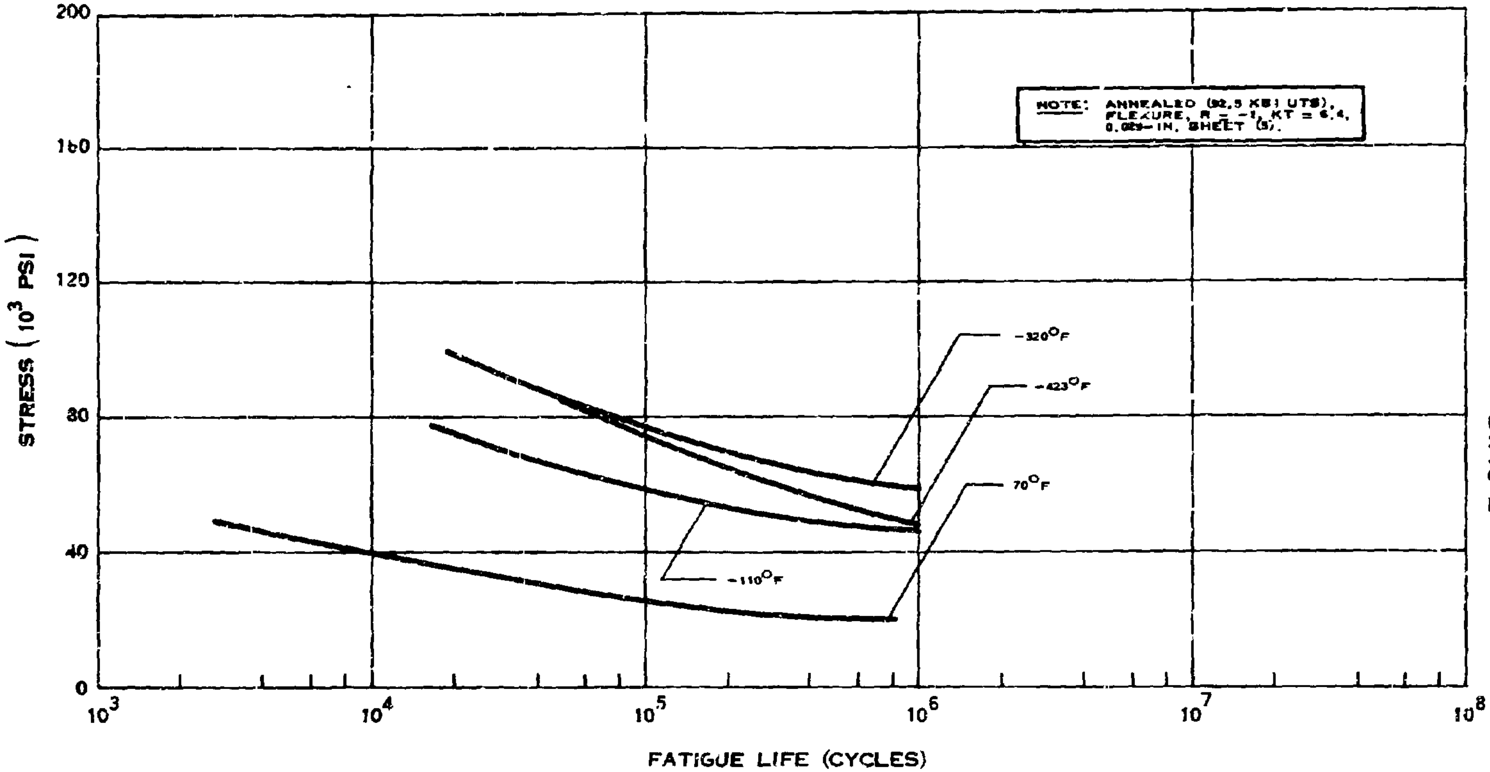
FATIGUE STRENGTH OF 347 STAINLESS STEEL



NOTCH FATIGUE STRENGTH OF 347 STAINLESS STEEL

(7-64)

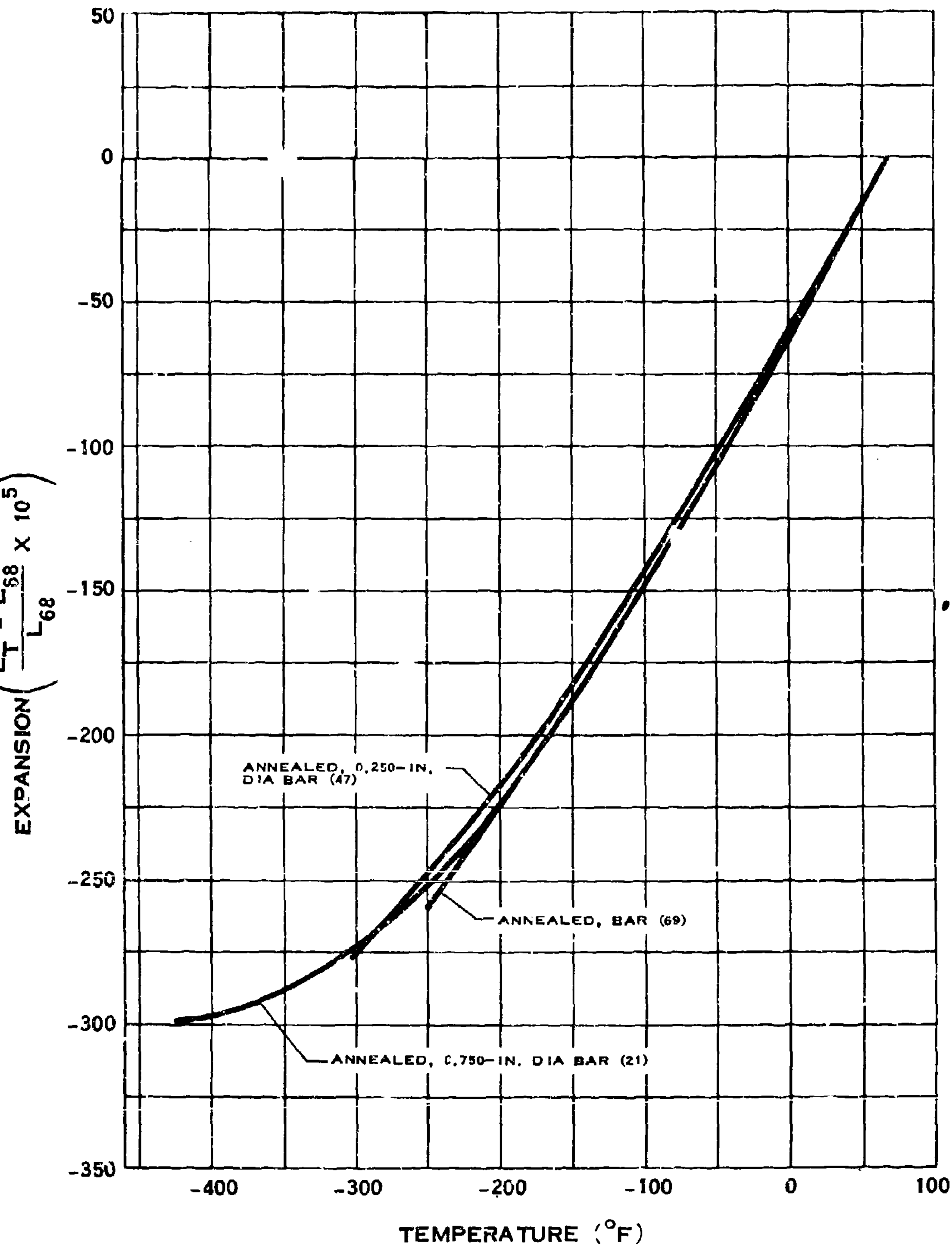
B.7.c-2



NOTCH FATIGUE STRENGTH OF 347 STAINLESS STEEL

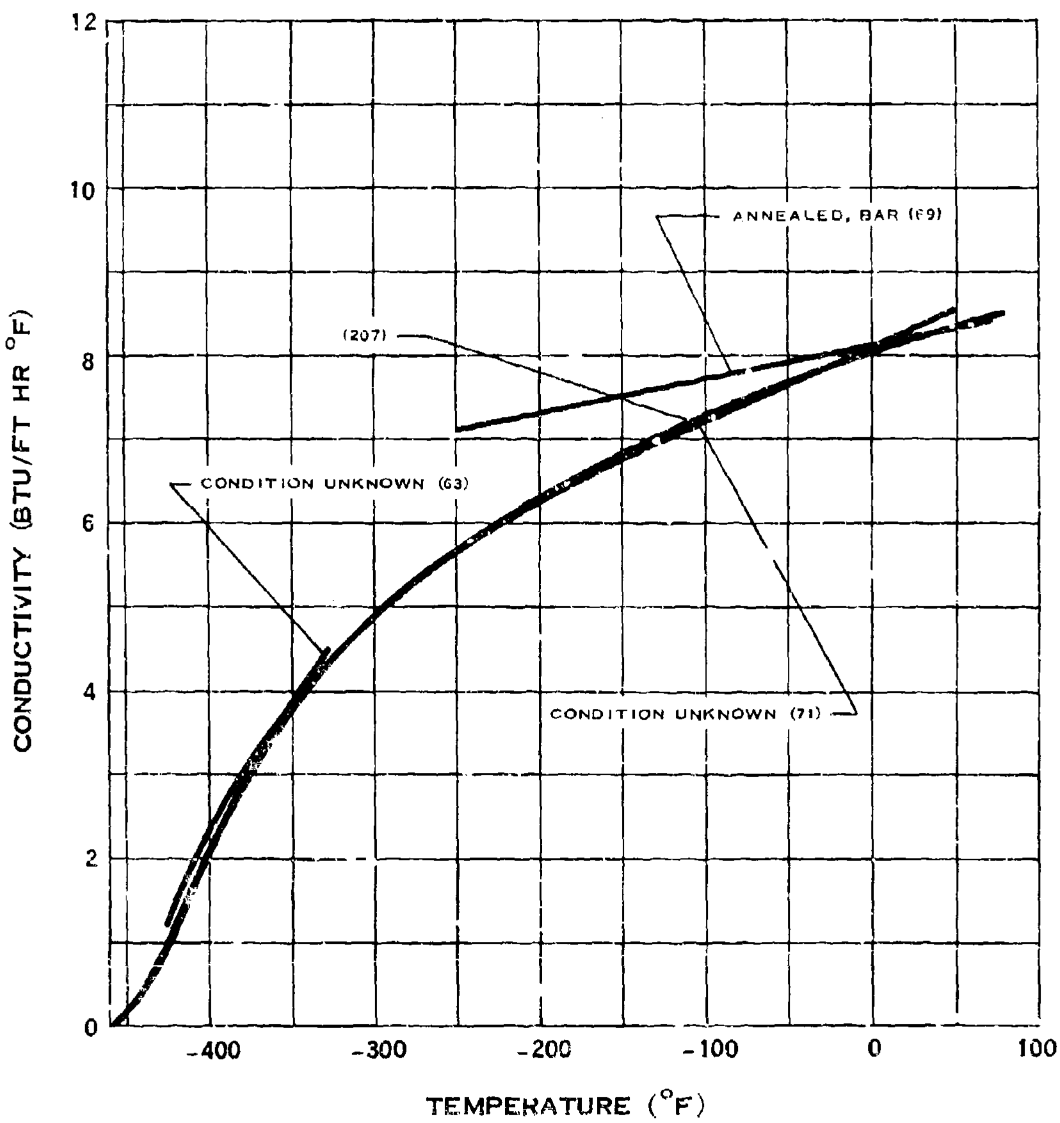
(7-64)

B.7.t



THERMAL EXPANSION OF 347 STAINLESS STEEL

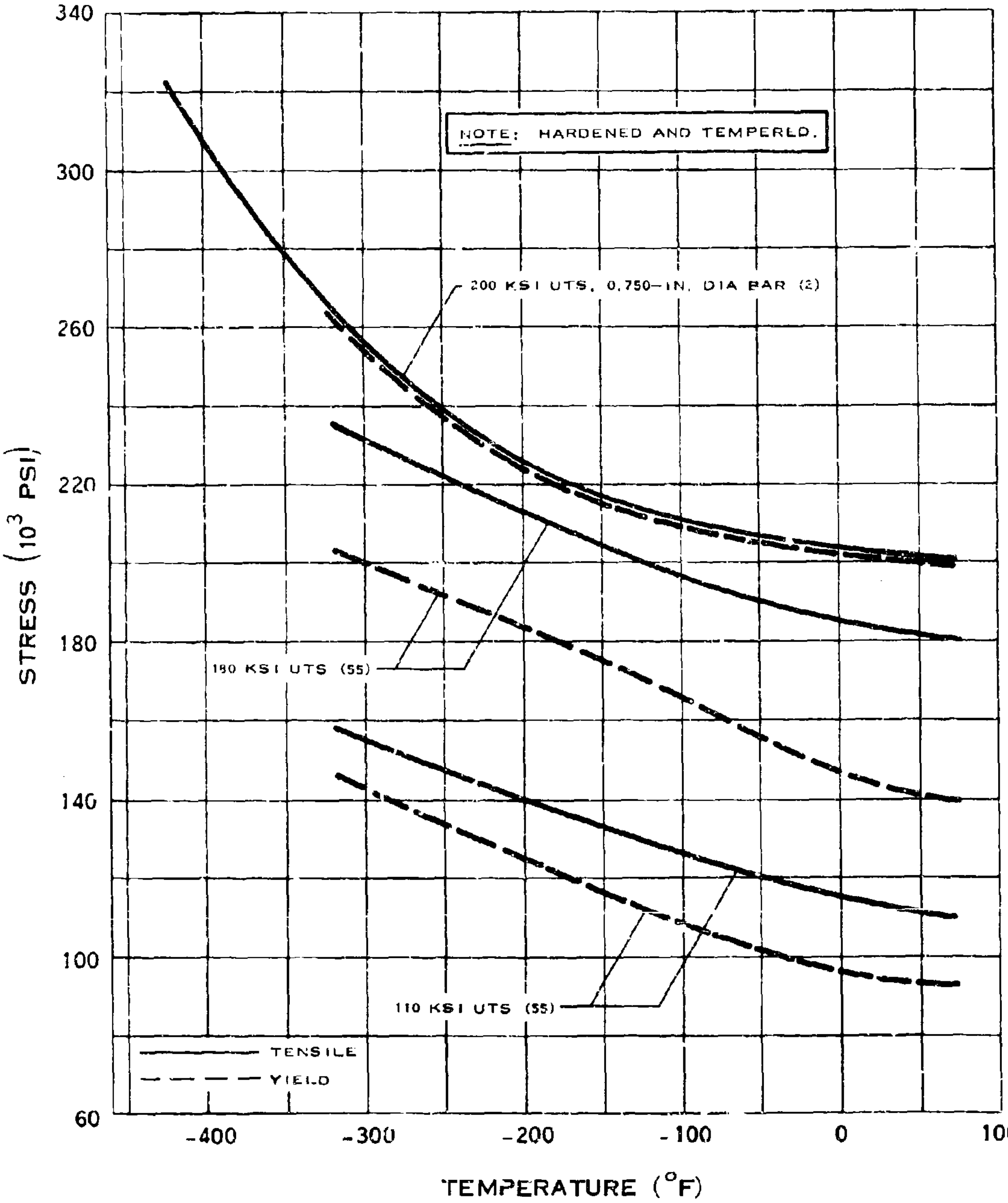
B.7.v



THERMAL CONDUCTIVITY OF 347 STAINLESS STEEL

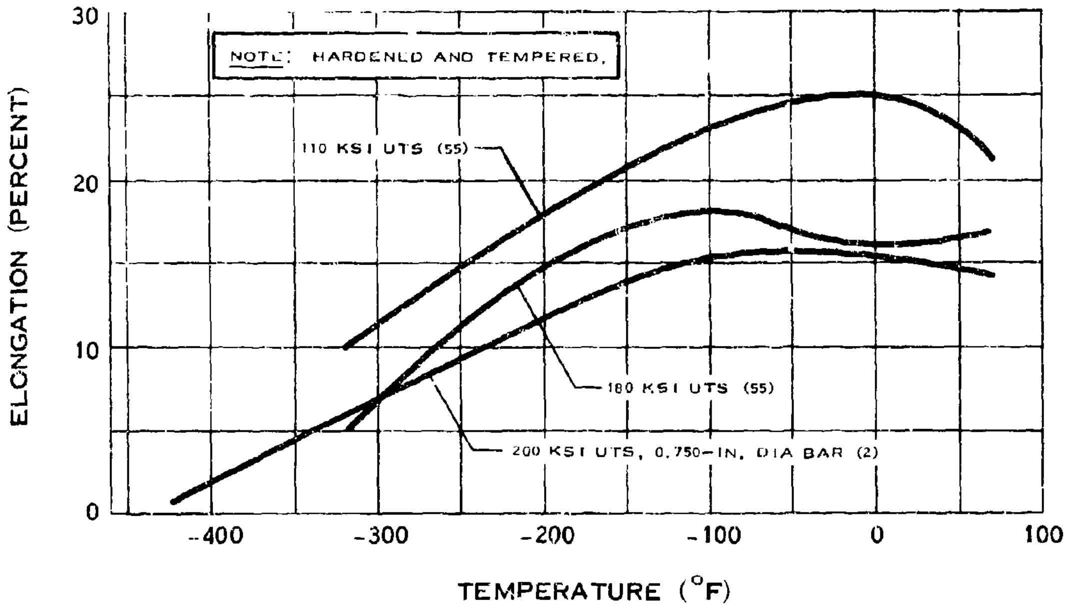
(6-68)

B.8.ab

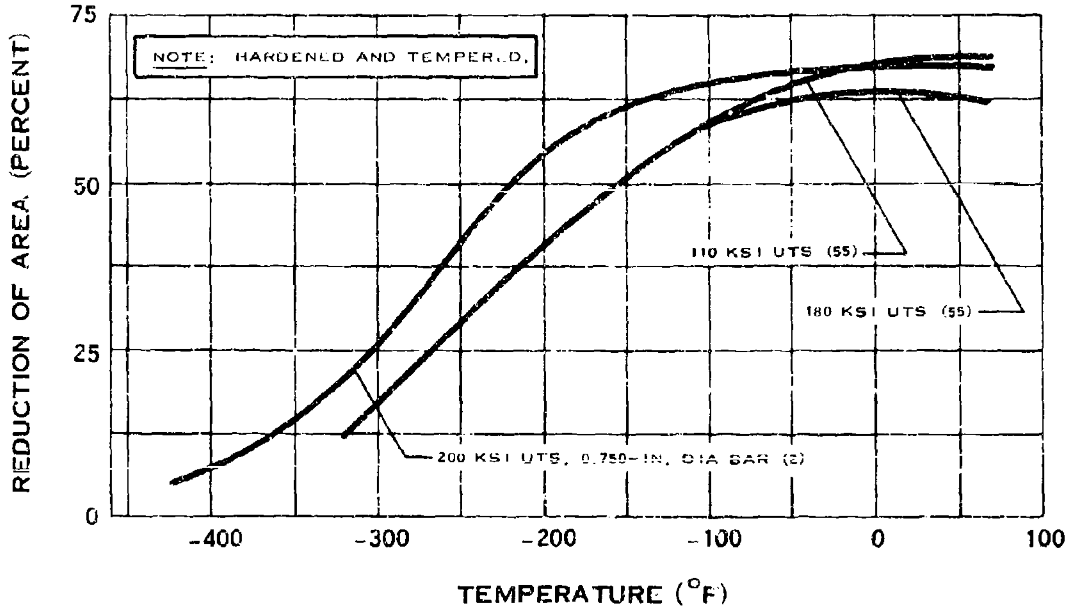


STRENGTH OF 410 STAINLESS STEEL

(7-64)

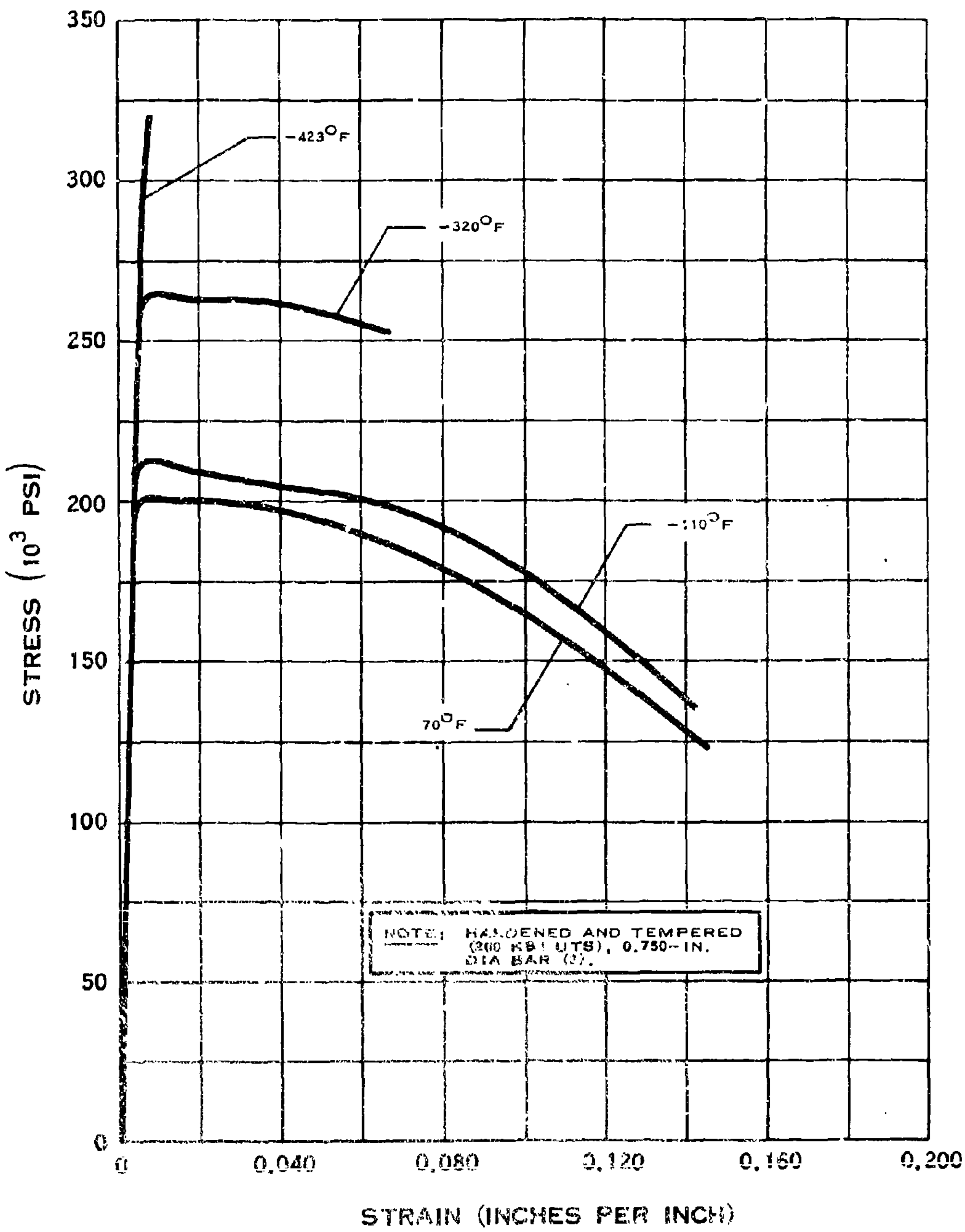


ELONGATION OF 410 STAINLESS STEEL

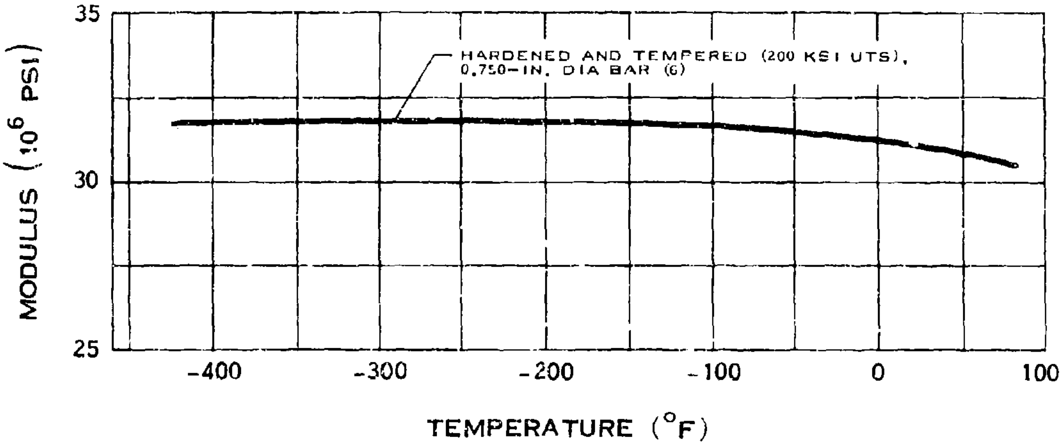


REDUCTION OF AREA OF 410 STAINLESS STEEL

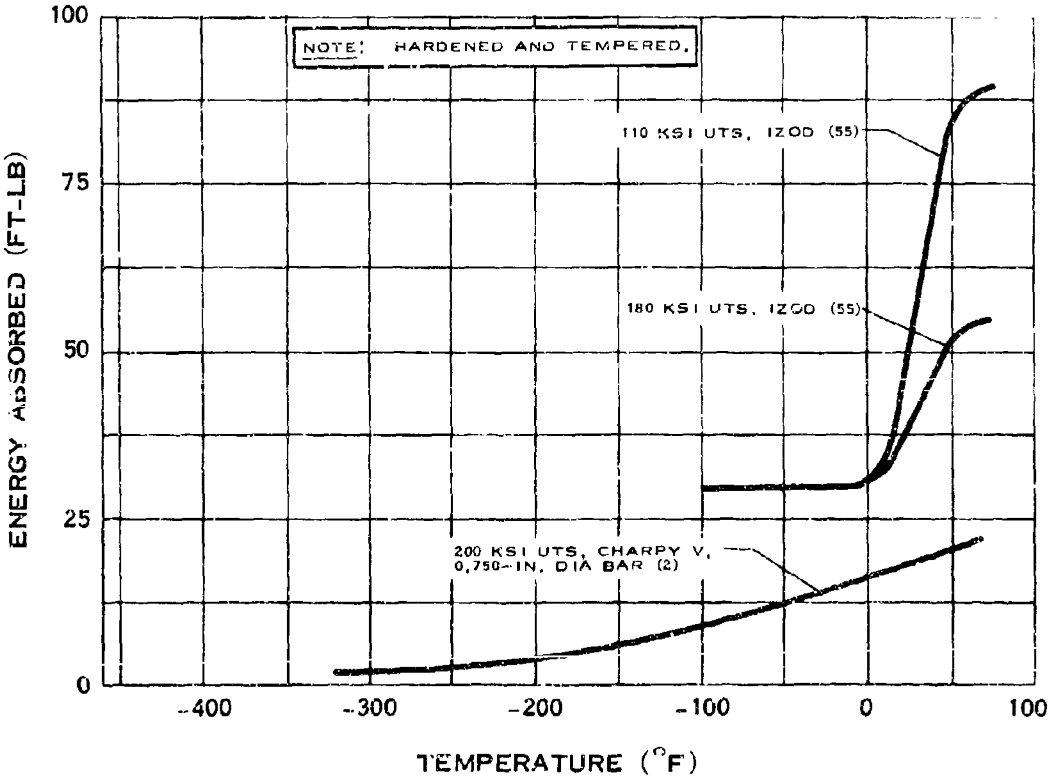
B.8.h



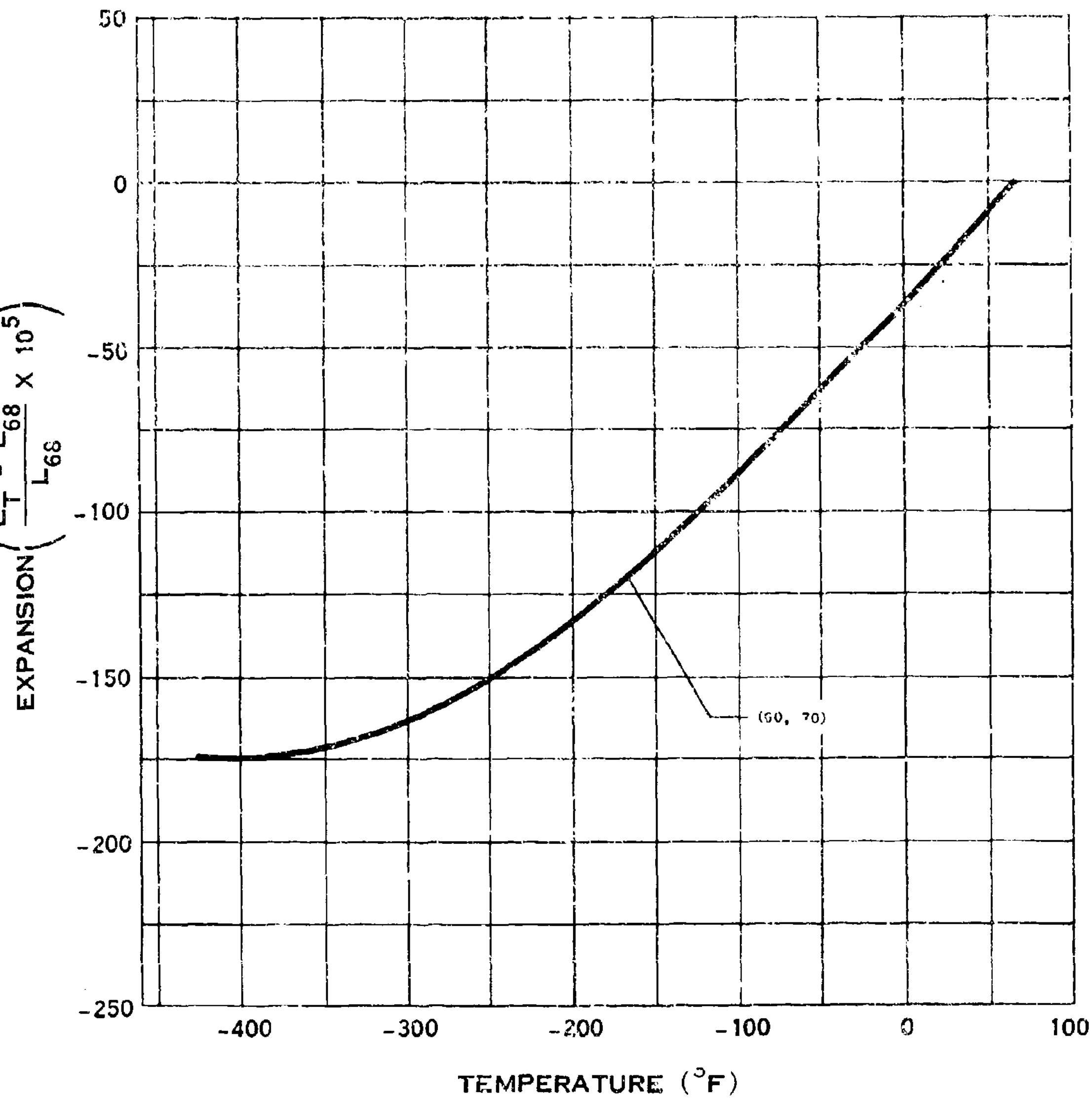
STRESS-STRAIN DIAGRAM FOR 410 STAINLESS STEEL



MODULUS OF ELASTICITY OF 410 STAINLESS STEEL

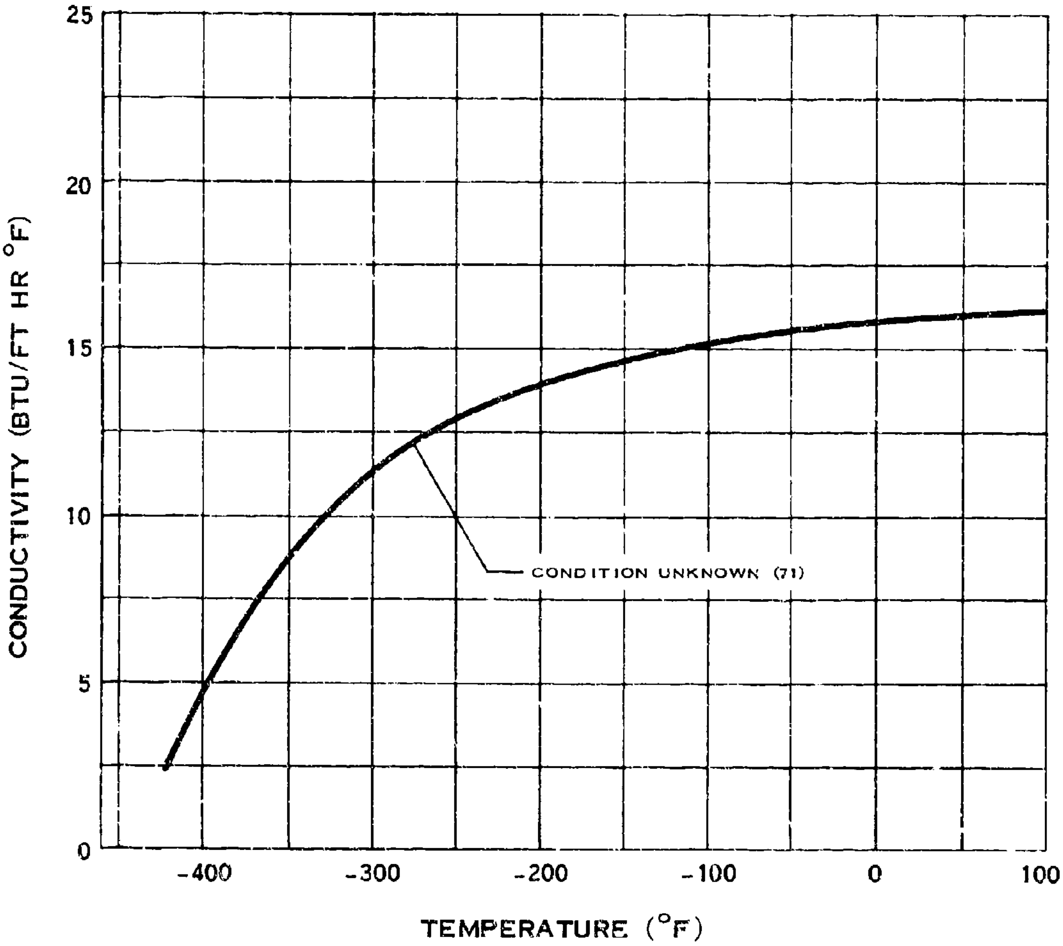


IMPACT STRENGTH OF 410 STAINLESS STEEL



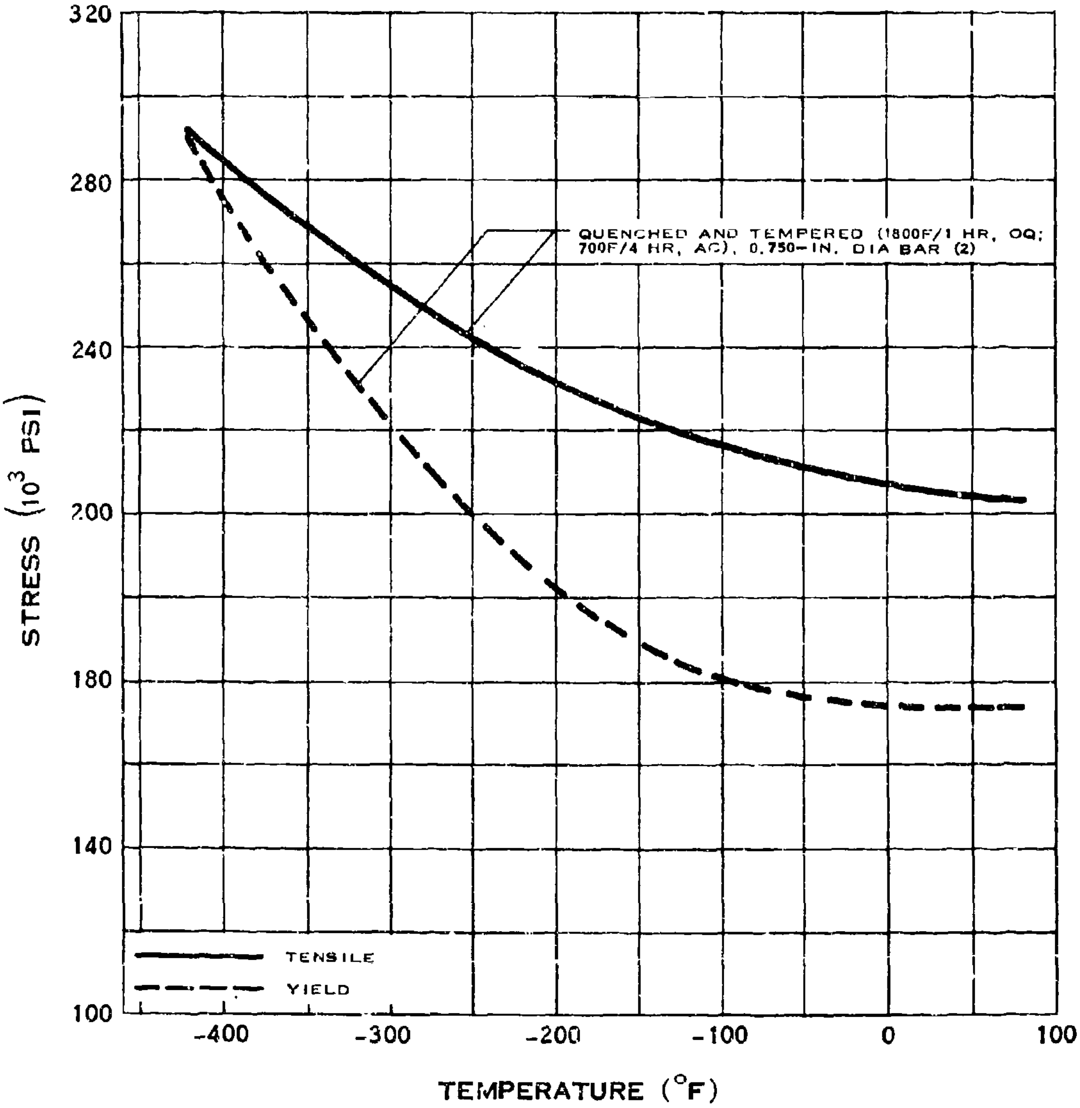
THERMAL EXPANSION OF 410 STAINLESS STEEL

B.8.v

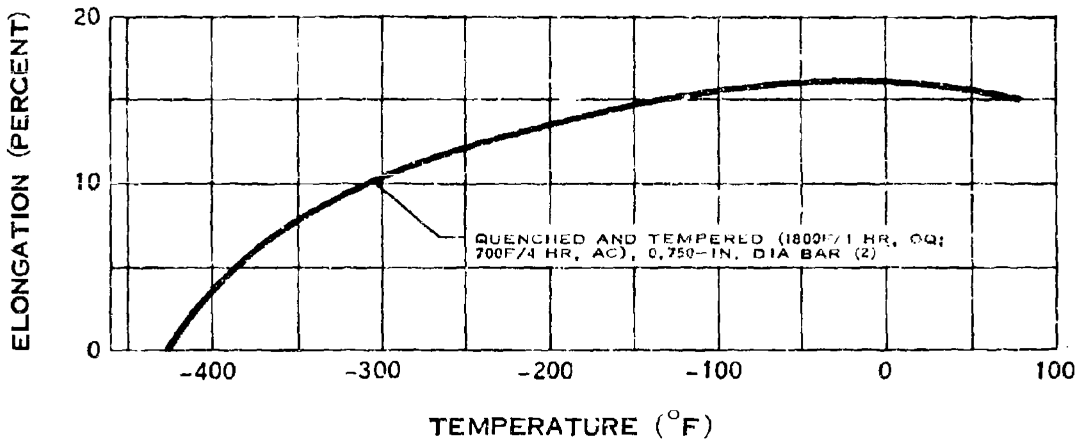


THERMAL CONDUCTIVITY OF 410 STAINLESS STEEL

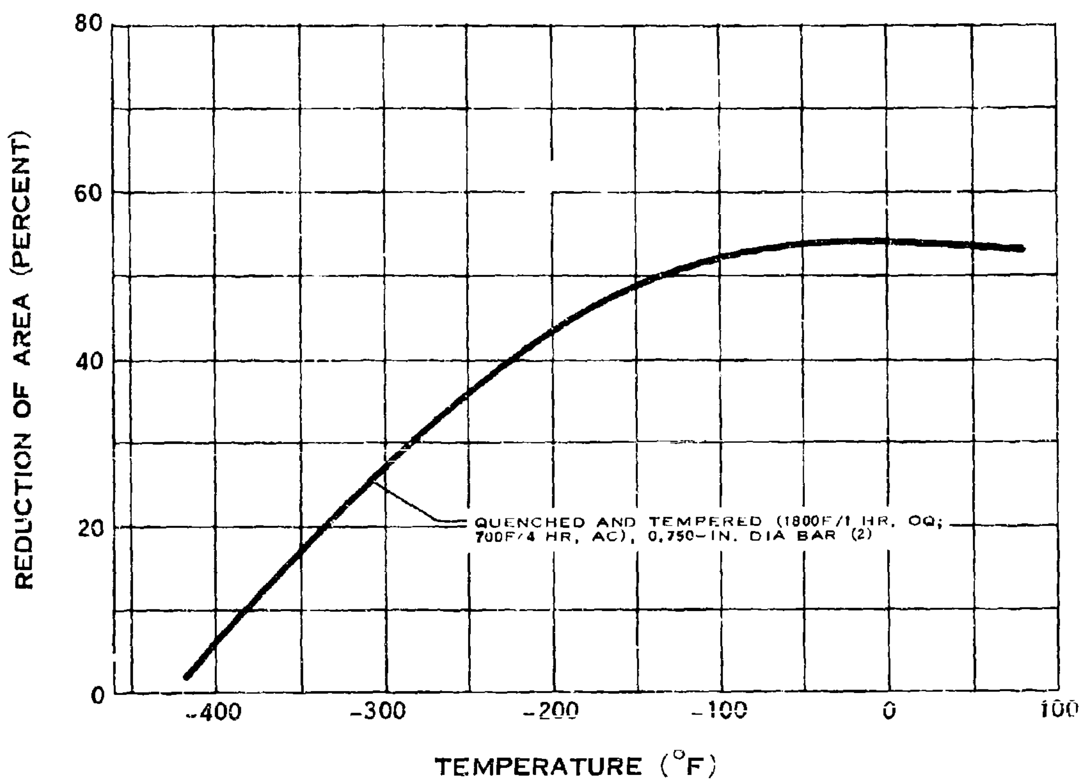
B.9.ab



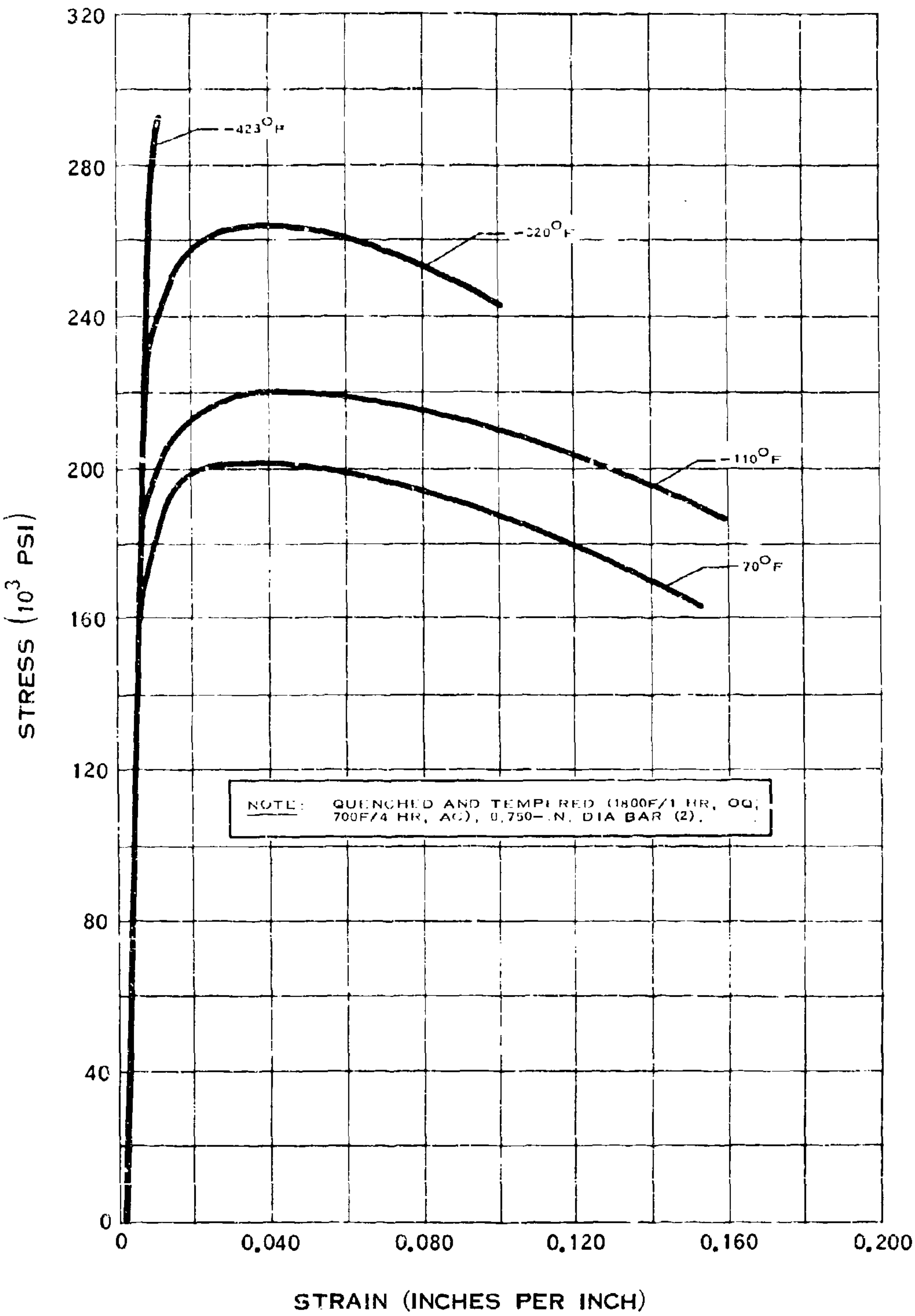
STRENGTH OF 416 STAINLESS STEEL



ELONGATION OF 416 STAINLESS STEEL

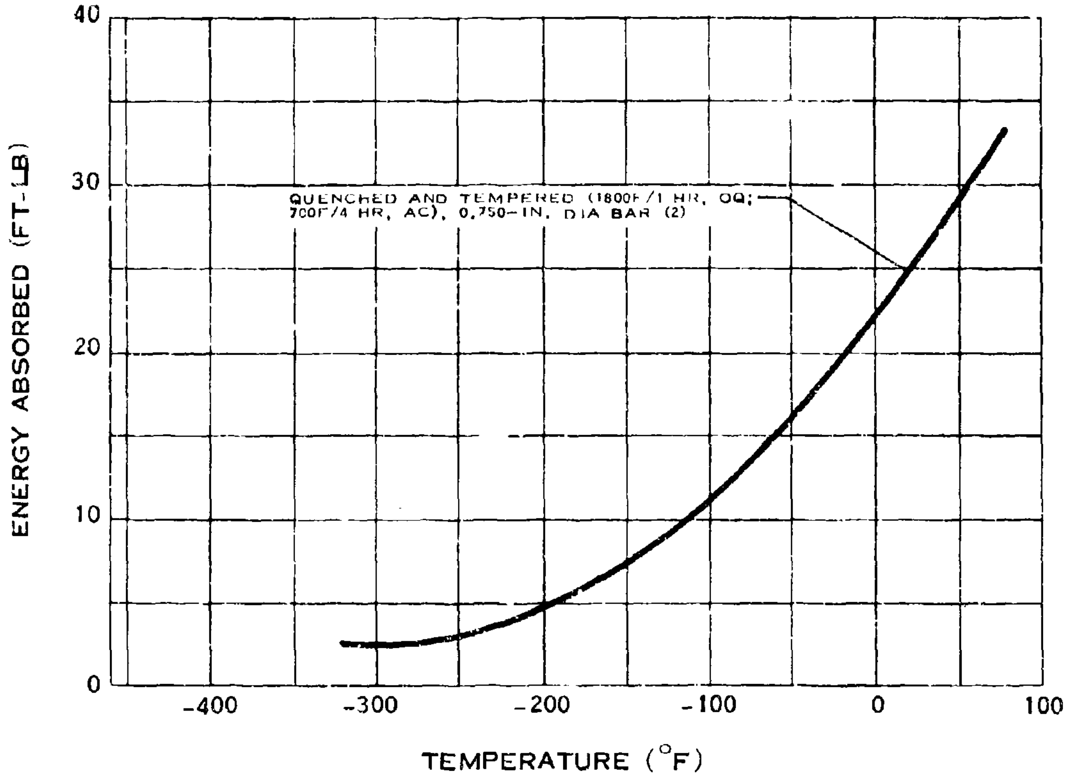


REDUCTION OF AREA OF 416 STAINLESS STEEL



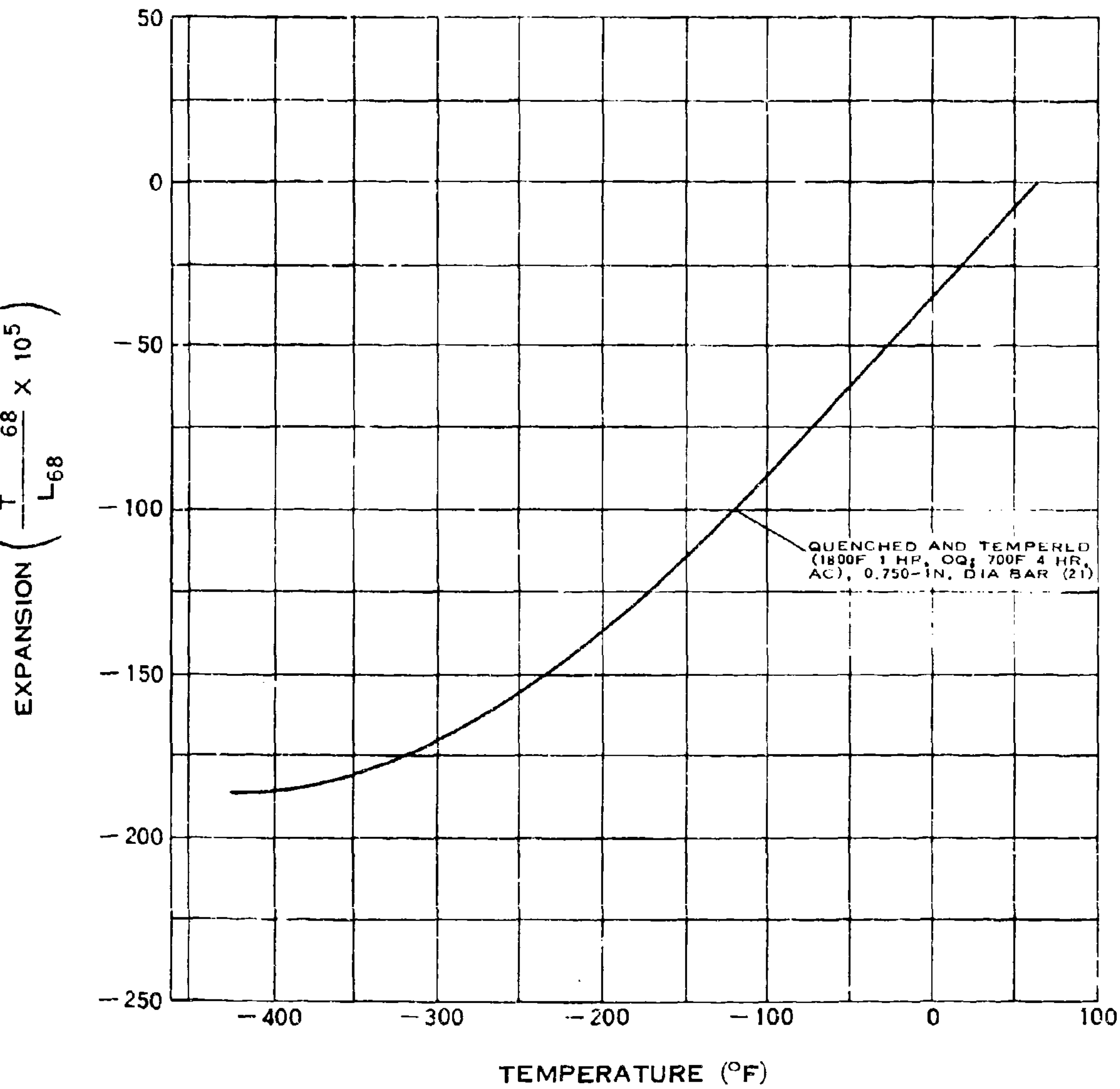
STRESS-STRAIN DIAGRAM FOR 416 STAINLESS STEEL

B.9.j



IMPACT STRENGTH OF 416 STAINLESS STEEL

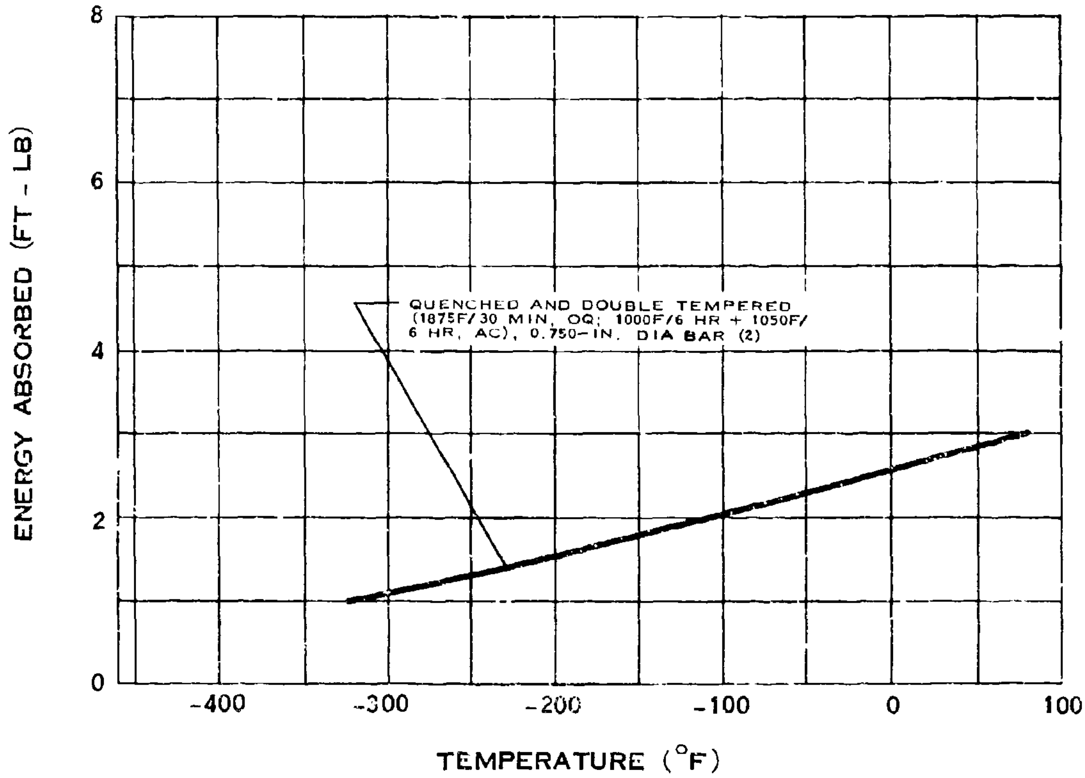
B.9.t



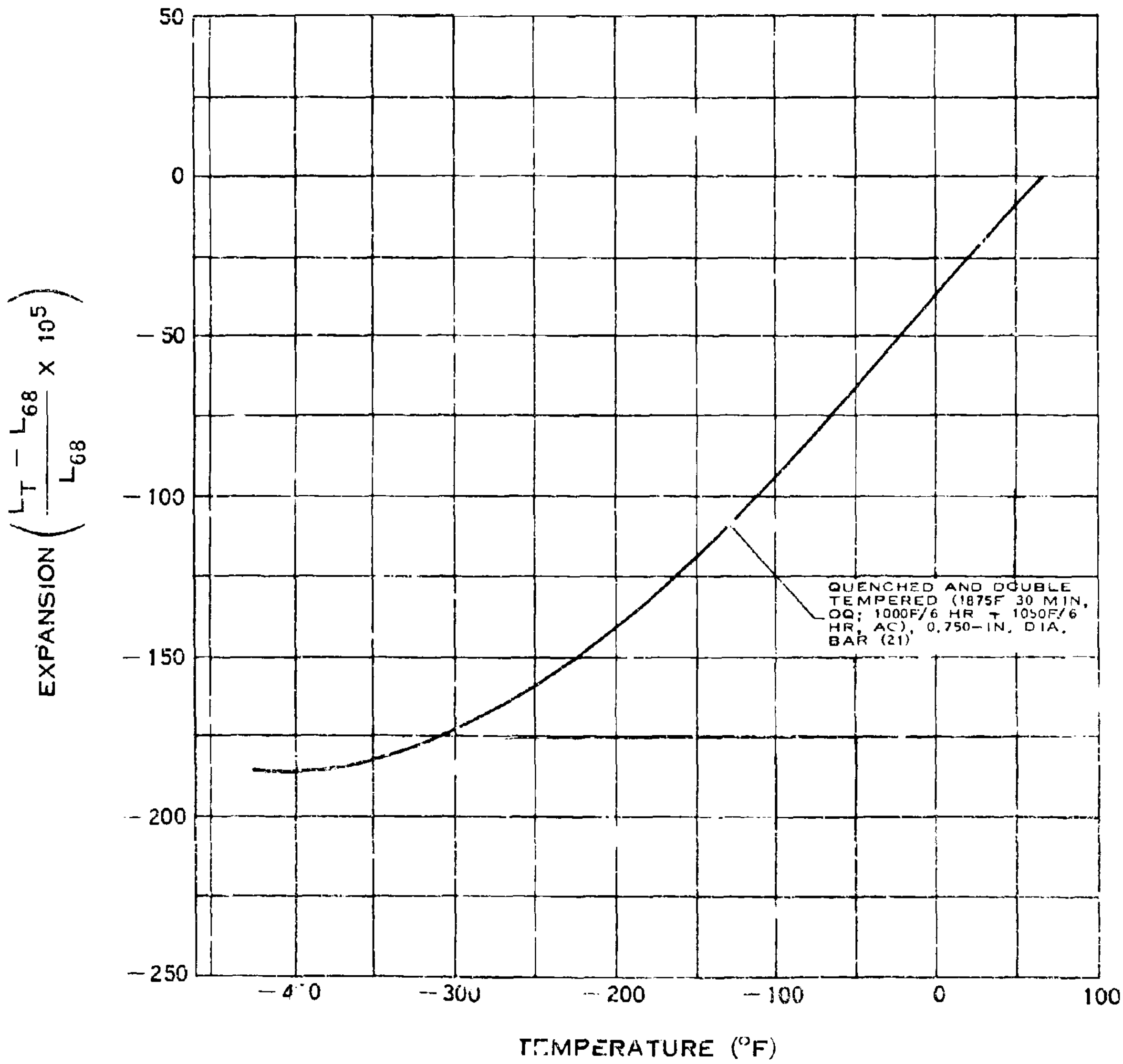
THERMAL EXPANSION OF 416 STAINLESS STEEL

(7-64)

B.10.j

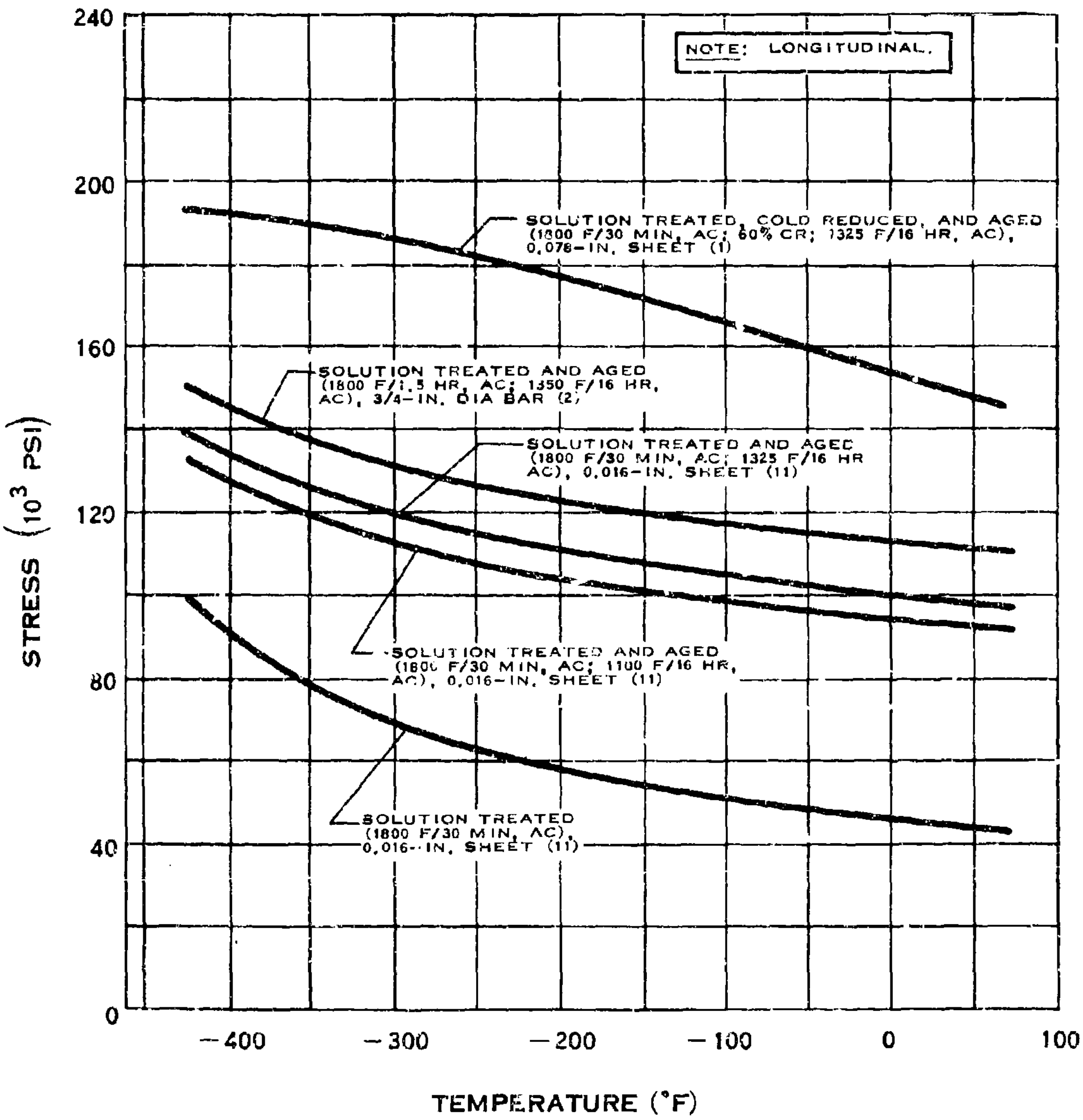


IMPACT STRENGTH OF 440C STAINLESS STEEL



THERMAL EXPANSION OF 440C STAINLESS STEEL

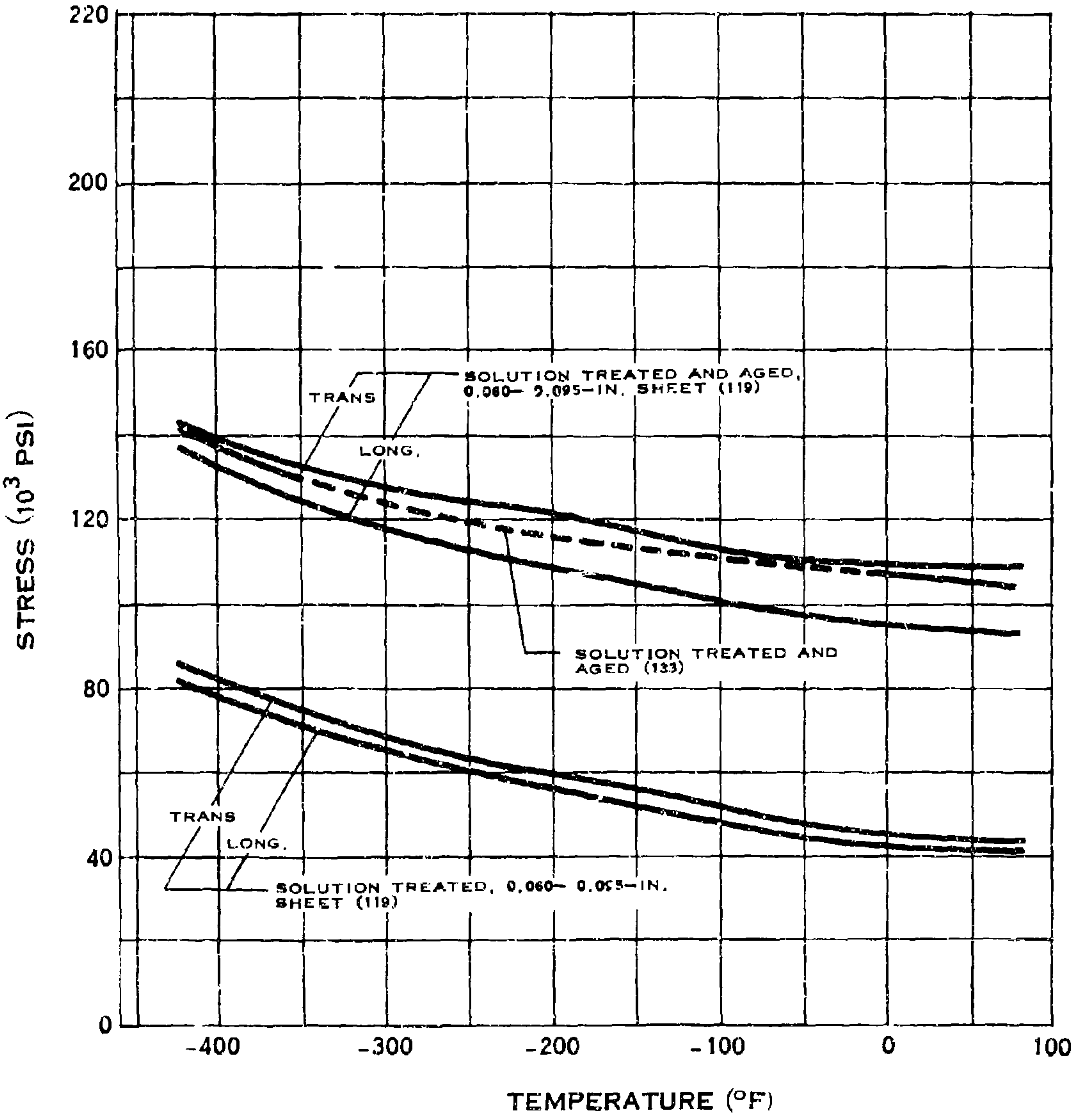
B.11.a



YIELD STRENGTH OF A-286 STAINLESS STEEL

(7-64)

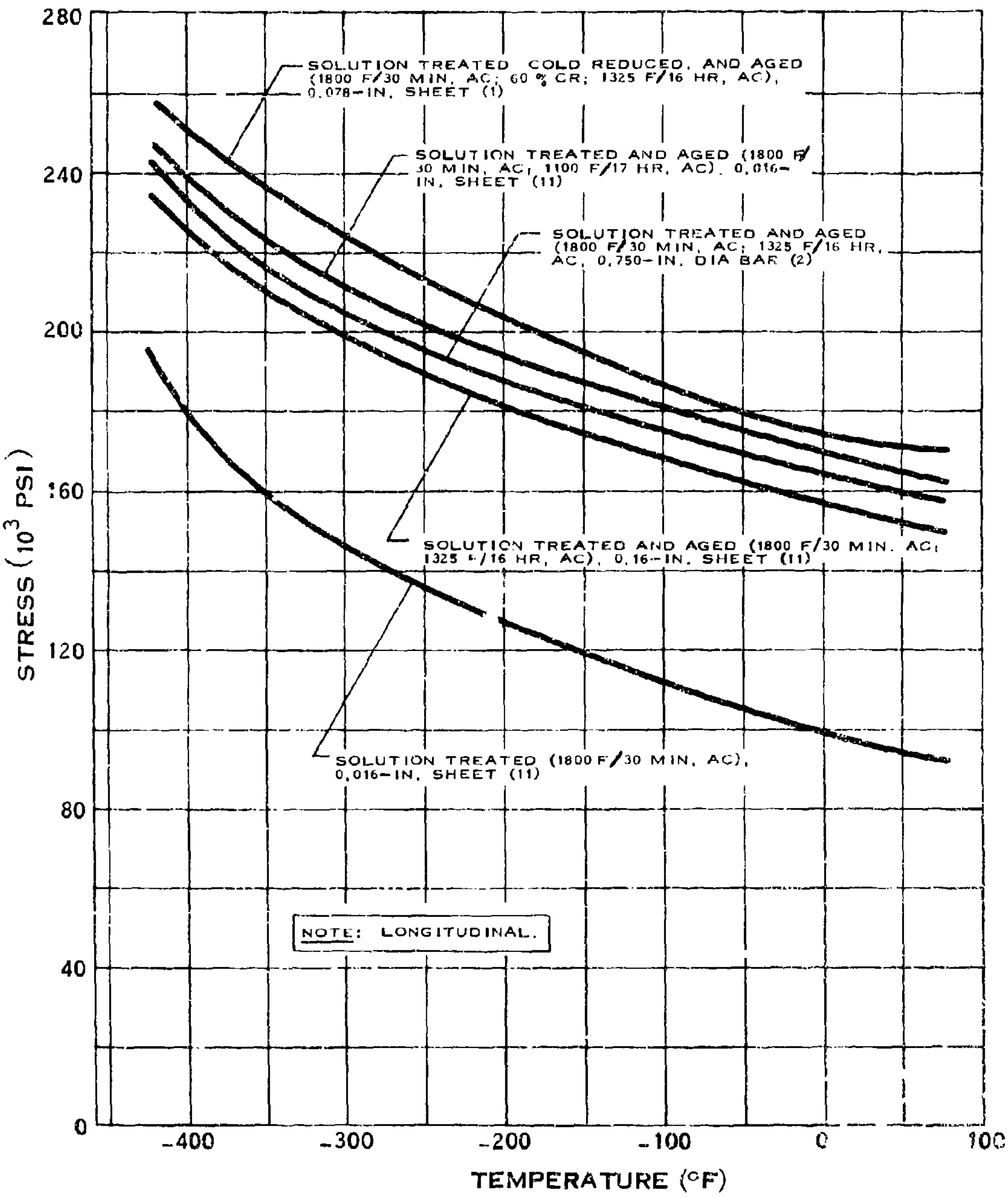
B.11.a-1



YIELD STRENGTH OF A-286 STAINLESS STEEL

(7--65)

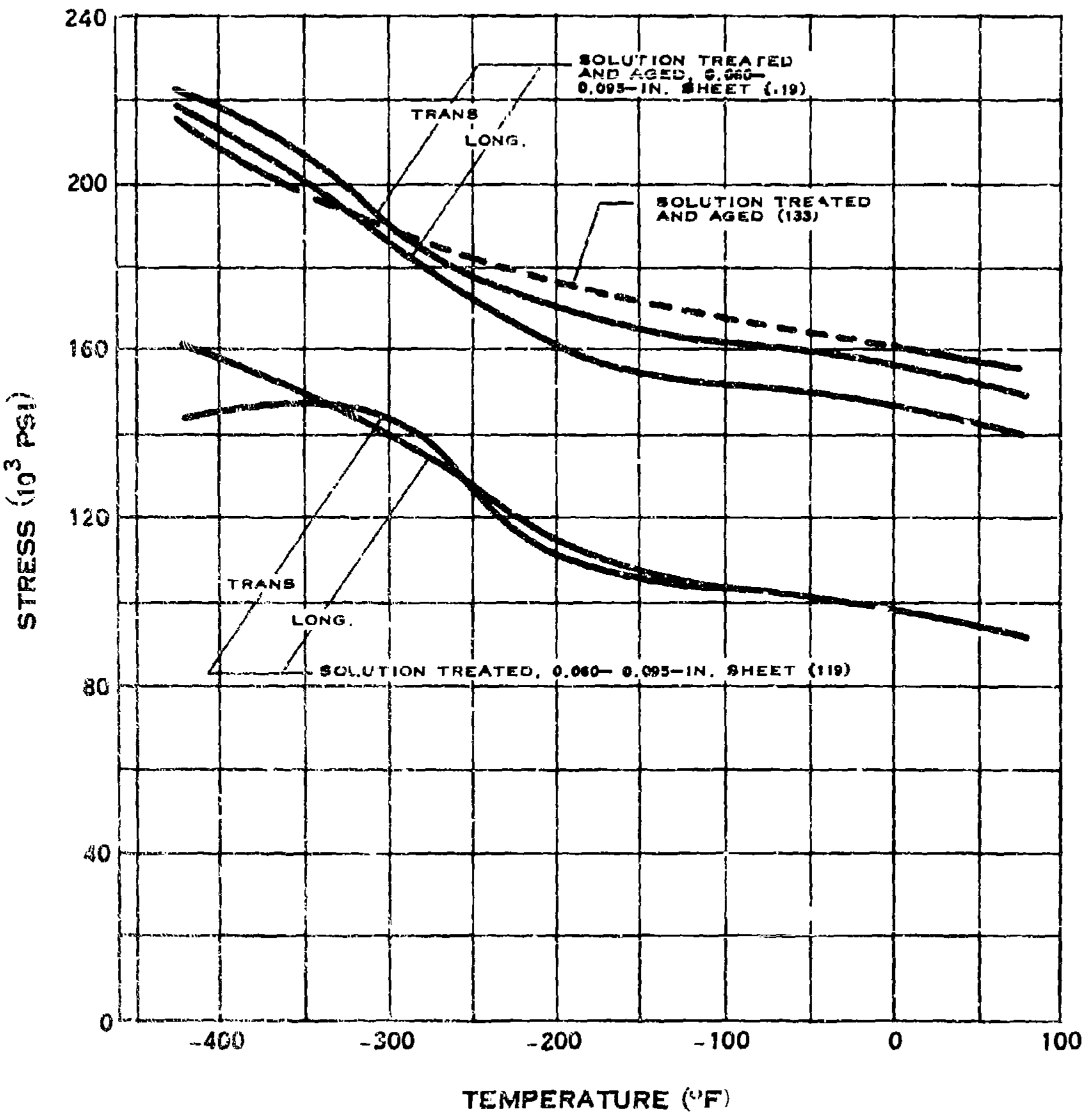
B.11.b



TENSILE STRENGTH OF A-286

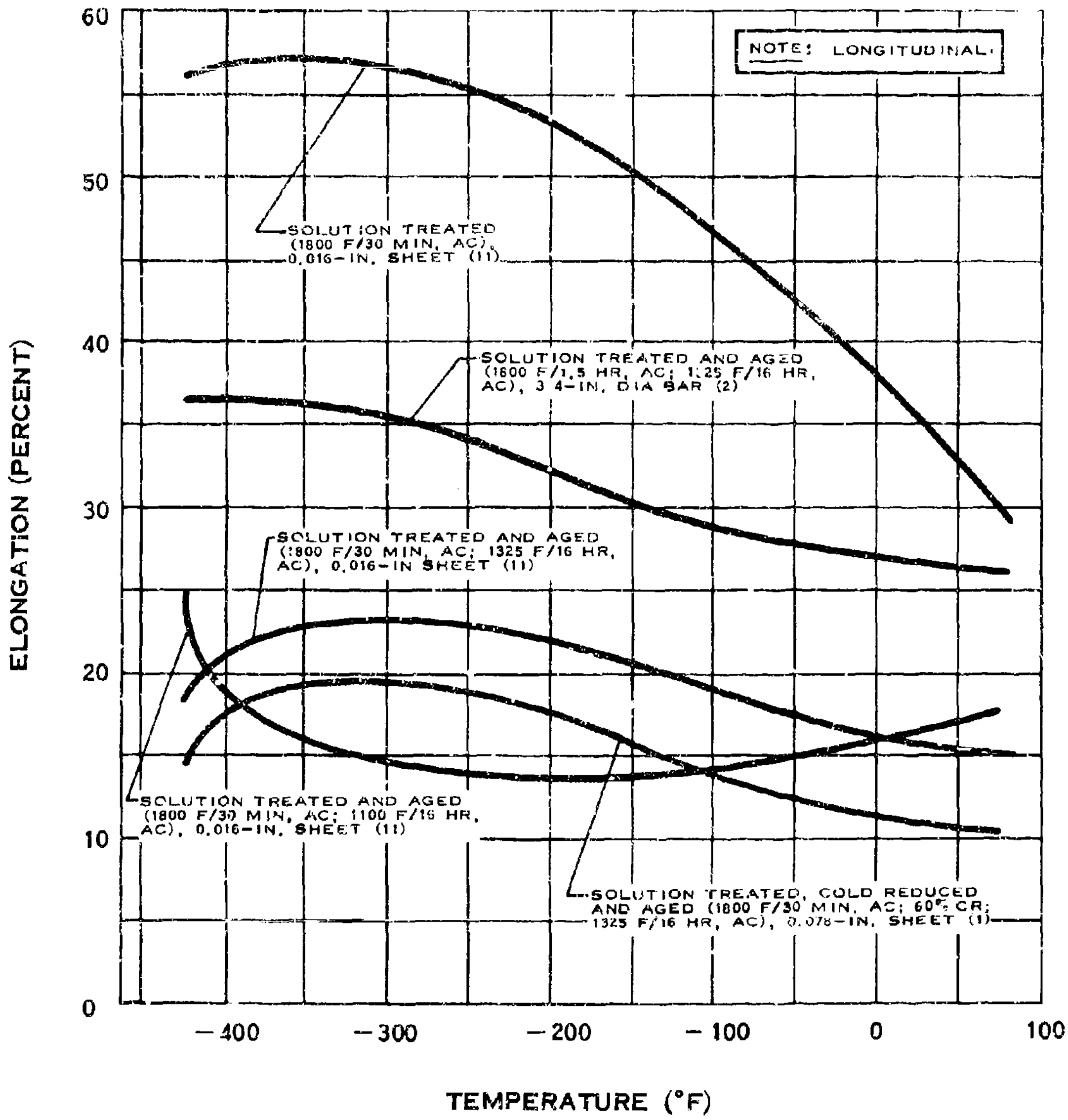
(3-66)

B.11.b-1



TENSILE STRENGTH OF A-286 STAINLESS STEEL

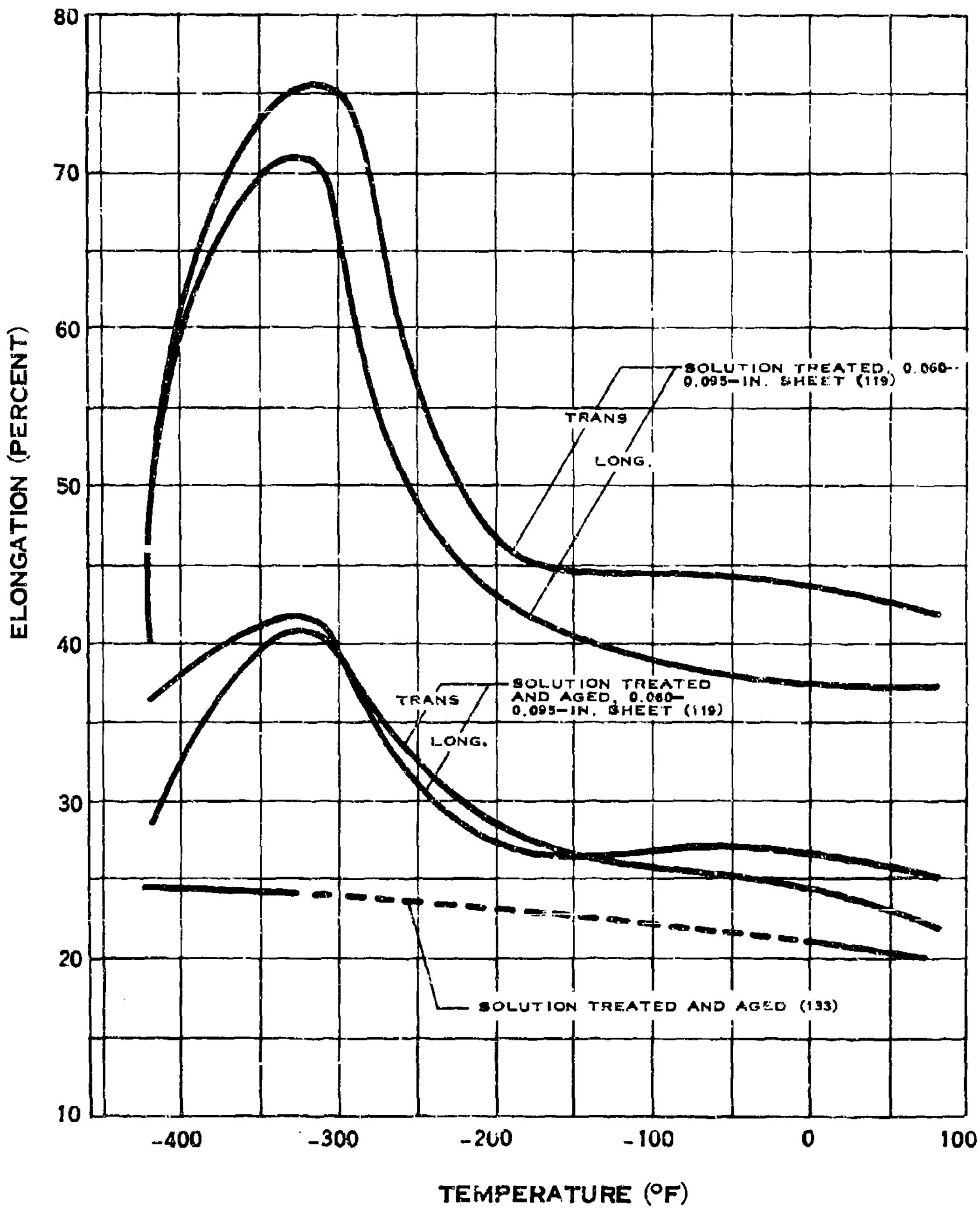
(7–65)



ELONGATION OF A-286 STAINLESS STEEL

(7-64)

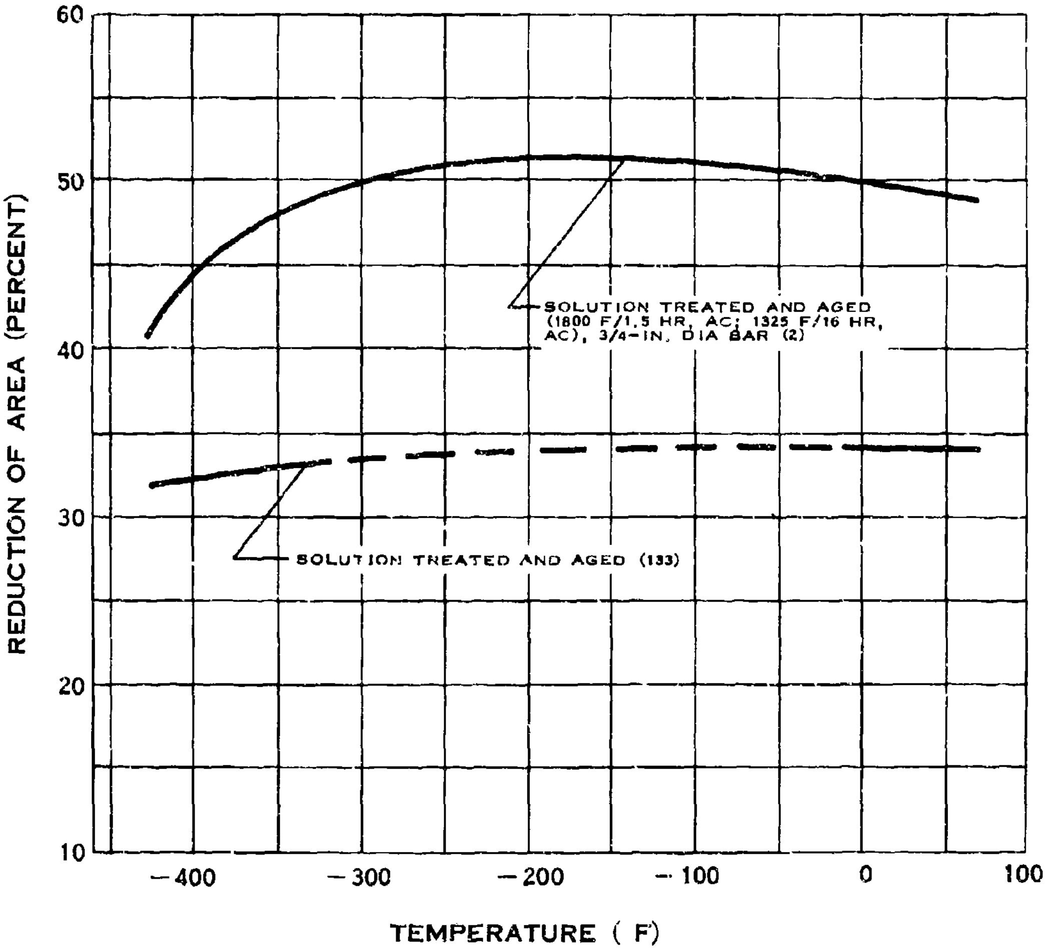
B.11.c-1



ELONGATION OF A-286 STAINLESS STEEL

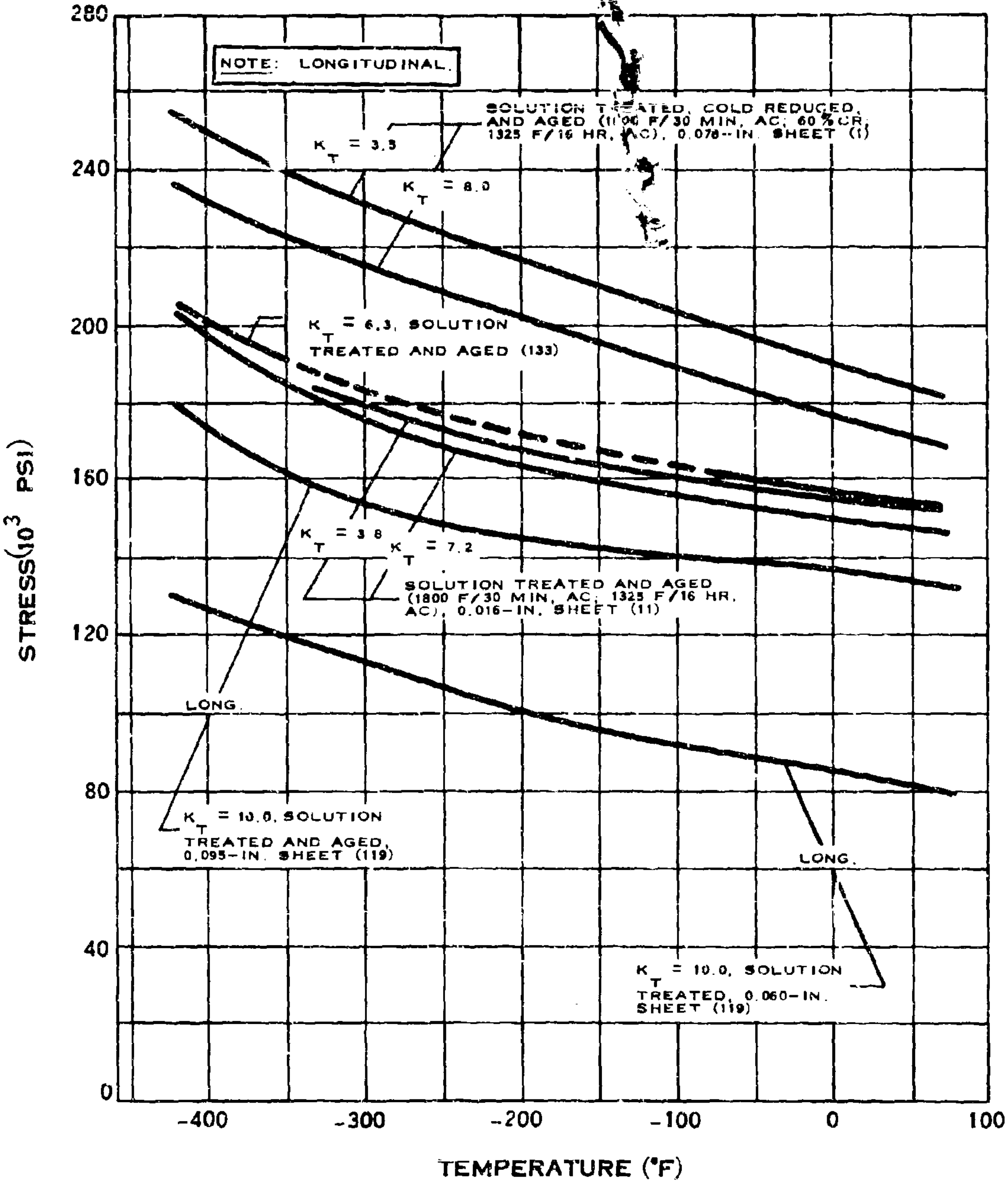
(7-65)

B.11.d



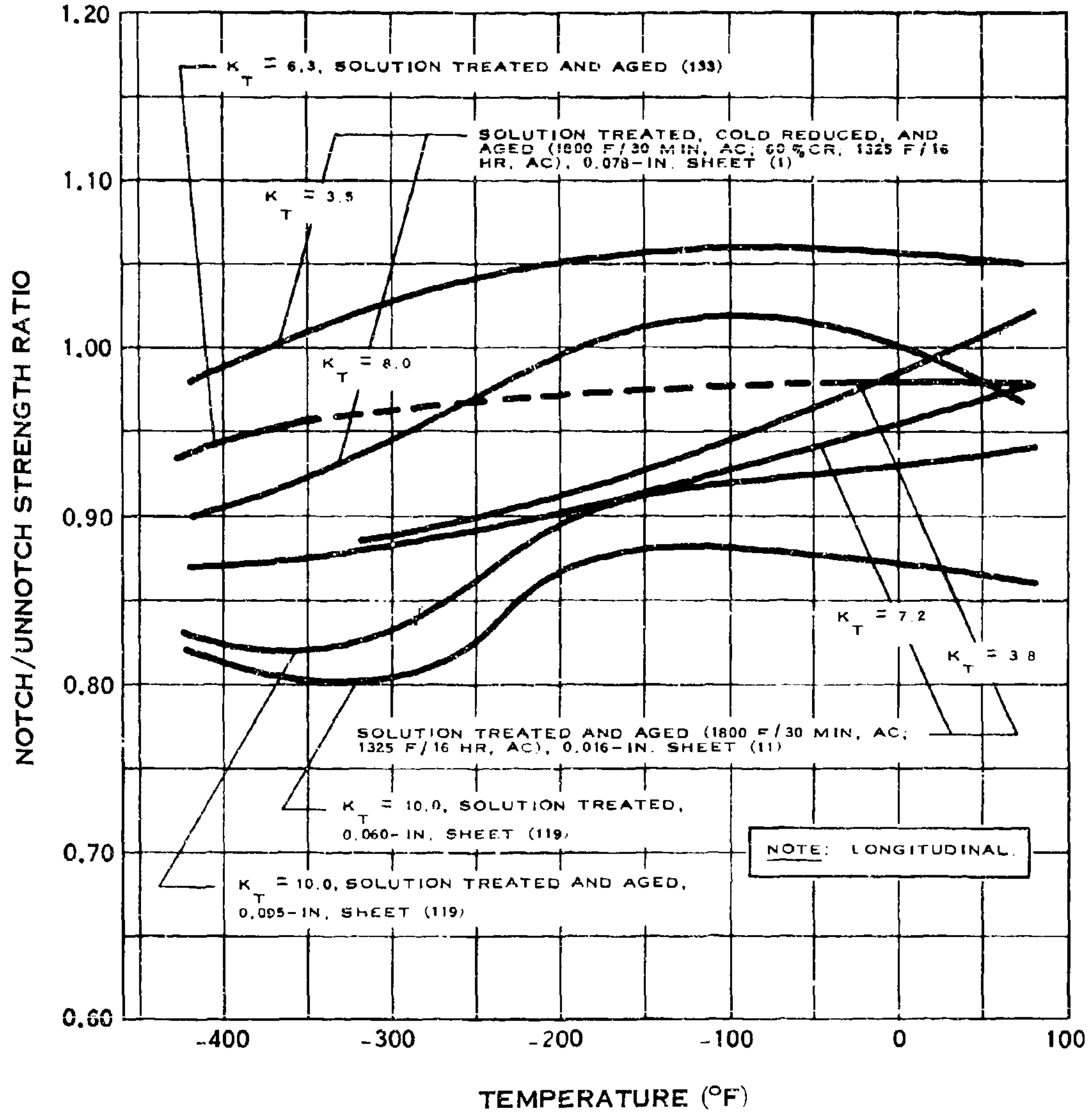
REDUCTION OF AREA OF A-286 STAINLESS STEEL

