2. Clark YH

Chord line
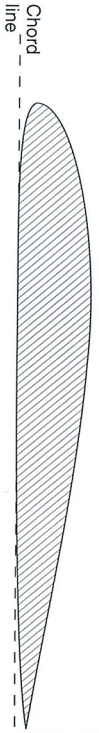
Excellent American general purpose aerofoil.

Modifications of Clark Y have been used on many types of aircraft all over the world; Clark YH was one of the first of these modifications.

Figures relate to aspect ratio of 6, and standard roughness.

Reynolds Number of test 7 million.

Distance from LE, % chord	Upper surface	Lower surface
0	3.50	3.50
1.25	5.45	1.93
2.5	6.50	1.47
5	7.90	0.93
7.5	8.85	0.63
10	9.60	0.42
15	10.68	0.15
20	11.36	0.03
30	11.70	0
40	11.40	0
50	10.51	0
60	9.15	0
70	7.42	0.06
80	5.62	0.38
90	3.84	1.02
95	2.93	1.40
100	2.05	1.85

Angle of attack	C_L	C_D	CP, fraction of chord	$C_{M.LE}$	L/D
−4°	+0.09	0.010	−	+0.030	−10
−2°	+0.05	0.009	0.74	−0.010	+5.2
0°	+0.20	0.010	0.40	−0.046	19.3
2°	0.36	0.015	0.32	−0.072	23.2
4°	0.51	0.022	0.295	−0.116	23
6°	0.66	0.033	0.285	−0.150	20.6
8°	0.80	0.045	0.275	−0.184	17.7
10°	0.94	0.062	0.27	−0.220	15.2
12°	1.06	0.083	0.27	−0.244	13.3
14°	1.21	0.103	0.27	−0.276	11.8
16°	1.33	0.125	0.265	−0.320	11
18°	1.43	0.146	0.265	−0.352	9.9
19°	1.36	0.170	0.275	−0.356	8
20°	1.26	0.211	0.29	−0.354	7
25°	0.97	0.324	0.33	−0.354	2.9
30°	0.81	0.430	0.37	−0.352	1.9

(a) What is $C_{M.AC}$ at 0°, 4° and 8° for this aerofoil?

(b) Where is the aerodynamic centre of this aerofoil section?

(c) What is the stalling angle?

(d) What is the value of $C_{L}max/C_{D}$ min?

(e) What is the value of $C_{L}^{\frac{3}{2}}/C_{D}$ at 4° and 8°?