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# **Trimix:**

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**compact!**

**Version 2020/2021**

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GROUP

TEL AVIV – SAN FRANCISCO – STUTTGART

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## Preamble / Motivation

Trimix – compact! Is here to give a short and pragmatic overview and introduction to the topic. It is not only for TEC divers but as well for everybody, including layman. As well it is intended as a basis for own diving-experiments and further studies / reading. It is not thought as a replacement for traditional / incumbent TEC/Trimix materials & courses. Quite the contrary: here we try to present ALL topics in concise form but without the usual blinders or diving-course dogmas. As well we try not to repeat to much of the standard Nitrox/EAN stuff. Thus we may have here some materials which will be not at all, very short or even falsely adressed in the standard courses. So consider this manual as a supplementary volume of what you already have. The sources / references are listed at the end of every chapter. Is a source/ref. embellished with a no. in square brackets [xyz], then it indicates a link to our literature list on the web: [https://www.divetable.info/books/index\\_e.htm](https://www.divetable.info/books/index_e.htm)

## Little List of Abbreviations

CNS	Central Nervous System
CNS-OT	see OT
CCR	closed circuit rebreather
C & R	Construction- & Repair (diving)
DAN	Divers Alert Network
DCS	Decompressionsickness
DRA	Decompression Risk Analysis
DSL	Diving Safety Laboratory
EAD	Equivalent Air Depth
EAN	Enriched Air Nitrox
END	Equivalent Narcotic Depth
GF	Gradient Factor
GF Hi / GF Lo	GF High / GF Low
ICD	Isobaric Counter Diffusion
HPNS	High Pressure Nervous Syndrome
HT	half life, half time
MOD	Maximum Operating Depth
NDL	No Decompression Limit
NOAA	National Oceanic and Atmospheric Administration, a U.S department of commerce

POT	Pulmonary Oxygen Toxicity
SCUBA	Self Contained Underwater Breathing Apparatus
SI	Surface Interval
OT	Oxygen Toxicity
OTU	oxygen tolerance unit
RT	Run-time
Tmx	Trimix

Source (german): <https://www.divetable.info/skripte/Glossar.pdf>

## What is Trimix, anyway?

The name „TRI-mix“ stems from the greek numeral „tri“ = „three, 3“. In these mixes we have basically only 3 main components: oxygen, helium and nitrogen.

The names / chemical symbols are:

- O<sub>2</sub> , Oxygen
- He , Helium
- N<sub>2</sub> , Nitrogen

## Thermal conductivity & specific capacity

In the table below we have the details of the chemical and physical properties of these 3 gases:

	Oxygen	Helium	Nitrogen	Air (dry)
Chemical Symbol	O <sub>2</sub>	He	N <sub>2</sub>	-
molecular weight	32	4.0026	28	-
Boiling Point [°C]	-183	-269	-196	-
Freezing Point [°C]	-219	-272 (@ ca. 25 Bar)	-210	-
specific density (@ 1 Bar, 0°C, [kg/m <sup>3</sup> ])	1.43	0.178	1.25	1.29
specific thermal capacity c <sub>v</sub> [kJ kg <sup>-1</sup> K <sup>-1</sup> ]	0.643	3.161	0.741	0.176
Thermal conductivity [W m <sup>-1</sup> K <sup>-1</sup> ]	0.0266	0.1513	0.0258	0.0261

Sources: Hollemann-Wiberg: Lehrbuch der Anorganischen Chemie, 81. Auflage

Bergmann Schaefer: Lehrbuch der Experimentalphysik, Bd. I, 9. Auflage

of two of my friends and colleagues: Dr. Max „Maxe“ Hahn and Dr. Bernd „Aschi“ Aspacher:



Max told me a lot about the Deco-, Micro- and whatever –Brains, incl. the a- and b-coefficients he modified for them and about his last work, the Deco2000. Bernd was one of the first PADI instructors in Europe who enjoyed my PADI Specialty „Dive Tables & -Computers“ here in Esslingen during the 90's. Both were physicists, dedicated diving instructors with heart and soul. Both died during tragically diving accidents.

