Westfalen AG · Industrieweg 43
D-48155 Münster · Tel. 02 51/6 95-0
Fax 02 51/6 95-194 · www.westfalen-ag.de

Protadur® E 941 (Nitrogen)

Product Designation	Protadur® E 941 (Nitrogen)
Physical state	gaseous, compressed
Chemical symbol	N_2
Purity	99,999 vol.%
Other names	Nitrogenium
	E 941

Impurities	**Maximum value**
Moisture	4 vol. ppm
Hydrocarbons	1 vol. ppm
Carbon monoxide	5 vol. ppm
Nitrogen monoxide + nitrogen dioxide	5 vol. ppm
Oxygen	3 vol. ppm

Delivery formats

In steel cylinders and 12-cylinder bundles

Descriptions	**cylinders/container volumes**	**Filling pressure**	**Content**
Protadur E 941 T10 RCyl	10 l	200 bar	1,90 m^3
Protadur E 941 T50 RCyl	50 l	200 bar	9,60 m^3
Protadur E 941 RBundle	12 x 50 l	200 bar	115,20 m^3

Unless otherwise stated, these refer to filling pressure at 288,15K (15°C) and to content at 288,15K (15°C) and 1,013 bar.

Other delivery formats

on request
Alumini® 12, 200 Nitrogen 5.0
in static and mobile tanks: Liquid nitrogen 4.8, 5.0, 6.0, Protadur® E 941 and Secudur® N
in steel cylinders and bundles: Nitrogen 3.0, 4.0, 4.8, 5.0, 5.5, 6.0, ECD, Secudur® N and Protadur® E 941
in 300 bar technology: Oxygen 3.0, 4.0, 4.8, 5.0, Secudur® N, Protadur® E 941

Manufacture complies with the requirements of EC Regulation 178/2002/EC and corresponds to purity requirements for food additives according to regulation (EU) 231/2012.

Properties	asphyxiant
Valve connection	DIN 477 No. 10 | (W 24.32 x 1/14)
Shoulder colour	jet black (RAL 9005)
Suitable pressure regulators	Manufacturers' gas outlet fittings introduced in line with EC Regulation 1935/2004/EC.

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Typical applications

as a packaging gas for oxygen-sensitive foodstuffs
as a propellant for expelling liquid foodstuffs from their containers
for stabilising of drinks
for inerting
for cold pressing (e.g. in oil mills)
for packaging under protective atmosphere
for wine conservation

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Conversions

1 m^3	at 288.15 K (15°C); 1 bar	=	1,171 kg
1 m^3		=	1,447 l $_{liquid}$
1 kg		=	0,854 m^3
1 kg		=	1,236 l $_{liquid}$
1 l $_{liquid}$	at T $_{boiling\ point}$; 1 bar	=	0,691 m^3
1 l $_{liquid}$		=	0,809 kg

Physical data:

Molar Mass	Molar mass	28,01 g mol^{-1}
Liquid State	Boiling Point	77,35 (-195,8) K (°C)
	Heat of Evaporation	198,70 kJ kg^{-1}
	Liquid Density	808,6 kg m^{-3}
Gaseous state	Density (at 273.15 K and 1.013 bar)	1,25 kg m^{-3}
	Density Ratio to Air (at 288.15 K and 1.013 bar)	0,97
	Specific heat (at 298.15 K and 1.013 bar)	1,04 kJ kg^{-1} K^{-1}
	Thermal Conductivity (at 288.15 K and 1.013 bar)	0,0250 J s^{-1} m^{-1} K^{-1}
Critical Point	Temperature	126,2 (-147,0) K (°C)
	Pressure	34,00 bar
	Density	314 kg m^{-3}
Triple Point	Temperature	63,2 (-210,0) K (°C)
	Vapour Pressure	0,1253 bar
	Heat of Fusion	25,8 kJ kg^{-1}
Additional operating	Ignition Point	-- K (°C)
	Ignition Range in Air	-- vol.%
	Calorific Value to DIN 51850	-- kJ kg^{-3}

The provided data, values and information corresponds to the state of knowledge at the time of printing. They assert no claim for accuracy or completeness and in this respect do not absolve the user from their duty of verification.
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