

124 OPERATING FUEL STORAGE

This basic category includes all of the immediate backup fuel storage for supplying the dispensing facilities at airfields and other land and marine installations. For bulk-type storage, see Category Group 410. Fire protection and safety clearance requirements will be considered for each individual installation. The types, sizes, and spacing of storage tanks are determined by considerations of safety, economics, locality, and intended service.

1. Tank-Spacing of Surface Tanks. The objective in spacing of surface tanks in a fuel facility is dispersion. In no case should the distance between the shells of adjacent tanks be less than the diameter of the largest tank. The distance from the outside of surface tanks to the adjoining property line or the nearest building, where an approved type of fire extinguishing system exists, shall be as follows:

	Capacity of tanks	Distance from property lines or buildings (ft)
Horizontal tanks (gallons)	750 or less	5
	751 to 1,100	10
	1,101 to 3,000	20
	3,001 to 21,000	25
	21,001 to 50,000	50
Vertical tanks (barrels)	750	30
	1,000	40
	1,500	50
	3,000	60
	5,000	75
	7,500	85
	10,000	100
	13,500	125
	27,000	175
55,000	200	
100,000	200	

2. Tank Spacing of Vertical Subsurface Tanks. The objectives in the spacing of subsurface tanks are dispersion and concealment. To obtain adequate dispersion of the vertical subsurface tanks the clear distance between the outside of the shells of adjacent tanks of the larger capacities shall not be less than the following;

<u>Capacity</u> (<u>bbbl</u>)	<u>Distance apart</u> (<u>ft</u>)
13,500	125 (200 where available land permits)
27,000	175 (200 where available land permits)
Over 27,000	200

Where it is impracticable to avoid locating more than two tanks in line, distances between tanks shall be at least four tank diameters of the larger tank.

3. Tank Spacing of Horizontal Subsurface Tanks. The minimum clearance between shells of adjacent horizontal underground tanks should be 3 feet and the minimum clearance between aboveground horizontal tanks with capacities 40,000 gallons or under should be as follows:

(1) Tanks should be arranged in pairs with a minimum of 5 feet between tanks in each pair and 10 feet between adjacent tanks of two pairs in the same row.

(2) Adjacent groups of more than two pairs in a single row should be spaced 20 feet between the nearest tanks of the groups.

(3) Minimum end-to end spacing between tanks in longitudinal rows should be 20 feet.

See NAVFAC DM-22 for design criteria.

124 20 DRUM AND CAN READY FUEL STORAGE (GA)

A drum and can ready storage tank may be provided to store large quantities of fuel shipped to the station in drums and cans.

The ready avlube storage tank will be equal to 2.0 percent of the avgas storage tankage, for the equivalent period. A ready tank for lube for fighter aircraft is not required. Vehicle lube and grease requirements are small and will be stored in drums and cans as received. Alcohol used as a fuel additive will be stored in drums and cans as received unless the monthly consumption exceeds 4,000 gallons.

The normal storage for CONUS would be a 10-day supply and for an overseas station, a 30-day supply. The size and number of drum and can ready fuel storage tanks depend on the type and quantity of liquids used, the logistics of supply, and the station mission.

The quantity of fuel stored at a fuel facility will depend on the service required of the facility. See Code 124 for tank spacing and safety distances.

See NAVFAC DM-22 for design criteria.

124 30 AIRCRAFT READY FUEL STORAGE (GA)

Description. Aircraft ready fuel storage provides an operating and reserve supply of aviation gasoline and jet fuel. At air installations all aviation fuel storage shall be categorized as ready fuel storage as opposed to depot storage, 411 category code series. Aircraft ready fuel storage may be classified as local or remote. The remote area, usually designated as the station fuel farm, provides the majority of the storage capacity. Local storage are those storage tanks located close to a fuel dispensing facility. Local storage tanks can be refilled overnight thereby permitting the use of a smaller diameter pipeline from the remote tanks to the local storage and dispensing area. The greater the distance

between the remote storage area and the dispensing facility, the more likely it will be cost effective to provide local storage tanks.

Criteria. The fuel storage requirement must be determined by an engineering analysis. The requirement is a function of: the number and type of aircraft supported, aircraft fuel consumption rates and the number of hours flown. At CONUS installations, a ten day supply is normally provided. At installations outside of CONUS a thirty day supply may be provided. The above days of supply requirements are guidelines and may be modified to reflect restricted or unpredictable fuel delivery schedules. When both local and remote storage are provided, the remote storage capacity requirements shall be reduced by 50 percent of tank capacity provided for local storage:

For Example; Given: (1) CONUS 10 day requirement equals
500,000 gallons
(2) 50,000 gallons of (local storage)
are being provided

Remote Storage = 500,000 - 50% (local storage)
= 500,000 - .50 (50,000)
= 475,000 gallons

Total (124-30) Requirement = local + remote
= 50,000 + 475,000
= 525,000 gallons

Siting. Fuel storage tanks must be separated from each other and from buildings, property lines, roads, railroad tracks and powerlines. The separations required depend on the type of tank, type of fuel and the tank capacity. See NAVFAC DM-22 for siting criteria.

124 40 SMALL CRAFT READY FUEL STORAGE (GA)

A marine ready fuel storage tank is the ready issue operating storage of a particular grade of fuel for small boats and yard craft.

The size and number of the marine ready fuel storage tanks will be determined by the number and types of boats required to serve the station and the logistic support involved. The minimum ready fuel storage will be one 5,000-gallon gasoline tank for each octane grade and one 5,000 gallon diesel fuel tank. The tanks will include piping, pumps, security fencing, fire protection, and access for a complete and usable project.

The quantity of fuel stored at this facility will depend on the service required of the facility. Spacing of tanks will be in accordance with criteria set forth in Code 124.

See NAVFAC DM-22 for design criteria.

124 50 VEHICLE READY FUEL STORAGE (GA)

A vehicle ready fuel storage tank contains the immediate backup fuel for vehicles and equipment. There are three grades of vehicular fuel that include both a leaded and a unleaded gasoline and a diesel fuel. The size and number of tanks will depend on the station mission and the number of vehicles maintained. There should be a 10-day total storage capacity for CONUS bases and a 30-day total storage capacity for overseas bases. The quantity of fuel stored at a fuel facility will depend on the service required of the facility. Therefore, past records would best indicate the rate of consumption and accordingly the storage requirements. If records are not available, provide 32 gallons per vehicle for each type of fuel used at overseas bases. Spacing of the tanks will be in accordance with criteria set forth in code 124. The storage capacity of this facility will not include the storage capacity of category code 123 10, Filling Station.

124 70 SURGE STORAGE (GA)

If fuel facilities receiving fuel from tankers require surge tanks, a tank will be provided for each type and grade of fuel received. Surge tanks are required whenever tanker unloading rates exceed rates of shore pumping system. If the tanker can discharge 100,000 barrels in 36 hours, or at the rate of approximately 2,780 barrels per hour, and the port facility can only receive at two-thirds this rate of flow, then a surge tank or tanks of approximately 33,000 barrel capacity will be required. The use of a surge tank insures the shore pumps of a constant supply of oil and allows for surges at the rate of tanker discharge. The size of surge tanks will be determined by the size of tankers unloading at the facility and the capacity of shore booster pumps.