

## BLENDING RESPIRATORY GAS MIXTURES

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**Rezumat.** Amestecurile gazoase binare sau ternare utilizate în scufundare se pot fabrica fie printr-o injecție succesivă și controlată a gazelor componente în recipiente cu volum constant, urmărindu-se presiunea din recipiente, fie printr-o amestecare în flux continuu, cu injectarea simultană a gazelor componente la proporția dorită, utilizându-se pentru aceasta dispozitive prevăzute cu ajutaje calibrate lucrând în domeniul critic (sonic), ce asigură livrarea componentelor gazoase la debite masice constante.

**Abstract.** The binary or ternary gas mixtures used in diving can be blended either by a successive and controlled injection of the component gases into containers of constant volume, following the pressure in the containers, or by a continuous flow mixing, with the simultaneous injection of the component gases to the desired proportion, using for this devices equipped with calibrated nozzles working in the critical (sonic) range, which ensure the delivery of gaseous components at constant mass flow rates.

**Keywords:** diving, gases, respiratory mixtures

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### 1. Blending binary respiratory mixtures

Nitrogen-oxygen mixtures (NITROX) are usually blended by injecting compressed air into a container containing oxygen at a certain pressure. Helium-oxygen mixtures (HELIOX) are blended by injecting oxygen into a container containing helium at a certain pressure.

Respiratory gas mixtures are blended by compressing the component gases in containers with known volumes. If working at constant temperature, the quantities of compressed gas in the container can be determined by measuring the pressure variations in the container resulting from the injection of pure gases or gas mixtures. The main measuring instruments required for blending gas mixtures are the manometer with the appropriate precision class and the oxygen analyzer. When analyzing the oxygen in the blended mixture, it must be taken into account that it needs at least 12 hours for a good homogenization, and for measuring the

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