B.11.e



NOTCH TENSILE STRENGTH OF A-286 STAINLESS STEEL

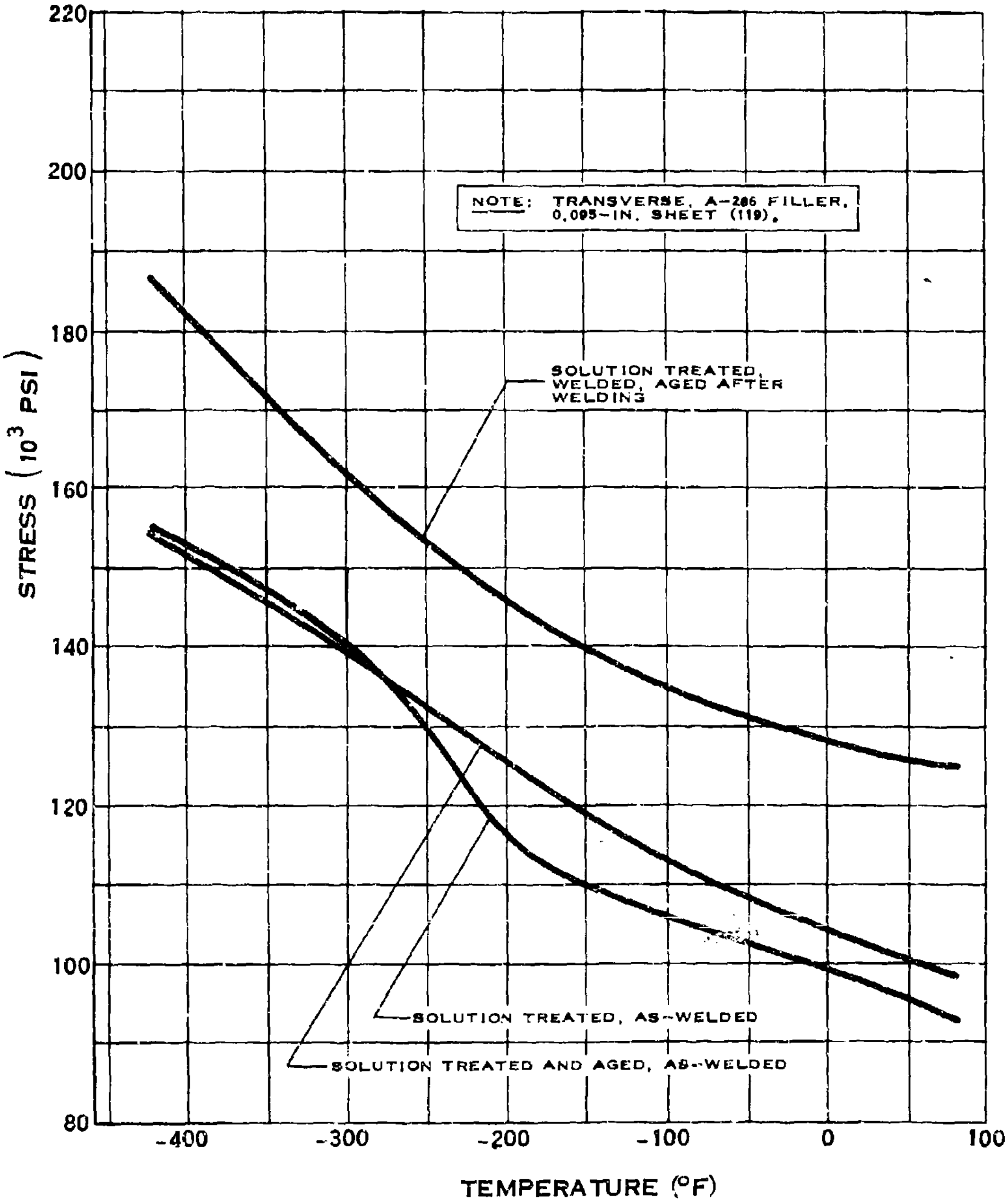
B.11.e-1



NOTCH STRENGTH RATIO OF A-286 STAINLESS STEEL

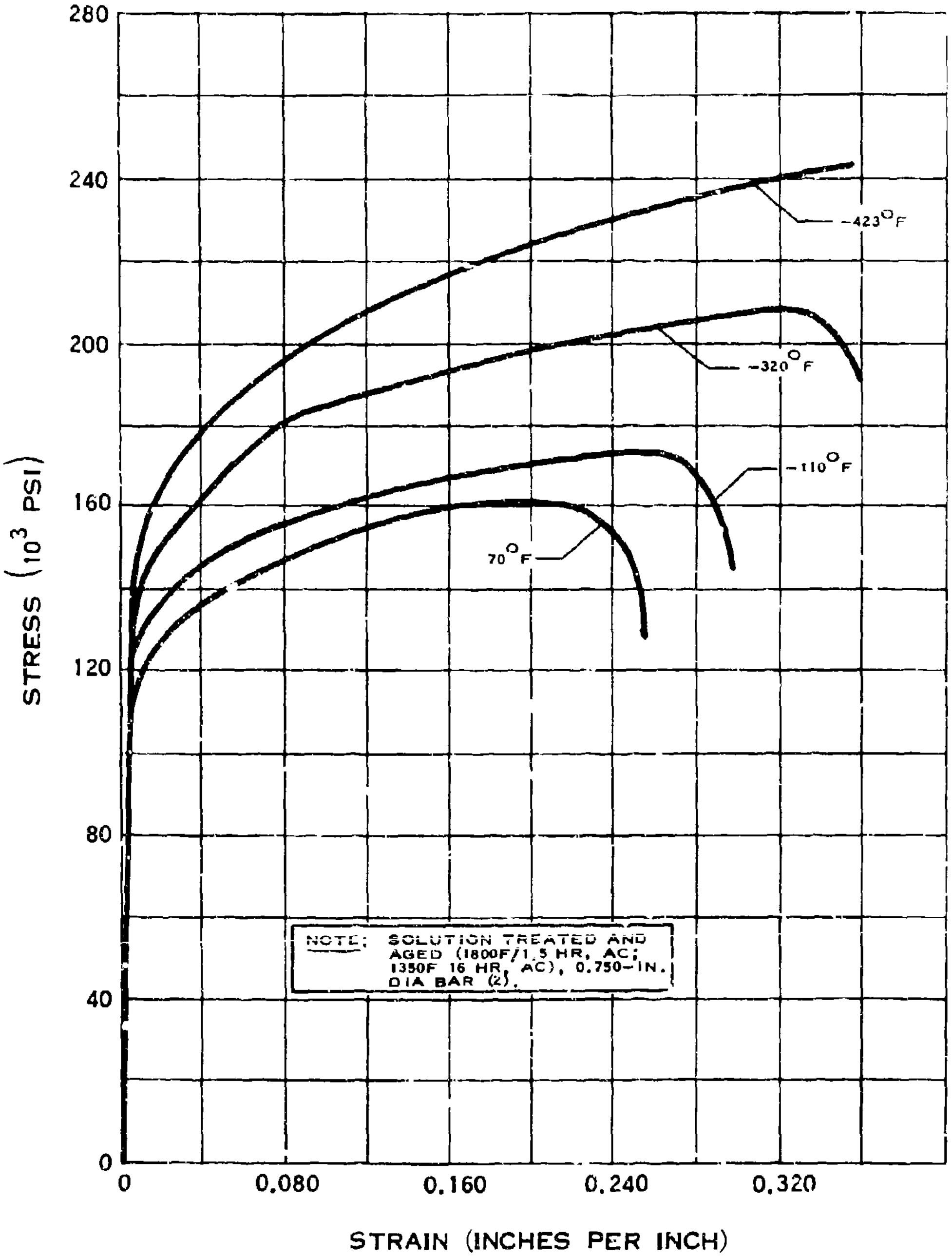
(7-65)

B.11.g

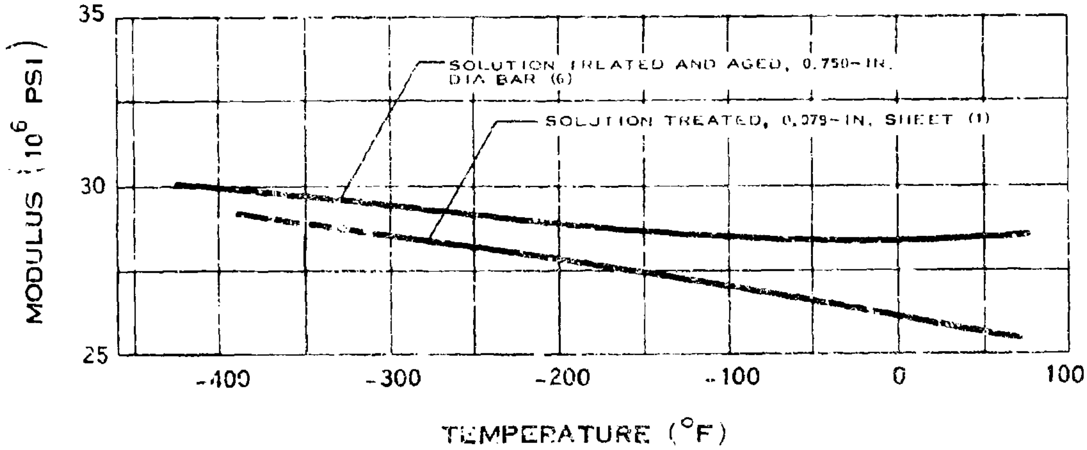


WELD TENSILE STRENGTH OF A-286 STAINLESS STEEL

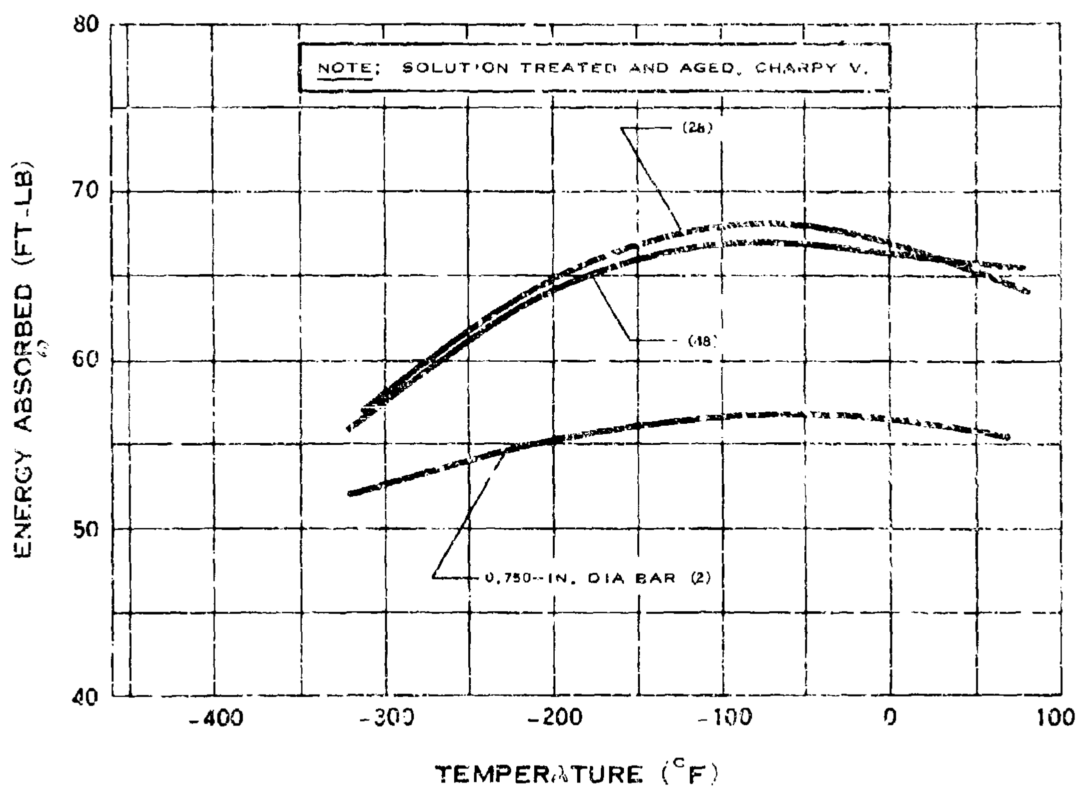
B.11.h



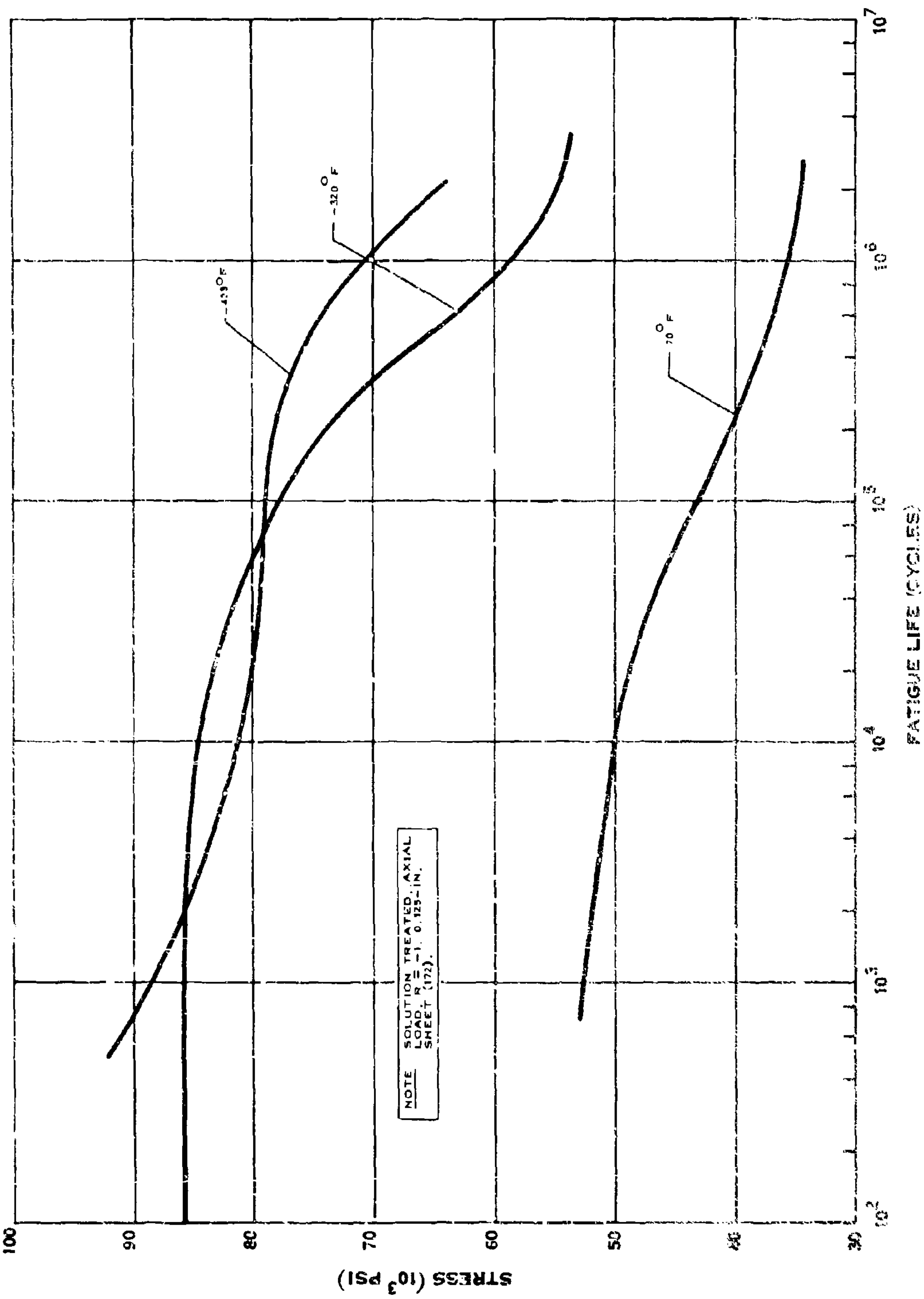
STRESS-STRAIN DIAGRAM FOR A-286 STAINLESS STEEL



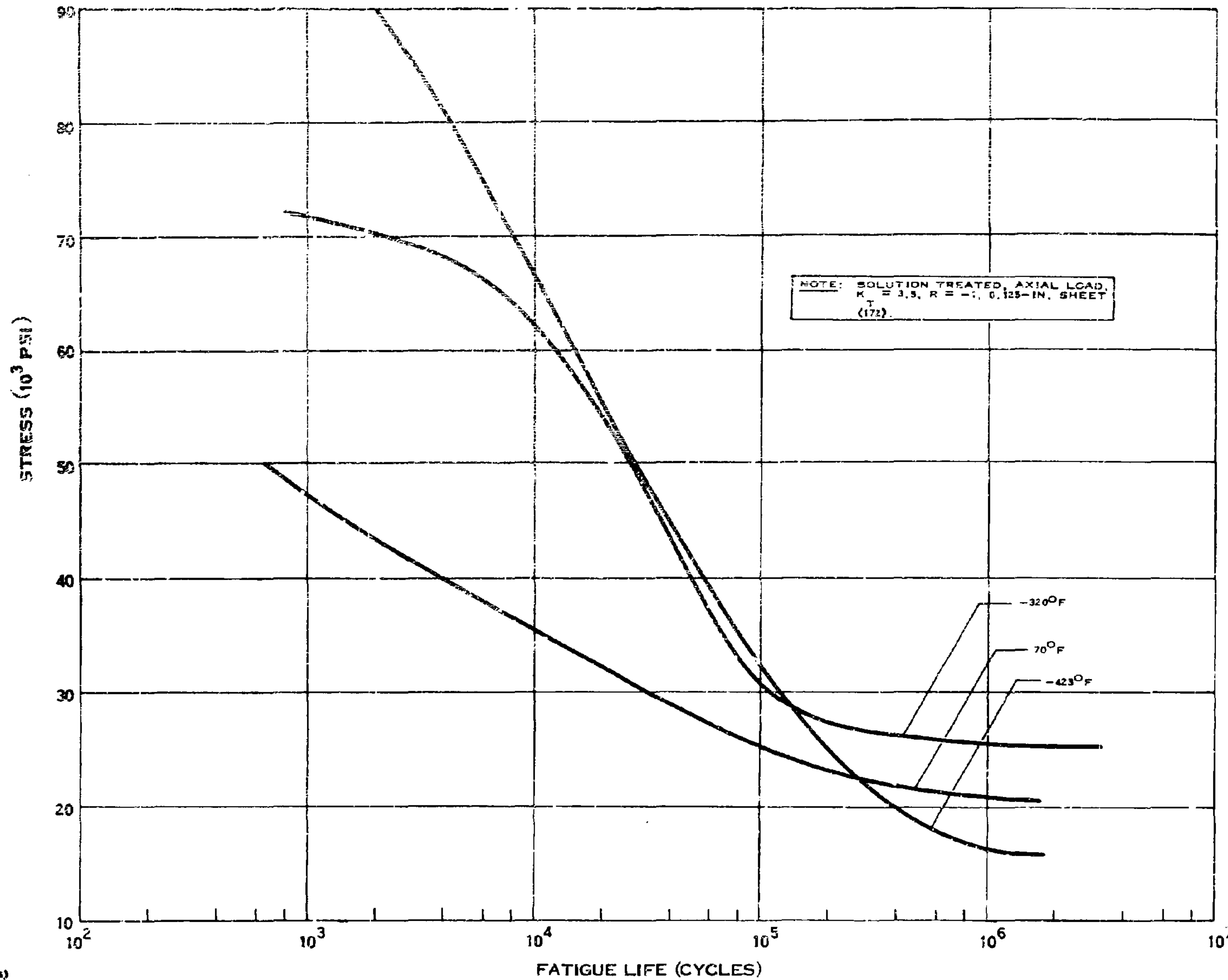
MODULUS OF ELASTICITY OF A-286 STAINLESS STEEL



IMPACT STRENGTH OF A-236 STAINLESS STEEL

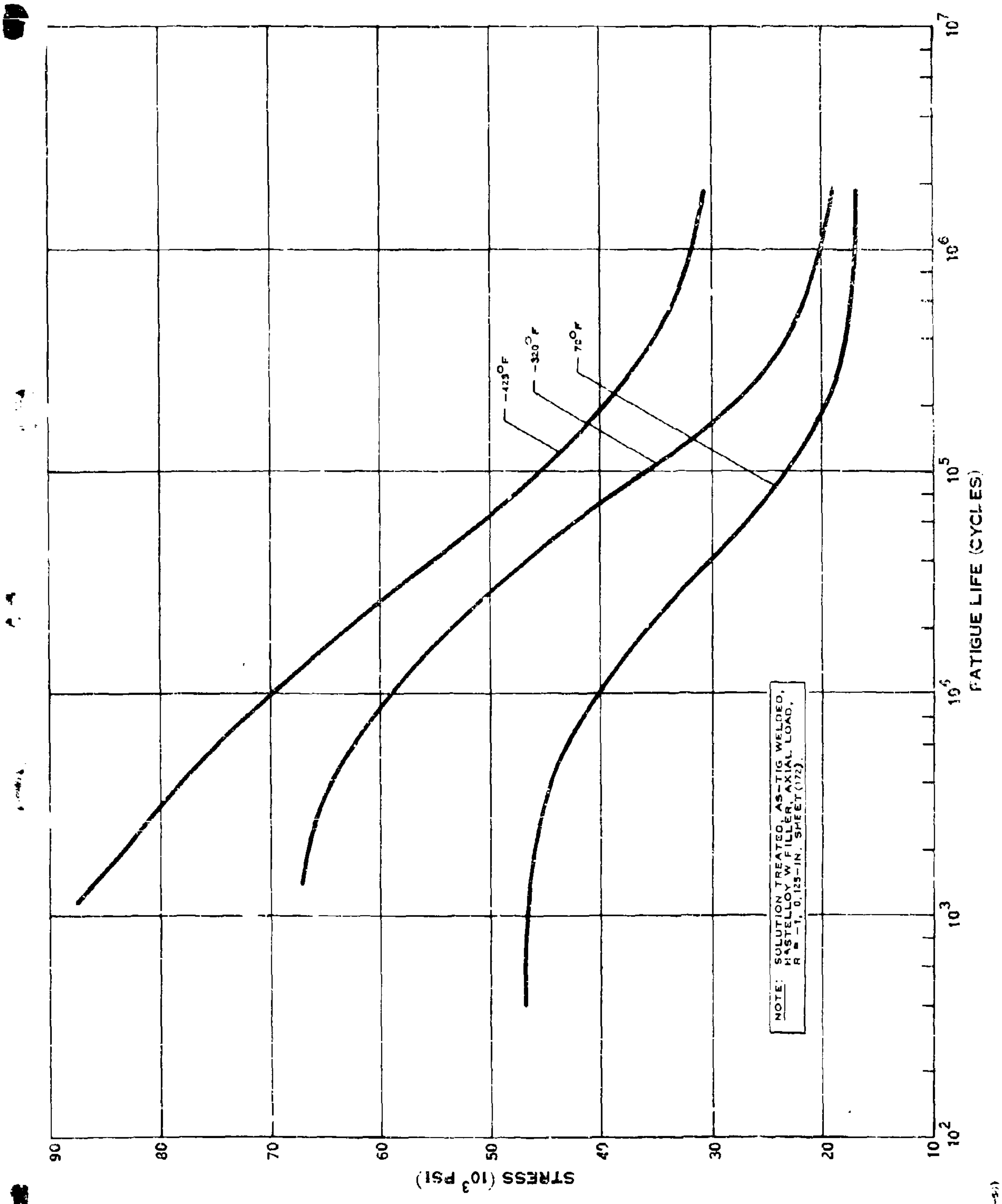


FATIGUE STRENGTH OF A-286 STAINLESS STEEL

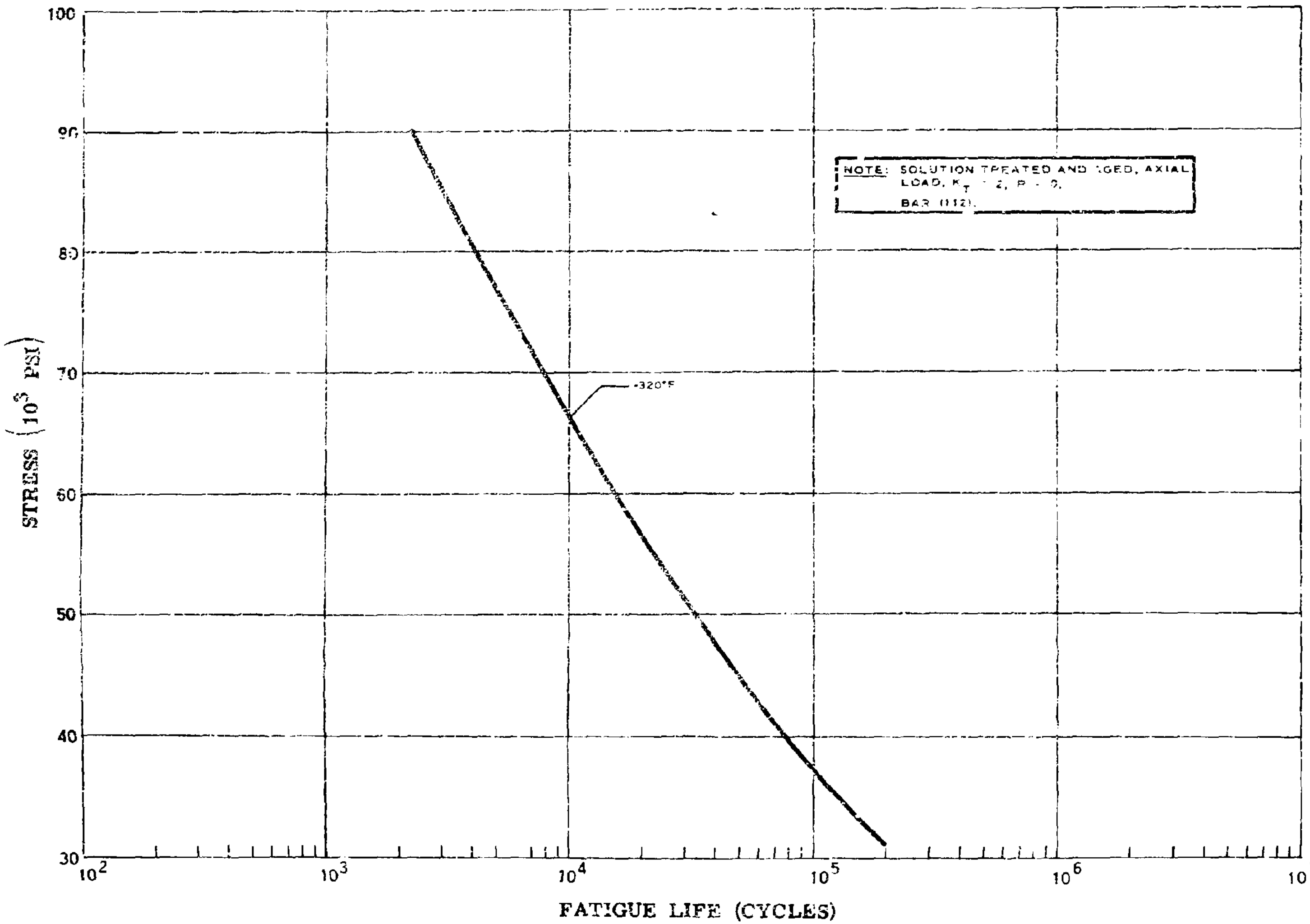


NOTCH FATIGUE STRENGTH OF A-286 STAINLESS STEEL

B.11.o-2



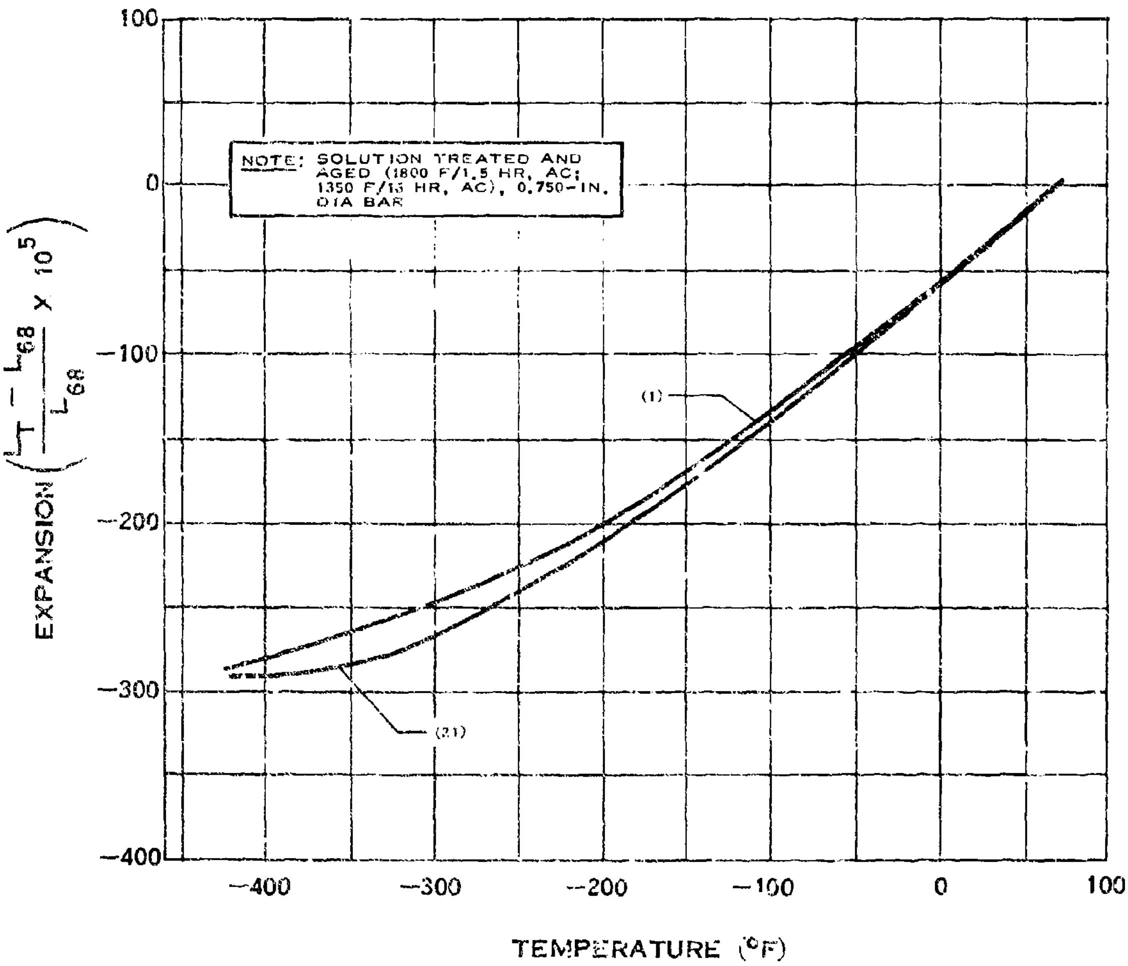
WELD FATIGUE STRENGTH OF A-286 STAINLESS STEEL



FATIGUE SYRENGTH OF A-286 STAINLESS STEEL

(6-68)

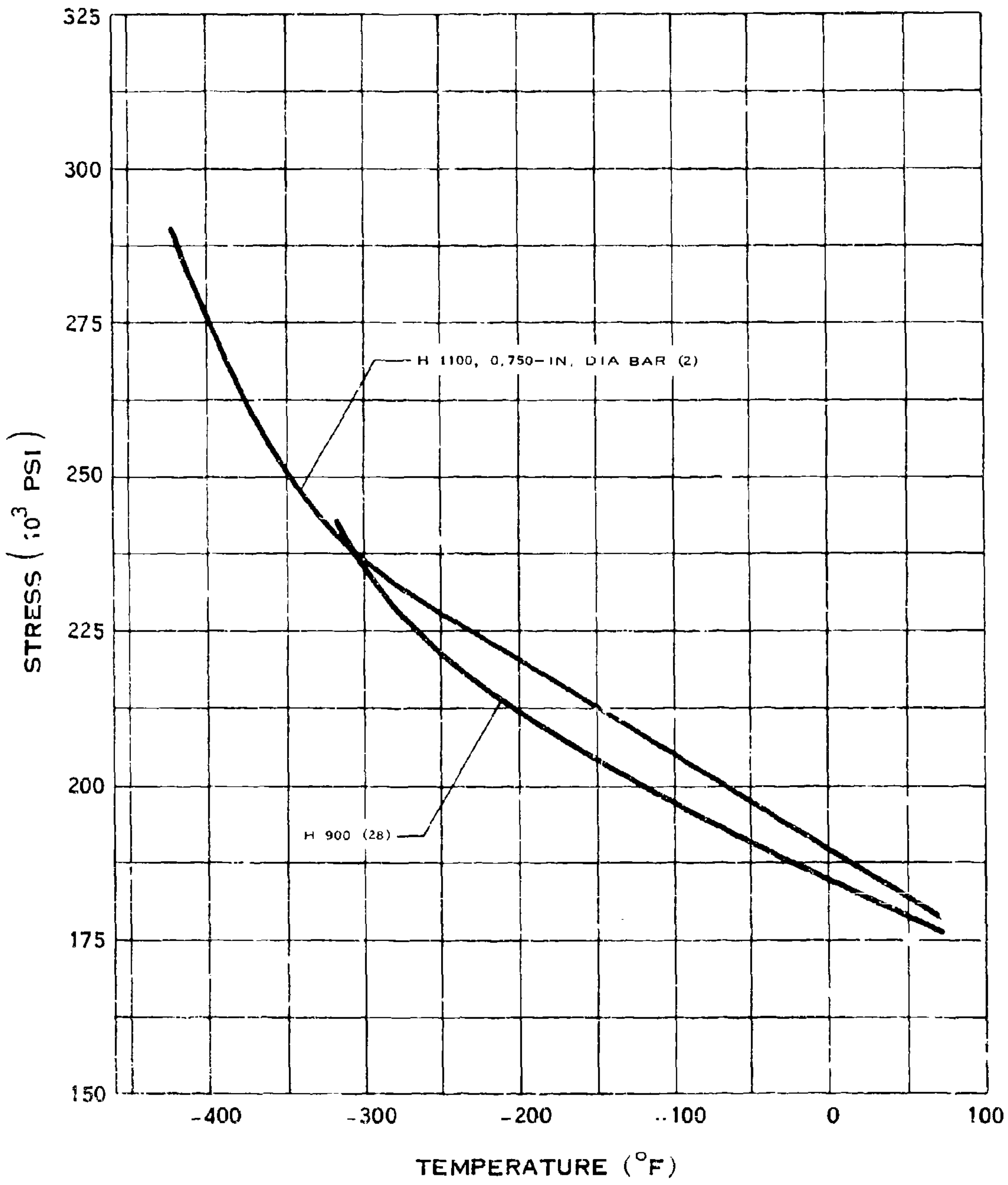
B.11.t



THERMAL EXPANSION OF A-286 STAINLESS STEEL

(7-64)

B.12.a



YIELD STRENGTH OF 17-4 PH STAINLESS STEEL

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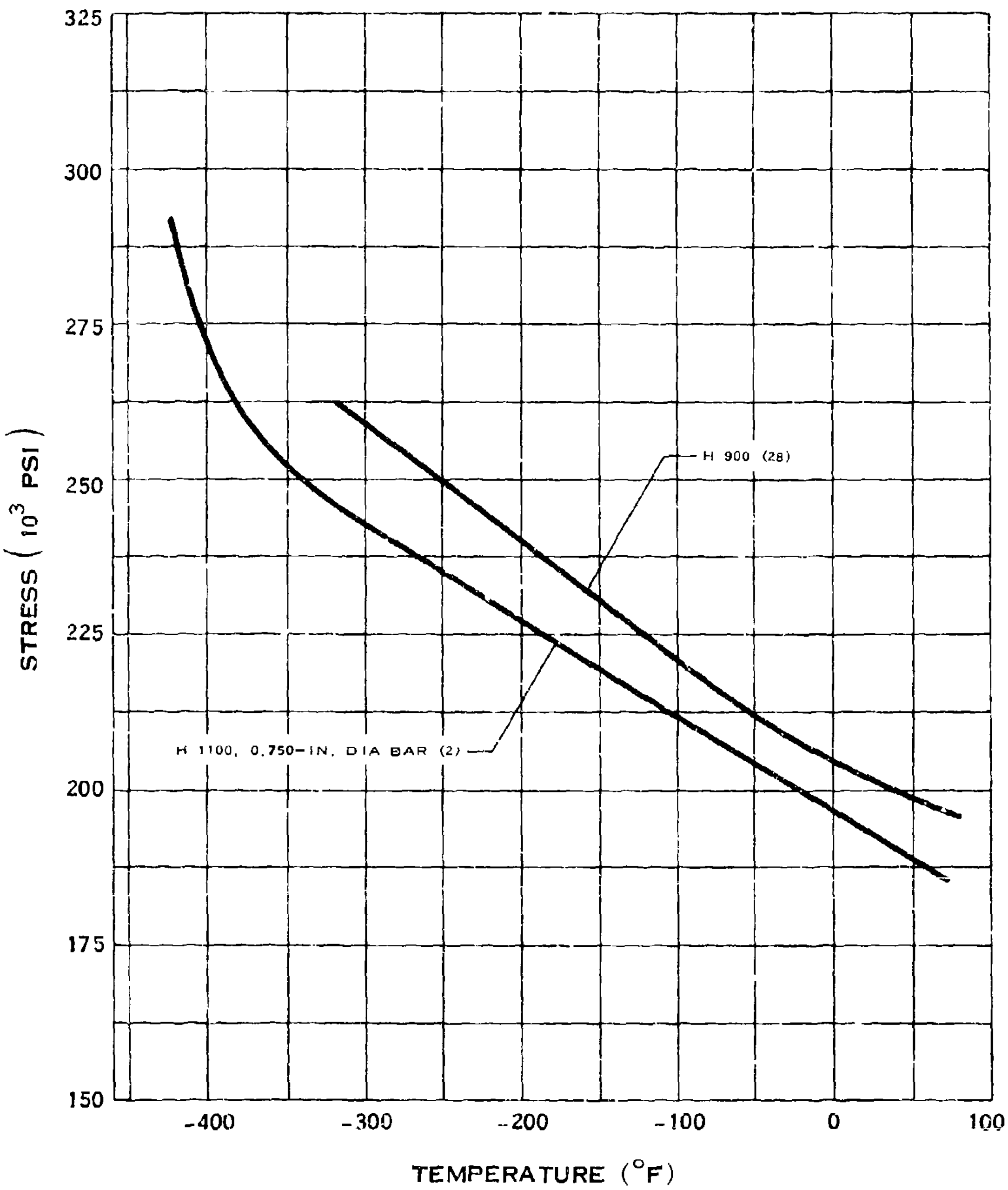
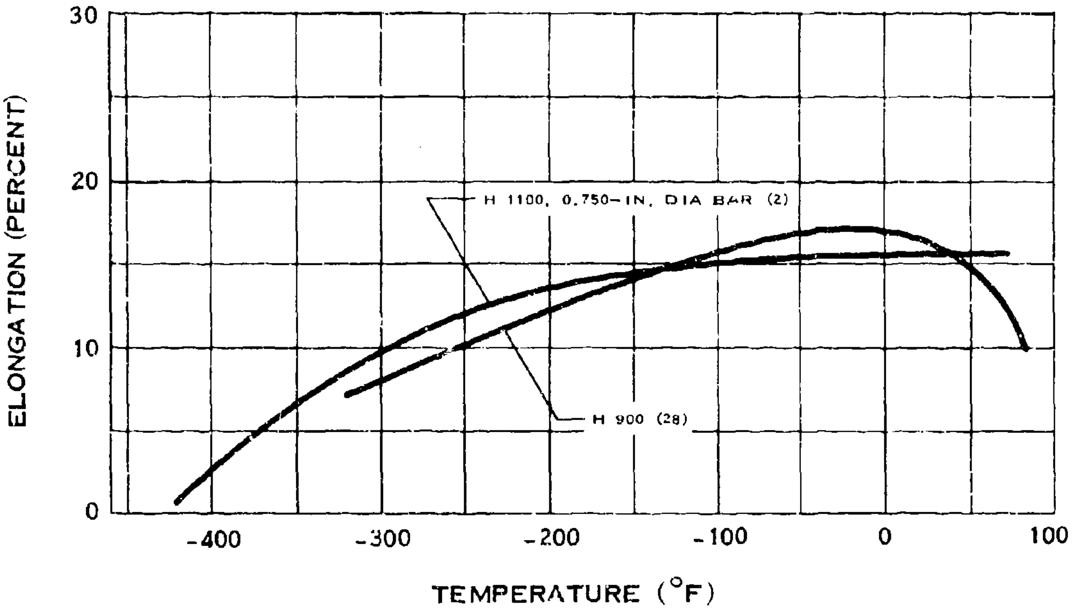
B.12.b

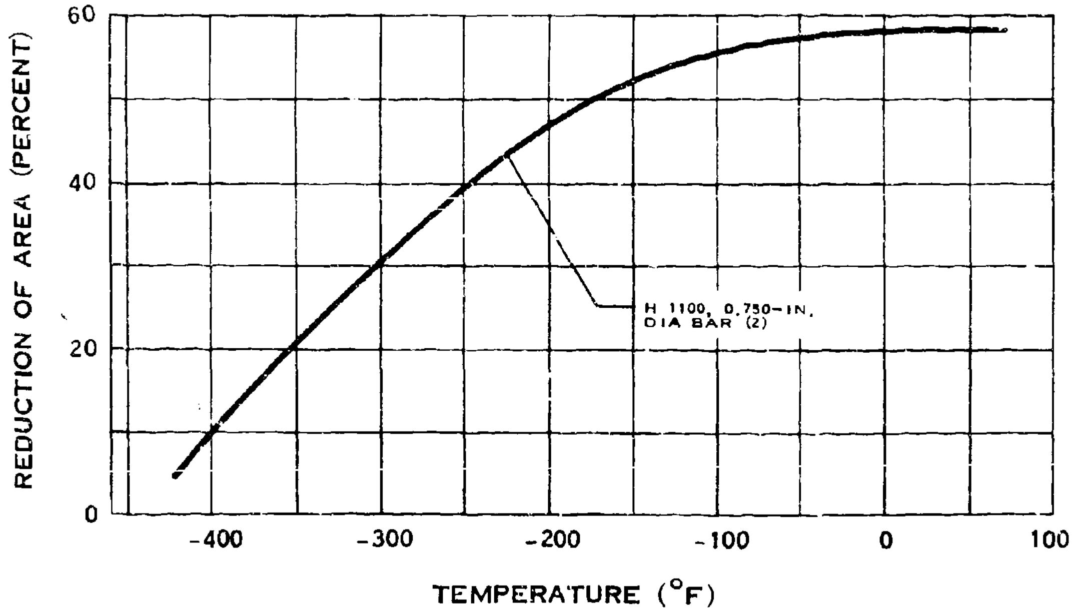


TENSILE STRENGTH OF 17-4 PH STAINLESS STEEL

B.12.cd



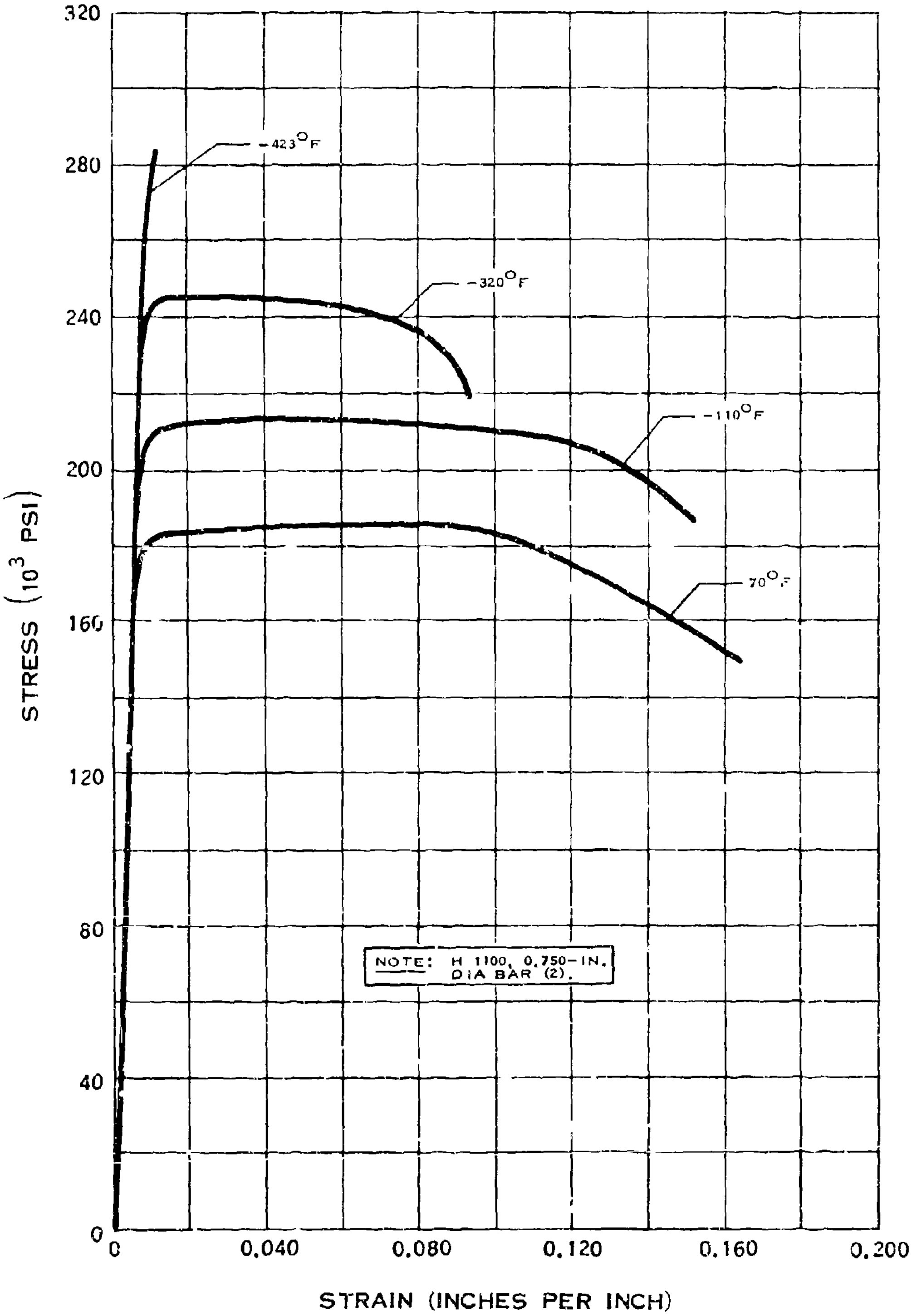
ELONGATION OF 17-4 PH STAINLESS STEEL



REDUCTION OF AREA OF 17-4 PH STAINLESS STEEL

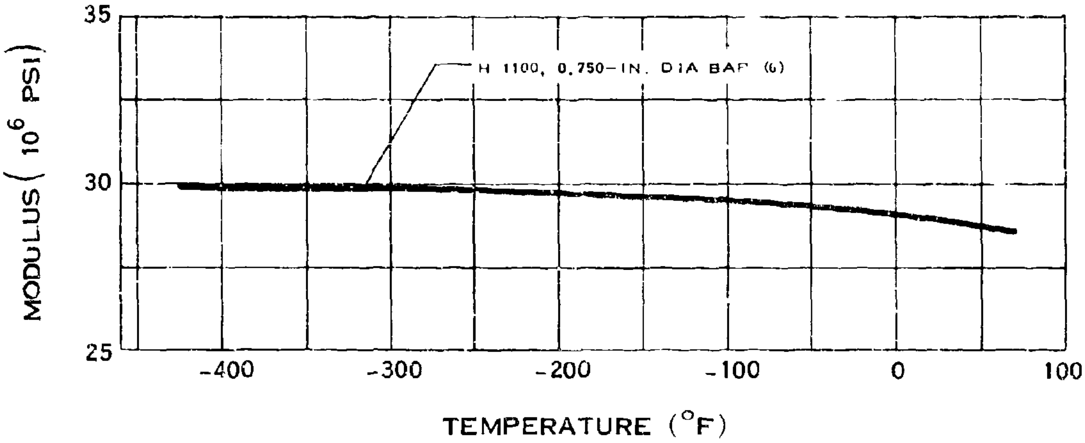
(7-64)

B.12.h

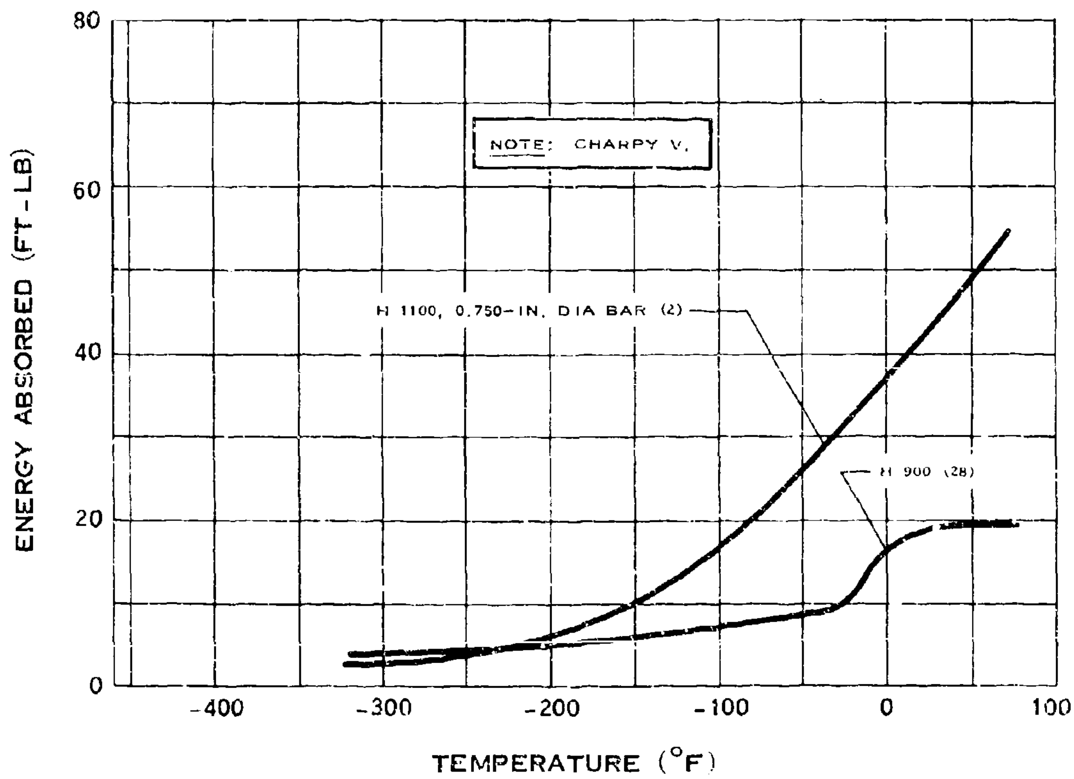


STRESS-STRAIN DIAGRAM FOR 17-4 PH STAINLESS STEEL

(7-64)

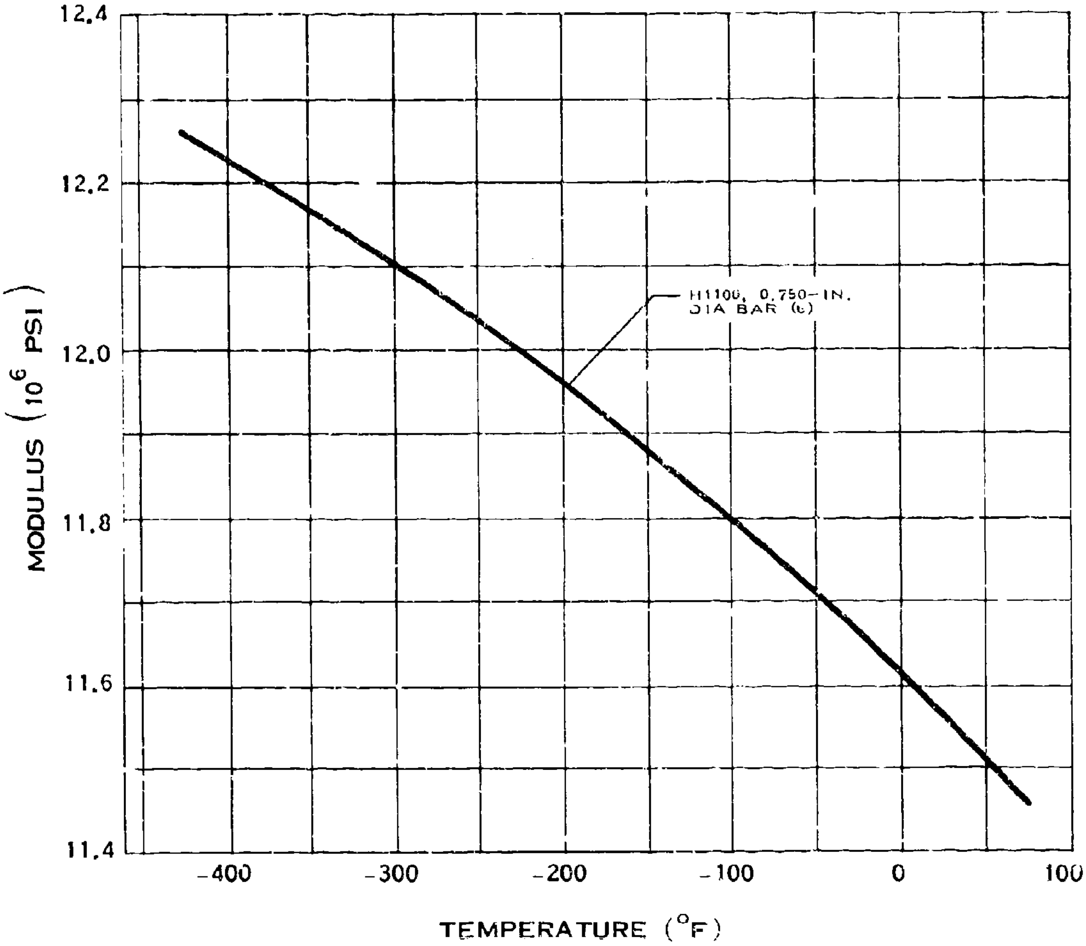


MODULUS OF ELASTICITY OF 17-4 PH STAINLESS STEEL

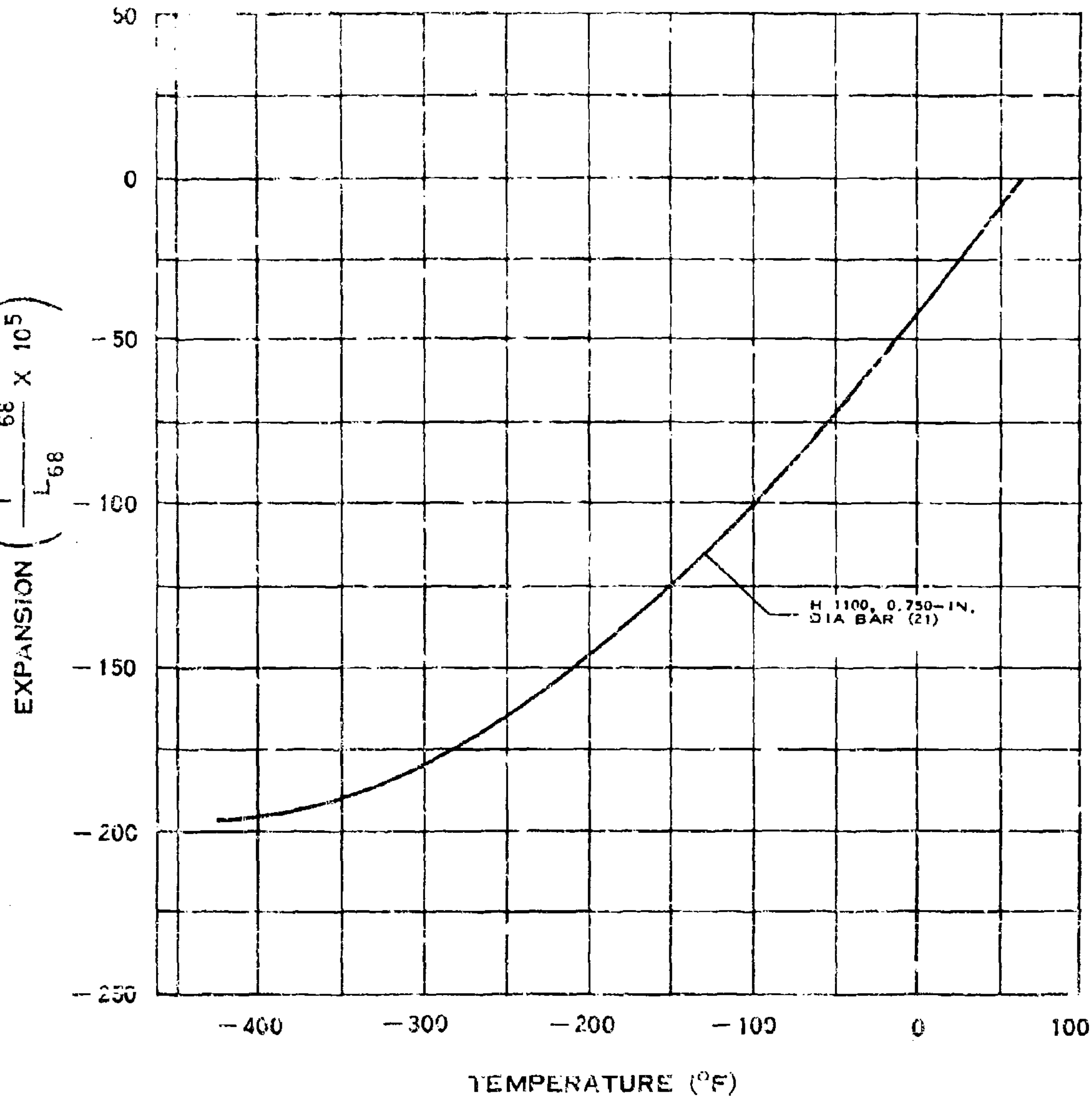


IMPACT STRENGTH OF 17-4 PH STAINLESS STEEL

B.12.ℓ

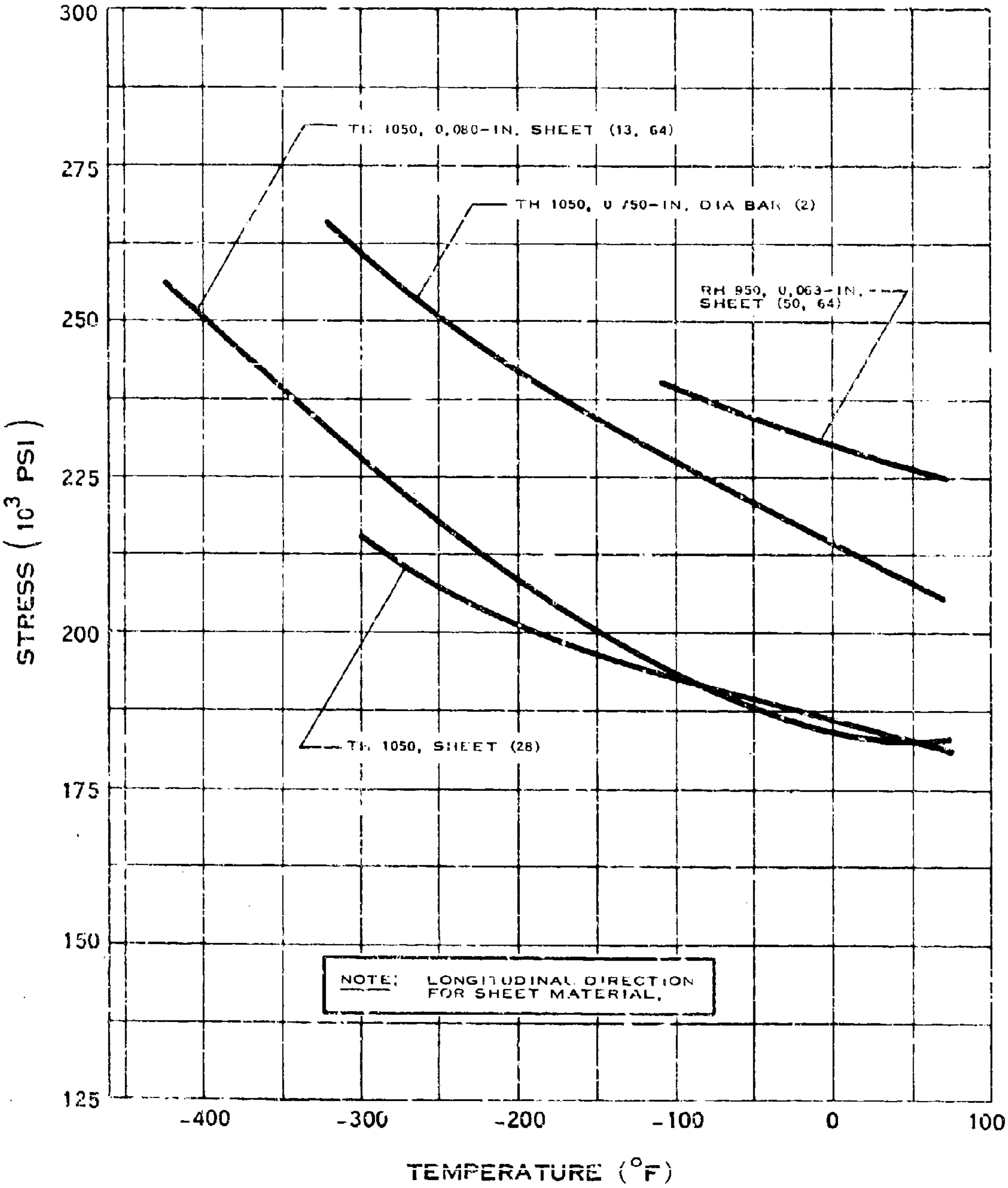


MODULUS OF RIGIDITY OF 17-4 PH STAINLESS STEEL



THERMAL EXPANSION OF 17-4 PH STAINLESS STEEL

B.13.a



YIELD STRENGTH OF 17-7 PH STAINLESS STEEL

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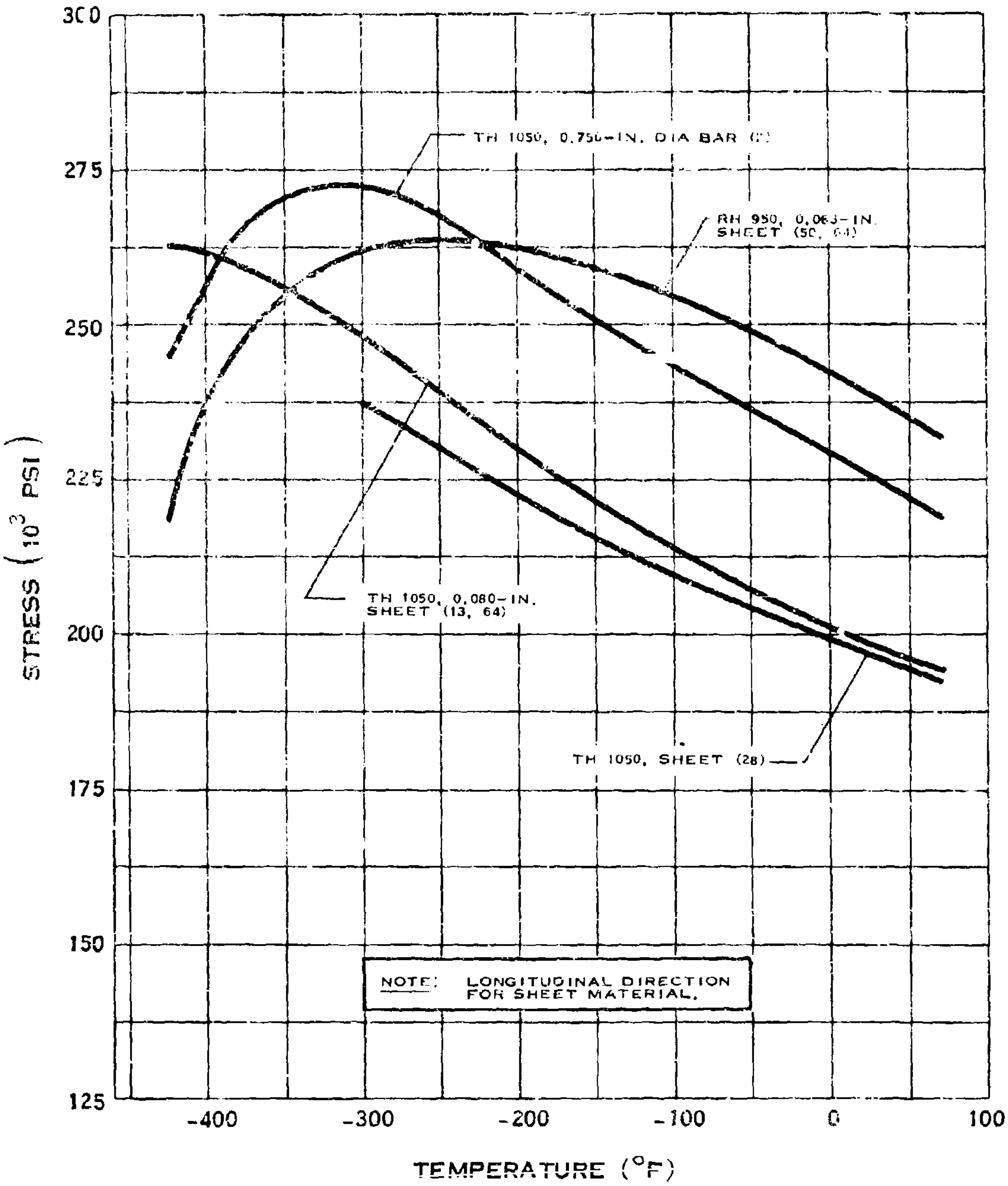
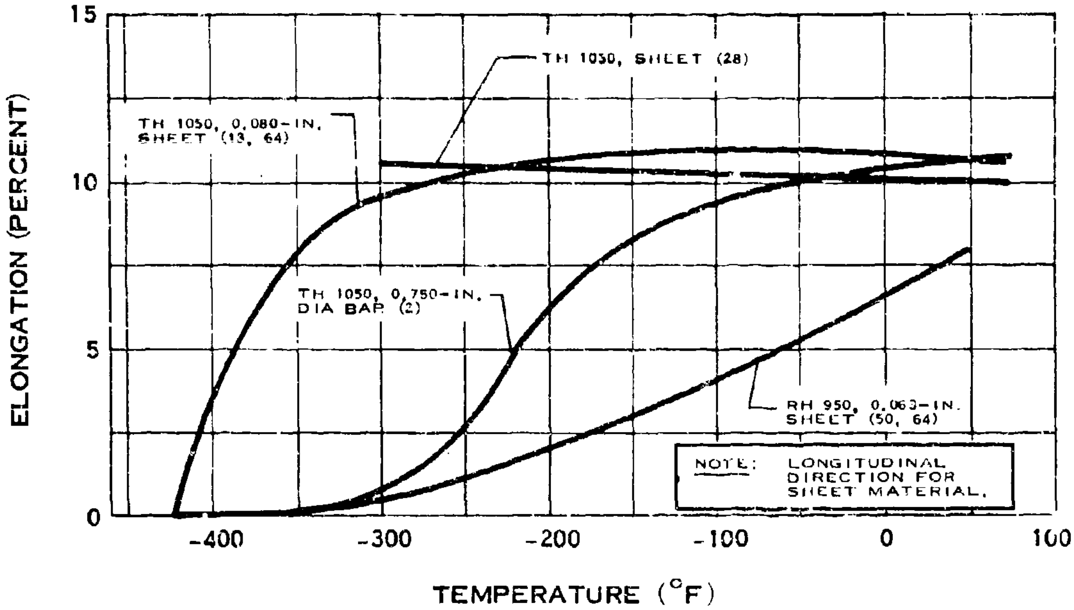
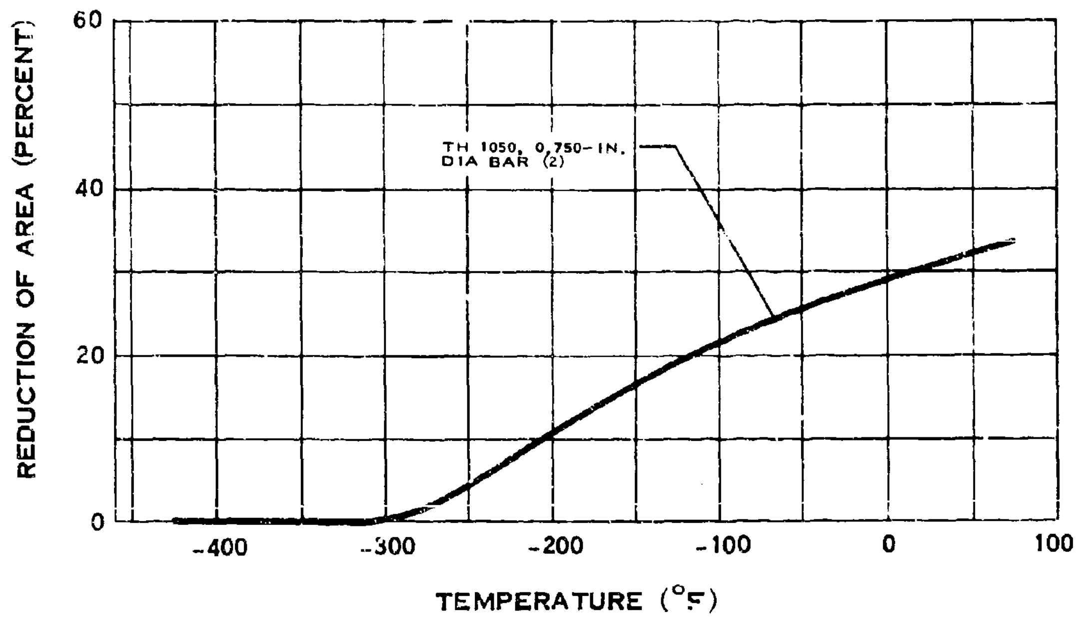
B.13.b



TENSILE STRENGTH OF 17-7 PH STAINLESS STEEL

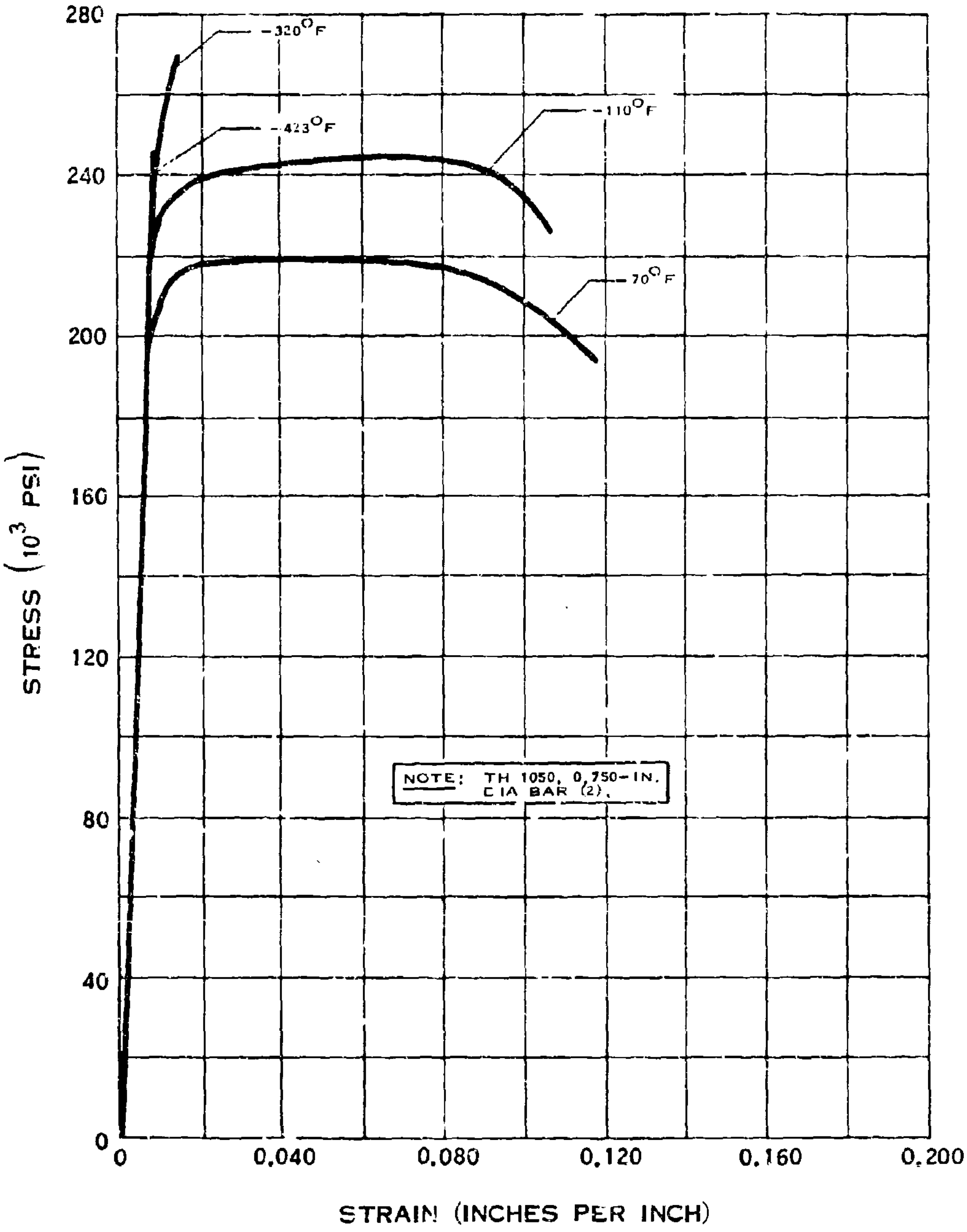


ELONGATION OF 17-7 PH STAINLESS STEEL

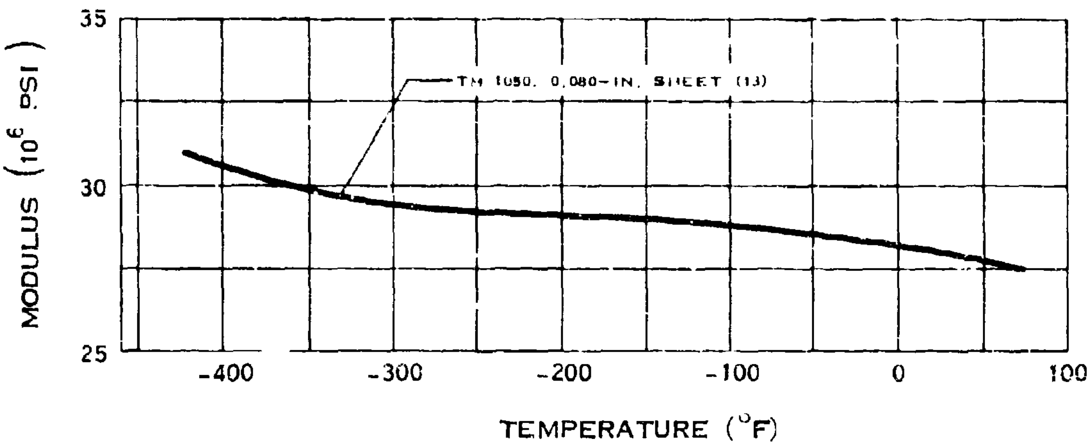


REDUCTION OF AREA OF 17-7 PH STAINLESS STEEL

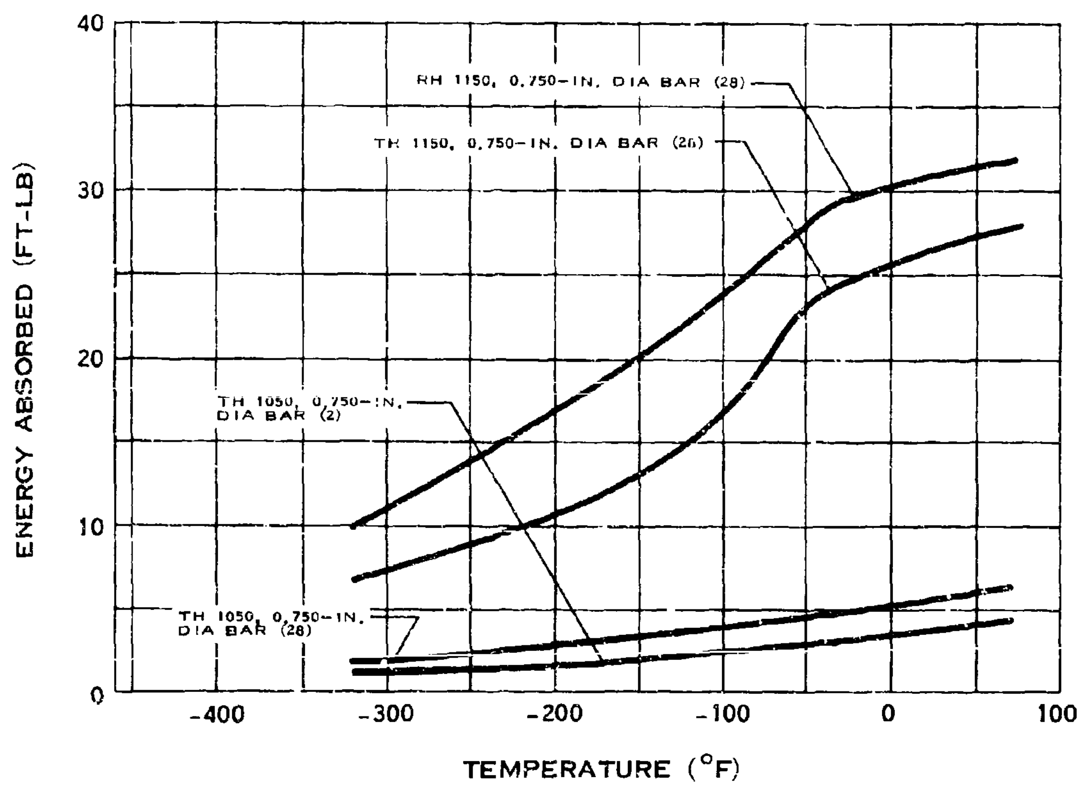
B.13.h



STRESS-STRAIN DIAGRAM FOR 17-7 PH STAINLESS STEEL



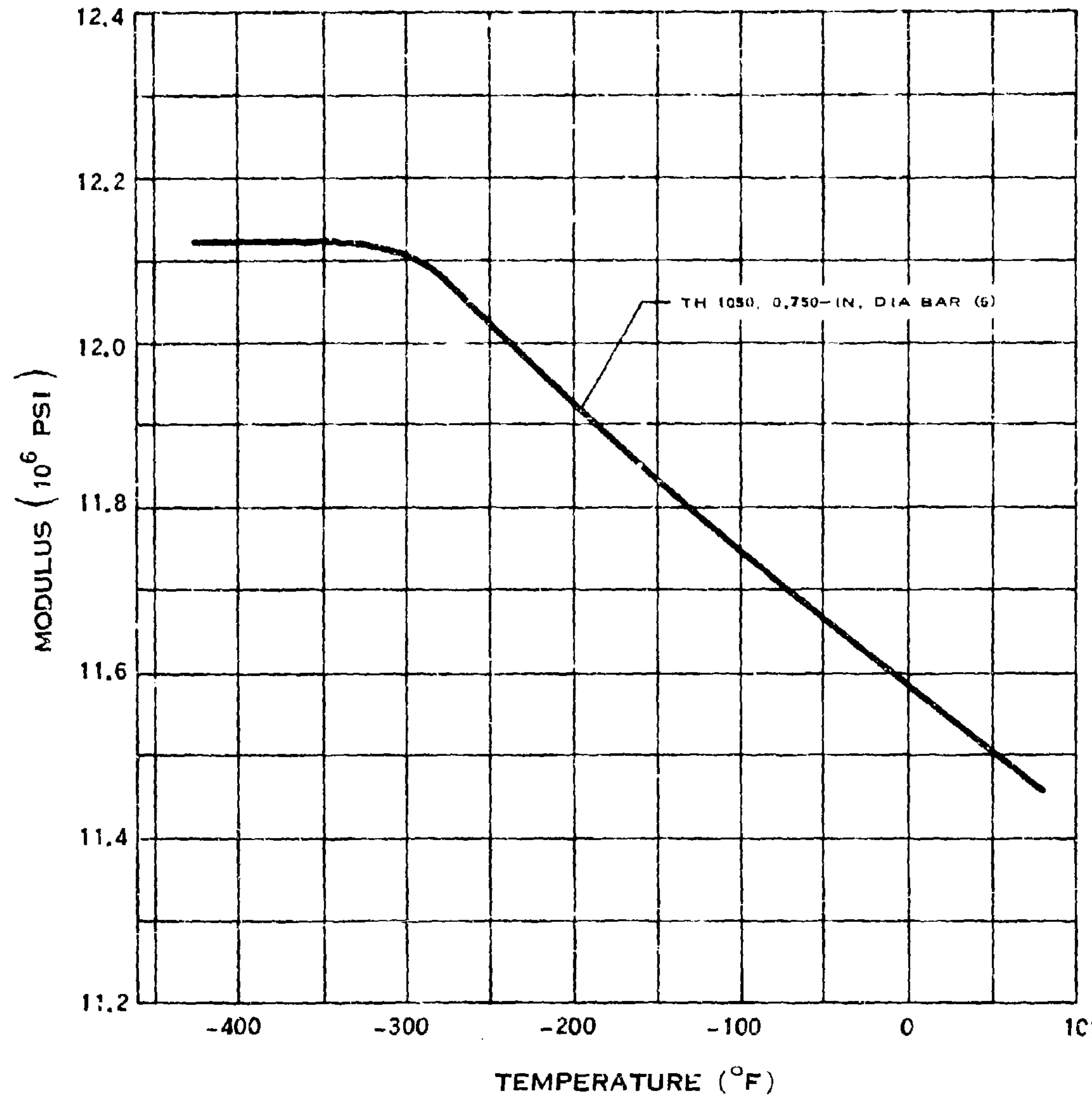
MODULUS OF ELASTICITY OF 17-7 PH STAINLESS STEEL



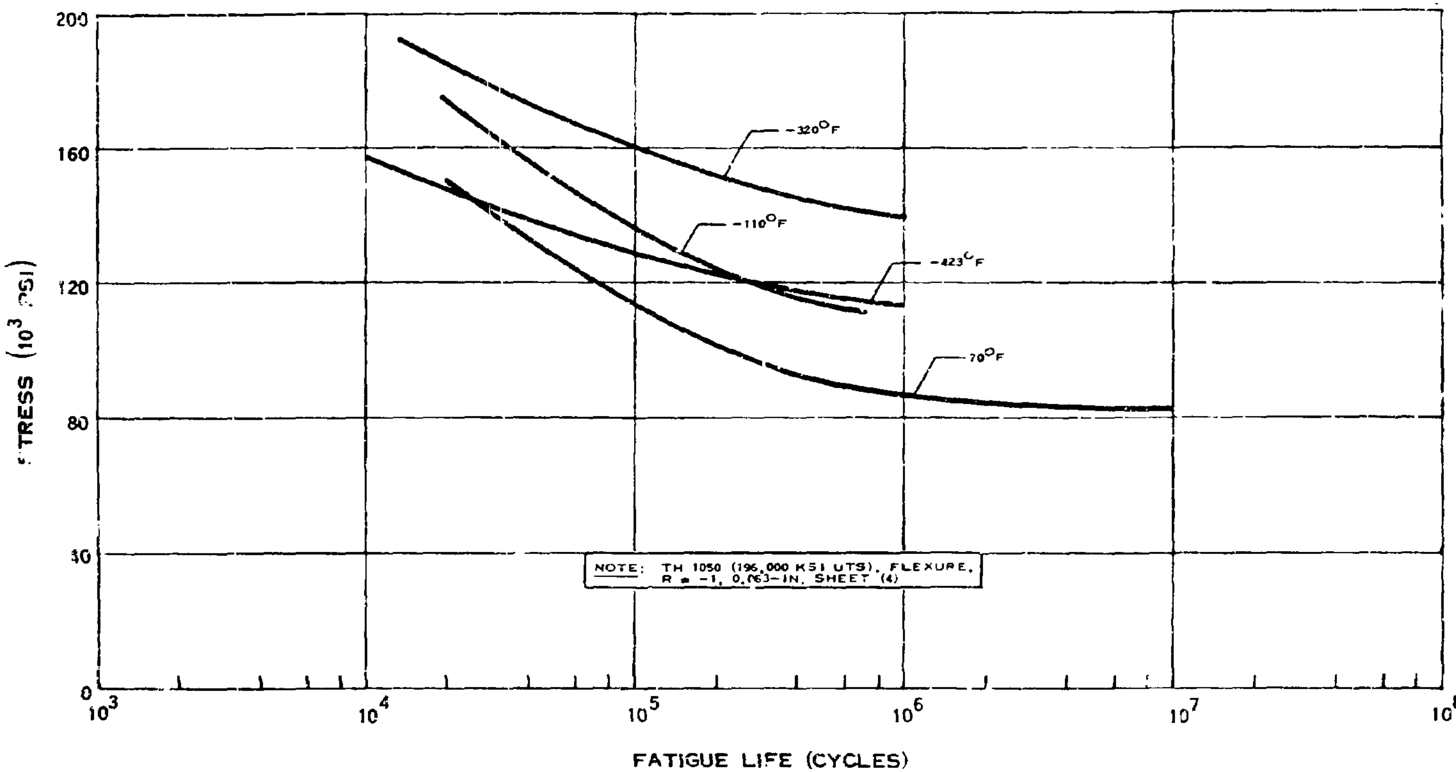
IMPACT STRENGTH OF 17-7 PH STAINLESS STEEL

(7-64)

B.13.2

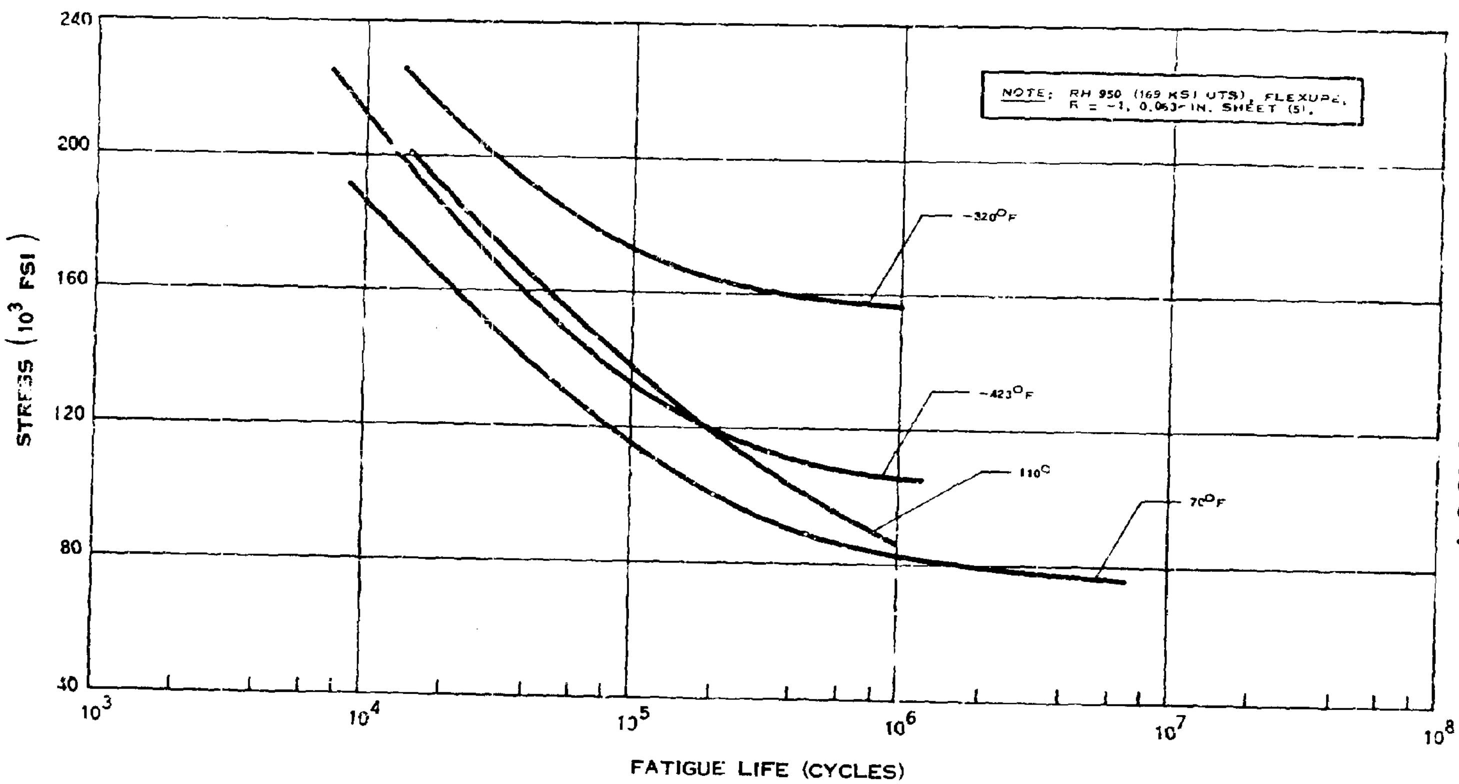


MODULUS OF RIGIDITY OF 17-7 PH STAINLESS STEEL



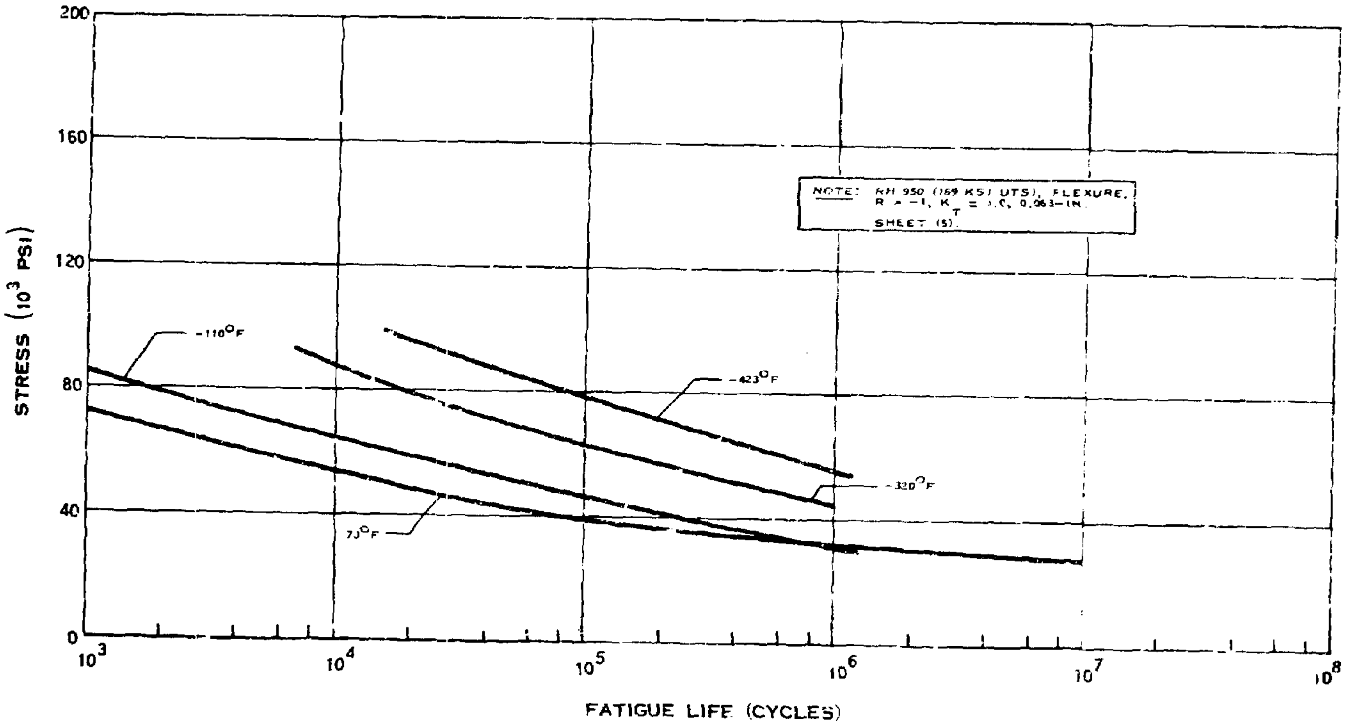
FATIGUE STRENGTH OF 17-7 PH STAINLESS STEEL

(7-64)



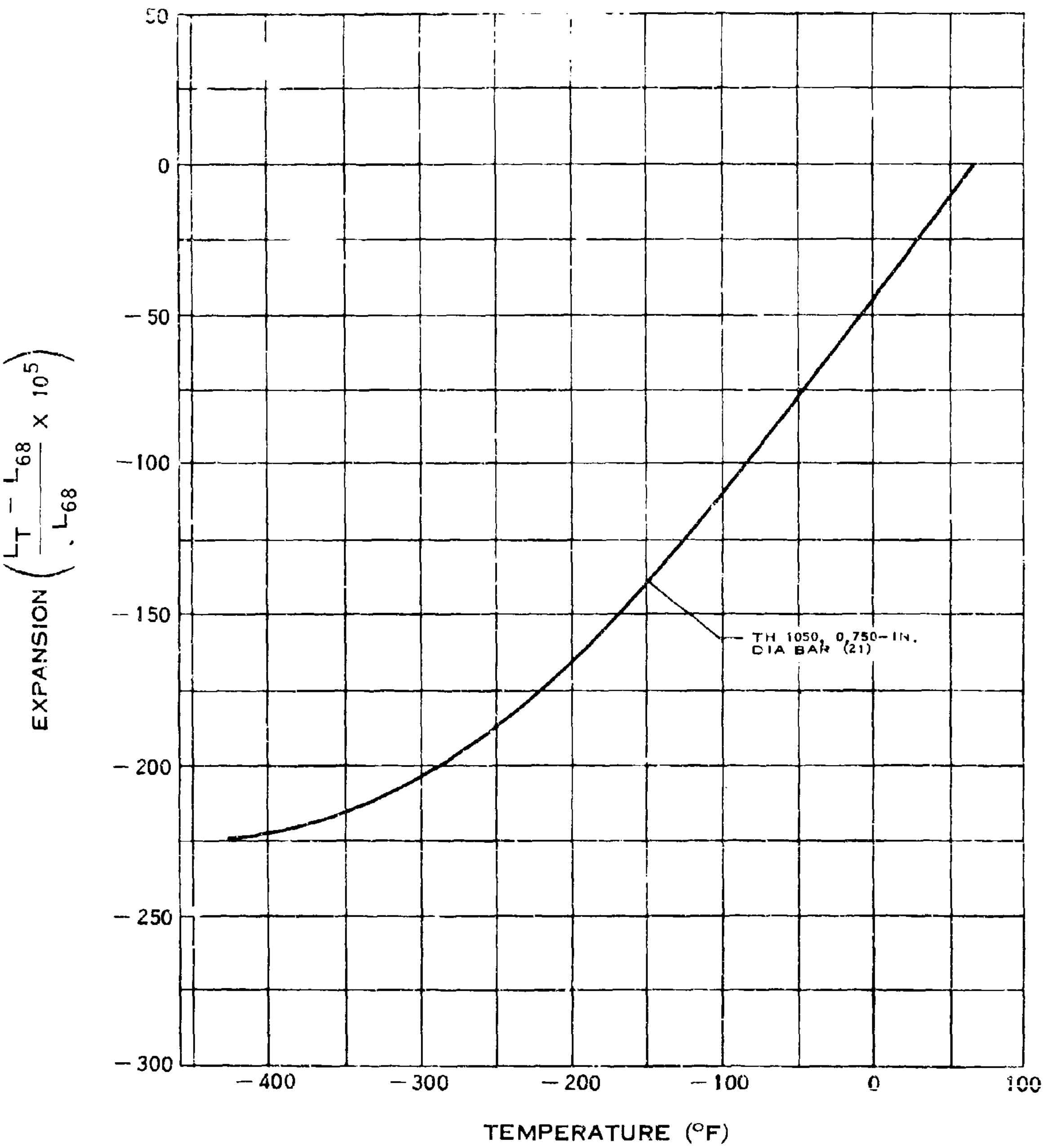
FATIGUE STRENGTH OF 17-7 PH STAINLESS STEEL

(7-64)



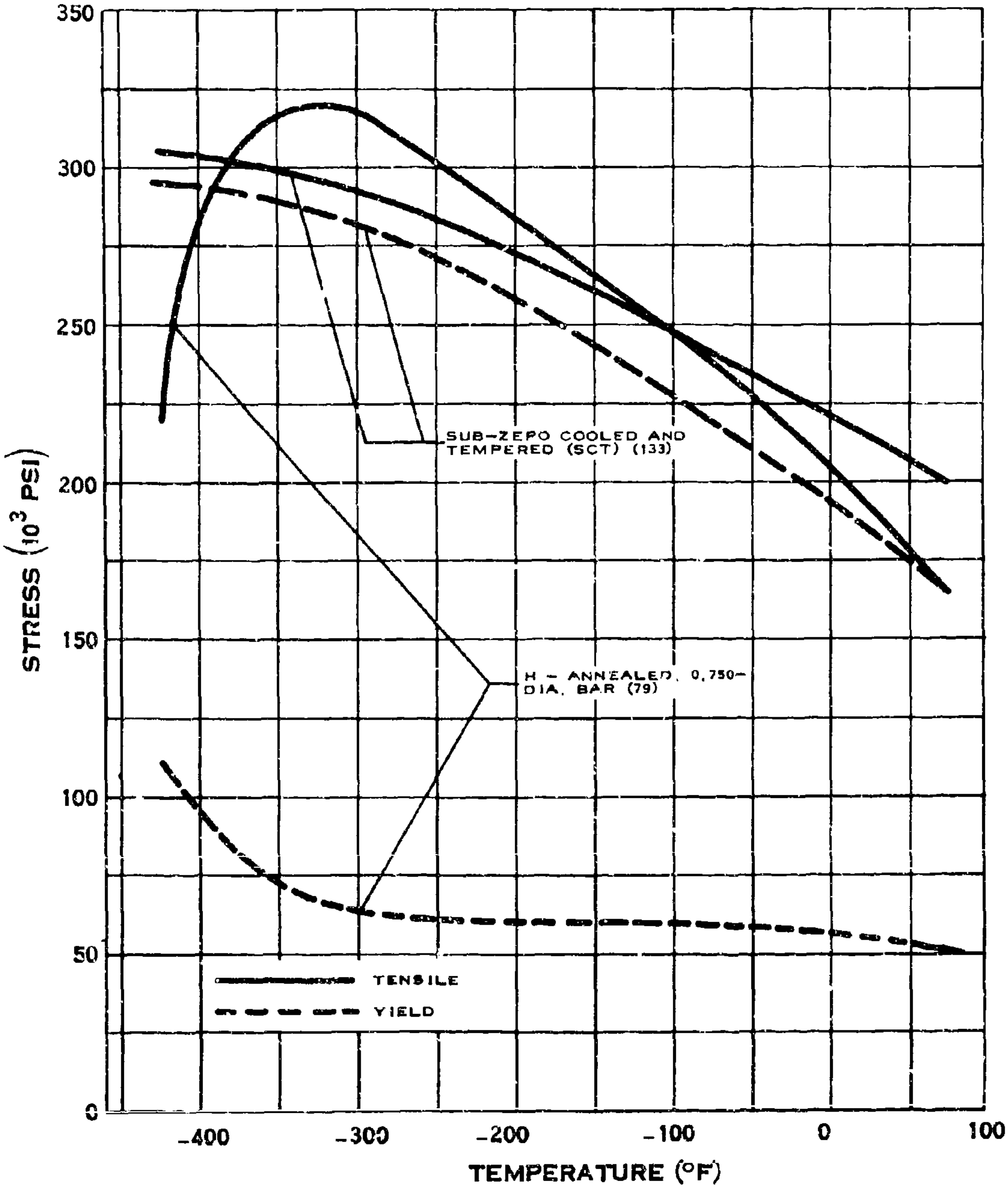
NOTCH FATIGUE STRENGTH OF 17-7 PH STAINLESS STEEL

B.13.t



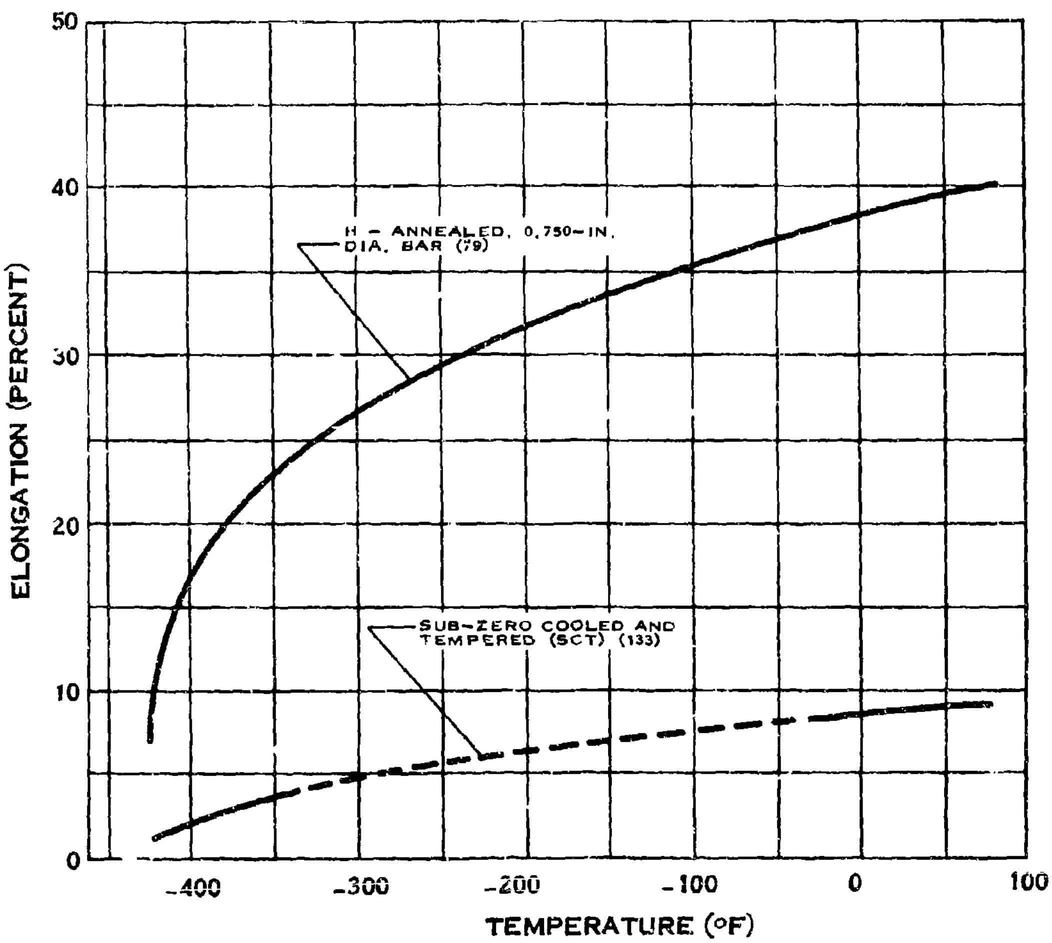
THERMAL EXPANSION OF 17-7PH STAINLESS STEEL

