

TABLES OF NATURAL VAPORIZATION IN LPG TANKS

The natural vaporization of a tank with propane can be obtained by the expression: $D = aSK(Te-Ti)/q$ where D is the capacity of vaporization of propane in kg/h. The following tables show the vaporization flow for LAPESA models at different working pressures and the values used to prepare these tables are:

a= percentage of the tank surface area in contact with the liquid. It depends on the percentage filling of tank. For horizontally positioned tanks and a filling percentage of 20%, $a=0.336$, for a filling percentage of 30%, $a=0.397$. The values in the tables are calculated for 20% filling of tank so that for to obtain the values for 30% filling, the table values have to be multiplied by 1.18 (only for horizontal tanks).

S= tank surface area in m².

K= coefficient of heat exchange with exterior. This depends on several factors. In the tables the values used are K= 12 Kcal./hm²°C (in underground tanks this value is reduced by 30%, K= 8.4 Kcal./hm²°C).

Te= minimum temperature of environment in which the tank is installed (5°C for underground tanks).

Ti= propane liquid-gas equilibrium temperature. It depends on the type of mix. The following values are considered:

Mains pressure:	1,25	1,50	1,75	2,00
Internal temp.:	-26	-22	-20	-17

q= Latent heat from vaporization of propane. A value of: $q=94$ Kcal./kg. can be used.

Model Ref.	Rated capacity (l.)	Diam. (mm)	Area (m ²)	NATURAL VAPORIZATION FLOW (Kg. of propane per hour)																															
				Working pressure: 1'25 bar								Working pressure: 1'50 bar								Working pressure: 1'75 bar								Working pressure: 2'00 bar							
				Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks												
				Minimum ext. temp (°C)					Minimum ext. temp (°C)					Minimum ext. temp (°C)					Minimum ext. temp (°C)																
				-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10							
LP1000A	1.000	1.000	5,2	3,6	4,7	5,8	6,9	8,0	4,8	2,7	3,8	4,9	6,0	7,1	4,2	2,2	3,3	4,5	5,6	6,7	3,9	1,6	2,7	3,8	4,9	6,0	3,4								

