APPENDIX 2.

STANDARD MATERIALS USED BY A TYPICAL JAPANESE AIRCRAFT FACTORY.

INTRODUCTION.

The Data Sheets contained in this Appendix were translated by the Language School, Directorate of Intelligence, R.A.A.F., and the writer gratefully acknowledges this assistance.

As stated in the main report, these Data Sheets were obtained from Mr. Nakagawa, Chief Designer of the Kawasaki Aircraft Co., and they deal with the physical properties and recommended uses of aircraft materials used by that Company.

A critical review of these Data Sheets, together with the Data Sheets obtained from Commander Otsuki (Reference Appendix to Report No. 4) has been undertaken by Engineers of the Beaufort Division, Department of Aircraft Production, and issued as Report No. 9 in this series.

SYMBOLS FOR DATA SHEETS ON MATERIALS.

σ_P = YIELD POINT OR PROOF STRESS ..... Kg/mm^2.

σ_T = TENSILE STRENGTH ..... Kg/mm^2.

σ_C = COMPRESSIVE STRENGTH ..... Kg/mm^2.

σ_B = BENDING STRENGTH ..... Kg/mm^2.

T_S = SHEAR STRENGTH ..... Kg/mm^2.

T_T = TORSIONAL STRENGTH ..... Kg/mm^2.

E: = YOUNGS MODULUS ..... $10^3\ Kg/mm^2$.

G: = MODULUS OF RIGIDITY ..... $10^3\ Kg/mm^2$.

WELDING
- Ga: GAS WELD. B: BRAZE. S: SOLDER.
- "G": GOOD
- "N": IMPOSSIBLE
- "F": FAIR

▲ : SPECIFICATION VALUE.

△ : VALUES ACCORDING TO DESIGN AUTHORITY.

✳ : EXPERIMENTAL VALUES.

WHERE THERE IS NO DISTINGUISHING SYMBOL, THE VALUE HAS BEEN CALCULATED USING A COEFFICIENT.

	SYMBOLS FOR DATA SHEETS ON MATERIALS.	TS.1401

CLASSIFICATION	NAME	CODE Nº	σ_P	σ_T	σ_C	σ_B	τ_S	τ_T	SPECIFIC GRAVITY	Δ E	Δ G	WELDING Ga	WELDING B	WELDING S	NOTES
STEEL	35 CARBON STEEL.	1003	▲ 40	▲ 55	50	41	39	39	7·84 ~ 7·86	21·11	8·4	G			
	45 CARBON STEEL.	1004	▲ 50	▲ 70	63	53	49	49	7·84 ~ 7·86			N			
	CASE HARDENED CHROME-STEEL.	1106	Δ>50	Δ>75	60	56	53	53	7·85 ~ 7·86			N		G	
	CASE HARDENED CHROME-MOLYBDENUM-STEEL.	1107	Δ>75	Δ>90	72	67	63	63	7·85 ~ 7·86			N		G	
	75 KGM CROME-MOLYBDENUM-STEEL.	1202	Δ 60	▲ 75	68	56	53	53	7·85	22·0	8·5	G(1)			WELDED PARTS & THOSE OF UP TO 75 KG. TENSILE STRENGTH. (WHEN USED AT A HIGHER TENSILE STRENGTH EXPLANATORY NOTES ARE NECESSARY). (1) IT IS GOOD IN PREVENTING COARSE GRANULATION OF WELDED PORTIONS.
			Δ 103	▲ 110	99	82	77	77							
	90 KGM.CHROME - MOLYBDENUM - STEEL.	1203	▲>75	▲>90	72	67	63	63	7·85 ~ 7·86	22·0	8·5	G	G	G	USED WHEN A TENSILE STRENGTH OF 110 KG. IS NEEDED AND THERE IS NO WELDING.
	13% CHROME STAINLESS STEEL.	1401	Δ 50	▲ 70	63	53	49	*46	7·6 ~ 7·75	20⁷/21·2	8·5	F (1)			(1) FAIR IF PRE-HEATED. SOFTEN IMMEDIATELY.
COPPER ALLOYS	COPPER BARS LESS THAN 25.	1001	Δ 6	▲ 22	20	11	15	15	8·9	12		G	G	G	
	COPPER BARS GREATER THAN 25.		Δ 6	▲ 20	18	10	14	14							
	"NAVAL" BRASS BARS LESS THAN 20.	1101	21	▲ 41	37	21	28	28	8·46	10/12		G	G	G	
	NAVAL BRASS BARS GREATER THAN 20.		14	▲ 35	32	18	25	25							
	PHOSPHOR BRONZE BARS 1ST GRADE LESS THAN 50.	1201	24	▲ 47	42	24	33	33	8·94	10/12		G	G	G	
	ALUMINIUM BRONZE	1204	25	▲>50	45	25	35	35	APPROX. 7·5			(1)	(1)	(1)	INTEND TO INSERT NOTES AFTER INVESTIGATION.
ALUMINIUM ALLOYS	ALUMINIUM BARS LESS THAN 20.	4001	4	▲ 10	7	6	5	5	2·715 ~ 2·72	6·3	2·3	G	N	N(1)	(1) SAID TO BE FAIR WITH THE USE OF "AROTO" Nº 7 ALUMINIUM FLUX.
	AL. BARS EQUAL TO OR GREATER THAN 20		3	▲ 7	5	4	4	4							
	HIGH STRENGTH AL. ALLOY BARS 1ST GRADE LESS THAN 40.	4201	▲ 22	▲ 38	28	23	19	19	APPROX. 2·8	6·5	2·74	F (2)	N	N(1)	
	HIGH STRENGTH AL. ALLOY BARS 1ST GRADE 40-100.		22	▲ 35	26	21	18	18							
	HIGH STRENGTH AL. ALLOY BARS 1ST GRADE 100-150.		22	▲ 32	23	19	16	16							
	HIGH STRENGTH AL. ALLOY BARS 1ST GRADE GREATER THAN 150.		22	▲ 30	22	18	15	15							
	HIGH STRENGTH AL. ALLOY BARS 2ND GRADE LESS THAN 40.	4202	▲ 27	▲ 41	30	24	21	21	APPROX. 2·8	7·5	2·74	F (2)	N	N(1)	
	HIGH STRENGTH AL. ALLOY BARS 2ND GRADE 40-100		▲ 26	▲ 42	31	25	21	21							
	HIGH STRENGTH AL. ALLOY BARS 2ND GRADE 100-150.		▲ 24	▲ 40	29	24	20	20							
	HIGH STRENGTH AL. ALLOY BARS 2ND GRADE GREATER THAN 150.		23	▲ 38	28	23	19	19							
	HIGH STRENGTH AL. ALLOY FORGINGS 1ST GRADE LESS THAN 40.	4211	▲ 22	▲ 38	28	23	19	19	APPROX 2·8	6·5	2·74	F (2)	N	N(1)	
	HIGH STRENGTH AL. ALLOY FORGINGS 1ST GRADE 40-100		22	▲ 35	26	21	17	17							
	HIGH STRENGHT AL. ALLOY FORGINGS 1ST GRADE 100-150.		22	▲ 32	23	19	16	16							
	HIGH STRENGTH AL. ALLOY FORGINGS 1ST GRADE GREATER THAN 150.		22	▲ 30	22	18	15	15							
	E S D < 25		Δ 45	Δ 53	39	32	27	27	2·89	APPROX. 7·5	APPROX 2·74	F (2)	N	N	
	E S D 25 ~ 40		Δ 50	Δ 58	43	35	29	29							
	E S D 40 ~ 100		Δ 45	Δ 53	39	32	27	27							
MAGNESIUM ALLOYS.	MAGNESIUM ALLOY BARS 1ST GRADE < 40	1201	Δ 10	▲ 26	31	16	13	13	<1·85	4·6	1·8	F (1)	N	N	STRENGTH ABOUT ½, ELONGATION 0-6 % FOR ALL THESE MAGNESIUM ALLOYS AFTER WELDING.
	MAGNESIUM ALLOY BARS 1ST GRADE 40-100		9	▲ 24	29	14	12	12							
	MAGNESIUM ALLOY BARS 1ST GRADE > 100		9	▲ 22	26	13	11	11							
	MAGNESIUM ALLOY BARS 2ND GRADE < 40.	1202	12	▲ 30	36	18	15	15	<1·85	4·6	1·8	G (1)			
	MAGNESIUM ALLOY BARS 2ND GRADE 40-100		11	▲ 28	34	17	14	14							
	MAGNESIUM ALLOY BARS 2ND GRADE > 100		10	▲ 26	31	16	13	13							