B.14.ab



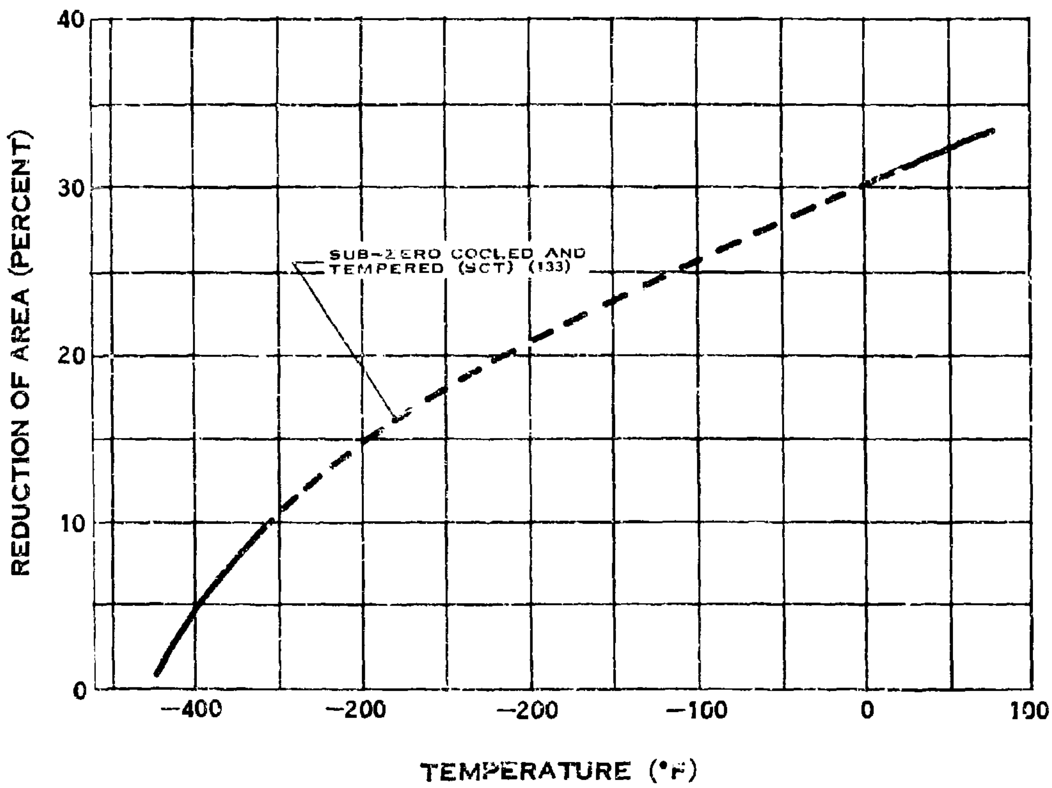
STRENGTH OF AM 350 STAINLESS STEEL

B.14.c

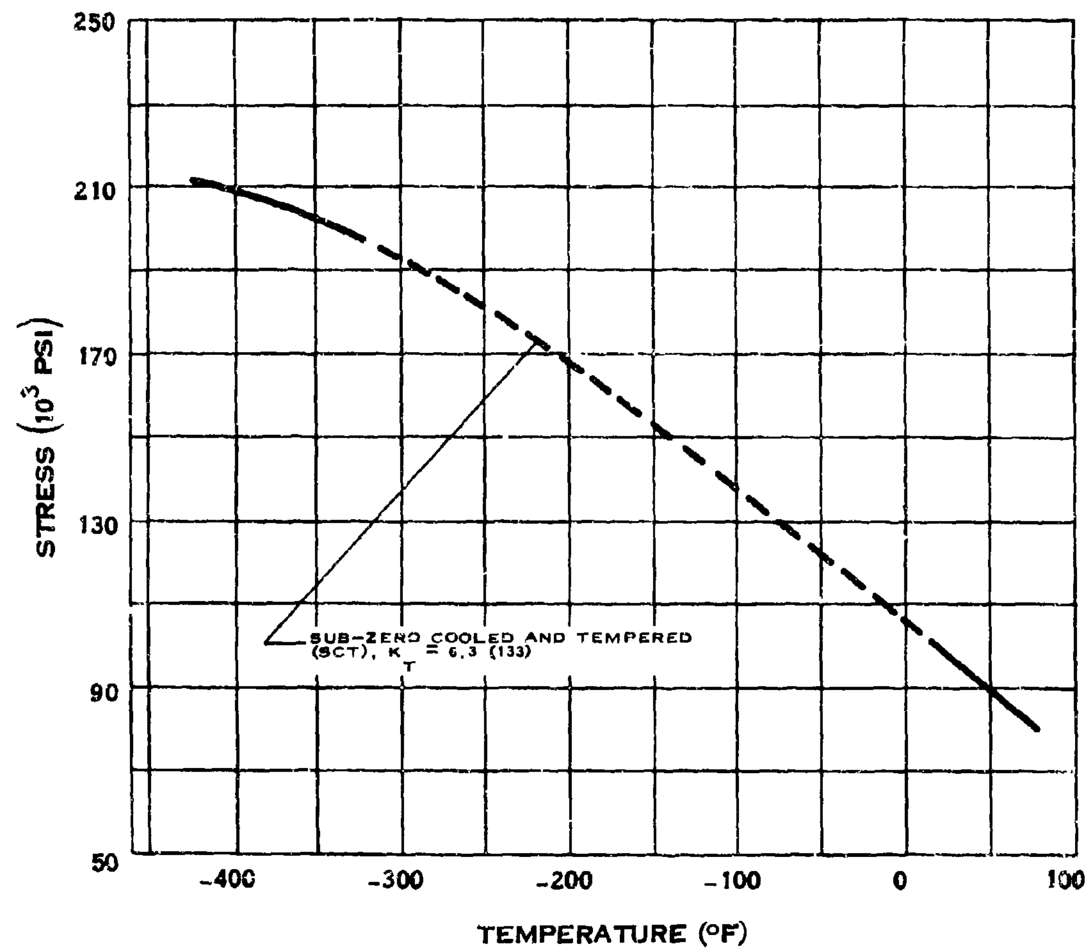


ELONGATION OF AM 350 STAINLESS STEEL

B.14.d

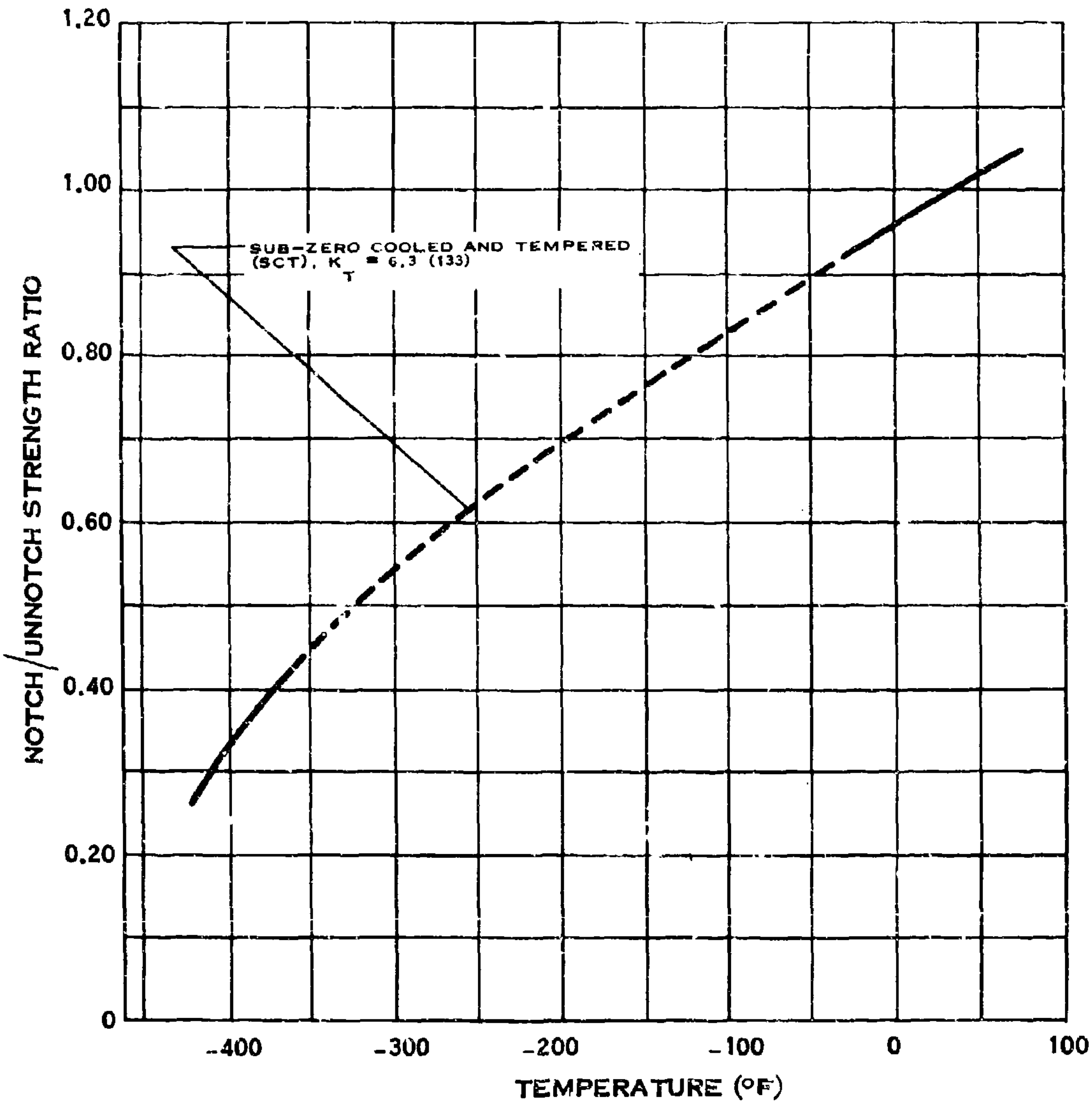


REDUCTION OF AREA OF AM 350 STAINLESS STEEL



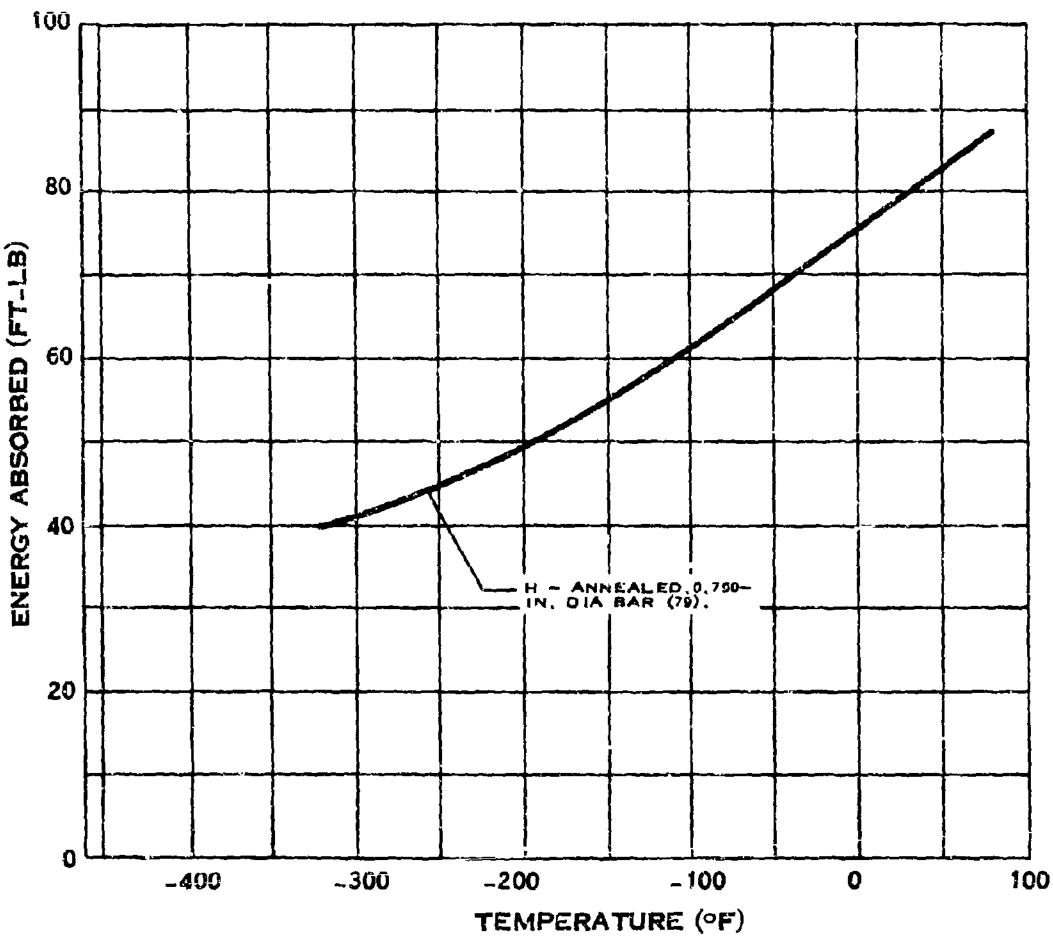
NOTCH TENSILE STRENGTH OF AM 350 STAINLESS STEEL

B.14.e-1



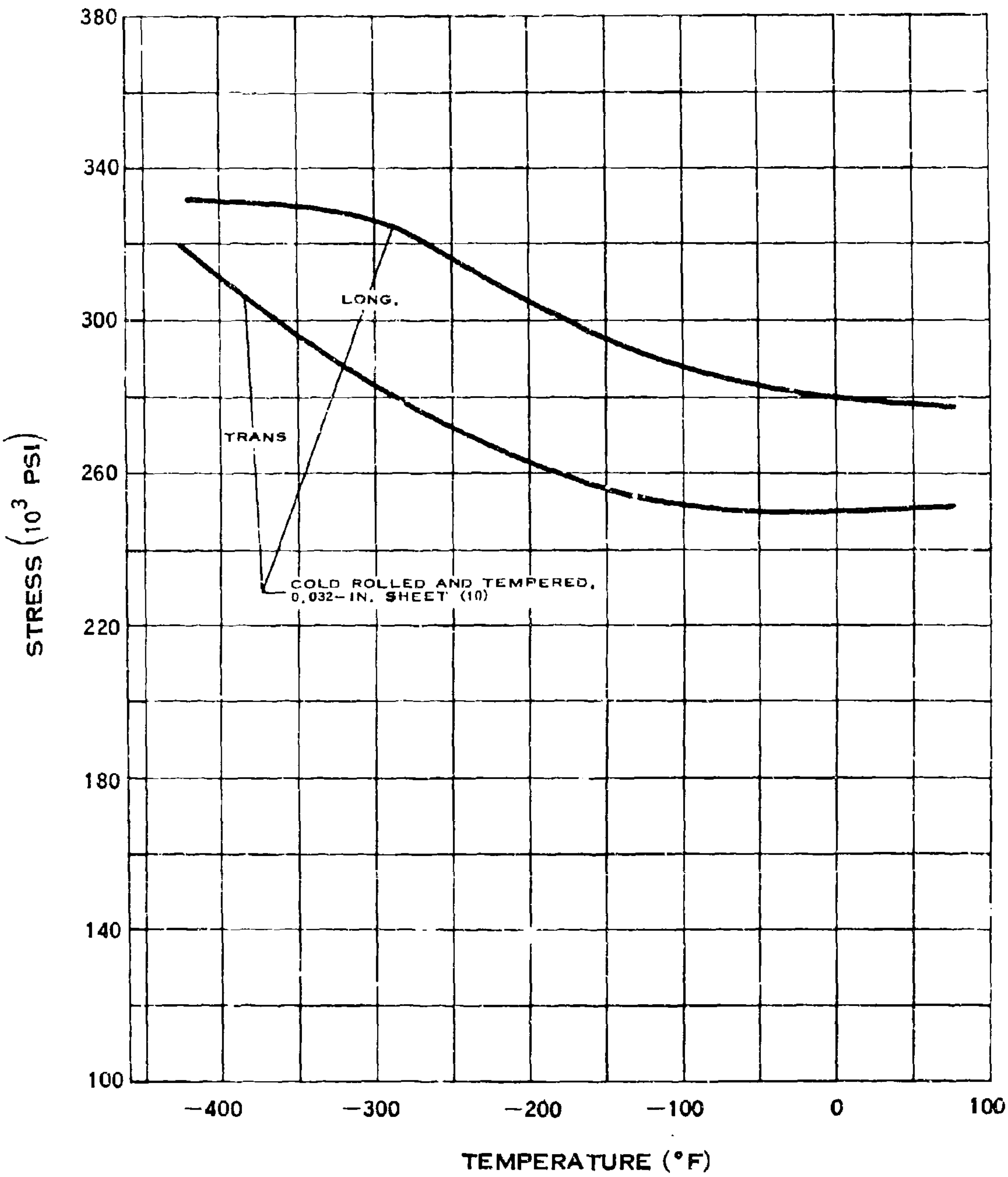
NOTCH STRENGTH RATIO OF AM 350 STAINLESS STEEL

B.14.j



IMPACT STRENGTH OF AM 350 STAINLESS STEEL

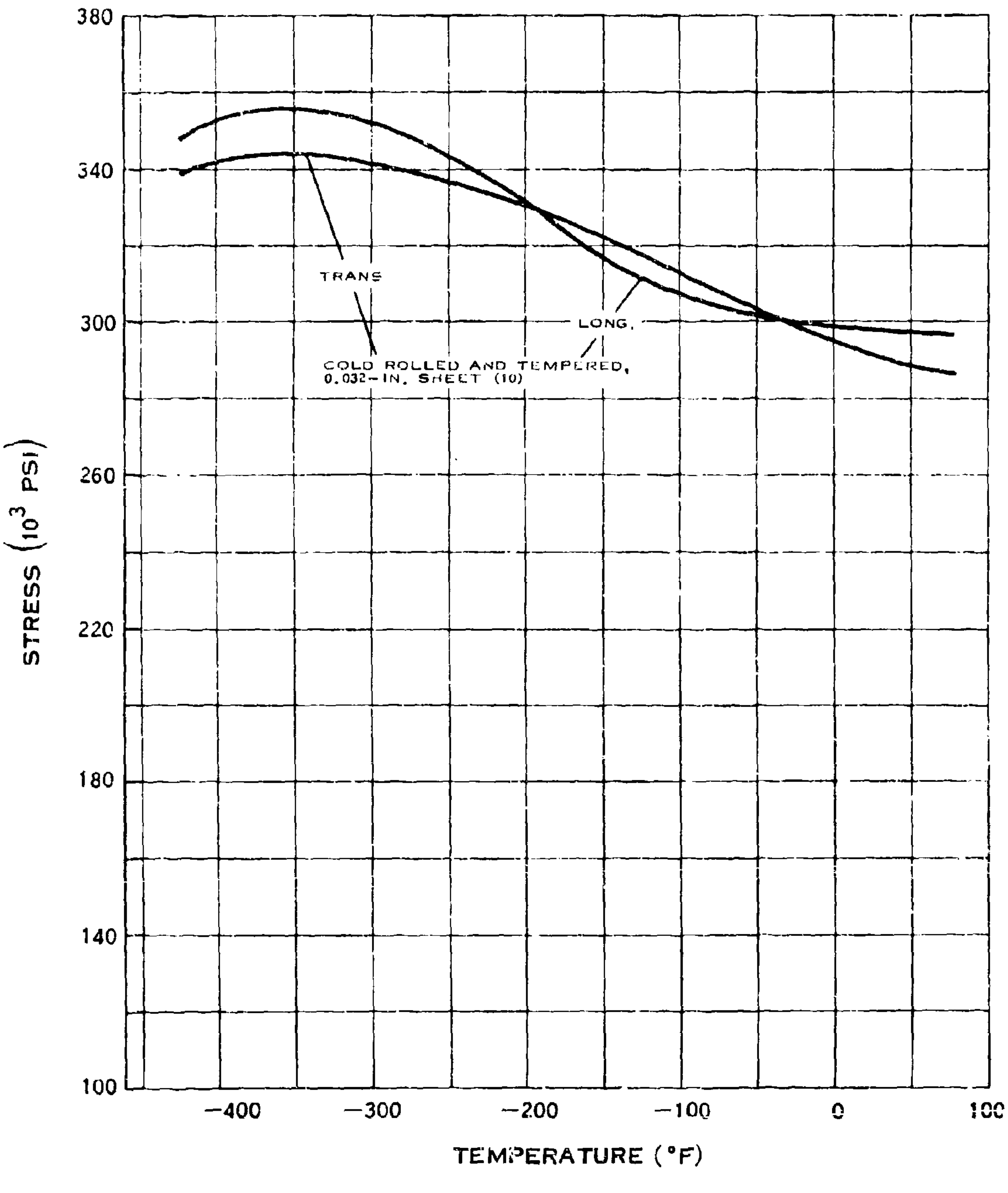
B.15.a



YIELD STRENGTH OF AM-355 STAINLESS STEEL

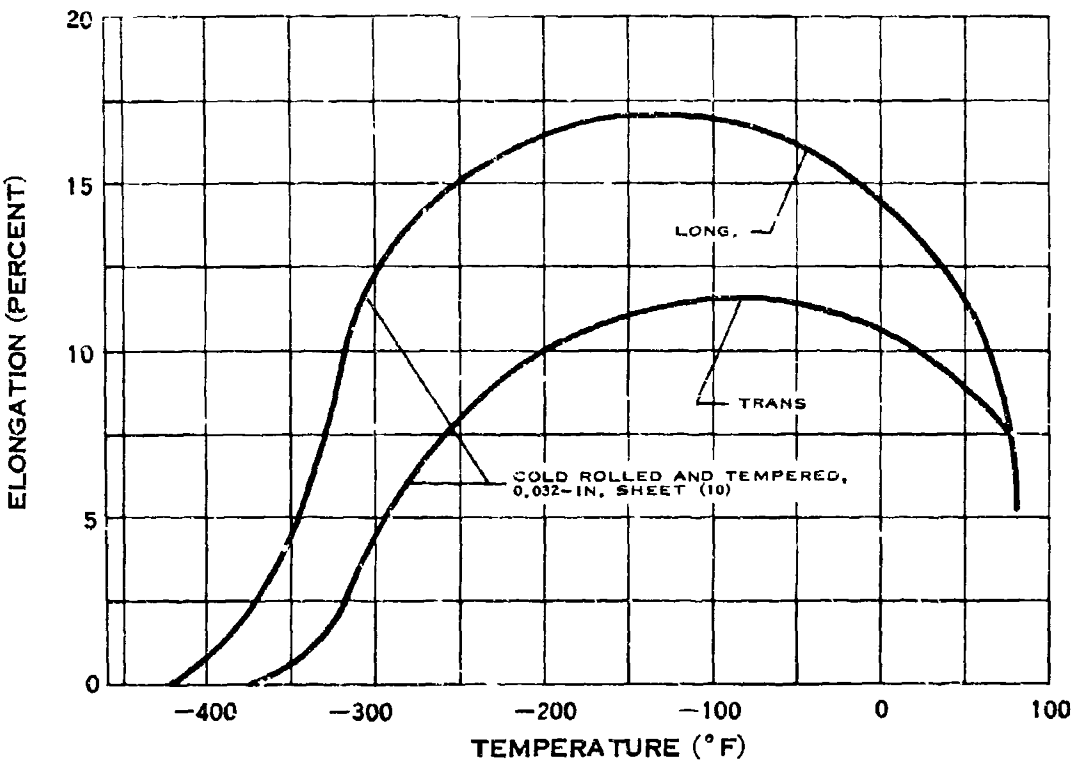
(7-64)

B.15.b



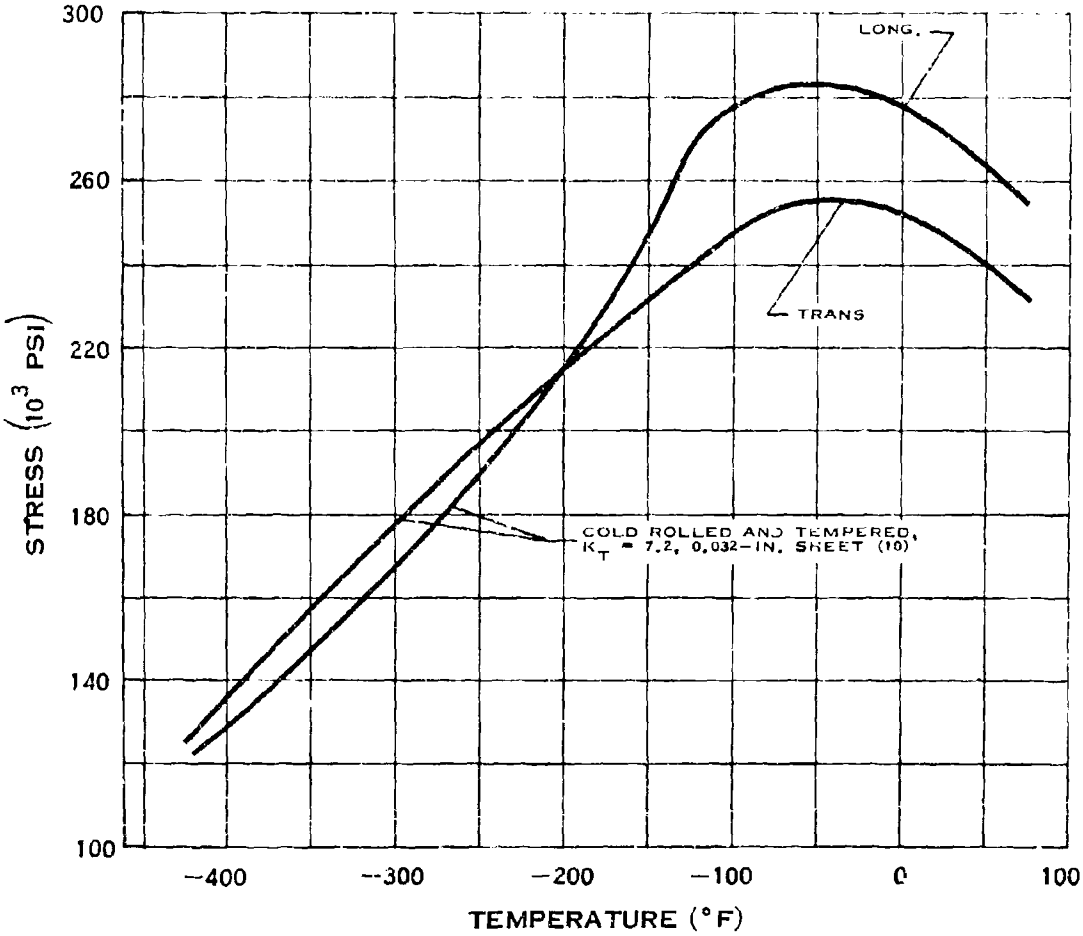
TENSILE STRENGTH OF AM-355 STAINLESS STEEL

B.15.c



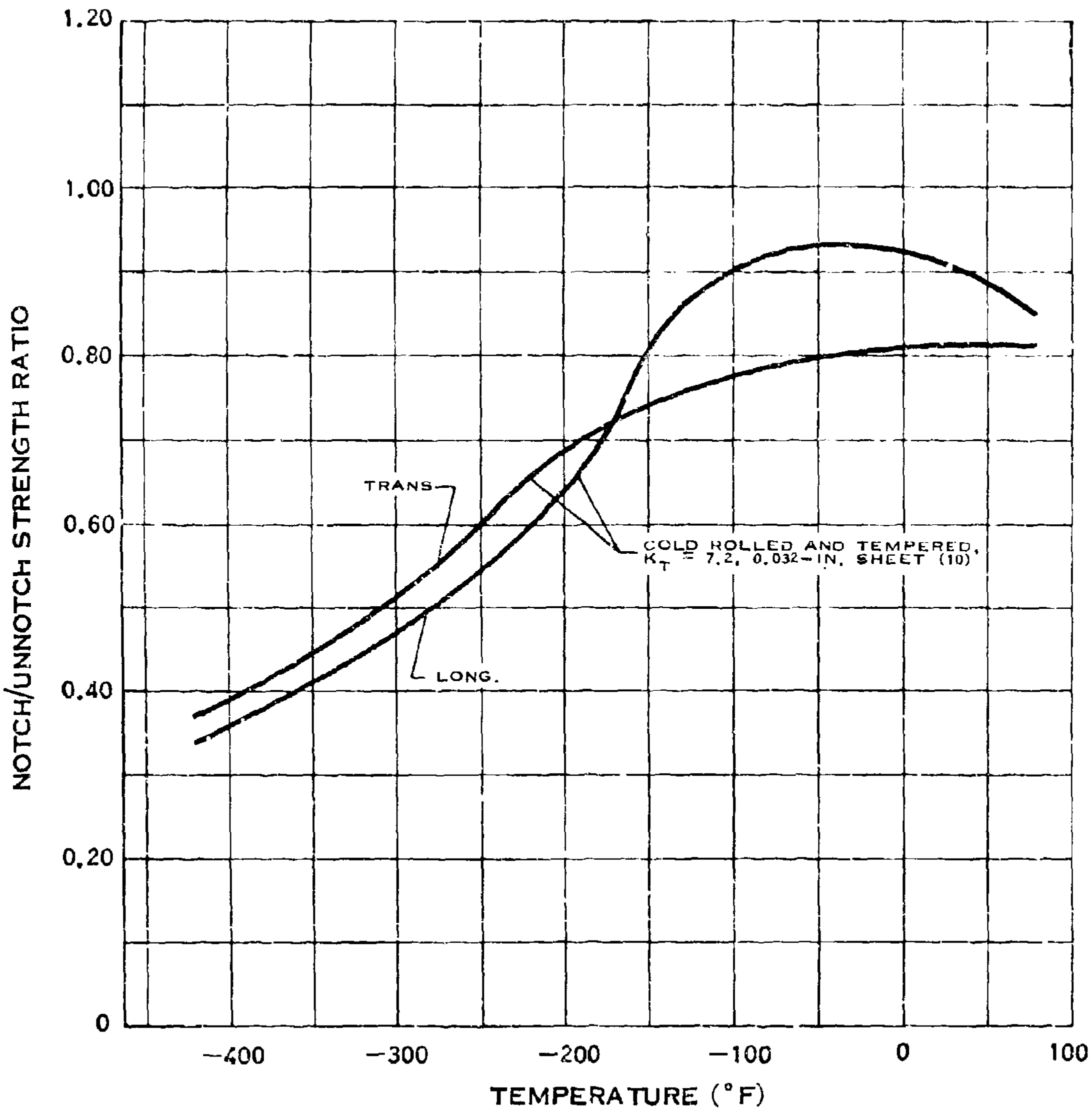
ELONGATION OF AM-355 STAINLESS STEEL

B.15.e



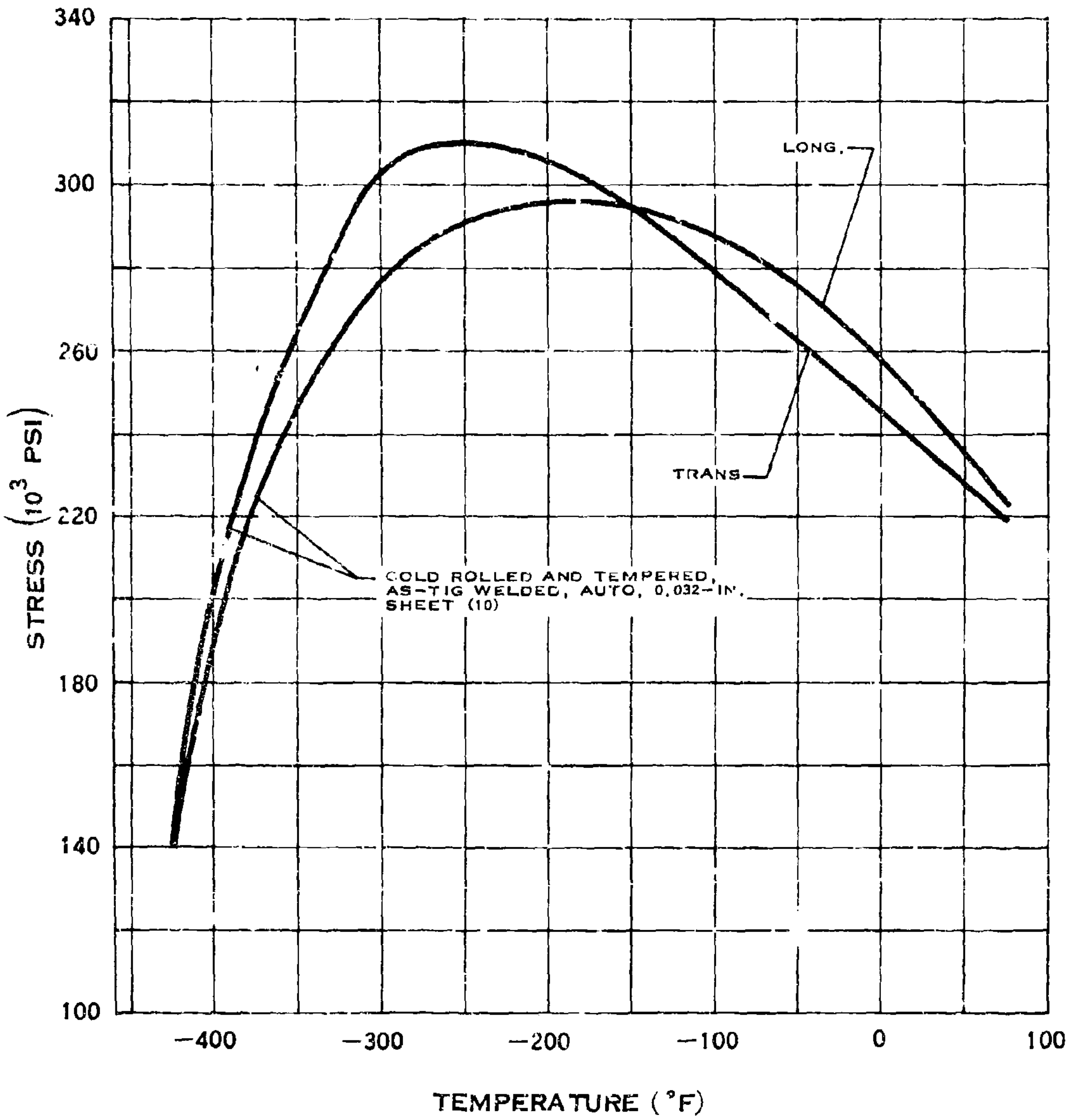
NOTCH TENSILE STRENGTH OF AM-355 STAINLESS STEEL

B.15.e-1



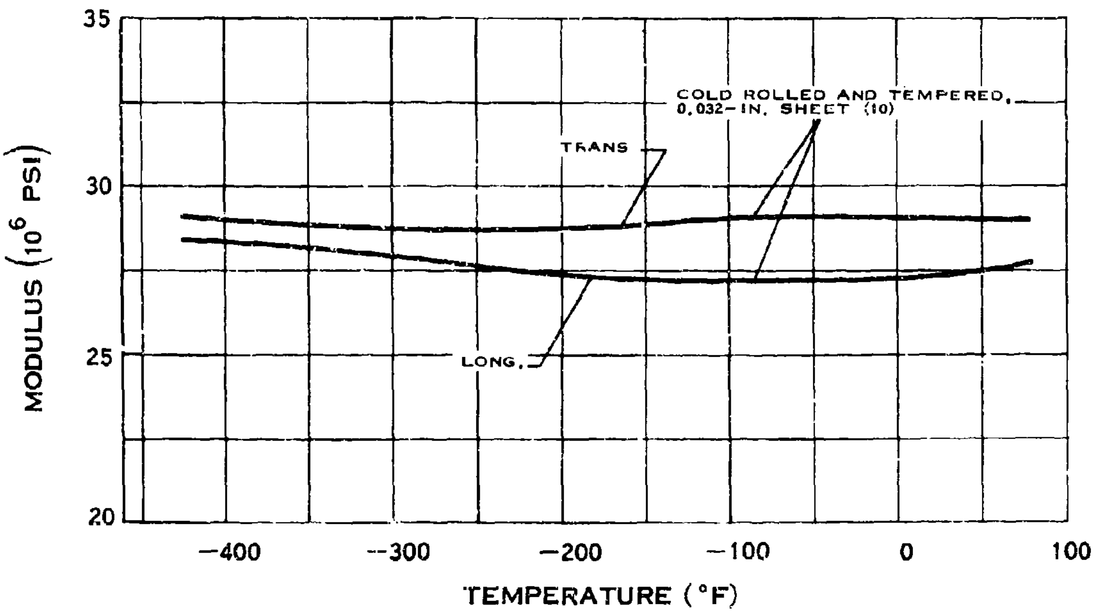
NOTCH STRENGTH RATIO OF AM-355 STAINLESS STEEL

B.15.g



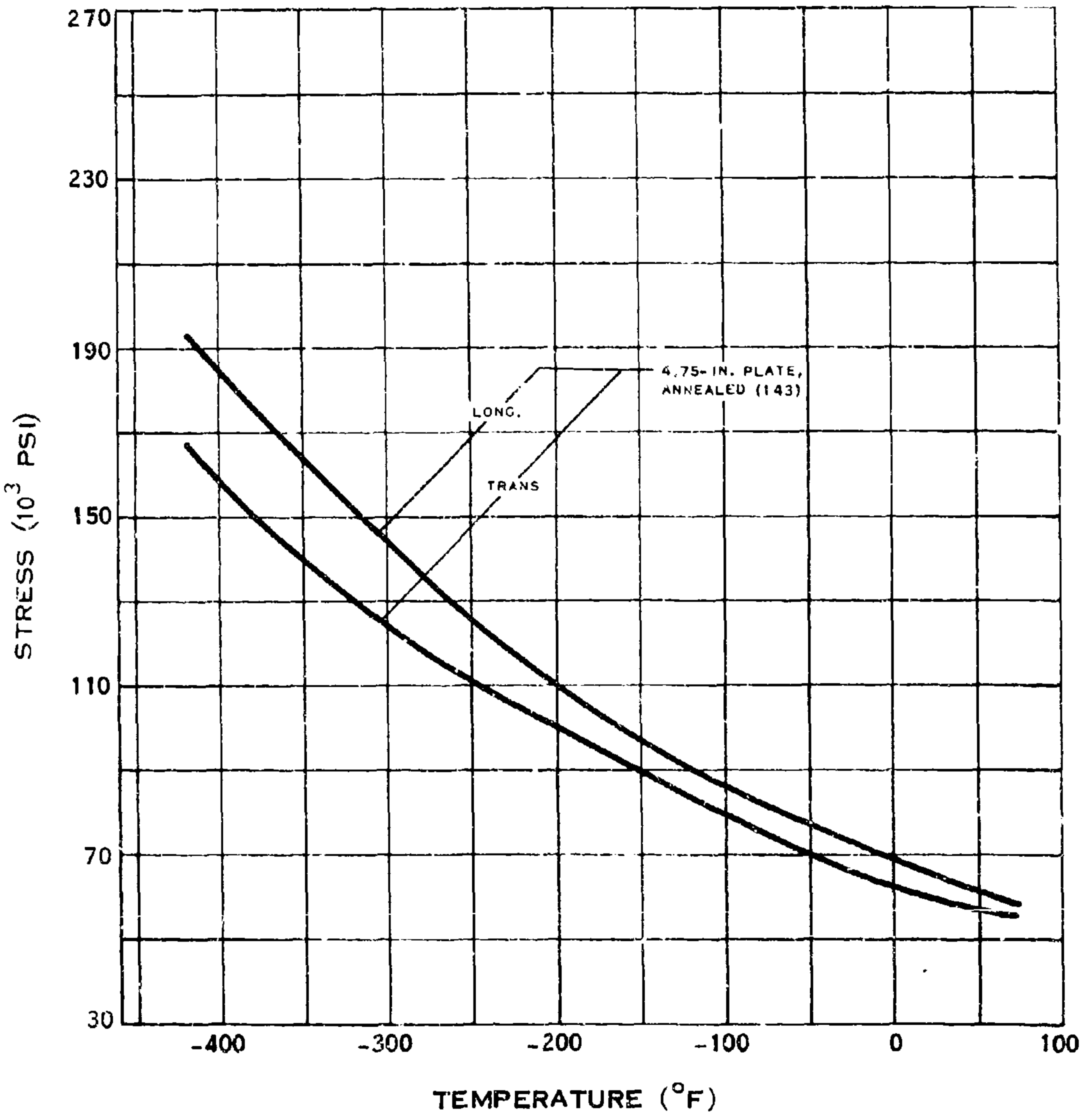
WELD TENSILE STRENGTH OF AM-355 STAINLESS STEEL

B.15.i



MODULUS OF ELASTICITY OF AM-355 STAINLESS STEEL

B.16.a



YIELD STRENGTH OF 21-6-9 STAINLESS STEEL

(6-68)

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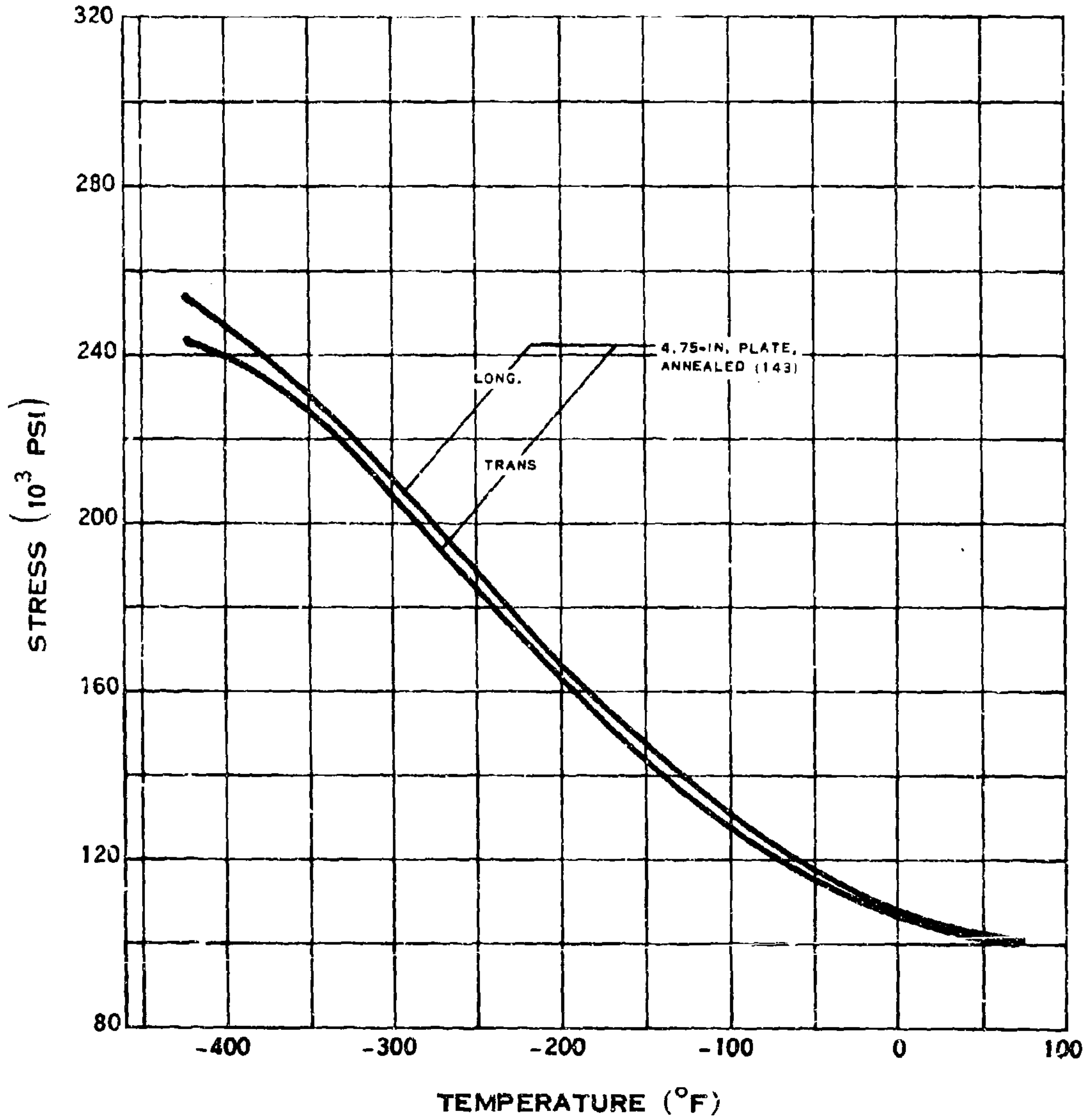
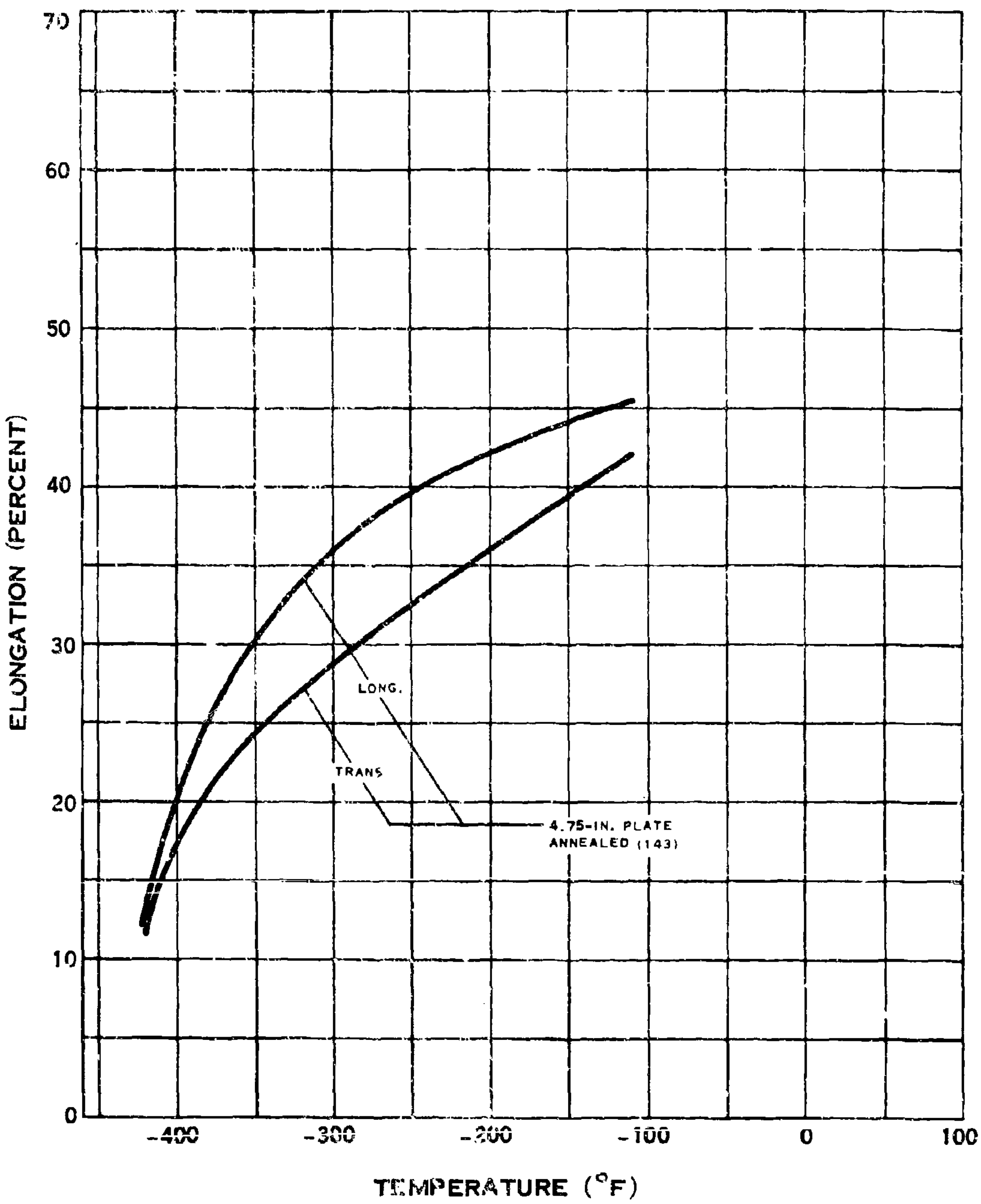
B.16.b



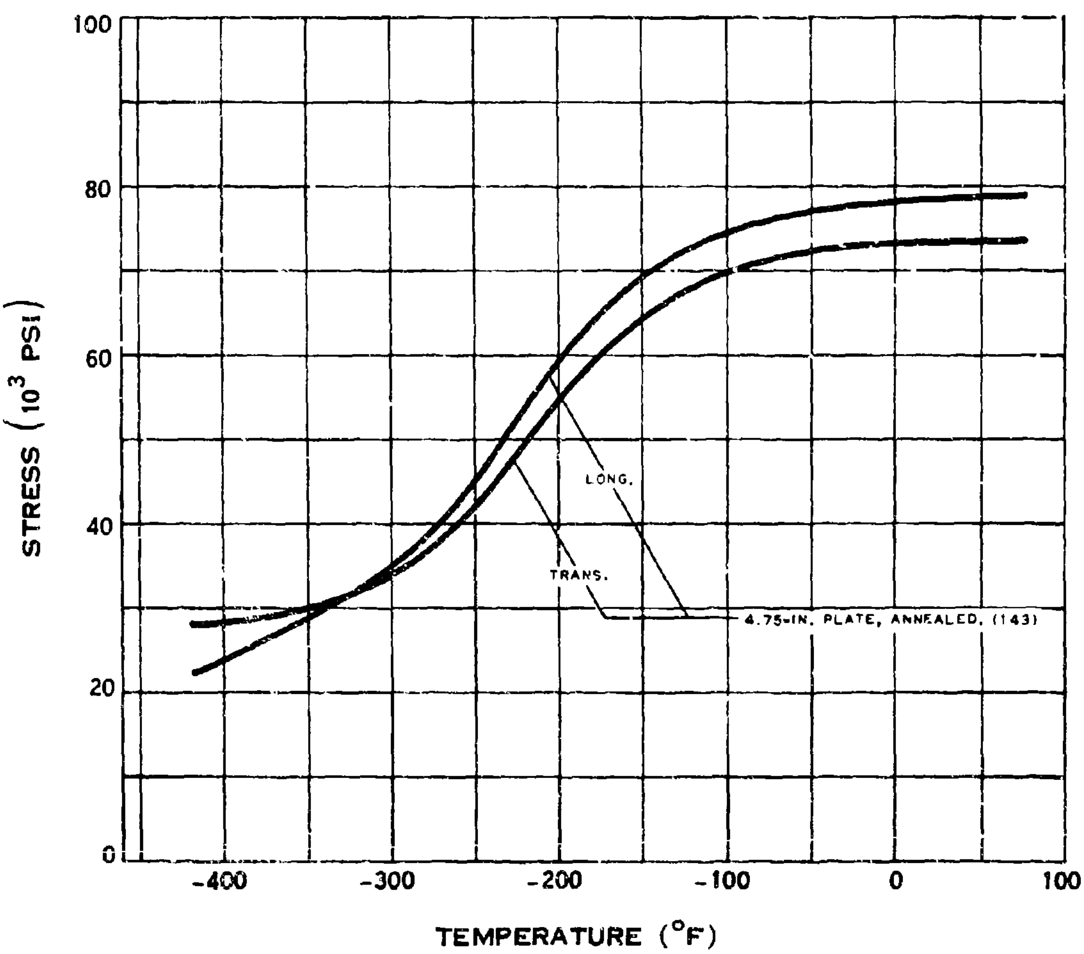
TENSILE STRENGTH OF 21-6-9 STAINLESS STEEL

(6-68)

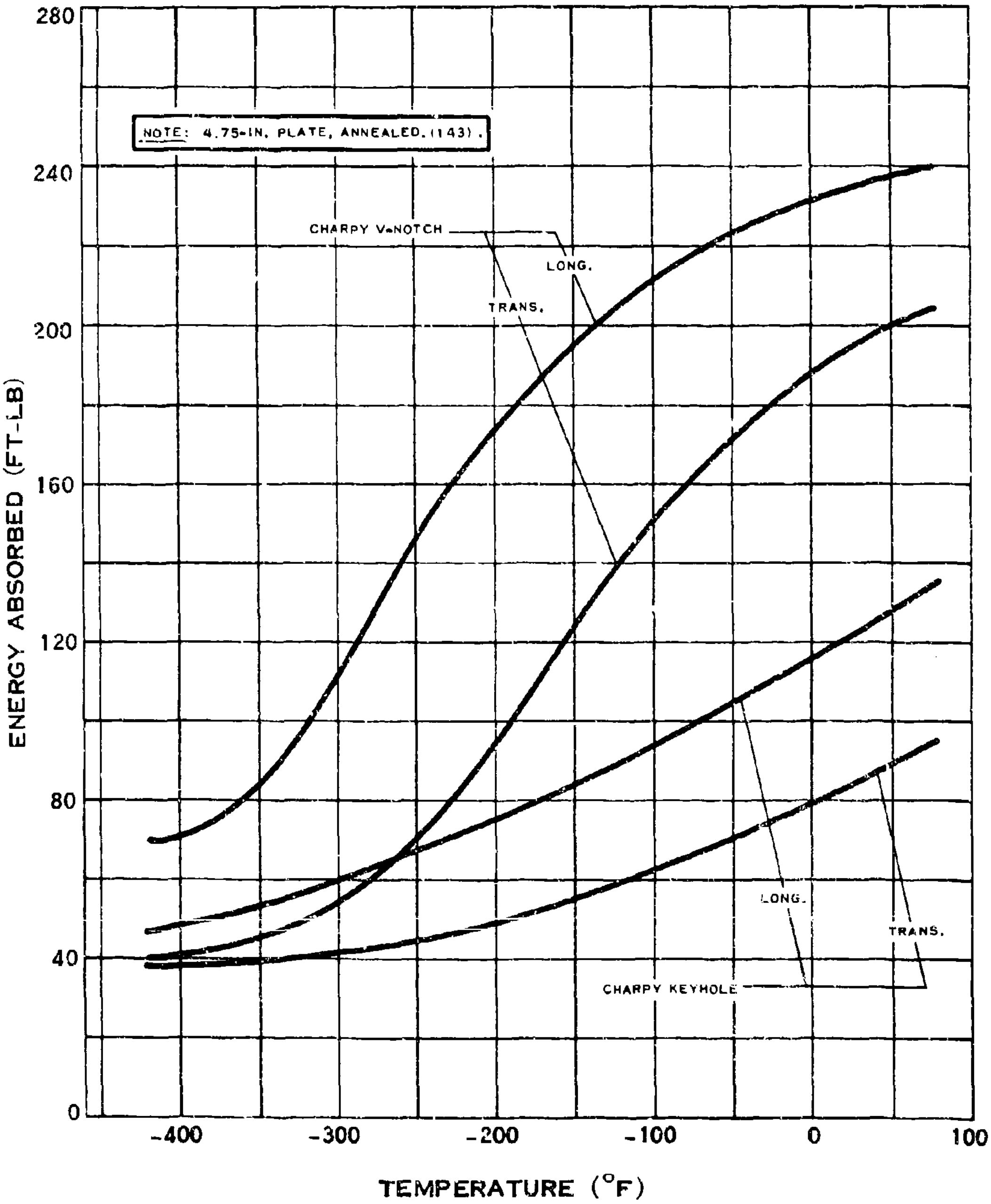


ELONGATION OF 21-6-9 STAINLESS STEEL

B.16.d



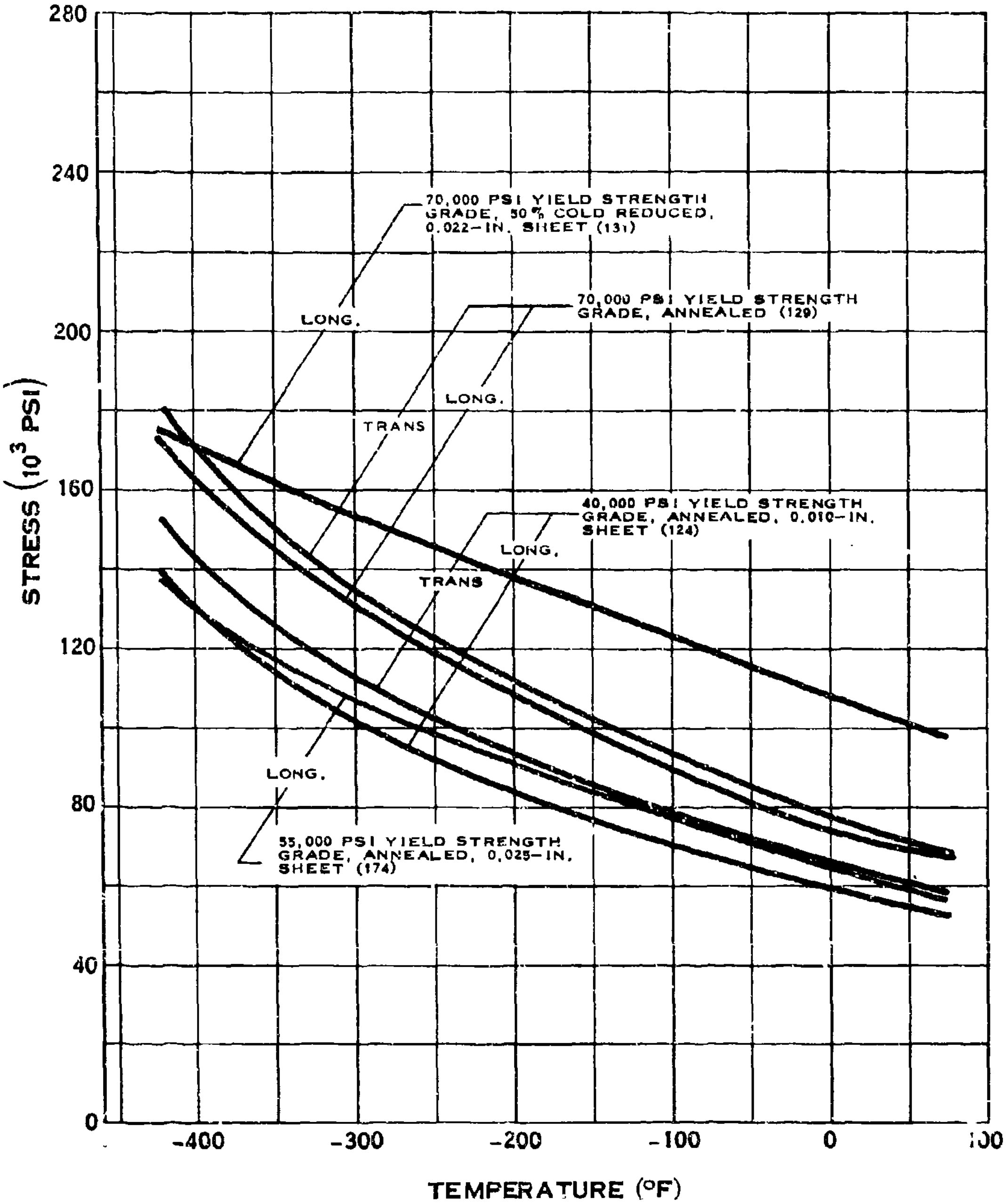
REDUCTION OF AREA OF 21-6-9 STAINLESS STEEL



IMPACT STRENGTH OF 21-6-9 STAINLESS STEEL

(6-68)

C - TITANIUM



YIELD STRENGTH OF COMMERCIALLY PURE TITANIUM

(6-68)

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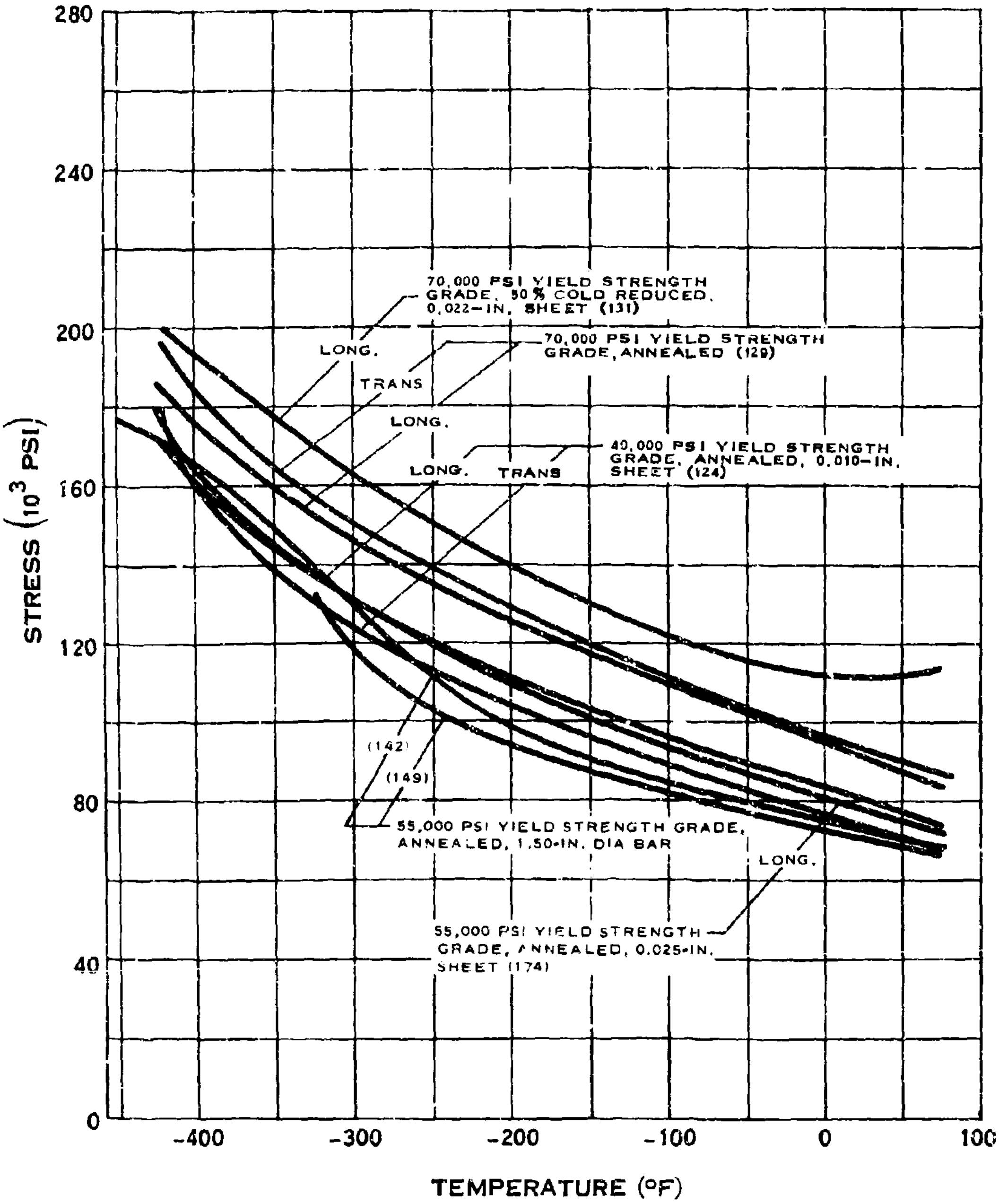
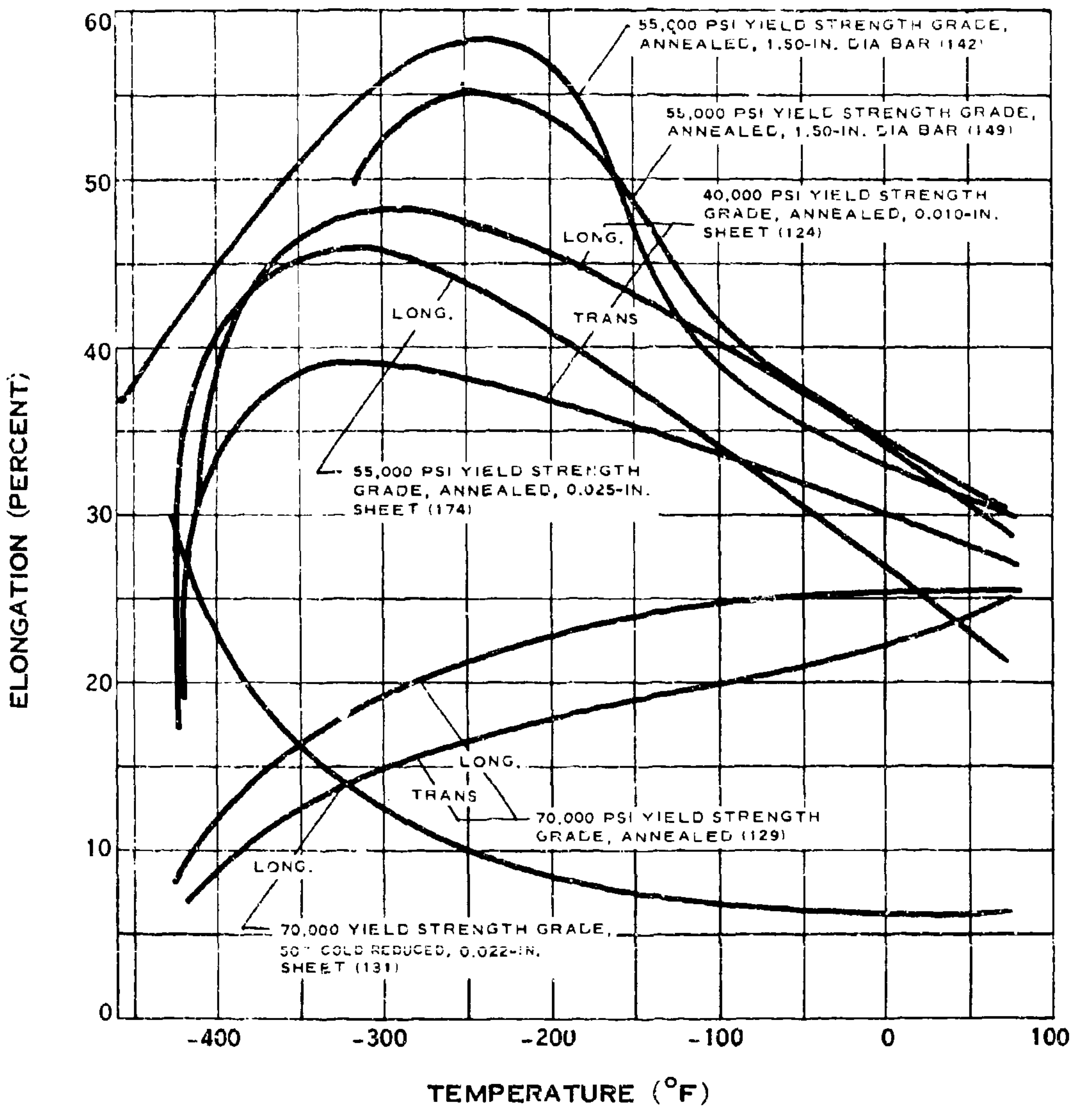


TENSILE STRENGTH OF COMMERCIALLY PURE TITANIUM

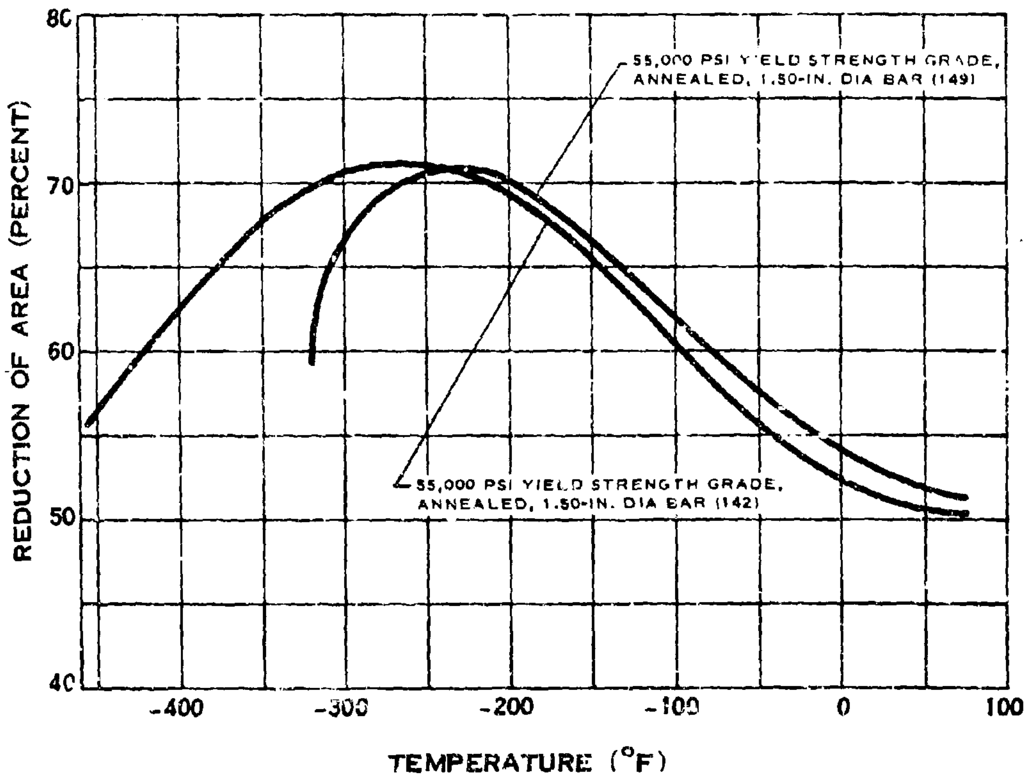
C.1.c



ELONGATION OF COMMERCIALLY PURE TITANIUM

(6-68)

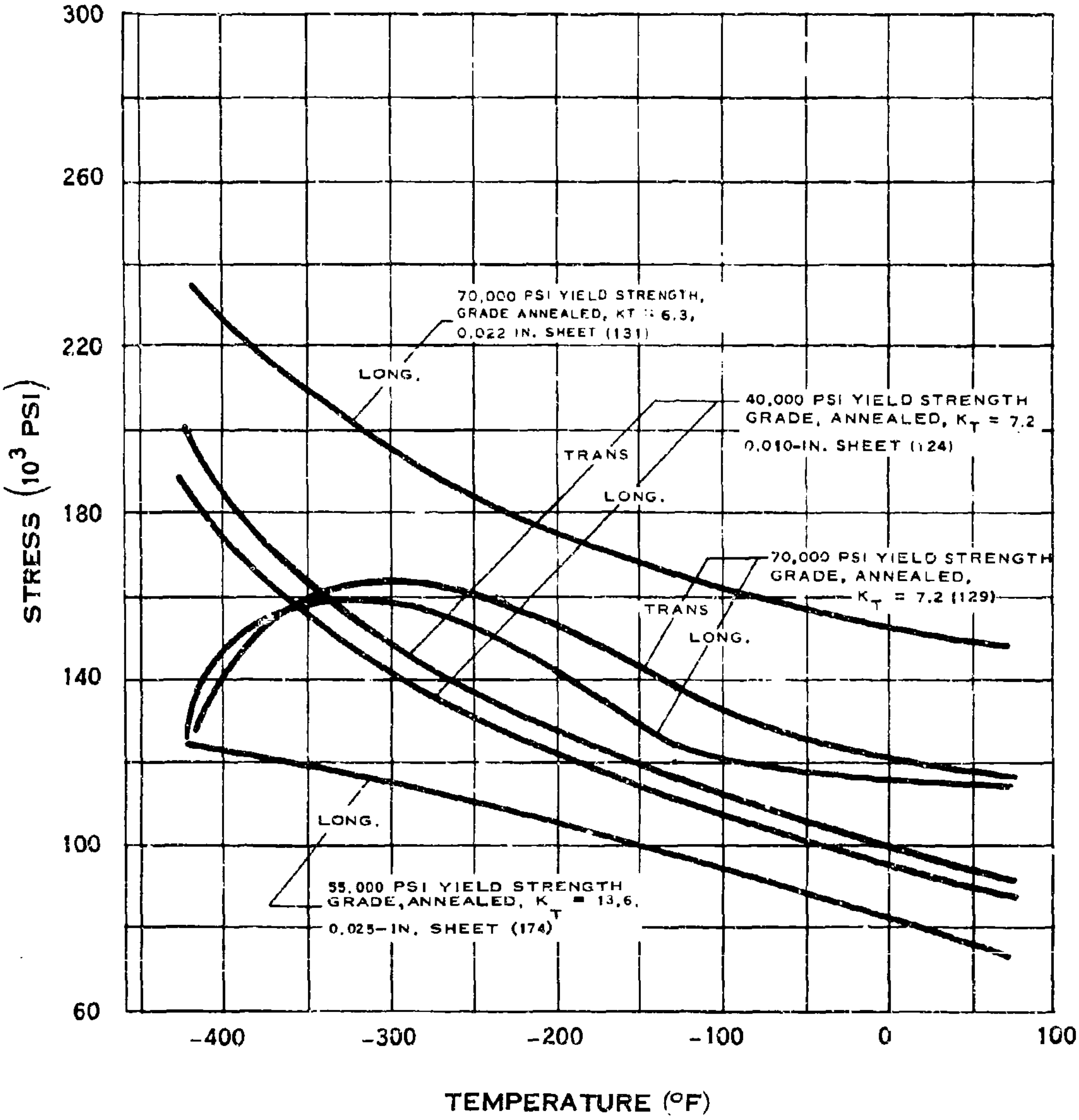
C.1.d



REDUCTION OF AREA OF COMMERCIALLY PURE TITANIUM

(6-68)

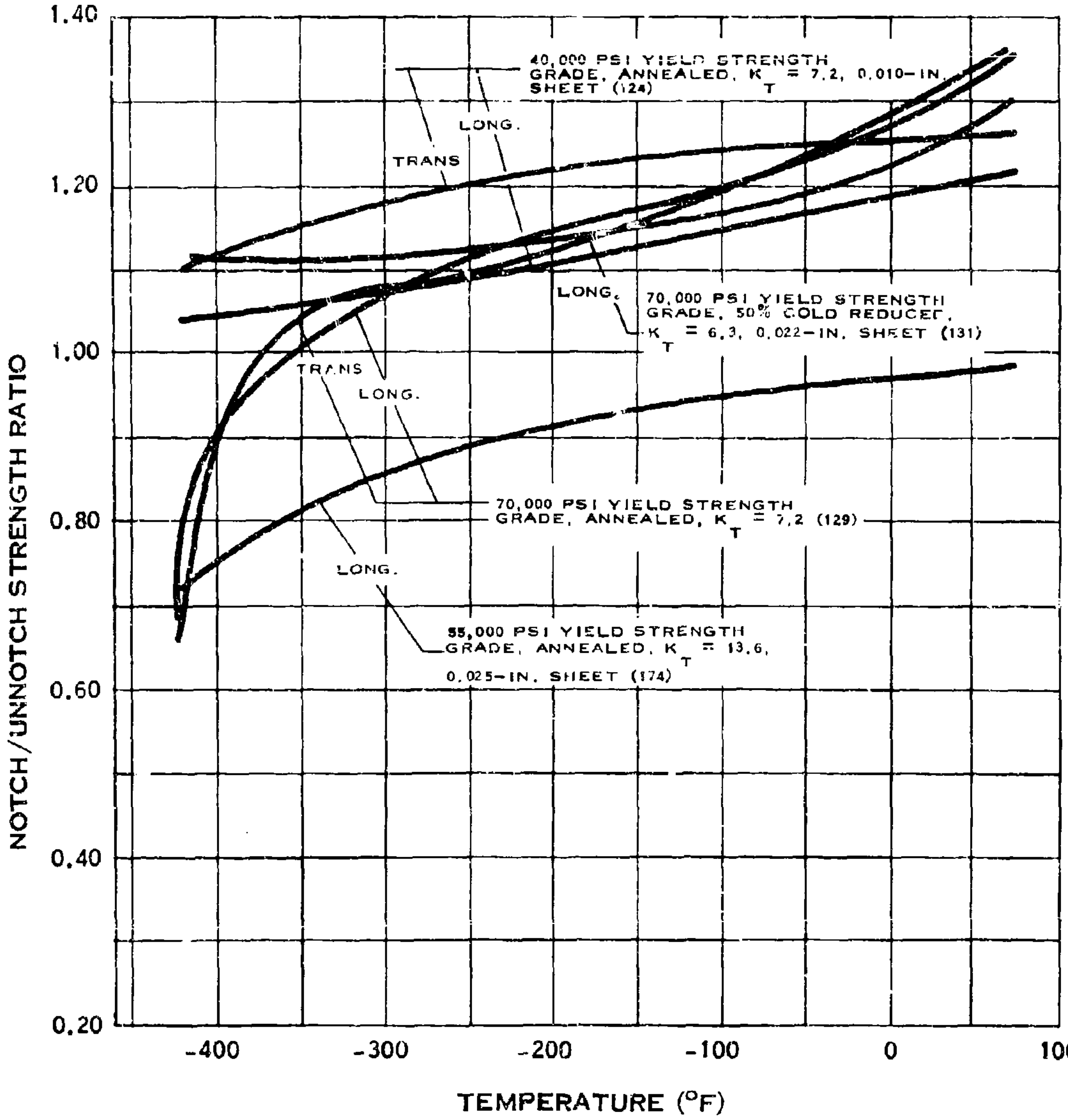
C.1.e



NOTCH TENSILE STRENGTH OF COMMERCIALLY PURE TITANIUM

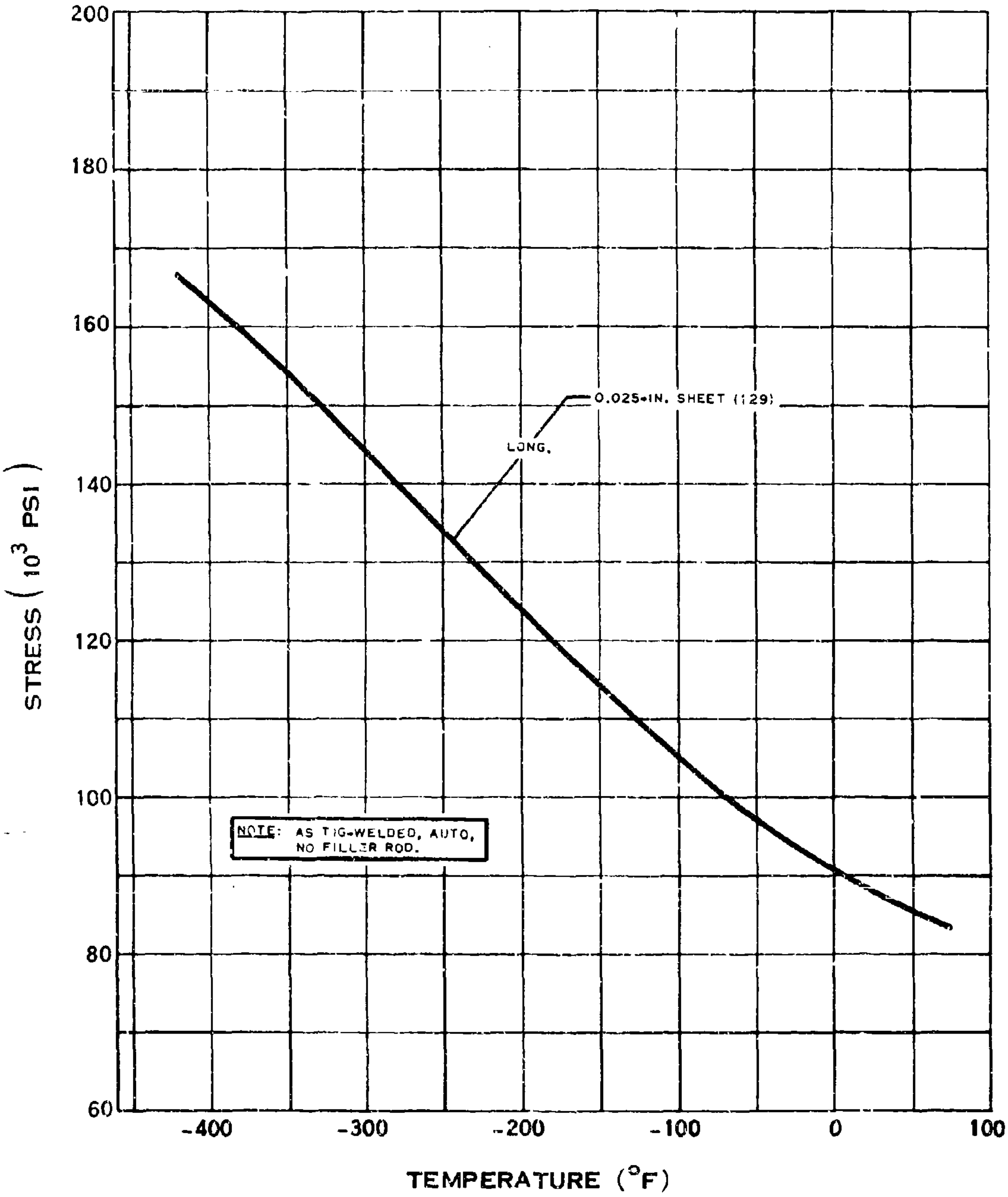
(6-68)

C.1.e-1



NOTCH STRENGTH RATIO OF COMMERCIALLY PURE TITANIUM

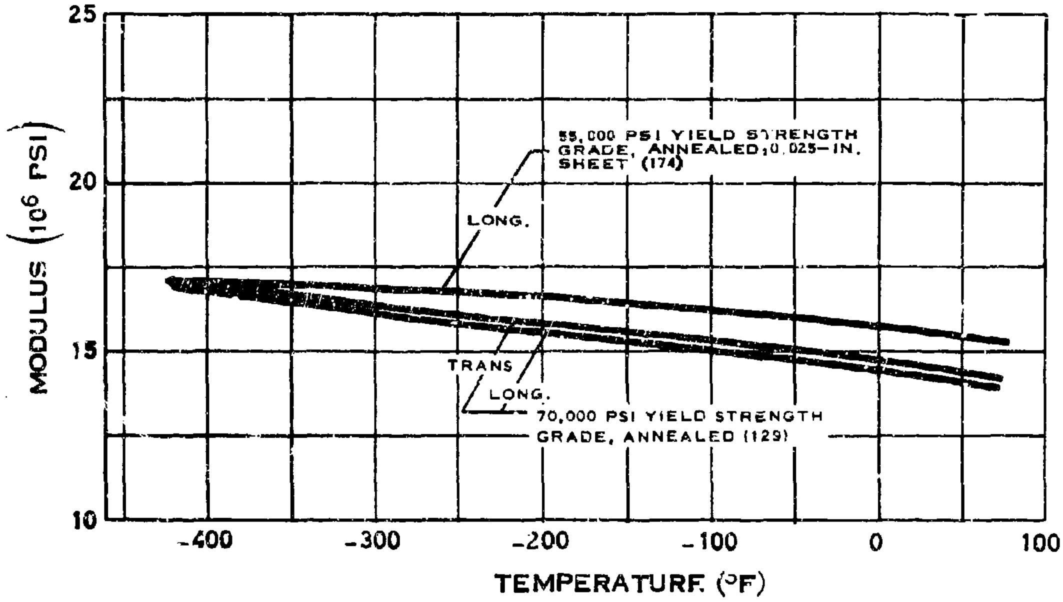
C.1.g



WELD TENSILE STRENGTH OF COMMERCIALLY PURE TITANIUM

(6-68)

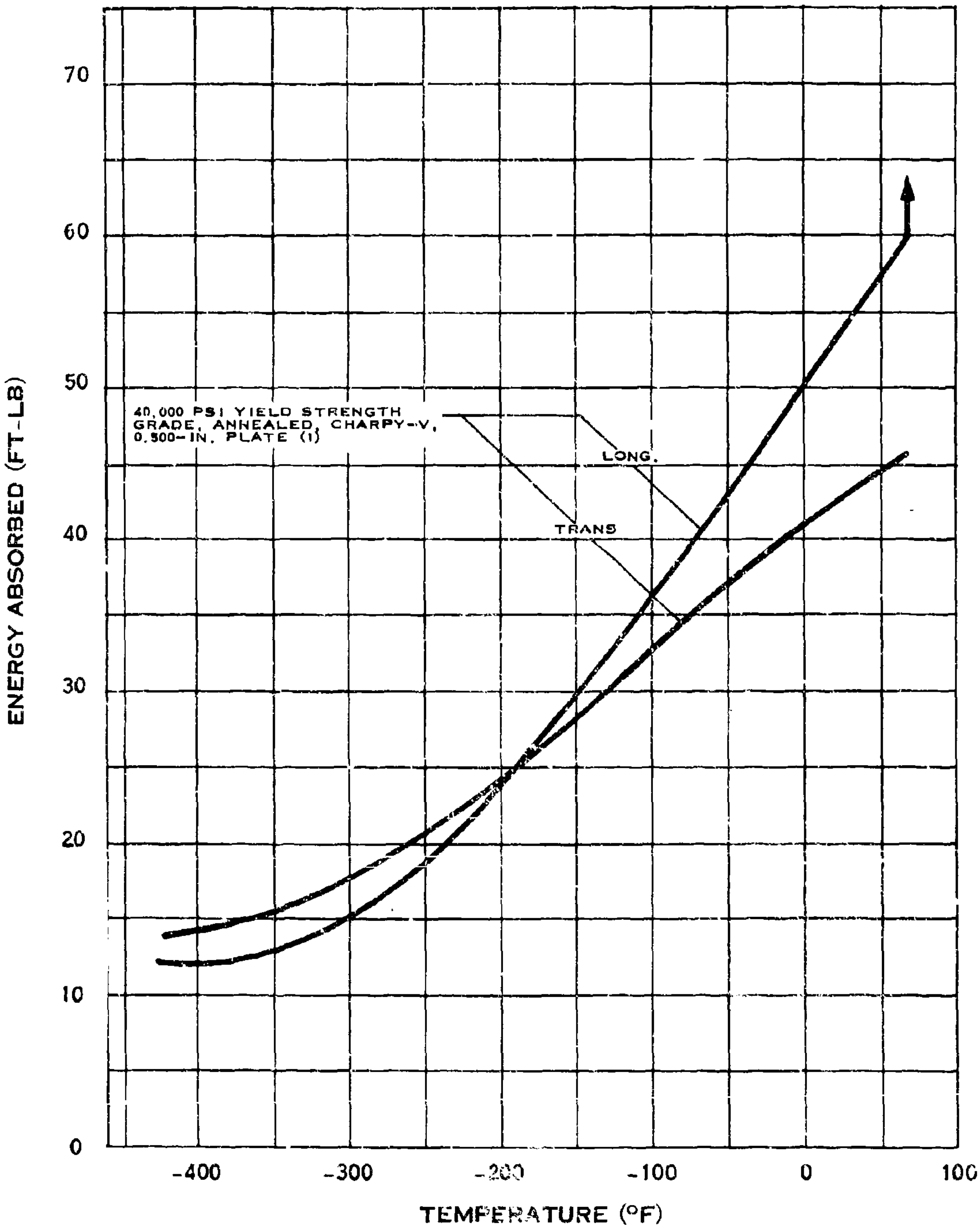
C.1.i



MODULUS OF ELASTICITY OF COMMERCIALLY PURE TITANIUM

(6-59)

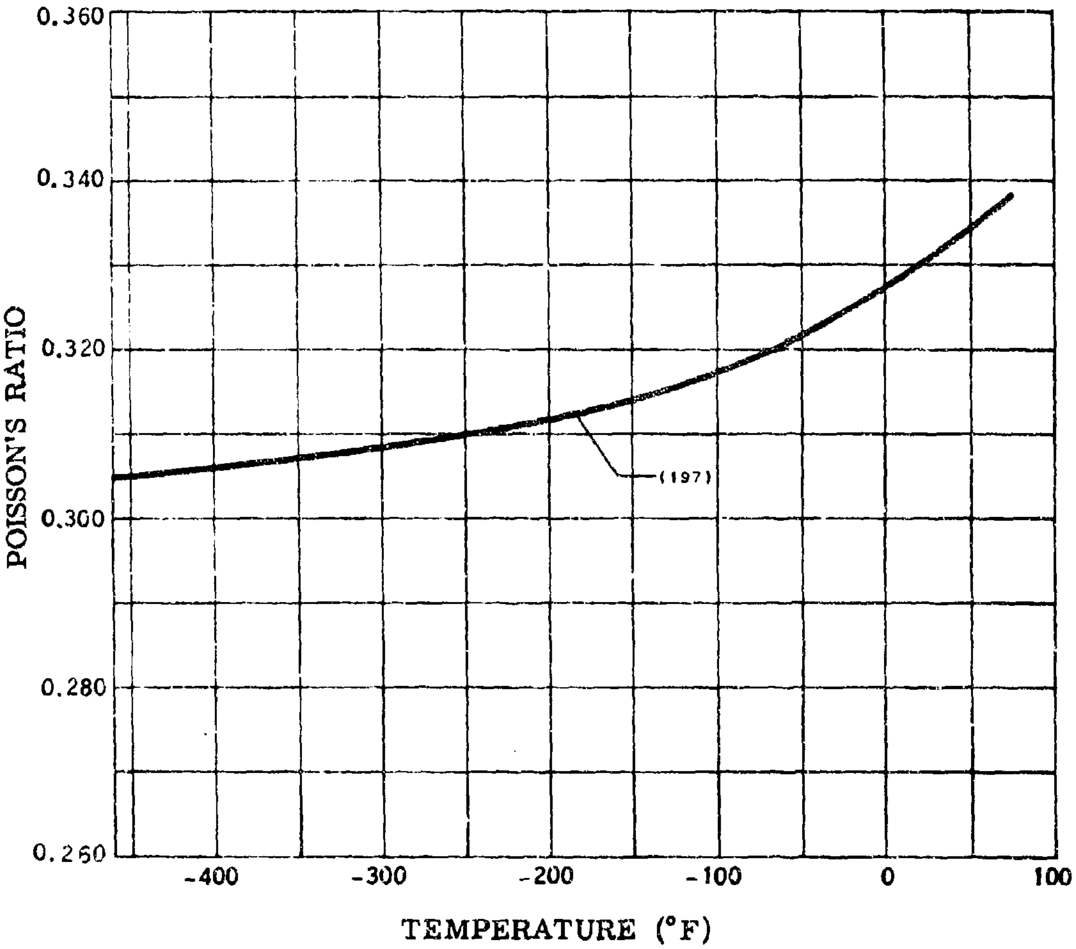
C.1.j



IMPACT STRENGTH OF COMMERCIALLY PURE TITANIUM

(7-65)