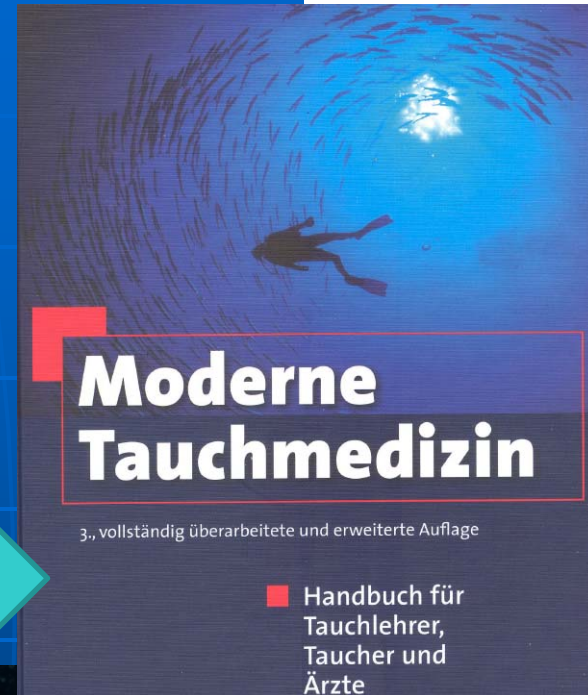
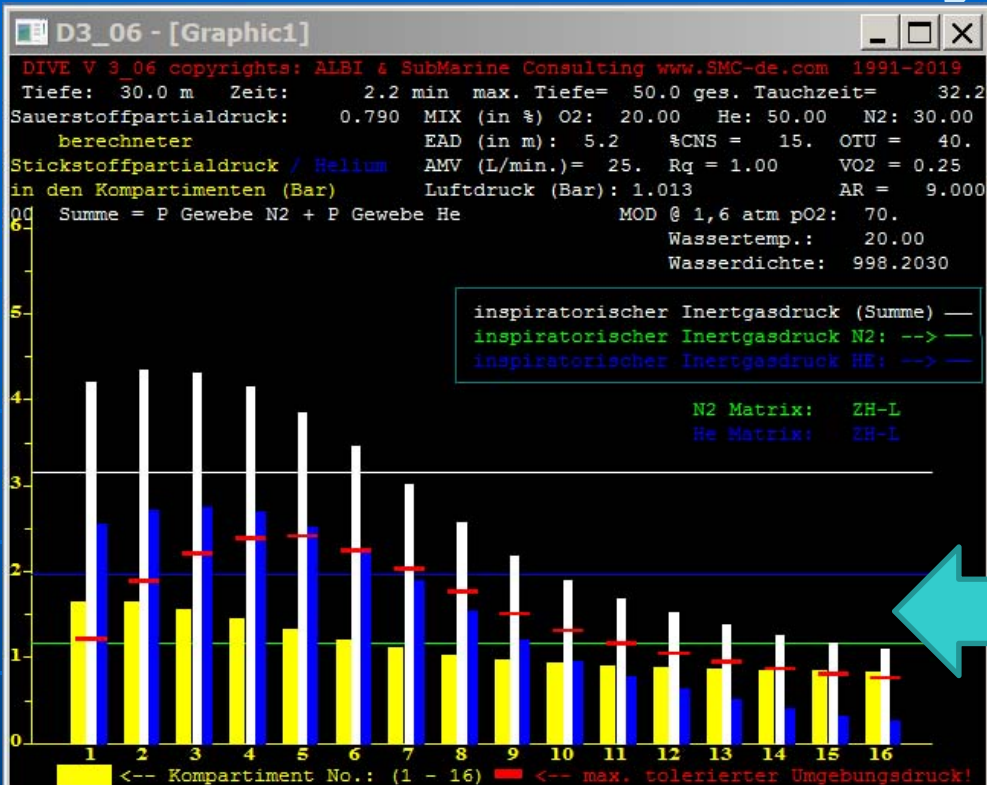
Examples of dive tables & run-time tables:

(IANTD / ZH-L & NAUI / RGBM)

As already pointed out above: these tables are as an illustrative material only: they are not validated. It is according to the motto: „You could do it like that, but you need not to necessarily ...“

# DIVE V3 eco system

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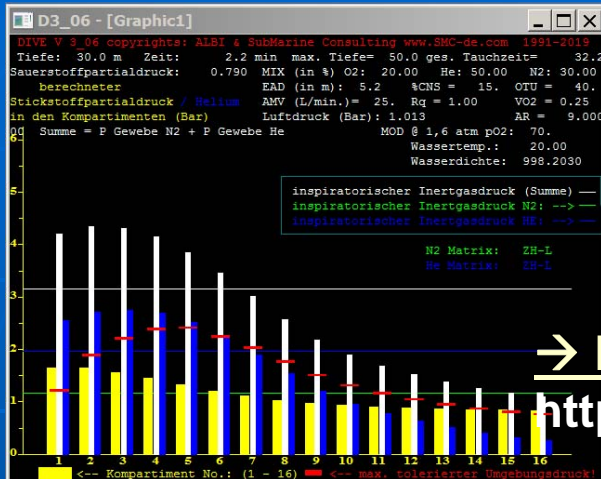
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→ DIVE Desktop Deco Software:

[https://www.divetable.info/DIVE\\_V3/index.htm](https://www.divetable.info/DIVE_V3/index.htm)

→ DER „deco workshop“:

<https://www.divetable.info/workshop.htm>

→ Moderne Tauchmedizin:

<https://www.divetable.info/books/205.pdf>

→ Das kleine virtuelle Tauchcomputermuseum:

[https://www.divetable.info/museum\\_g.htm](https://www.divetable.info/museum_g.htm)

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[https://www.divetable.info/workshop\\_e.htm](https://www.divetable.info/workshop_e.htm)

Have Fun!

Here is the link to the **catalogue of all manuals**:

<https://www.divetable.info/Flyer/Katalog.pdf>