AMENDMENT Nº 59
21-2-41.

21-2-41	BAR MATERIALS	TS 1402

CLASSIFICATION	NAME	CODE NUMBER	σ_P	σ_T	BEARC ST.	γ_S			Δ SPECIFIC GRAVITY	Δ E	Δ G	WELDING Ga	WELDING B	WELDING S	NOTES
STEEL	10 CARBON STEEL SHEETS	▭ 001	24	▲ 34		24			7·85 / 7·86	21·11	8·4	G	G	G	
	20 CARBON STEEL SHEETS	▭ 002	28	▲ 40		28									
	CHROME-MOLYBDENUM STEEL SHEETS <1	▭ 202	48	▲ 60		42				22	8·5				
	CHROME-MOLYBDENUM STEEL SHEETS >1	▭ 202	51	▲ 63		42									
	CHROME-MOLYBDENUM STEEL SHEETS	▭ 202 (1)	60	▲ 75		52									
	CHROME-MOLYBDENUM STEEL SHEETS	▭ 202 (2)	76	▲ >95		66									
	CHROME-MOLYBDENUM STEEL SHEETS	▭ 202 (3)	92	▲ 115		81									
	17% CHROME STAINLESS STEEL SHEETS	▭ 403	48	▲ >85		59				20·40					
	CARBON STEEL PLATES FOR SPRINGS	▭ 521	35 TREATED TO ▲	ANNEALED 50 ▲ TREATED — ▲		35 —				22	8·5	N		N	
	TIN PLATE	▭ 531	24	34		24				21·11	8·4	G (1)		G	BEFORE WELDING REMOVE TINNING.
COPPER ALLOYS	COPPER SHEETS (SEMI-RIGID) ½H	▷ 011 (Z)	7·5	▲ 25		17			8·89	12		G	G		BENT THROUGH 180° PERMISSIBLE BEND RADIUS = t
	BRASS SHEETS (SEMI-RIGID) ½H	▷ 111 (Z)	19	▲ 38		26			8·56						BENT THROUGH 180° PERMISSIBLE BEND RADIUS = 6t
	PHOSPHOR BRONZE SHEETS	▷ 211	32	▲ 65		44			8·8/8·95						
ALUMINIUM ALLOYS	ALUMINIUM 1ST CRADE SHEETS (甲)	∮ 021 (甲)	5	▲ 7		4			2·75	6·3 6·5		G	N	N	(1) STRENGTH ABOUT ½ ELONGATION 0-6% AFTER WELDING
	ALUMINIUM 1ST CRADE SHEETS (Z)	∮ 021 (Z)	7	▲ 10		5									(2) ALSO FAIR WHEN "AROTO" N° 7 FLUX IS USED
	ALUMINIUM 2ND CRADE SHEETS (甲)	∮ 022 (甲)	6	▲ 8		4			2·84	6·5	2·74	F (1)	N	N	(3) AFTER HEAT TREATMENT OF 甲 σ_P : 25 σ_T : >42 AFTER WORKING & AGAIN HEAT TREATING Z & 甲 σ_P : 26 σ_T : >43 t : >0·4
	ALUMINIUM 2ND CRADE SHEETS (Z)	∮ 022 (Z)	8	▲ 11		6				7·5					(4) AFTER HEAT TREATMENT OF 甲 σ_P : 24 σ_T : >41 AFTER WORKING & AGAIN HEAT TREATING Z & 甲 σ : 26 (t. 0·4-2)
	AL. ALLOY SHEETS 1ST CRADE <10	∮ 221	▲ 22	▲ 38		19									
	AL. ALLOY SHEETS 1ST CRADE >10	∮ 221	▲ 21	▲ 36		18									
	AL. ALLOY SHEETS 2ND CRADE <0·4	∮ 222 (Z)	▲ 27	▲ 42		21									
	AL. ALLOY SHEETS 2ND CRADE 0·4-2	∮ 222 (Z)	▲ 28	▲ 43		22									
	AL. ALLOY SHEETS 2ND CRADE 2-6	∮ 222 (Z)	▲ 28	▲ 44		22									
	AL. ALLOY SHEETS 2ND CRADE 6-10	∮ 222 (Z)	▲ 28	▲ 44		22									
	AL. ALLOY SHEETS 2ND CRADE 10-25	∮ 222 (Z)	▲ 27	▲ 43		22									
	AL ALLOY SHEETS 2ND CRADE <0·4 (ホ)	∮ 222 (ホ)	▲ 31	▲ 43		22									
	AL. ALLOY SHEETS 2ND CRADE 0·4-2	∮ 222 (ホ)	▲ 32	▲ 44		22									
	AL. ALLOY SHEETS 2ND CRADE 2-6	∮ 222 (ホ)	▲ 33	▲ 45		23									
	AL. CLAD AL ALLOY SHEETS 2ND CRADE 0·4-2 (Z)	∮ 232 (Z)	▲ 27	▲ 42		21									
	AL. CLAD AL. ALLOY SHEETS 2ND CRADE 2-6	∮ 232 (Z)	▲ 27	▲ 43		22									
	AL. CLAD AL. ALLOY SHEETS 2ND CRADE 6-10	∮ 232 (Z)	▲ 27	▲ 43		22									
	AL. CLAD AL. ALLOY SHEETS 2ND CRADE <2 (ホ)	∮ 232 (ホ)	▲ 31	▲ 43		22									
	AL. CLAD AL. ALLOY SHEETS 2ND CRADE 2-6	∮ 232 (ホ)	▲ 32	▲ 44		22									
	CORROSION RESISTANT AL. ALLOY SHEETS 1ST CRADE (甲)	∮ 421 (甲)	7	▲ 10		5			2·78	6·5	2·74	G	N	N (1)	(1) GOOD IF 'AROTO' N° 7 FLUX IS USED. r = t
	CORROSION RESISTANT AL. ALLOY SHEETS 1ST CRADE (Z)	∮ 421 (Z)	10	▲ 14		7									
	E S D 0·5-10		△ 45	△ 53		27			2·89	APPROX. 7·5	APPROX 2·74	F (1)	N	N	(1) STRENGTH ABOUT ½ 180° BEND RADIUS = t AFTER WELDING
MAGNESIUM ALLOYS	MAGNESIUM ALLOY SHEETS 1ST CRADE	1) 221	△ 10	▲ 26		13			1·85	4·6		F (1)	N	N	(1) STRENGTH ABOUT ½ ELONGATION 0-6% AFTER WELDING.
	MAGNESIUM ALLOY SHEETS 2ND CRADE	1) 223	12	▲ 30		15						F (1)			
	C Z M (2)		* 11·2 (1)	* 234 (1)		12						G	N	N	(1) VALUES APPLY TO DIRECTION OF ROLLING. HIGHER VALUES OBTAINED TRANSVERSELY. r = 3t (2) ANNEAL 300° C.