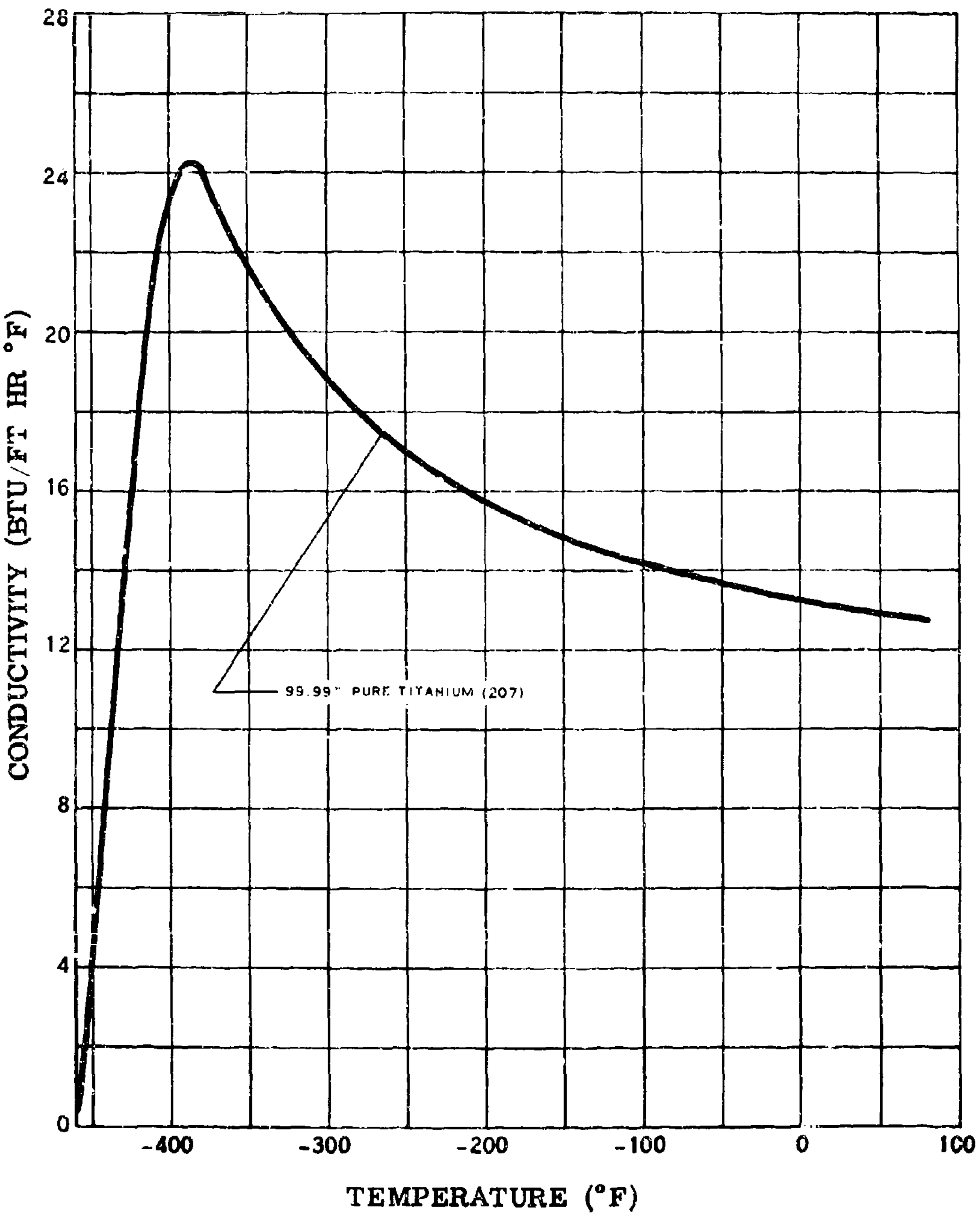
C.1.u



POISSON'S RATIO OF COMMERCIALLY PURE TITANIUM

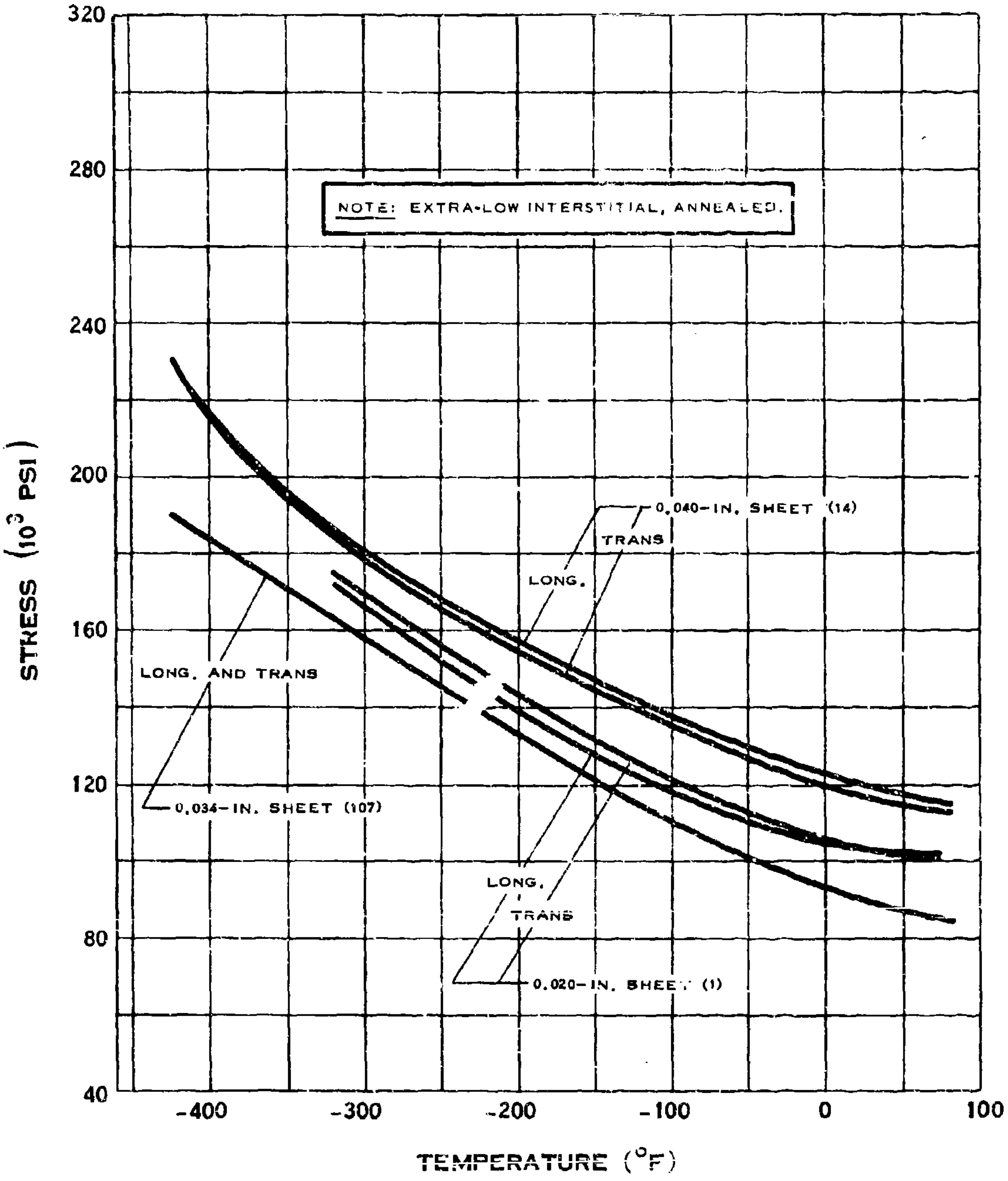
(6-68)

C.1.v



THERMAL CONDUCTIVITY OF PURE TITANIUM

C.2.a



YIELD STRENGTH OF 5Al-2.5 Sn TITANIUM

(6-68)

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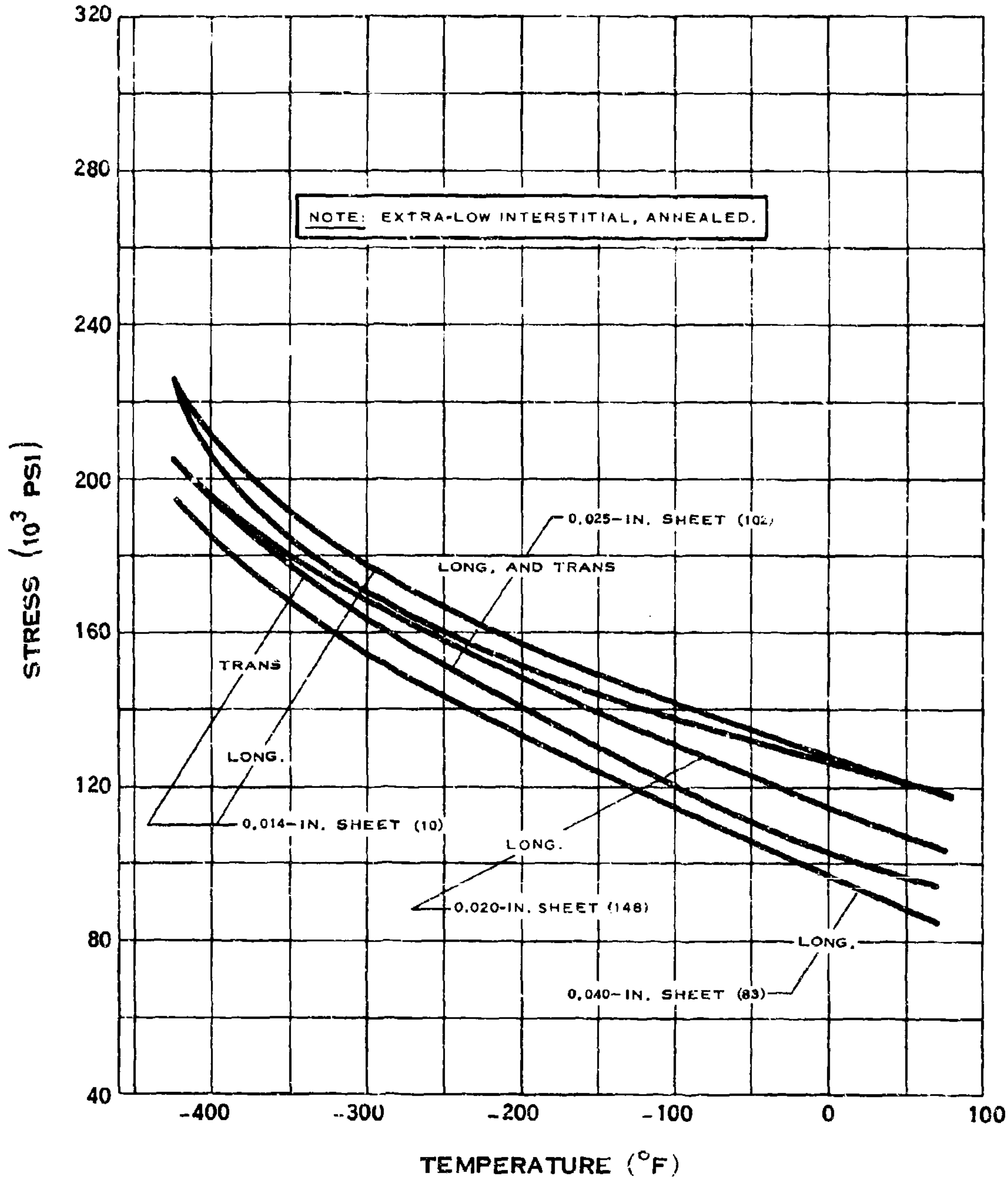
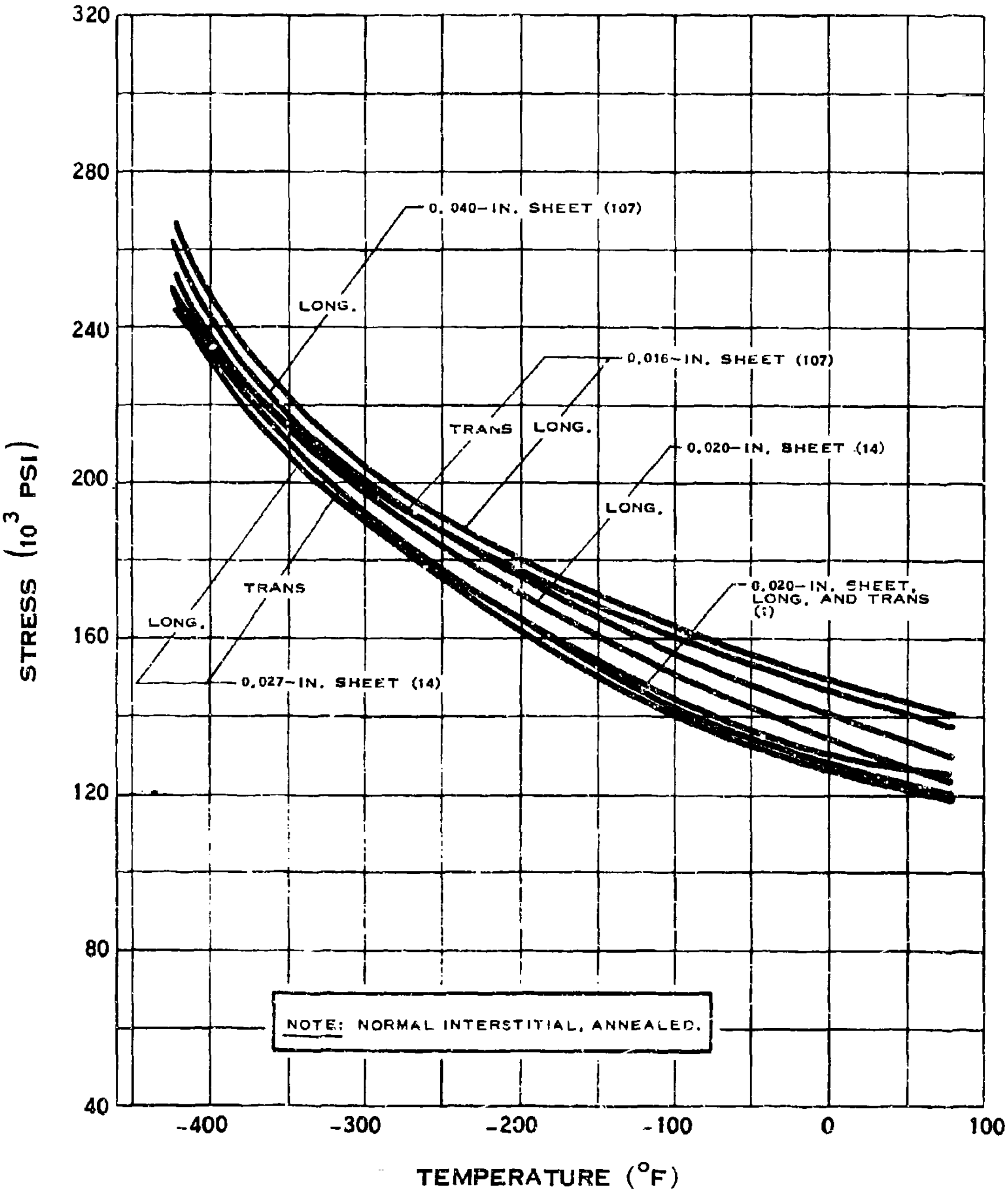
C.2.a-1



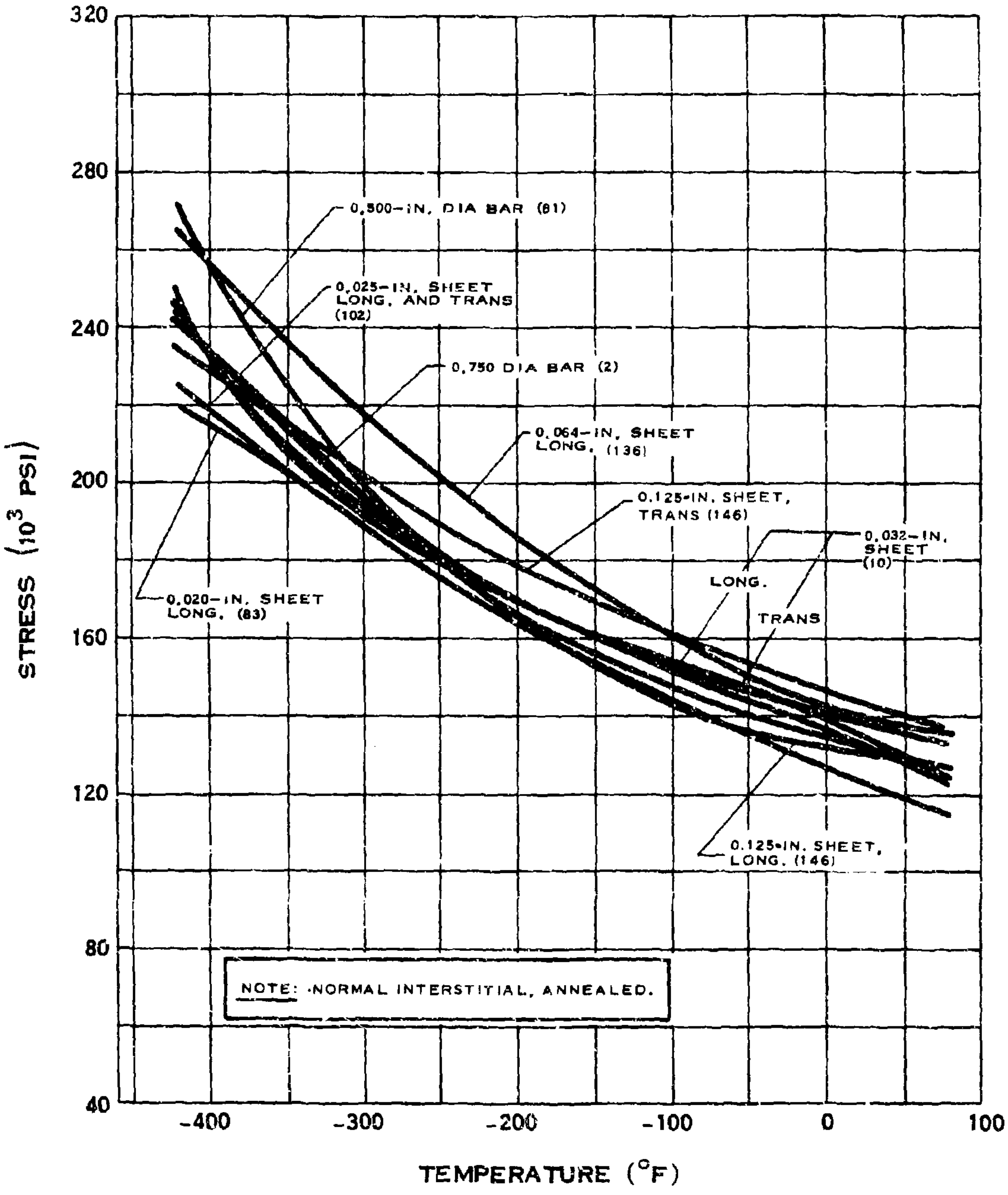
YIELD STRENGTH OF 5Al-2.5 Sn TITANIUM



YIELD STRENGTH OF 5Al-2.5 Sn TITANIUM

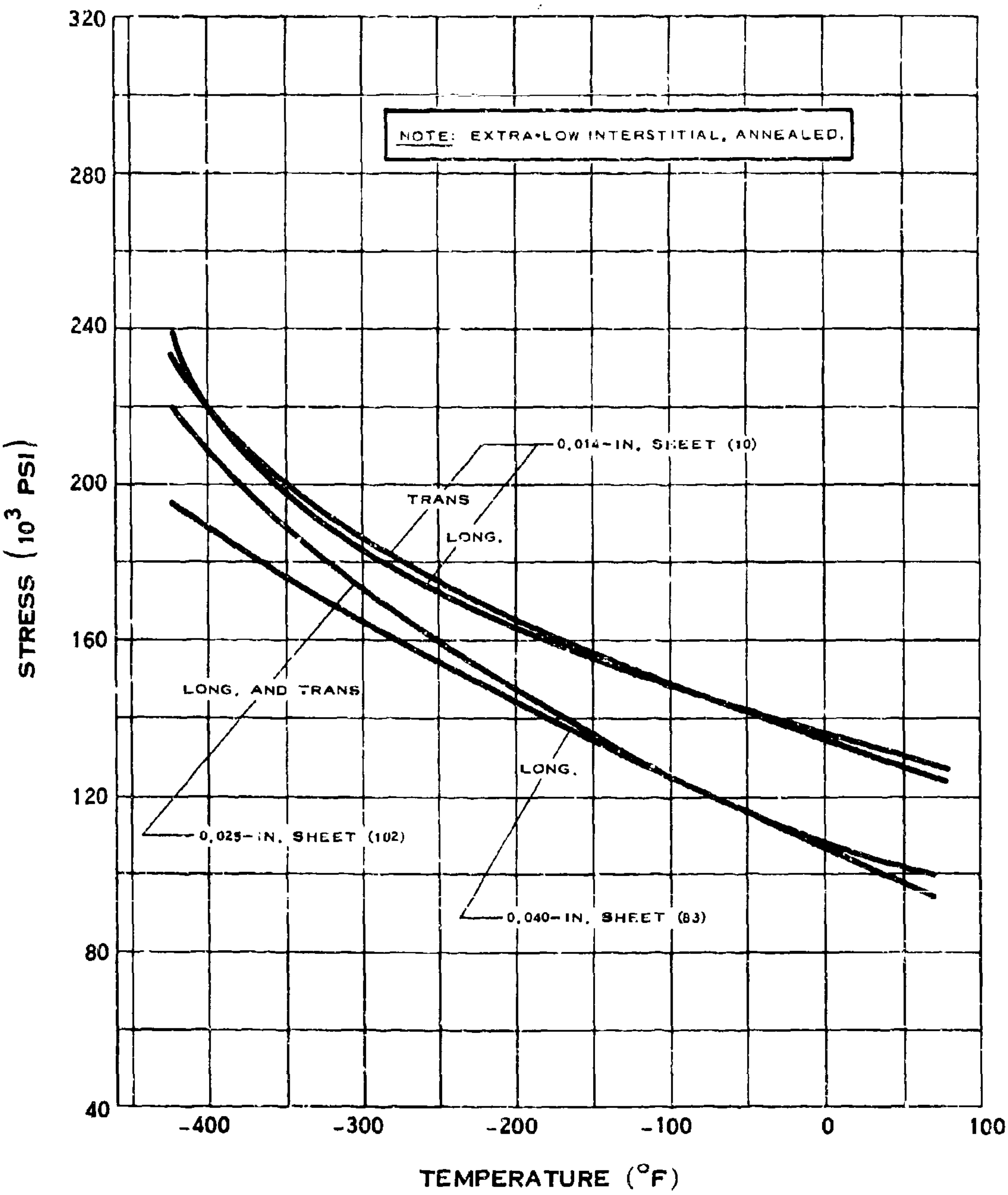
(6-63)

C.2.a-3



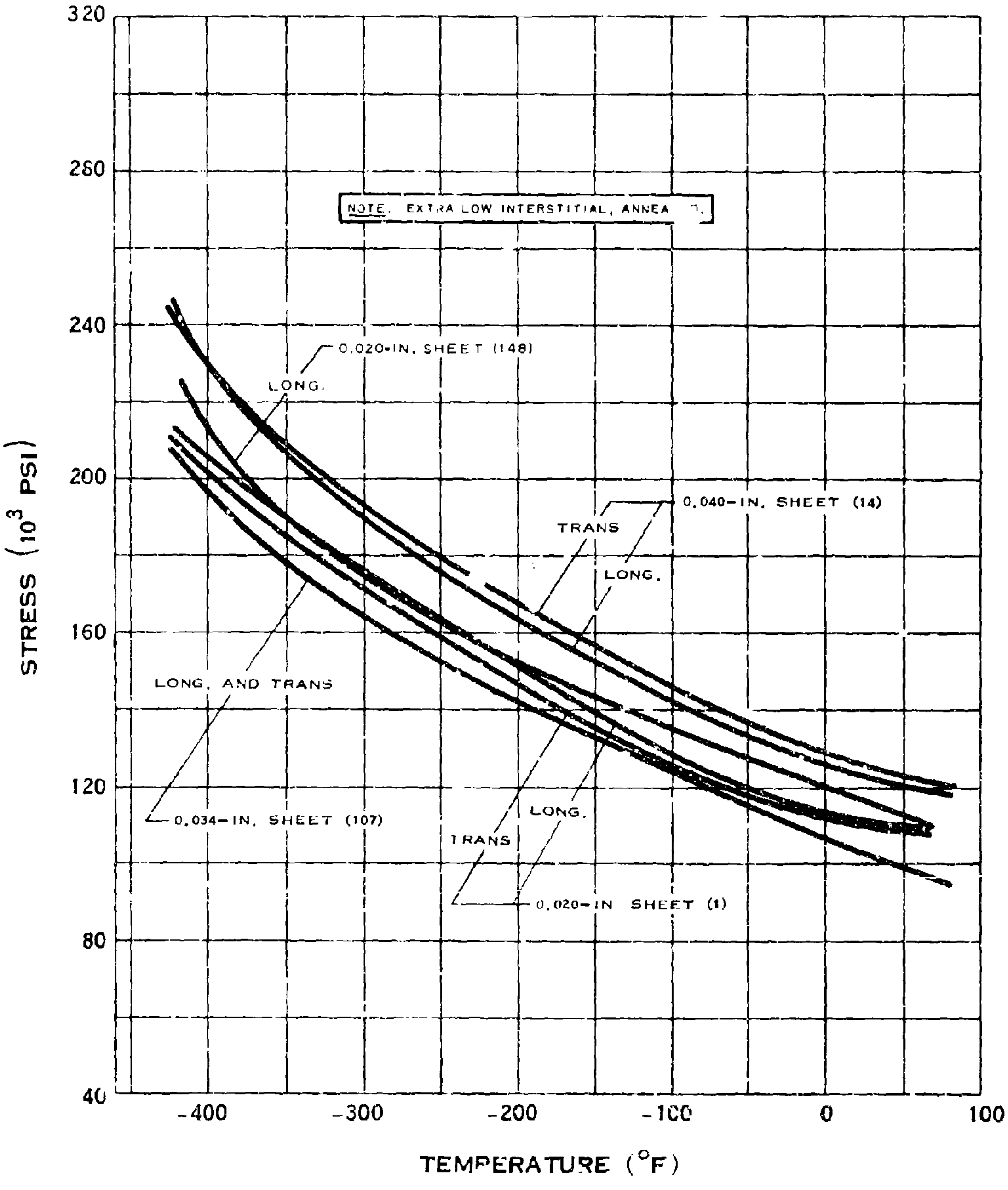
YIELD STRENGTH OF 5Al-2.5 Sn TITANIUM

C.2.b



TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

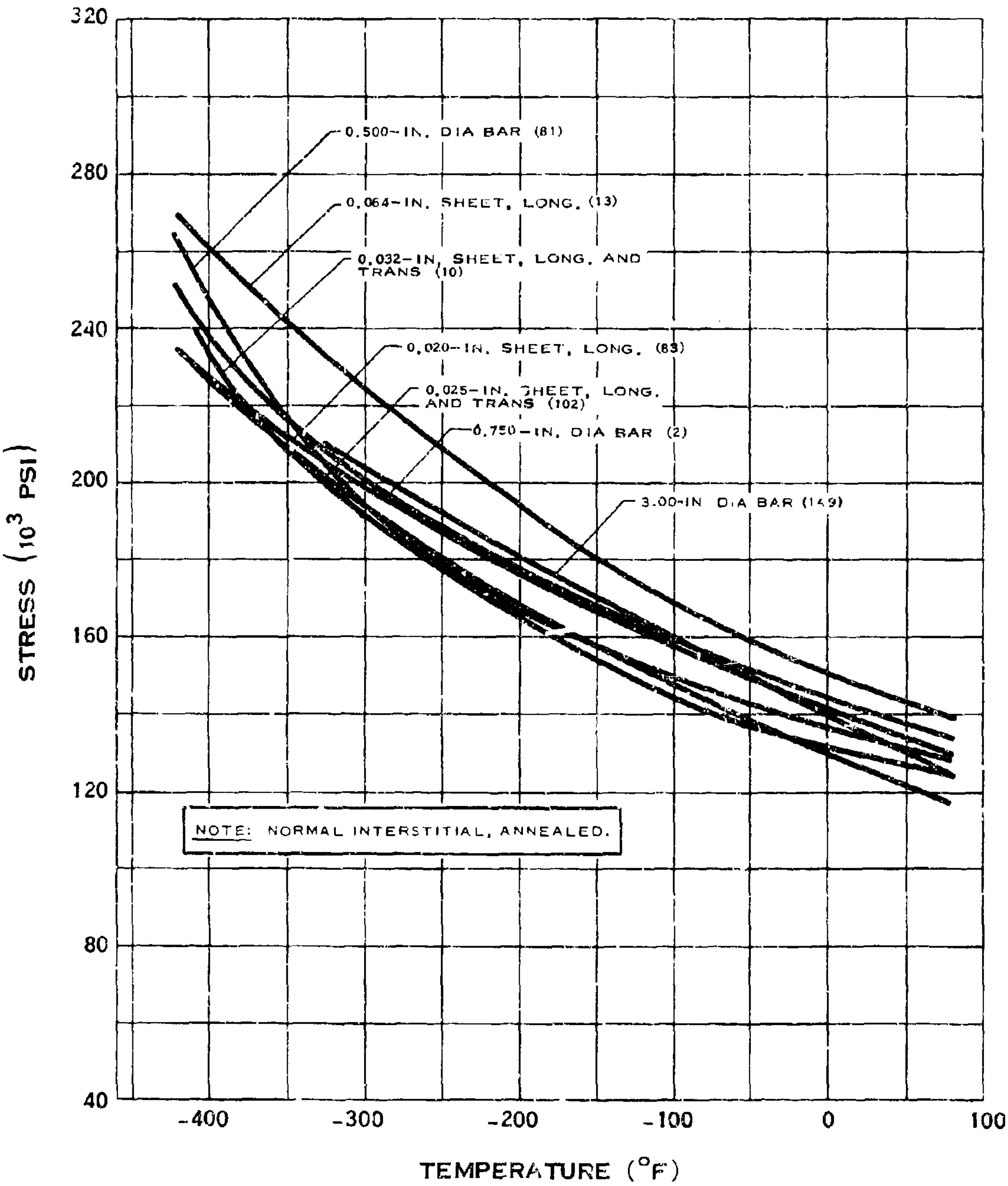
C.2.b-1



TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

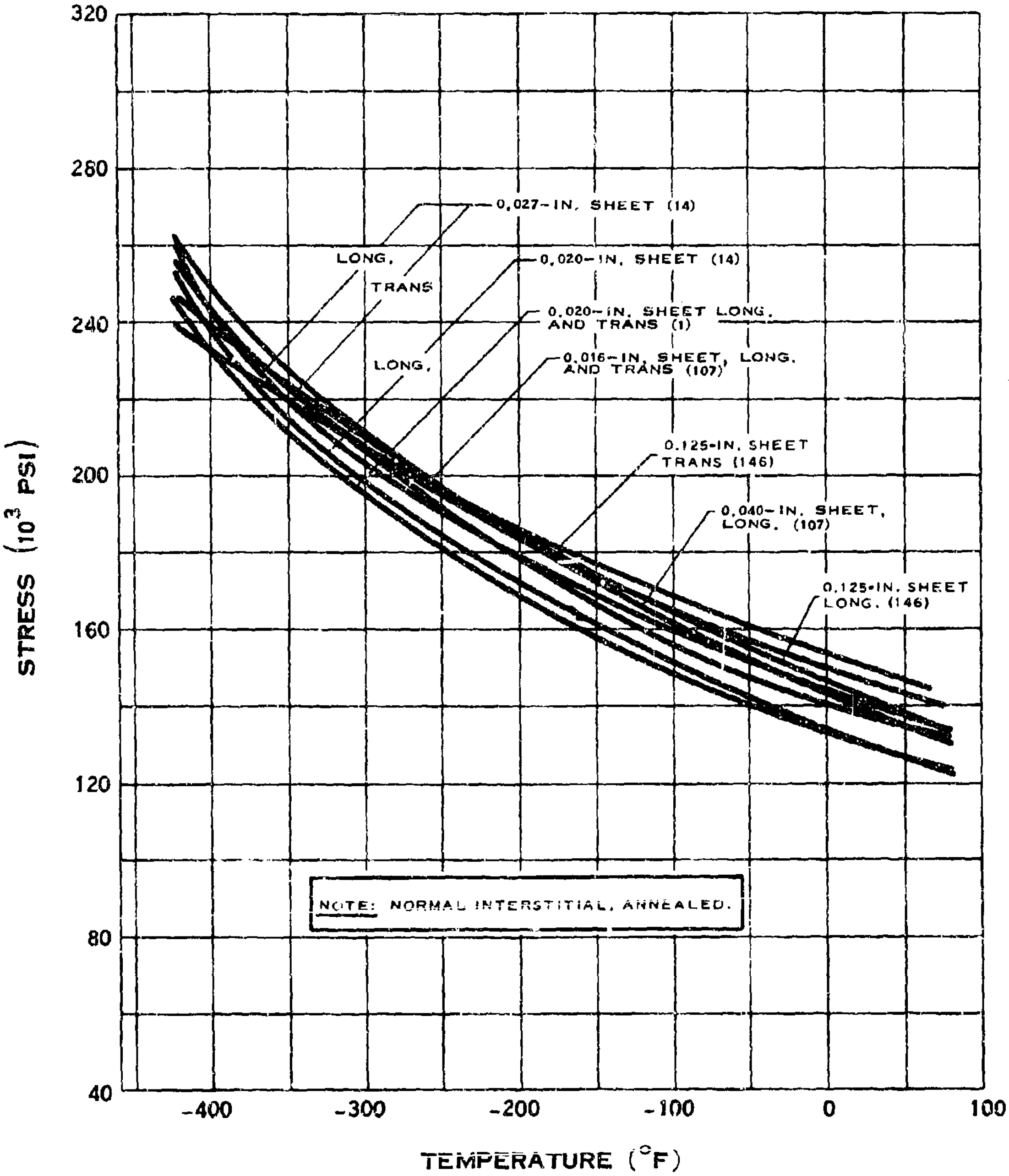
(6-68)

C.2.b-2



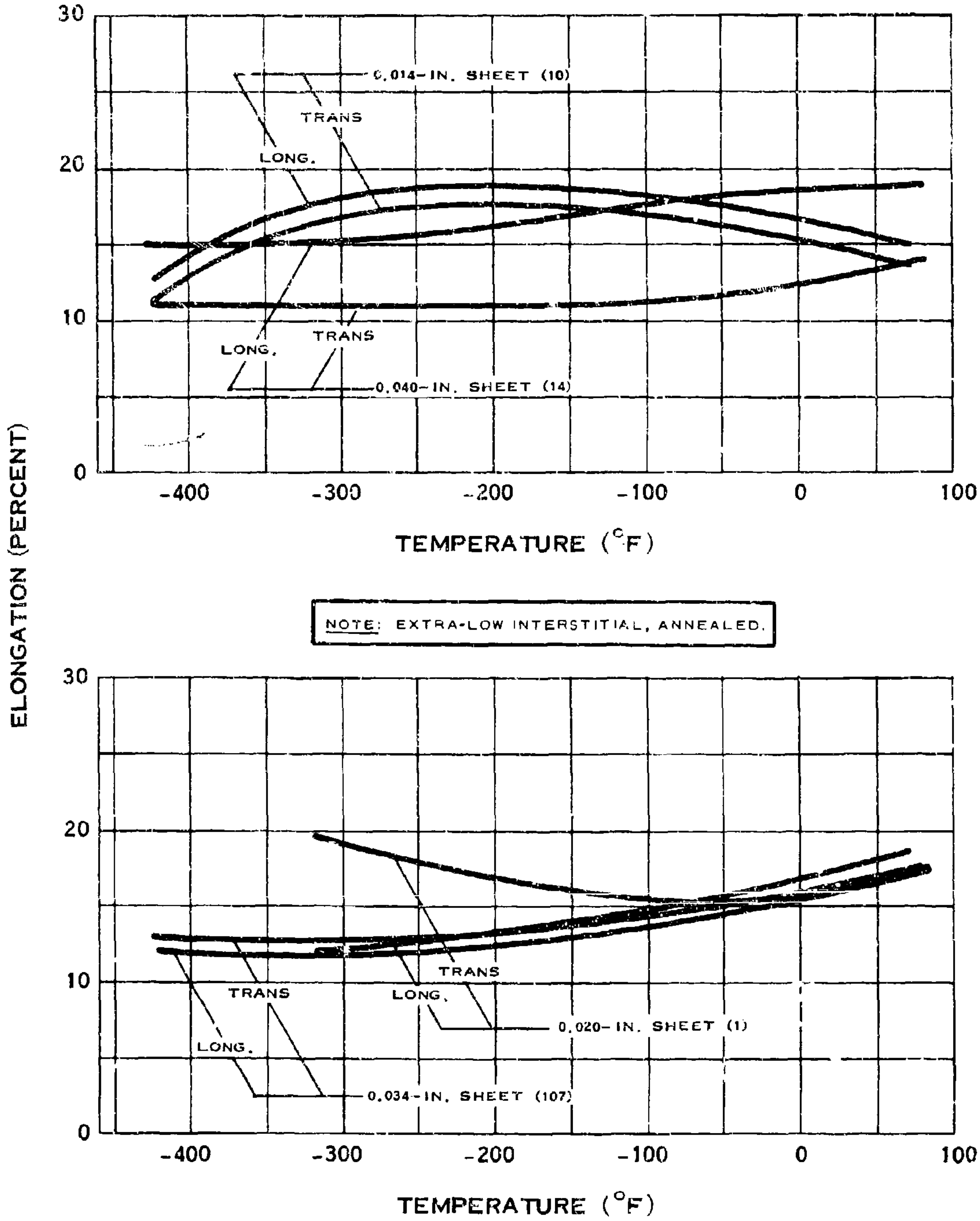
TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

(6-58)



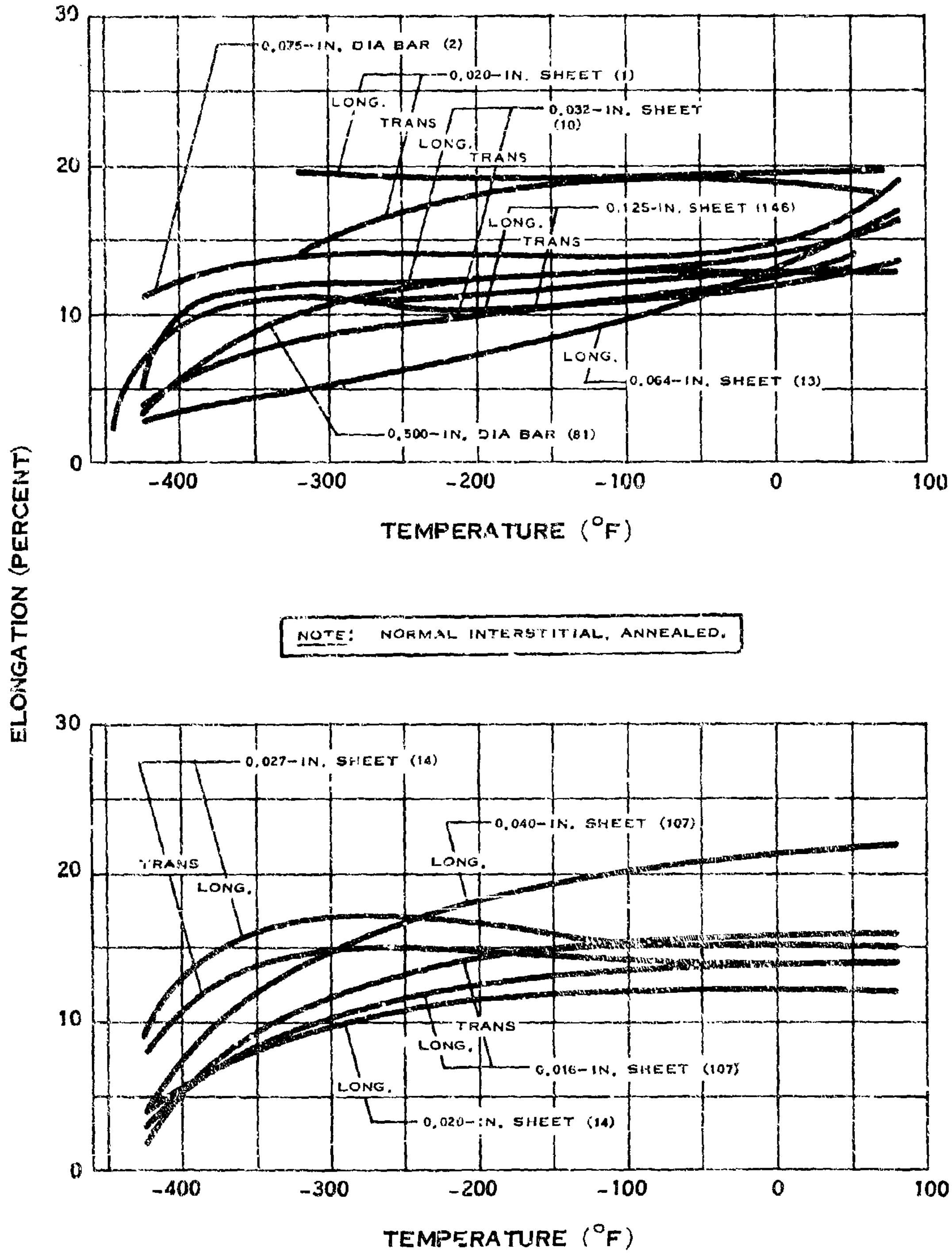
TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

C.2.c



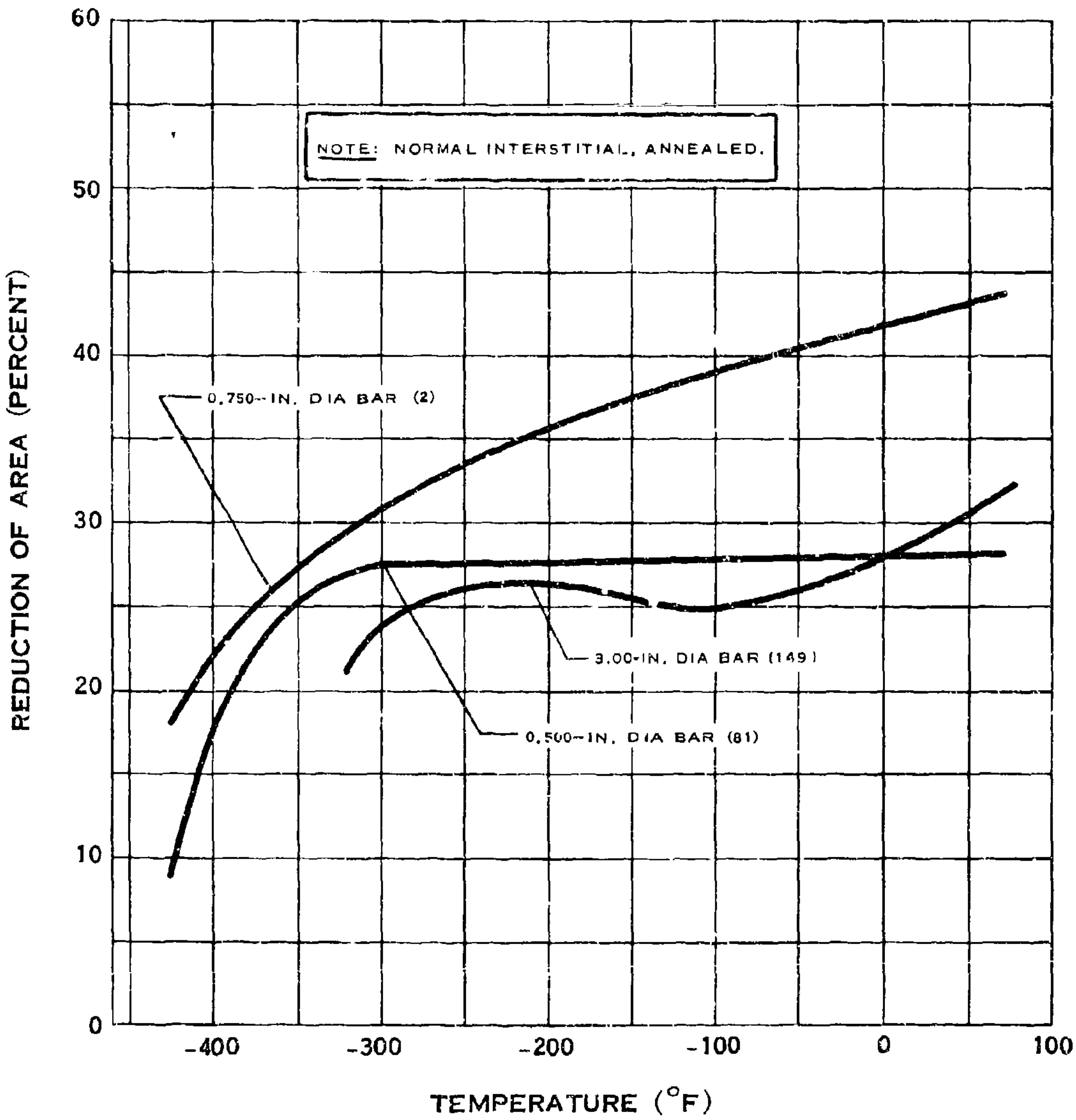
ELONGATION OF 5Al-2.5 Sn TITANIUM

C.2.c-1



ELONGATION OF 5Al-2.5 Sn TITANIUM

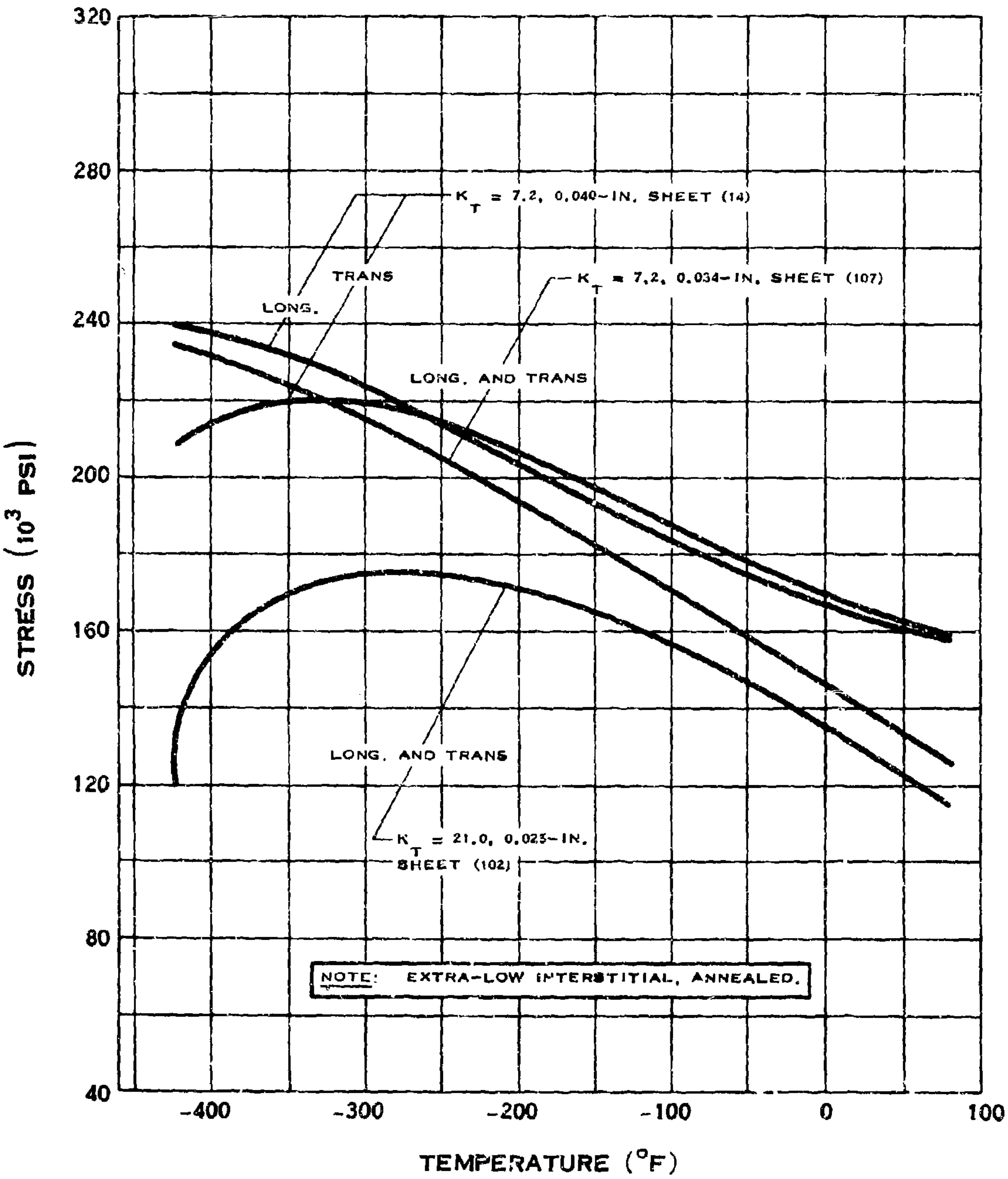
C.2.d



REDUCTION OF AREA OF 5Al-2.5 Sn TITANIUM

(6-68)

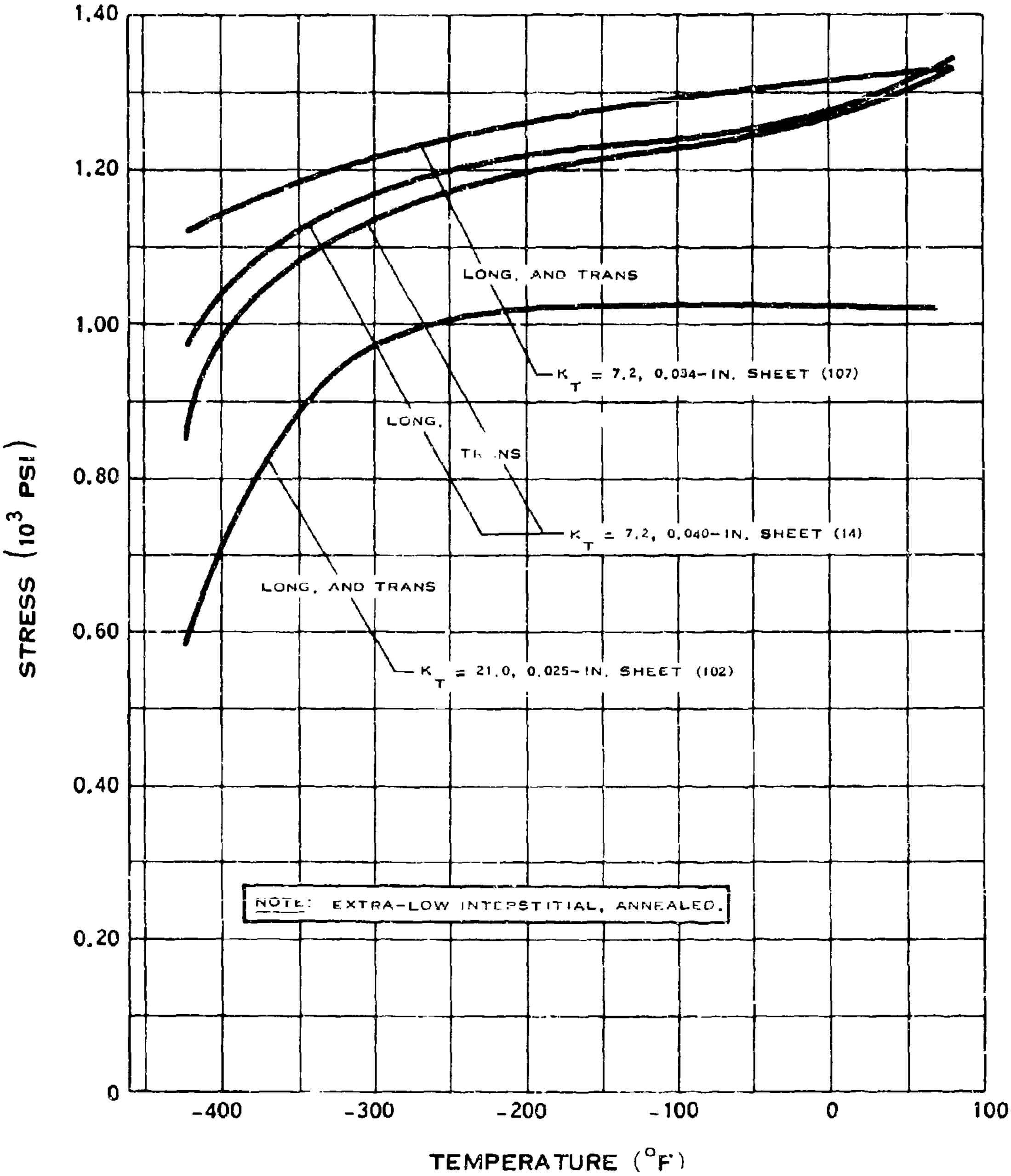
C.2.e



NOTCH TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

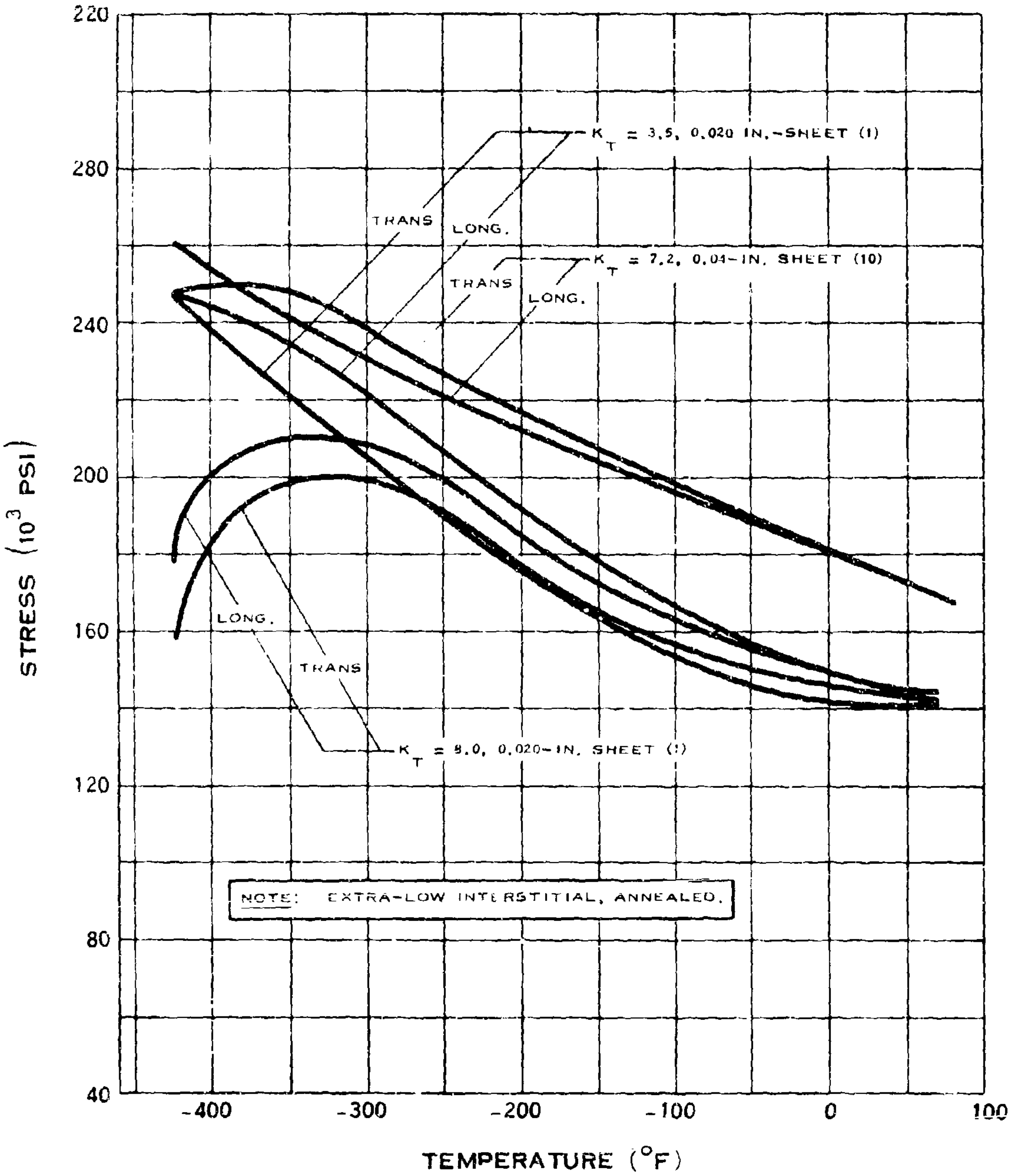
(6-68)

C.2.e-1

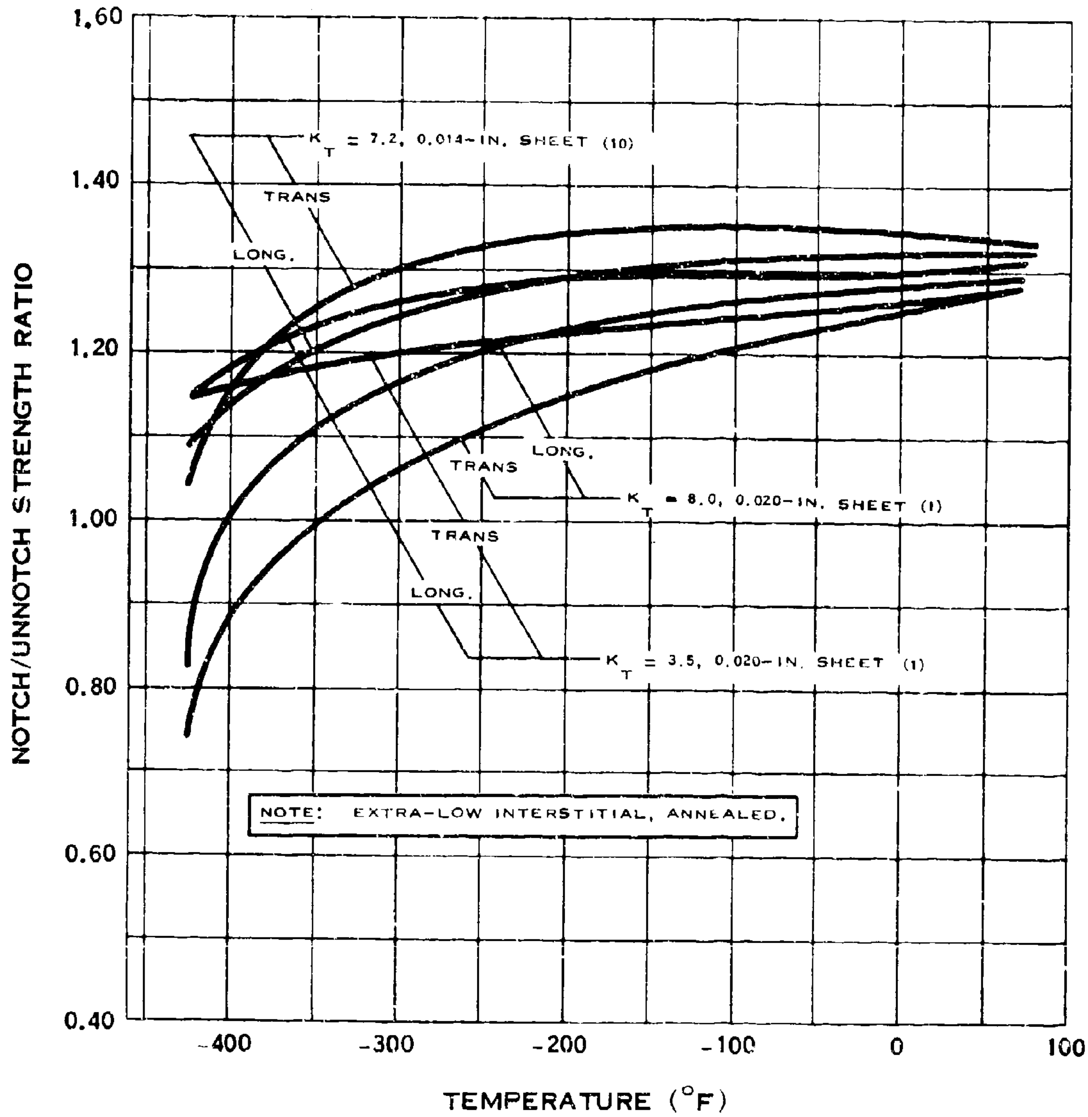


NOTCH STRENGTH RATIO OF 5Al-2.5 Sn TITANIUM

C.2.e-2



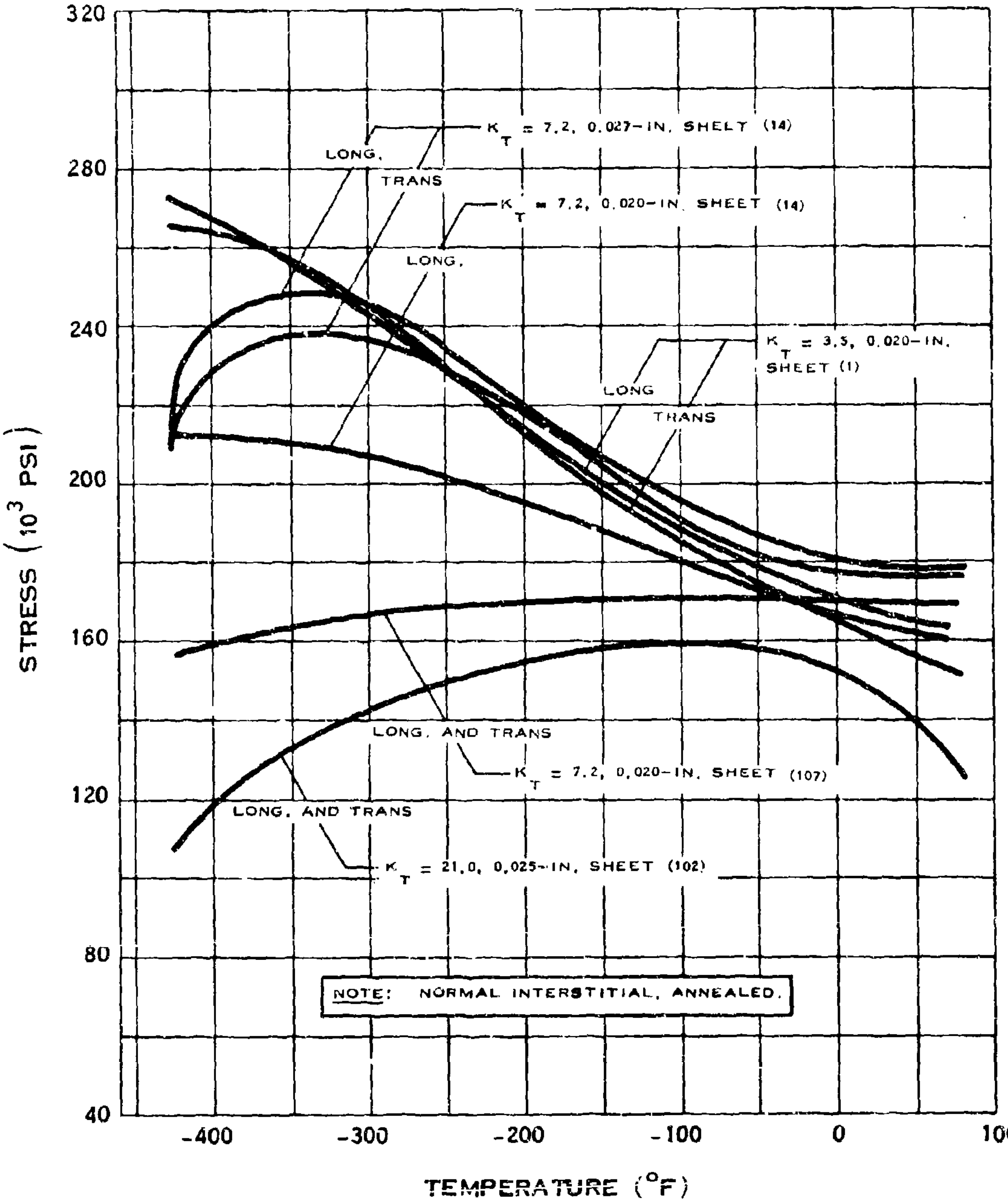
NOTCH TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM



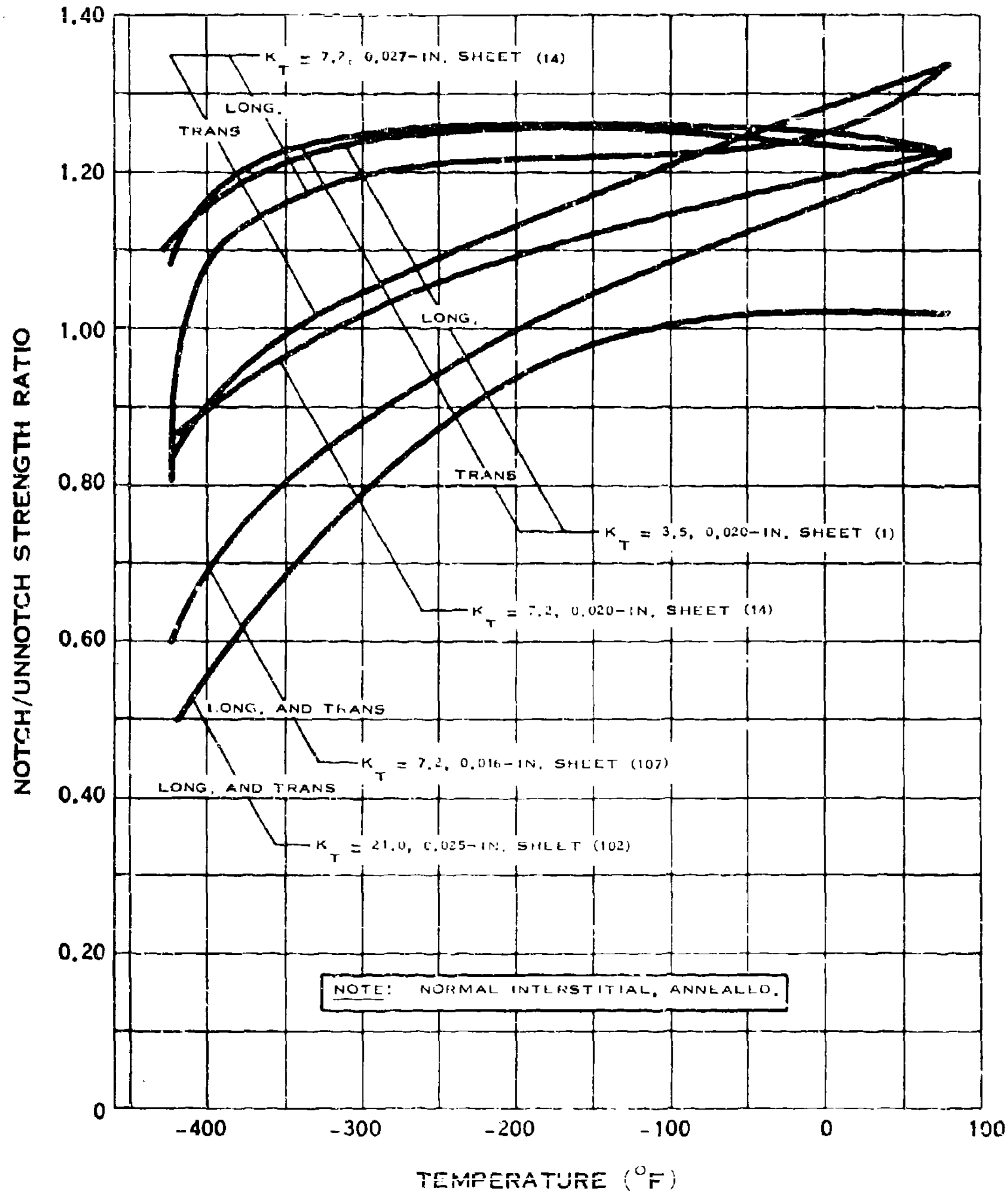
NOTCH STRENGTH RATIO OF 5Al-2.5 Sn TITANIUM

(1-65)

C.2.e-4



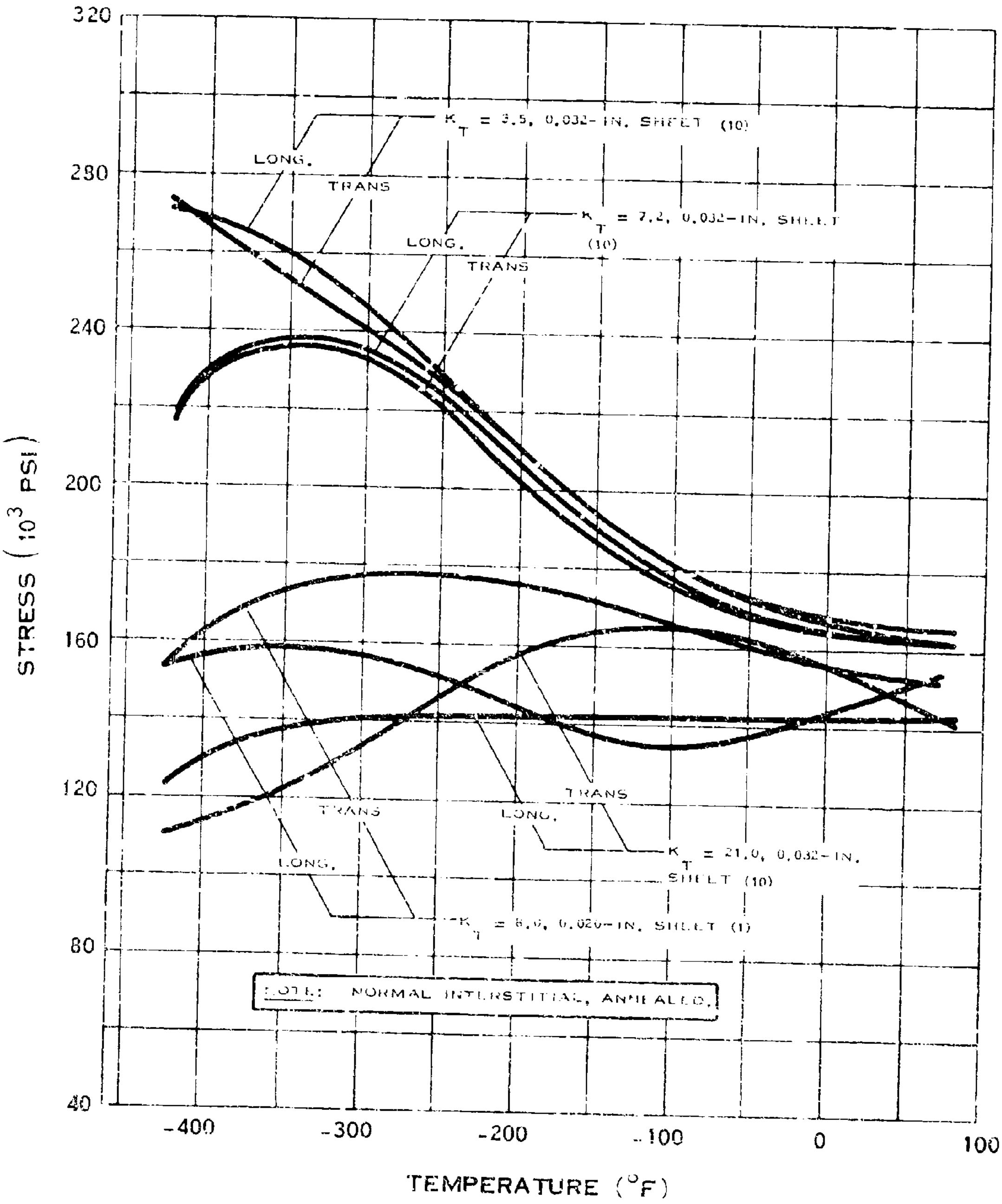
NOTCH TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM



NOTCH STRENGTH RATIO OF 5Al-2.5 Sn TITANIUM

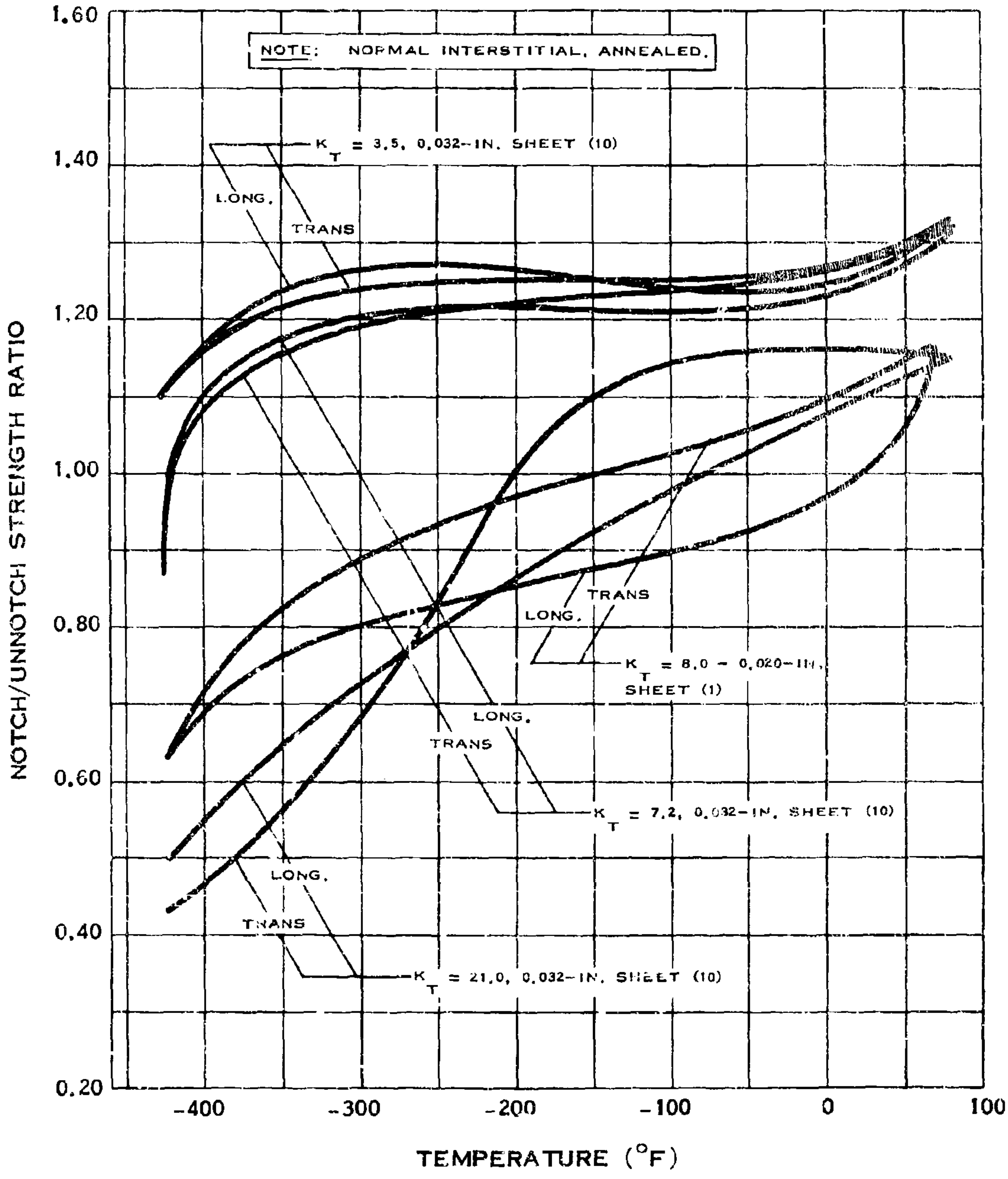
(1-65)

C.2.e-6



NOTCH TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

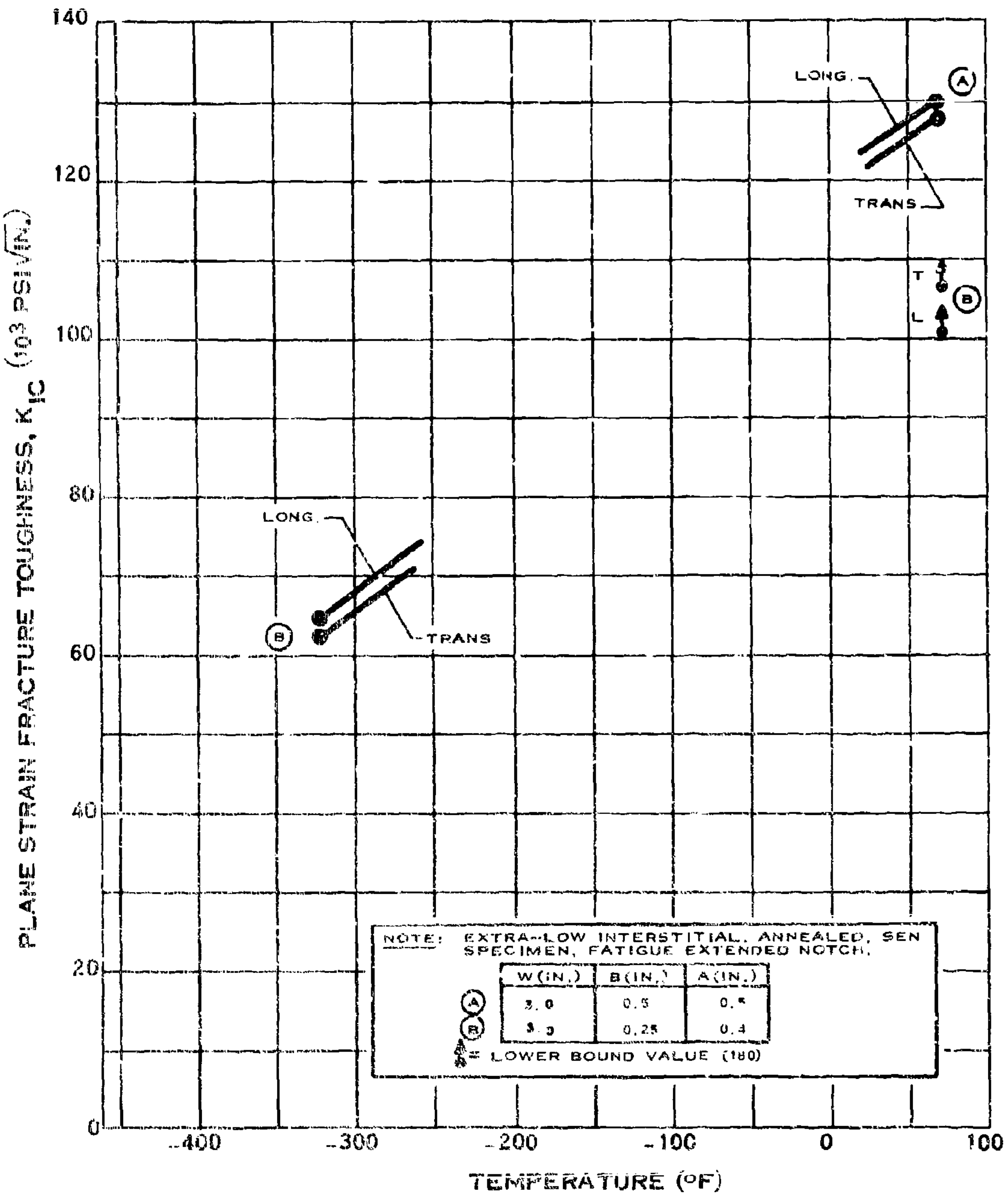
(1-65)



NOTCH STRENGTH RATIO OF 5Al-2.5 Sn TITANIUM

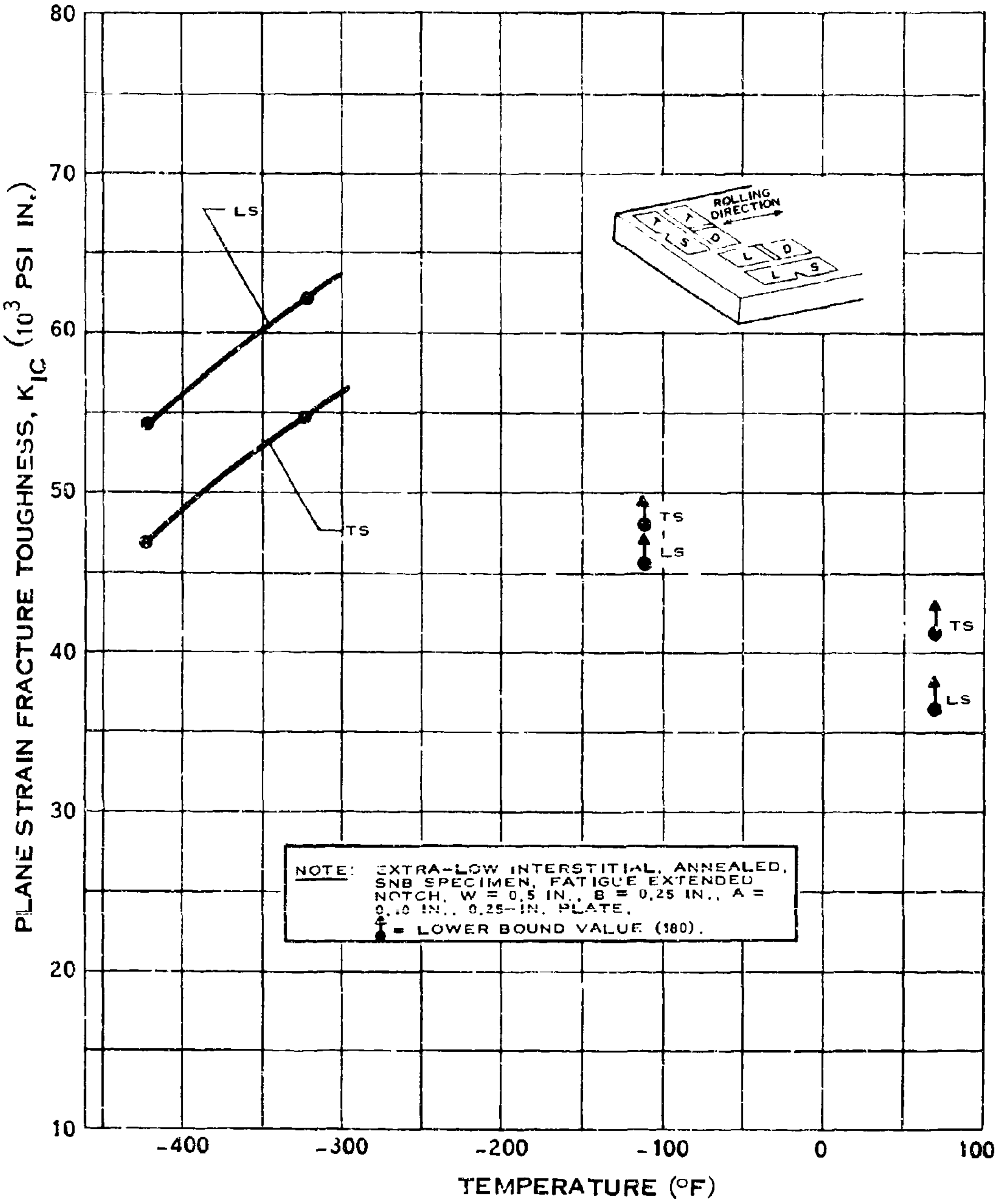
(1-63)

C.2.f



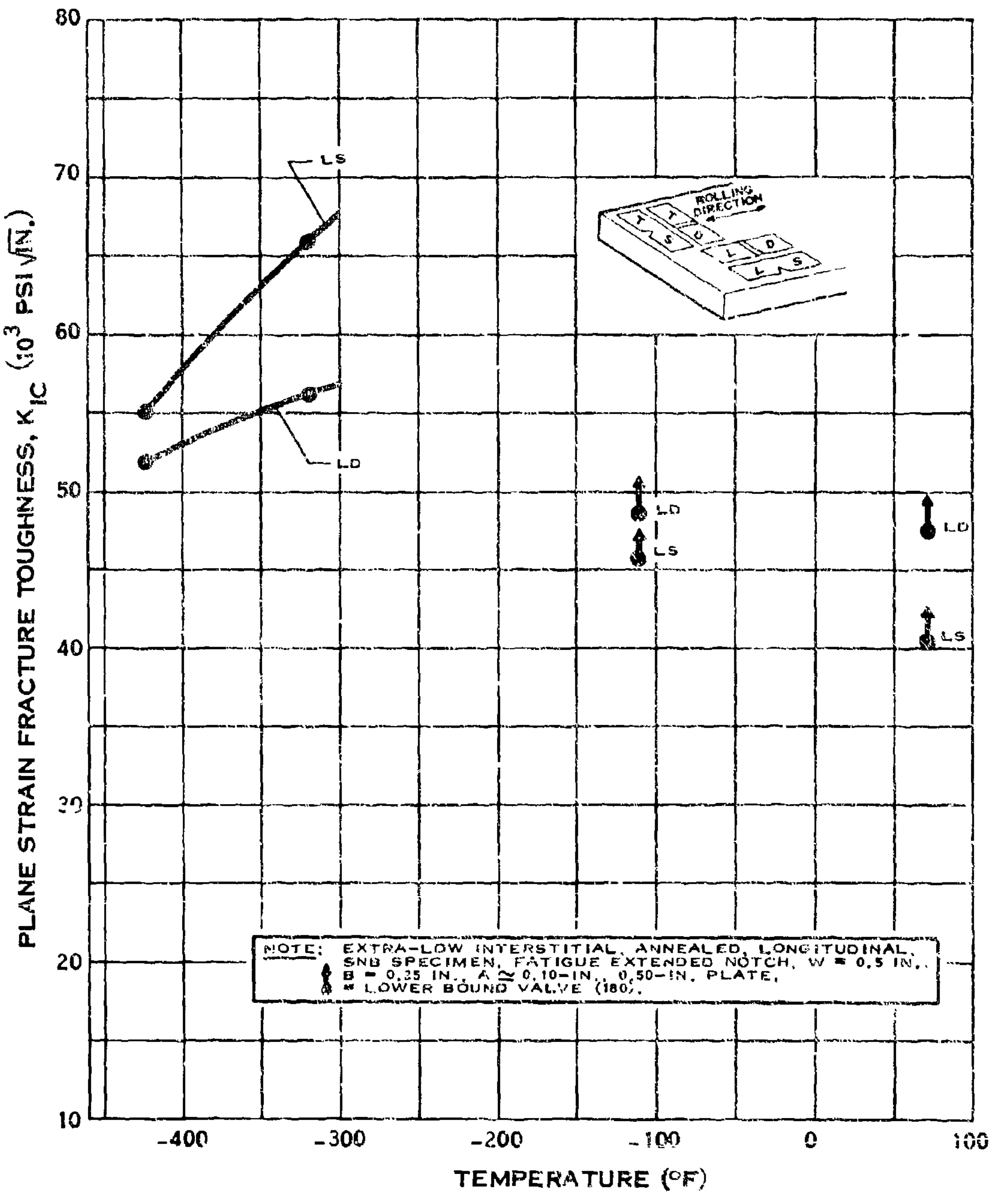
FRACTURE TOUGHNESS OF 5Al-2.5Sn TITANIUM

C.2.f-1



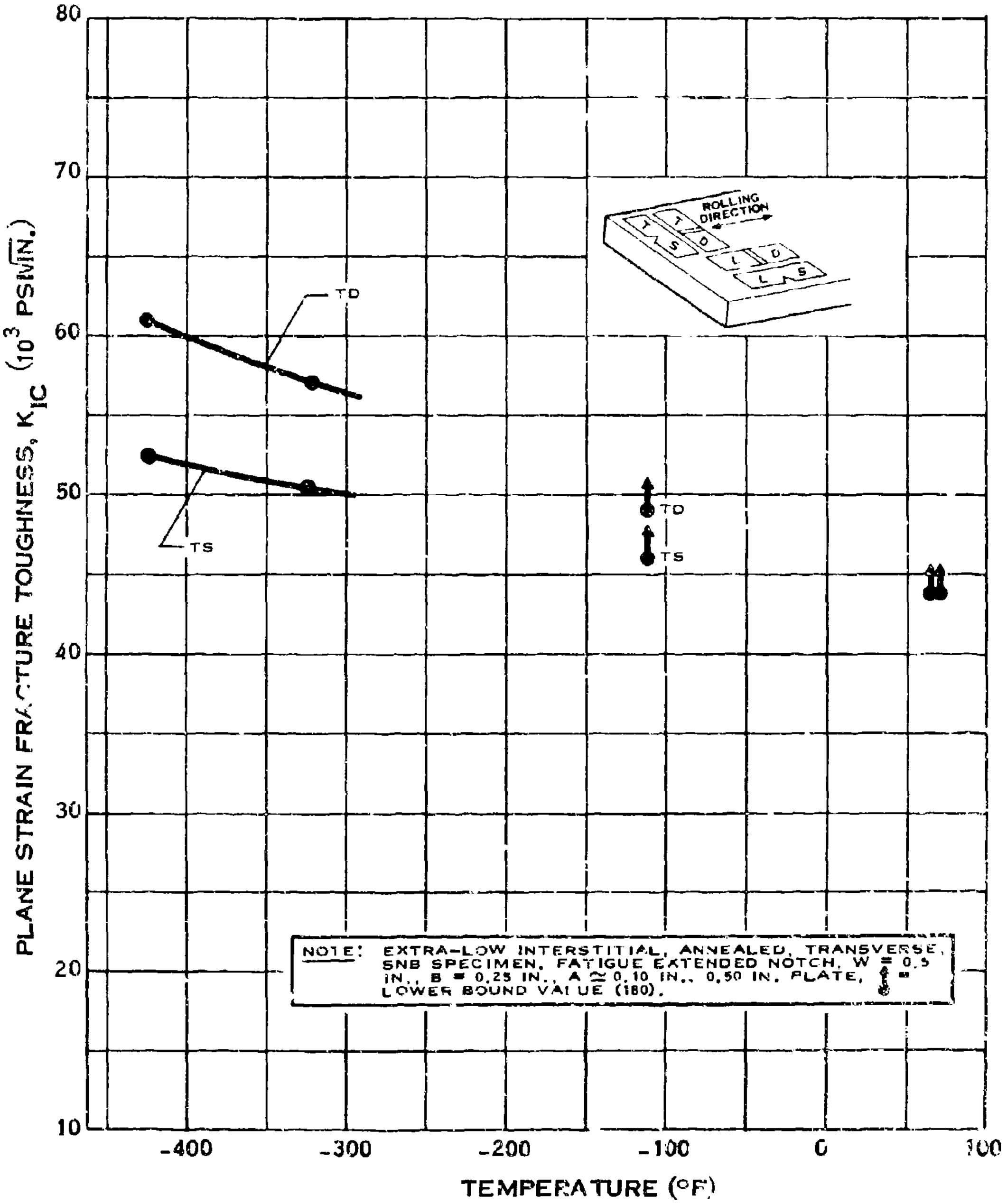
FRACTURE TOUGHNESS OF 5Al-2.5Sn TITANIUM

C.2.f-2



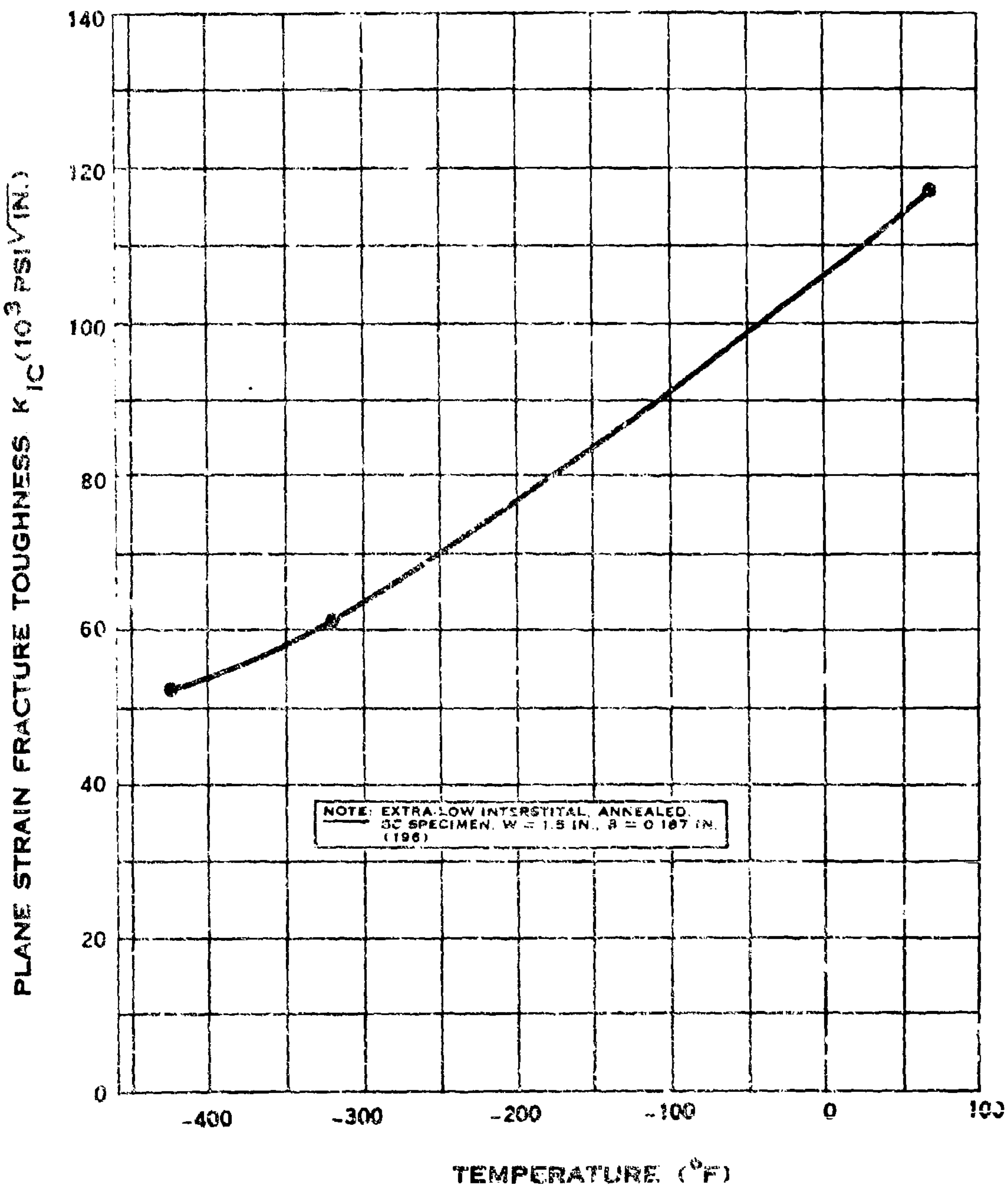
FRACTURE TOUGHNESS OF 5Al-2.5Sn TITANIUM

C.2.f-3



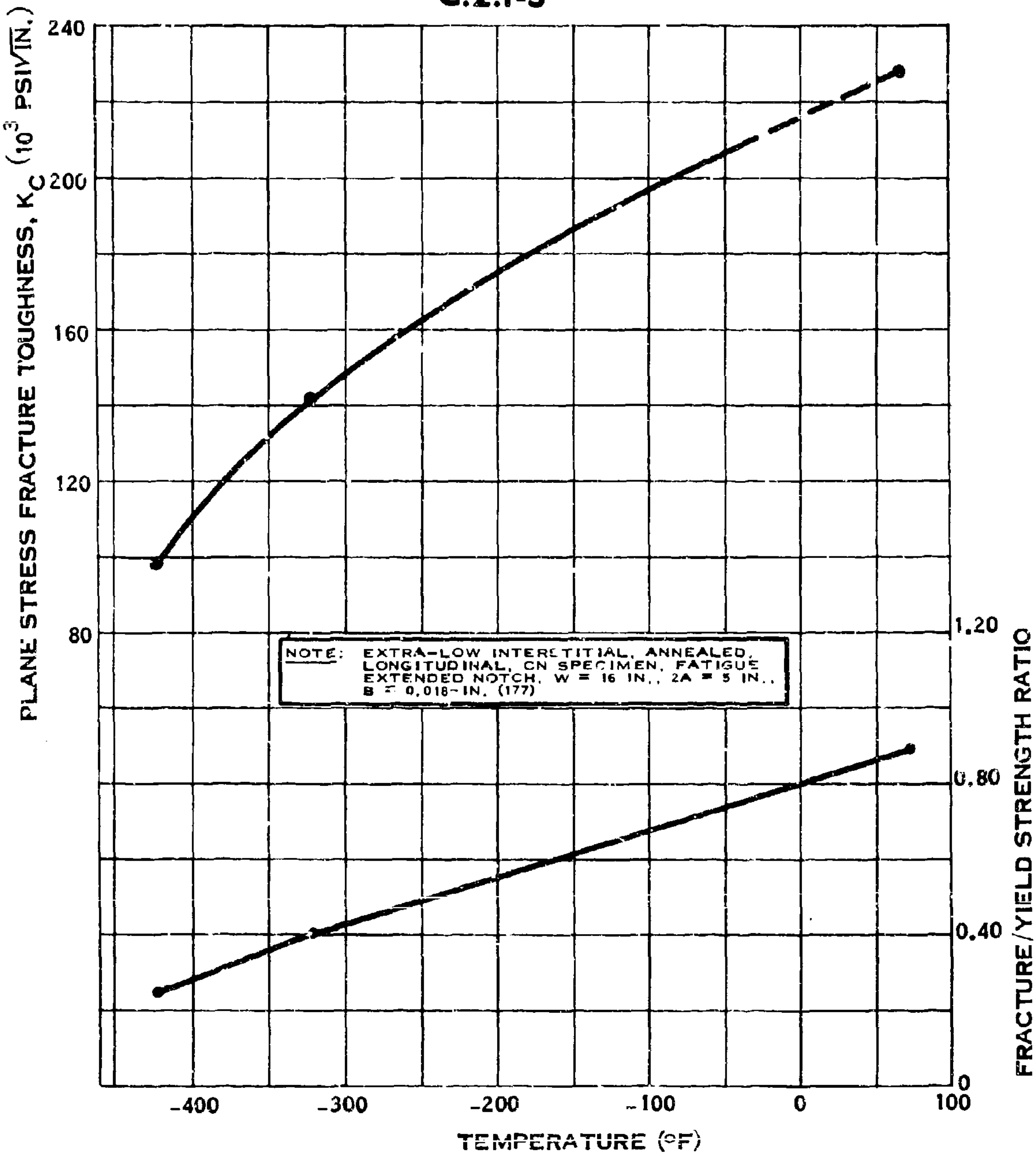
FRACTURE TOUGHNESS OF 5Al-2.5Sn TITANIUM

