

Aircraft refuelling hoses

Aircraft refuelling operations, as well as de-fuelling (draining fuel from tanks), are critical in terms of safety and cost associated with aircraft standstill. Refuelling of modern civil and military aircraft is usually carried out using the pressure method, where a hose with a suitable connector is attached tightly to the tank's connector (small aircraft can be refuelled using a non-pressurised pistol through the tank filler). Tanker trucks are used for refuelling - distributors, equipped with pumps, filters, measuring systems and hoses. Large aerodromes are equipped with underground fuel pipelines supplying fuel to a hydrant in a manhole in the aerodrome surface. Refuelling is carried out by means of an aggregate - a dispenser connected by one hose to the underground hydrant and the other to the aircraft tank. Often the hoses are wound on special reels. Lift platforms are also used.

Pressure refuelling hoses used at airports must absolutely meet the requirements specified in the standards, which are higher than for standard industrial fuel hoses. Among other things, they are characterised by a high operating pressure of 20 bar, high resistance to aviation fuel, no fuel contamination, adequate resistance to abrasion, ageing, kinking or delamination - separation of hose layers. Electrical properties are also a basic requirement - safe dissipation of electrical charges, achieved by means of an anti-static, conductive rubber outer layer or built-in copper links. The end fittings for refuelling hoses are usually mounted with aluminium shell clamps, and all finished hoses are subject to pressure testing and electrical resistance measurements.



Types of aircraft refuelling hoses (based on EN ISO 1825)			
type	electrical properties		construction and application
	designation	requirement *	
B	M	$R < 100 \Omega$	Delivery hose, with integrated anti-static lines. Not used in civil aviation.
C	Ω	$10^3 \Omega < R < 10^{(6)} \Omega$	Delivery hose, with an antistatic (conductive) rubber outer layer. Basic hose used for the transfer of fuel directly to aircraft tanks. Can be used for emptying tanks at low vacuums. Also used as a hydrant supply hose and in dispensers.
E	M	$R < 100 \Omega$	Suction and delivery hose (reinforced with steel spiral), with integrated anti-static lines. Used for tanker trucks as a connection to a trailer and for a jacking system. Not suitable for direct connection to aircraft tanks and as a hydrant supply hose.
F	Ω	$10^3 \Omega < R < 10^{(6)} \Omega$	Suction-delivery hose (reinforced with plastic spiral), with an antistatic (conductive) rubber outer layer. No metal parts in the hose construction, can be used alternatively directly for filling and emptying aircraft tanks.

* - measurement of the resistance between the ends of a complete cable, in accordance with ISO 8031



AVIO GLOBAL "C"

Pressure hose for aircraft refuelling Layer

inside: black NBR rubber

Reinforcement: synthetic cord
Outer layer: black synthetic rubber

Operating temp: -25°C to +70°C

A very strong aviation fuel delivery hose designed for direct pressure refuelling of aircraft. It can also be used in airport tanker-distributor fuel transfer operations where high vacuum is not required. It can be rolled on drums. Suitable for aviation fuel for turbine engines (aviation paraffin, paraffin, e.g. Jet A1), aviation gasoline and fuels with up to 50% aromatic hydrocarbons.

Inner layer of black, smooth, NBR rubber. Reinforced with layers of high-strength synthetic cord. Outer layer of black antistatic synthetic rubber, resistant to abrasion, weather and oil contact. **The antistatic outer layer, in accordance with the requirements of EN ISO 1825, ensures the required low resistance of the cable between the ends ($10^3 \Omega < R < 10^{(6)} \Omega$, ISO 8031).**

Conforms to the requirements for aviation fuel hoses (type C/ Ω) ISO 1825, API 1529:05, AS 2683, VG 95955, NFPA 407.

Hoses with fluorescent marking visible at night and discharge hose with anti-static cable (type B/M) are available on special request.

Chemical **resistance check:** NBR **chemical** resistance table (pre-selection), confirmation of resistance and conditions of use by Tubes International.

index	internal diameter [mm]	external diameter [mm]	wall thickness [mm]	working pressure [bar]	Bursting pressure [bar]	bend radius [mm]	mass [kg/m]	Roll length [m]
IV-AVIO-C-025	25	38	6,5	20	80	300	0,73	60
IV-AVIO-C-032	32	45	6,5	20	80	375	0,90	60
IV-AVIO-C-038	38	52	7	20	80	450	1,10	60
IV-AVIO-C-050	50	67	8,5	20	80	550	1,74	60
IV-AVIO-C-063	63,5	80	8,25	20	80	600	2,07	60
IV-AVIO-C-075	75	91	8	20	80	600	2,32	60