

# Tank and vaporizers for bulk gas storage

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A world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 75 countries with approximately 66,400 employees and serves more than 3.8 million customers and patients.



Air Liquide Polska supplies bulk gases to gas storage installations composed of cryogenic tanks and ambient vaporizers. Gas storage systems are rented to the customer.

Tank size and vaporizer type are selected to fulfill customer's gas requirements. Air Liquide Polska provides day to day service of the equipment and provides third body's inspections (UDT) approvals.

## Cryogenic tanks for bulk gas storage:

- double walled, vacuum-perlite insulated tanks:
  - inner vessel made of chrome-nickel steel resistant to low temperatures (for LIN, LOX, LAR),
  - outer vessel made of carbon steel protected against corrosion,
- designed in accordance with the European Pressure Directive PED 97/23/CE (standard for design, production and testing of the equipment operating under increased pressure) and EN 13458 and UBC standards (zone 3),
- supplied with complete set of fittings (shut-off valves, safety valves, measuring devices, etc.), mostly made of stainless steel, resulting in increased performance,
- depending on application, tanks are supplied in a medium pressure design (max. allowable working pressure of 17 bar) or a high pressure design (max. allowable working pressure of 35–37 bar),
- gas delivered in a liquid form for cryogenic applications.

### Safety first:

- inner vessel is protected by a doubled safety valve, and each valve ensures full safety of the tank,
- safety valves are annually inspected without changing the pressure in the tank due the use of a three way valve,
- bursting disk protects outer vessel and inner vessel against overpressure.

Specification of tanks for liquid oxygen, nitrogen and argon														
Type *)		C3	C6	C10	C21	C33	C53	C63	RHP6	RHP10	RHP21	RHP35	RHP50	
Net capacity	dm <sup>3</sup>	3 050	5 216	8 973	20 682	40 451	49 666	58 891	5 230	9 670	19 590	34 910	45 390	
Outside diameter	mm	1 900	1 900	2 200	2 200	2 840	2 840	2 840	1 900	1 900	2 200	2 840	2 840	
Height		3 490	4 790	5 130	9 430	11 190	12 700	14 670	4 790	7 430	9 430	9 900	12 250	
Weight empty	kg	2 800	3 700	5 100	9 200	16 650	19 100	21 900	4 400	6 800	11 500	18 600	23 200	
max filled with		LOX	5 264	7 914	12 350	25 911	49 334	59 230	69 484	8 626	14 613	27 329	46 807	59 875
		LIN	6 279	9 651	15 338	32 798	62 805	75 769	89 094	10 367	17 833	33 852	58 432	74 990
	LAR	7 048	10 965	17 599	38 009	72 998	88 285	103 934	11 685	20 270	38 789	67 230	86 428	
Allowable working pressure	bar	15						33						

Specification of tanks for carbon dioxide							
Type *)		RCV 6	RCV 10	RCV 20	RCV 35	RCV 50	RCV 60
Net capacity	dm <sup>3</sup>	5 106	9 191	18 510	33 286	52 734	62 458
Outside diameter	mm	1 900	1 900	2 200	2 840	2 840	2 840
Height		4 890	7 530	9 530	9 900	14 530	16 740
Weight empty	kg	4 000	6 100	10 700	17 500	25 700	29 500
max filled with CO <sub>2</sub>		9 377	15 778	30 191	52 550	81 229	95 268
Allowable working pressure	bar	20					

\*) The tables above present the selected choice of tanks. The parameters are for information purposes only. There are also other types available.

## Ambient vaporizers:

- special aluminium construction ensuring maximum heat exchange surface,
- designed in accordance with the UBC and ANSI A 58.1 standards and in compliance with pressure specification standards, such as: ASME, TÜV, PED, ISQL,
- size and number of vaporizers are selected depending on the flow and wear profile.

Specification of vaporizers								
Type		SG70HF	SG95HF	SG110HF	SG140HF	SG180HF	SG216HF	
External surface	m <sup>2</sup>	54	72	81	108	135	162	
Weight	kg	184	234	263	345	424	526	
Nominal capacity	LIN	Nm <sup>3</sup> /h	188	250	281	374	466	559
	LOX		177	236	265	353	440	527
	LAR		235	313	351	468	583	659
	LCO <sub>2</sub>	kg/h	141	187	211	280	350	419
Allowable working pressure	bar	40						

The table above presents the selected choice of vaporizers. The parameters are for information purposes only. There are also other types available.



## Additional services:

### MaxiFlo system

MaxiFlo system is recommended for high flows at continuous gas consumption. This system includes a second independent vaporization line, 2 pressure relief valves, 4 manual shut-off valves. With Auto Switch module additionally 2 actuated shut-off valves and control box that runs in time sequence both vaporizer lines.

### OPTIMAL system

Our OPTIMAL system provides with maximum efficiency and reliability, through:

- automated deliveries grounds of data received from remote monitoring processing unit,
- continuous monitoring of critical process data,
- anticipated Air Liquide intervention, if necessary,
- personalized web access i.e.: delivery notes, invoices, current status of the product in the tank and its pressure.