C.2.f-4



FRACTURE TOUGHNESS OF 5Al-Sn TITANIUM

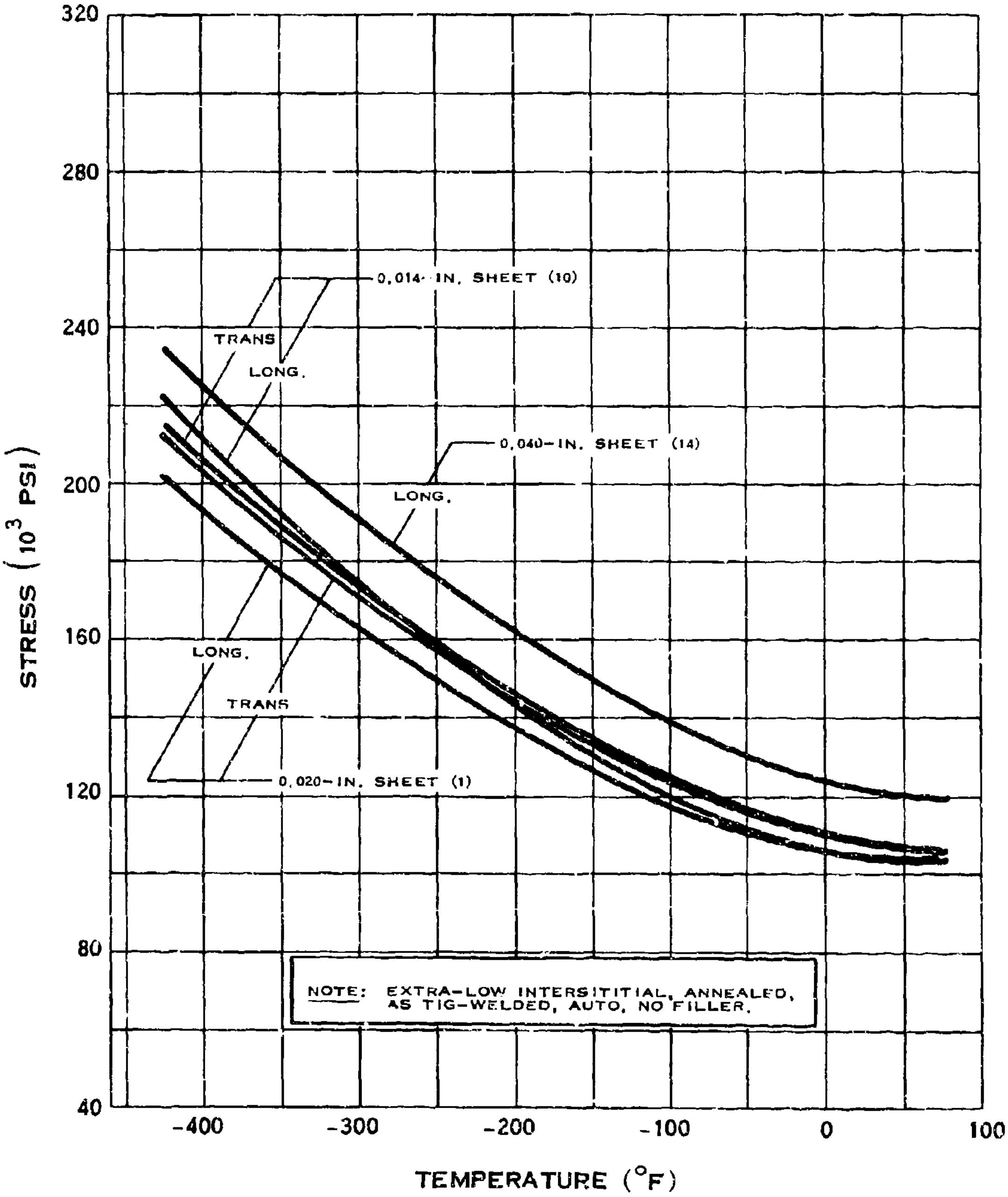
C.2.f-5



FRACTURE TOUGHNESS OF 5Al-2.5Sn TITANIUM

(3-66)

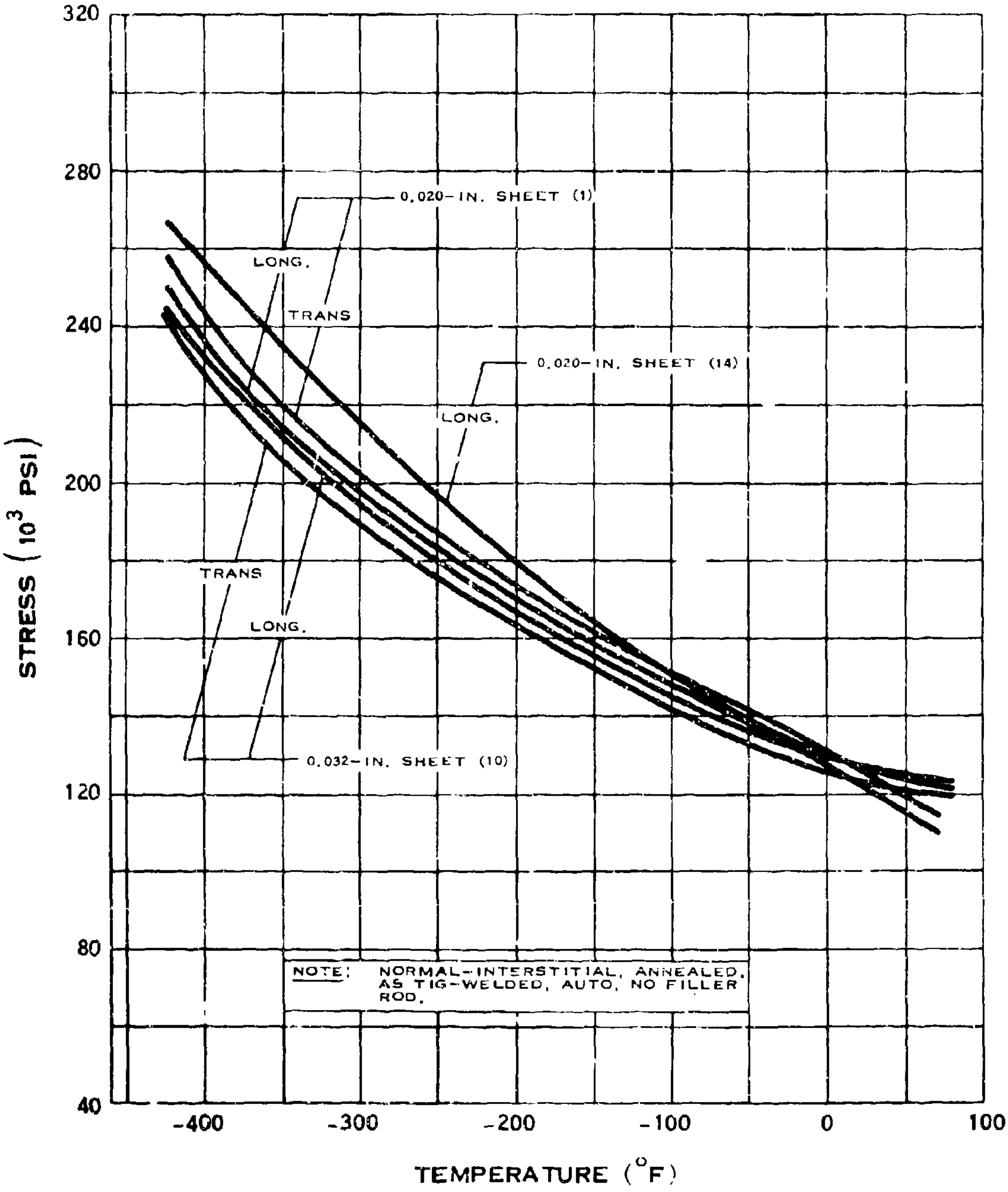
C.2.g



WELD TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

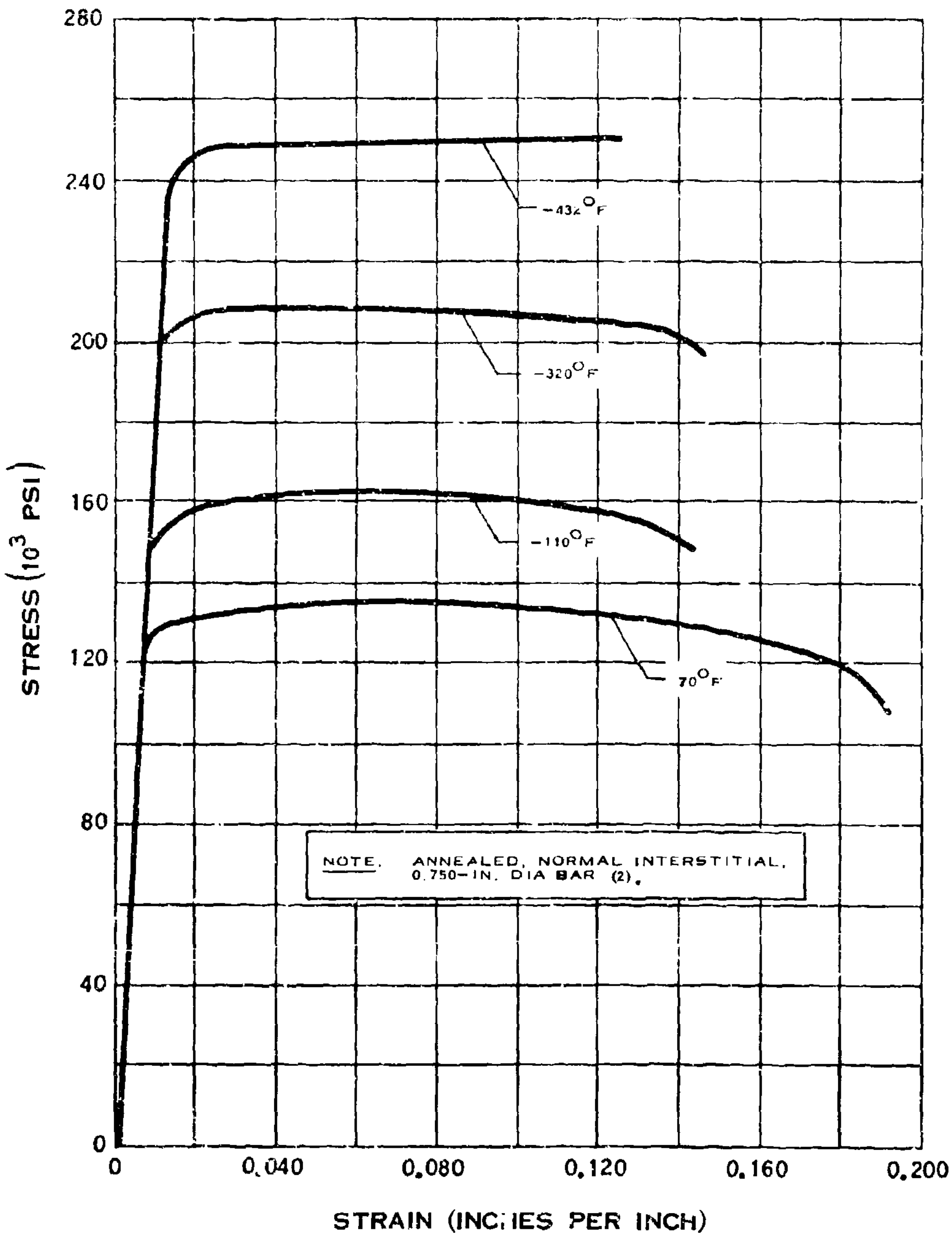
(1-65)

C.2.g-1



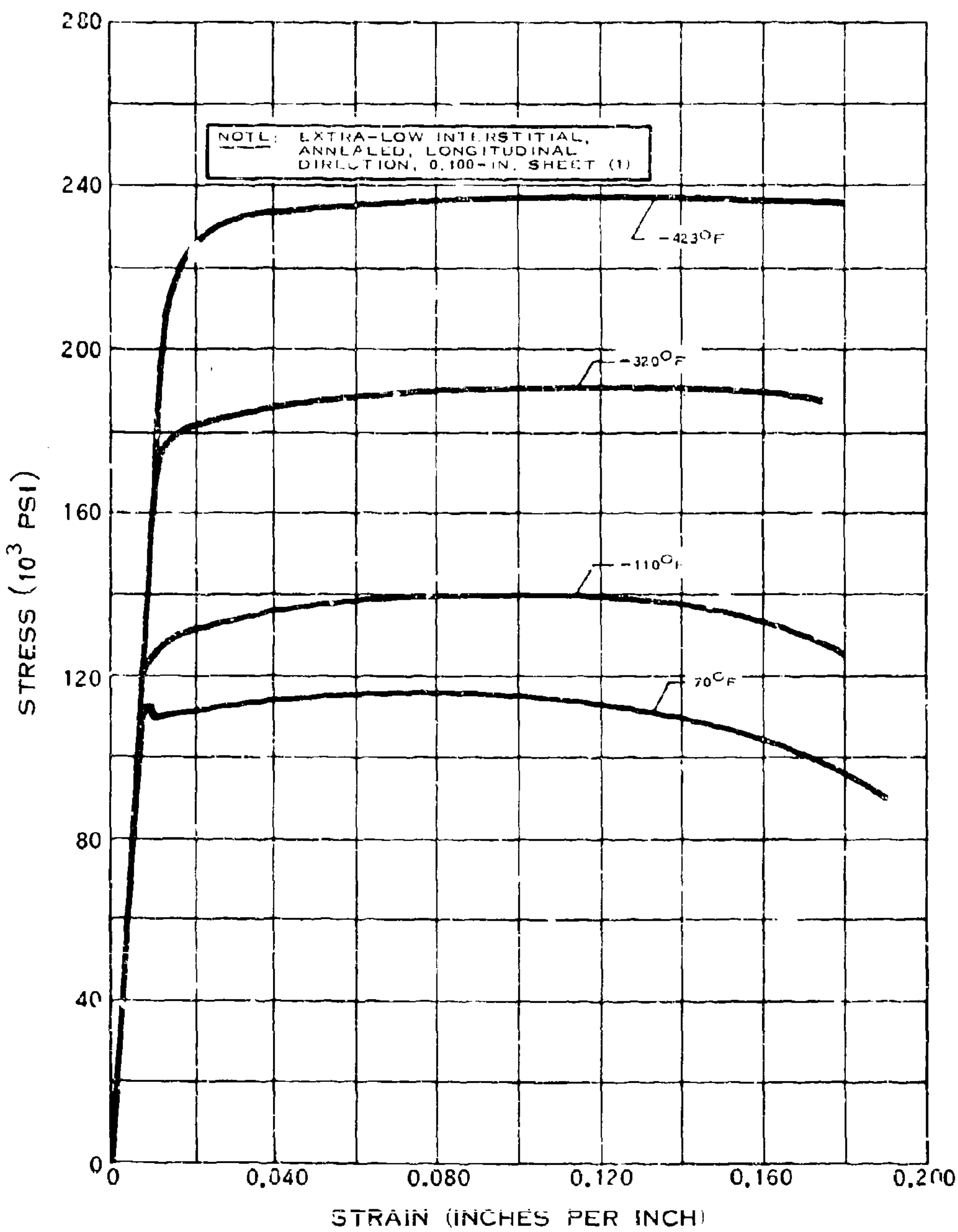
WELD TENSILE STRENGTH OF 5Al-2.5 Sn TITANIUM

C.2.h



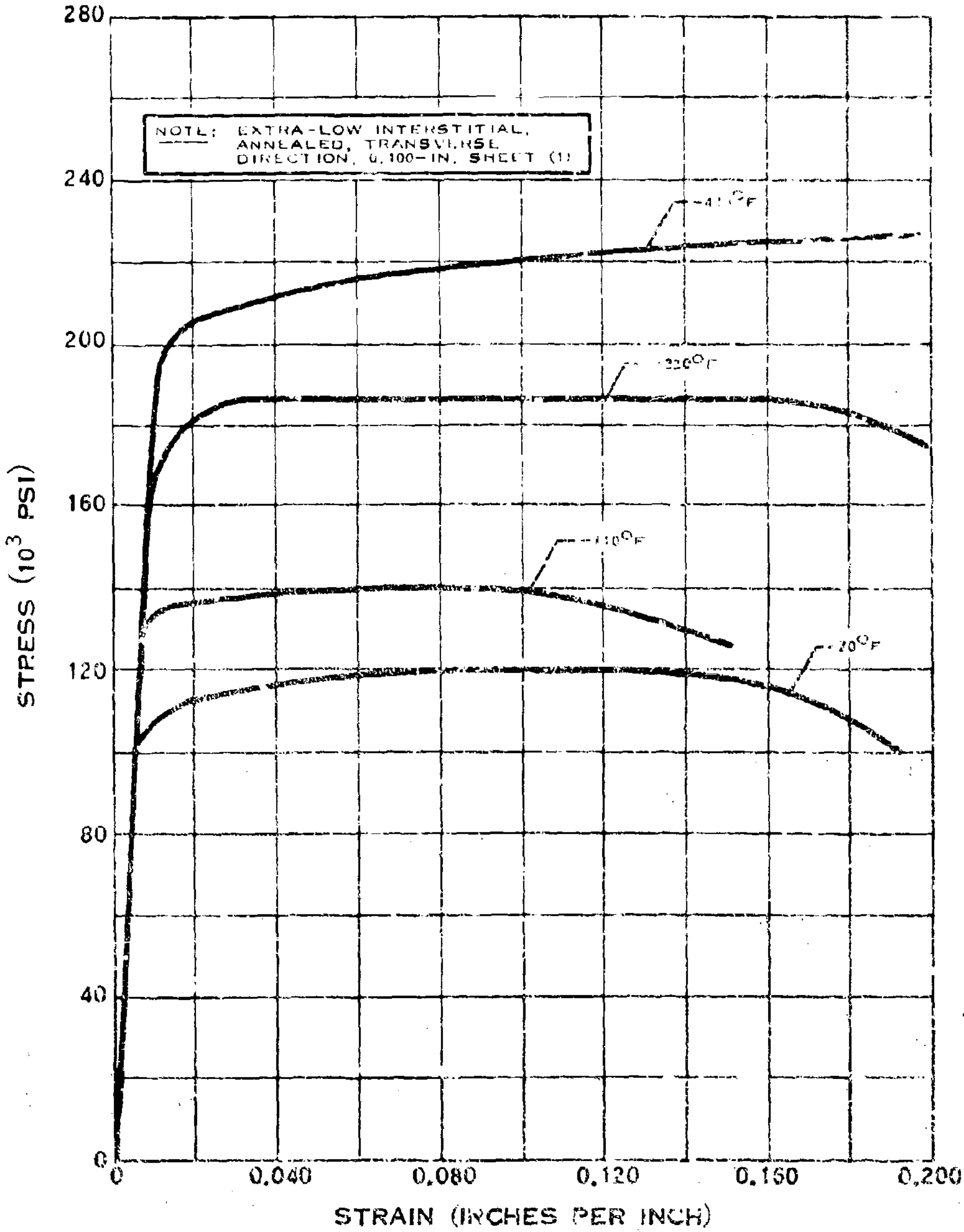
STRESS-STRAIN DIAGRAM FOR 5Al-2.5 Sn TITANIUM

C.2.h-1



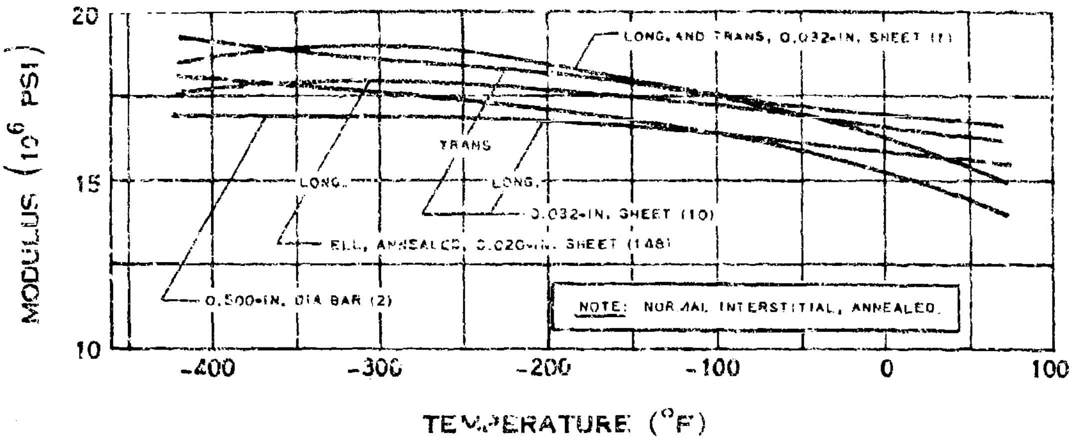
STRESS-STRAIN DIAGRAM FOR 5Al-2.5Sn TITANIUM

C.2.h-2

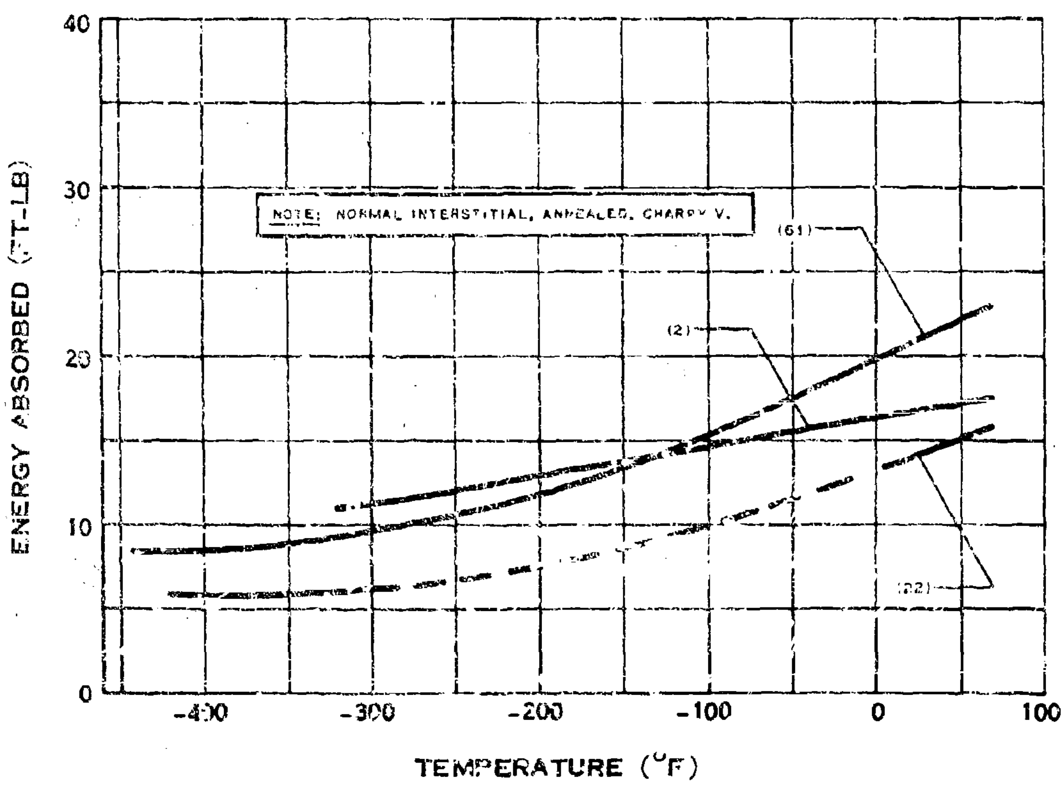


STRESS-STRAIN DIAGRAM FOR 5Al-2.5Sn TITANIUM

C.2.ij



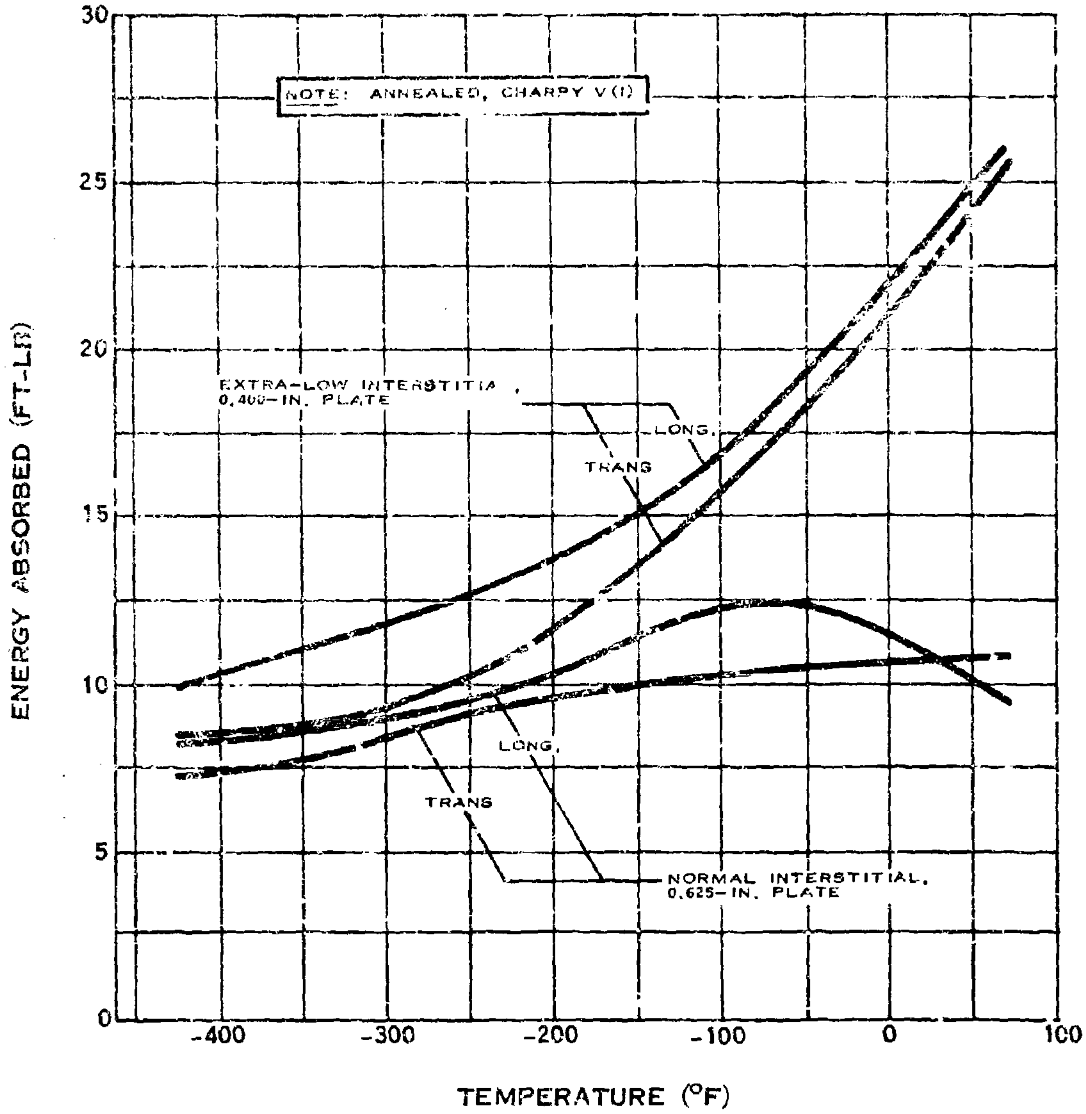
MODULUS OF ELASTICITY OF 5Al-2.5 Sn TITANIUM



IMPACT STRENGTH OF 5Al-2.5 Sn TITANIUM

(6-68)

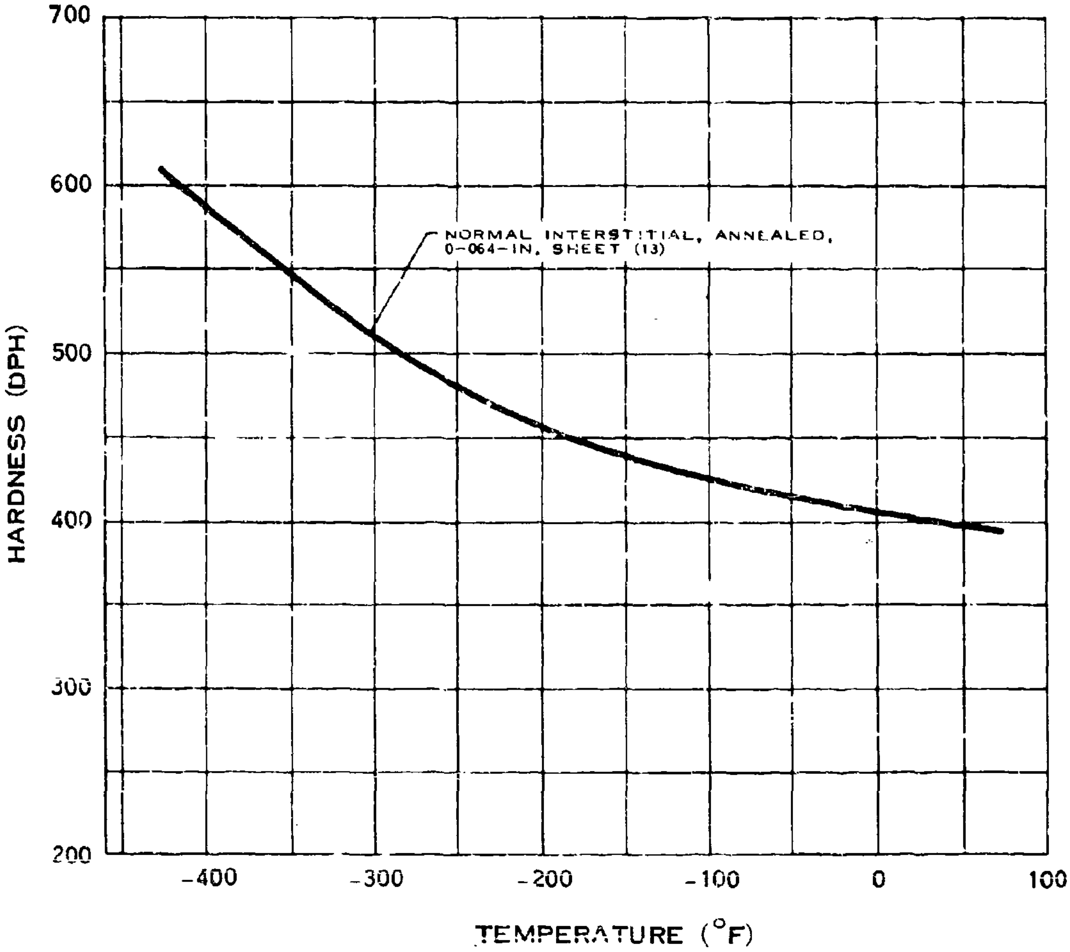
C.2.j-1



IMPACT STRENGTH OF 5Al -2.5 Sn TITANIUM

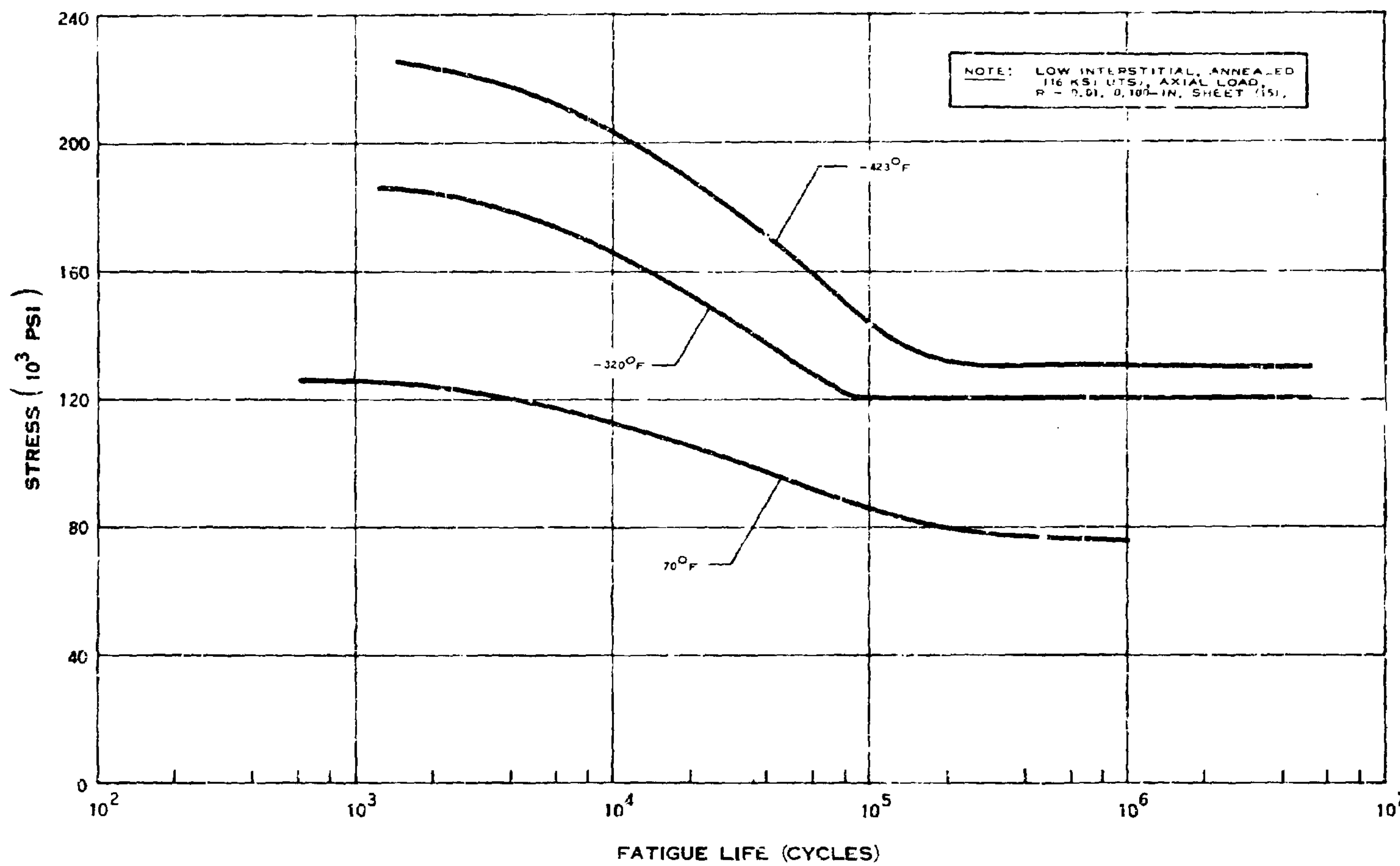
(6-68)

C.2.k

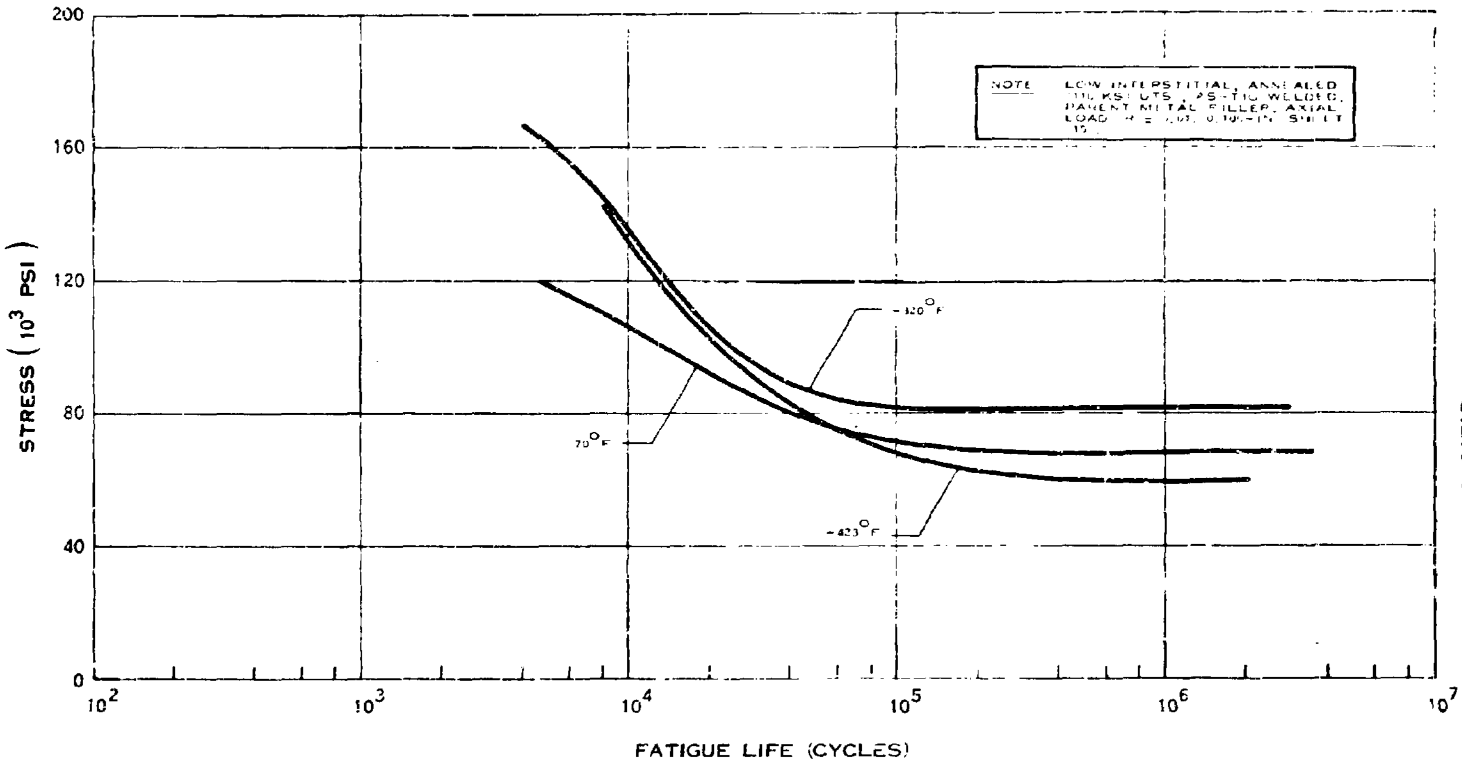


HARDNESS OF 5Al-2.5 Sn TITANIUM

C.2.o

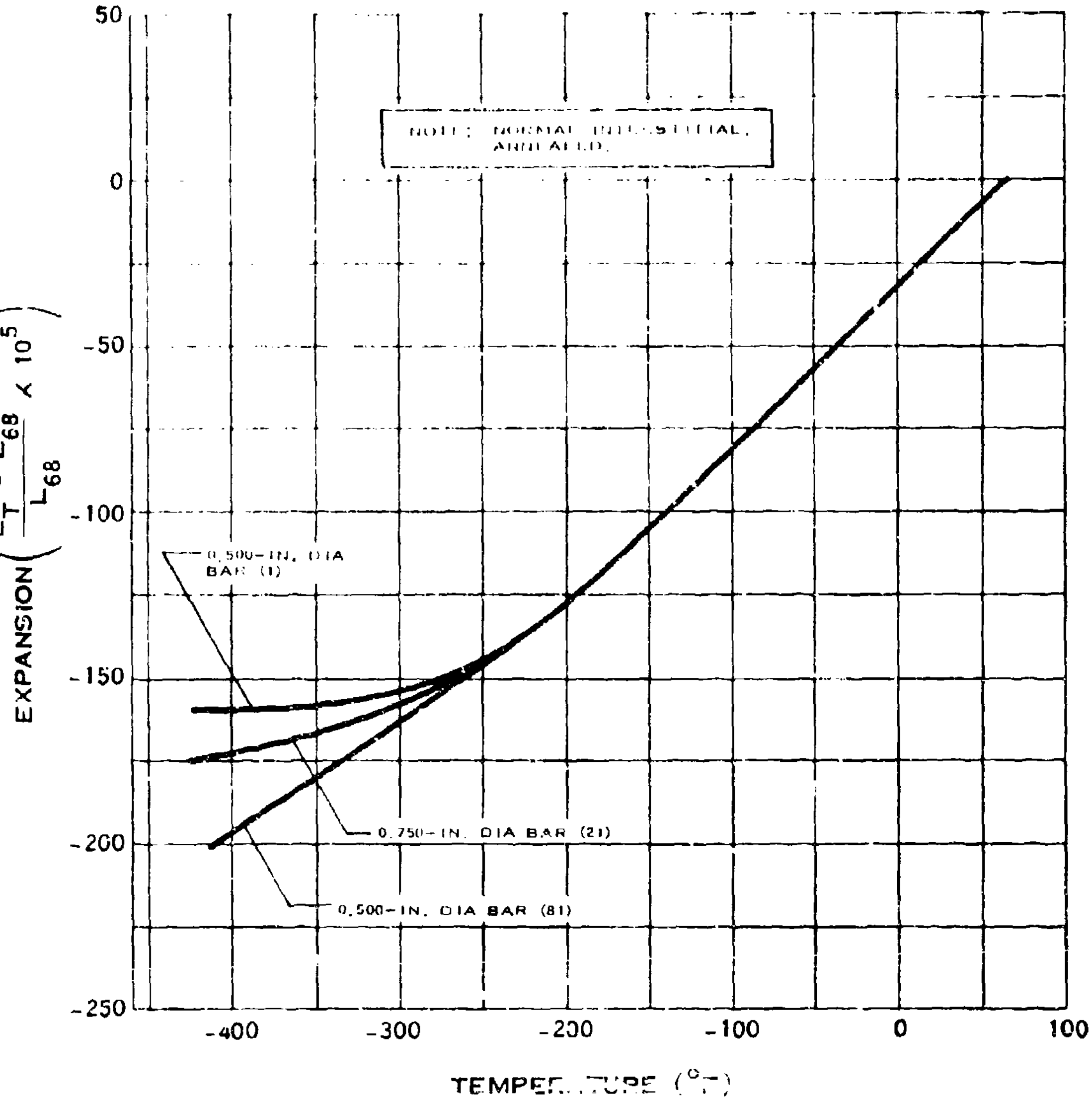


FATIGUE STRENGTH OF 5Al-2.5 Sn TITANIUM



WELD FATIGUE STRENGTH OF 5Al-2.5 Sn TITANIUM

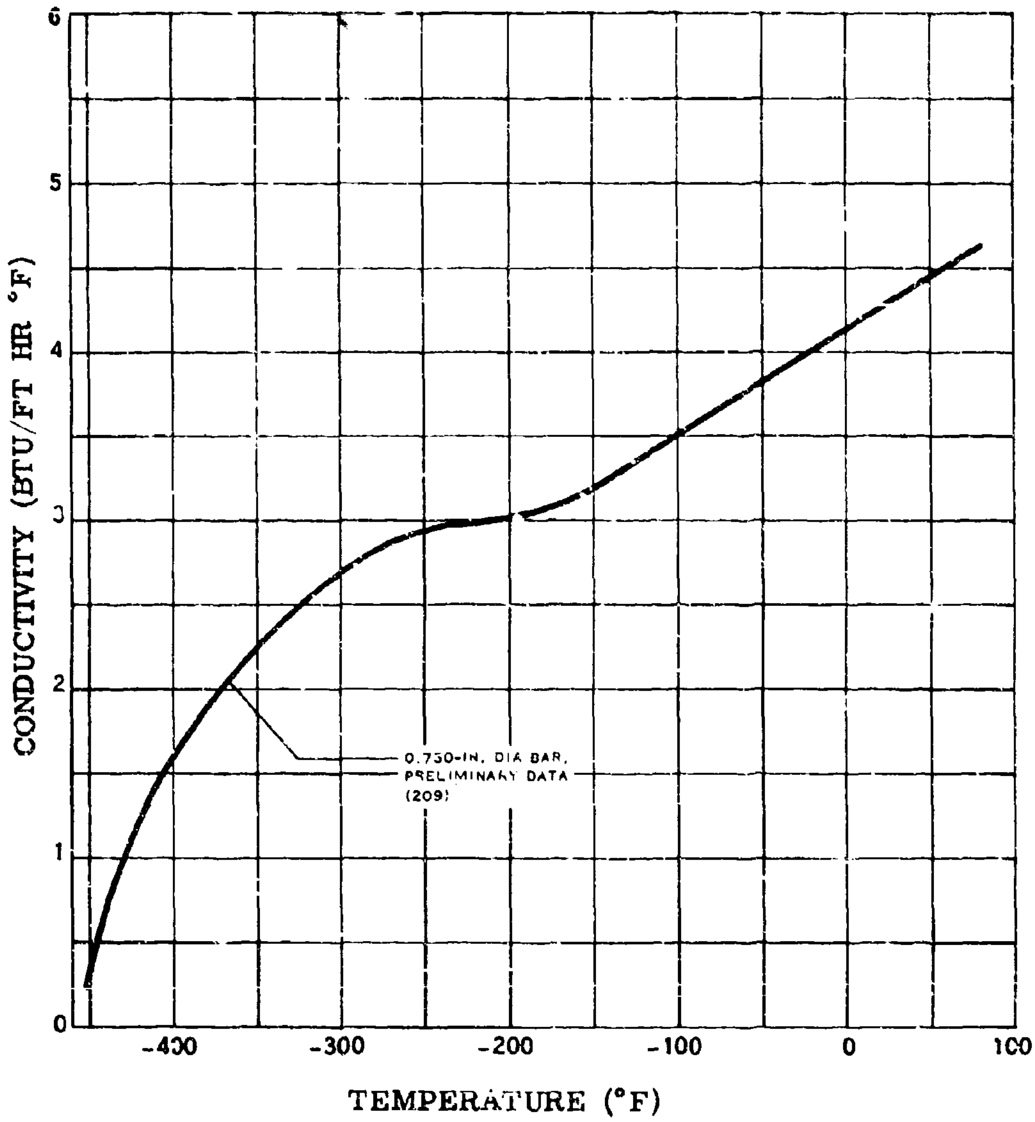
C.2.t



THERMAL EXPANSION OF 5Al-2.5 Sn TITANIUM

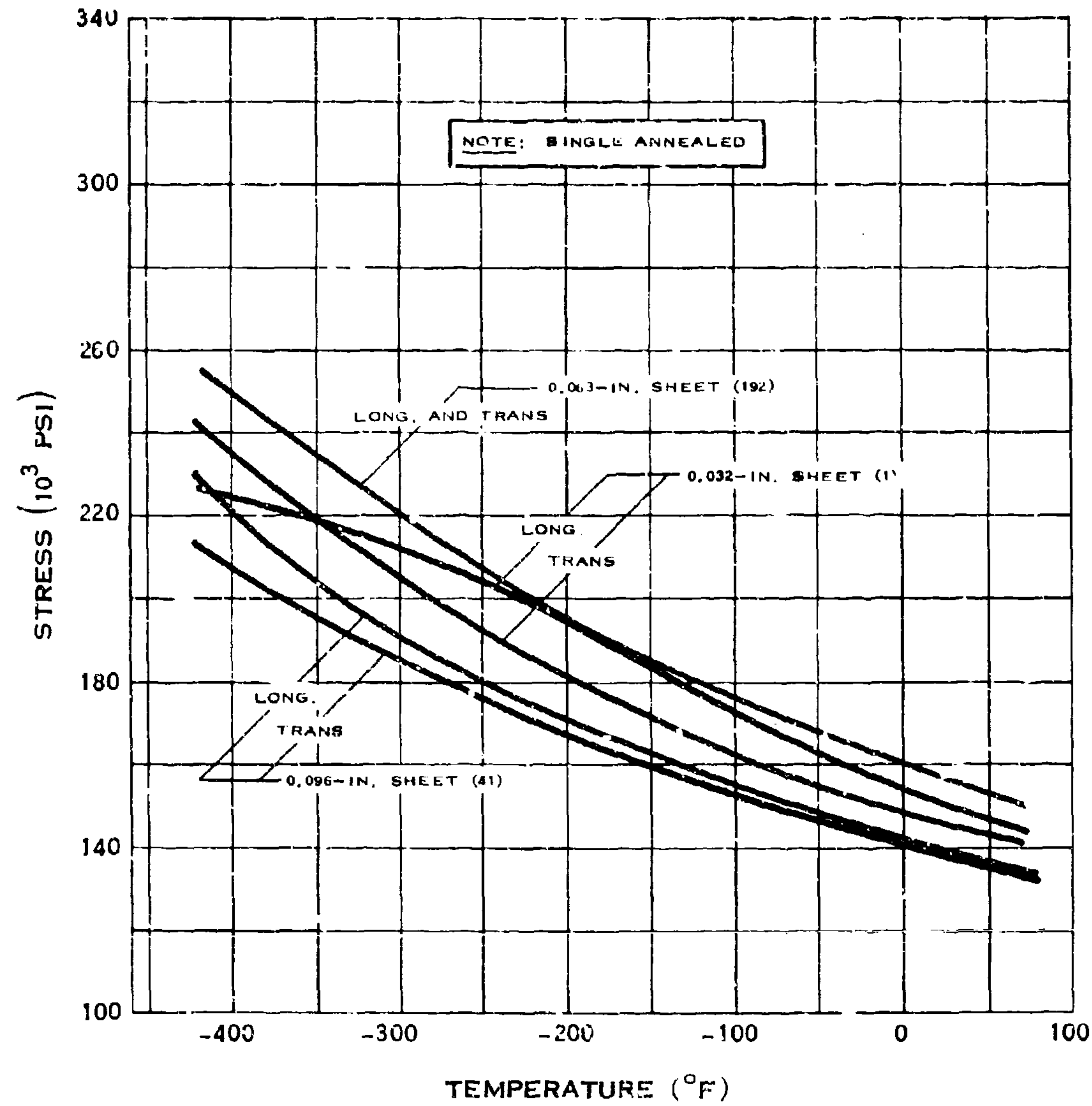
(1-65)

C.2.v



THERMAL CONDUCTIVITY OF 5Al-2.5 Sn TITANIUM

(6-68)



YIELD STRENGTH OF 8Al-1Mo-1V TITANIUM

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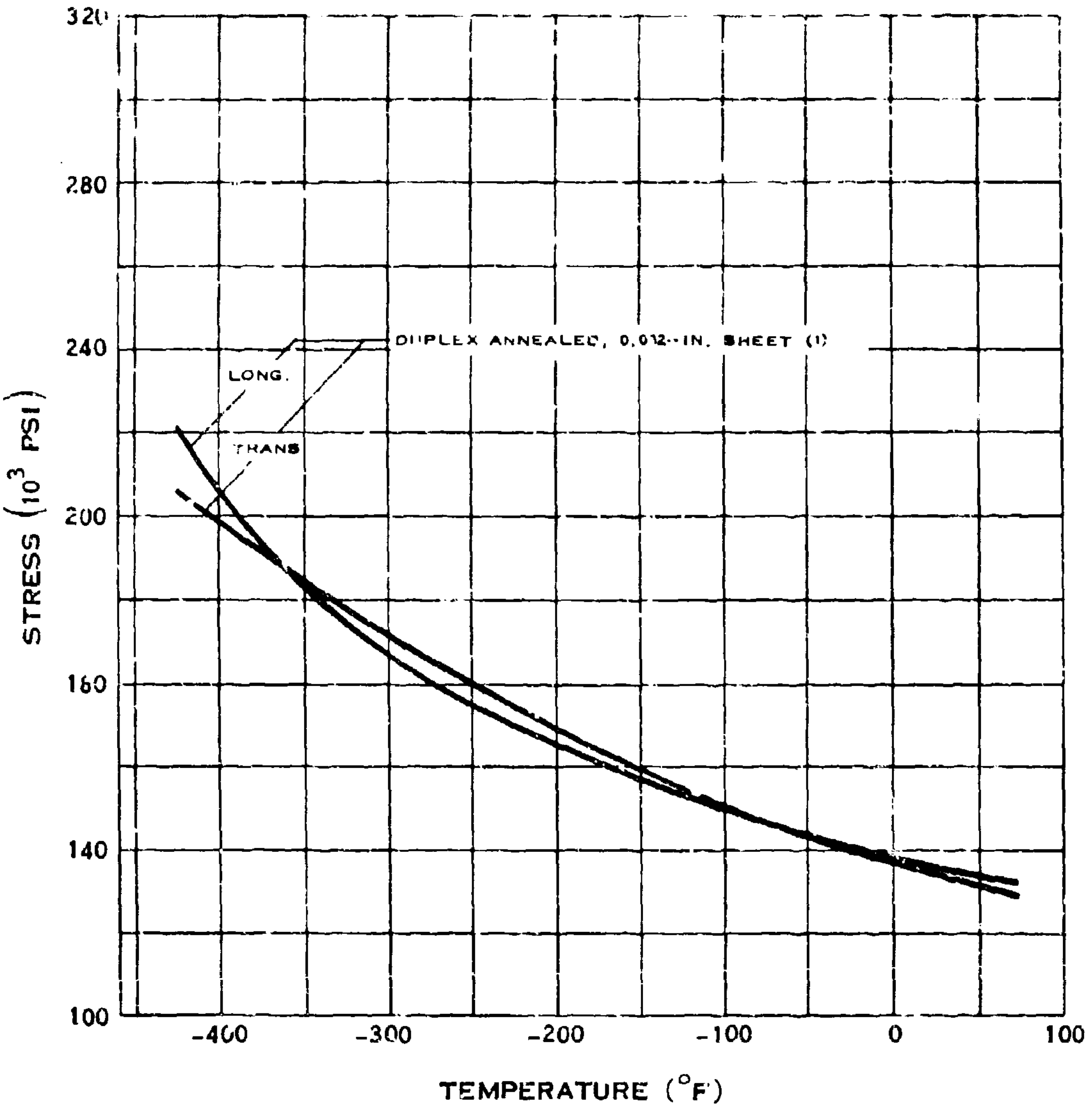
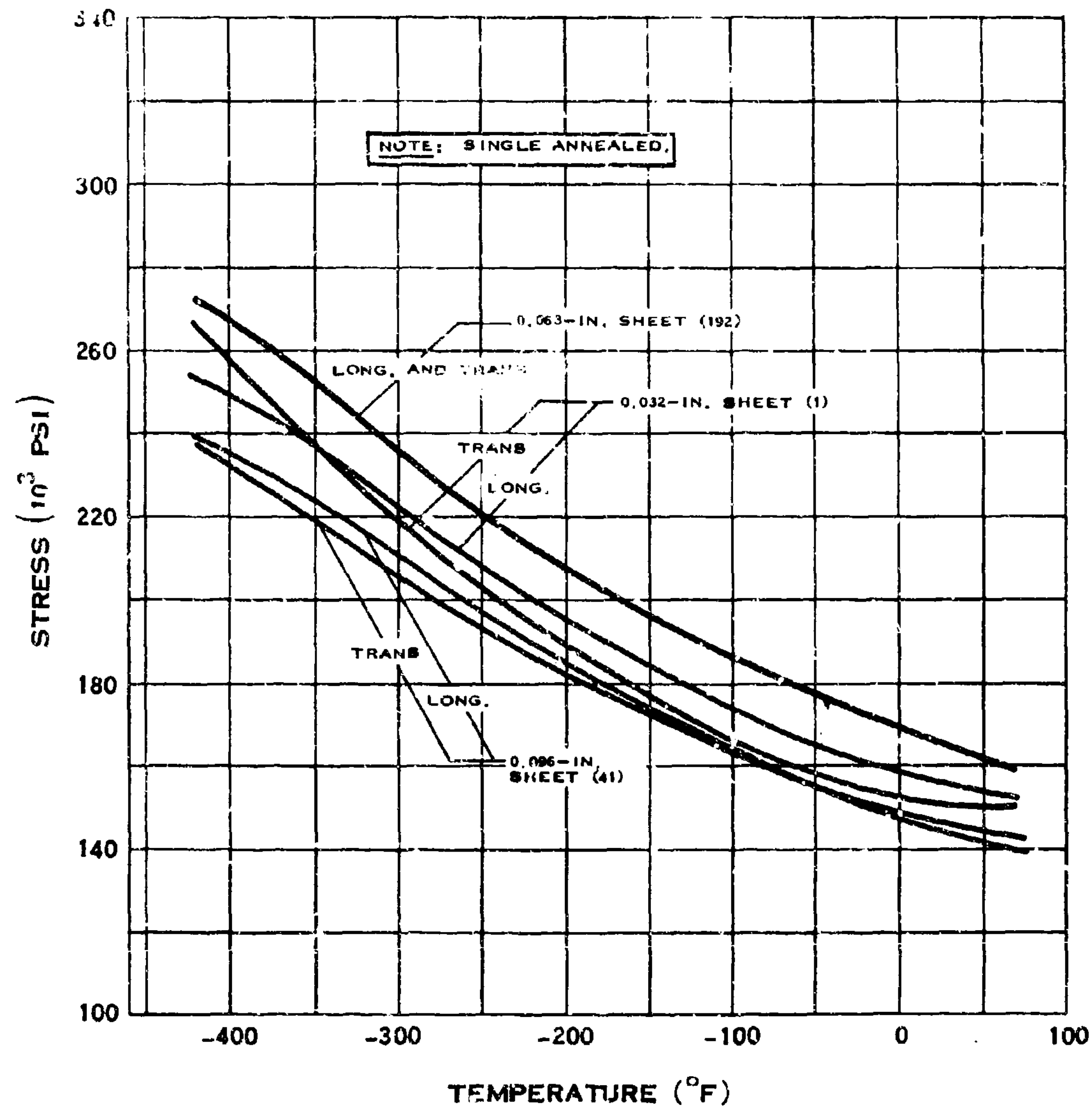
C.3.a-1



YIELD STRENGTH OF 8Al-1Mo-1V TITANIUM

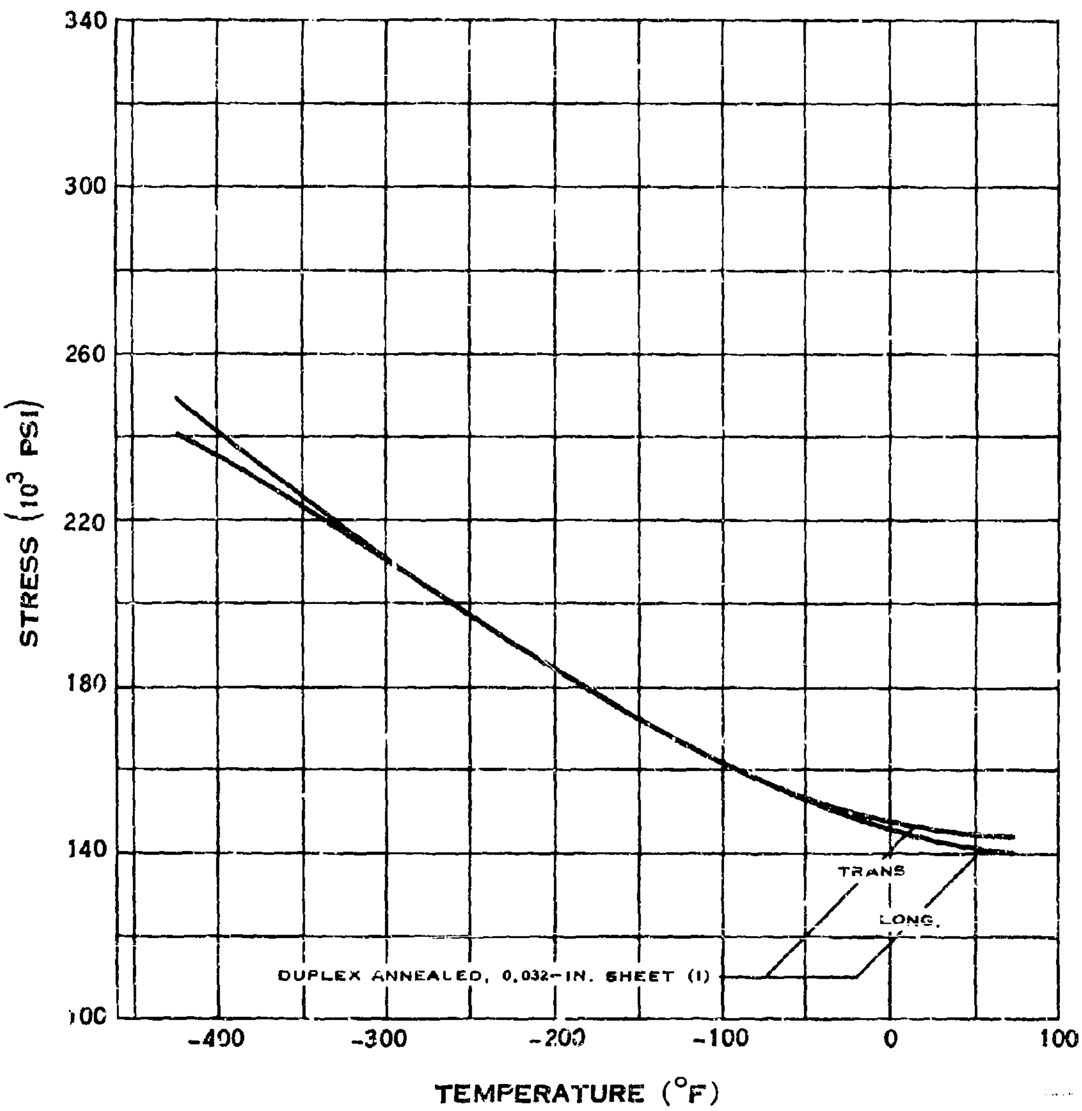
(1-65)

C.3.b

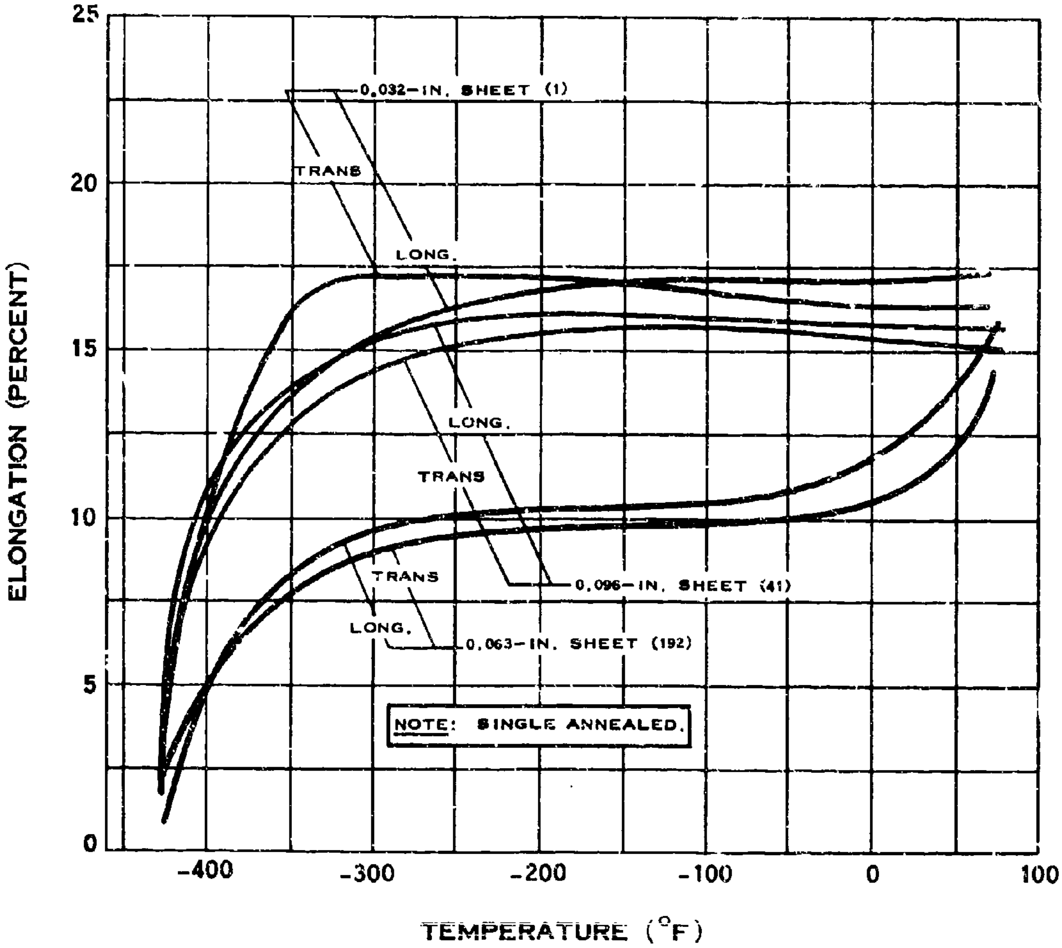


TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM

C.3.b-1

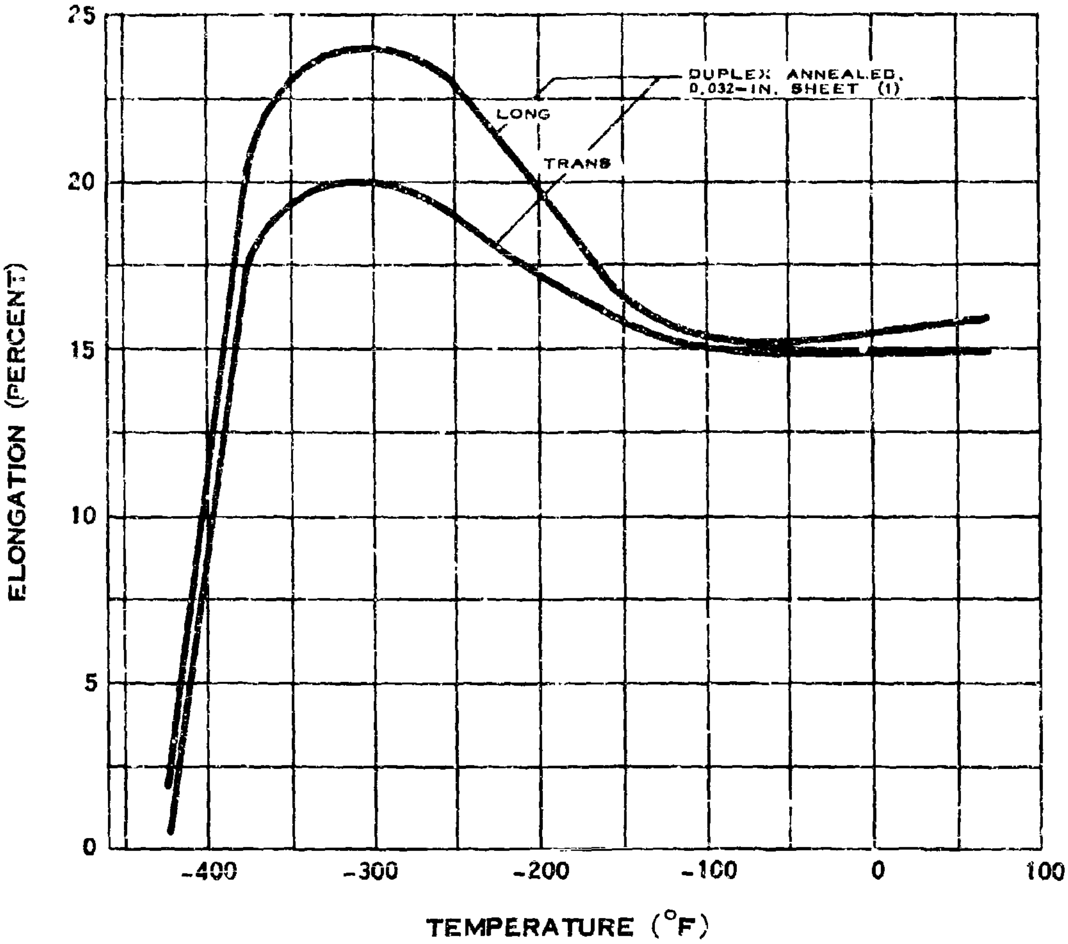


TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM



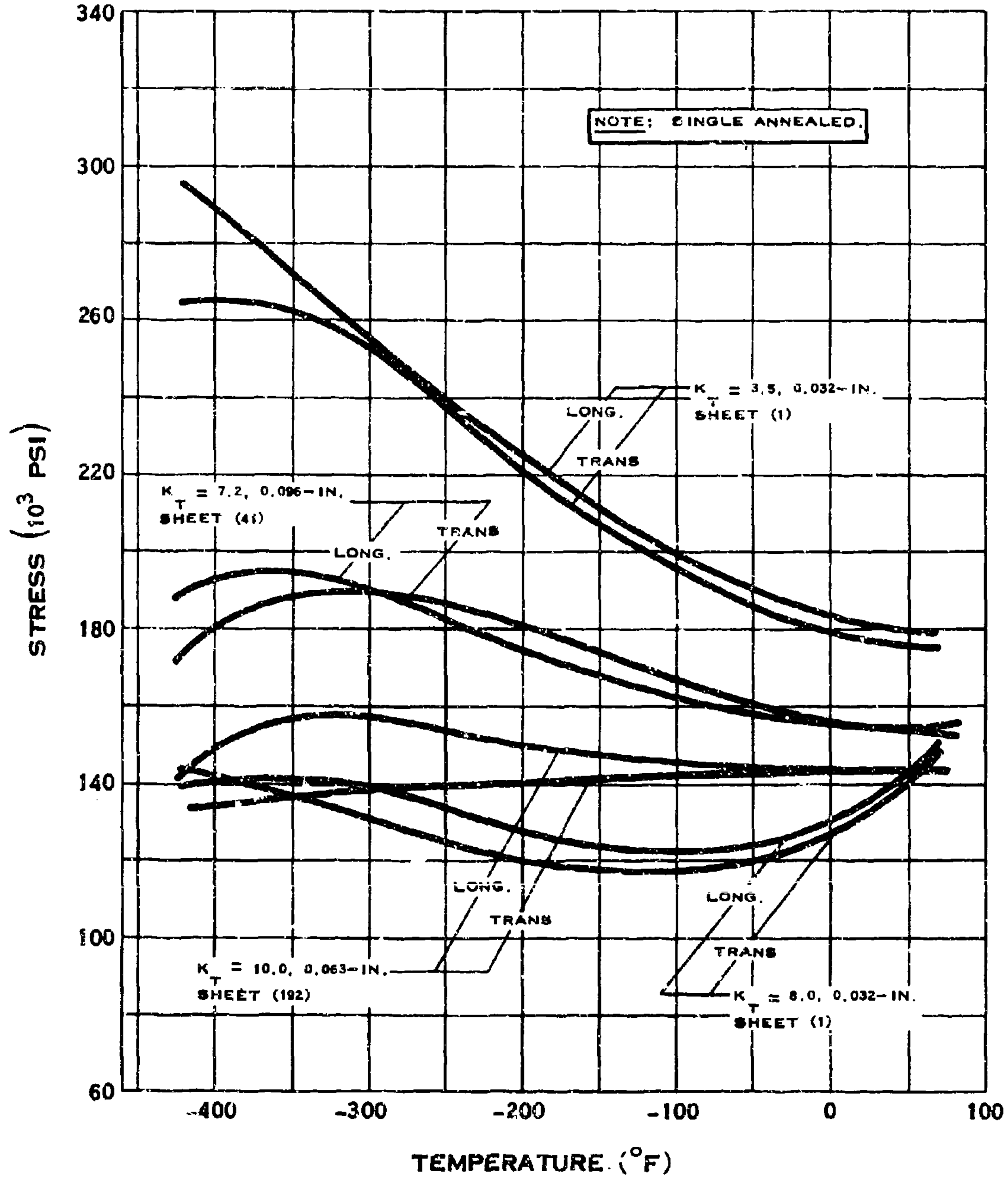
ELONGATION OF 8Al-1Mo-1V TITANIUM

C.3.c-1



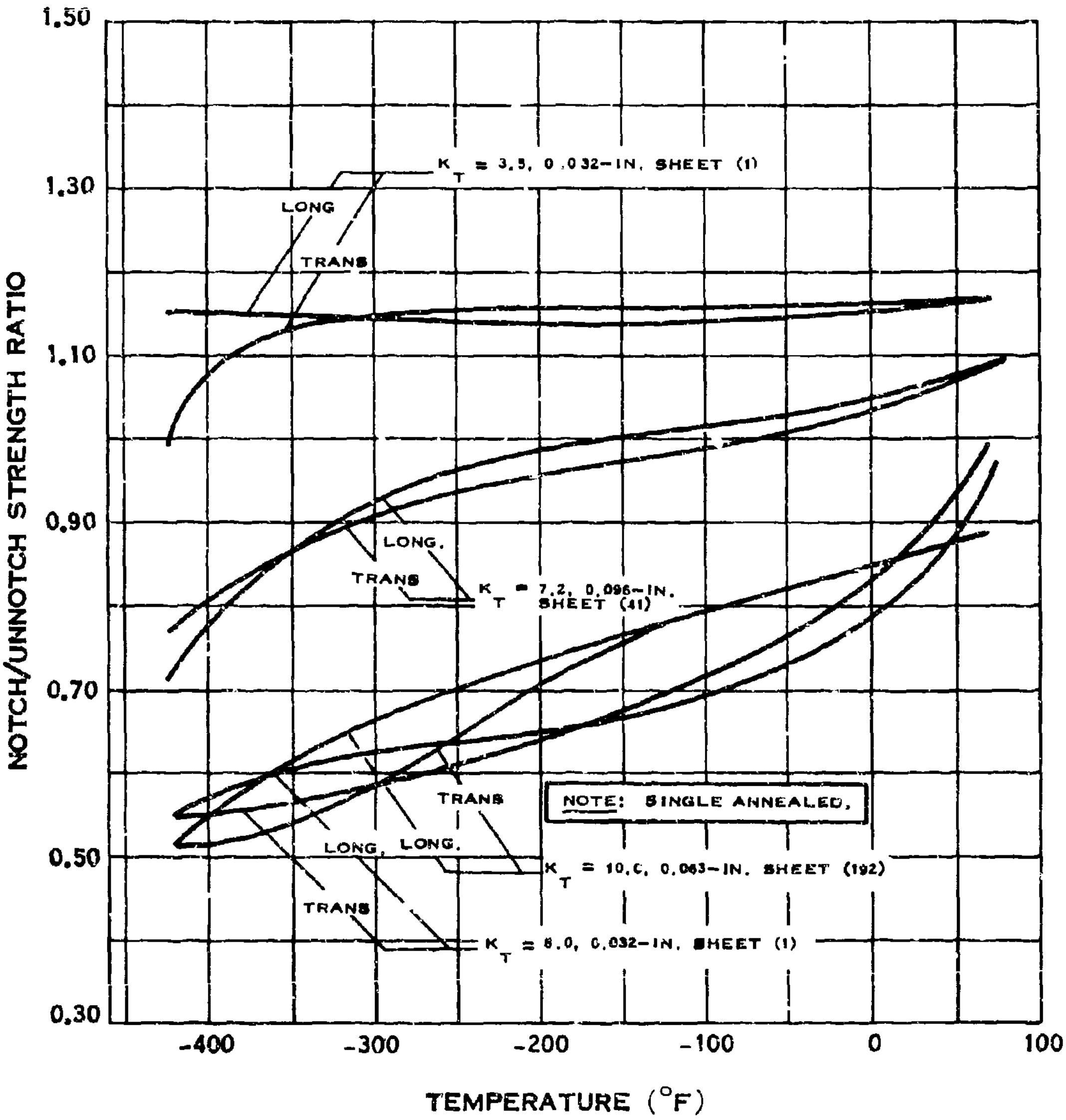
ELONGATION OF 8Al-1Mo-1V TITANIUM

C.3.e



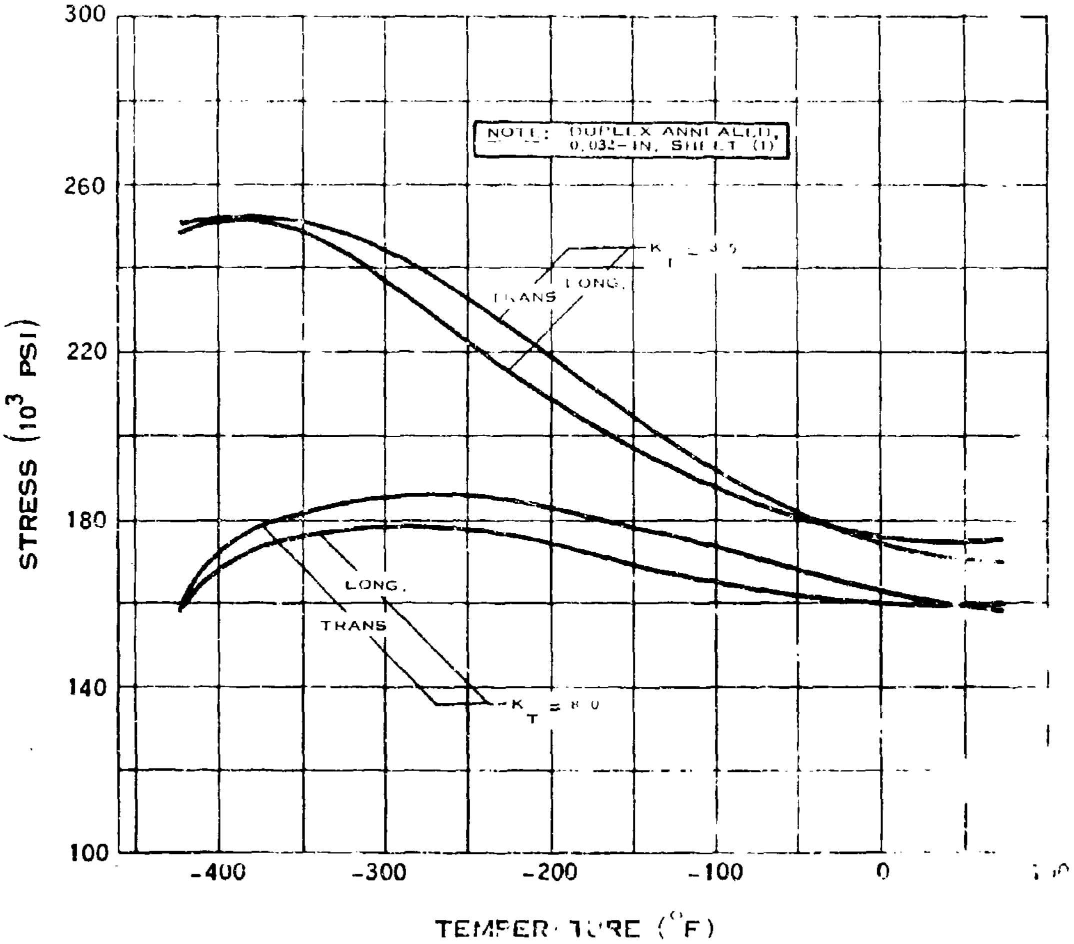
NOTCH TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM

(3-66)



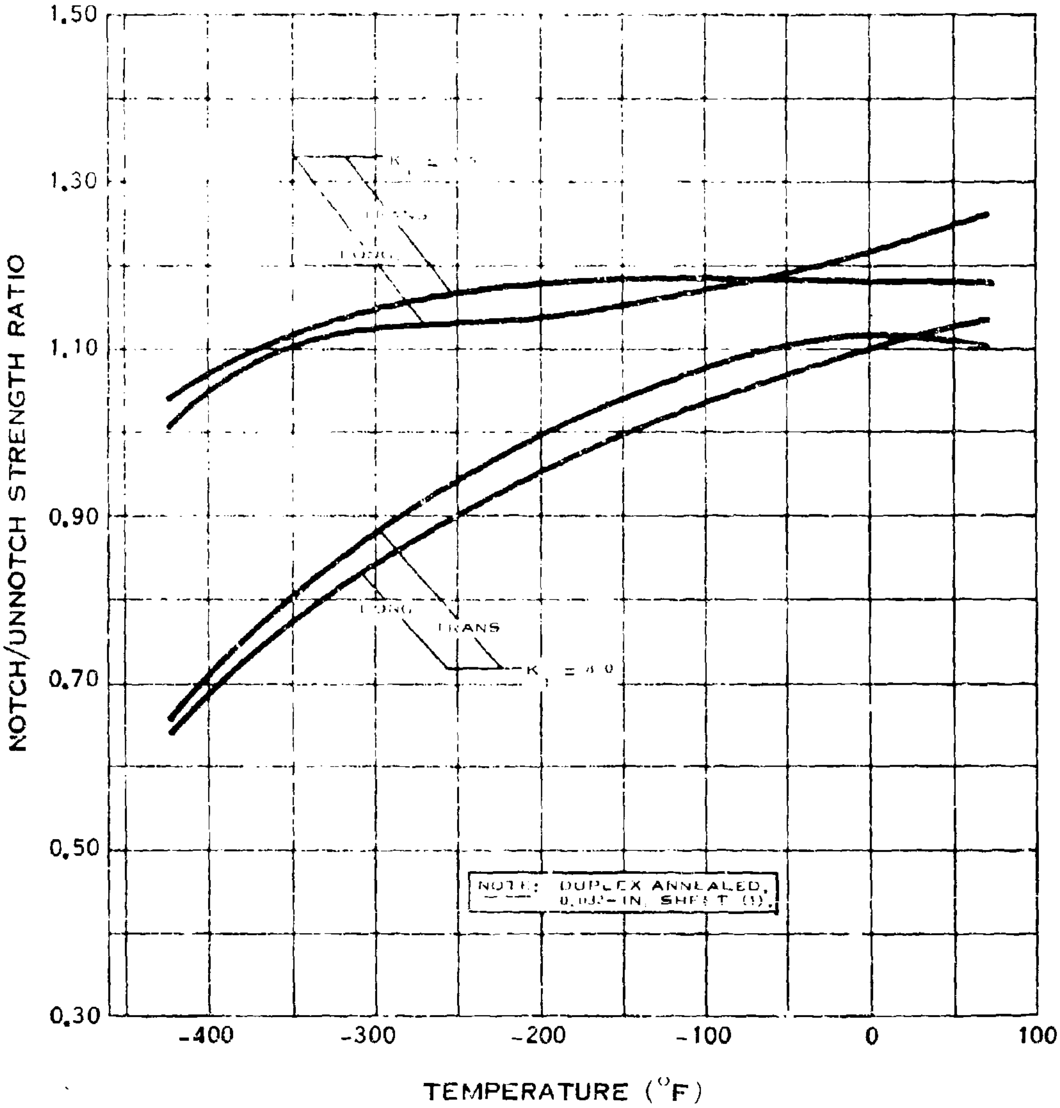
NOTCH STRENGTH RATIO OF 8Al-1Mo-1V TITANIUM

C.3.e-2



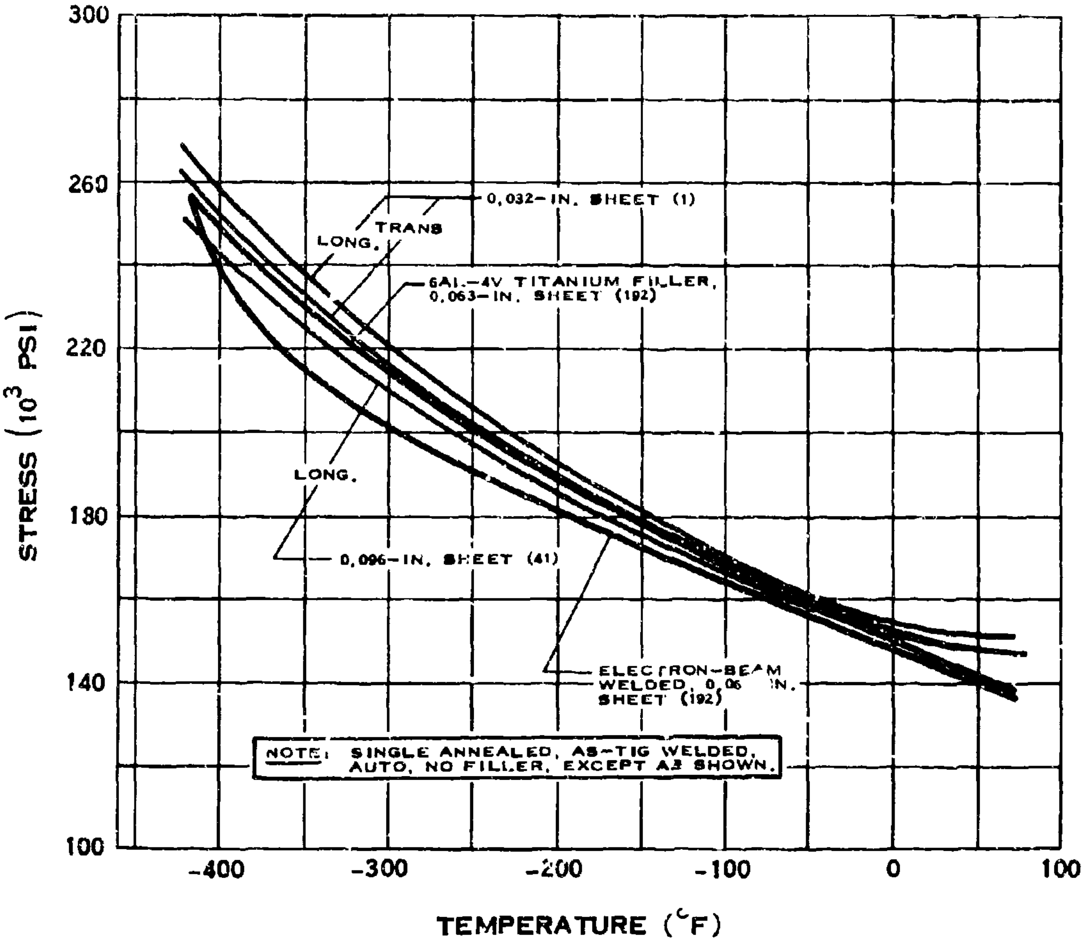
NOTCH TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM

C.3.e-3



NOTCH STRENGTH RATIO OF 8Al-1Mo-1V TITANIUM

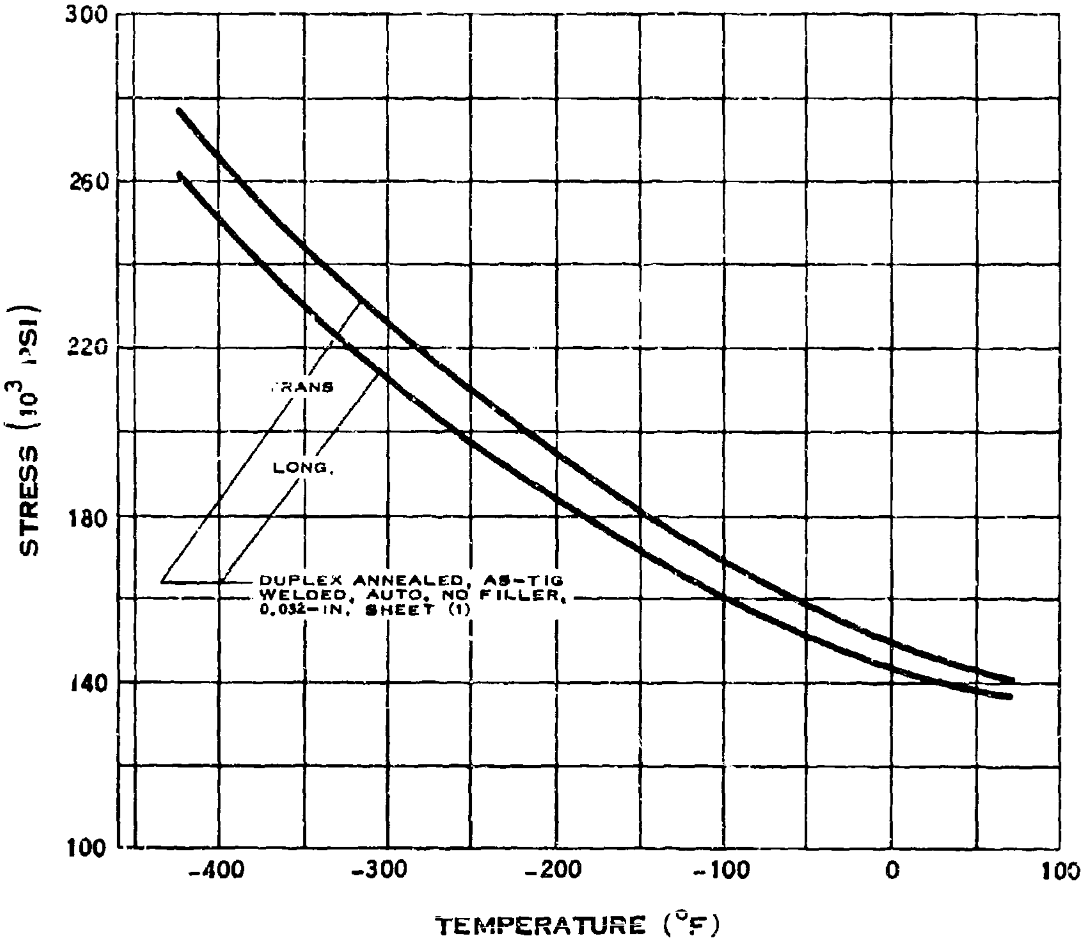
C.3.g



WELD TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM

(3-69)

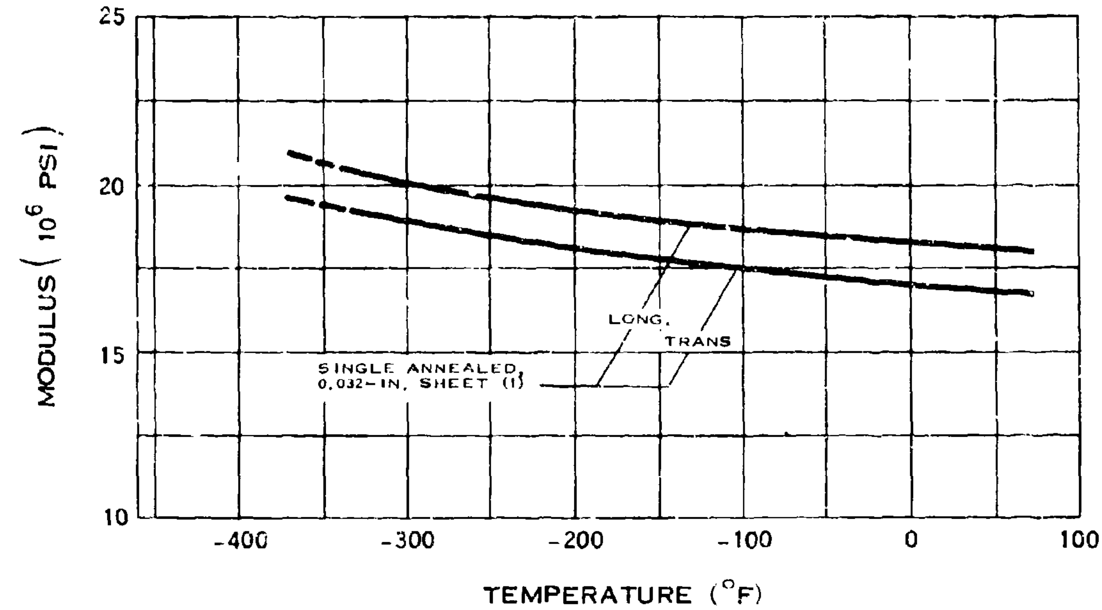
C.3.g-1



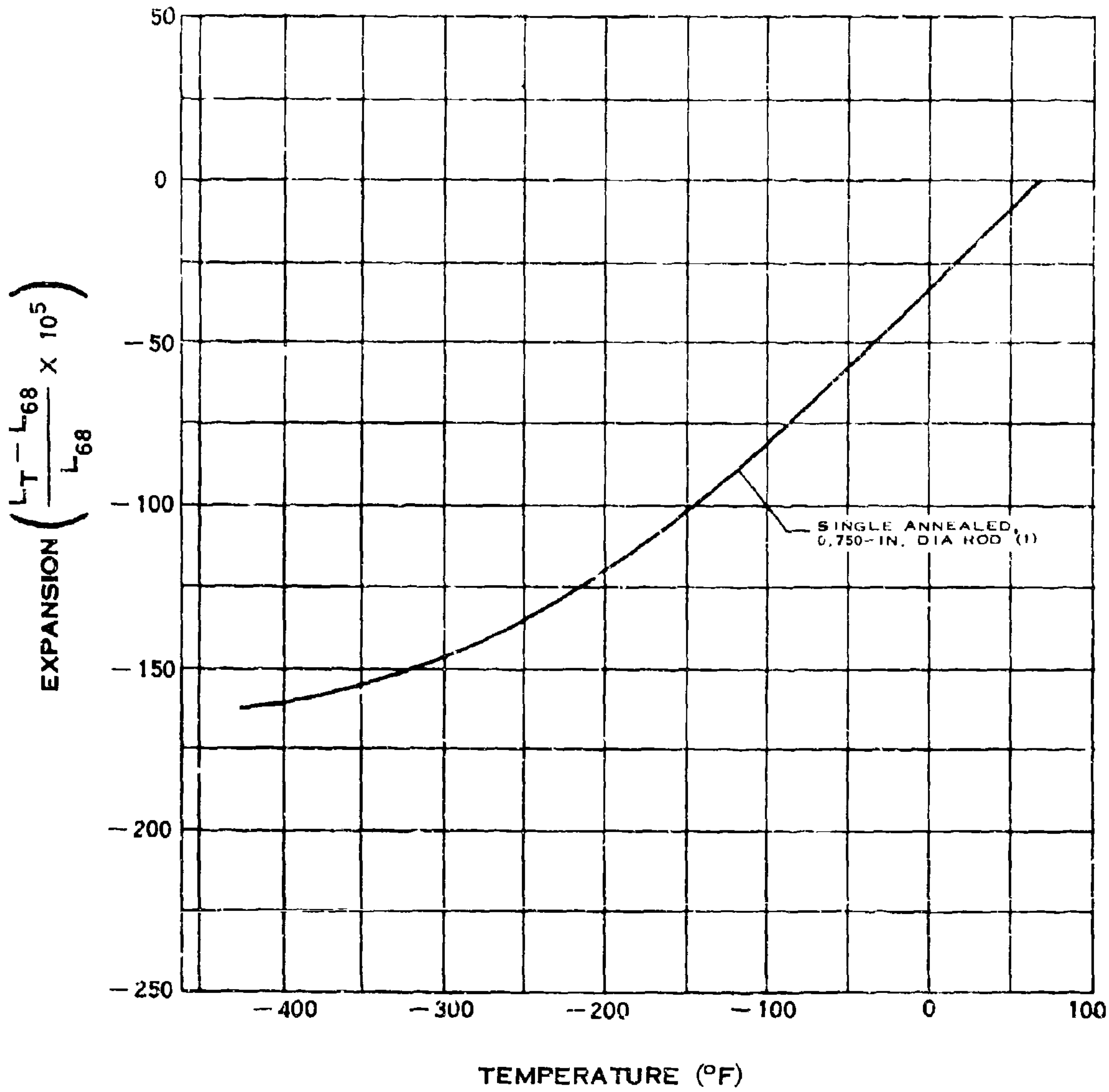
WELD TENSILE STRENGTH OF 8Al-1Mo-1V TITANIUM

(1-67)

