

NAUI RGBM TRIMIX TABLES

Ranged Trimix Tables for 16% oxygen and 24% to 40% helium for maximum depths from 240 fsw to 90 fsw (73 - 27 m), with a switch on ascent to pure oxygen at 20 fsw (6 m) to the surface. The max ascent rate is 33 fsw/min (10 m/min) and the max descent rate is 75 fsw/min (23 m/min). Minimal repetitive interval is 3 hours for 2 dives only, the minimal flying interval is 24 hours after 1 dive and 36 hours after 2 dives. For repetitive dives, use the next deeper and longer schedule than the maximum repetitive dive depth and bottom time.

WARNING: Do not use these tables without proper instruction in their use and trimix certification or supervision by a NAUI Trimix Instructor.

Mild conservatism is built into the model parameters and full-blown RGBM is used for calculations, yielding deeper stops but shorter overall deco times as compared to Haldane staging. The critical radius, r_c , ranges from 0.65 (liberal) to roughly 0.77 (conservative) micrometers, which tags bubble size excited into growth, and replaces Haldane critical tensions (M-values) in staging divers.

NAUI RGBM TRIMIX TABLES

TX 16% O2 / 24 - 40% He / 44 - 60% N2						
fsw	O2 from 20 fsw up to sea level					
10	16	13	10	8	6	2
20	9	8	6	4	2	1
30	19	13	11	9	4	1
40	10	10	8	4	3	1
50	9	8	5	4	2	
60	8	4	4	3	2	
70	5	5	4	3	2	
80	4	3	3	2	1	
90	4	3	2	2	1	
100	3	2	2	1	1	
110	2	2	2	1	1	
120	2	2	1	1	1	
130	2	1	1	1	1	
140	1	1	1	1	1	
150	1	1	1	1		
160	1	1	1			
170	1	1				
180						
190						
200						
210						
220						
230						
240	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						
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TX 16% O2 / 24 - 40% He / 44 - 60% N2						
fsw	O2 from 20 fsw up to sea level					
10	15	12	9	7	5	1
20	9	8	6	4	2	1
30	18	12	10	8	4	1
40	10	10	8	4	3	1
50	9	8	5	4	2	
60	8	4	4	3	2	
70	4	5	4	2	1	
80	4	3	2	2	1	
90	4	3	2	2	1	
100	3	2	2	1	1	
110	2	2	2	1	1	
120	2	2	1	1	1	
130	1	1	1	1	1	
140	1	1	1	1		
150	1	1	1			
160	1	1				
170						
180						
190						
200						
210						
220						
230	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						
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fsw	O2 from 20 fsw up to sea level					
10	15	12	10	6	4	1
20	8	8	5	4	2	1
30	17	11	10	7	4	1
40	10	9	7	5	2	1
50	9	8	5	4	2	
60	7	4	4	2	1	
70	4	4	3	2	1	
80	4	4	2	2	1	
90	4	2	2	1	1	
100	2	2	2	1	1	
110	2	2	1	1	1	
120	2	2	1	1	1	
130	1	1	1	1		
140	1	1	1	1		
150	1	1				
160						
170						
180						
190						
200						
210						
220	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						
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TX 16% O2 / 24 - 40% He / 44 - 60% N2						
fsw	O2 from 20 fsw up to sea level					
10	14	11	10	5	4	1
20	8	8	4	4	2	1
30	15	10	10	6	4	1
40	10	10	6	4	2	
50	9	6	5	4	2	
60	6	4	4	2	2	
70	4	4	3	2	1	
80	4	4	2	2	1	
90	3	2	1	1	1	
100	2	1	2	1	1	
110	2	2	1	1	1	
120	2	1	1	1		
130	1	1	1	1		
140	1	1	1			
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10	13	10	10	5	5	1
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30	13	11	11	5	6	
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50	8	5	6	3	2	
60	5	4	4	2	3	
70	4	4	4	2	1	
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90	3	2	2	1	1	
100	2	2	2	1	1	
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120	2	1	1	1	1	
130	1	1	1	1	1	
140	1	1	1			
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40	10	9	4	4	3	
50	7	4	5	2	3	
60	5	5	3	2	2	
70	4	3	2	2	2	
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10	11	9	8	5	2	1
20	8	6	4	3	2	
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40	9	8	5	4	1	
50	6	4	4	2	1	
60	5	4	2	2	1	
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fsw	O2 from 20 fsw up to sea level							
10	15	15	10	9	6	5	2	1
20	9	9	7	5	4	4	2	
30	18	16	11	10	7	6	2	
40	10	12	9	6	4	6	1	
50	9	9	5	4	4	3	1	
60	6	5	4	4	2	2	1	
70	4	5	4	2	2	2	1	
80	4	3	2	2	1	2		
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fsw	O2 from 20 fsw up to sea level							
10	14	14	10	9	5	5	2	1
20	9	9	6	4	4	2	1	
30	15	14	10	10	5	4	2	
40	11	11	8	5	4	2	1	
50	8	8	5	4	3	2	1	
60	5	5	4	3	2	1	1	
70	4	5	3	2	2	1		
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10	13	12	10	8	5	4	2	0
20	9	7	6	4	4	2	1	
30	12	11	10	8	5	3	2	
40	10	9	7	5	4	2	1	
50	7	5	4	4	2	2	1	
60	5	4	4	2	2	1		
70	4	3	2	2	2	1		
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10	13	11	9	7	5	4	2	0
20	8	6	5	4	3	2	1	
30	11	11	10	7	5	3	1	
40	10	8	5	5	3	2		
50	5	5	4	3	2	1		
60	5	4	3	2	2	1		
70	3	2	2	2	1			
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fsw	O2 from 20 fsw up to sea level							
10	12	10	9	6	5	3	1	0
20	7	6	4	4	3	2	1	
30	11	10	9	5	4	2		
40	8	6	5	4	3	2		
50	5	5	4	2	1	1		
60	4	3	2	2	1			
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fsw	O2 from 20 fsw up to sea level									
10	13	13	10	10	8	4	5	2	1	0
20	9	7	6	4	4	4	2	2	1	
30	12	12	11	10	7	5	3	2		
40	10	8	6	5	5	3	2	1		
50	5	5	5	4	2	2	2			
60	5	4	2	2	2	1				
70	2	2	2	1	1					
80										
90										
100										
110										
120	50	45	40	35	30	25	20	15	10	5