AMENDMENT N° 67
12-5-41

27-2-41	SHEET OR STRIP MATERIALS.	TS 1403

CLASSIFICATION	NAME	CODE Nº	σ_P	σ_T	σ_C	σ_B	τ_S	τ_T	SPECIFIC GRAVITY	ΔE	ΔG	WELDING Ga	WELDING B	WELDING S	NOTES
STEEL.	15 CARBON STEEL TUBES.	⋏001(Z)	▲40	▲46	41	34	32	27	7·85/7·86	21·15	8·4	G	G	G	
	30 CARBON STEEL TUBES.	⋏003(Z)	▲47	▲55	50	41	38	33		21·10					
	CHROME MOLYBDENUM STEEL TUBES LESS THAN 1.	⋏202	▲55	▲66	60	50	46	40	7·85	22·0	8·5				
	CHROME MOLYBDENUM STEEL TUBES 1-2	⋏202	▲50	▲63	56	47	44	38							
	CHROME MOLYBDENUM STEEL TUBES GREATER THAN 2	⋏202	▲45	▲60	54	45	42	36							
	CHROME MOLYBDENUM STEEL TUBES	⋏202(1)	▲60	▲75	67	56	52	45							
	CHROME MOLYBDENUM STEEL TUBES	⋏202(2)	76	▲95	85	71	67	57							
	CHROME MOLYBDENUM STEEL TUBES.	⋏202(3)	92	▲115	104	86	80	69							
COPPER ALLOYS.	SEAMLESS COPPER TUBES.	⊦021	6	Δ22	20	11	15	15	8·89	12·0		G	G	G	
	SEAMLESS COPPER TUBES (HARD).	⊦121(Z)	20	Δ 40/55	36/49	20/25	27/37	27/37	8·54	10/12					
	BRASS TUBES FOR COOLING APPARATUS.	⊦122	24	Δ28	25	14	19	19	8·56	10/12					BEND 180° AFTER FLATTENING.
	SILICON BRONZE TUBES.	⊦221	20	Δ37	33	19	28	28	8·89						BEND 180° AFTER FLATTENING.
ALUMINIUM ALLOYS.	ALUMINIUM TUBES LESS THAN 4.	⅄071	7	▲11	8	7	6	6	2·71/2·72	6·3	2·3	G	N	N	
	ALUMINIUM TUBES GREATER THAN 4.	⅄071	6	▲9	7	5	5	5	2·71/2·72	6·3	2·3	G			(1) GOOD IF AROTO Nº7 FLUX IS USED
	HIGH STRENGTH ALUMINIUM ALLOY TUBES 1ST GRADE.	⅄271	▲22	▲38	28	21	19	19	APPROX. 2·8	6·5	2·74	F(2)	N	N(1)	(2) STRENGTH ABOUT ½ ELONGATION 0-6% AFTER WELDING.
	HIGH STRENGTH AL. ALLOY TUBES 2ND GRADE LESS THAN 10"	⅄272	▲29	▲43	32	26	22	22	APPROX. 2·8	7·5	2·74				
	HIGH STRENGTH AL. ALLOY TUBES 2ND GRADE GREATER THAN 10" GREATER THAN 2·4.	⅄272	▲32	▲44	33	26	22	22							
	HIGH STRENGTH AL. ALLOY TUBES 2ND GRADE GREATER THAN 10" 2·4 - 5	⅄272	▲31	▲43	32	26	22	22							
	HIGH STRENGTH AL. ALLOY TUBES 2ND GRADE GREATER THAN 10" GREATER THAN 10	⅄272	▲29	▲43	32	32	22	22							
	CORROSION RESISTANT ALUMINIUM TUBES 2ND GRADE LESS THAN 10"	⅄472	11	▲15	11	9	8	8	2·78	6·5		G(2)			
	CORROSION RESISTANT ALUMINIUM TUBES 2ND GRADE GREATER THAN 10"	⅄472	12	▲16	12	10	8	8							
	E S D		✳45	✳53	39	29	27	27	2·89	APPROX. 7·5		F(2)			
MAGNESIUM ALLOYS	MAGNESIUM ALLOY TUBE 3RD GRADE.	⅄273	10	▲20	24	12	10	10	⩽1·85	APPROX. 4·6		G(1)	N	N	(1) STRENGTH ABOUT ½ AFTER WELDING.

	CLASSIFICATION	NAME	CODE NUMBER	σ_P	σ_T	σ_C	σ_B	τ_S	τ_T	Δ SPECIFIC GRAVITY	Δ E	Δ G	WELDING Ga	WELDING B	WELDING S	NOTES
CAST MATERIALS	COPPER ALLOYS	BRASS CASTINGS	⊦ 141	13	▲ 26					APPROX 8.5			G	G	G	
		PHOSPHOR BRONZE CASTINGS 1ST GRADE	⊦ 243	10	▲ 20											
		SPECIAL SILICON BRONZE	⊦ 246	23	▲ 45											
	ALUMINIUM ALLOYS	AL. ALLOY CASTINGS 2ND GRADE 甲	∮ 502(甲)	10	▲ 16					APPROX 2.8			F (1)	N	N	(1) STRENGTH ABOUT ½, ELONGATION 0-6% AFTER WELDING
		AL. ALLOY CASTINGS 2ND GRADE Z	∮ 502 (Z)	17	▲ 28											
	MAGNESIUM ALLOYS	MAGNESIUM ALLOY CASTINGS 1ST GRADE	1) 501 (1)	8	▲ 18	36		14	14	<1.85	4.4		G (3)	N	N	(1) AS CAST (2) HEAT TREATED (3) STRENGTH ABOUT ½ AFTER WELDING
		MAGNESIUM ALLOY CASTINGS 2ND GRADE	1) 502 (1)	6.8	▲ 15	30		12	12	<1.85						
		MAGNESIUM ALLOY CASTINGS	1) 502 (2)	9.5	▲ 21	42		17	17							
WIRE MATERIALS ETC.	STEEL	STEEL RIVET MATERIALS 2ND GRADE			▲ 4/48					APPROX 7.85	20/22	8.5	N	G	F	
		WIRE STRIP LESS THAN 10			▲ 87/107											
		WIRE STRIP GREATER THAN 10			▲ 82/98											
		SPECIAL STEEL CABLE LESS THAN 10			▲ 87/102											
		SPECIAL STEEL CABLE GREATER THAN 10			▲ 82/98											
		CIRCULAR WIRES			▲ 43/59											
		HIGH TENSILE STRENGTH STEEL WIRE			▲ 140/183											
	ALUMINIUM ALLOYS	AL. RIVET MATERIALS AND RIVETS	∮ 081	5	▲ 15	▲ 8				2.72	6.3	2.3	G (1)	N	N	(1) STRENGTH ABOUT ½, 0-6% ELONGATION AFTER WELDING (2) GOOD WITH USE OF "AROTO" Nº 7 FLUX.
		SOFT QUALITY AL. ALLOY RIVET MATERIALS	∮ 181	15	▲ 26	▲ 18				APPROX 2.8	6.5	2.74	F (1)			
		HIGH STRENGTH AL. ALLOY 1ST GRADE RIVET MATERIALS	∮ 281	Δ 22	▲ 38	▲ 28										
	COPPER ALLOYS	COPPER WIRE		7	Δ 25	16				8.89	12		G	G	G	
		BRASS WIRE		14	Δ 35	25				8.48						