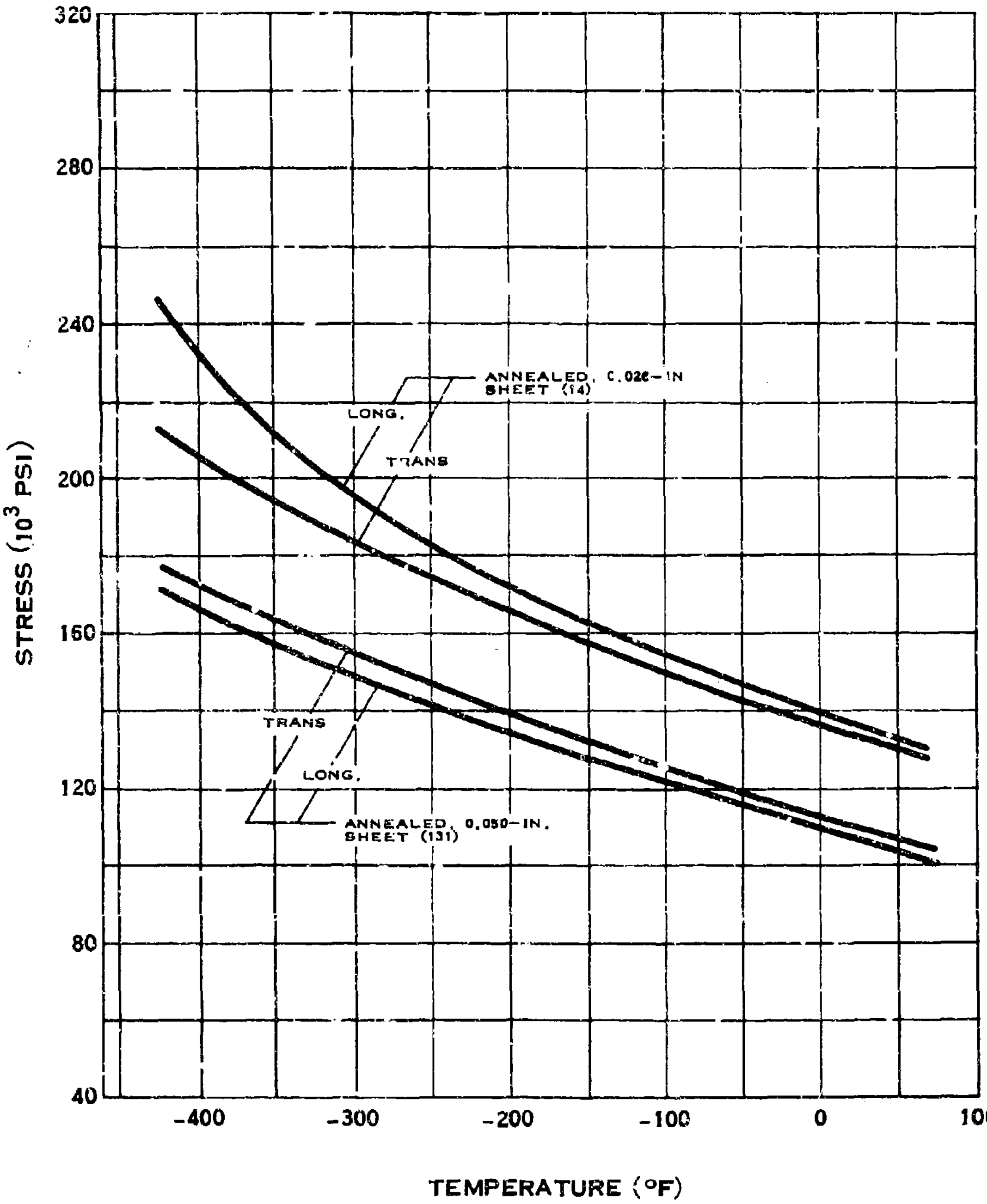
C.3.i



MODULUS OF ELASTICITY OF 8Al-1Mo-1V TITANIUM



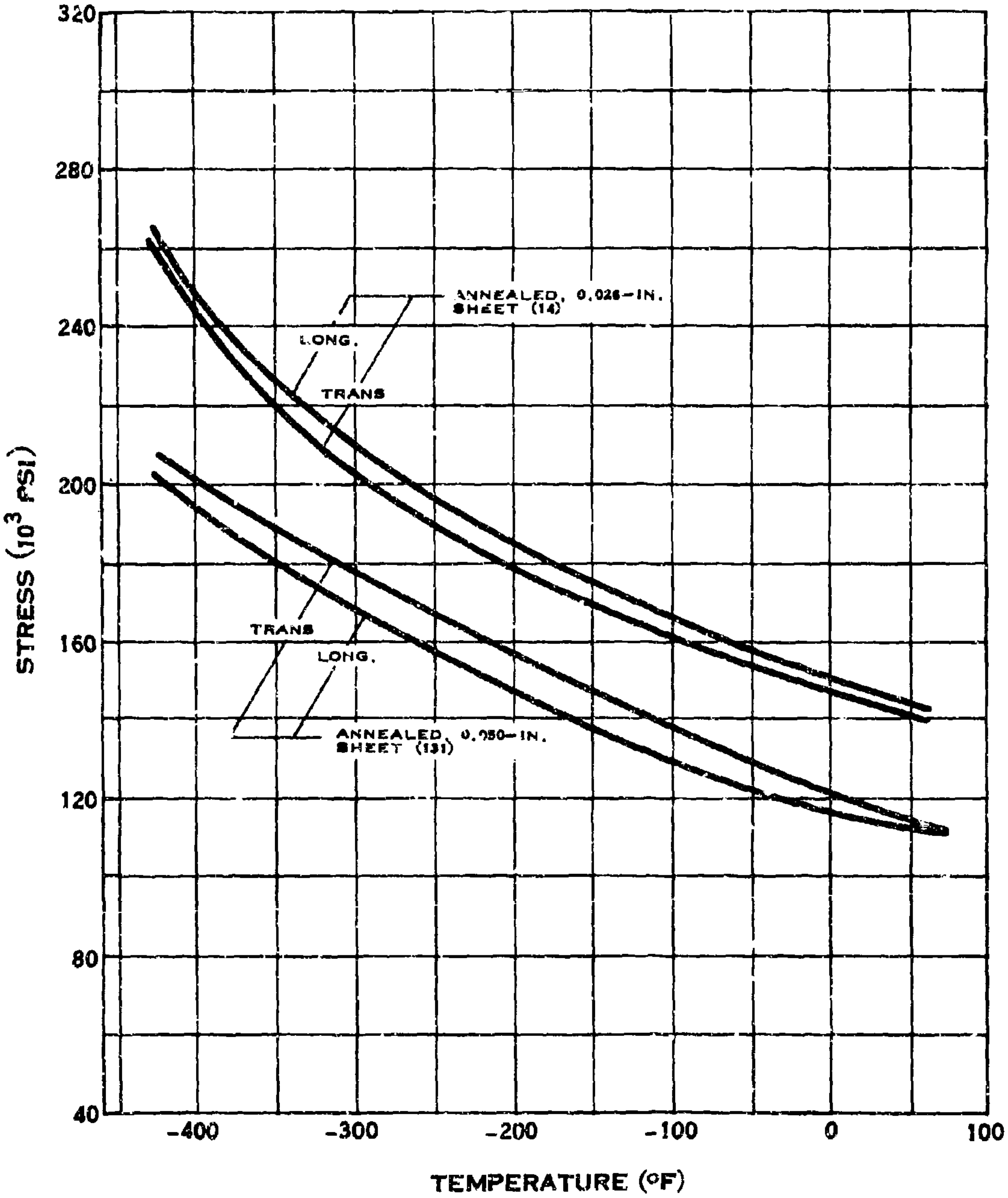
THERMAL EXPANSION OF 8Al-1Mo-1V TITANIUM



YIELD STRENGTH OF 8Al-2Cb-1Ta TITANIUM

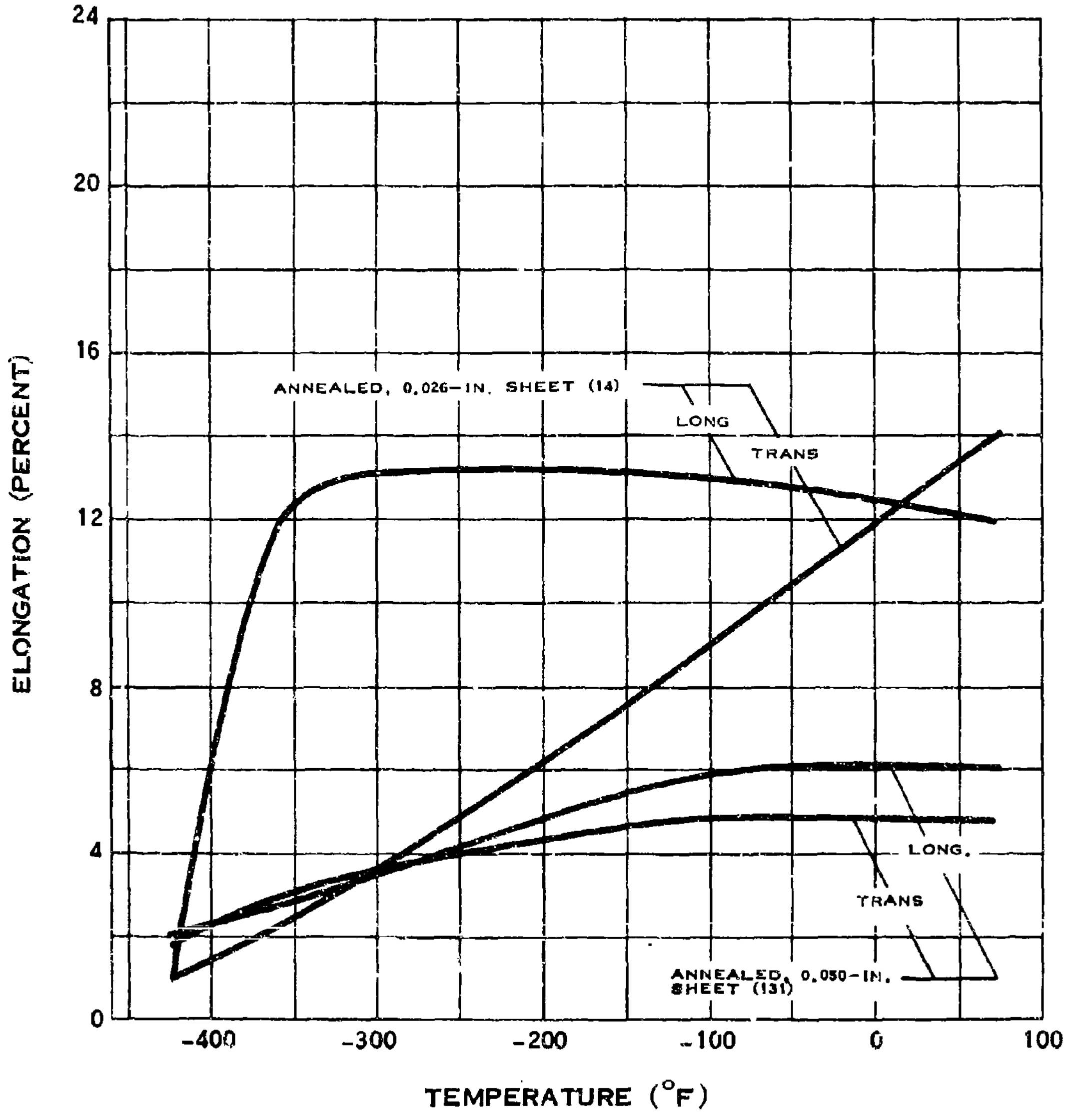
(7-65)

C.4.b

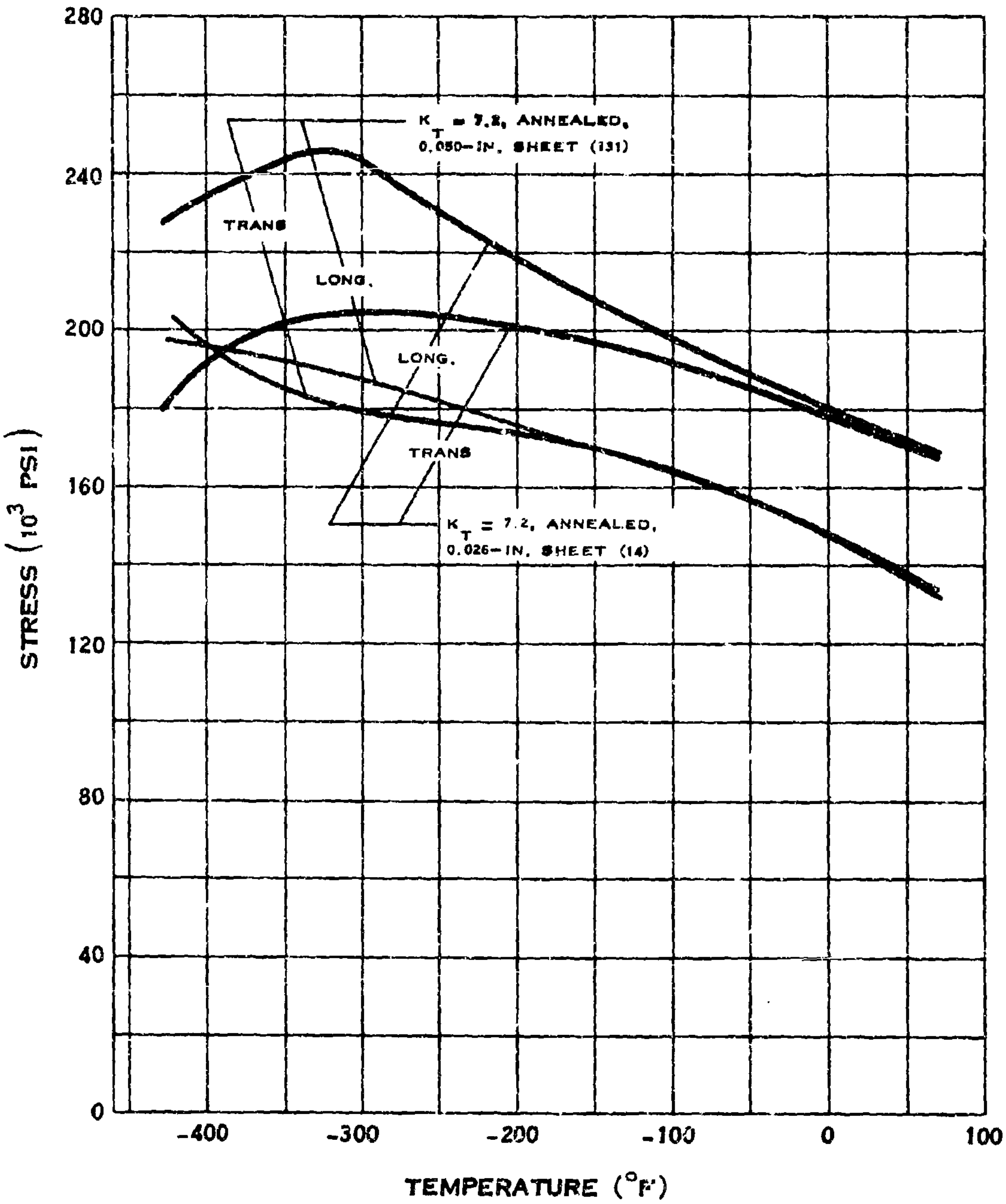


TENSILE STRENGTH OF 8Al-2Cb-1Ta TITANIUM

(7–65)

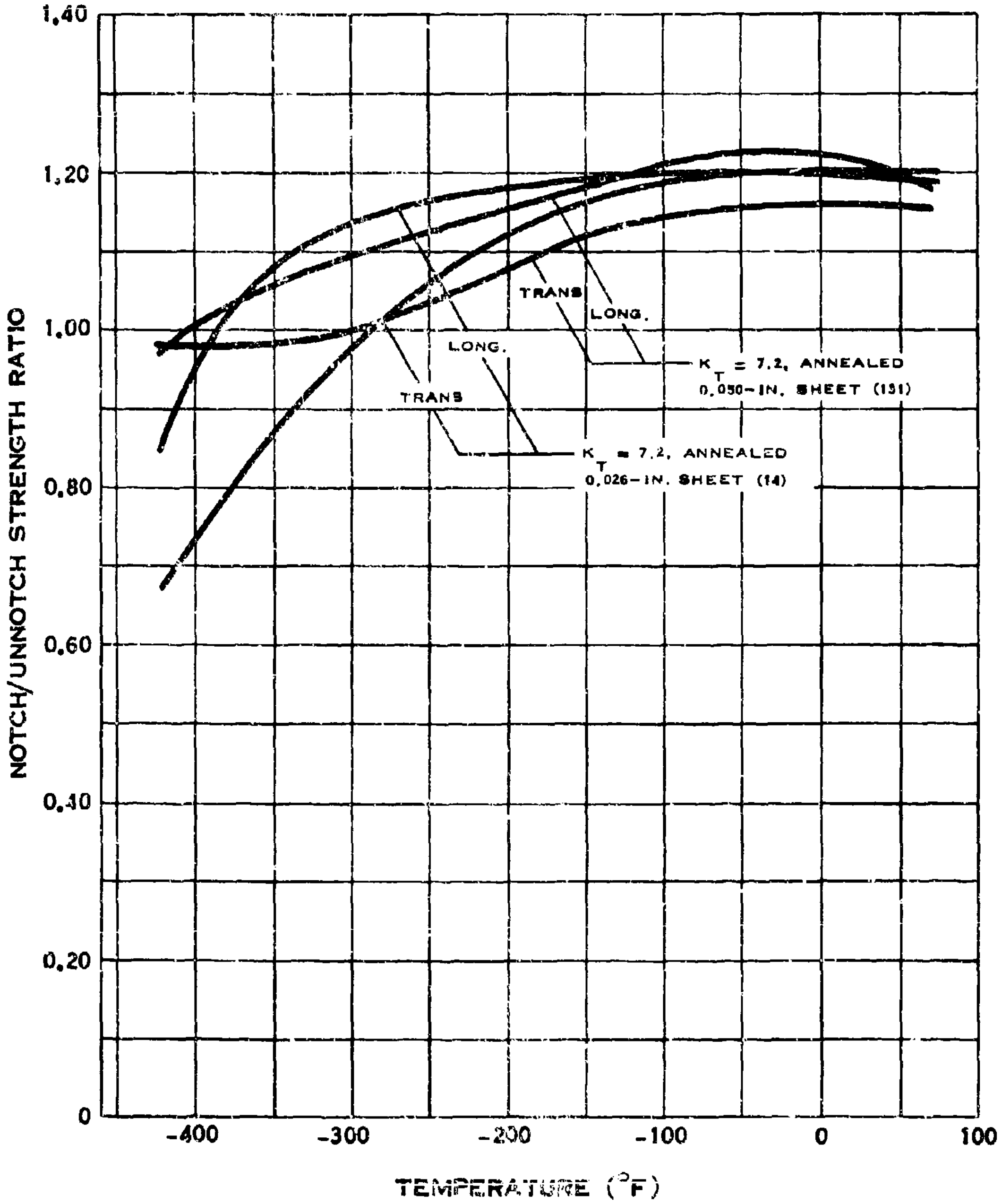


ELONGATION OF 8Al-2Cb-1Ta TITANIUM



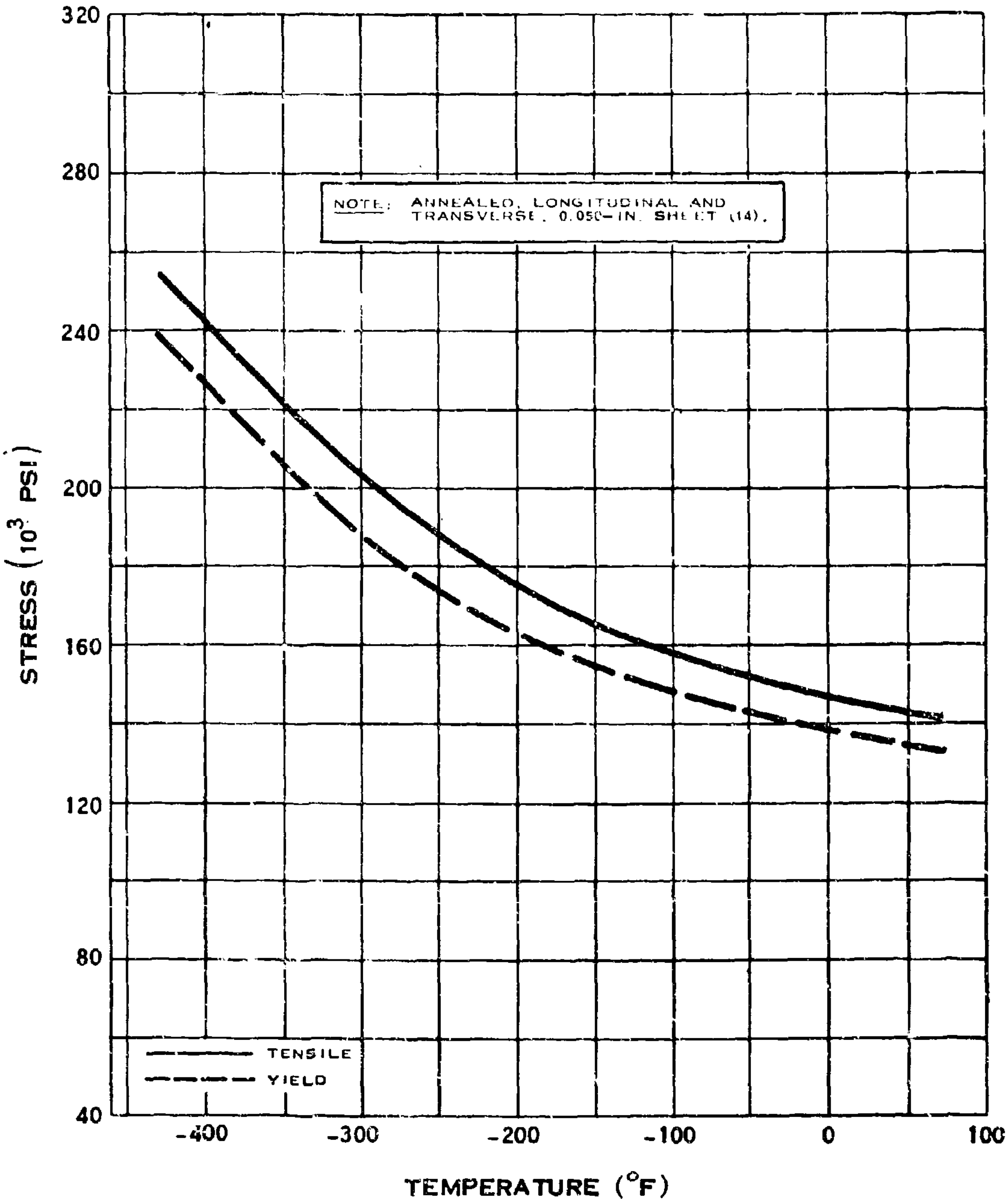
NOTCH TENSILE STRENGTH OF 8Al-2Cb-1Ta TITANIUM

(7-65)



NOTCH STRENGTH RATIO OF 8Al-2Cb-1Ta TITANIUM

C.5.ab



STRENGTH OF 7Al-12Zr TITANIUM

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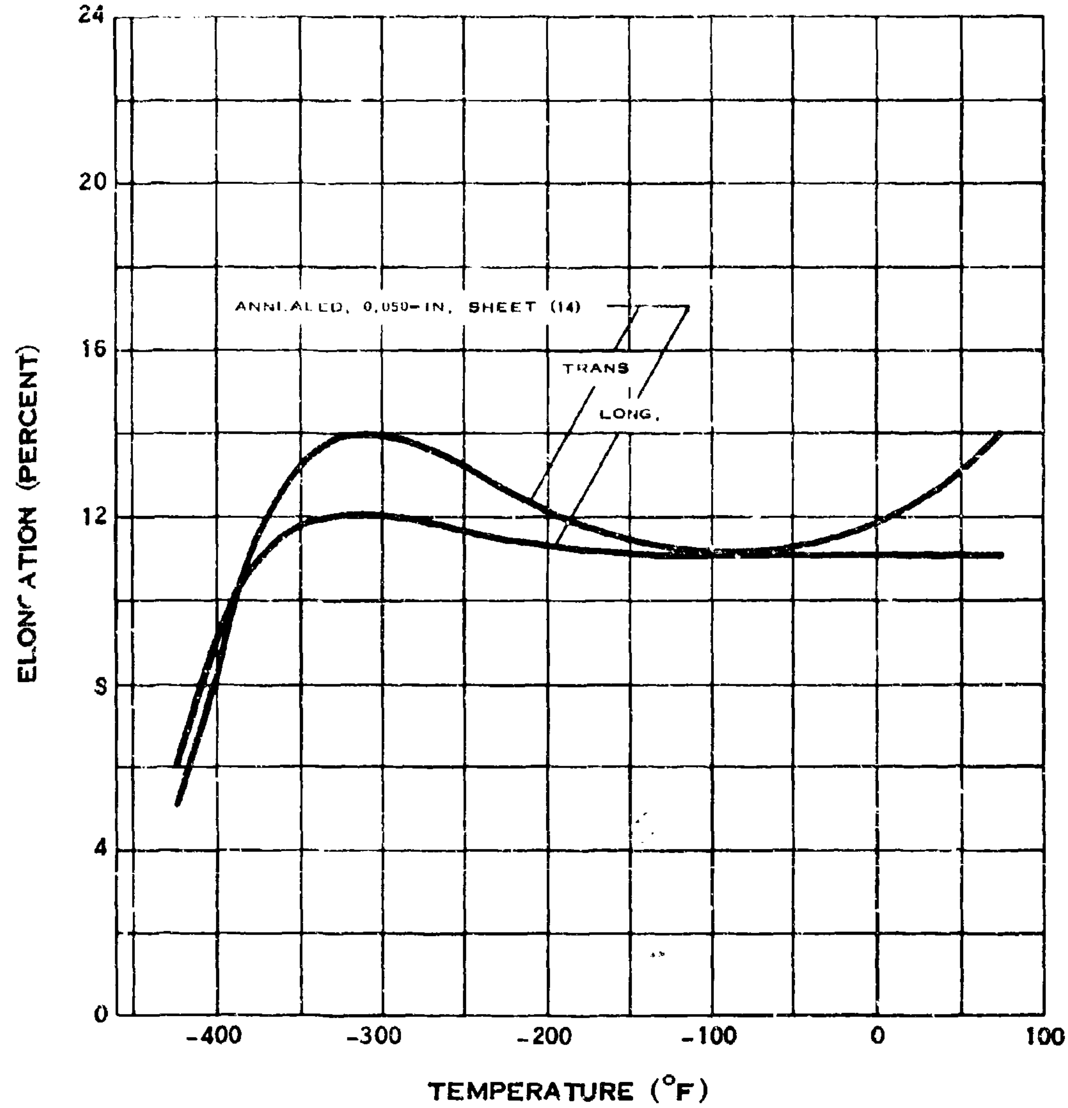
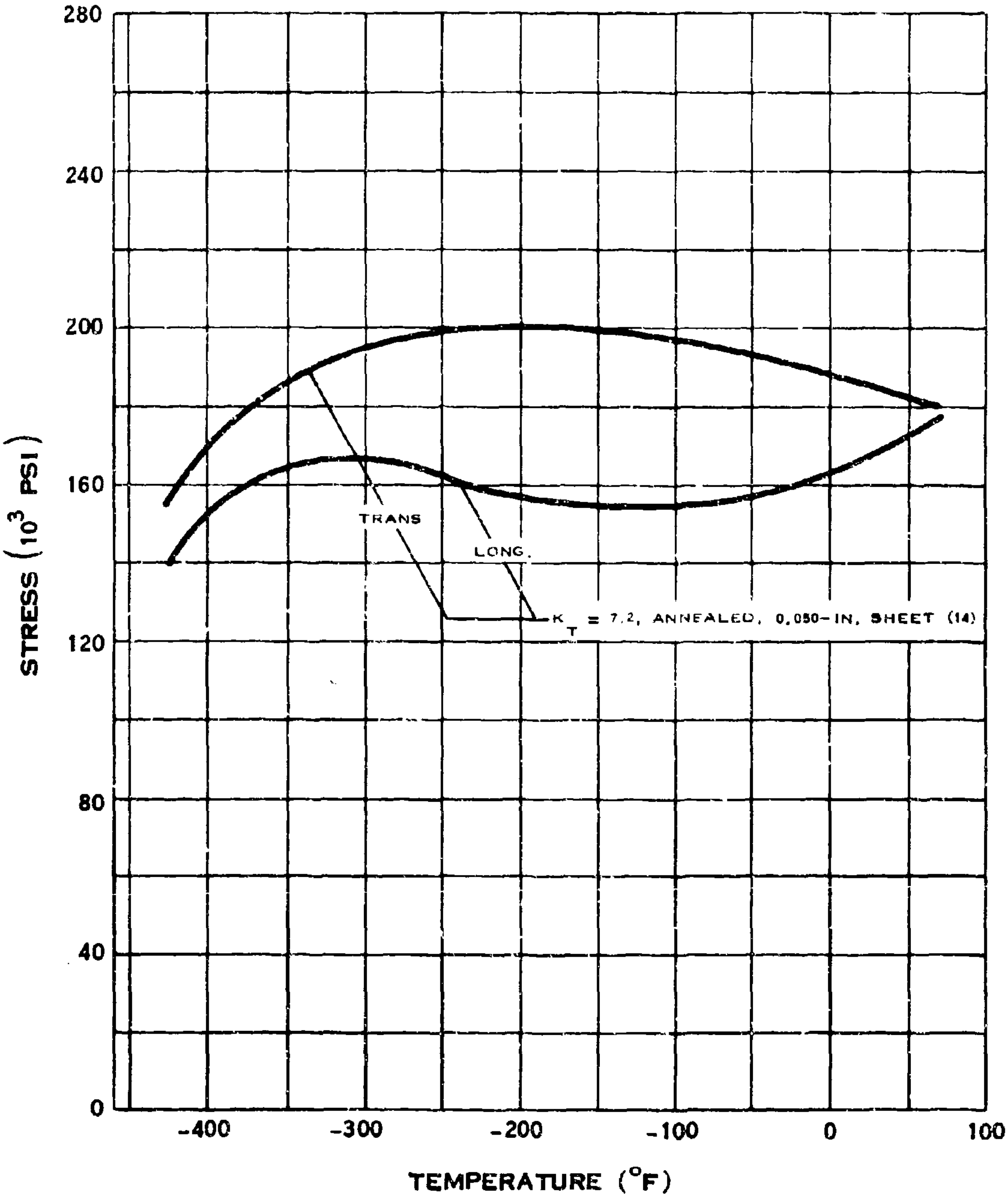
C.5.c



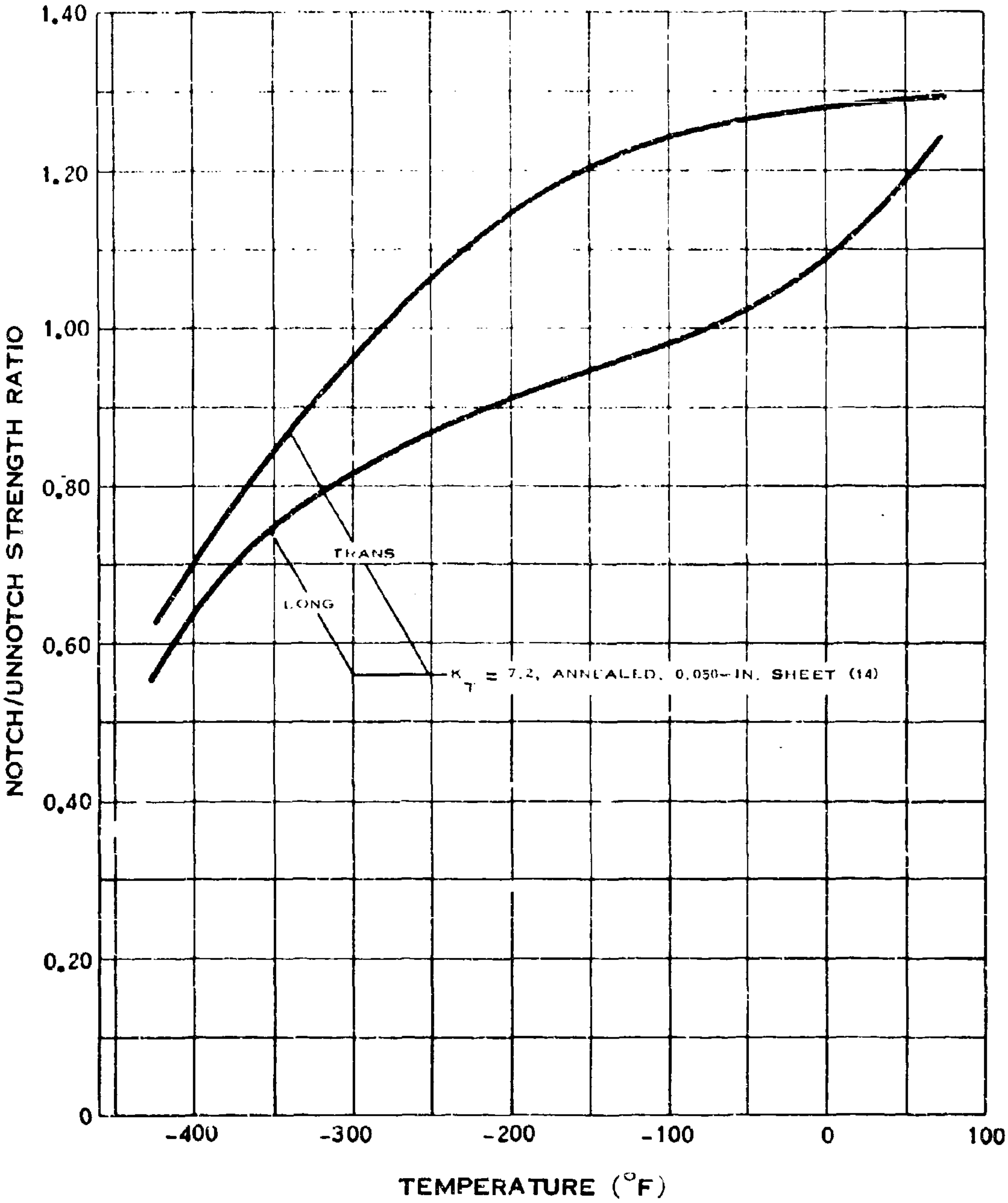
ELONGATION OF 7Al-12Zr TITANIUM

C.5.e



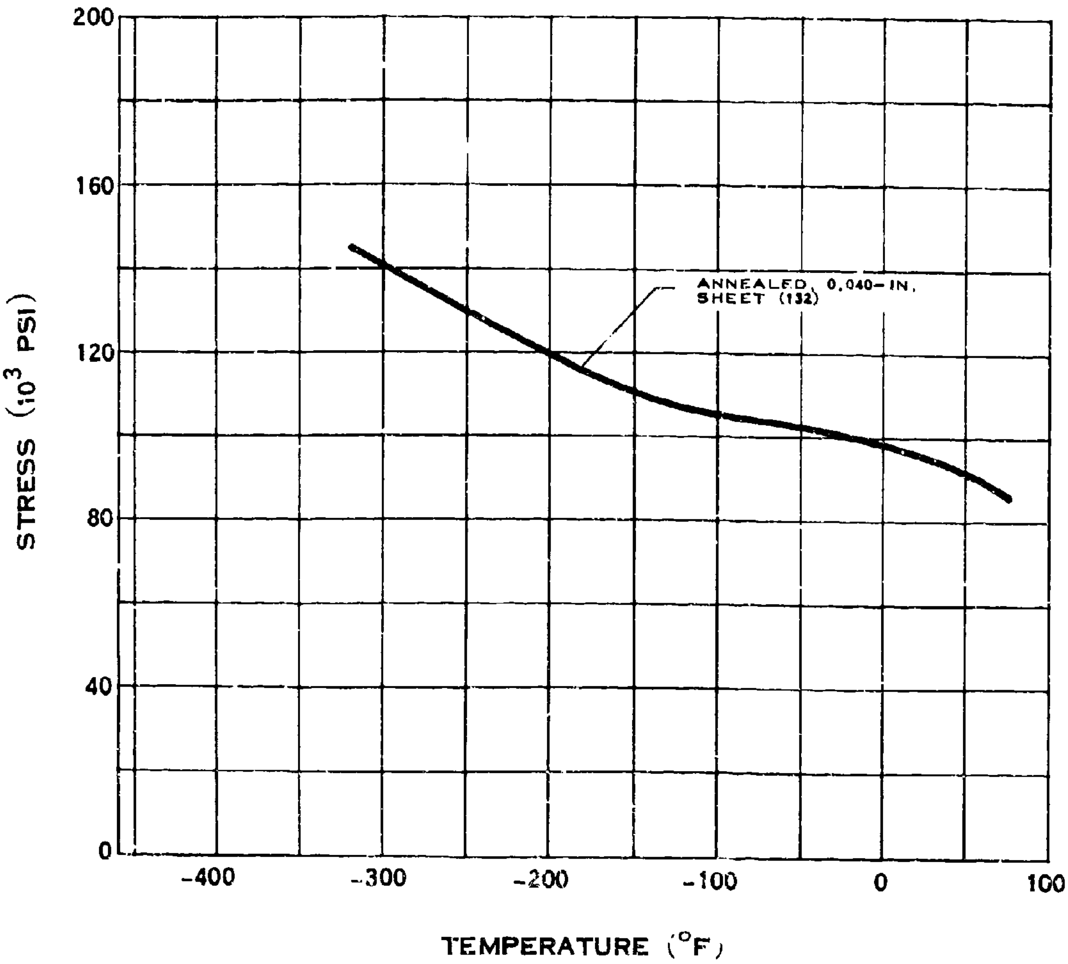
NOTCH TENSILE STRENGTH OF 7Al-12Zr TITANIUM

C.5.e-1



NOTCH STRENGTH RATIO OF 7Al-12Zr TITANIUM

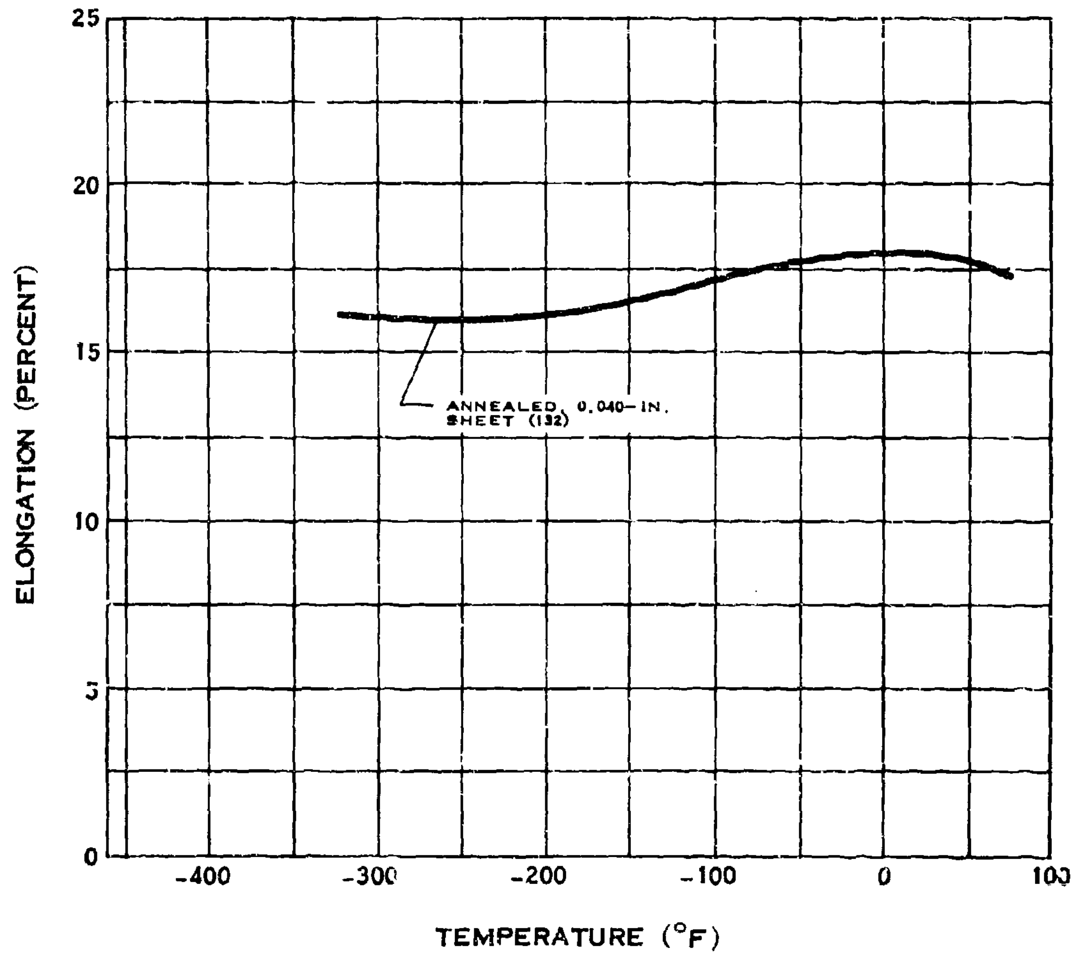
C.6.b



TENSILE STRENGTH OF 3Al-2.5V TITANIUM

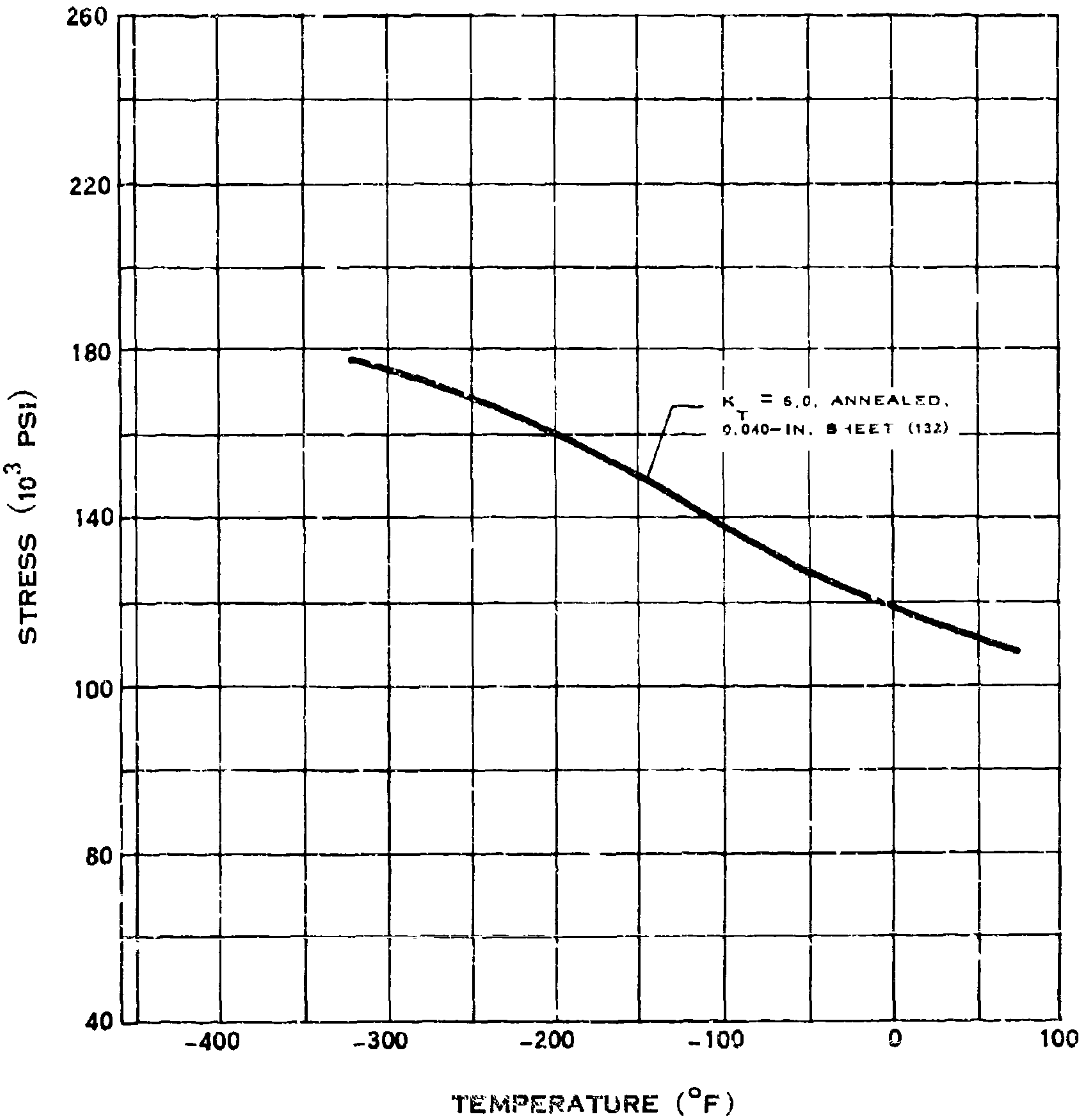
(7-63)

C.6.c



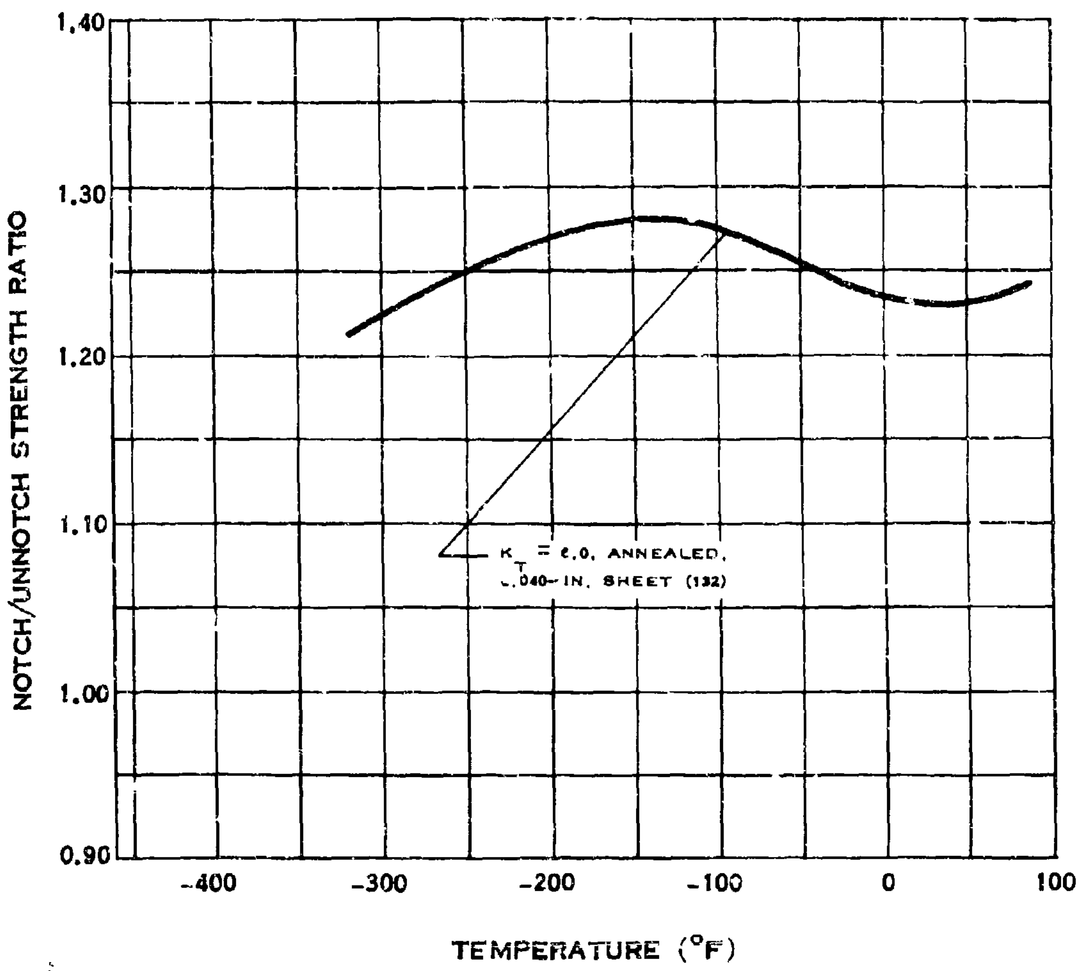
ELONGATION OF 3Al-2.5V TITANIUM

C.6.e



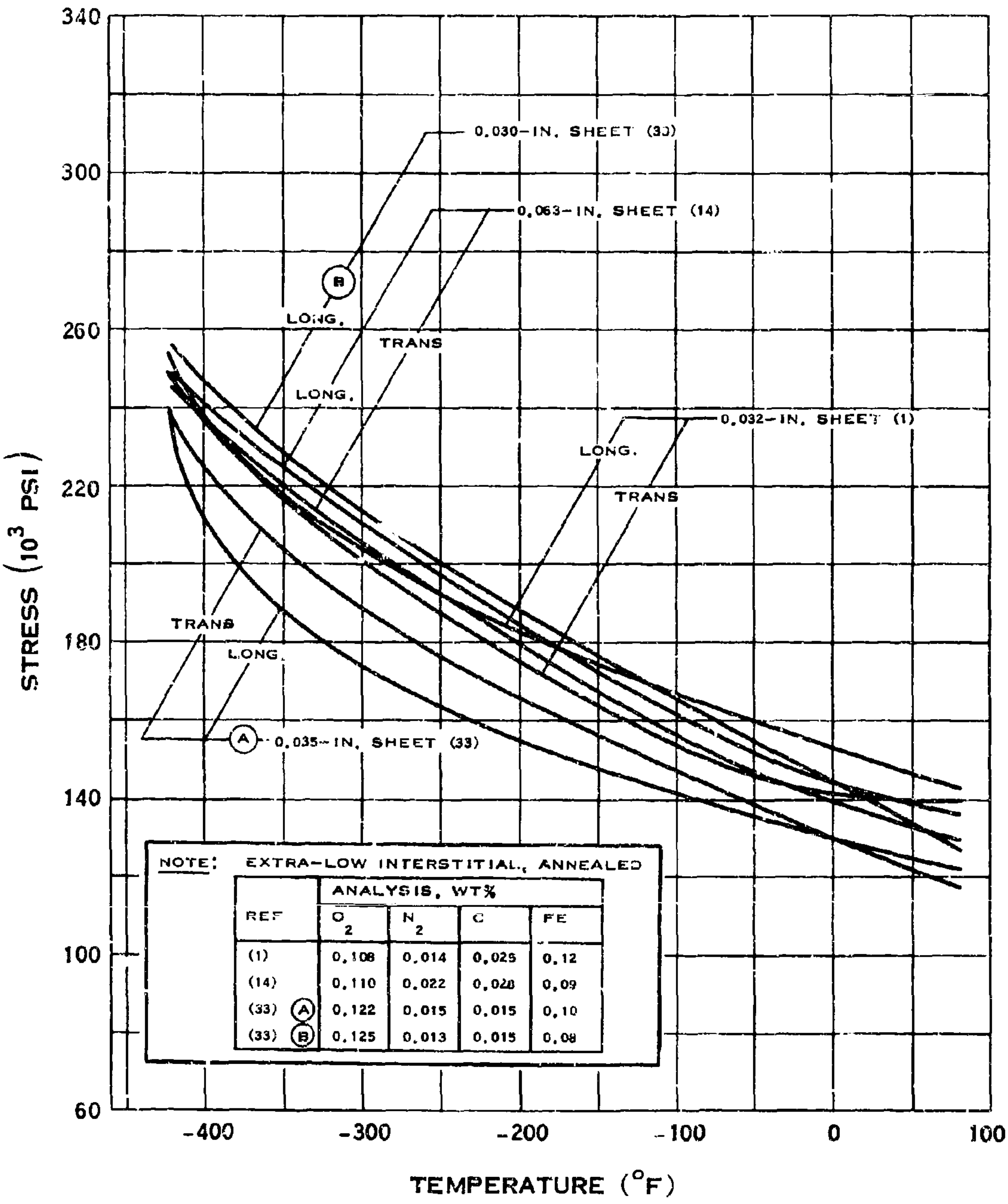
NOTCH TENSILE STRENGTH OF 3Al-2.5V TITANIUM

C.6.e-1



NOTCH STRENGTH RATIO OF 3Al-2.5V TITANIUM

C.7.a



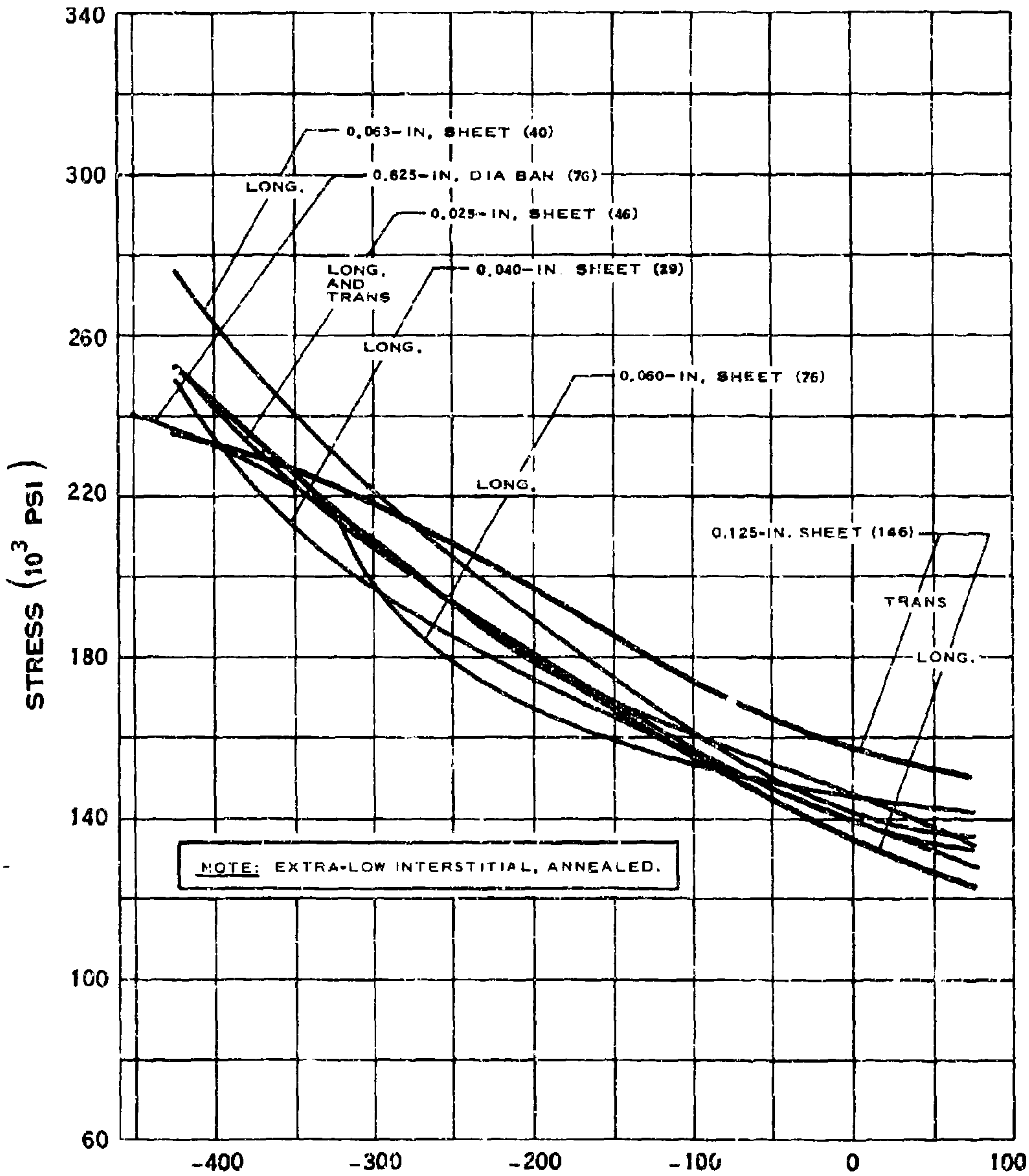
NOTE: EXTRA-LOW INTERSTITIAL, ANNEALED

REF	ANALYSIS, WT%			
	O_2	N_2	C	FE
(1)	0.108	0.014	0.025	0.12
(14)	0.110	0.022	0.028	0.09
(33) A	0.122	0.015	0.015	0.10
(33) B	0.125	0.013	0.015	0.08

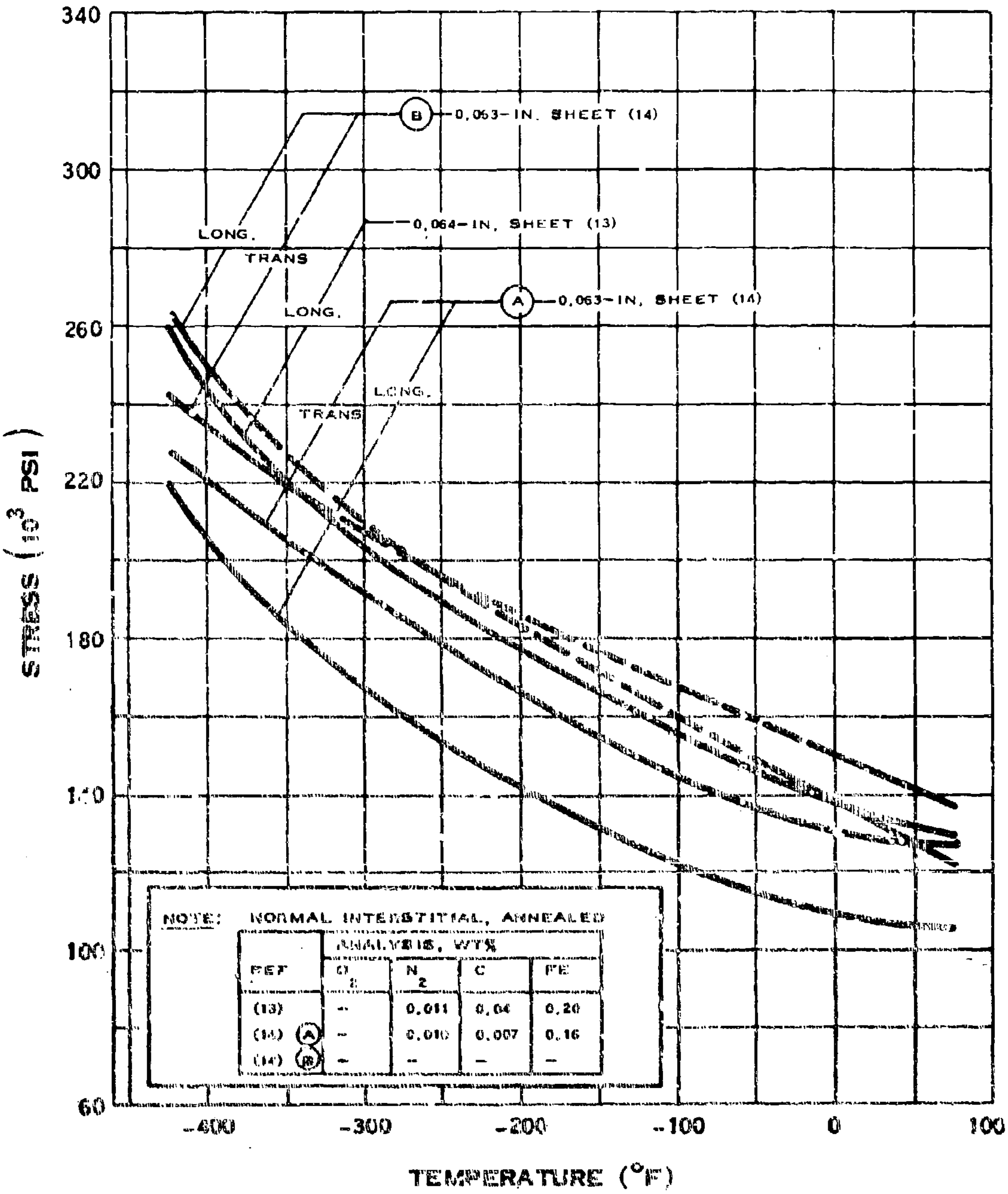
YIELD STRENGTH OF 6Al-4V TITANIUM

(7-65)

C.7.a-1

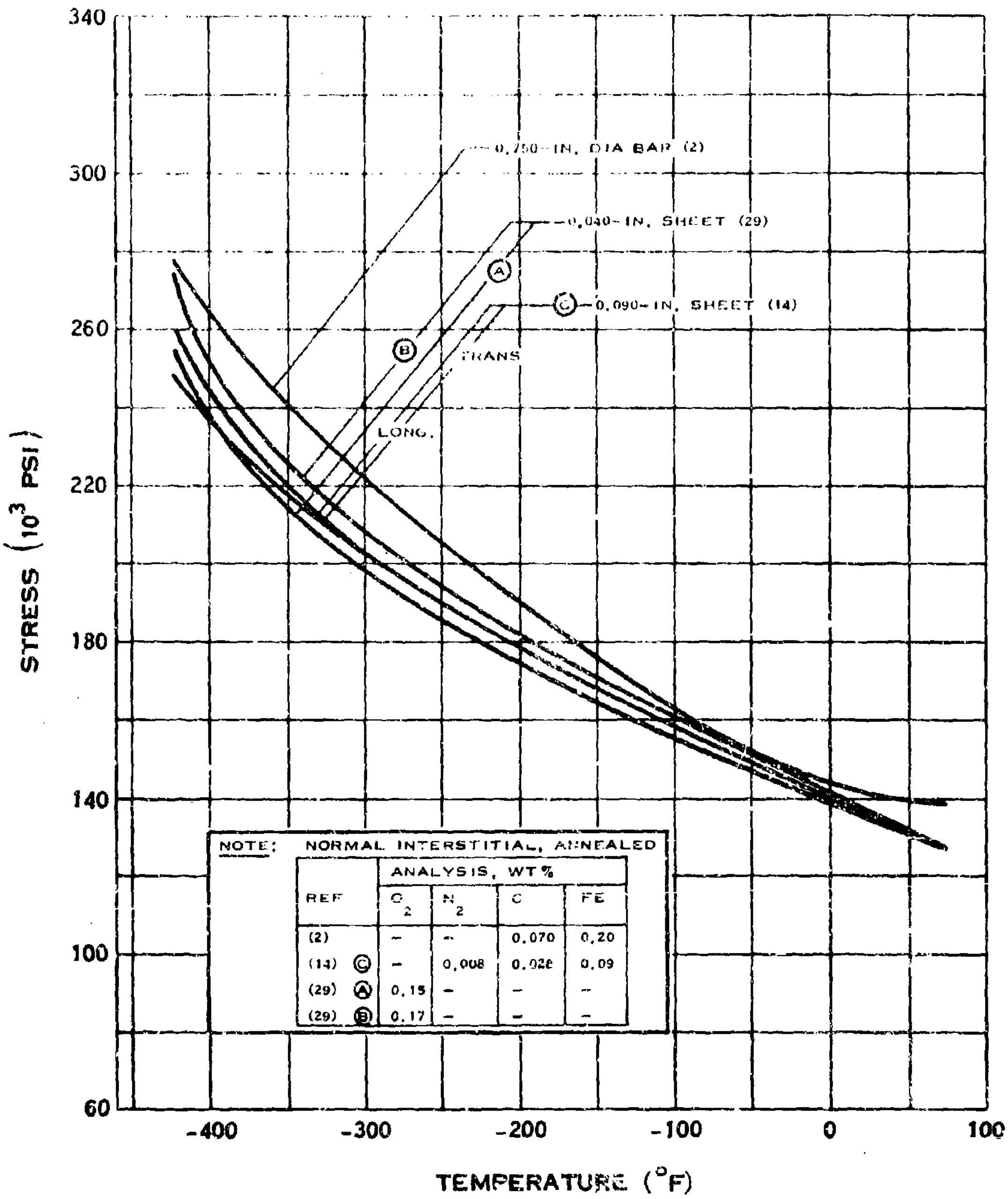


YIELD STRENGTH OF 6Al-4V TITANIUM



YIELD STRENGTH OF 6Al-4V TITANIUM

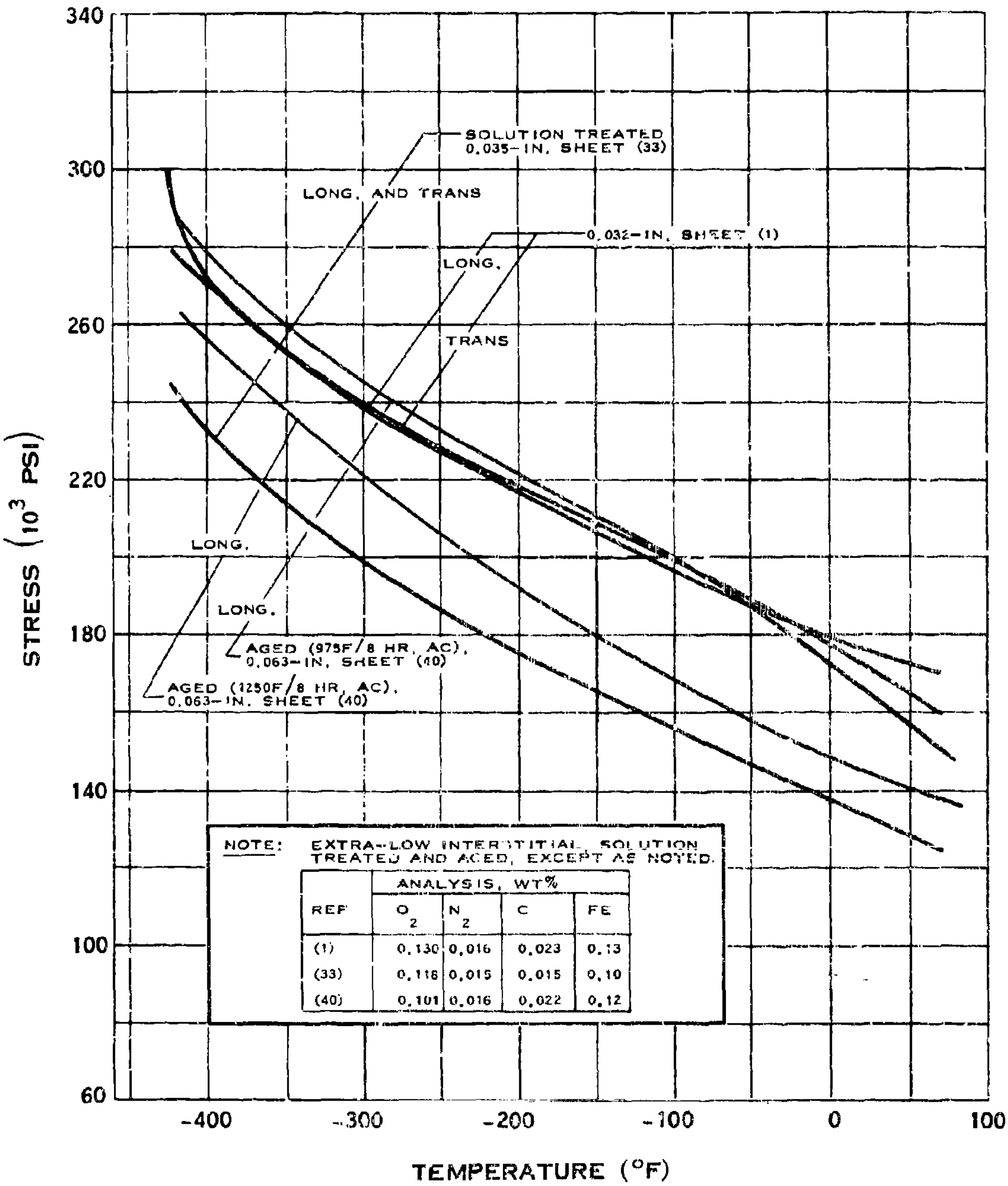
C.7.a-3



NOTE: NORMAL INTERSTITIAL, ANNEALED

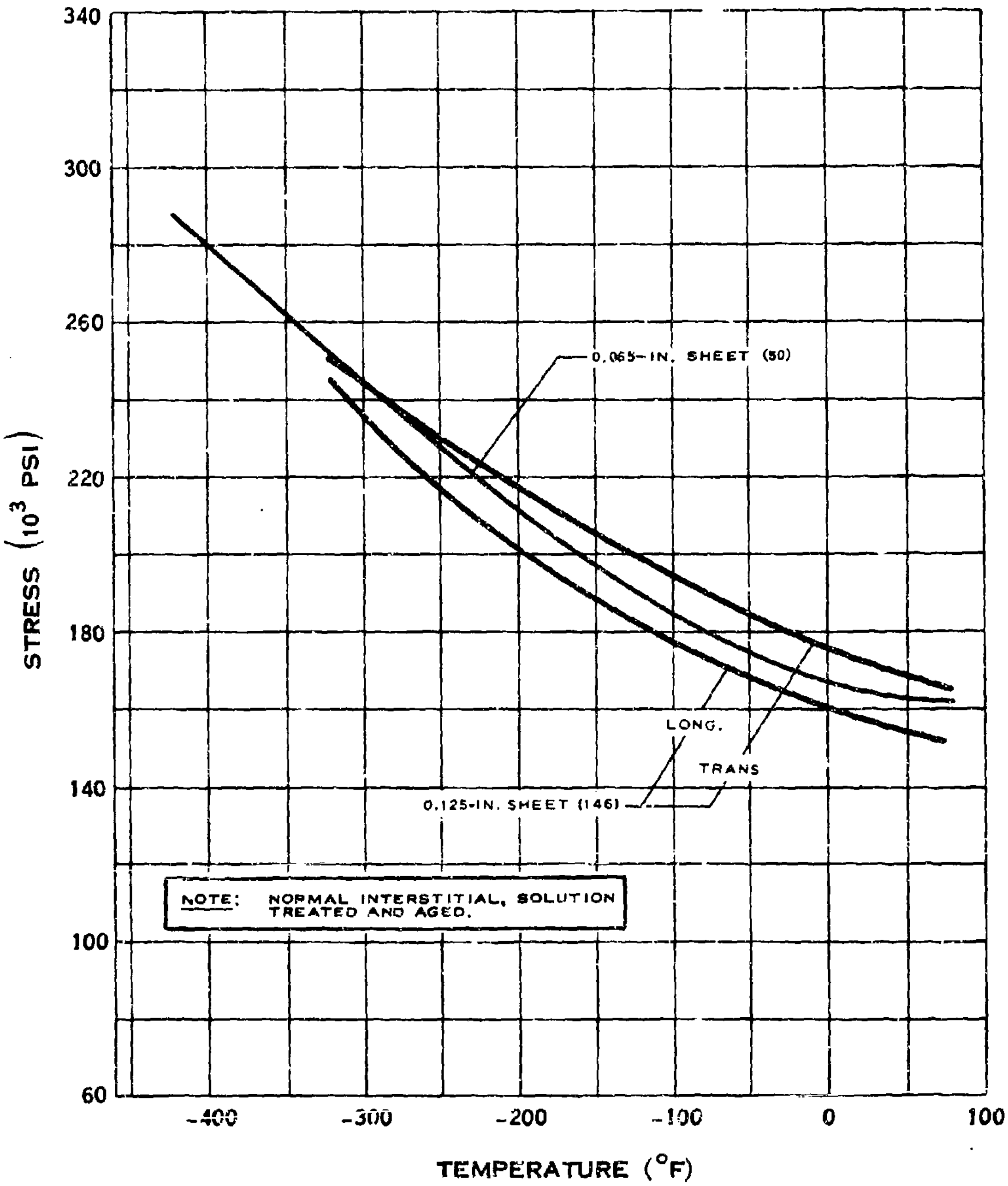
REF	ANALYSIS, WT %			
	O_2	N_2	C	FE
(2)	–	–	0.070	0.20
(14) C	–	0.008	0.028	0.09
(29) A	0.15	–	–	–
(29) B	0.17	–	–	–

YIELD STRENGTH OF 6Al-4V TITANIUM



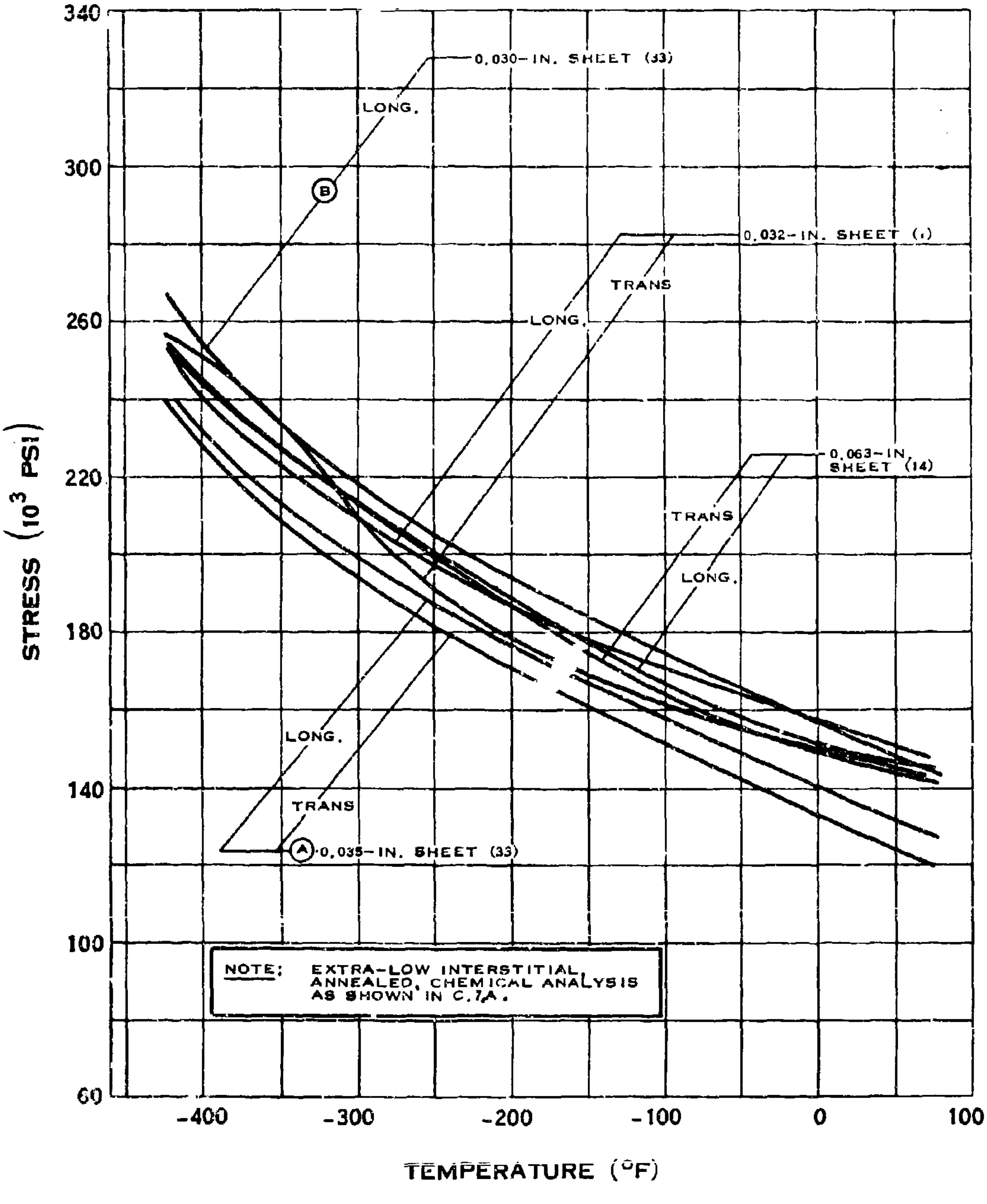
YIELD STRENGTH OF 6Al-4V TITANIUM

(3-66)



YIELD STRENGTH OF 6Al-4V TITANIUM

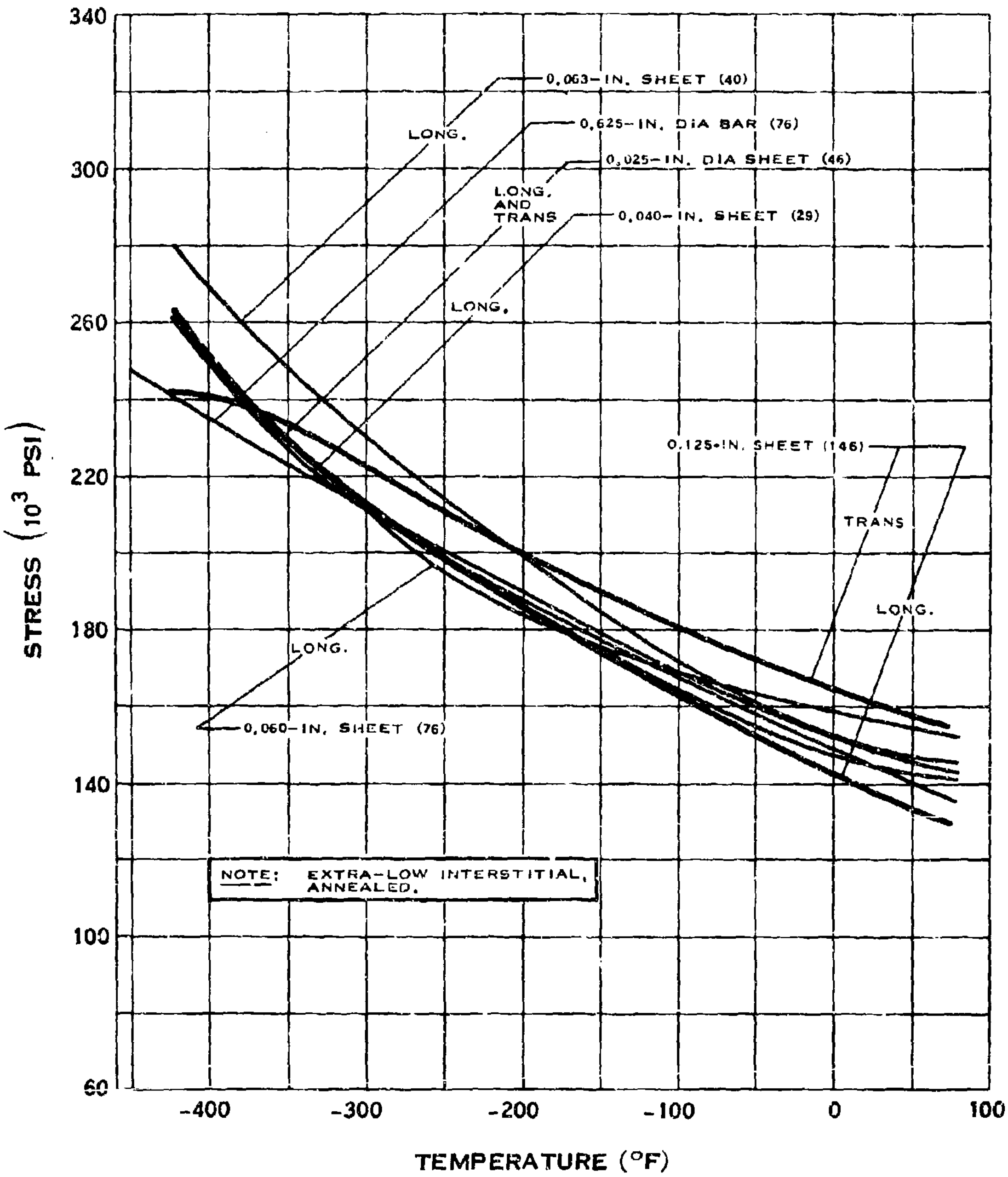
C.7.b



TENSILE STRENGTH OF 6Al-4V TITANIUM

(1-65)

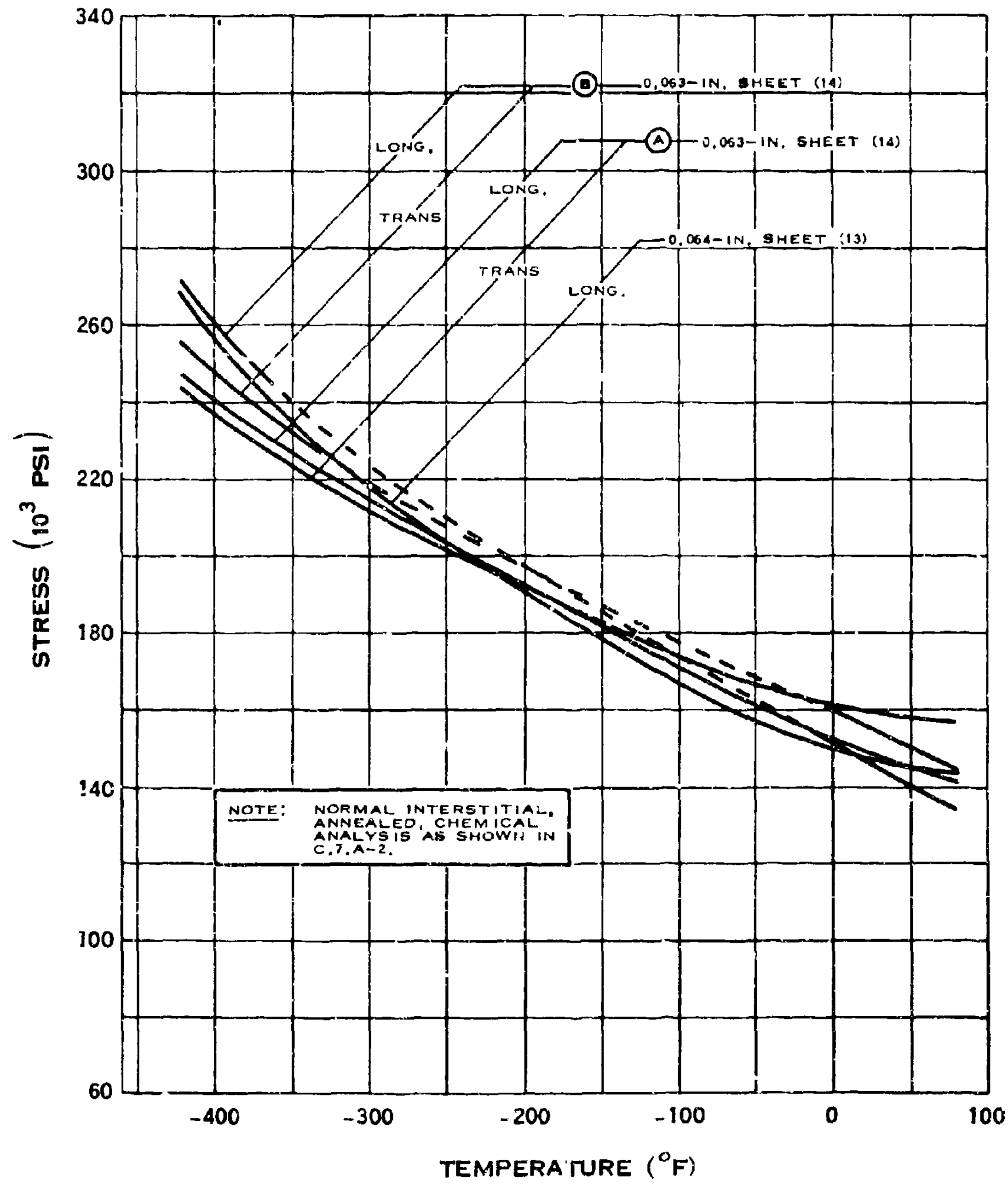
C.7.b-1



TENSILE STRENGTH OF 6Al-4V TITANIUM

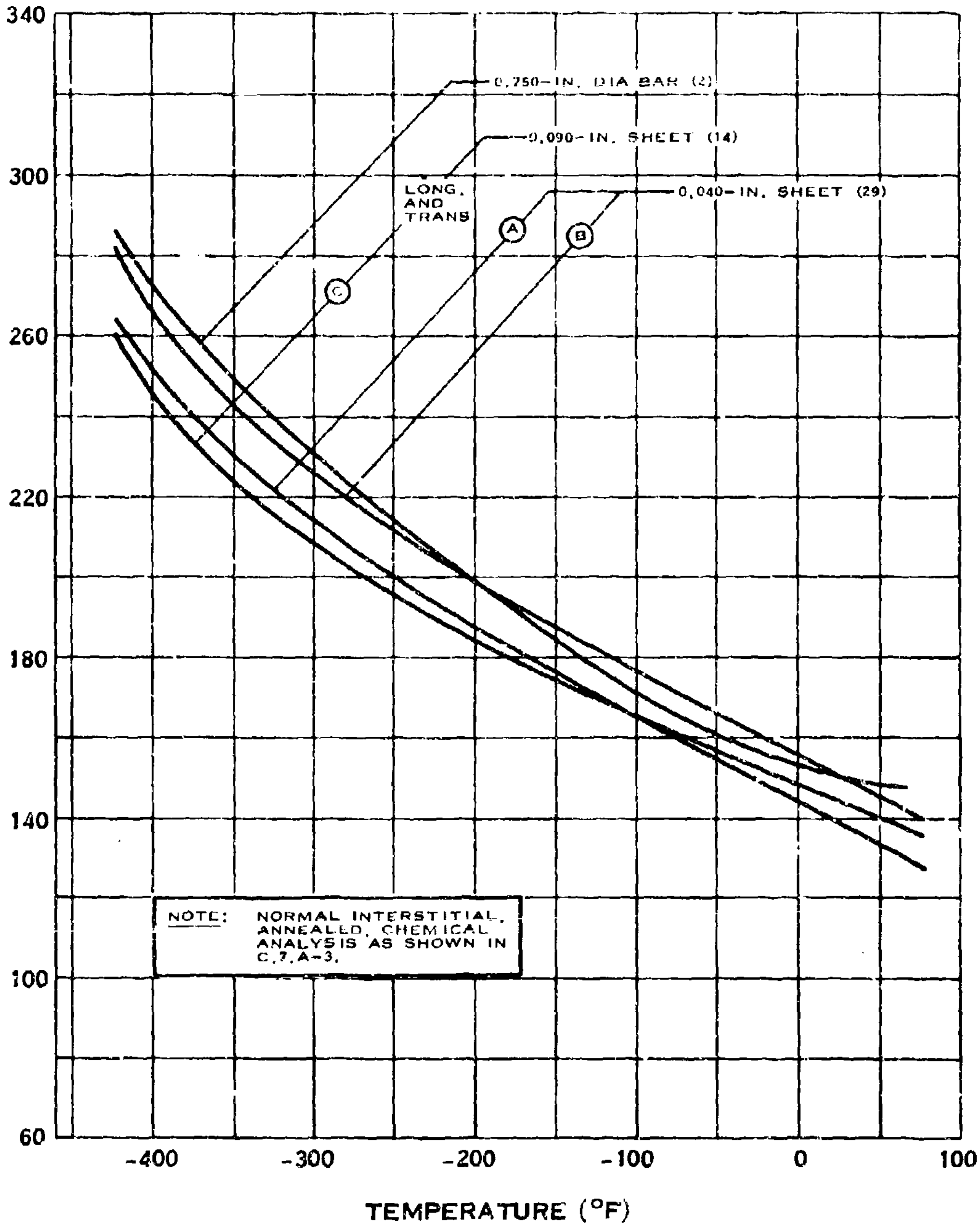
(6-68)

C.7.b-2



TENSILE STRENGTH OF 6Al-4V TITANIUM

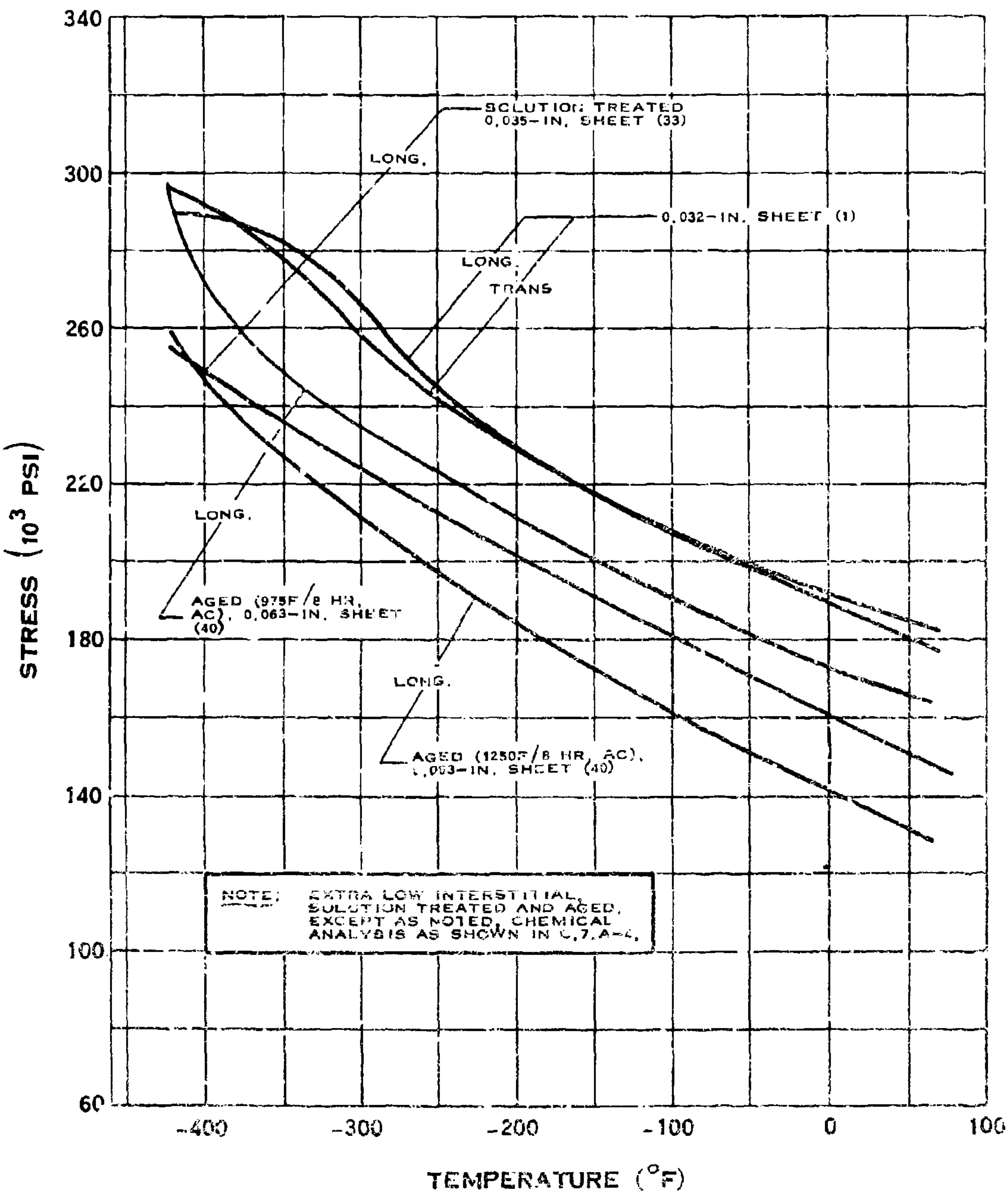
(1-65)



TENSILE STRENGTH OF 6Al-4V TITANIUM

(1-65)

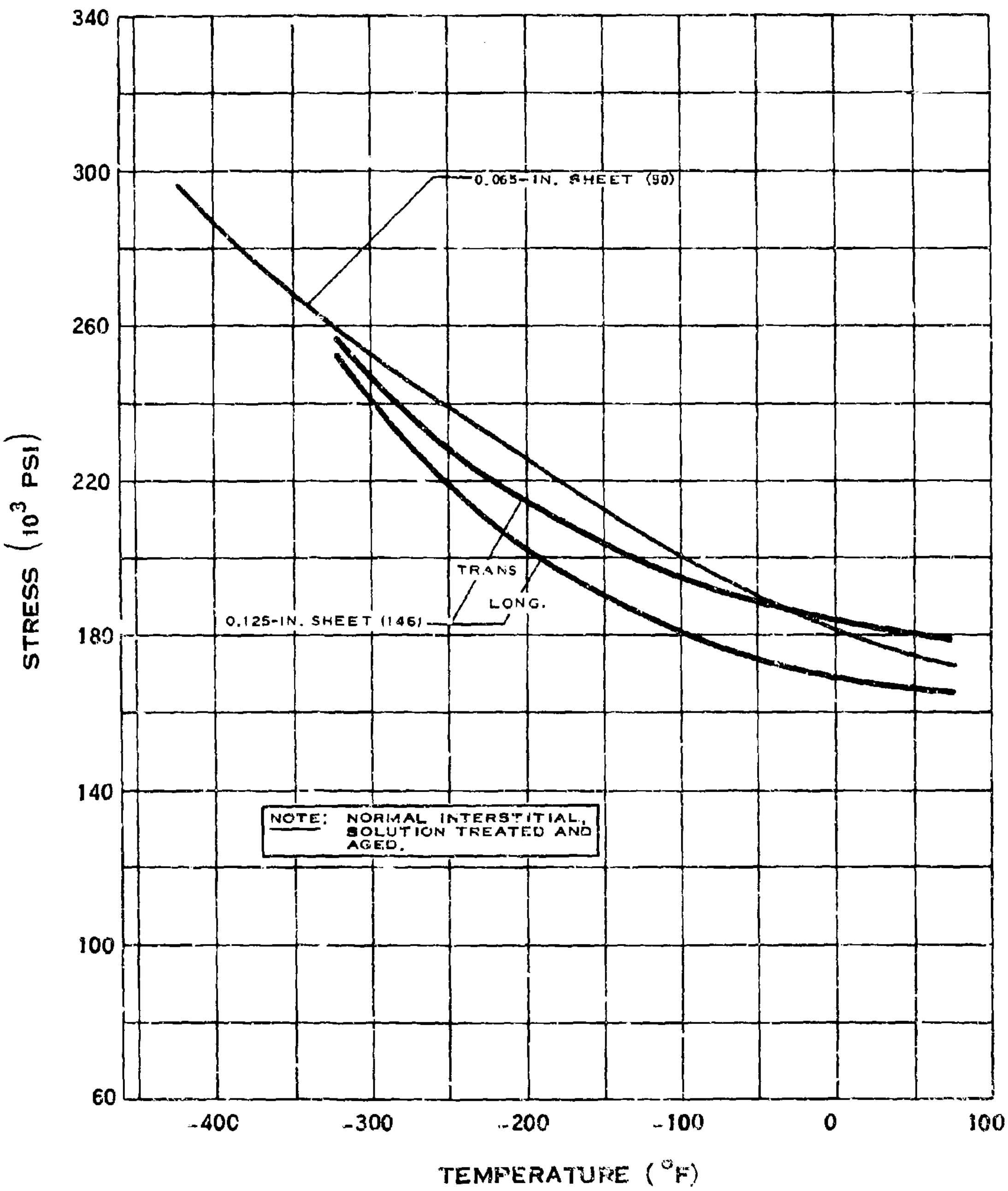
C.7.b-4



TENSILE STRENGTH OF 6Al-4V TITANIUM

(3-66)

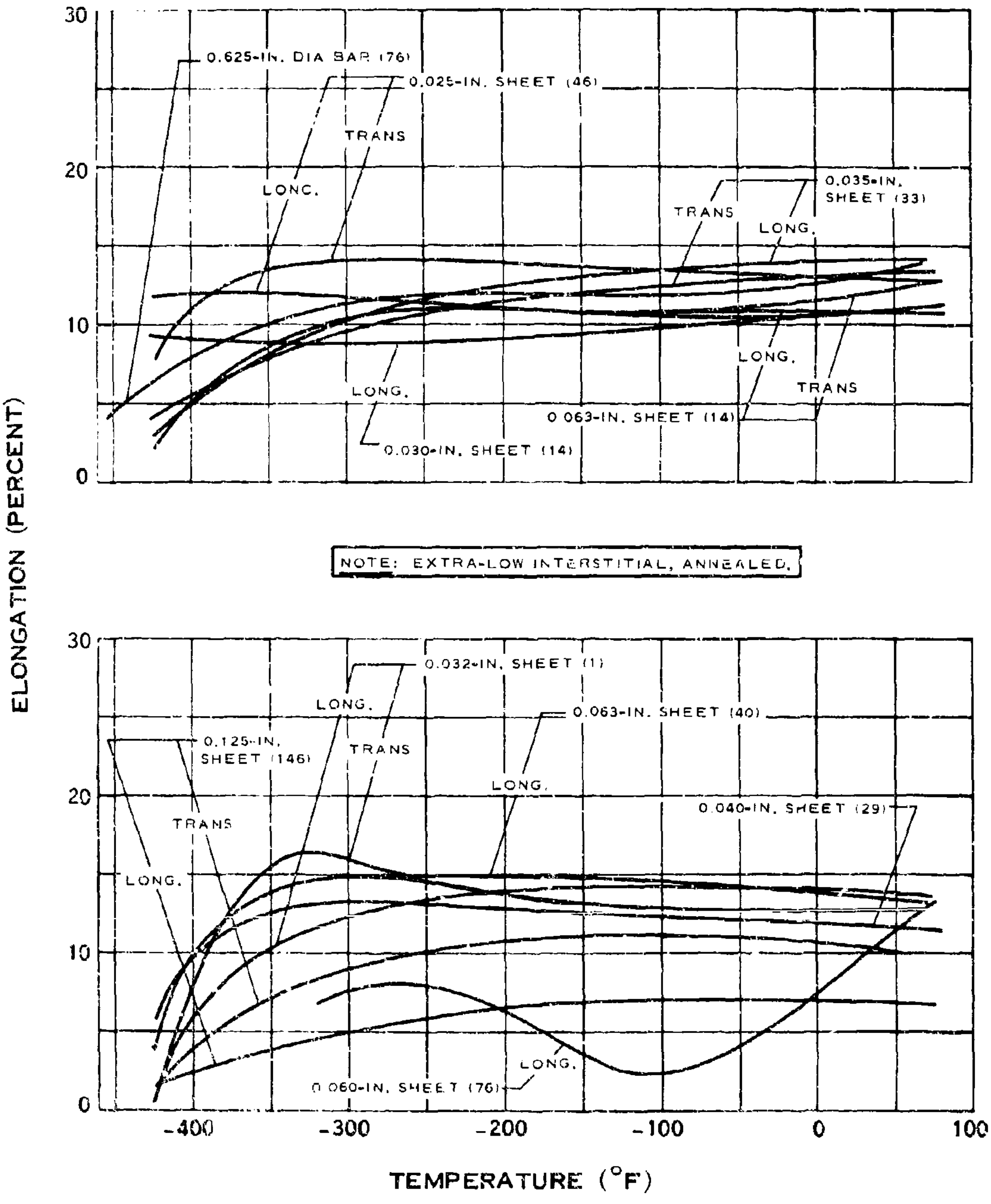
C.7.b-5



TENSILE STRENGTH OF 6Al-4V TITANIUM

(6-68)