Max descent 75 fpm / max ascent 33 fpm

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fsw	O2 from 20 fsw up to sea level									
10	12	11	10	9	6	5	4	2	1	
20	8	6	5	4	4	3	2	1		
30	12	11	10	8	5	4	3	1		
40	8	6	5	5	3	3	1			
50	5	5	4	2	2	1				
60	2	2	2	2	1					
70	1									
80										
90										
100										
110	50	45	40	35	30	25	20	15	10	

Max descent 75 fpm / max ascent 33 fpm

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fsw	O2 from 20 fsw up to sea level								
10	11	10	9	7	4	5	3	2	0
20	6	5	5	4	4	2	2	2	
30	11	10	7	5	4	4	1		
40	6	5	5	4	3	1			
50	3	2	2	1					
60	1	1							
70									
80									
90									
100	50	45	40	35	30	25	20	15	10
Max descent 75 fpm / max ascent 33 fpm									
Copyright 1999 NAUI Worldwide									

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fsw	O2 from 20 fsw up to sea level								
10	10	9	8	5	4	4	3	3	0
20	5	5	4	4	3	2	2		
30	9	7	5	4	4	1			
40	4	3	3	1					
50	1	1							
60									
70									
80									
90	50	45	40	35	30	25	20	15	10
Max descent 75 fpm / max ascent 33 fpm									
Copyright 1999 NAUI Worldwide									

NAUI RGBM HELITROX TABLES

Ranged Helitrox Tables for 26% -30% oxygen and 13% - 17% helium for maximum depths from 150 fsw to 100 fsw (46 -30 m), with a switch on ascent to pure oxygen at 20 fsw (6 m) to the surface.

The maximum ascent rate is 33 fsw/min (10 m/min) and the maximum descent rate is 75 fsw/min (23 m/min). The minimal repetitive interval is 3 hours for 2 dives only. The minimal flying interval is 24 hours after 1 dive and 36 hours after 2 dives. For repetitive dives, use the next deeper and longer schedule than the maximum repetitive dive depth and bottom time.

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26 - 30% O2 / 13 - 17% He / 53 - 61% N2						
fsw	O2 from 20 fsw up to sea level					
10	7	5	4	2	1	0
20	4	3	2	2		
30	6	4	3	1		
40	3	2	1	1		
50	2	2	1			
60	2	1	1			
70	1	1				
80						
90						
100						
110						
120						
130						
140						
150	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						

26 - 30% O2 / 13 - 17% He / 53 - 61% N2						
fsw	O2 from 20 fsw up to sea level					
10	7	4	4	2	1	0
20	3	3	2	1		
30	5	3	2	1		
40	3	2	1			
50	2	1	1			
60	1	1				
70						
80						
90						
100						
110						
120						
130						
140	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						

