(b) Be protected from excessive heat;
(c) Be prevented from falling;
(d) Be tested after any repair, modification, or alteration to the pressure boundaries as set forth in §197.462; and
(e) Meet the requirements of—
(1) Part 54 of this chapter; or
(2) 49 CFR 173.34 and 49 CFR part 178, subpart C.

### §197.340 Breathing gas supply.

(a) A primary breathing gas supply for surface-supplied diving must be sufficient to support the following for the duration of the planned dive:
(1) The diver.
(2) The standby diver.
(3) The decompression chamber, when required by §197.432(e)(2) or by §197.434(a) for the duration of the dive and for one hour after completion of the planned dive.
(4) A decompression chamber when provided but not required by this subpart.
(5) A closed bell when provided or required by §197.434(d).
(6) An open bell when provided or required by §197.432(e)(4) or by §197.434(c).
(b) A secondary breathing gas supply for surface-supplied diving must be sufficient to support the following:
(1) The diver while returning to the surface.
(2) The diver during decompression.
(3) The standby diver.
(4) The decompression chamber when required by §197.432(e)(2) or by §197.434(a) for the duration of the dive and one hour after the completion of the planned dive.
(5) The closed bell while returning the diver to the surface.
(6) The open bell while returning the diver to the surface.
(c) A diver-carried reserve breathing gas supply for surface-supplied diving must be sufficient to allow the diver to—
(1) Reach the surface.
(2) Reach another source of breathing gas; or
(3) Be reached by a standby diver equipped with another source of breathing gas for the diver.
(d) A primary breathing gas supply for SCUBA diving must be sufficient to support the diver for the duration of the planned dive through his return to the dive location or planned pick-up point.
(e) A diver-carried reserve breathing gas supply for SCUBA diving must be sufficient to allow the diver to return to the dive location or planned pick-up point from the greatest depth of the planned dive.
(f) Oxygen used for breathing mixtures must—
(1) Meet the requirements of Federal Specification BB-0–925a; and
(2) Be type 1 (gaseous) grade A or B.
(g) Nitrogen used for breathing mixtures must—
(1) Meet the requirements of Federal Specification BB-N–411c;
(2) Be type 1 (gaseous);
(3) Be class 1 (oil free); and
(4) Be grade A, B, or C.
(h) Helium used for breathing mixtures must be grades A, B, or C produced by the Federal Government, or equivalent.
(i) Compressed air used for breathing mixtures must—
(1) Be 20 to 22 percent oxygen by volume;
(2) Have no objectionable odor; and
(3) Have no more than—
(i) 1,000 parts per million of carbon dioxide;
(ii) 20 parts per million carbon monoxide;
(iii) 5 milligrams per cubic meter of solid and liquid particulates including oil; and
(iv) 25 parts per million of hydrocarbons (includes methane and all other hydrocarbons expressed as methane).

### §197.342 Buoyancy-changing devices.

(a) A dry suit or other buoyancy-changing device not directly connected to the exhaust valve of the helmet or mask must have an independent exhaust valve.
(b) When used for SCUBA diving, a buoyancy-changing device must have an inflation source separate from the breathing gas supply.

### §197.344 Inflatable floatation devices.

An inflatable floatation device for SCUBA diving must—
(a) Be capable of maintaining the diver at the surface in a faceup position;

(b) Have a manually activated inflation device;
(c) Have an oral inflation device;
(d) Have an over-pressure relief device; and
(e) Have a manually operated exhaust valve.

### § 197.346 Diver's equipment.

(a) Each diver using SCUBA must have—
(1) Self-contained underwater breathing equipment including—
(i) A primary breathing gas supply with a cylinder pressure gage readable by the diver during the dive; and
(ii) A diver-carried reserve breathing gas supply provided by—
(A) A manual reserve (J valve); or
(B) An independent reserve cylinder connected and ready for use;
(2) A face mask;
(3) An inflatable floatation device;
(4) A weight belt capable of quick release;
(5) A knife;
(6) Swim fins or shoes;
(7) A diving wristwatch; and
(8) A depth gage.
(b) Each diver using a heavyweight diving outfit must—
(1) Have a helmet group consisting of helmet, breastplate, and associated valves and connections;
(2) Have a diving dress group consisting of a basic dress that encloses the body (except for head and hands) in a tough, waterproof cover, gloves, shoes, weight assembly, and knife;
(3) Have a hose group consisting of the breathing gas hose and fittings, the control valve, the lifeline, communications cable, and a pneumofathometer; and
(4) Be provided with a helmet cushion and weighted shoes.
(c) Each surface-supplied dive operation using a heavyweight diving outfit must have an extra breathing gas hose with attaching tools available to the standby diver.
(d) Each diver using a lightweight diving outfit must have—
(1) A safety harness;
(2) A weight assembly capable of quick release;
(3) A mask group consisting of a lightweight mask and associated valves and connections;
(4) A diving dress group consisting of wet or dry diving dress, gloves, shoes or fins, and knife; and
(5) A hose group consisting of the breathing gas hose and fittings, the control valve, the lifeline, communications cable, and a pneumofathometer (if the breaking strength of the communications cable is at least equal to that required for the lifeline, the communications cable can serve as the lifeline).
(e) Each surface-supplied air dive operation within the no-decompression limits and to depths of 130 fsw or less must have a primary breathing gas supply at the dive location.
(f) Each surface-supplied dive operation outside the no-compression limits, deeper than 130 fsw, or using mixed-gas as a breathing mixture must have at the dive location—
(1) A primary breathing gas supply; and
(2) A secondary breathing gas supply.
(g) Each diver diving outside the no-decompression limits, deeper than 130 fsw, or using mixed-gas must have a diver-carried reserve breathing gas supply except when using a heavyweight diving outfit or when diving in a physically confining area.

## OPERATIONS

### § 197.400 Applicability.

Diving operations may only be conducted from a vessel or facility subject to the subpart if the regulations in this subpart are met.

### § 197.402 Responsibilities of the person-in-charge.

(a) The person-in-charge shall—
(1) Be fully cognizant of the provisions of this subpart;
(2) Prior to permitting any commercial diving operation to commence, have—
(i) The designation of the diving supervisor for each diving operation as required by § 197.210;
(ii) A report on—
(A) The nature and planned times of the planned diving operation; and
(B) The planned involvement of the vessel or facility, its equipment, and its personnel in the diving operation.