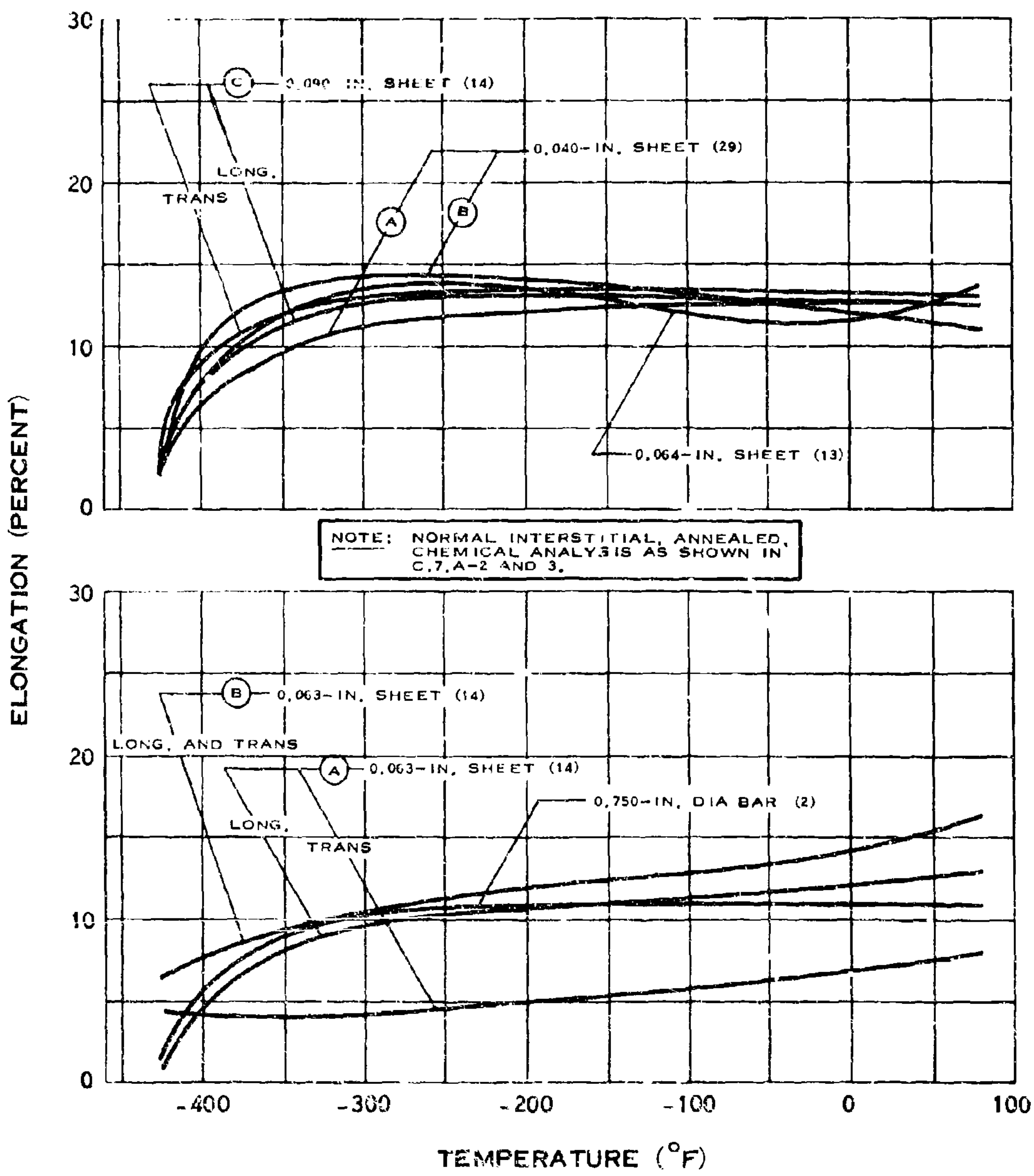
C.7.c



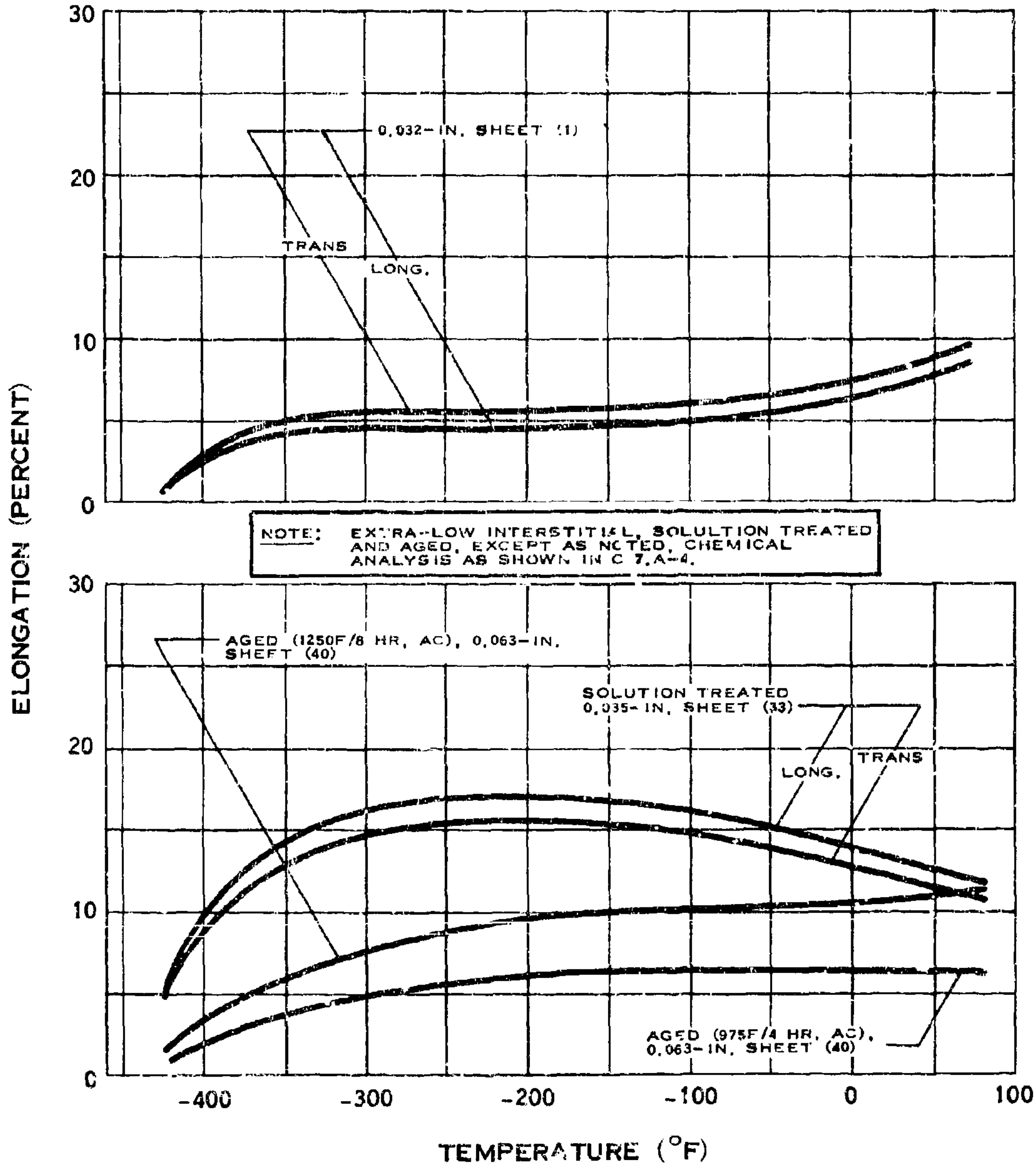
ELONGATION OF 6Al-4V TITANIUM

(6-68)

C.7.c-1

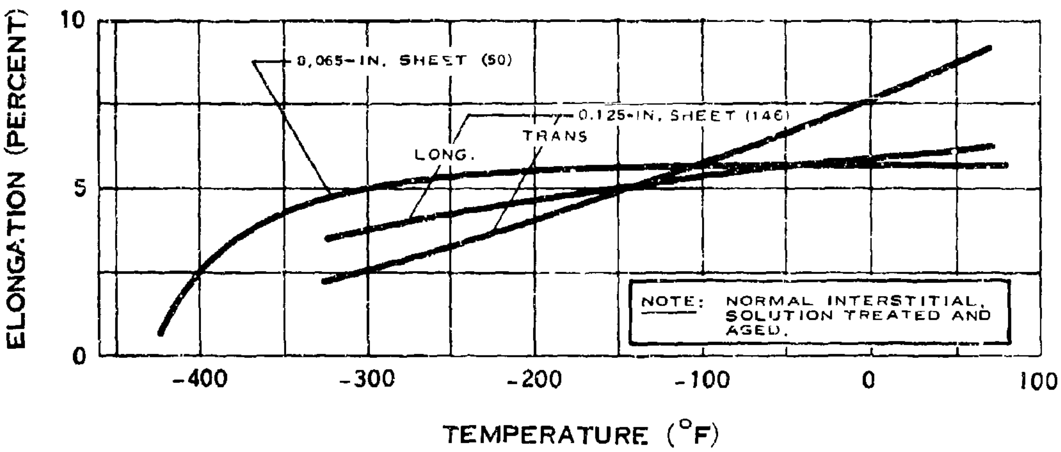


ELONGATION OF 6Al-4V TITANIUM



ELONGATION OF 6Al-4V TITANIUM

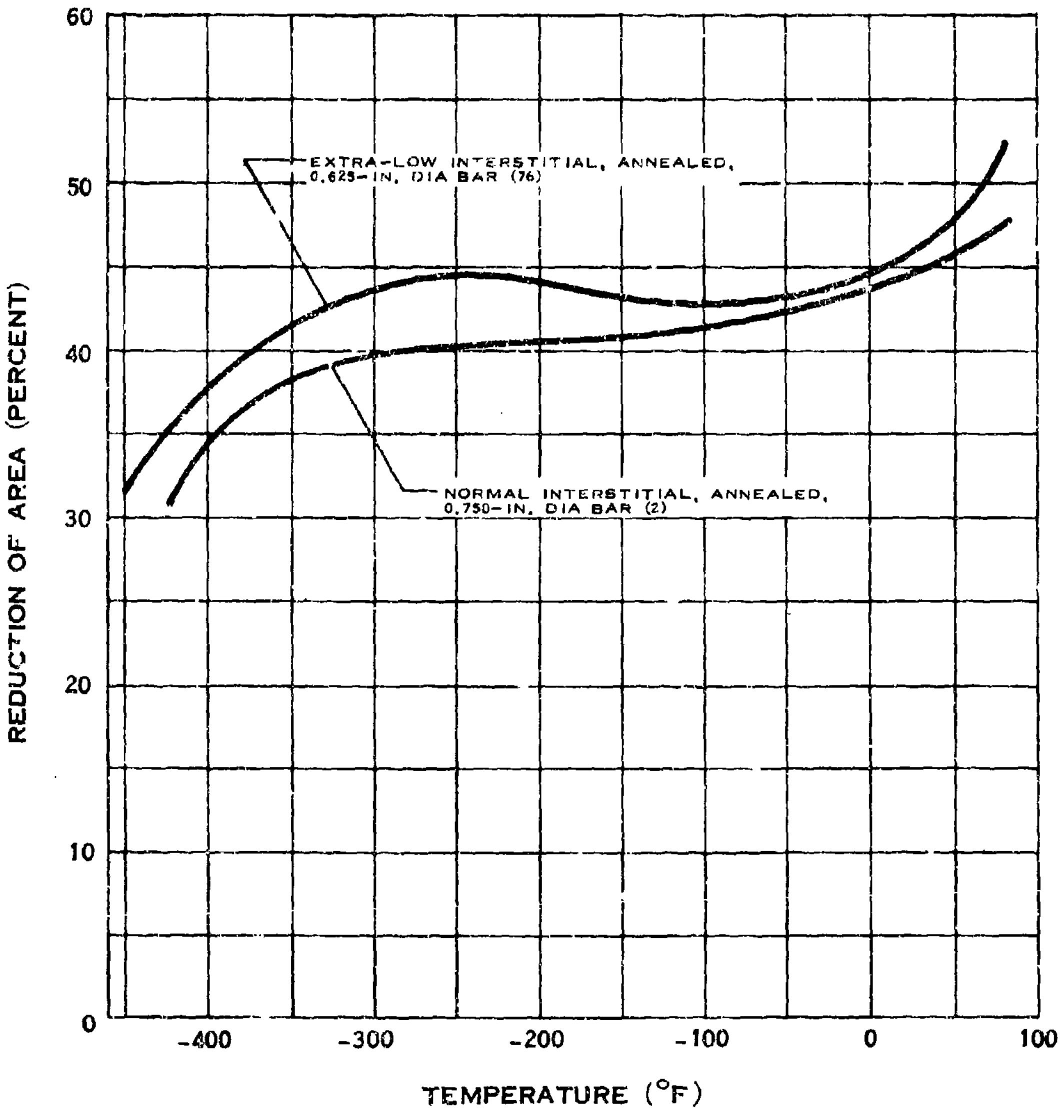
C.7.c-3



ELONGATION OF 6Al-4V TITANIUM

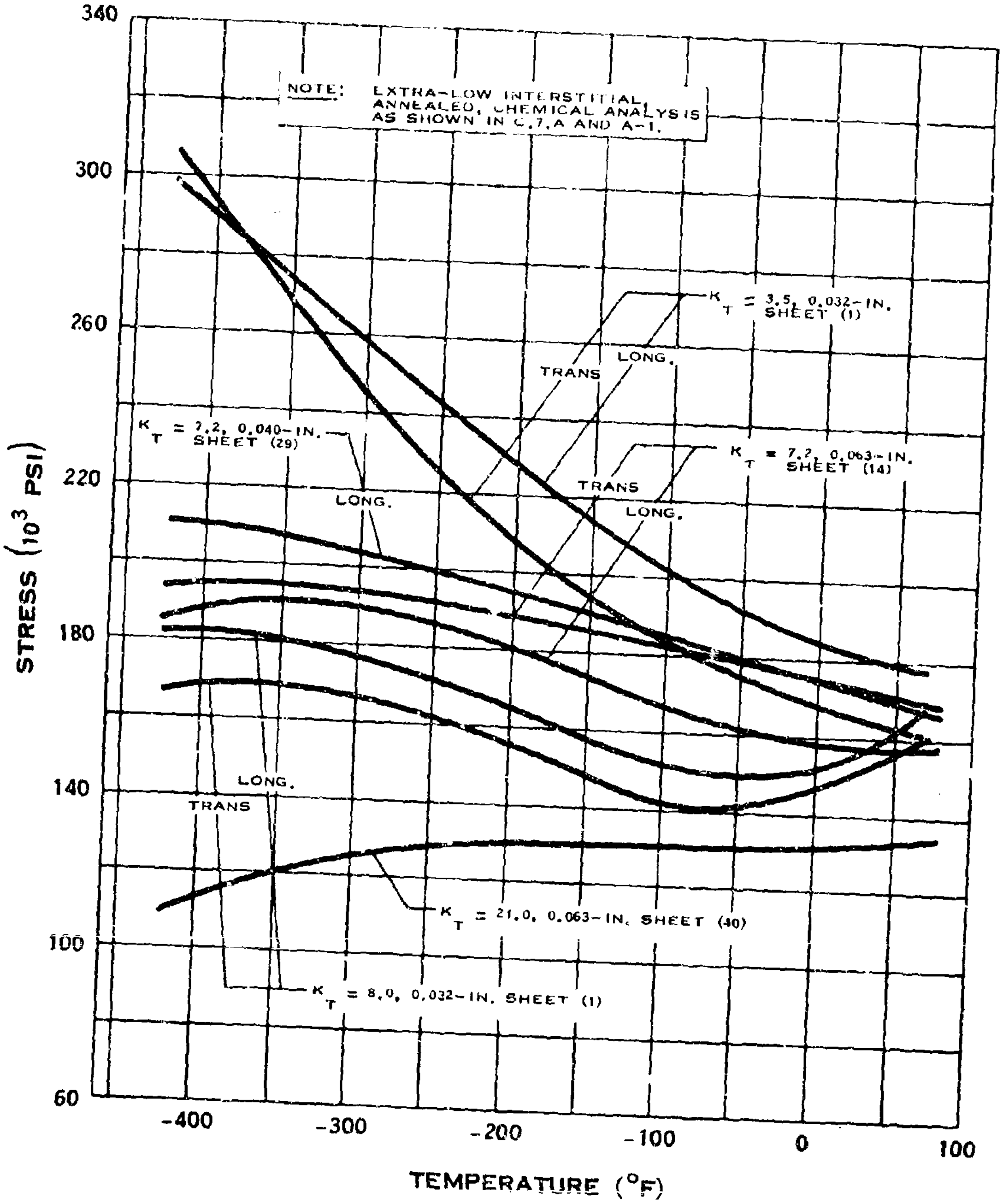
(6-68)

C.7.d



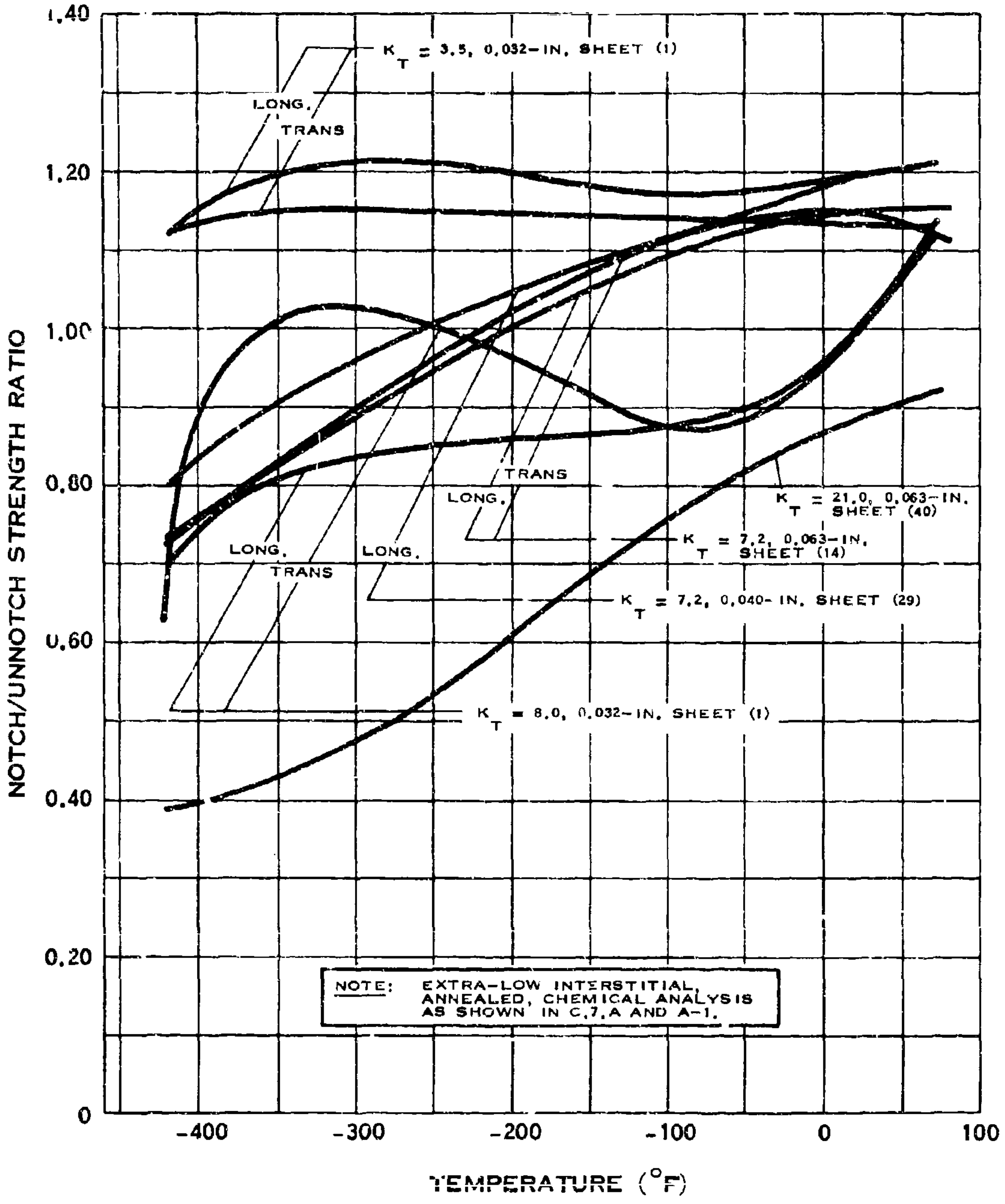
REDUCTION OF AREA OF 6Al-4V TITANIUM

C.7.e



NOTCH TENSILE STRENGTH OF 6Al-4V TITANIUM

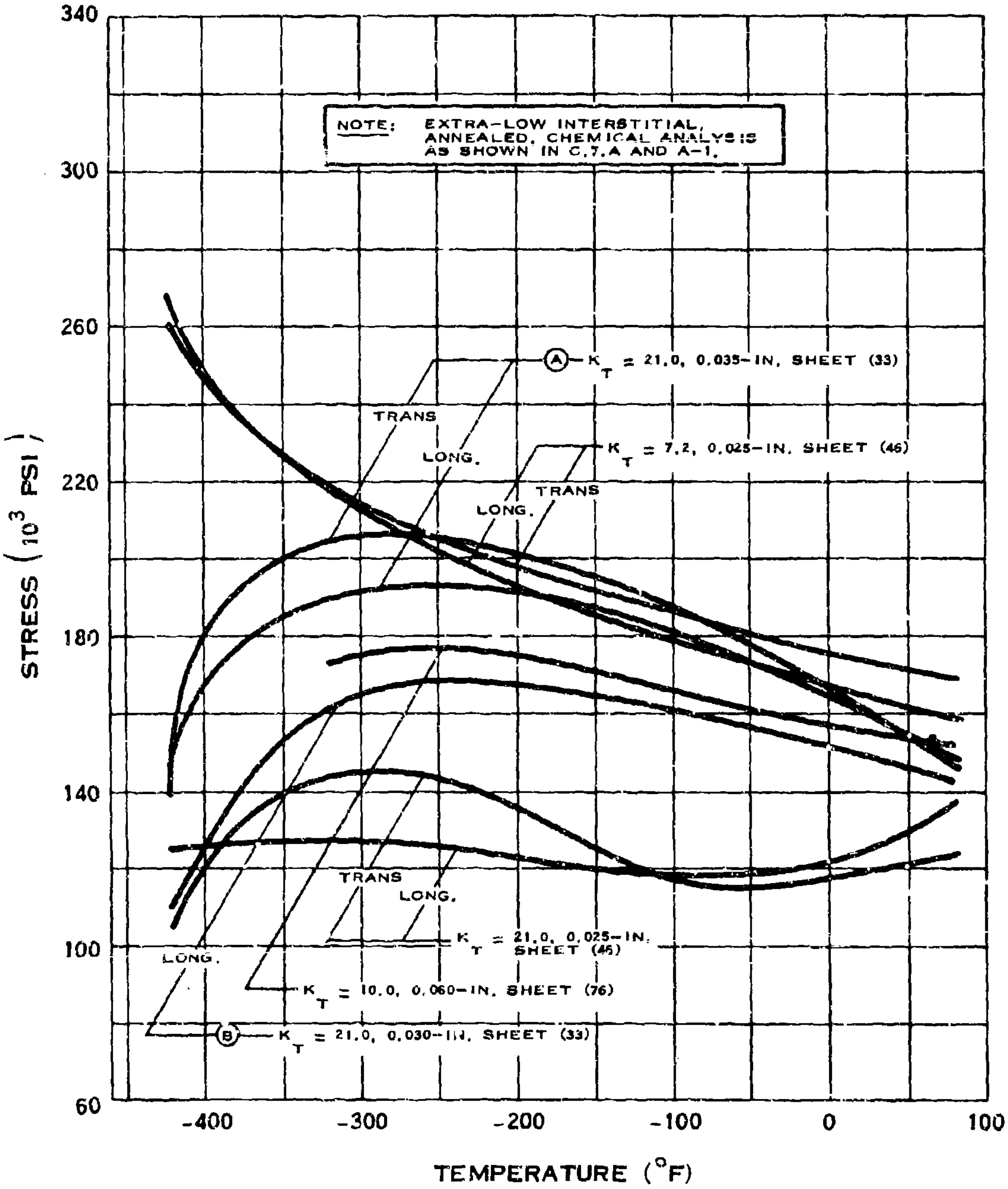
(1-65)



NOTCH STRENGTH RATIO OF 6Al-4V TITANIUM

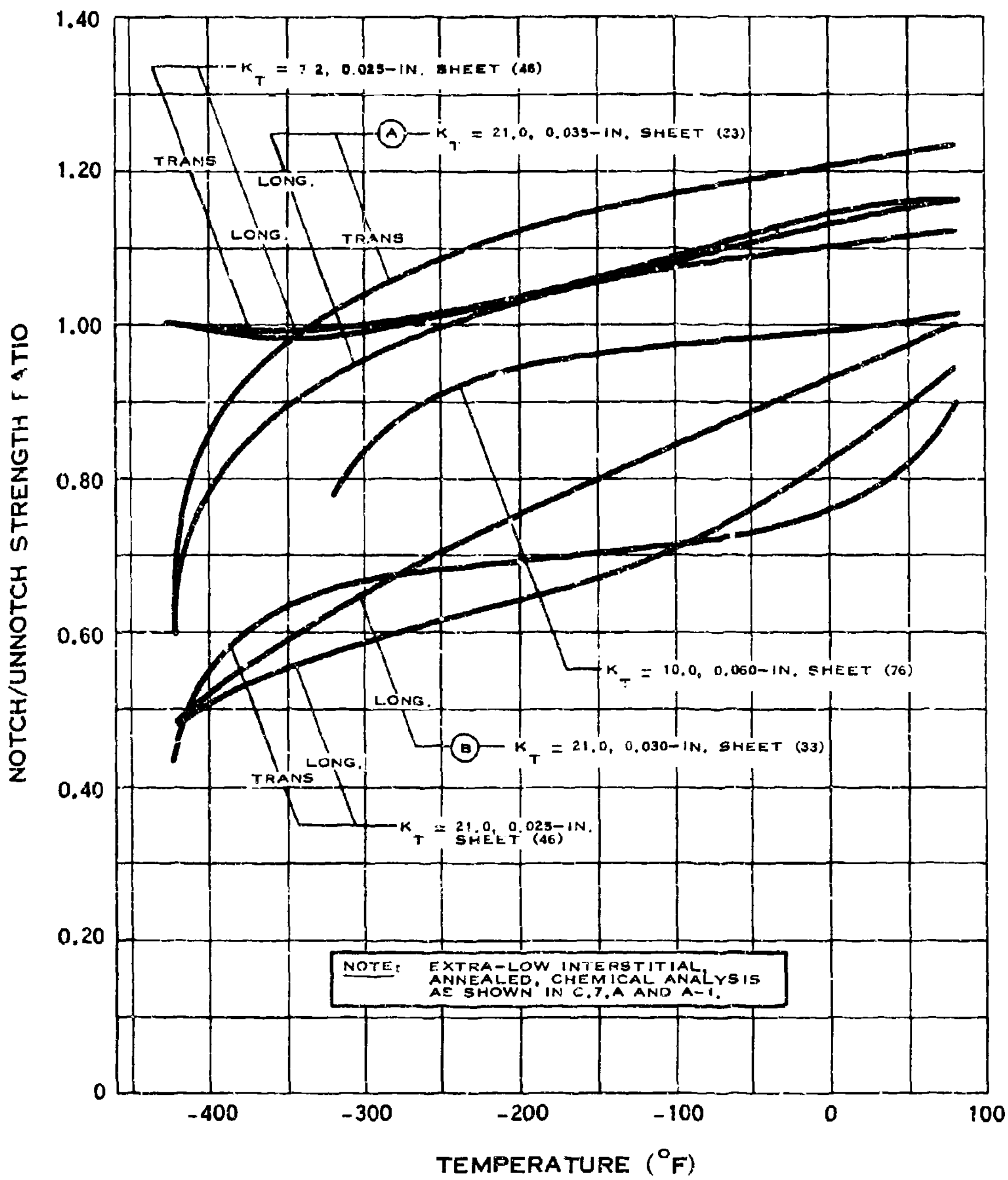
(7-65)

C.7.e-2

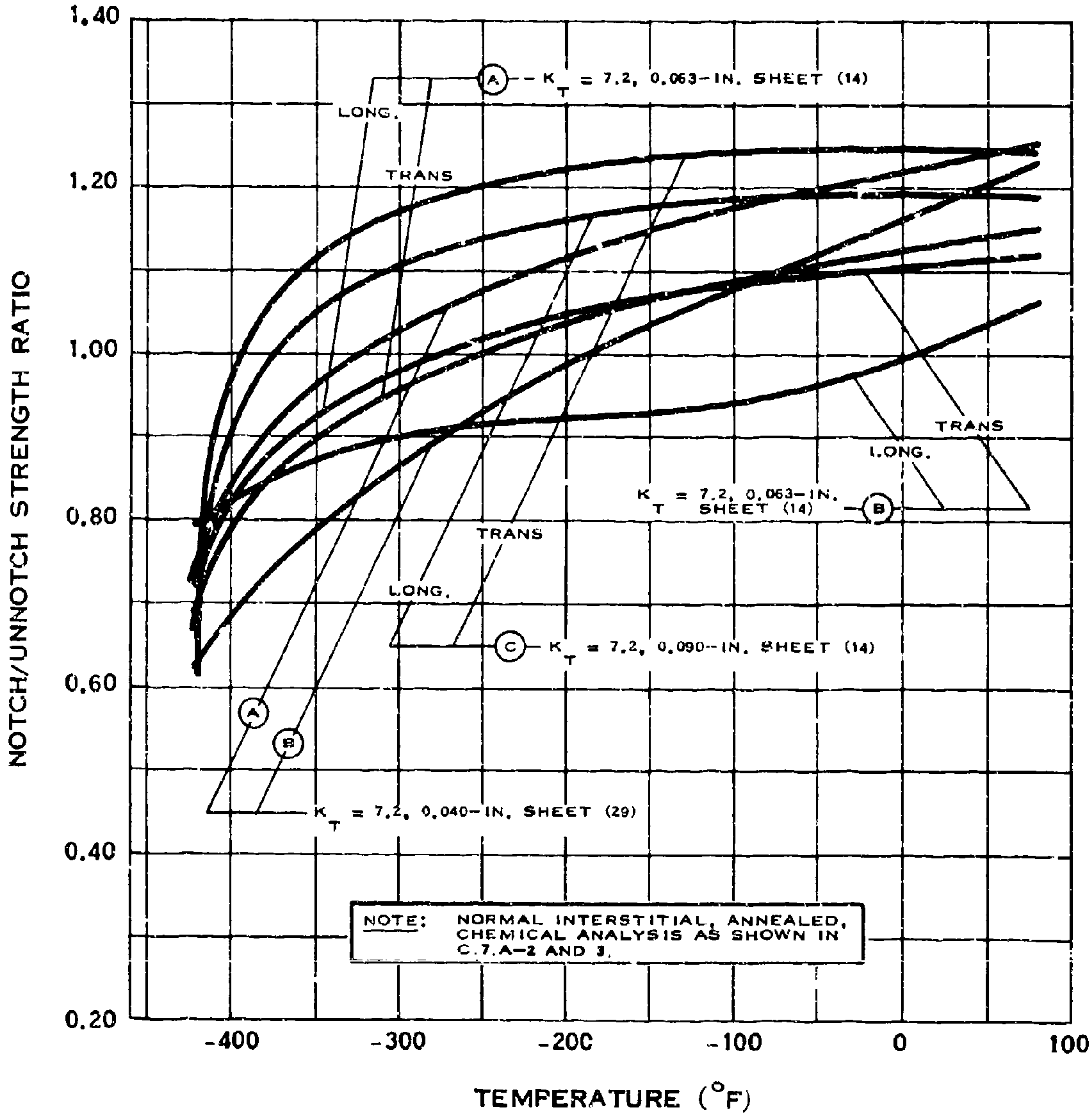


NOTCH TENSILE STRENGTH OF 6Al-4V TITANIUM

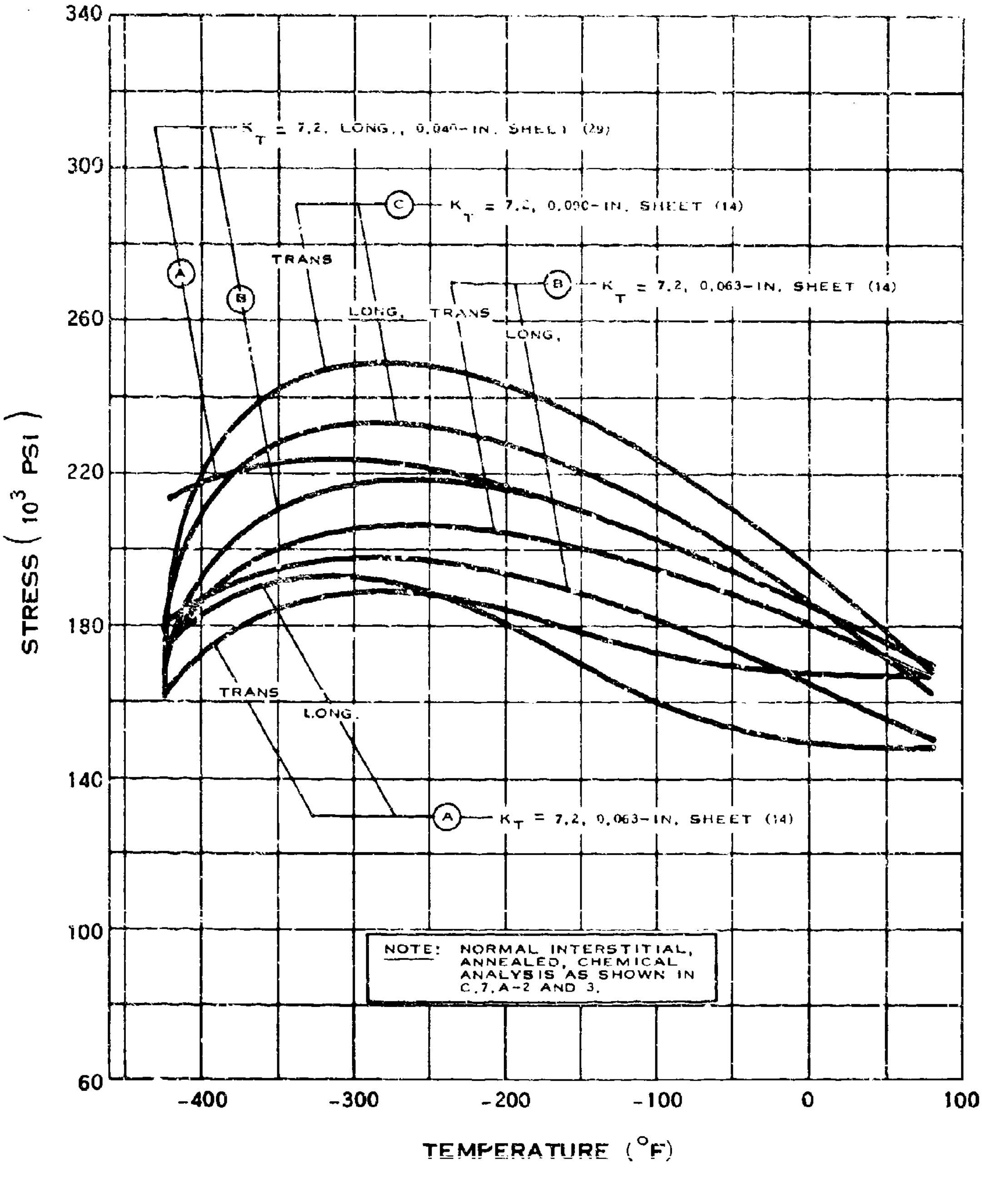
(1-35)



NOTCH STRENGTH RATIO OF 6Al-4V TITANIUM

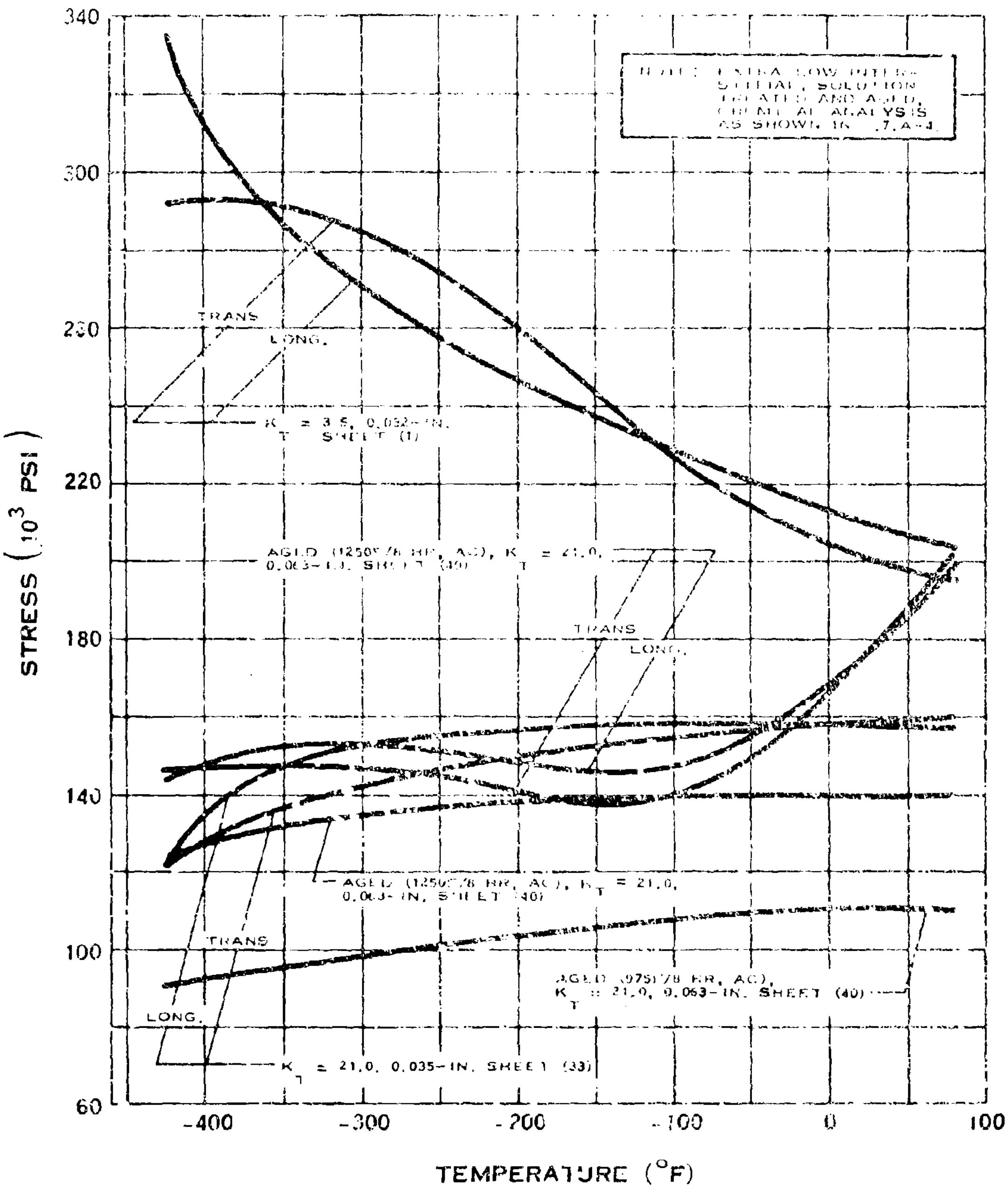


NOTCH STRENGTH RATIO OF 6Al-4V TITANIUM

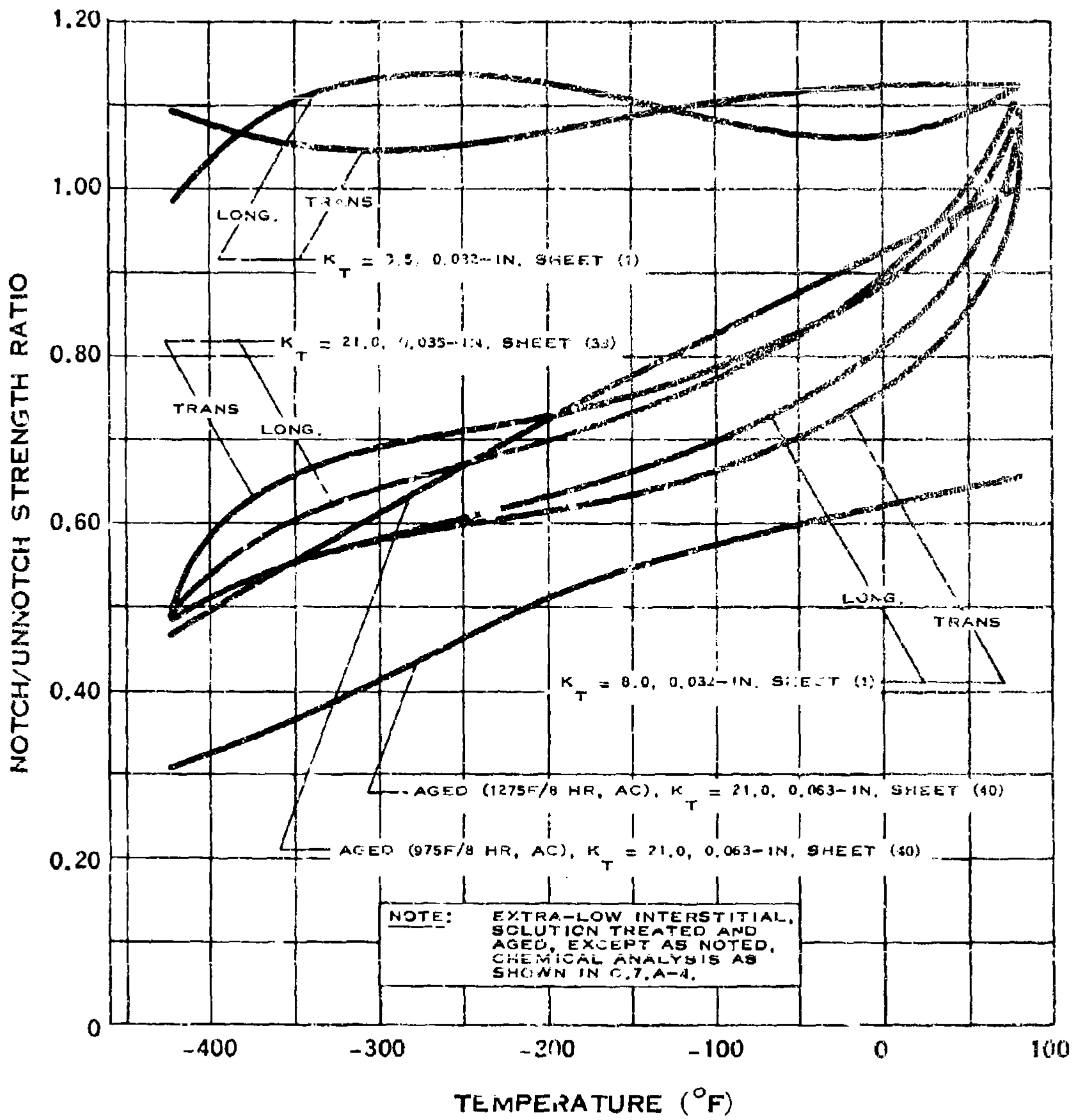


NOTCH TENSILE STRENGTH OF 6Al-4V TITANIUM

C.7.e-6

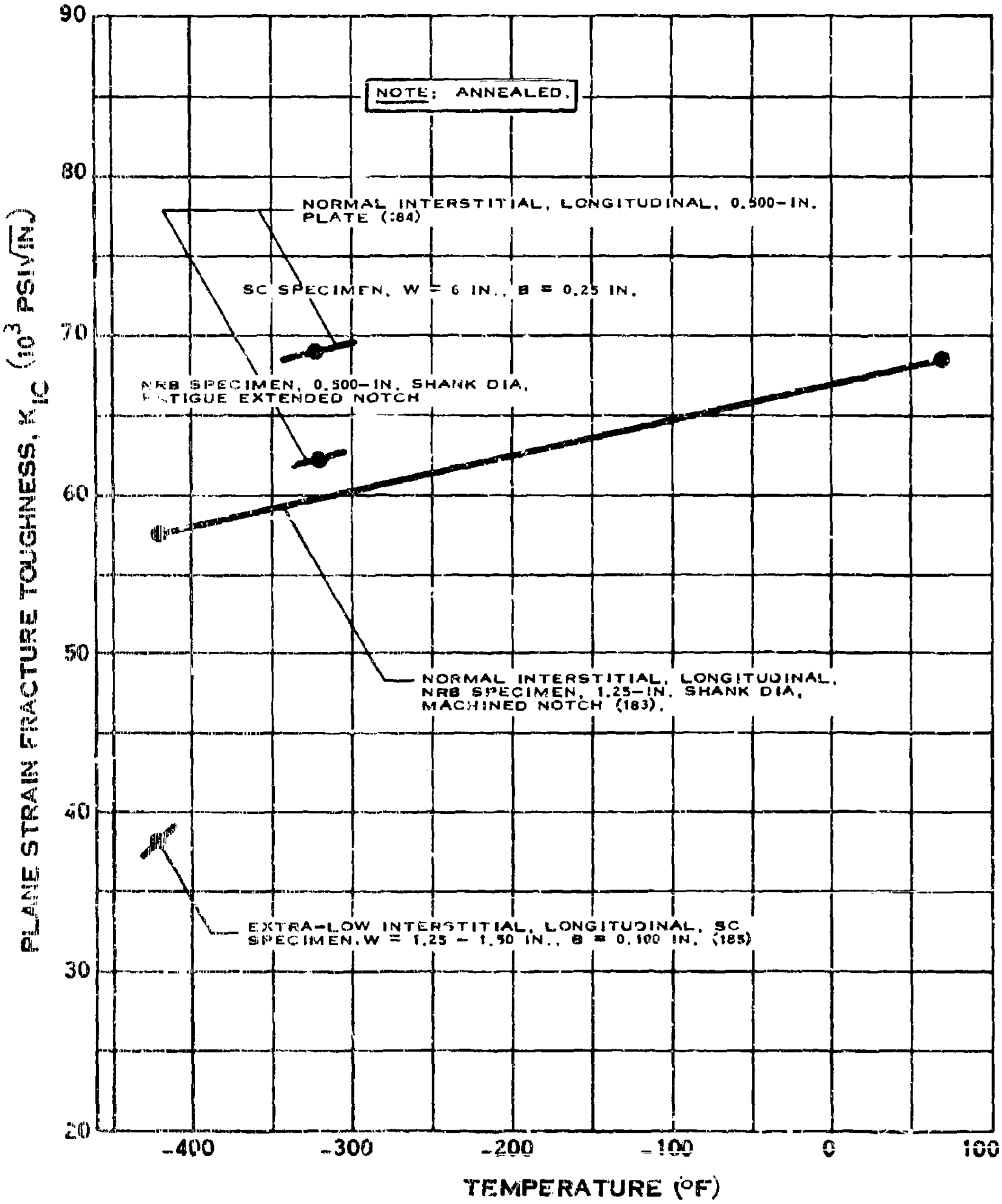


NOTCH TENSILE STRENGTH OF 6Al-4V TITANIUM



NOTCH STRENGTH RATIO OF 6Al-4V TITANIUM

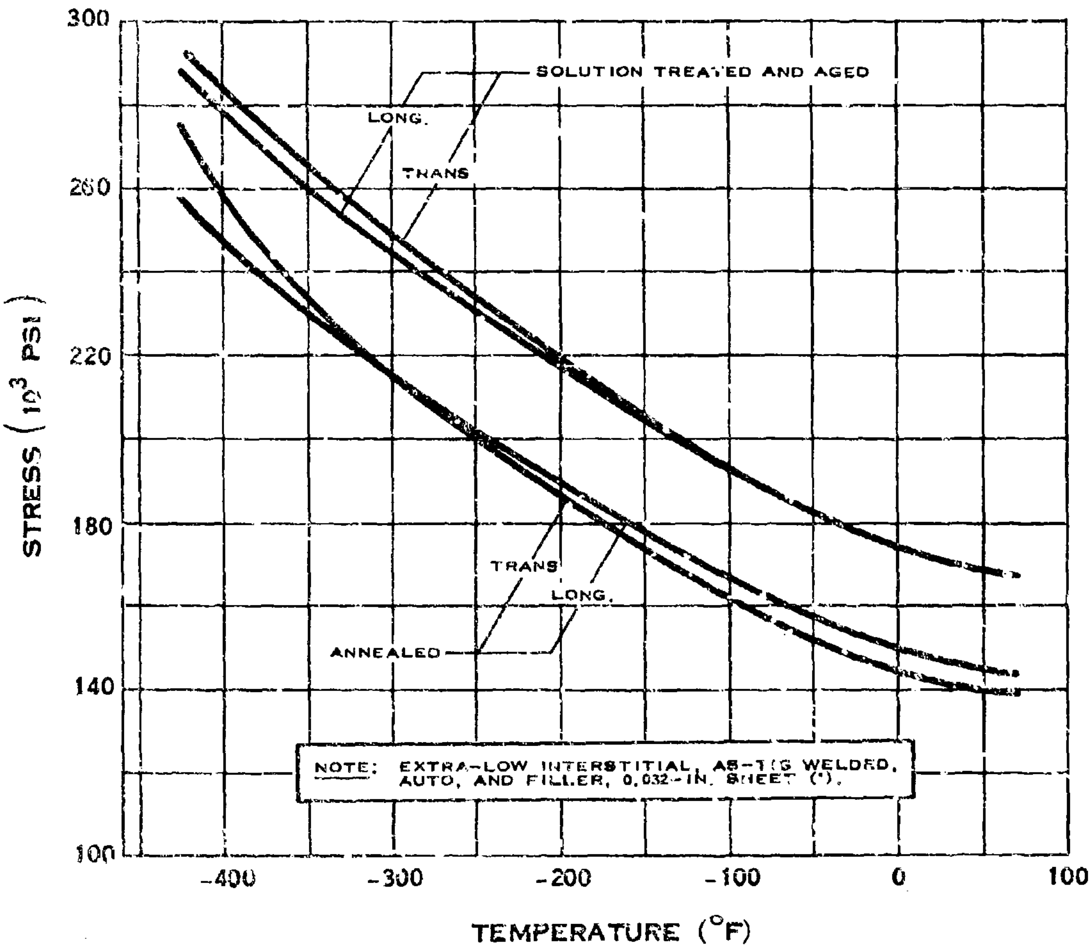
(1-63)



FRACTURE TOUGHNESS OF 6Al-4V TITANIUM

(3-66)

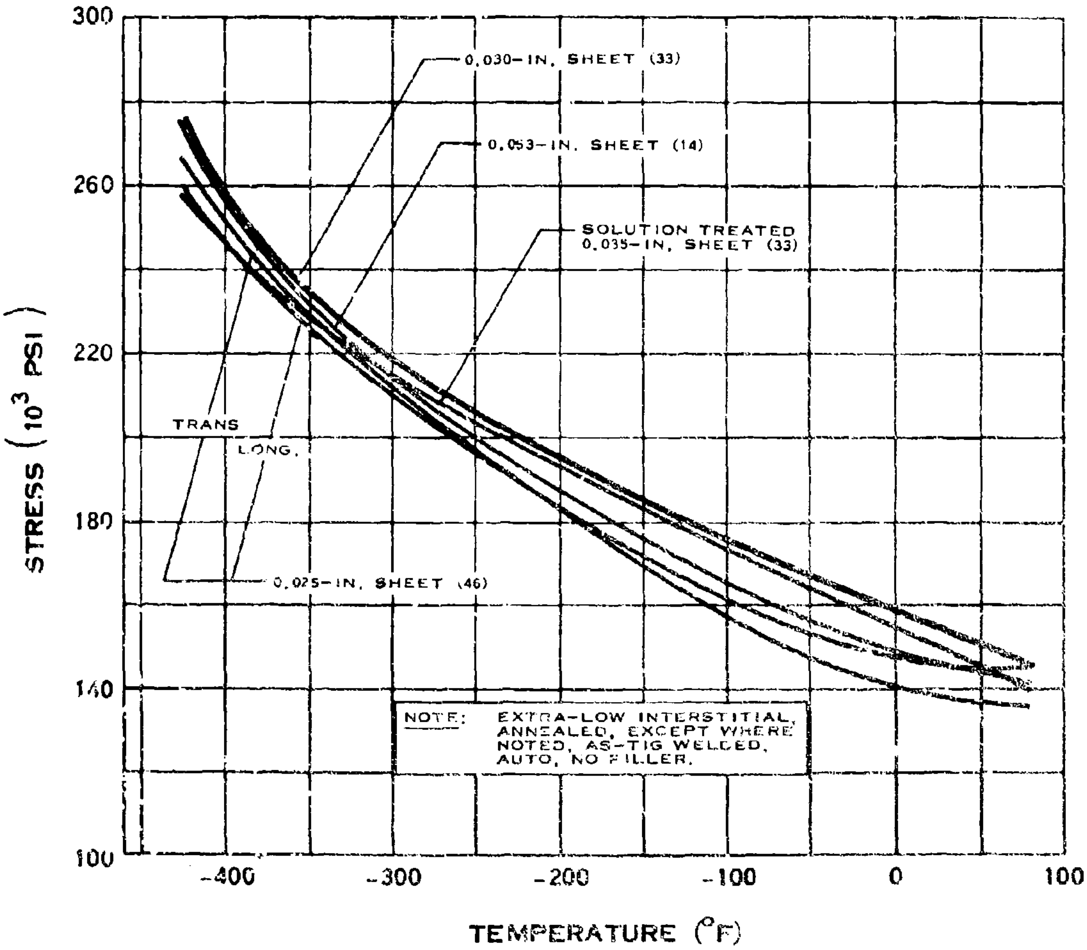
C.7.g



WELD TENSILE STRENGTH OF 6Al-4V TITANIUM

(1-65)

C.7.g-1



WELD TENSILE STRENGTH OF 6Al-4V TITANIUM

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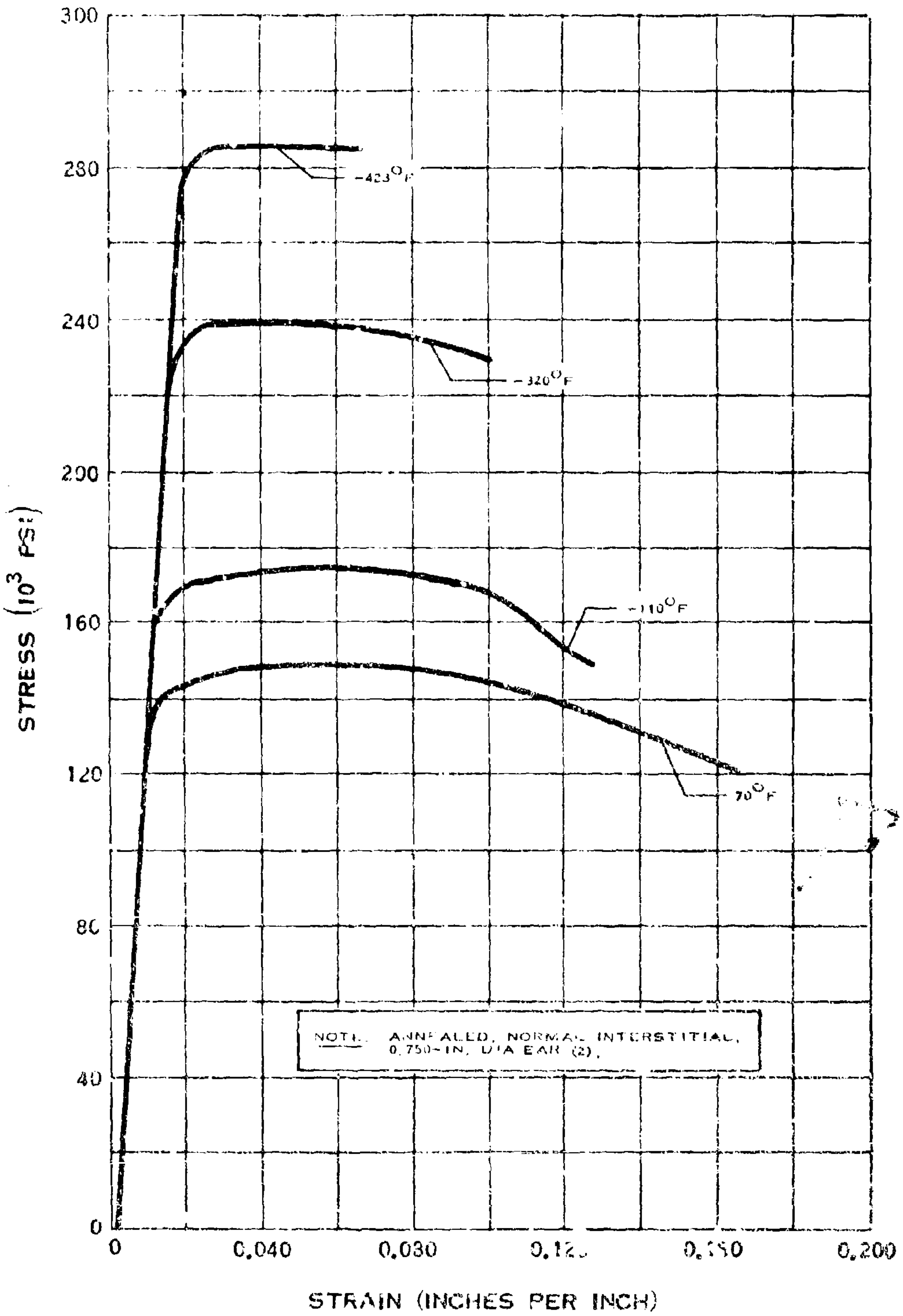
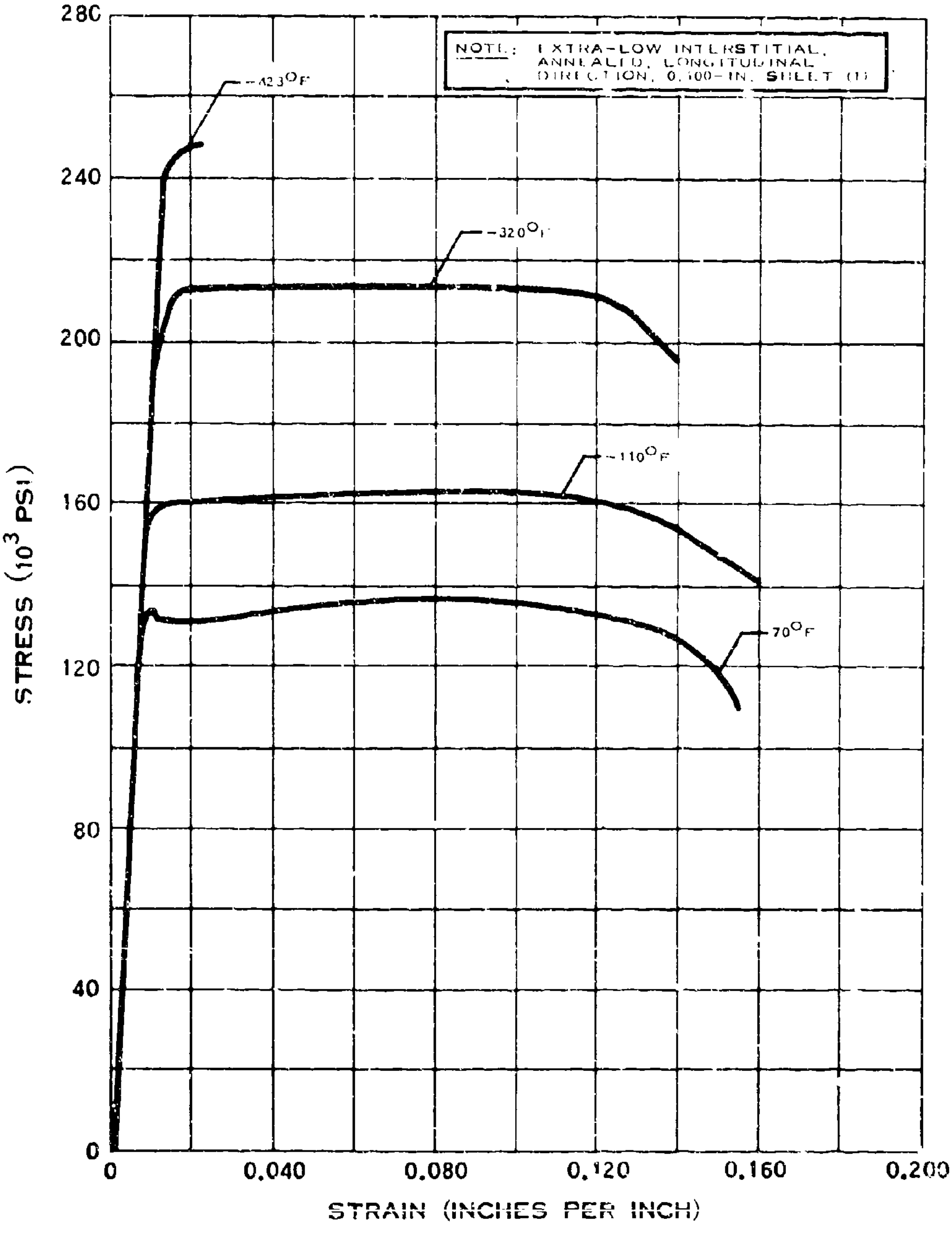
C.7.h



STRESS-STRAIN DIAGRAM FOR 6Al-4V TITANIUM

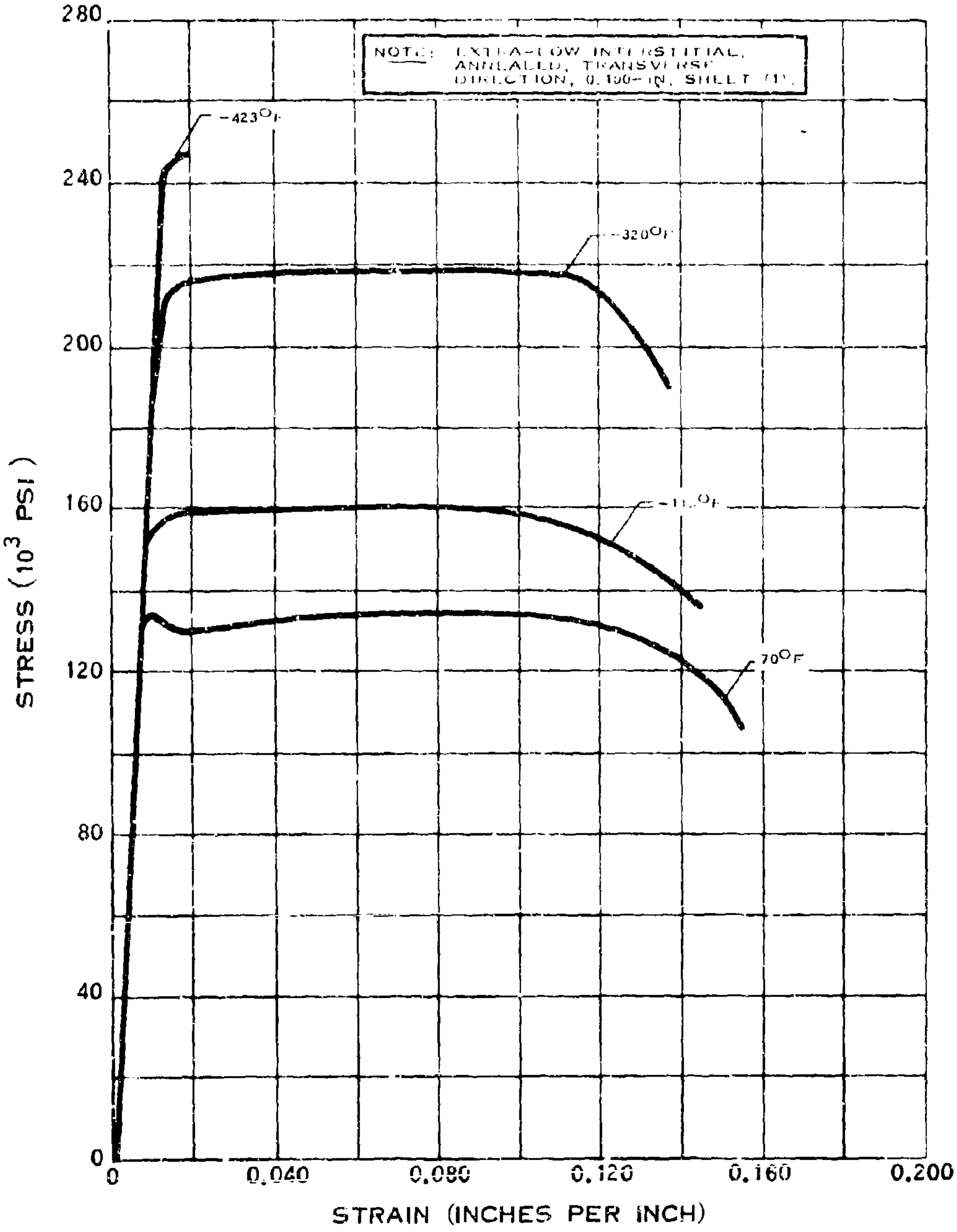
C.7.h-1



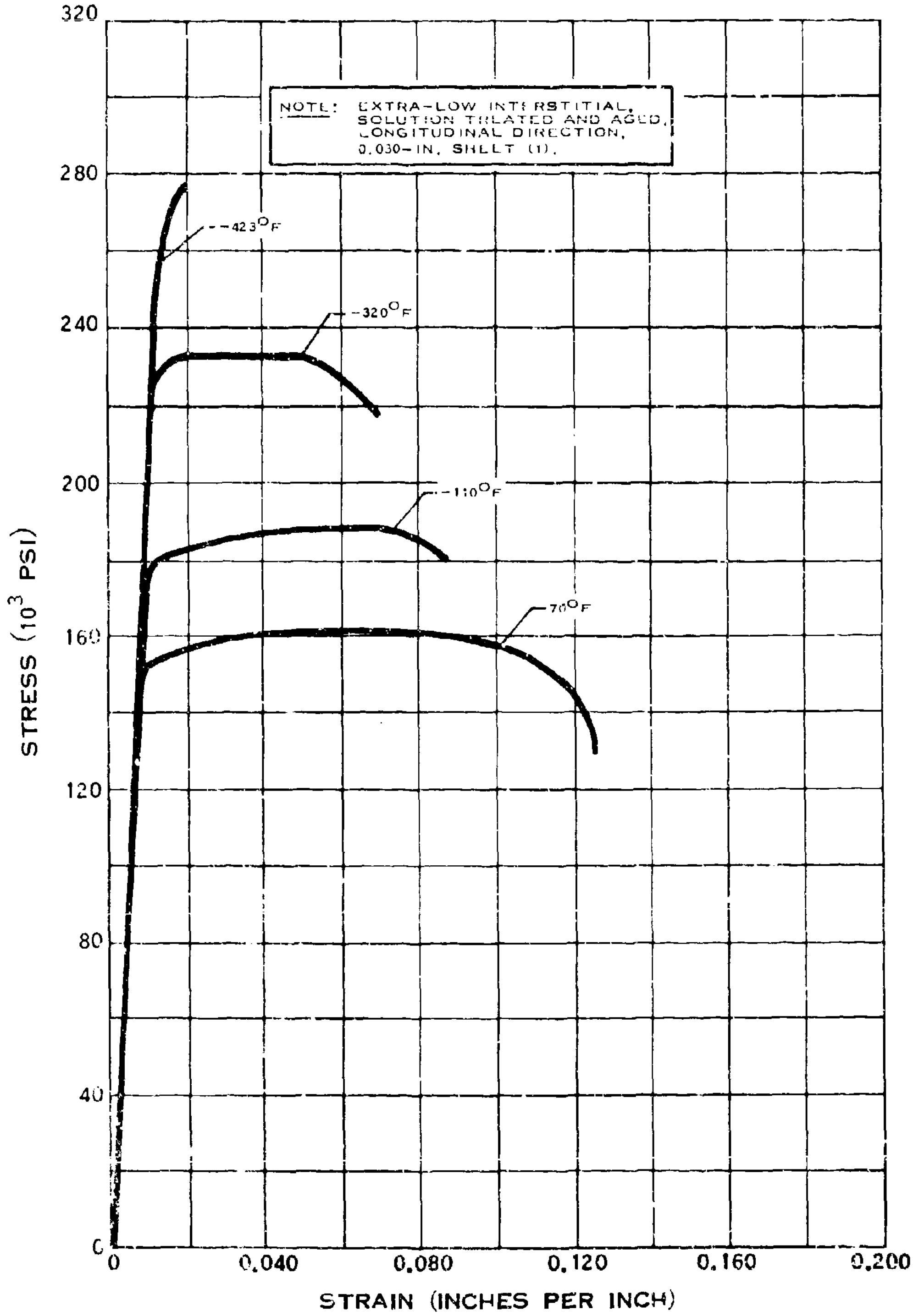
STRESS-STRAIN DIAGRAM FOR 6Al-4V TITANIUM

(1-65)

C.7.h-2

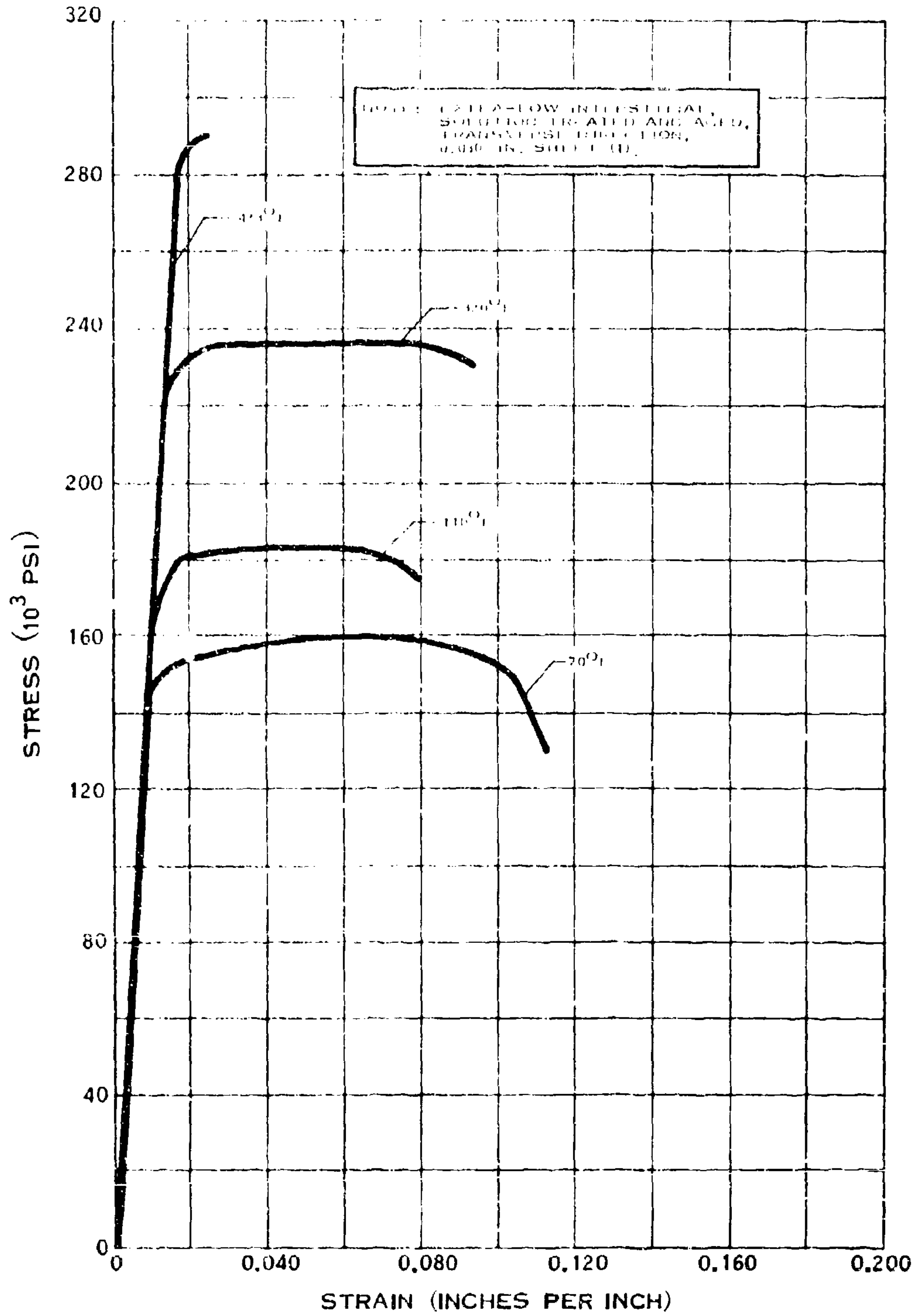


STRESS-STRAIN DIAGRAM FOR 6Al-4V TITANIUM

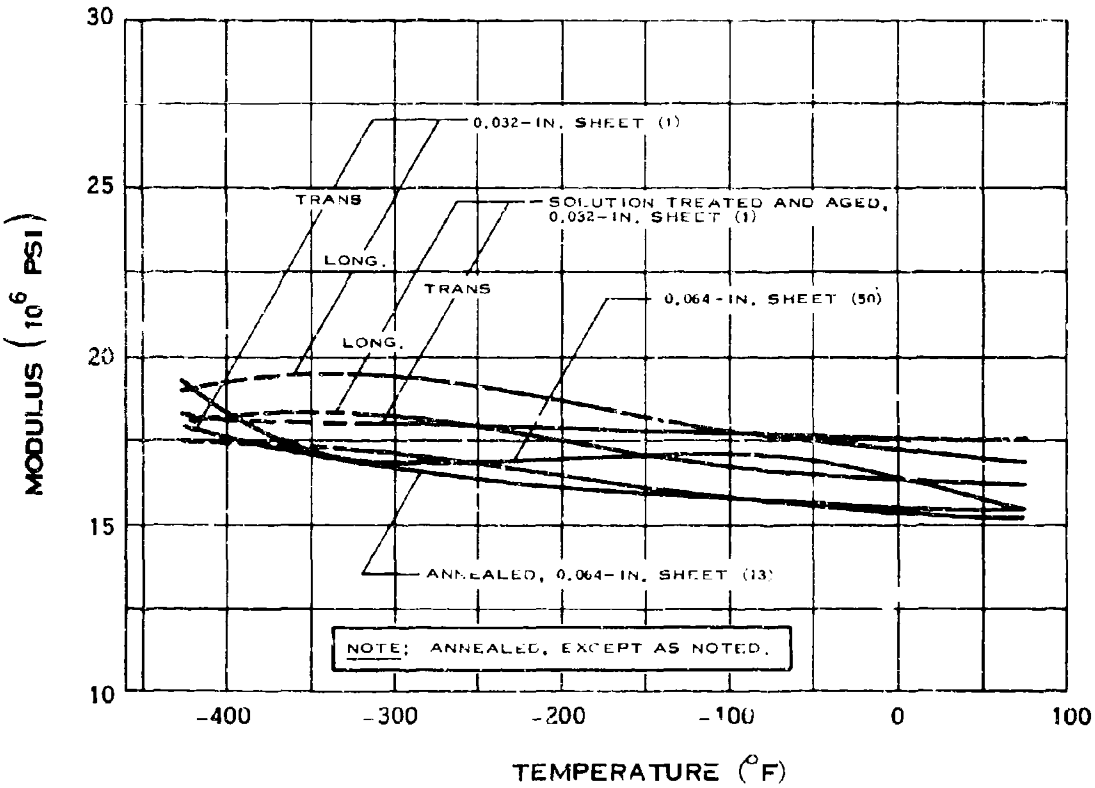


(1-65) **STRESS-STRAIN DIAGRAM FOR 6Al-4V TITANIUM**

C.7.h-4

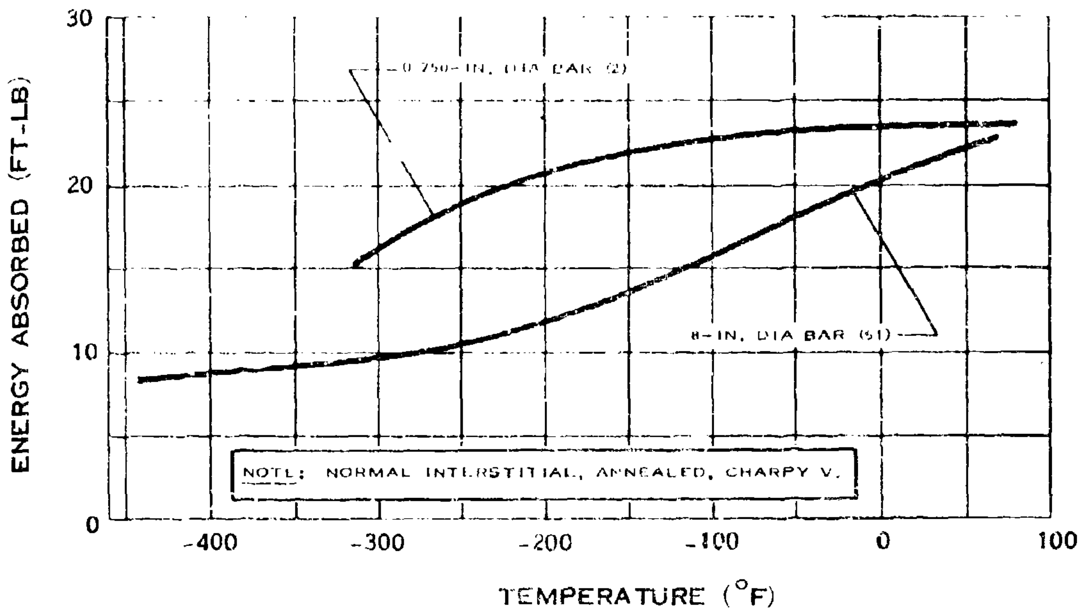


(1-65) **STRESS-STRAIN DIAGRAM FOR 6Al-4V TITANIUM**



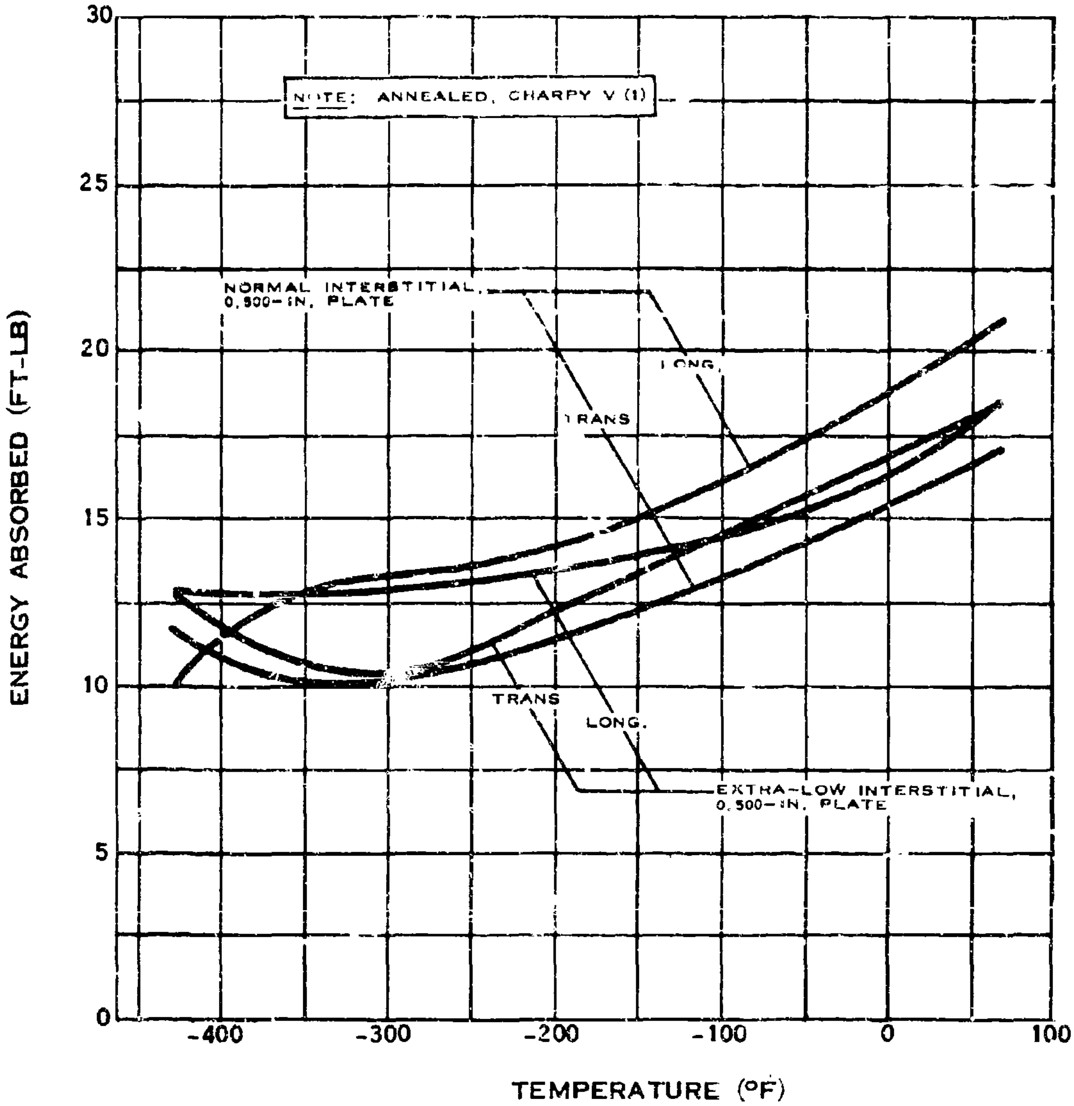
MODULUS OF ELASTICITY OF 6Al-4V TITANIUM