21-2-41	CASTINGS, WIRE MATERIALS (AND OTHERS)	TS 1405

CLASSIFICATION	NAME	CODE Nº	6P	6T	6C				SPECIFIC GRAVITY	Δ E	Δ G	WELDING Ga	WELDING B	WELDING S	NOTES
ALUMINIUM ALLOYS	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 1ST GRADE LESS THAN 0·4.	4241	▲22	▲38	29				2·8	7·5	2·74	F (1)	N	N	STRENGTH ABOUT ½ ELONGATION 0-6% FOR ALL THESE ALUMINIUM ALLOYS AFTER WELDING.
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 1ST GRADE 0·4-3·2.	4241	▲22	▲38	29										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE LESS THAN 0·4 (B)	4242(Z)	▲26	▲42	32										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE 0·4-2.		▲27	▲43	32										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE 2-6.		▲26	▲43	32										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE 6-10.		▲26	▲43	32										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE LESS THAN 0·4 (C).	4242(H)	▲31	▲43	32										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE 0·4-2.		▲32	▲44	33										
	(ROLLED) HIGH STRENGTH ALUMINIUM ALLOY 2ND GRADE 2-6		▲33	▲45	34										
	(EXTRUDED) HIGH STRENGTH 2ND GRADE LESS THAN 3	4262	▲27	▲40	30										
	(EXTRUDED) HIGH STRENGTH 2ND GRADE GREATER THAN 3		▲28	▲43	32										
	(EXTRUDED) E.S.D. 3-20.		Δ50	Δ58	43				2·89	APPROX.7·5	APPROX.2·74				
MAGNESIUM ALLOYS.	(ROLLED) MAGNESIUM ALLOY 1ST GRADE.	1241	11·1	Δ23	28				<1·85	4·6		G (1)	N	N	STRENGTH ABOUT ½ ELONGATION 0-6% FOR ALL THESE MAGNESIUM ALLOYS AFTER WELDING ANNEAL AT 300°C
	(ROLLED) MAGNESIUM ALLOY 1ST GRADE		11·5	Δ25	30										
	(ROLLED) MAGNESIUM ALLOY 3RD GRADE.	1243	8·2	Δ17	20										
	(ROLLED) MAGNESIUM ALLOY 3RD GRADE.		9·1	Δ19	23										
	(EXTRUDED) MAGNESIUM ALLOY 1ST GRADE LESS THAN 3.	1261	10·5	Δ22	26										
	(EXTRUDED) MAGNESIUM ALLOY 1ST GRADE GREATER THAN 3.		11·5	Δ24	29										
	(EXTRUDED) MAGNESIUM ALLOY 3RD GRADE LESS THAN 3.	1263	8·6	Δ18	22										
	(EXTRUDED) MAGNESIUM ALLOY 3RD GRADE LESS THAN 3.		9·6	Δ20	24										
	(ROLLED) C.Z.M.		*11·2	*23·4	28										

