

LIST OF TABLES

Table	Page
I Billet Materials Used in Hydrostatic Extrusion Program	20
II Fluids Evaluated in Hydrostatic-Extrusion Program	22
III Billet Lubricants Evaluated in Hydrostatic Extrusion Program	23
IV Billet Conversion Coatings Evaluated in the Hydrostatic-Extrusion Program	25
V Empirical Equations Relating Pressure and Extrusion Ratio for Cold Hydrostatic Extrusion of Several Materials	32
VI Experimental Data for 80 F Hydrostatic Extrusion of 7075-O Aluminum Rounds at a Ratio of 20:1 and Stem Speed of 20 IPM	39
VII Additional Experimental Data for 80 F Hydrostatic Extrusion of 7075-O Rounds	40
VIII Room-Temperature Tensile Properties of 7075 Aluminum Rounds Produced by Hydrostatic Extrusion	46
IX Investigation of Lubrication Systems Under Constant Extrusion Conditions for 80 F Hydrostatic Extrusion of AISI 4340 Rounds	48
X Investigation of Extrusion Ratio, Stem Speed, and Die Angle for 80 F Hydrostatic Extrusion of AISI 4340 Rounds	50
XI Experimental Data for Hydrostatic Extrusion of AISI 4340 Rounds at Elevated Temperatures	51
XII Effect of Billet Lubrication in Hydrostatic Extrusion of AISI 4340 With Castor Oil as the Fluid Medium	55
XIII Effect of Fluid Medium and Billet Lubrication in Hydrostatic Extrusion of AISI 4340 at 80 F	56
XIV Effect of Die Angle on Extrusion Pressures at Two Ratios	59
XV Comparison of Pressures Obtained in the Hydrostatic Extrusion of AISI 4340 Steel at 80, 120, and 140 F	60
XVI Effect of Fluid on Pressures for Warm Hydrostatic Extrusion of AISI 4340 Steel	62
XVII Evaluation of Lubricants Used in Extruding AISI 4340 Steel at 500 F	63
XVIII Room-Temperature Tensile Properties of AISI 4340 Steel Rounds Produced by Hydrostatic Extrusion	64

LIST OF TABLES
(Continued)

<u>Table</u>	<u>Page</u>
XIX Experimental Data for 80 F Hydrostatic Extrusion of Ti-6Al-4V Rounds	66
XX Experimental Data for Hydrostatic Extrusion of Ti-6Al-4V Rounds at 400 and 500 F	68
XXI Tensile Properties of Ti-6Al-4V Alloy Rounds Produced by Hydrostatic Extrusion	73
XXII Experimental Data for Hydrostatic Extrusion of Superalloys	76
XXIII Tensile Properties and Hardness of Hydrostatic Extrusions Made From Superalloys A-286 and Alloy 718	77
XXIV Experimental Data for Cold Hydrostatic Extrusion of Dispersion-Hardened Sintered Aluminum	78
XXV Mechanical Properties of Sintered-Aluminum Product as Worked by Cold Hydrostatic Extrusion and Hot Conventional Extrusion	79
XXVI Experimental Data for Hydrostatic Extrusion of TZM Rounds at 80 and 500 F	81
XXVII Experimental Data for Hydrostatic Extrusion of Beryllium Rounds at 80 and 500 F	82
XXVIII Tensile Properties of Beryllium Hydrostatically Extruded Cold at an Extrusion Ratio of 4:1	94
XXIX Experimental Data for 80 F Hydrostatic Extrusion of Tubing From 7075-O Al, AISI 4340, and Ti-6Al-4V	100
XXX Experimental Data for 80 F Hydrostatic Extrusion and Re-Extrusion of 7075-O Aluminum T-Sections	114
XXXI Experimental Data for 80 F Hydrostatic Extrusion and Re-Extrusion of T-Sections of AISI 4340, Ti-6Al-4V, and Cb 752 Columbium Alloy	117
XXXII Experimental Data for HYDRAW of Ti-6Al-4V Wire at 80 and 500 F	125
XXXIII Selected Experimental Data for HYDRAW of Beryllium Wire	127
XXXIV Average Tensile Properties of Beryllium Wire Before and After Hydrostatic Extrusion Drawing at 500 F	131