C.7.j



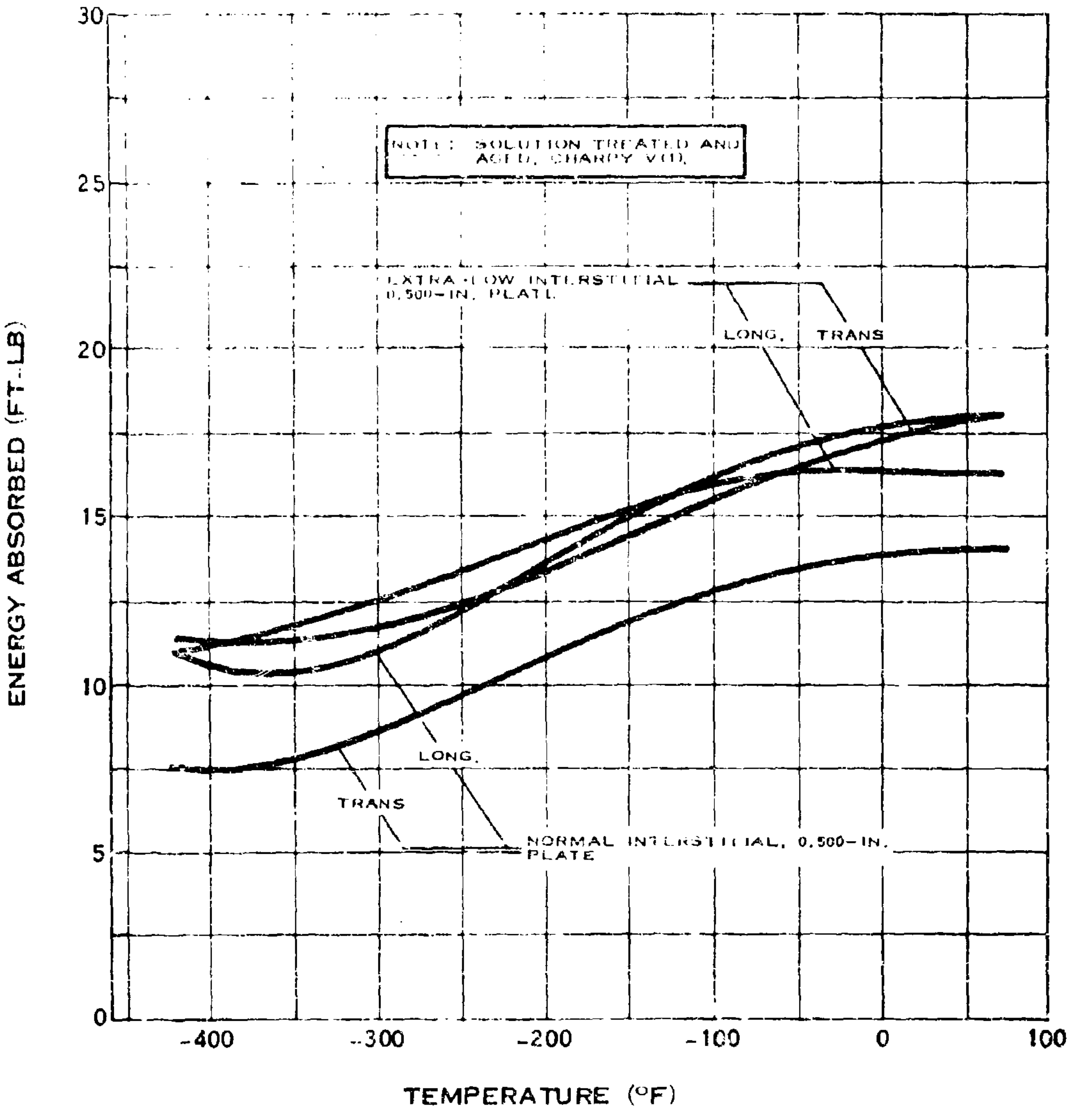
IMPACT STRENGTH OF 6Al-4V TITANIUM

C.7.j-1

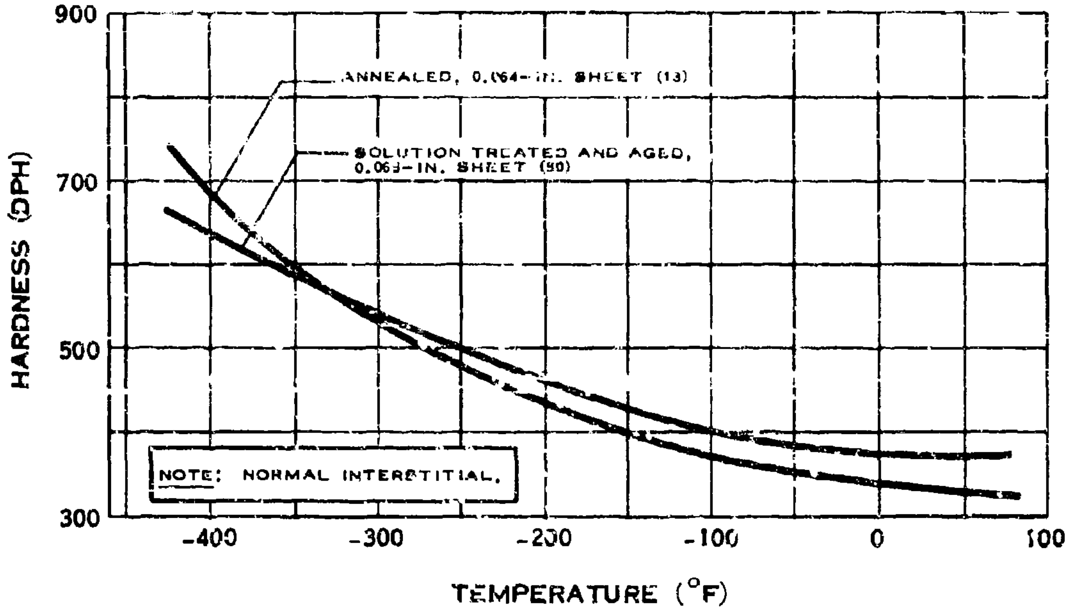


IMPACT STRENGTH OF 6Al -4V TITANIUM

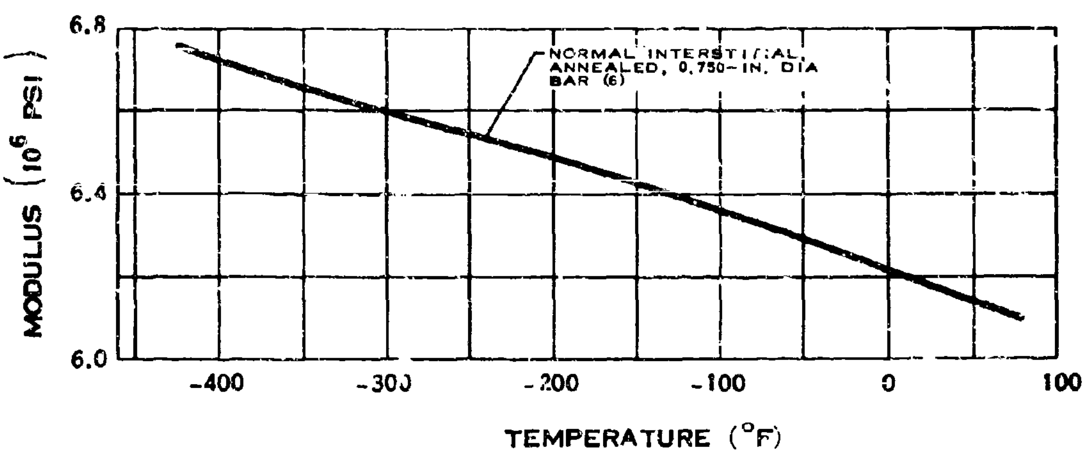
C.7.j-2



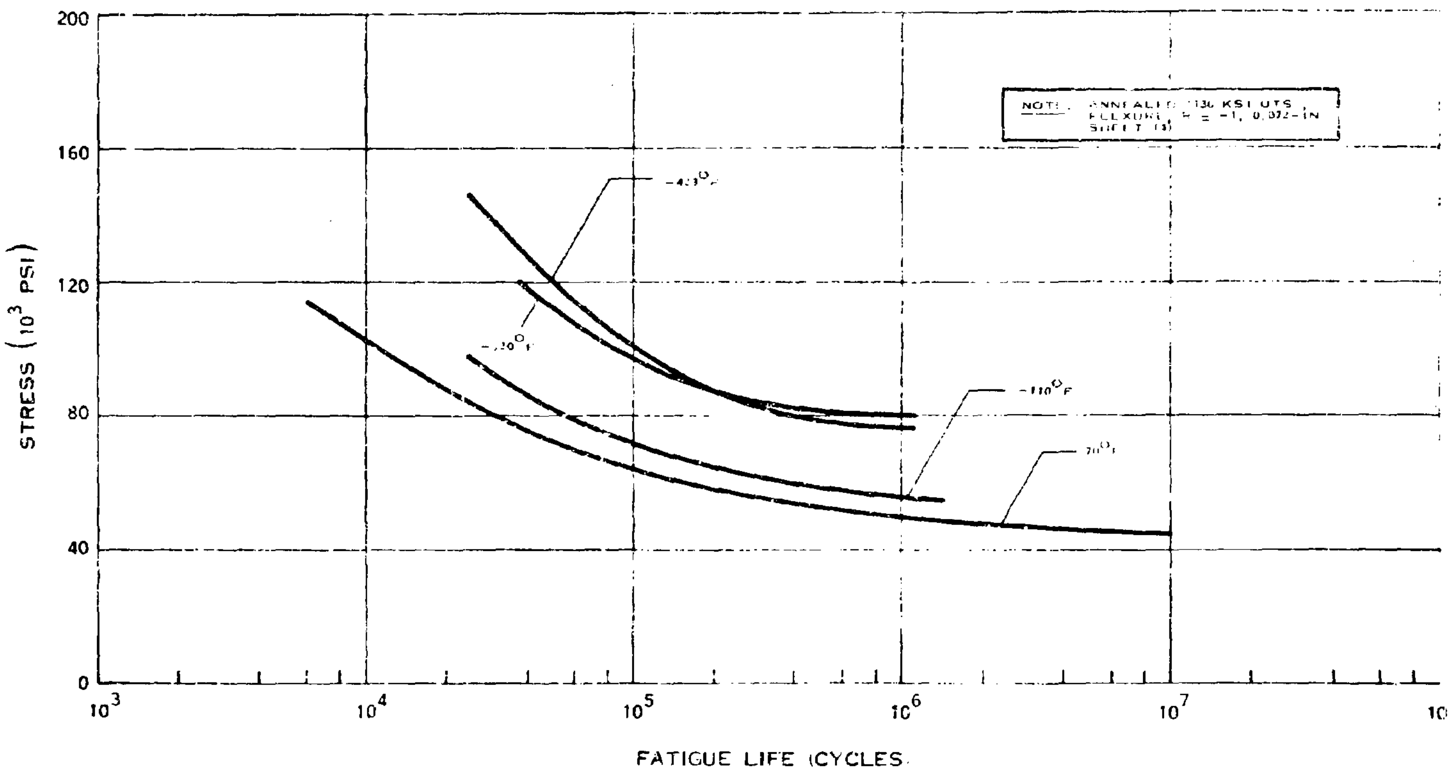
IMPACT STRENGTH OF 6Al -4V TITANIUM



HARDNESS OF 6Al-4V TITANIUM

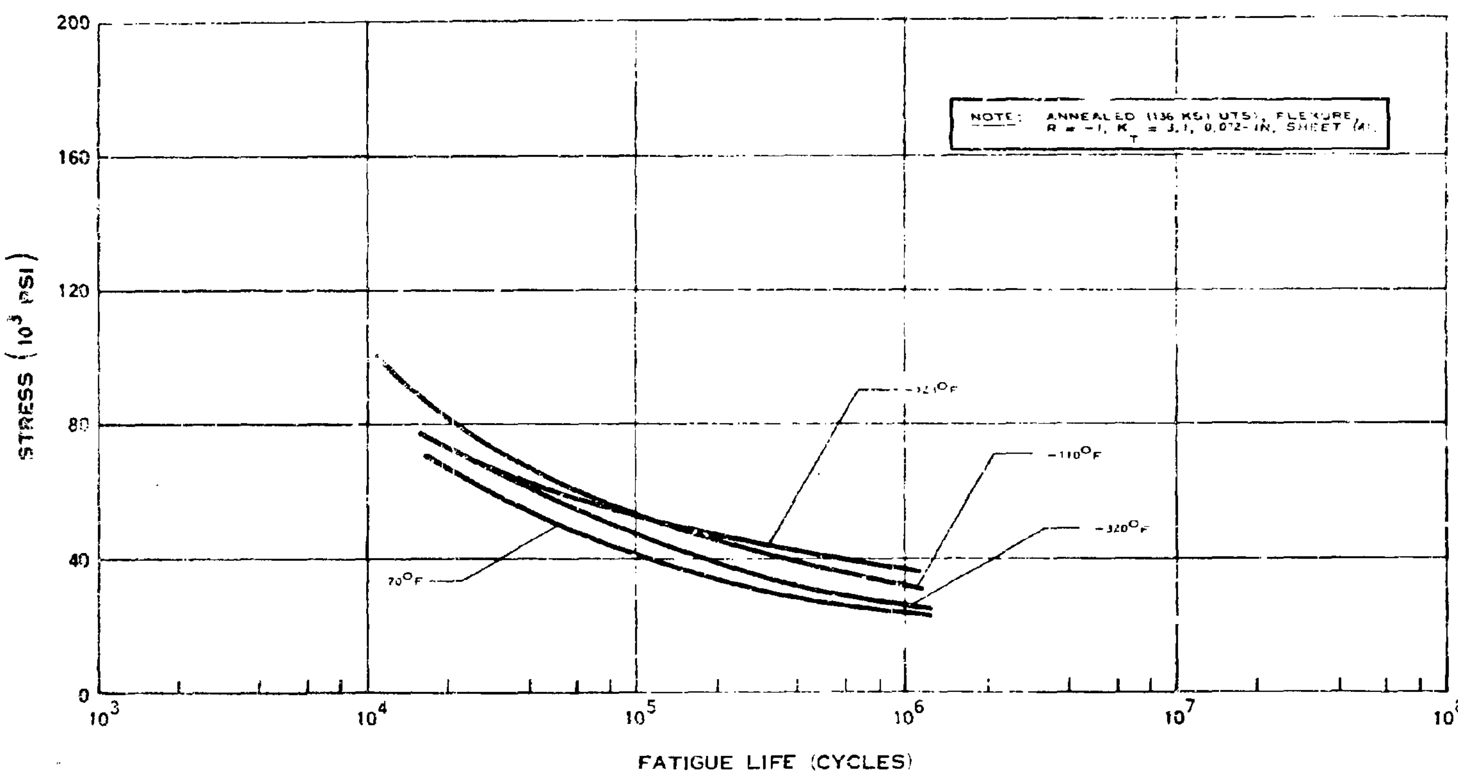


MODULUS OF RIGIDITY OF 6Al-4V TITANIUM



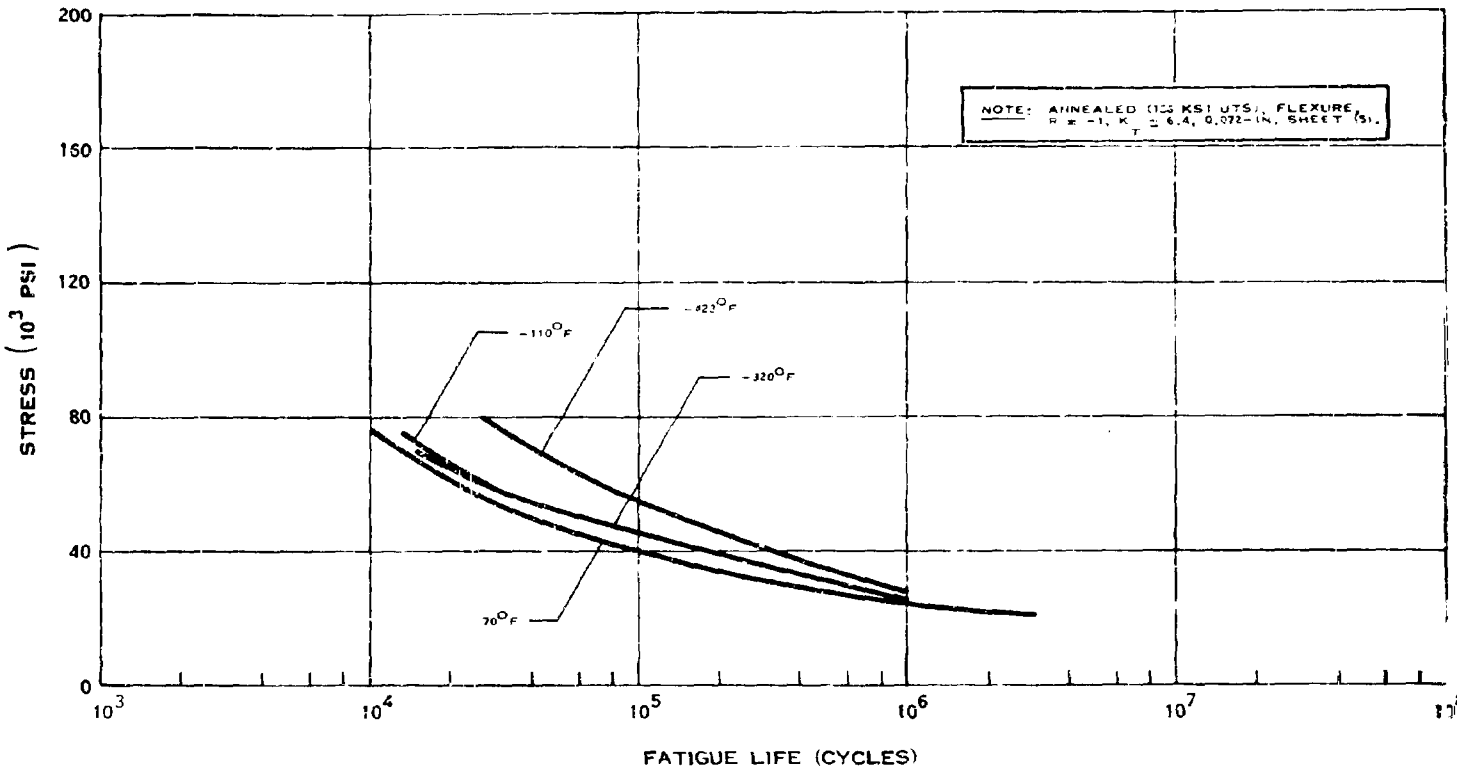
FATIGUE STRENGTH OF 6Al-4V TITANIUM

C.7.o-1

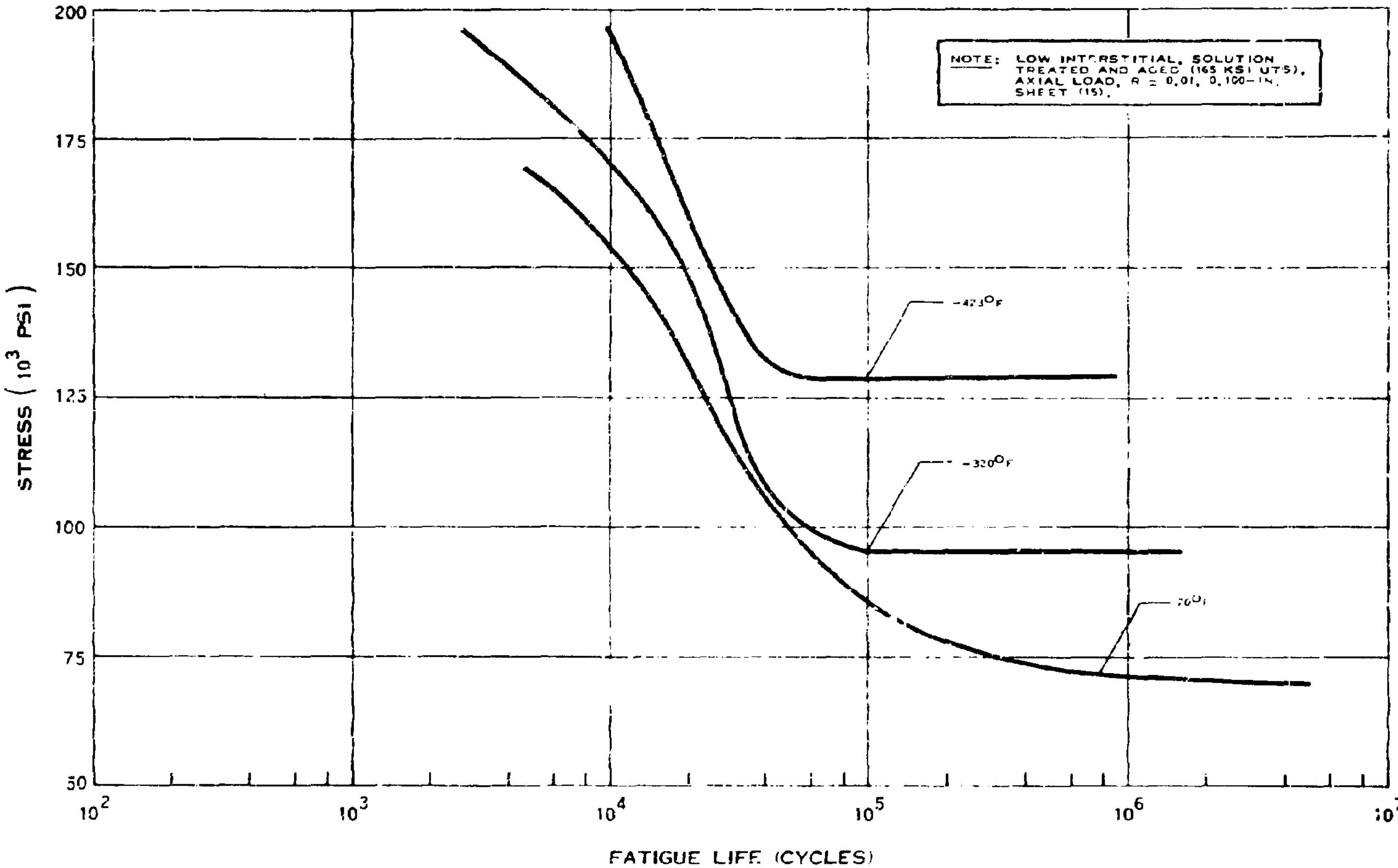


NOTCH FATIGUE STRENGTH OF 6Al-4V TITANIUM

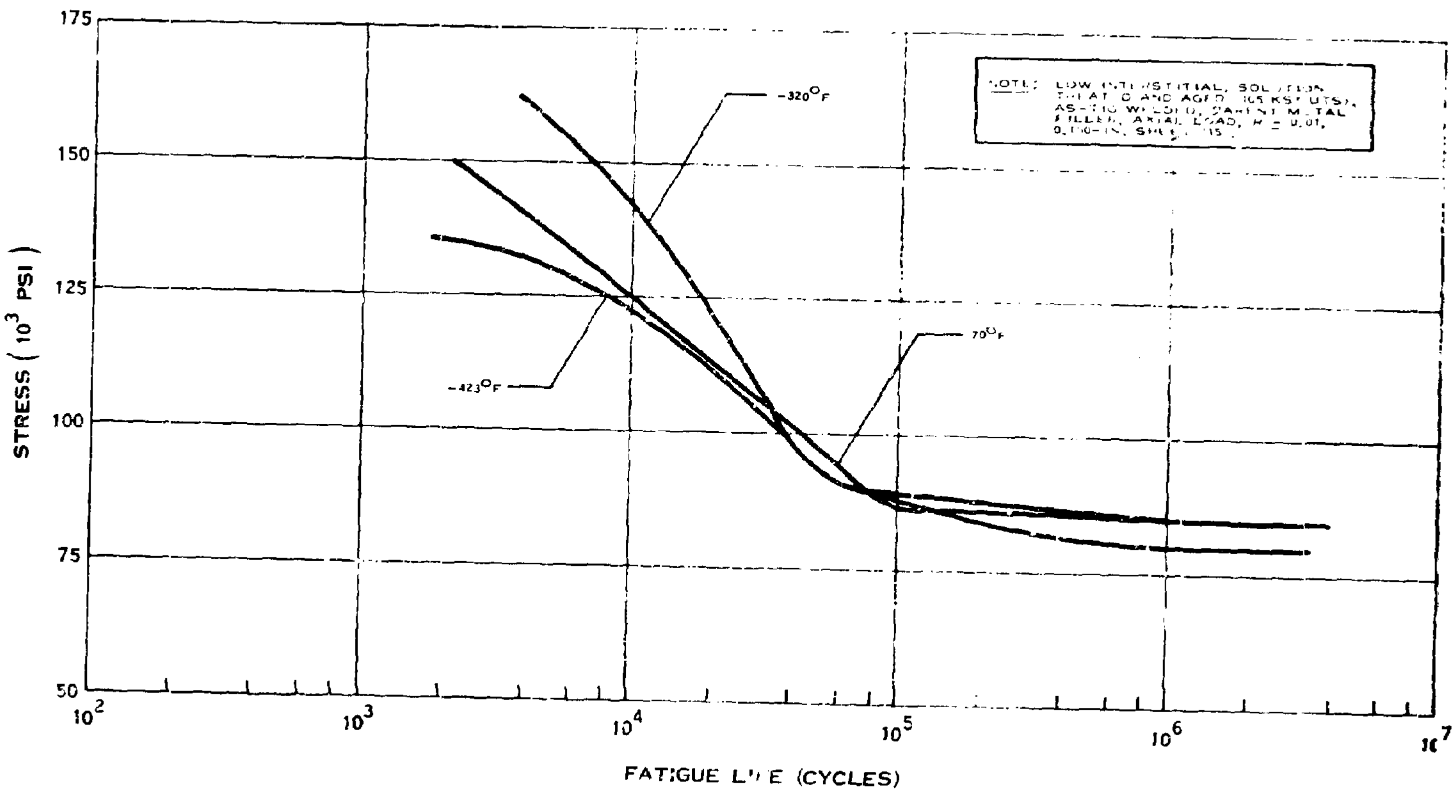
C.7.o-2



NOTCH FATIGUE STRENGTH OF 6Al-4V TITANIUM

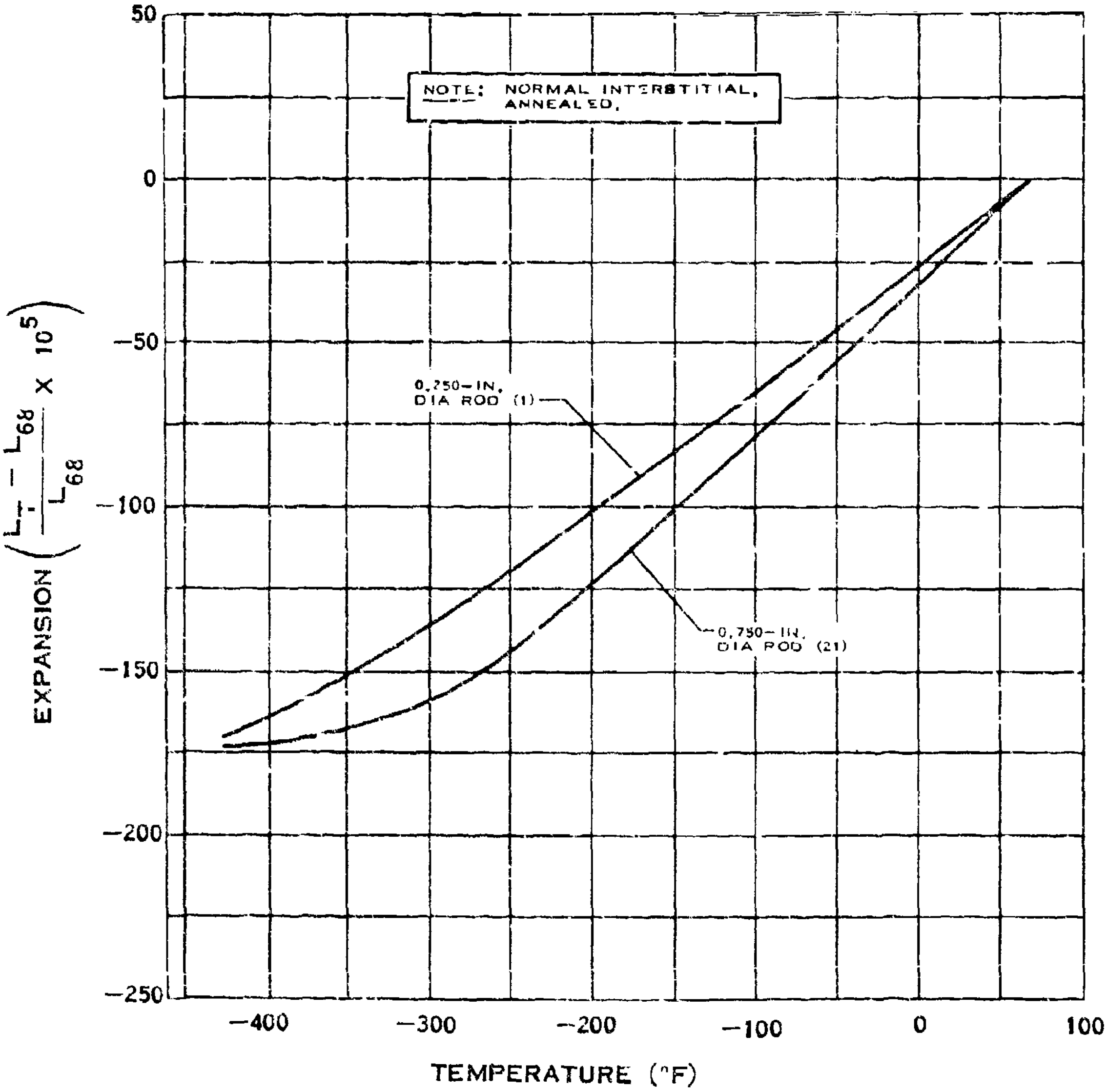


FATIGUE STRENGTH OF 6Al-4V TITANIUM



WELD FATIGUE STRENGTH OF 6Al-4V TITANIUM

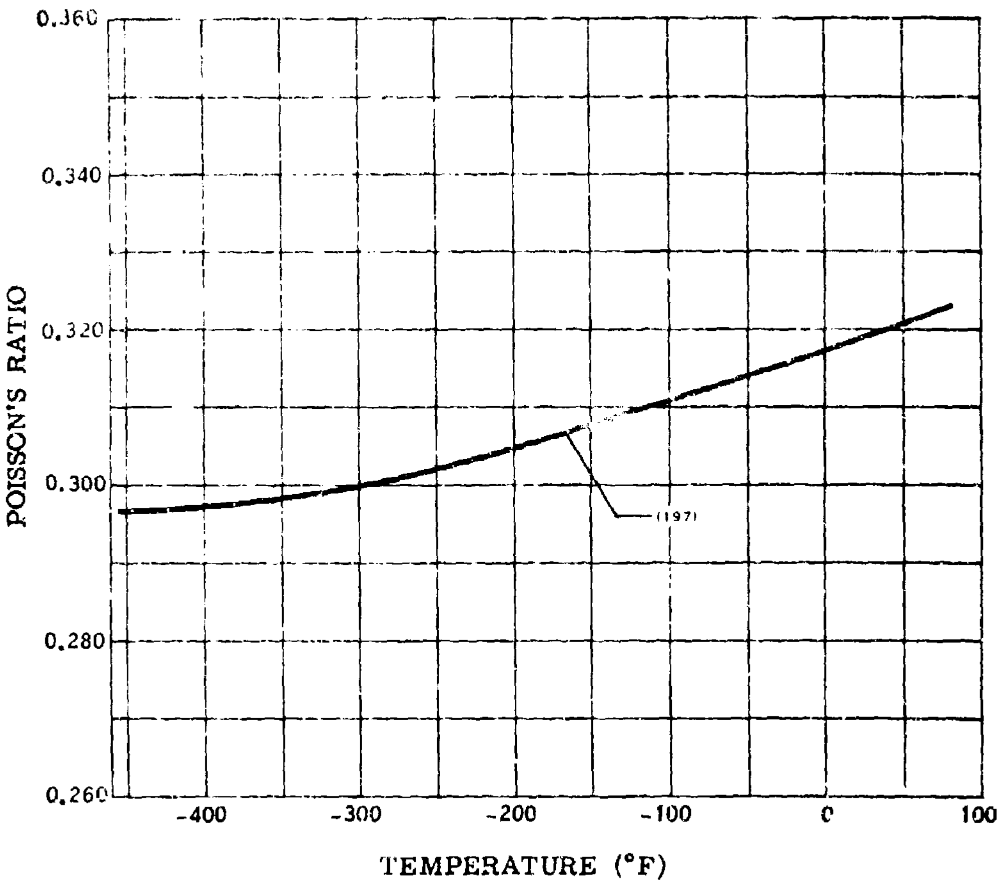
C.7.t



THERMAL EXPANSION OF 6Al-4V TITANIUM

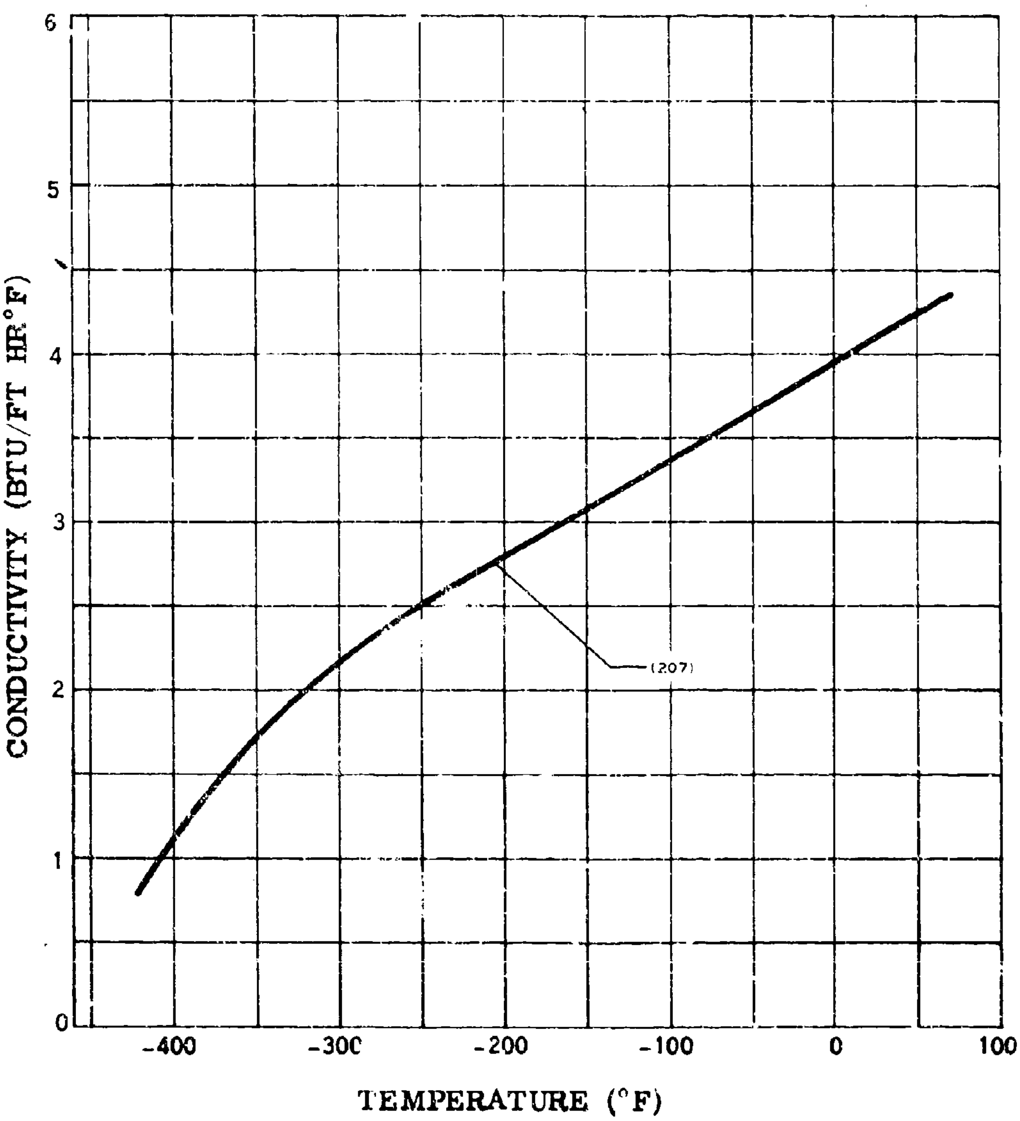
(1-65)

C.7.u



POISSON'S RATIO OF 6Al-4V TITANIUM

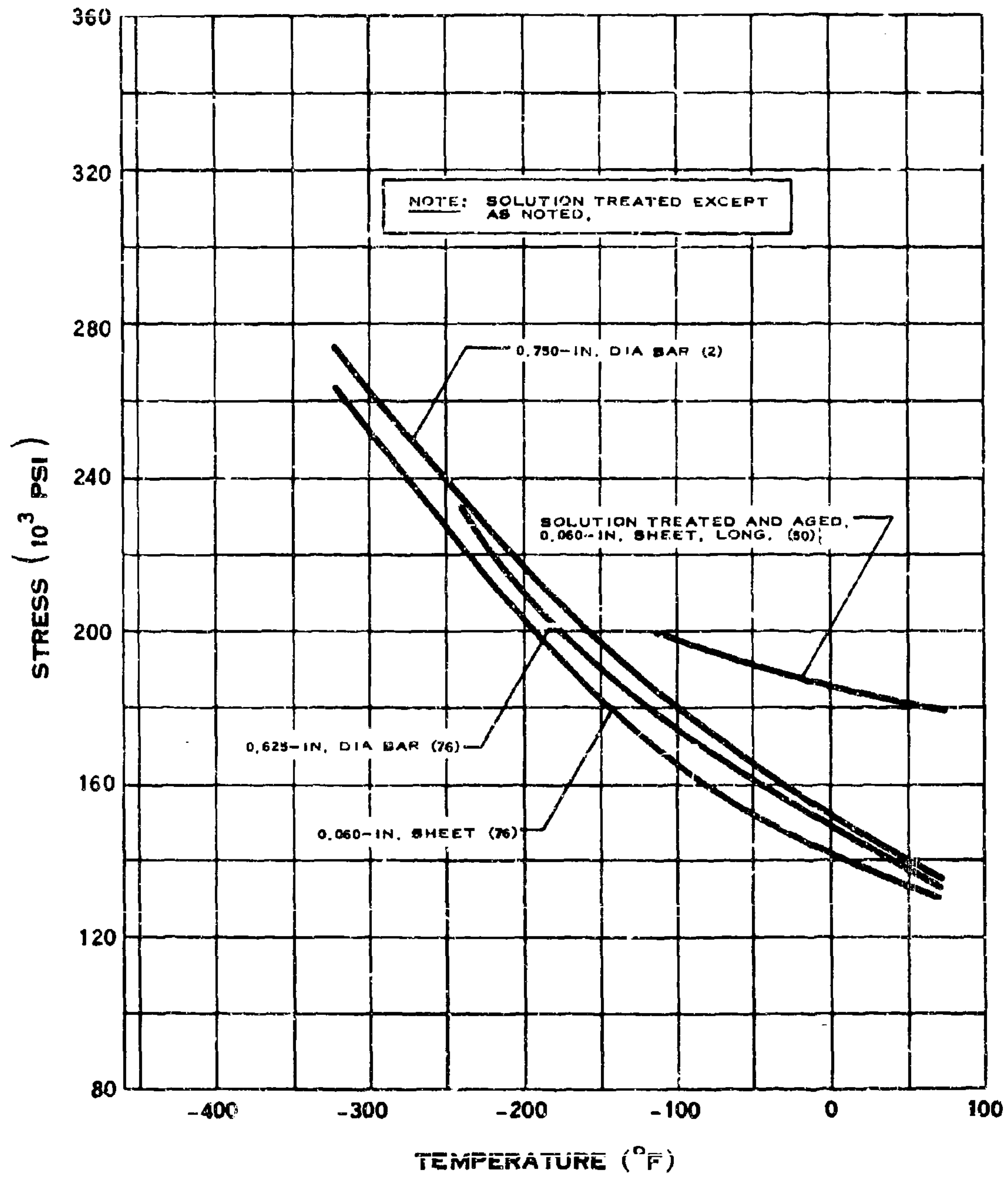
16-68.



THERMAL CONDUCTIVITY OF 6Al-4V TITANIUM

(6-68)

C.8.a



YIELD STRENGTH OF 13V-11Cr-3Al TITANIUM

(1-68)

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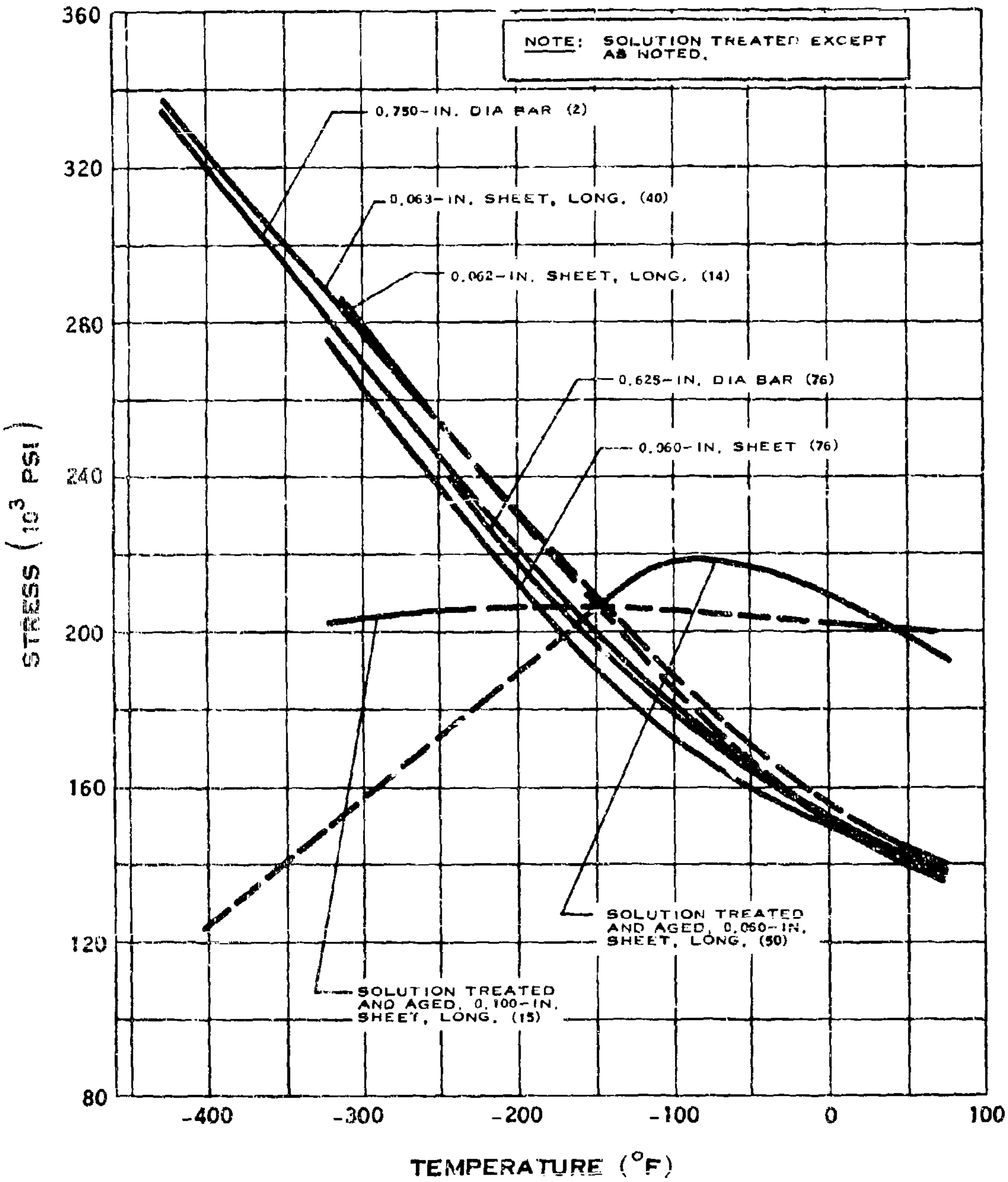
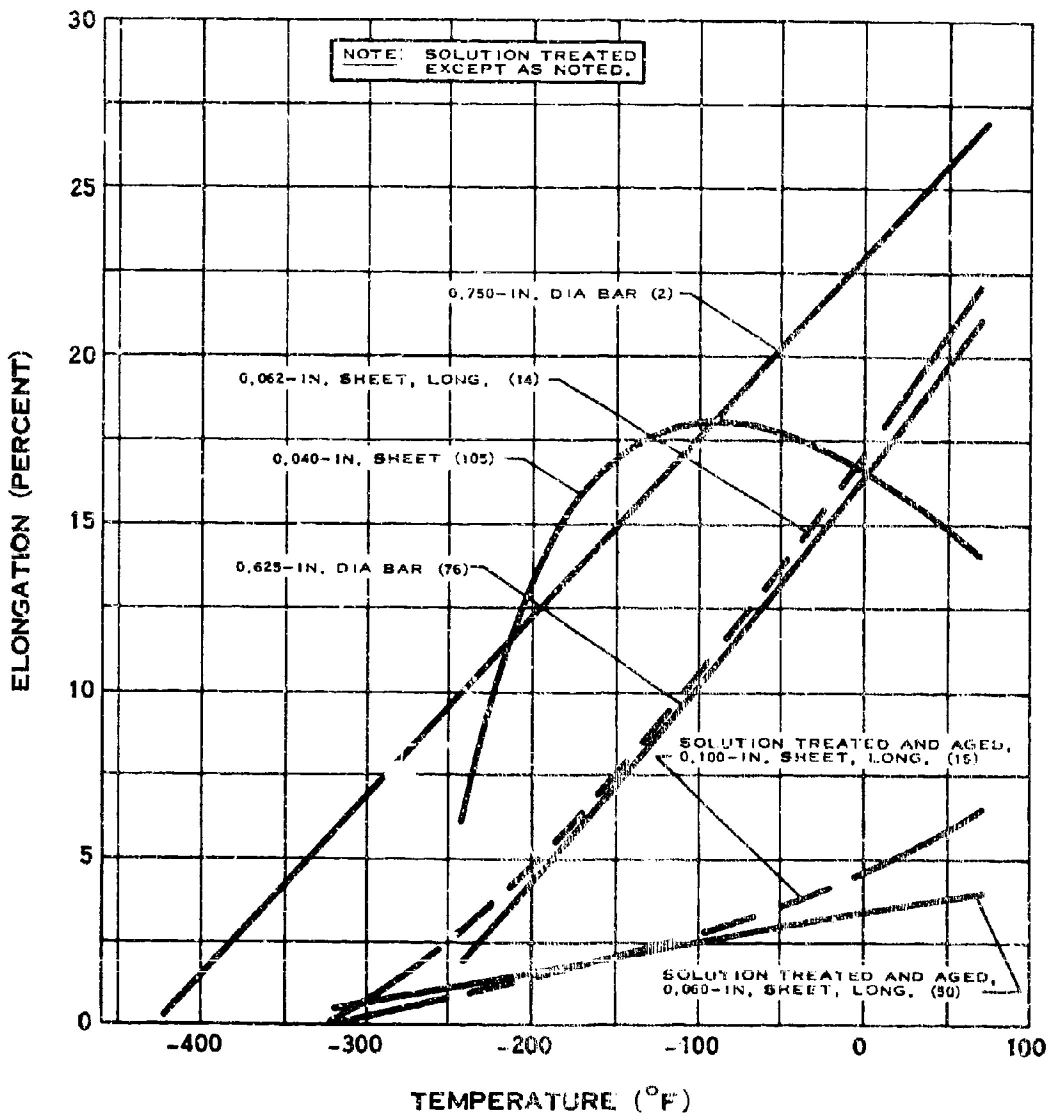
C.8.b

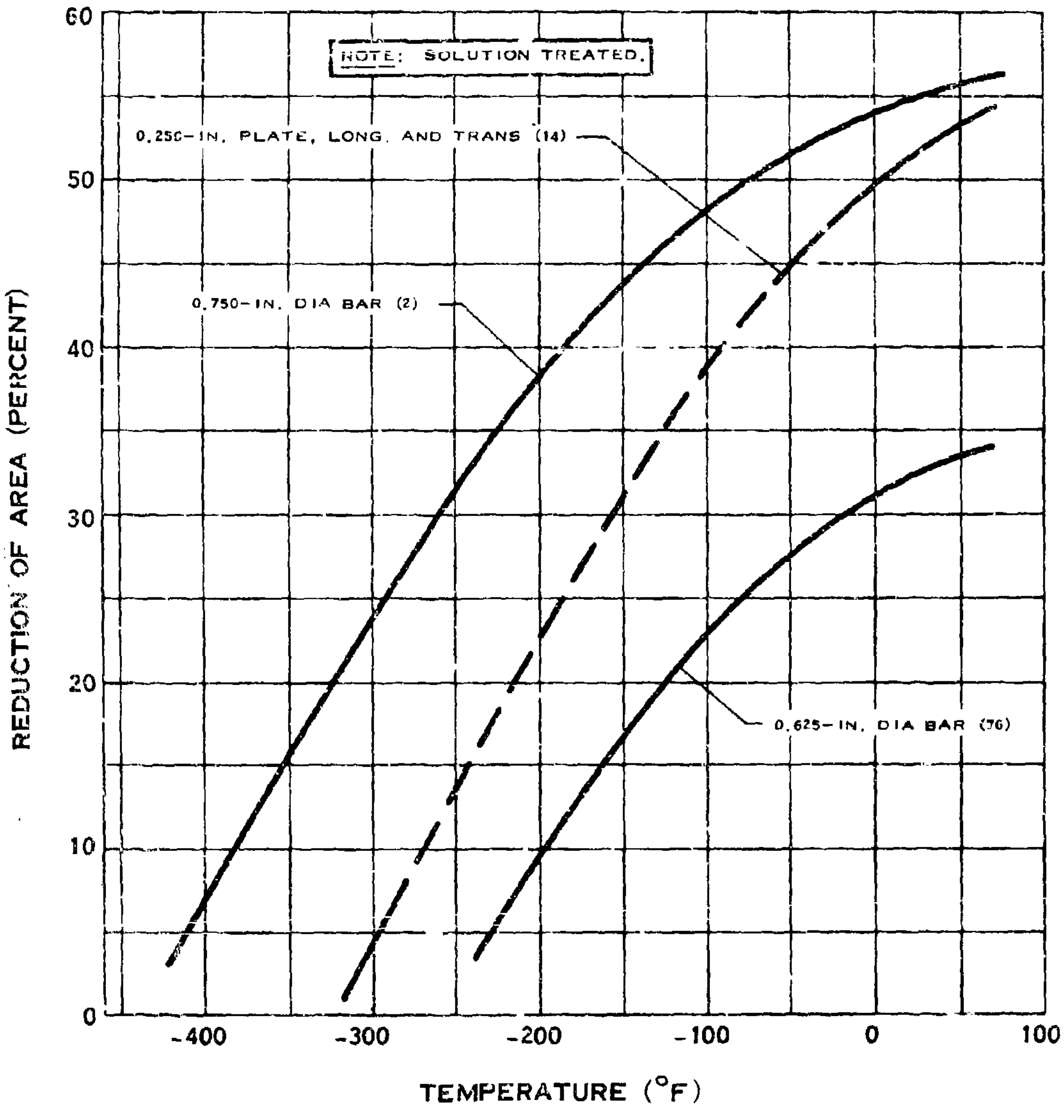


TENSILE STRENGTH OF 13V-11Cr-3Al TITANIUM



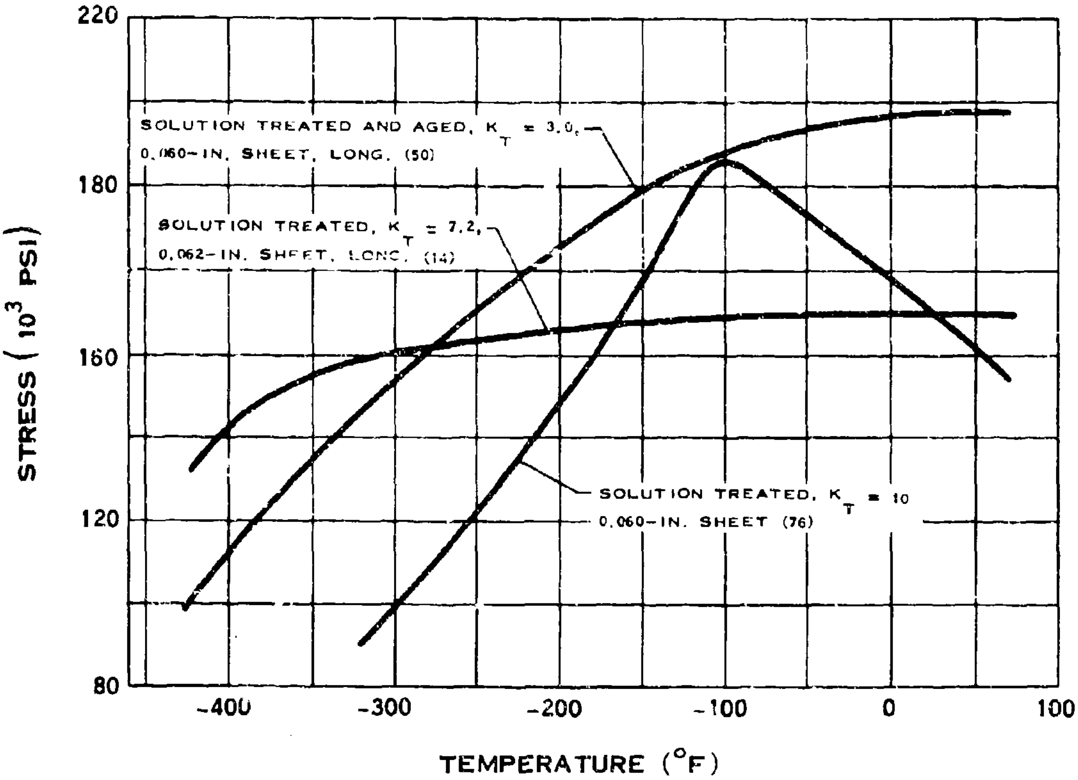
ELONGATION OF 13V-11Cr-3Al TITANIUM

C.8.d



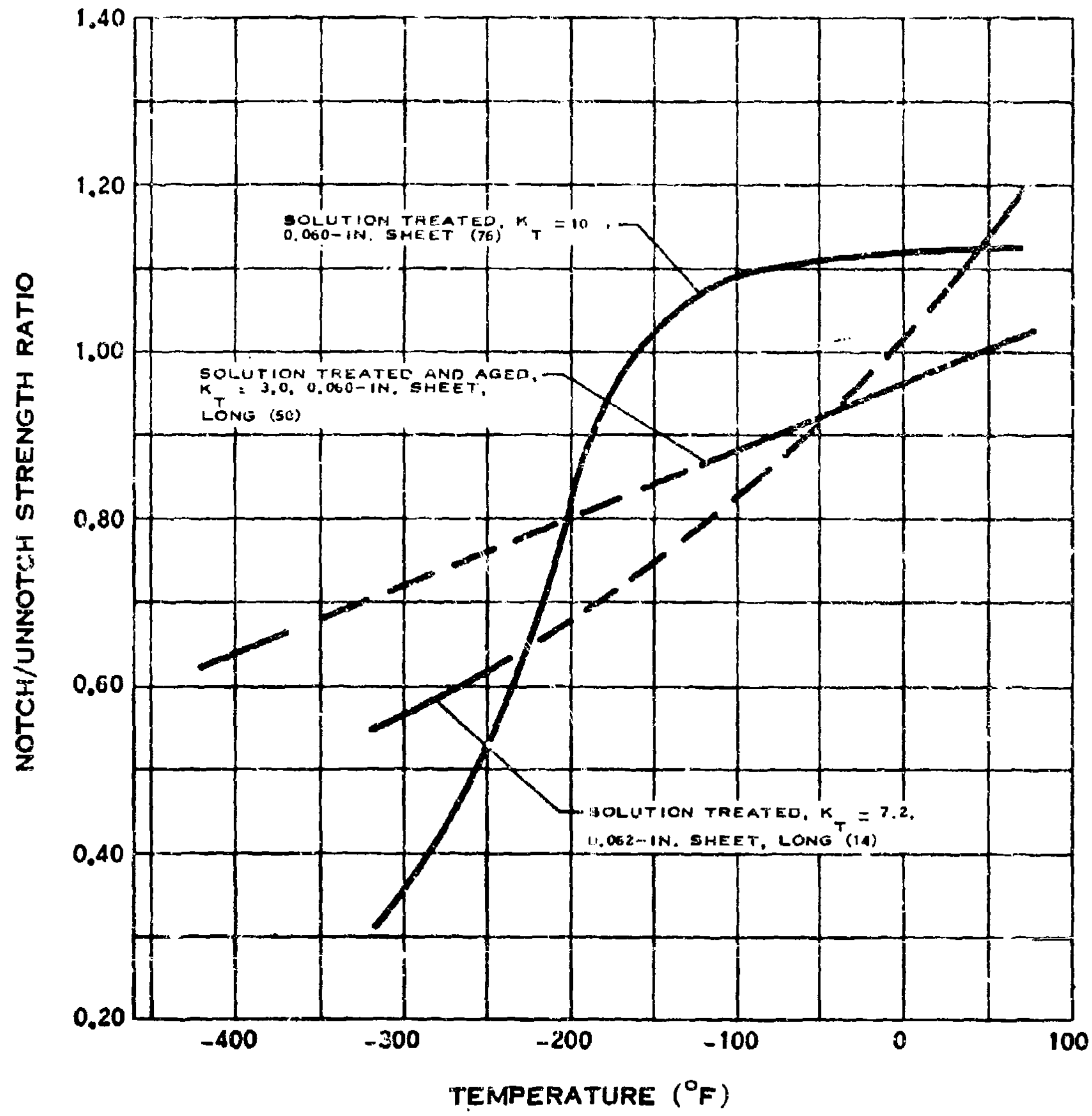
REDUCTION OF AREA OF 13V-11Cr-3Al TITANIUM

C.8.e



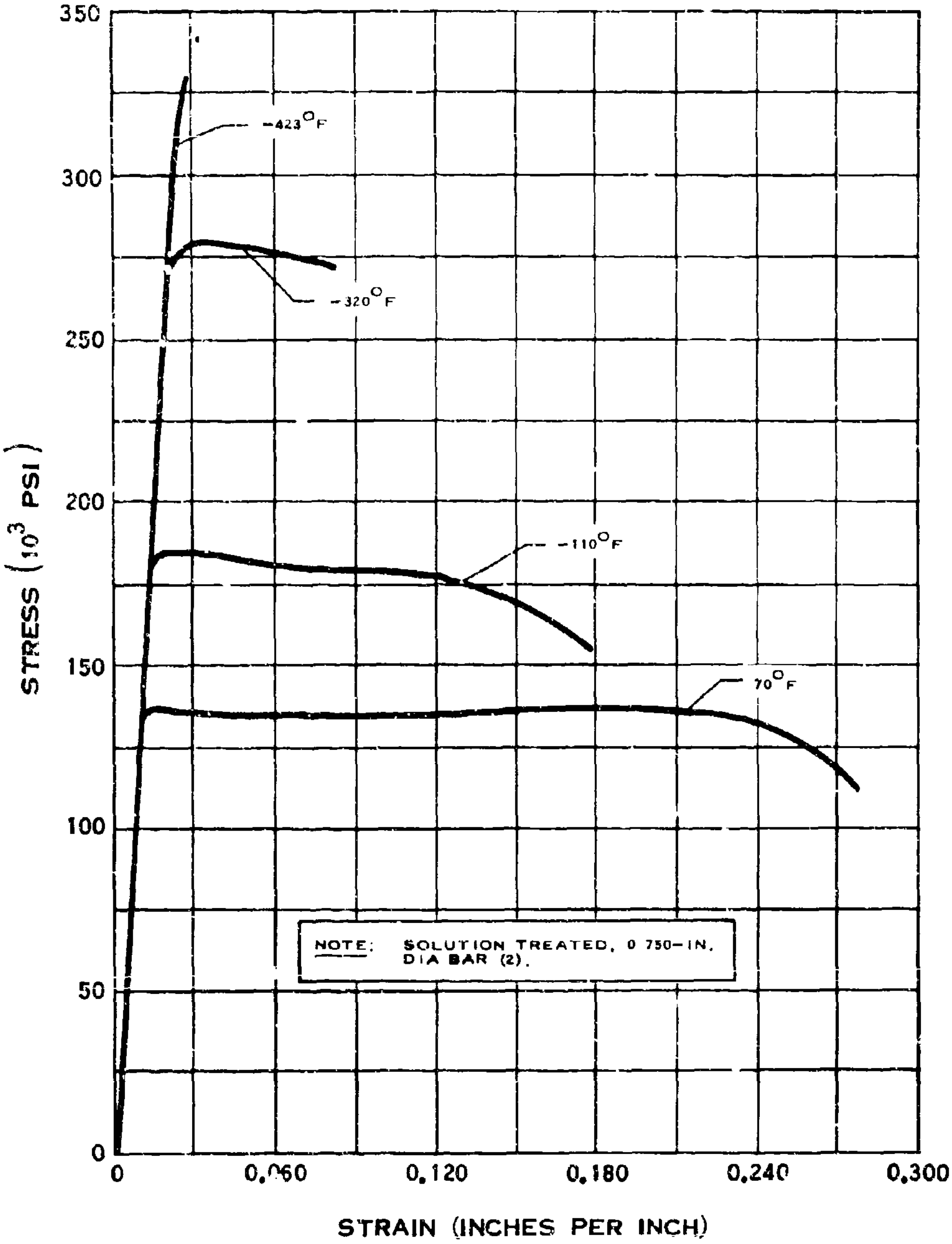
NOTCH TENSILE STRENGTH OF 13V-11Cr-3Al TITANIUM

(1 -65)



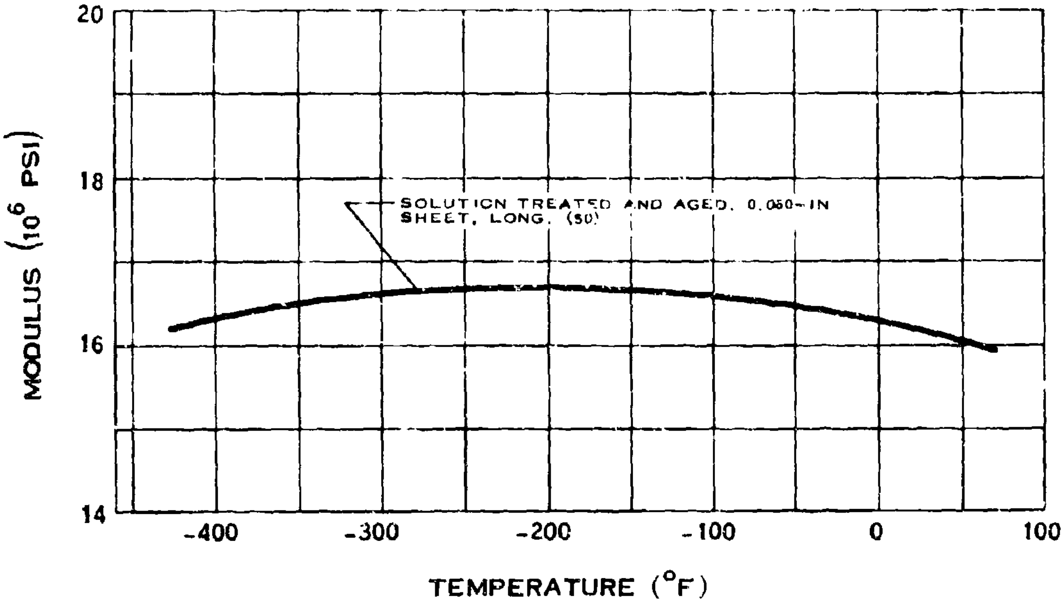
NOTCH STRENGTH RATIO OF 13V-11Cr-3Al TITANIUM

C.8.h



STRESS-STRAIN DIAGRAM FOR 13V-11Cr-3Al TITANIUM

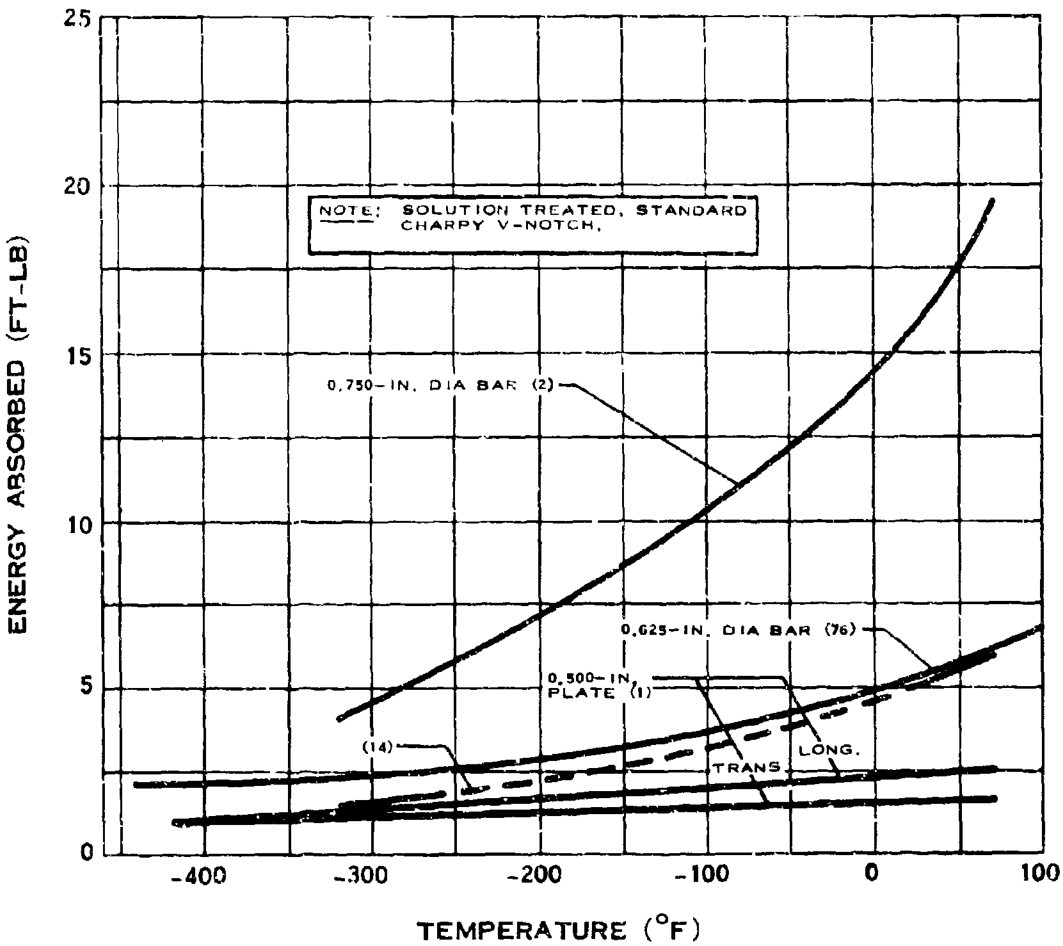
C.8.i



MODULUS OF ELASTICITY OF 13V-11Cr-3Al TITANIUM

(1-65)

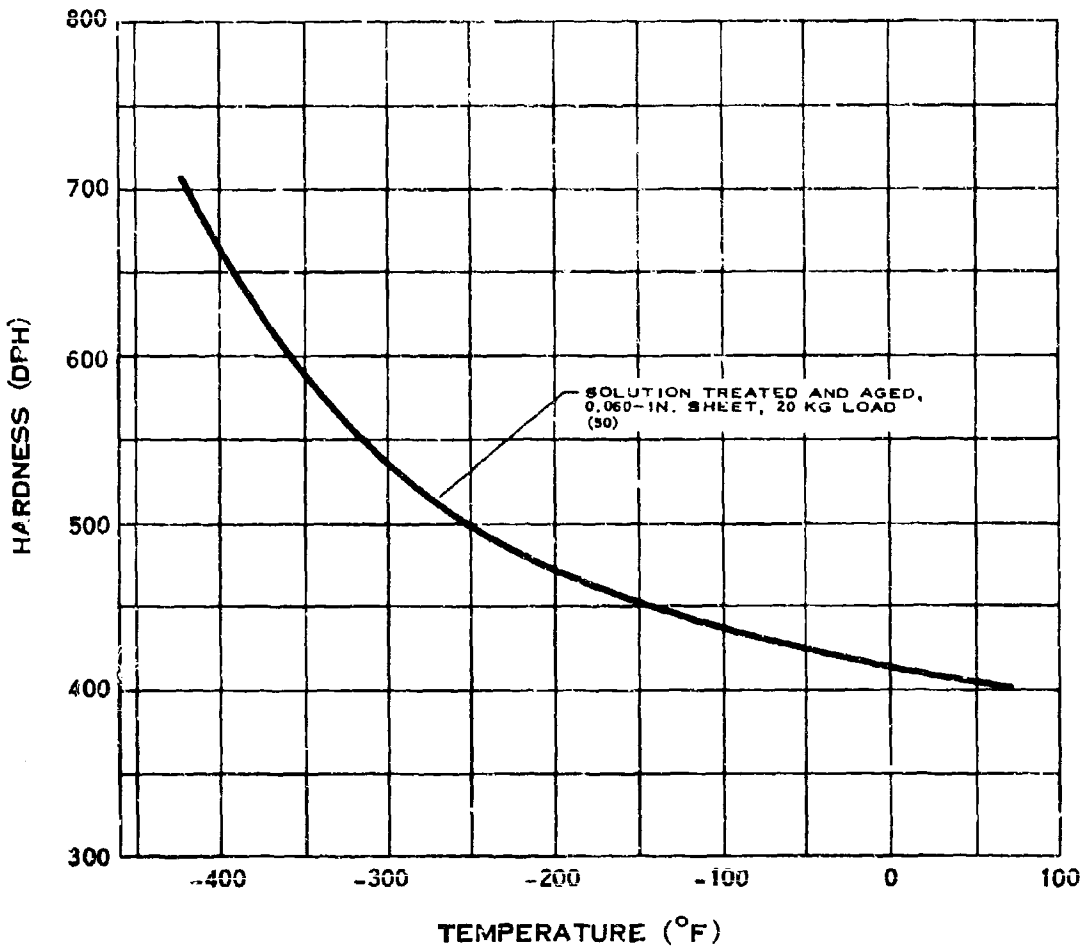
C.8.j



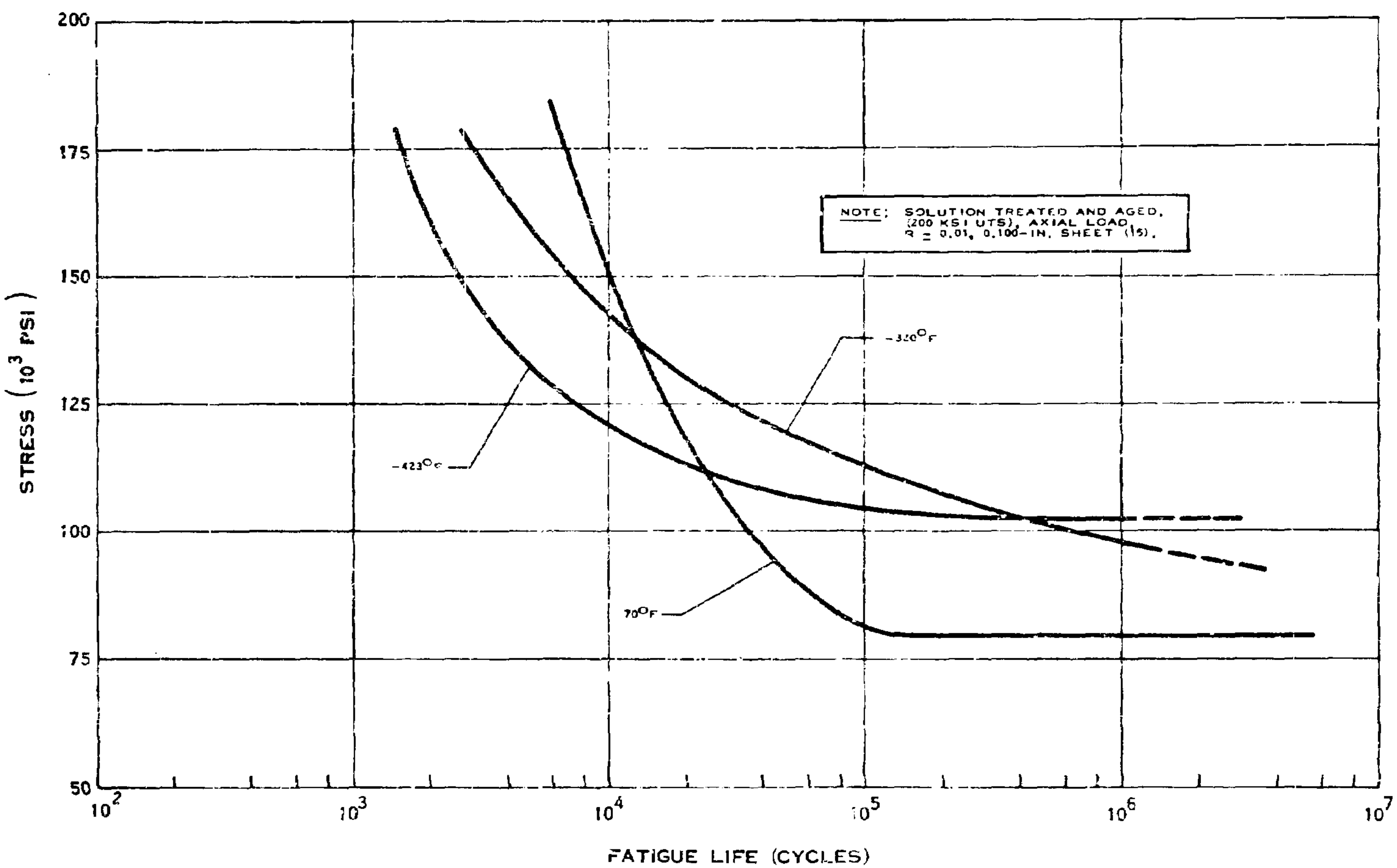
IMPACT STRENGTH OF 13V-11Cr-3Al TITANIUM

(1-65)

C.8.k

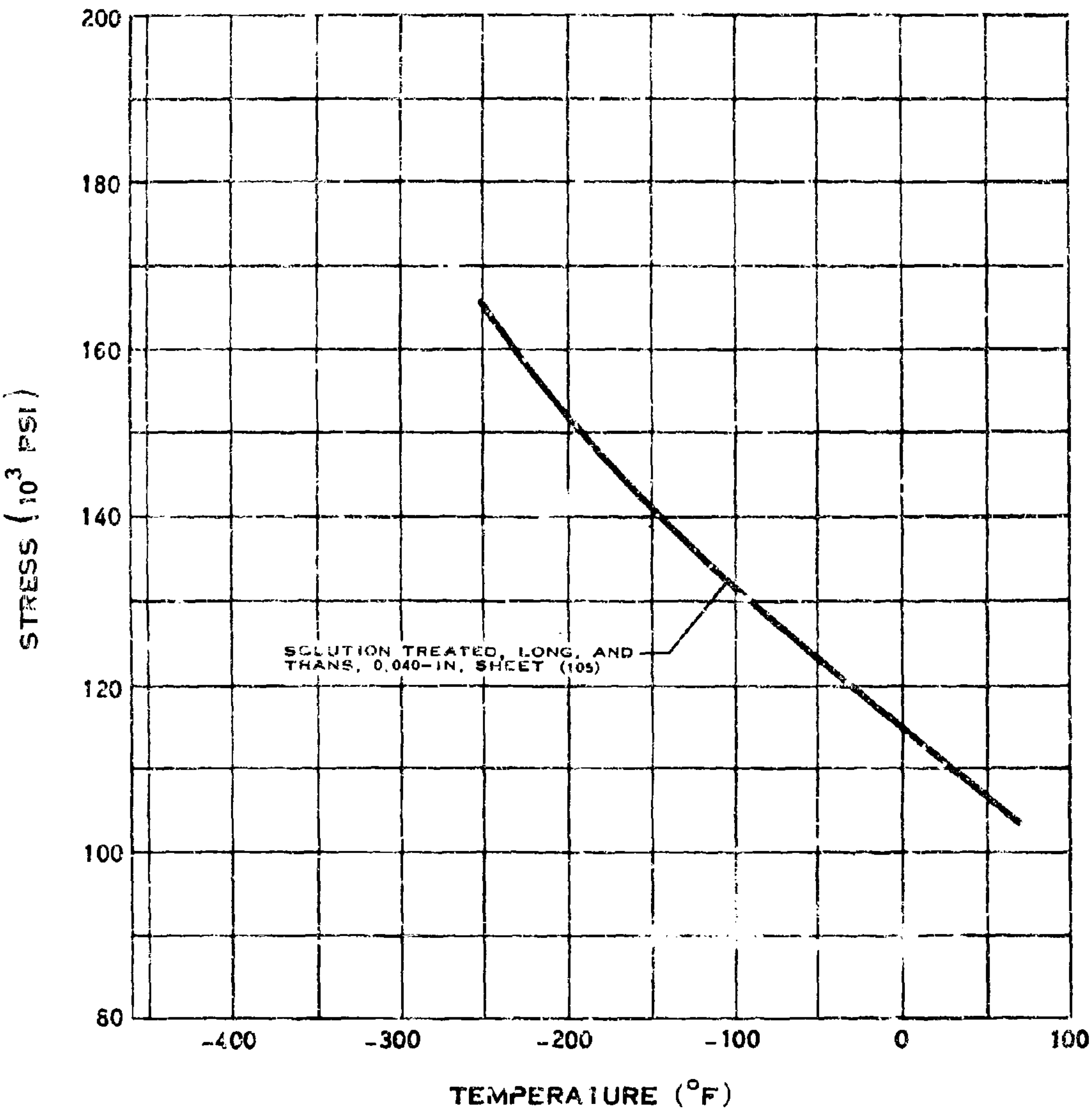


HARDNESS OF 13V-11Cr-3Al TITANIUM

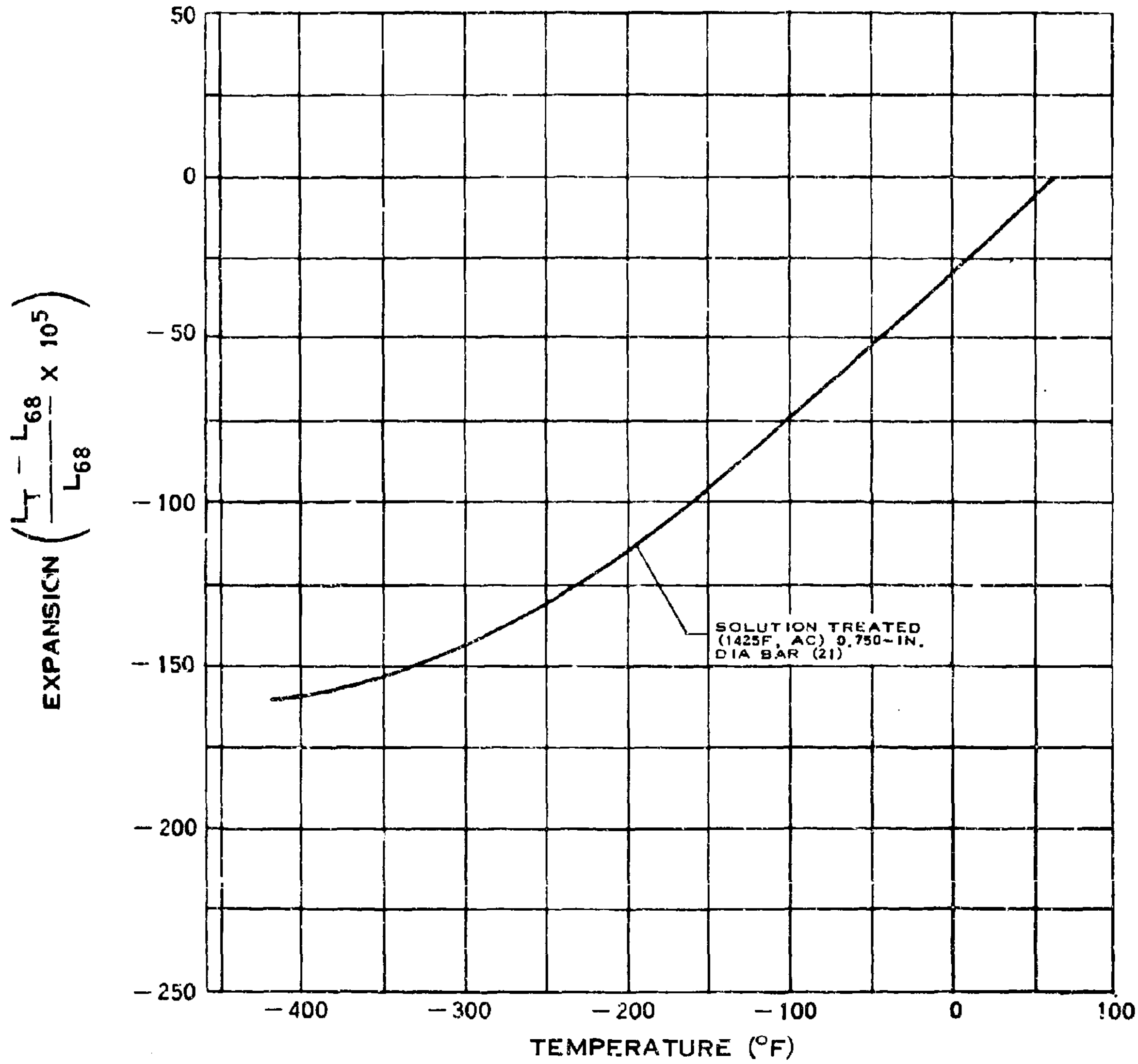


FATIGUE STRENGTH OF 13V-11Cr-3Al TITANIUM

(1-65)

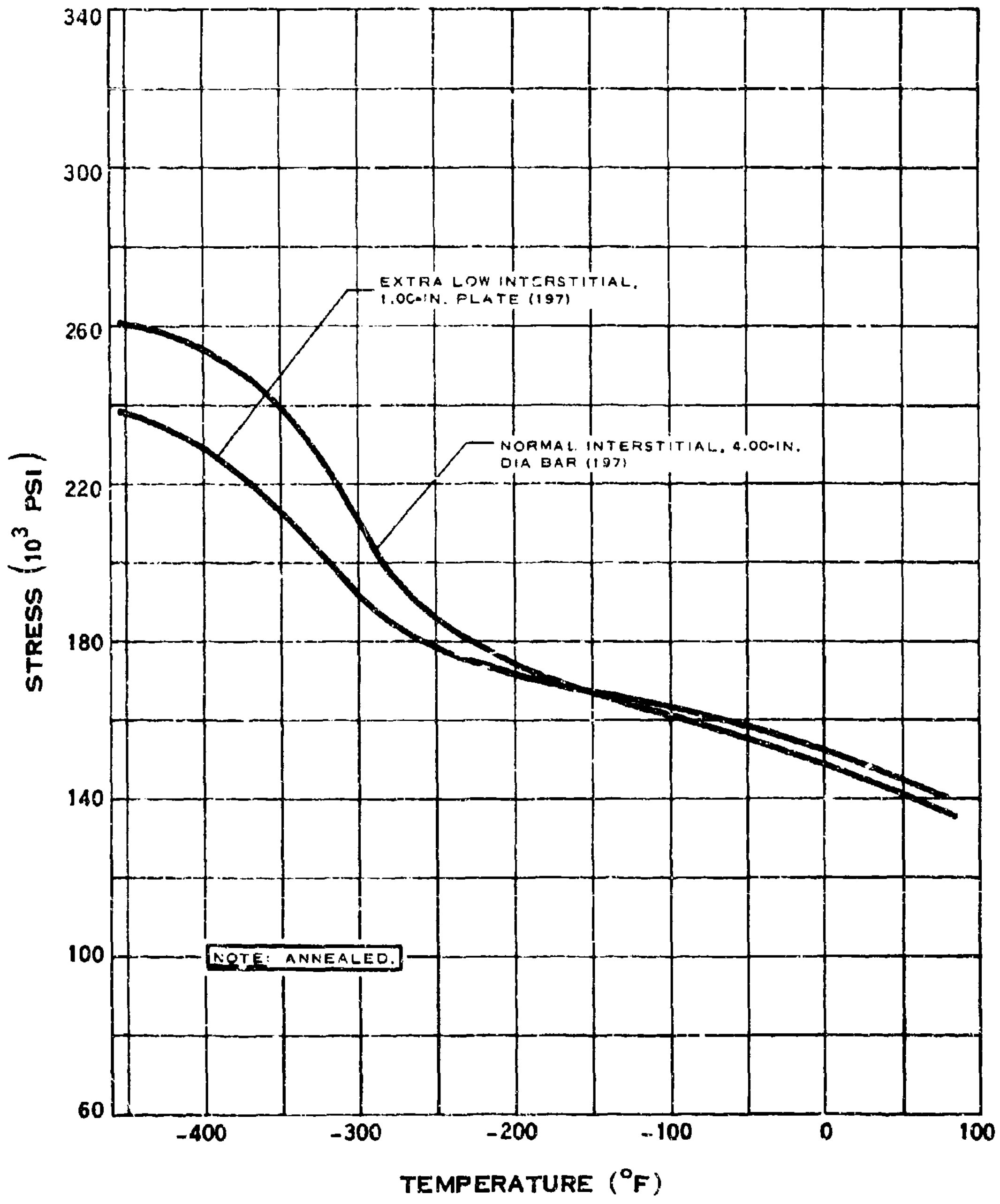


SHEAR STRENGTH OF 13V-11Cr-3Al TITANIUM



THERMAL EXPANSION OF 13V-11Cr-3Al TITANIUM

C.9.a



YIELD STRENGTH OF 6Al-6V-2 Sn TITANIUM

(6-68)

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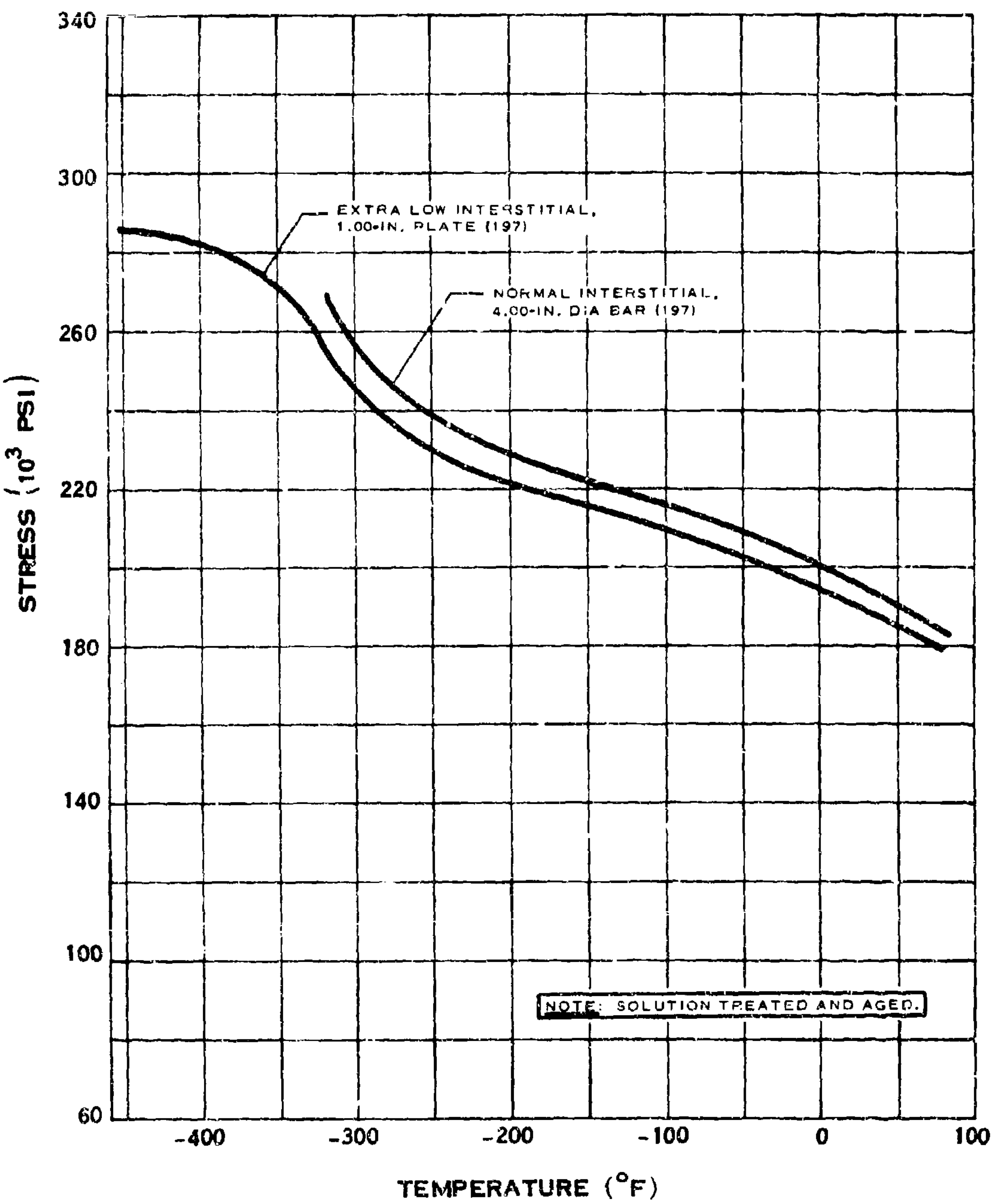
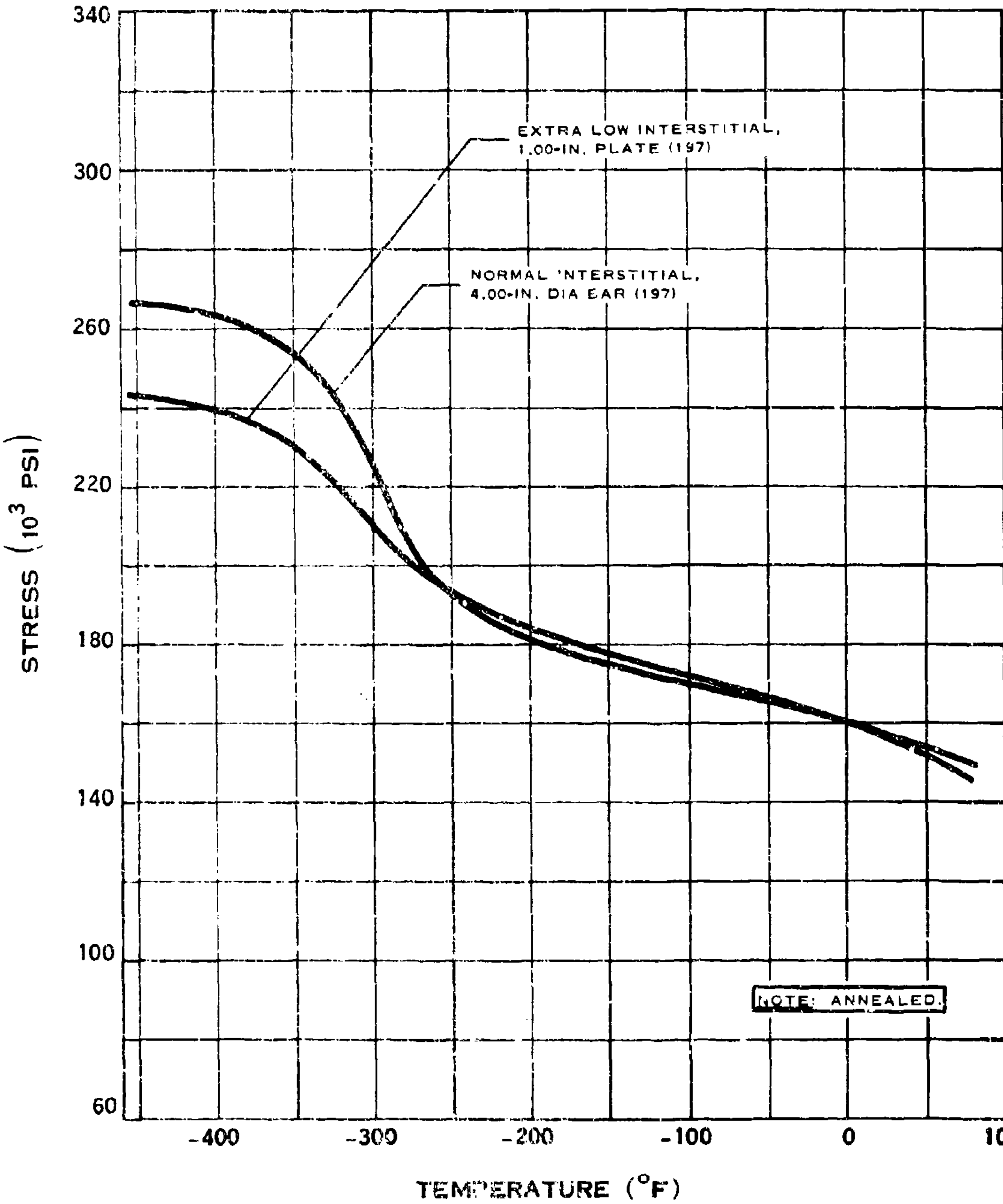
C.9.a-1



YIELD STRENGTH OF 6Al-6V-2 Sn TITANIUM

(6-68)

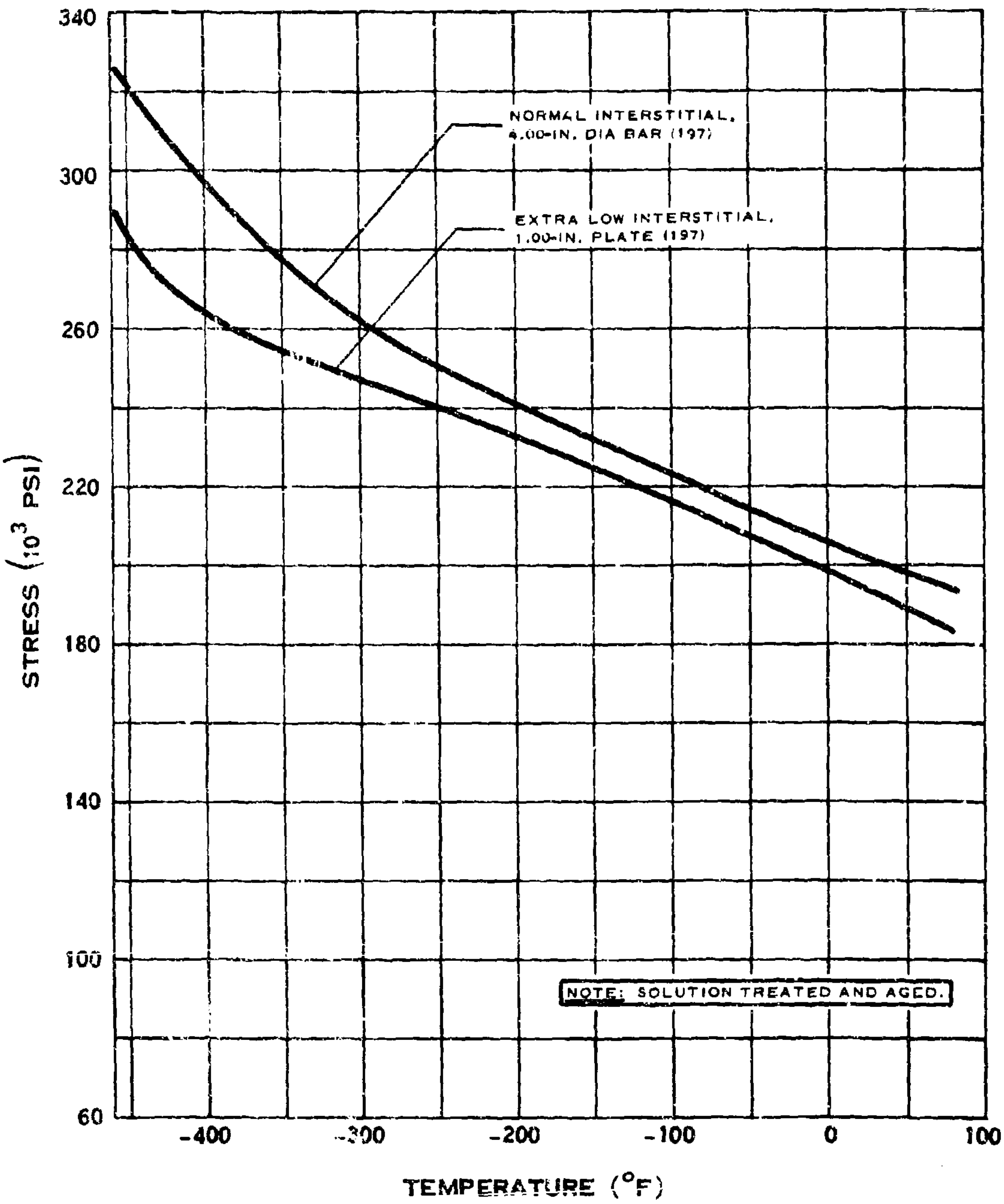
C.9.b



TENSILE STRENGTH OF 6Al-6V-2 Sn TITANIUM

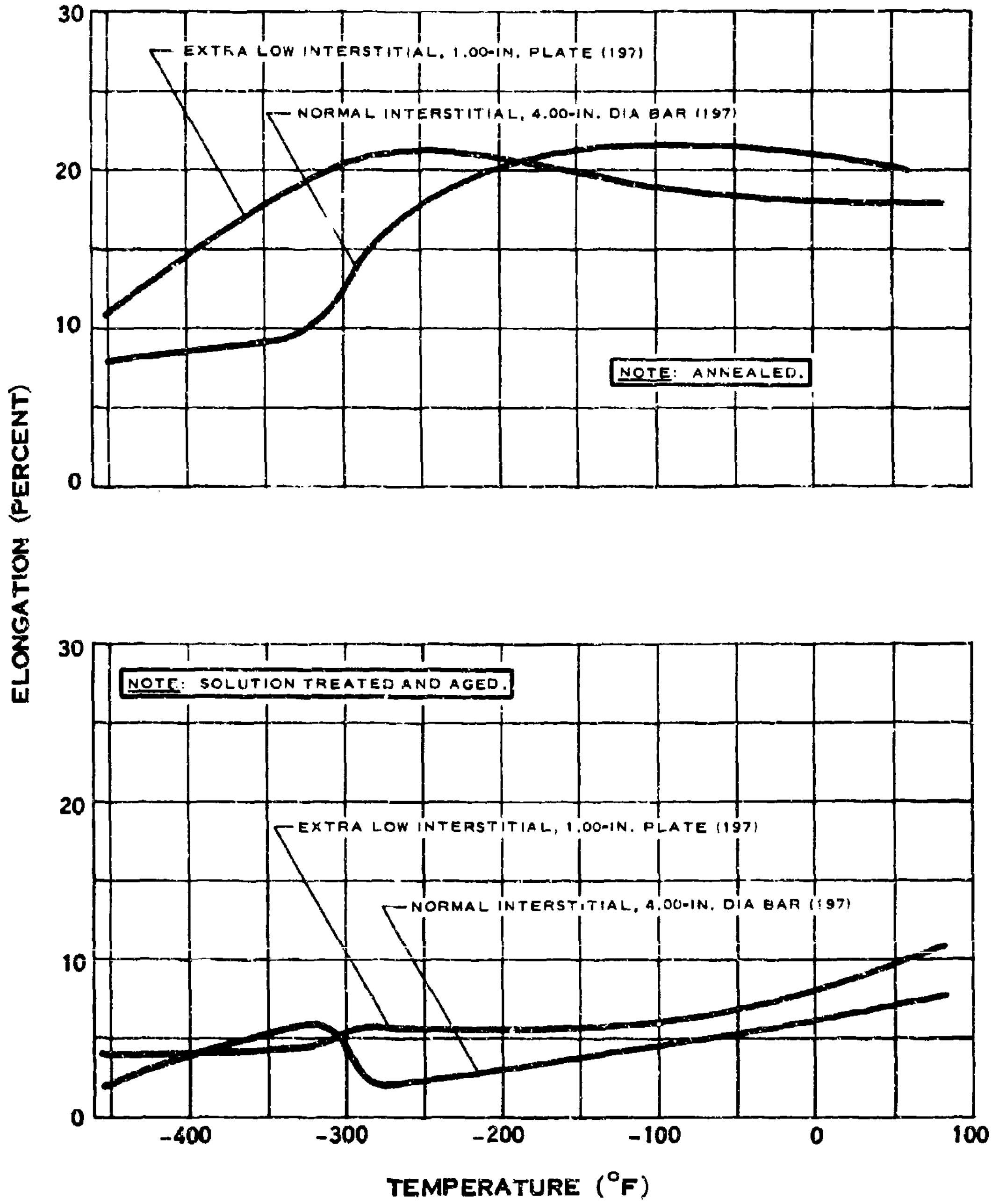
(6-68)

C.9.b-1



TENSILE STRENGTH OF 6Al-6V-2 Sn TITANIUM

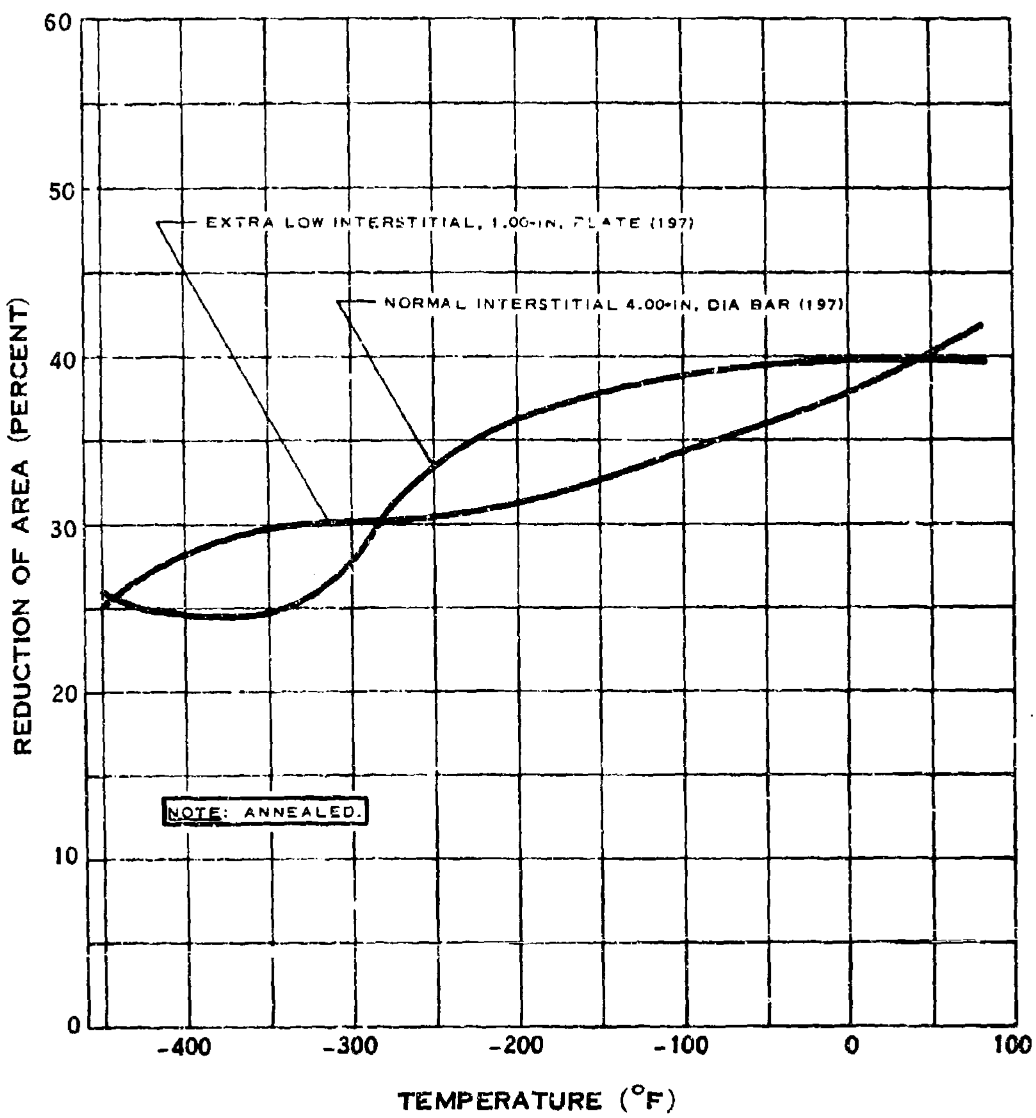
(6-68)



ELONGATION OF 6Al-6V-2 Sn TITANIUM

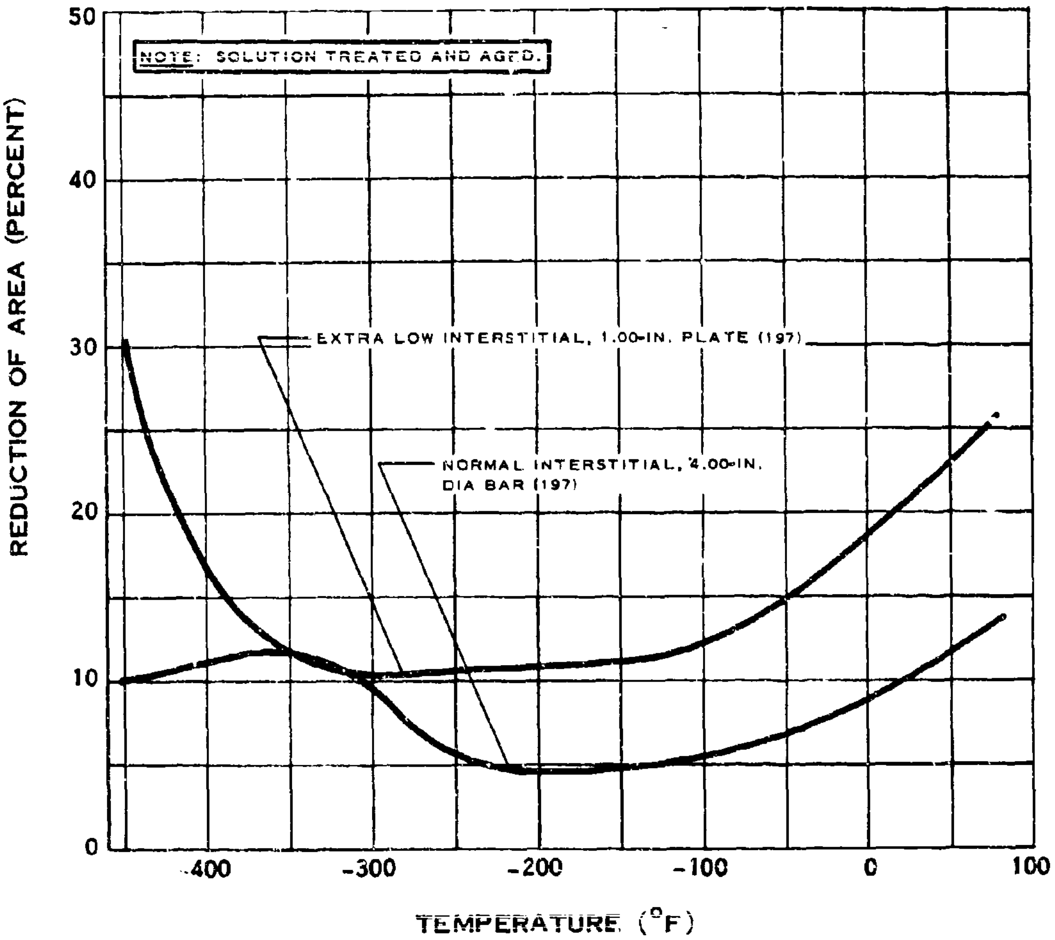
(6-68)

C.9.d



REDUCTION OF AREA OF 6Al-4V-2 Sn TITANIUM

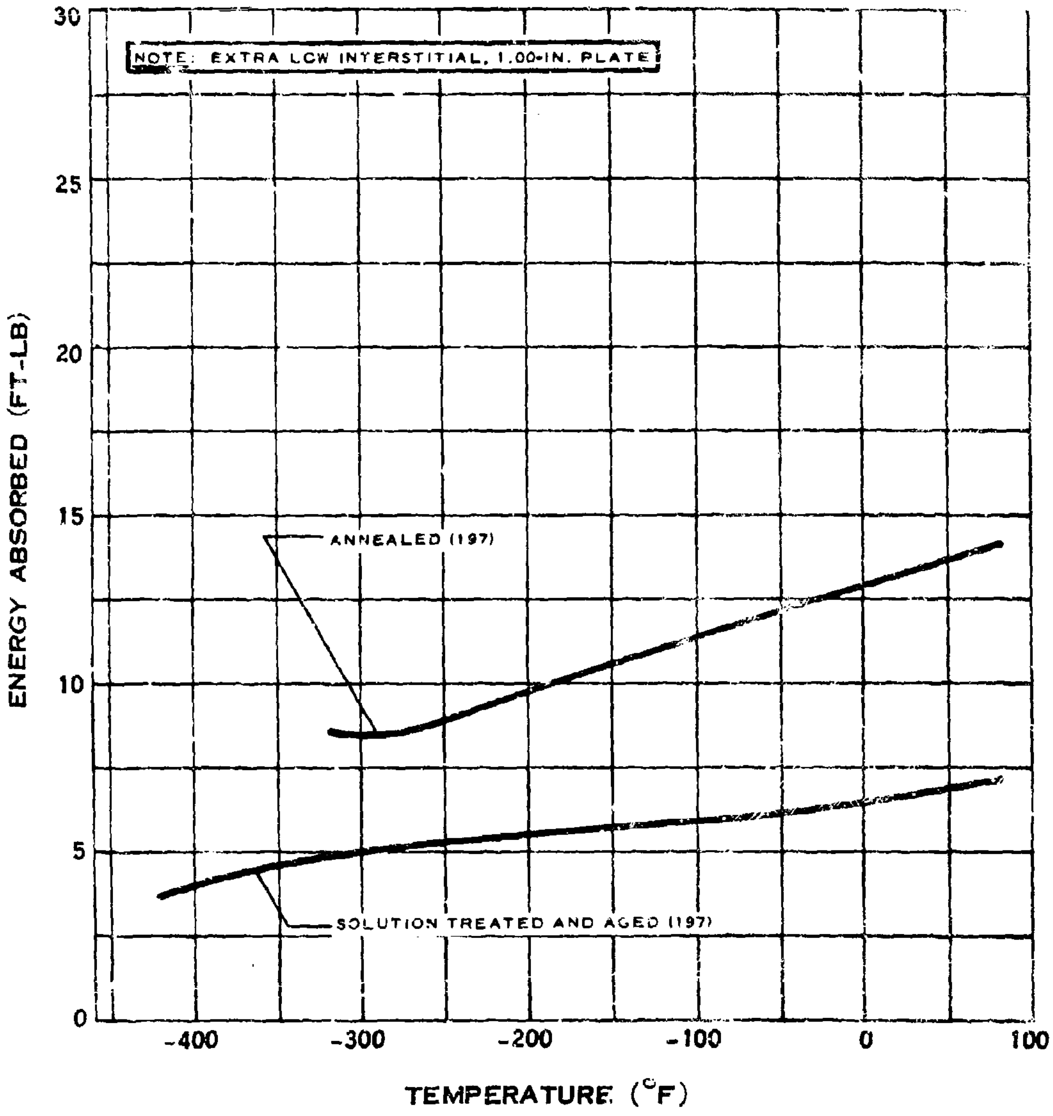
(6-68)



REDUCTION OF AREA OF 6Al-4V-2 Sn TITANIUM

(6-68)

C.9.j



IMPACT STRENGTH OF 6Al-6V-2 Sn TITANIUM

(E-68)

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Martin Marietta Corporation P. O. Box 179 Denver, Colorado	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP

3. REPORT TITLE

CRYOGENIC MATERIALS DATA HANDBOOK (Revised) 1970, VOLUME I

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Summary Report

5. AUTHOR(S) (First name, middle initial, last name)

Schwartzberg, Fred R. Herzog, Richard G.
Osgood, Samuel H. Knight, Marvin (Compiler, AFML)

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
June 1970	748	210

8a. CONTRACT OR GRANT NO. F33615-67-C-1794 b. PROJECT NO. 7381 c. Task 738106 d.	9a. ORIGINATOR'S REPORT NUMBER(S) AFML-TR-64-280, Vol I (Revised 1970) 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

10. DISTRIBUTION STATEMENT

This document has been approved for public release and sale; its distribution is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY Air Force Materials Laboratory Air Force Systems Command Wright-Patterson Air Force Base, Ohio

13. ABSTRACT

The eight sections of the two volumes of the handbook contain data on various properties of 88 metallic and nonmetallic materials at cryogenic temperatures. In addition to property data, there is information on tests procedures,other sources of cryogenic data, a treatment of nonmetallic materials used in cryogenic service applications, with a bibliography and a "Materials Selection Guide". The handbook and its supplements were developed under several contracts with the Martin Marietta Corporation. This revision is just a compilation of their reports performed at the Air Force Materials Laboratory.

DD FORM 1 NOV 65 1473

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14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Cryogenic Metallic Non-metallic Materials Properties						