21-2-41	ROLLED OR EXTRUDED SECTIONS	TS 1406

CHART FOR STANDARDS OF SELECTION OF STEEL MATERIALS

16TH MAY 1944

TYPE	CLASSIFICATION	"JAPANESE AIRCRAFT STANDARDS" CODE NUMBER	DIMENSIONS	0·2% PROOF STRESS	STRENCTH kg/mm² TENSILE STRENCTH	SHEAR STRENCTH	COMPRESSIVE STRENCTH	ELONGATION %	SPECIFIC GRAVITY	PRINCIPAL USES	REMARKS	COMPOSITION % C	Si	Mu	P	S	Cr	Cu	Fe	STANDARD DIMENSIONS
STEEL BAR	25 CARBON STEEL	丁 003		40	55	(33)	(81)	22	7·85	USED FOR PARTS OF LOW STRENCTH ONLY.	AS THIS CAN EASILY BE ROLLED, & MATERIALS CAN BE PROCURED WITHOUT DIFFICULTY DUE TO THE SMALL AMOUNT OF SPECIAL ELEMENTS IN ITS COMPOSITION, THIS MAY BE USED AS A SUBSTITUTE FOR BRASS.	0·3 -0·4	<0·35	<0·6	<0·035	<0·035			REMAINDER	
	45 CARBON STEEL	丁 004		50	70			17	"	USED IN ALL PARTS WHERE MEDIUM STRENCTH IS NECESSARY. THESE ARE FORGED WHEN THE STRUCTURES ARE RATHER COMPLEX.	COMPARED WITH 丁 232, MACHINE TREATMENT IS EASY.	0·3 -0·5		"	"	"			"	
	75 kgm SILICON MANCANESE CHROME STEEL	丁 232 乙	<30	75	95	(57)	(120)	13	"	MADE INTO PARTS IN WHICH HIGH STRENGTH IS DESIRED & USED FOR PARTS WHICH ARE TO BE WELDED.	AS COMPARED WITH THE USUAL TOUGH STEEL IT DOES NOT CONTAIN Ni. Mo. ETC. WHICH ARE IN SHORT SUPPLY. ALSO IT CAN BE WELDED. IT IS USED INSTEAD OF THE FORMER 丁 202	0·25 -0·35	0·7 -1·0	0·7 -1·0	<0·030	<0·030	0·7 -1·0		"	
	90 kgm SILICON MANCANESE CHROME STEEL	丁 234 ⊕	<40	95	115	(69)	(135)	12	"	MADE INTO PARTS IN WHICH HIGH STRENGTH IS DESIRED, & USED FOR PARTS WHICH WILL NOT BE WELDED. MAY BE FORCED WHEN DESIGNS ARE FAIRLY INTRICATE.	AS COMPARED WITH THE USUAL TOUGH STEEL, IT DOES NOT CONTAIN Ni. Mo. ETC. WHICH ARE IN SHORT SUPPLY. IT IS USED WHERE 丁 201 WAS USED BEFORE.	0·33 -0·43	0·8 -1·2	0·8 -1·2	<0·030	<0·030	0·8 -1·2		"	
	CASE-HARDENED CHROME STEEL	丁 106		50	75	(45)	(103)	15	"	MUST NOT BE USED EXCEPT FOR PARTS IN WHICH SURFACE HARDENING IS ESSENTIAL & CAMS ETC. IN WHICH FRICTIONAL WEAR IS GREAT.	IT IS INTENDED TO BE USED AS AN ALTERNATIVE TO 丁 101 WHILST WAITING ON RESEARCH INTO MATERIALS ECONOMISING IN NICKEL & MOLYBDENUM.	0·15 -0·20	<0·35	0·70 -1·00	<0·030	<0·030	0·8 -1·2		"	
STEEL SHEETS	15 CARBON STEEL SHEETS	冂 001			38			20	"	GENERAL, BECAUSE OF ITS SUITABILITY FOR PRESSED PARTS & ALUMINISING, IT IS PRINCIPALLY USED IN EXHAUST MANIFOLDS.	ITS PROCUREMENT IS EASY OWING TO THE SMALL NUMBER OF SPECIAL ELEMENTS IN ITS COMPOSITION.	0·10 -0·20	<0·35	<0·60	<0·035	<0·035			"	
	SILICON MANCANESE-CHROME STEEL PLATES	冂 232 (Z)			95			10	"	USED IN SHEET (PARTS) WHERE HIGH STRENCTH IS DESIRED.	HIGH STRENCTH STEEL. NOT CONTAINING NICKEL OR MOLYBDENUM	0·25 -0·35	0·7 -1·0	0·7 -1·0	<0·035	<0·030	0·7 -1·0		"	
	CARBON STEEL PLATES (FOR SPRINGS)	冂 521		70					"	SPRINGS	SPRING STEEL SHEETS WITH A SMALL NUMBER OF SPECIAL ELEMENTS IN THEIR COMPOSITION.	0·80 -1·00	<0·35	<0·60	<0·030	<0·030			"	
	TINPLATE SHEETS	冂 531			35			20	"	USED AS A SUBSITUTE FOR LIGHT ALLOY SHEETS FOR PARTS IN WHICH RIGIDITY IS MORE NECESSARY THAN STRENGTH.	THROUGH SKILFUL PLANNING, ECONOMY OF ALUMINIUM RAW MATERIALS MAY BE EFFECTED.	<0·13	<0·10	<0·50	<0·10	<0·04			"	
STEEL TUBES	25 CARBON STEEL TUBES	入 002		47	55				"	USED PRINCIPALLY IN TUBE MATERIALS TO WHICH INTERNAL PRESSURE IS APPLIED.	STEEL TUBES WITH FEW SPECIAL ELEMENTS IN THEIR COMPOSITION.	0·25 -0·35	<0·35	<0·60	<0·035	<0·035			"	SEE T.S. 1417
	25 CARBON STEEL WELDED & DRAWN TUBES	入 002 ⊕		25	44				"	DOES NOT REQUIRE STRENGTH. GENERAL STRUCTURAL TUBING.	WELDED DRAWN STEEL TUBES AS COMPARED WITH COLD-DRAWN STEEL TUBES - PRODUCTION IS EASY.	0·25 -0·35	<0·35	<0·60	<0·035	<0·035			"	
	SILICON MANCANESE-CHROME STEEL TUBES	入 232 Z			95			8	"	USED AS TUBE MATERIALS WHERE HIGH STRENGTH IS DESIRED.	HIGH STRENGTH STEEL NOT CONTAINING NICKEL & MOLYBDENUM.	0·25 -0·35	0·7 -1·0	<0·60	<0·030	<0·030	0·7 -1·0		"	SEE T.S. 1417
STEEL WIRE	VERY SOFT STEEL WIRE FOR RIVETS	二 001			35-45			25	"	AS STEEL RIVETS, USED TO JOIN IMPORTANT STEEL PARTS.	SUITABLE FOR STEEL RIVETING MATERIALS IN ACCORDANCE WITH EMERGENCY REQUIREMENTS. FEW SPECIAL ELEMENTS IN ITS COMPOSITION. RIVETING IS EASY.	<0·15	<0·35	<0·60	<0·030	<0·030			"	
	CARBON STEEL WIRES FOR SPRINGS	二 541							"	IN GENERAL USED AS SPRING WIRE.	EQUIVALENT TO THE HIGH TENSILE STRENGTH STEEL WIRE THAT IS GENERALLY USED.	0·60 -0·75	<0·35	0·30 -0·60	<0·040	<0·040				
CAST STEEL	25 kgm SILICON MANCANESE CHROME STEEL CASTINGS	入 232		60	75			15	7·85	USED IN PARTS THAT WOULD BE DIFFICULT FOR FORGING IN REGARD TO DRAWING & WORKING.	A TOUGH CAST STEEL NOT CONTAINING NICKEL OR MOLYBDENUM.	0·25 -0·35	<1·00	0·70 -1·0	<0·035	<0·030	0·4 -1·00		"	
	MALLEABLE CAST IRON TYPE Nº 1				32			8		USED IN SMALL METAL PARTS IN WHICH STRENCTH IS NOT IMPORTANT.	DOES NOT INCLUDE SPECIAL ELEMENTS IN ITS COMPOSITION.									
STEEL CABLES	Nº 2 DOUBLE TWIST SPECIAL STEEL CABLE									CONTROL CABLE WIRING	FOR CONTROL CABLES, Nº 4 DOUBLE TWIST WILL BE SUFFICIENT BY ITSELF.									

EXPLANATORY NOTES:—① "TENSILE STRENCTH" AND "ELONGATION" ARE TAKEN WHOLLY FROM JAPANESE AIRCRAFT STANDARDS; THE SHEARING STRENCTH AND COMPRESSIVE VALUES ENTERED IN BRACKETS ARE NOT TAKEN FROM JAPANESE AIRCRAFT STANDARDS BUT ARE MAINLY BASED UPON EXPERIENCE WITH OTHER AIRCRAFT PROJECTS. IN GENERAL THE SHEAR STRENGTH IS 60% OF THE TENSILE STRENCTH;

② THE CODE NUMBERS OF THE JAPANESE AIRCRAFT STANDARDS ARE TO BE USED FOR ENTRIES ON DRAWINGS AND TABLES OF MATERIALS.

③ STANDARD DIMENSIONS OTHER THAN THOSE GIVEN IN T.S. DATA SHEETS SPECIFIED ON THE RELEVANT DRAWINGS.

