



UNIVERSITÀ
DI PAVIA

Dipartimento di Chimica Università di Pavia

Sede Amministrativa: via Taramelli, 12 - 27100 Pavia - Italia

Cod. Fisc. 80007270186

Partita IVA 00462870189

Pavia, June 20, 2014

Spett. SANPELLEGRINO S.p.A.

Società soggetta all'attività di direzione e coordinamento della Nestlé Waters SA

Sede Legale: Località Ruspino

24016 San Pellegrino Terme (BG)

Sede Secondaria: Via del Mulino, 6 20090 Assago (MI)

Chemical and chemical-physical analysis on samples of natural mineral water named **S. PELLEGRINO**, collected in San Pellegrino Terme (BG), Italy, on April 15, 2014.

Limpid, colourless and odourless water				APAT IRSA-CNR
Temperature of air	°C		14.7	
Water temperature at source	°C		22.3	UNI 10500:1996
pH at source			7.6	2060 APAT IRSA-CNR
Specific conductance at 20°C	µS/cm		1127	2030 APAT IRSA-CNR
Total mineralisation	mg/L		1024	
Total dissolved solids at 180°C	mg/L		925	UNI 10506:1996
Oxidability with permanganate (Kubel)	O ₂	mg/L	0.2	UNI EN ISO 8467:1997
Free carbon dioxide	CO ₂	mg/L	16.8	4010 APAT IRSA-CNR
Silica	SiO ₂	mg/L	7.8	4130 APAT IRSA-CNR
Hydrogencarbonate	HCO ₃ ⁻	mg/L	245	S.M. 2320B (a)
Chloride	Cl ⁻	mg/L	55.9	S.M. 4110B (a)
Sulphate	SO ₄ ²⁻	mg/L	445	S.M. 4110B (a)
Sodium	Na ⁺	mg/L	33.6	S.M. 3500-Na B (a)
Potassium	K ⁺	mg/L	2.5	S.M. 3500-K B (a)
Calcium	Ca ²⁺	mg/L	178	S.M. 3120 B, 3500-Ca B (a)
Magnesium	Mg ²⁺	mg/L	53.8	S.M. 3120 B, 3500-Mg B (a)
Iron (dissolved)	Fe	mg/L	< 0.02	UNI EN ISO 11885:2000; ISO 17294-2
Ammonium	NH ₄ ⁺	mg/L	< 0.05	4030A2 APAT IRSA-CNR
Phosphorus (total)	P	mg/L	< 0.05	4110 APAT IRSA-CNR
Sulfide (total)	H ₂ S	mg/L	< 0.01	4160 APAT IRSA-CNR; S.M. 4500S ² -D (a)
Strontium	Sr ²⁺	mg/L	2.8	ISO 17294-2; UNI EN ISO 11885:2000
Lithium	Li ⁺	mg/L	0.12	ISO 17294-2
Aluminium	Al	mg/L	< 0.010	ISO 17294-2
Bromide	Br ⁻	mg/L	0.3	S.M. 4110B (a)
Iodide	I ⁻	mg/L	0.012	ISO 17294-2
Silver	Ag	mg/L	< 0.001	ISO 17294-2
Zinc	Zn	mg/L	0.030	ISO 17294-2
Antimony	Sb	mg/L	< 0.00125	ISO 17294-2 (b)
Arsenic	As	mg/L	0.002	UNI EN ISO 11969:1999 (b); ISO 17294-2 (b)
Barium	Ba	mg/L	< 0.1	ISO 17294-2 (b)
Boron	B	mg/L	0.1	ISO 17294-2 (b)
Cadmium	Cd	mg/L	< 0.0003	ISO 17294-2 (b)
Chromium	Cr	mg/L	< 0.005	ISO 17294-2 (b)
Copper	Cu	mg/L	< 0.1	ISO 17294-2 (b)
Cyanide (total)	CN ⁻	mg/L	< 0.001	S.M. 4500-CN ^E (a) (b)
Fluoride	F ⁻	mg/L	0.5	4100B APAT IRSA-CNR (b)

Lead	Pb	mg/L	< 0.001	ISO 17294-2 (b)
Manganese	Mn	mg/L	< 0.01	ISO 17294-2 (b)
Mercury	Hg	mg/L	< 0.0002	UNI EN 1483:1999 (b)
Nickel	Ni	mg/L	< 0.002	ISO 17294-2 (b)
Nitrate	NO ₃ ⁻	mg/L	2.8	S.M. 4110 B (a)(b)
Nitrite	NO ₂ ⁻	mg/L	< 0.002	4050 APAT IRSA-CNR (b)
Selenium	Se	mg/L	< 0.001	UNI 10557:1996 (b)
Anionic surfactants (as LAS)		µg/L	< 50	S.M. 5540 C (a) (c)
Oil, grease, dissolved hydrocarbons, emulsion		µg/L	< 10	5160 APAT IRSA-CNR (c)
Benzene		µg/L	< 0.5	S.M. 6200 B (a) (c)
Benzo(a)pyrene		µg/L	< 0.003	ISO 17993 (c)
Benzo(b)fluoranthene		µg/L	< 0.006	ISO 17993 (c)
Benzo(k)fluoranthene		µg/L	< 0.006	ISO 17993 (c)
Benzo(ghi)perylene		µg/L	< 0.006	ISO 17993 (c)
Dibenzo(a,h)anthracene		µg/L	< 0.006	ISO 17993 (c)
Indeno(1,2,3-cd)pyrene		µg/L	< 0.006	ISO 17993 (c)
Others polynuclear aromatic hydrocarbons		µg/L	< 0.006	ISO 17993 (c)
Pesticides (Insecticides, herbicides, fungicides, nematicides, acaricides, algicides, rodenticides, metabolites and by-products), individual compound		µg/L	< 0.05	UNI EN ISO 6468:1999 (c) EPA 551.1 (c)
Aldrin, Dieldrin, Eptachlor, Eptachlor epoxide (individual compound)		µg/L	< 0.01	UNI EN ISO 6468:1999 (c)
Polychlorinated biphenyls (individual congener)		µg/L	< 0.05	UNI EN ISO 6468:1999 (c)
Chloroform		µg/L	< 0.5	S.M. 6200 B (a) (c)
Chlorodibromomethane		µg/L	< 0.5	S.M. 6200 B (a) (c)
Dichlorobromomethane		µg/L	< 0.5	S.M. 6200 B (a) (c)
Bromoform		µg/L	< 0.5	S.M. 6200 B (a) (c)
Trichloroethylene,		µg/L	< 0.1	S.M. 6200 B (a) (c)
Tetrachloroethylene		µg/L	< 0.1	S.M. 6200 B (a) (c)
1,2-dichloroethane		µg/L	< 0.1	S.M. 6200 B (a) (c)
Halogenated compounds not included in pesticides and polychlorinated biphenyls lists (individual compound)		µg/L	< 0.1	S.M. 6200 B (a) (c)

(a) Reference: "Standard Methods for the Examination of Water and Wastewater" - APHA Editor, 22nd Edition.

(b) Performance characteristics for the analysis of the constituents in Annex I-Decreto del Ministero della Salute 29/12/2003.

(c) Methods detection limits as in Annex II-Decreto del Ministero della Salute 29/12/2003.

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