



800 TO 1400
GRAMS

LIGHTER

THAN THE EXISTING CARBON
COMPOSITE ALUMINIUM
LINER CYLINDER



PET Liner and
Carbon Fiber and
Aramid Fiber
wrapped in
Epoxy Matrix

PET Liner and
Carbon Fiber
with Nano
technology in
Epoxy Matrix



Czech

CE 1017



SAFER[®]

**Ultralite Carbon Composite Cylinders
Available in Aramid Fiber and
Graphene Nano Tube Options**

Innovation of SAFER[®] cylinders have reduced the weight of the cylinders in comparison to the steel & carbon composite aluminum liner cylinders. This is achieved by using **PET liner material** and construction with **high-quality carbon and Aramid (Kevlar) fibers** or **Graphene Nano Tube**.

Graphene Nano Tube is a form of carbon with a single layer of carbon atoms. It is the thinnest material with very high surface area-to-volume ratio. This makes it light weight, and upto ten times stronger than steel.

Safer Cylinders are ideal to be used for
SCBA / ELBA applications
Spare Cylinders for Water Mist and CAF fire extinguishers
Vessels (to make it light weight and non-corrosive)

TECHNICAL SPECIFICATIONS OF PESO APPROVED ULTRALITE CARBON COMPOSITE PET LINER AIR CYLINDER WITH CARBON AND ARAMID FIBERS WRAPPED IN EPOXY MATRIX

PARAMETERS	2L 300 Bar	4.7 L 300 Bar	6.8 L 300 Bar	9L 300 Bar
Conformity to Standard	EN12245:2009 + A1:2011			
Material of Air Cylinder Liner	PET			
Type	IV			
Empty weight without valve and Pressure Gauge (approx)	1.1 Kg	2.7 Kg	3.30 Kg	4.2Kg
Filled weight with valve and pressure Gauge (approx)	2.35 Kg	4.65 Kg	5.9 Kg	7.45 Kg
Diameter (mm)	116	158	158	174
Length (mm) without valve	321	400	526	580
Length (mm) with valve (MBA-10 valve with pressure gauge provision)	380	460	590	635
Working pressure	300 bar			
Test Pressure	450 bar			
Neck Screw thread as per IS:3224 or equivalent	M18 x 1.5 Valve			





TECHNICAL SPECIFICATIONS OF PESO APPROVED ULTRALIGHT CARBON COMPOSITE PET LINER AIR CYLINDER WITH GRAPHENE NANO TUBE CARBON FIBERS IN EPOXY MATRIX

PARAMETERS	4.7 L 300 Bar	6 L 300 Bar	6.8 L 300 Bar	8 L 300 Bar	9 L 300 Bar	10 L 300 Bar
Conformity to Standard	EN12245:2009 + A1:2011					
Material of Air Cylinder Liner	Graphene Nano Tube					
Type	IV					
Empty weight without valve and Pressure Gauge (approx)	2.2 Kg	2.55 Kg	2.75 Kg	3.06 Kg	3.7 Kg	3.66 Kg
Diameter (mm)	156	156	156	156	171	156
Length (mm) without valve	404	480	527	588	572	735
Working pressure	300 bar					
Test Pressure	450 bar					
Neck Screw thread as per IS:3224 or equivalent	M18 x 1.5 Valve					



COMPARISON CHART ON THE BASIS OF 6.8 L CAPACITY FOR SCBA

PARAMETERS	SAFER TYPE IV COMPOSITE GRAPHENE NANO TUBE AIR CYLINDERS	SAFER TYPE IV CARBON AND ARAMID FIBER AIR CYLINDERS	TYPE III CARBON COMPOSITE ALUMINUM LINER AIR CYLINDERS	ADVANTAGES OF SAFER'S ULTRALITE CARBON COMPOSITE PET LINER AIR CYLINDER
Size	6.8 L (Nano)	6.8 L	6.8 L	Type IV (Latest Technology) Cylinder with PET Liner
Weight without valve	2.7 Kg 	3.3 Kg 	4.1 Kg	Less fatigue to user is always best in harsh environments, 1400 grams lighter (in Graphene Nano Tube Air Cylinders) 800 grams lighter (in Carbon and Aramid Fiber Air Cylinders)
Service Life	20 Years PESO Approved. NO Limit Life (TUV approved)	20 Years PESO Approved. NO Limit Life (TUV approved)	15 Years	More than 5 Years Extended Service life 20 Years Life (PESO Approved) No Limit Life (TUV Approved)

CLIENTS:



SCBA OEMs



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