A TABLE OF STANDARDS OF SELECTION OF LIGHT ALLOYS

19TH MAY 1944

TYPE		CLASSIFICATION	"JAPANESE AIRCRAFT STANDARDS" CODE NUMBER	DIMENSIONS	0·2% PROOF STRESS kg/mm²	STRENGTH kg/mm² TENSILE STRENGTH	STRENGTH kg/mm² SHEAR STRENGTH	STRENGTH kg/mm² COMPRESSIVE STRENGTH	ELONGATION %	SPECIFIC GRAVITY	PRINCIPAL USES	REMARKS	COMPOSITION % Si	Fe	Cu	Mg	Mn	Zn	Cr	Al	STANDARD DIMENSIONS
ALUMINIUM	BARS	ALUMINIUM BARS	≠ 002	<20	(4)	10	(5)	(16)	10	(2·7)	USED IN MACHINE PARTS REQUIRING LOW STRENGTH AND PARTS TO BE WELDED.	① CAN BE WELDED. ② BECAUSE OF DIFFICULTY IN TRANSPORTATION OF RAW MATERIALS, USE ONLY WHERE NECESSARY. CHANGE WHEREVER POSSIBLE TO TIMBER, SYNTHETIC RESINS AND STEEL.	0·6	0·6	0·2					REMAINDER	
				>20	(3)	7	(4)	(11)	20													
	SHEETS	ALUMINIUM SHEETS CLASS 2	≠ 022 Z		(6)	(8)	(4)	(13)	20	(2·7)	WELDED SHEET-PARTS REQUIRING LOW STRENGTH.	①② BOTH THE SAME AS THE ABOVE. ③ SHOULD NOT BE EMPLOYED FOR LABELS.	0·6	0·6	0·2					"	TS 1414
	TUBES	ALUMINIUM TUBES	≠ 072	DIA <4	(7)	11	(6)	(18)		(2·7)	WELDED TUBE PARTS REQUIRING LOW STRENGTH.	①② BOTH THE SAME AS THE ABOVE.	0·6	0·6	0·2					"	TS 1415
				<50 >4	(6)	9	(5)	(15)														
				>50	(6)	9	(5)	(15)														
HIGH STRENGTH ALUMINIUM ALLOY	BARS	HIGH-STRENGTH ALUMINIUM ALLOY BARS CLASS 1	≠ 201	<40	22	38	(19)	(52)	14	2·8	METAL PARTS IN GENERAL.	SAME AS ② ABOVE.	<0·5	<0·6	3·3 -4·2	0·3 -0·7	0·3 -0·7			"	
				40-100	22	35	(18)	(48)														
				100-150	22	32	(16)	(45)														
				>150	22	30	(15)	(43)														
	FORCINGS	HIGH-STRENGTH ALUMINIUM ALLOY FORCINGS CLASS 1	≠ 211	<40	22	38	(19)	(52)	14	2·8	METAL PARTS WHERE COMPLEXITY OF FORM WOULD NECESSITATE EXCESS MACHINING OF BAR MATERIALS.	AS ABOVE	<0·5	<0·6	3·3 -4·2	0·3 -0·7	0·3 -0·7			"	
				40-100	22	35	(18)	(48)														
				100-150	22	32	(16)	(45)														
				>150	22	30	(15)	(43)														
	SHEETS	ALUMINIUM CLAD HIGH STRENGTH ALUMINIUM ALLOY SHEETS & STRIPS CLASS 1	≠ 232 Z	04-20	27	42	(21)	(56)	14	2·8	SHEET PARTS IN GENERAL.	① FOR CURVED PLATES & MOULDED MATERIALS ≠ 252 Z MAY BE USED. ② CHANGE TO SUBSTITUTES, AS FAR AS POSSIBLE THIN LAMINATED WOODEN SHEETS ETC.	<0·5	<0·6		0·4 -1·0	1·0 -2·0	EXTERNAL PLATES		"	TS 1414
				20-60	27	43	(21)	(56)	15													
				60-70	27	43	(21)	(56)	12				<0·5	<0·6	3·8 -4·8	1·2 -1·8	0·4 -1·0	INTERNAL PLATES		"	
	EXTRUSIONS	HIGH-STRENGTH ALUMINIUM ALLOY EXTRUSIONS CLASS 1	≠ 267 Z	<30	27	40	(20)	(52)	8	2·8	SPARS, FLANGES, LONGERONS, STIFFENERS	① AS FAR AS POSSIBLE CHANGE TO PARTS ROLLED FROM STEEL SHEET OR STRIP. ② A SUBSTITUTE FOR ≠ 262.	<0·5	<0·6	<0·8	1·2 -2·2	0·3 -0·8	4·8 -5·8	0·1 -0·4	"	FOR SECTIONS TAKE TS 1409 - TS 1413 AS THE STANDARD
				>30	28	43	(21)	(56)	8													
			≠ 267 ホ	<30	40	48	(24)	(62)	3	2·8	STRUCTURAL PARTS OF HIGH LOADING SUCH AS SPARS, FLANGES.	① STEEL MATERIALS TO BE USED INSTEAD WHEREVER POSSIBLE. ② SUBSTITUTE FOR ESDT EXTRUDED MATERIALS.	<0·5	<0·6	<0·8	1·2 -2·2	0·3 -0·8	4·8 -5·8	0·1 -0·4	"	FOR SECTIONS TAKE TS 1409 - TS 1413 AS THE STANDARD
				>30	45	50	(25)	(65)	8													
	TUBES	HIGH-STRENGTH ALUMINIUM ALLOY TUBES CLASS 1	≠ 271		22	38	(19)	(52)	12	2·8	IN GENERAL, TUBE PARTS IN STRUTS ETC.	USE STEEL TUBES INSTEAD WHEREVER POSSIBLE	<0·5	<0·6	3·3 -4·2	0·3 -0·7	0·3 -0·7			"	TS 1415
NON-CORROSIVE AL ALLOY	TUBES	NON-CORROSIVE ALUMINIUM ALLOY TUBES CLASS 2	≠ 472	<10	(12)	15	(8)	(24)	16	2·75	PIPING FOR FUEL, LUBRICATING OIL, OIL-HYDRAULIC, WATER, AIR & OXYGEN SYSTEMS		<0·5	<0·5	<0·2	0·8 -1·5	0·8 -1·5			"	TS 1415
				>10	(12)	16	(8)	(25)	18													
ALUMINIUM ALLOY CASTINGS		WARTIME ALUMINIUM ALLOY CASTINGS CLASS 2	≠ 512 甲	(METAL MOULD)	(10·3)	14			(7)	2·8	CASTING PARTS IN GENERAL	THEY ARE CASTINGS SUBSTITUTED FOR ≠ 502 甲	3·0 -6·0	<1·5	2·0 -4·5	<1·5				"	
				(SAND MOULD)	(4·5)	10																
			≠ 512 Z	(METAL MOULD)	(10·8)	24			(2)	2·8	CASTING-PARTS OF HIGH STRENGTH.	THEY ARE CASTINGS SUBSTITUTED FOR ≠ 502 Z	3·0 -6·0	<1·5	2·0 -4·5	<1·5				REMAINDER	
				(SAND MOULD)	(7·7)	17																

