Liquid and Gaseous Oxygen Specifications & DOT Shipping Information

PROPELLANT-GRADE LIQUID OXYGEN

CHARACTERISTIC	PROCURED/DELIVERED	DELIVERED (Shuttle Only)
SPECIFICATION:	MIL-PRF-25508F, Type II, Grade A	SE-S-0073, Table 6.3-2
Purity	99.6% by vol. (min.)	99.2% by vol. (min.)
Alkynes as acetylene	0.25 ppm by vol. (max.) for Type II only	1.55 ppm by vol. (max.)
Total hydrocarbon content (as methane)	50 ppm by vol. (max.)	75.0 ppm by vol. (max.)
Moisture	3 ppm by vol. (max.)	26.3 ppm by vol. (max.)
Particulate	1.0 mg/liter or "Continuous Service"	N/A

NOTE: Filtration is provided as follows: LO2A tankers have 40-micron absolute on outlet. Small dewars are not normally equipped with filters but liquid used to refill them are passed through a 40-micron absolute filter. Customers may add filters suitable for their application to dewar outlets.

AVIATORS BREATHING OXYGEN PARAMETERS

CHARACTERISTIC	PROCURED/DELIVERED
SPECIFICATION:	MIL-O-27210, TYPE II
Purity	99.5% by vol. (min.)
Carbon dioxide (CO_2)	5 ppm by vol. (max.)
Methane (CH_4)	25 ppm by vol. (max.)
Acetylene (C_2H_2)	0.05 ppm by vol. (max.)
Ethylene (C_2H_4)	0.2 ppm by vol. (max.)
Ethane (C_2H_6) & other hydro- carbons as ethane equivalents	3 ppm by vol. (max.)
Nitrous oxide (N_2O)	2 ppm by vol. (max.)
Halogenated compounds: Refrigerants (freon,etc) Solvents (trichloroethylene,carbon tetrachloride, etc)	 1 ppm by vol. (max.) 0.1 ppm by vol. (max.)
Other (each discernible from background noise on infrared spectrophotometer)	0.1 ppm by vol. (max

NOTE: MIL-O-27210 - grade Oxygen is recertified MIL-PRF-25508 Grade A and is used for aircraft flight line operations.

"GRADE F" LIQUID & GASEOUS OXYGEN

CHARACTERISTIC	PROCURED	DELIVERED
Specification: PID-07	MIL-PRF-25508E, Grade F	SE-S-0073, Table 6.3-4
Purity	99.990% by vol. (min.)	99.989% by vol. (min.)
Alkynes as acetylene	0.05 ppm by wt. (max.)	0.05 ppm by wt. (max.)
Total hydrocarbons as methane	10 ppm by vol. (max.)	23 ppm by vol. (max.)
Moisture	3 ppm by vol. (max.)	3 ppm by vol. (max.)
Nitrous oxide	1 ppm by vol. (max.)	1 ppm by vol. (max.)
Halogenated hydrocarbons	1 ppm by vol.	1 ppm by vol. (max.)
Chlorinated hydrocarbons	N/A	0.1 ppm by vol. *
CO and CO_2	1 ppm by vol. (max.)	1 ppm by vol. total (max.)
Methane	16 ppm by vol. (max.)	N/A
Ethane	2 ppm by vol. (max.)	N/A
Propane by other hydrocarbons as propane	1 ppm by vol. (max.)	N/A
Other (neon, argon, krypton etc.)	75 ppm by vol. (max.)	N/A
Particulate	1 mg/liter (max.)	N/A
Odor	None	None

* Analysis required for manned test and flight use only

NOTES: Purity shall be determined by subtracting total of the measured aggregate impurities from 100%. Other impurities discernible from instrument noise shall be identified and quantified.
JBOSC provides filtration as follows: LO2F tankers and rechargers have 40-micon absolute on outlet. Compressed gas trailers, MSUs, k-bottle manifolds, and small dewars are not normally equipped with filters.
The high-purity oxygen is used primarily in the Space Shuttle fuel cell system.

Proper Shipping Name and Container Markings:

49 CFR 172.101 Hazardous Materials Table

Sym-bols	Hazardous material descriptions & proper shipping names	Hazard Class or Division	Identifi-cation numbers	PG	Label Codes	Special Provision	Packaging (173.***)			Quantity Limitations		Vessel Stowage	
							Excep-tions	Non Bulk	Bulk	Passenger aircraft/ rail	Cargo aircraft only	Loca-tion	Other

DOT Hazardous Material Codes and Regulations will explain the letters and numbers.

Sample Table for Gaseous Oxygen

							Packaging (173.***)			Quantity Limitations		Vessel Stowage	
	Oxygen, compressed	2.2	UN1072		2.2, 5.1	A52	306	302	314, 315	75kg	150kg	A	

Sample Table for Liquid Oxygen

							Packaging (173.***)			Quantity Limitations		Vessel Stowage	
	Oxygen, refrigerated liquid (cryogenic liquid)	2.2	UN1073		2.2, 5.1		320	316	318	Forbidden	Forbidden	D	

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