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26 - 30% O2 / 13 - 17% He / 53 - 61% N2

fsw	O2 from 20 fsw up to sea level					
10	6	3	4	2	0	0
20	3	3	1	1		
30	4	3	2			
40	2	1	1			
50	2	1				
60						
70						
80						
90						
100						
110						
120						
130	30	25	20	15	10	5
Max descent 75 fpm / max ascent 33 fpm						

26 - 30% O2 / 13 - 17% He / 53 - 61% N2

fsw	O2 from 20 fsw up to sea level						
10	8	7	5	4	3	1	0
20	4	3	3	2	1		
30	6	4	3	2	1		
40	3	3	2	1			
50	2	1					
60							
70							
80							
90							
100							
110							
120	40	35	30	25	20	15	10
Max descent 75 fpm / max ascent 33 fpm							

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fsw	O2 from 20 fsw up to sea level						
10	7	6	3	3	2	1	0
20	3	3	3	2	2		
30	5	3	2	1			
40	2	2					
50							
60							
70							
80							
90							
100							
110	40	35	30	25	20	15	10
Max descent 75 fpm / max ascent 33 fpm							

26 - 30% O2 / 13 - 17% He / 53 - 61% N2							
fsw	O2 from 20 fsw up to sea level						
10	6	4	3	3	3	0	0
20	3	3	2	1			
30	3	1					
40							
50							
60							
70							
80							
90							
100	40	35	30	25	20	15	10
Max descent 75 fpm / max ascent 33 fpm							

CONVERSIONS

When $a = b$; $a/b = a$ and $b/a = b$

Pressure Conversions

1 atm = 1.013247 bar

1 atm = 33.08 fsw

1 atm = 10.13 msw

1 atm = 14.6959 psi

1 bar = 14.50377 psi

Weight Conversions

1 pound = 0.45354 kg

1 kilogram = 2.2046 lb

1 milligram = 0.001 gm

Distance Conversions

1 inch = 2.54 cm

1 foot = 0.3048 m

1 micrometer = 1μ

1 millimeter = 1000μ

Fluid Volume Conversions

1 in.³ = 0.01639 L

1 L = 61.025 in.³

1 ml = 0.001 L

Gas Volume Conversions

1 ft.³ = 0.02832 m³

1 ft.³ = 28.3 L

1 m³ = 35.314 ft.³

Parts Per Million Conversion to Percent

1 ppm = 0.0001%

Temperature Conversions

$^{\circ}\text{C} = ^{\circ}\text{F} - 32 \times (5 \div 9)$

$^{\circ}\text{F} = ^{\circ}\text{C} \times (9 \div 5) + 32$

Scientific Notation

1234 = 1.234×10^3

0.001234 = 1.234×10^{-3}

REFERENCES

1. Abyss, Abysmal Diving Inc.
2. Basic Decompression Theory and Application, B. R. Wienke, Best Publishing, 1991
3. DCIEM Diving Manual, Universal Dive Techtronics, Inc., 1992
4. Decompression and the Physics of Bubble Formation, R. D. Vann, DAN, 1986
5. Deeper Into Diving, John Lippmann, J. L. Publications, 1990
6. Diving Medicine for Scuba Divers, C. Edmonds, et al, J. L. Publications, 1992
7. Diving Physiology In Plain English, J. Bookspan, UHMS, 1995
8. Life Support Systems Design, M. L. Nuckols, et al, Simon & Schuster, 1996
9. Man In The Sea Vol. I and Vol. II, Y.C. Lin, et al, Best Publication, 1990
10. Mastering Breath-Hold Diving, Jan Neal, NAUI Worldwide, 1997
11. Mixed Gas Blender and Oxygen Service Technician, J. G. Neal, NAUI, 1998
12. Mixed Gas Diving, T. Mount, et al, Watersport Publishing, 1993
13. Physics, Physiology, and Decompression Theory for the Technical and Commercial Diver, B. R. Wienke, NAUI, 1998
14. Physiology of Diving with Special Breathing Gases, R. Hamilton, Hamilton Research, 1999
15. Physiology and Medicine of Diving, Bennett and Elliott, 1982
16. Recompression Chamber Life Support Manual, Hyperbarics, Inc., 1990
17. Report on Diving Accidents & Fatalities, Divers Alert Network, 1996
18. Sport Diving, J. Lippmann, Aqua Quest Publication, 1992
19. Technical EANx, Decompression Techniques & Extended Range, J. G. Neal, NAUI, 1998
20. Technical Diving Handbook, G. Gentile, Gary Gentile Productions, 1998
21. Undersea & Hyperbaric Medicine, Vol. 21, No. 4, Journal of the Undersea Hyperbaric Medical Society, Dec 1994
22. US Navy Diver's Handbook, Best Publishing, 1995
23. Voyager Desktop Decompression System, Diverse Technologies, Inc.

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