A TABLE OF
STANDARDS OF SELECTION OF LIGHT ALLOYS

19TH MAY 1944

TYPE	CLASSIFICATION	"JAPANESE AIRCRAFT STANDARDS" CODE NUMBER	DIMENSIONS	0·2% PROOF STRESS kg/mm²	STRENGTH kg/mm²			ELONGATION %	SPECIFIC GRAVITY	PRINCIPAL USES	REMARKS	COMPOSITION %									STANDARD DIMENSIONS
					TENSILE STRENGTH	SHEAR STRENGTH	COMPRESSIVE STRENGTH					Si	Fe	Cu	Mg	Mn	Zn	Cr	Sn	Al	
ALUMINIUM ALLOY CASTINGS	SPECIAL ALUMINIUM ALLOY CASTINGS CLASS 2	〒 702 Z								USED AS MATERIALS FOR BEARINGS	CONTAINS LITTLE COPPER (RAW MATERIAL FOR WHICH IS SCARCE) AND IS EASY TO OBTAIN. IS USED AS A SUBSTITUTE FOR BRASS.			3·5 -4·5	1·0 -2·0				2·0 -4·0	REMAINDER	
ALUMINIUM ALLOY DIE-CASTINGS	WARTIME ALUMINIUM ALLOY DIE-CASTINGS CLASS 2	〒 612			14				2·8	CAST PARTS WHICH ARE SMALL IN QUANTITY	IN CASES WHERE IT IS POSSIBLE TO USE SYNTHETIC RESINS, THESE ARE USED. A SUBSTITUTE FOR THE USUAL 〒 602	3·0 -6·0	<2·5	2·0 -4·0	<1·5					"	
ALUMINIUM ALLOY RIVET MATERIALS	TYPE Nº 2 ALUMINIUM RIVET MATERIAL	〒 082		(5)	15	8	(24)	2	2·7	RIVET MATERIAL FOR ALUMINIUM STRUCTURAL PARTS		<0·6	<0·6	<0·2						"	TS 2001 AND TS 2002
	SOFT ALUMINIUM ALLOY RIVET MATERIAL	〒 181		(15)	26	18	(38)	20	2·8	RIVETING MATERIALS OF LESS THAN 3·0♦	ACCORDING TO DRAFTING REGULATION 1160	<0·6	<0·6	2·0 -3·0	0·2 -0·6	<0·2				"	TS 2001 AND TS 2002
	HIGH STRENGTH ALUMINIUM ALLOY TYPE Nº 1 RIVET MATERIAL	〒 281		(22)	38	26	(51)	16	2·8	RIVETING MATERIALS OF MORE THAN 3·0♦	IN ACCORDANCE WITH DRAFTING REGULATION 1160	<0·5	<0·6	3·3 -4·2	0·3 -0·7	0·3 -0·7				REMAINDER	TS 2001 AND TS 2002

EXPLANATORY NOTES :—

① IN HIGH STRENGTH ALUMINIUM ALLOYS, THE COEFFICIENT OF LONGTITUDINAL ELASTICITY IS 7500 kg/mm² AND THE COEFFICIENT OF LATERAL ELASTICITY IS 2600 kg/mm². WITH RECARD TO ALUMINIUM, VALUES OF 10% LESS THAN THESE HAVE BEEN ADOPTED.

② THE VALUES SHOWN IN BRACKETS ARE OTHER THAN STANDARD VALUES.

③ "AIRCRAFT STANDARDS" CODE Nºˢ ARE TO BE USED FOR ENTRIES ON DRAWINGS AND TABLE OF MATERIALS.

A TABLE OF STANDARDS OF SELECTION OF COPPER ALLOYS

ǂ 74 II STANDARDS OF SELECTION OF MATERIALS USED

21ST MAY 1944

TYPE		CLASSIFICATION	"JAPANESE AIRCRAFT STANDARDS" CODE NUMBERS	DIMENSIONS	STRENGTH Kg/mm² TENSILE STRENGTH	STRENGTH Kg/mm² SHEAR STRENGTH	STRENGTH Kg/mm² COMPRESSIVE STRENGTH	ELONGATION %	SPECIFIC GRAVITY	PRINCIPAL USES	REMARKS	COMPOSITION % Cu	Sn	Zn	Al	Fe	Mn	P	Si
COPPER	BARS	COPPER BARS	⊦ 001	<25 >25	22 20			35	8·9	ELECTRICAL PARTS, TERMINALS ETC.		>99·5							
	SHEETS	COPPER SHEETS (SEMI-RIGID TYPE)	⊦ 011 Z		25	(15)		20	8·9	ELECTRICAL PARTS		>99 5							
	TUBES	SEAMLESS COPPER TUBES	⊦ 021		22	(13)		35	8·9	OXYGEN PIPING SYSTEMS AND PIPING IN PARTS OF HIGH TEMPERATURE.		>99·5							
	WIRE	SOFT COPPER WIRE		>0·5 >0·8 >2·0 >8·0	28 27 26 25			20 25 30 35		ELECTRICAL PARTS									
BRASS	BARS	NAVAL BRASS BARS	⊦ 101	<20 >20	41 35	(25) (21)	(56) (48)	20	8·5	MACHINE PARTS IN GENERAL	A SUBSTITUTE FOR ⊦ 102	61 ı 64	0·8 ı 1·5	REMAINDER					
	SHEETS	BRASS SHEETS (SEMI-RIGID TYPE)	⊦ 111 Z		38	(23)	(51)	30	8·5	PARTS OF NON-CORROSIVE TYPE AND ELECTRICAL PARTS		6·9 -7·2		REMAINDER					
	TUBES	BRASS TUBES FOR USE IN RADIATORS	⊦ 122		28	(17)			8·5	RADIATORS		6·9 -7·2		REMAINDER					
BRONZE	BARS	PHOSPHOR-BRONZE BARS CLASS 1	⊦ 201	<50 >50 >100	47 45 40			15	8·8	ELECTRICAL PARTS		REMAINDER	5 ı 7					<0·3	
		SPECIAL ALUMINIUM-BRONZE CLASS 3	⊦ 209 (Z)	<100 >100	75 70	(45) (42)	(105) (98)	12 10	7·6	SLIDING MACHINE PARTS OF HIGH LOADING	A SUBSTITUTE FOR ⊦ 206	"				3 -5	4 -6		
	SHEETS	PHOSPHOR-BRONZE SHEETS	⊦ 211		65	(39)	(93)	7	8·8	FLAT SPRINGS FOR USE IN ELECTRICAL PARTS.		"	5-8					<0·6	
	WIRE	PHOSPHOR-BRONZE WIRE	⊦ 231		85	(51)	(113)		8·8	AERIAL WIRE AND SPRINGS FOR USE IN ELECTRICAL PARTS.		"	5-8					<0·6	
	CASTINGS	SPECIAL SILICON-BRONZE CASTINGS	⊦ 246		45	(27)	(70)	12	8·4	NON-CORROSIVE AND ANTI-FRICTIONAL-WEAR CASTINGS	A SUBSTITUTE FOR ⊦ 243	"		14-16					4-5
BRAIDED (—) WIRE		CIRCULAR BRAIDED (—) WIRE								FOR SHIELDING ELECTRIC CABLES									
		RIBBON BRAIDED (–) WIRE								FOR BONDING									

EXPLANATORY NOTES:—

① COPPER ALLOYS ARE TO BE REPLACED AS FAR AS POSSIBLE BY OTHER MATERIALS AND USED ONLY WHEN ABSOLUTELY NECESSARY.

② IN THE "MATERIALS" COLUMN ON DRAWINGS, "AIRCRAFT STANDARDS" CODE NUMBERS ARE TO BE USED FOR ENTRIES. WHERE THERE IS NO CODE NUMBER THE TYPE IS TO BE ENTERED.

③ THE FIGURES NOT ENTERED IN BRACKETS ARE VALUES AS SHOWN IN "JAPANESE AIRCRAFT STANDARDS", AND THE FIGURES ENTERED IN BRACKETS ARE THOSE VALUES NOT BASED UPON "JAPANESE AIRCRAFT STANDARDS."

④ THE BRASS WIRE WHICH HAS BEEN USED IN THE PAST IN BINDING WIRE, NETTING ETC. IS NOT TO BE USED.

⑤ STANDARD MEASUREMENTS ARE SHOWN ELSEWHERE.

CHART Nº 5
PART 1

± 74 II STANDARDS OF SELECTION OF MATERIALS USED

7-1

A TABLE OF
STANDARDS OF SELECTION OF TIMBER AND ADHESIVES

19TH MAY 1945

TYPE	CLASSIFICATION	CODE NUMBER	TYPE	CODE NUMBER IN USE	RELATIVE DIRECTIONS OF FIBRES	STRENGTH: TENSILE STRENGTH	STRENGTH: COMPRESSIVE STRENGTH	STRENGTH: BENDING STRENGTH	STRENGTH: SHEAR STRENGTH	YOUNG'S COEFFICIENT	SPECIFIC GRAVITY	PRINCIPAL USES AND/OR REMARKS
NATURAL TIMBER	TIMBER CLASS 1	11-001 甲	JAPANESE CYPRESS	CYPRESS A	PARALLEL	(8)	3·0	5·0	0·5	720	(0·45)	TIMBER STRUCTURAL PARTS IN CENERAL
		11-001 乙	JAPANESE CEDAR	CEDAR B	PARALLEL		2·6	4·6	0·35	550	(0·45)	WOODEN STRUCTURAL PARTS OF LOW STRENGTH.
	TIMBER CLASS 2	11-002 甲	BEECH	BEECH A	PARALLEL	(7·5)	4·0	7·5	0·75	900	(0·6)	WOODEN STRUCTURAL PARTS OF FAIRLY HIGH STRENGTH. (BEECH IS USED AS MUCH AS POSSIBLE)
			BIRCH	BIRCH A	PARALLEL	(7·5)	5·0	8·0	0·8	1000	(0·6)	
		11-002 乙	"DORA NO KI"	"DORA NO KI" B	PARALLEL		2·5	4·0	0·5	400	(0·5)	CONSTRUCTIONAL PARTS STEAMED TO CURVATURE.
		11-002 丙	PAULOWNIA IMPERIALIS	PAULOWNIA	PARALLEL						0·3	FAIRING AND FILLING MATERIALS, ETC.
STRENGTHENED WOOD	STRENGTHENED WOOD CLASS 1	11-301 甲		STRENGTHENED WOOD CLASS 1	PARALLEL	26	16	3·1	2·8	(2200)	1·4	PARTS BEARING CONCENTRATED STRESSES OR STRUCTURAL PARTS OF HIGH STRENGTH.
					RIGHT-ANGLES				4			
VENEER			BIRCH	BIRCH SINGLE SHEETS	PARALLEL	(8)			(2·5)	(1200)	(0·68)	PARTS WITH LARGE CURVATURE OR DOUBLE LAYER CURVED SURFACE PARTS.
					RIGHT ANGLES	(5)			(2·6)			
					45°	(3)			(2·5)			
PLY SHEETS	PLY SHEETS CLASS 1	ル 101	BIRCH	BIRCH PLY SHEETS CLASS 1	PARALLEL	8			(2·5)	(1200)	(0·68)	CONSTRUCTIONAL PARTS OF SHEET MATERIALS WITH HIGH STRENGTH. (BEECH IS USED AS MUCH AS POSSIBLE)
					RIGHT ANGLES	5			(2·6)			
					45°	3			(2·5)			
			BEECH	BEECH PLY SHEETS CLASS 1	PARALLEL	5			(2·1)	(1100)	(0·63)	
					RIGHT ANGLES	3·5			(2·1)			
					45°	2			(2·3)			
			"SHINA NO KI"	"SHINA NO KI" PLY SHEETS CLASS 1	PARALLEL	4			(2·4)	(800)	(0·51)	CONSTRUCTIONAL PARTS OF SHEET MATERIALS WITH LOW STRENGTH.
					RIGHT ANGLES	3			(2·2)			
					45°	2			(2·2)			
			JAPANESE CYPRESS	CYPRESS PLY SHEETS CLASS 1	PARALLEL	7			(1·1)	(700)	(0·45)	STRUCTURAL PARTS OF SHEET MATERIALS IN WHICH LIGHT WEIGHT IS DESIRED.
					RIGHT ANGLES	3·5			(1·2)			
					45°	1·7			(1·2)			
ADHESIVES	UREA TYPE OF SYNTHETIC RESIN ADHESIVES	ヲ 101	KL 303 AND HARDENING CHEMICAL	NOT ENTERED	(2·0) (ADHESIVE STRENGTH)							AN ADHESIVE FOR ALL LAMINATED WOODEN SHEETS.
			KL 305 AND HARDENING CHEMICAL	NOT ENTERED	(2·0) (ADHESIVE STRENGTH)							AN ADHESIVE FOR STRENGTHENED WOODS
	CASEIN ADHESIVES	ヲ 201		NOT ENTERED	(2·0) (ADHESIVE STRENGTH)							MAY EVEN BE USED IN SECONDARY STRUCTURES.

CHART Nº 5. PART 2 (CONTINUATION)

7-2

NATURAL TIMBER	TIMBER CLASS 2	11-002 丁	"SHŌJI"	SHŌJI A	PARALLEL		4·0	8·0	0·8	900	(0·65)	FILLING MATERIALS
		11-002 乙	OAK	OAK B	PARALLEL		4·5	8·0	0·85	750	(0·9)	FILLING MATERIALS IN WHICH STRENGTH IS DESIRED.

EXPLANATORY NOTES:-

① THE CLASSIFICATION & CODE NUMBER ARE AS IN JAPANESE AIRCRAFT STANDARDS & ARMY AIR MATERIAL STANDARDS.

② "CODE NUMBERS IN USE" ARE TO BE USED IN ENTRIES MADE ON DRAWINGS.

③ THE NUMBERS IN BRACKETS ARE VALUES ARRIVED AT FROM (SOURCES) OTHER THAN JAPANESE AIRCRAFT STANDARDS, & NUMBERS THAT ARE NOT IN BRACKETS SHOW THE VALUES IN JAPANESE AIRCRAFT STANDARDS.

④ THE UNITS OF BOTH STRENGTH & YOUNG'S COEFFICIENT ARE kg/mm^2

⑤ TABLES OF MEASUREMENTS IN USE WILL BE PUBLISHED LATER.