VÍZKUTATÓ VÍZKÉMIA KFT

1026 Budapest, Szilágyi E. fasor 43/b.
Tel./Fax: (1)-2124157, (1)-2148937
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MINERAL WATER CLASSIFICATION

On the basis of Mineral water test report No. 40720

Name:	***№ 1-L(SV), 48°36' 24" N 23°05' 07" E***
Sample:	***MKV „Alex" drilled well (Depth: 260,0m)***
Sampler:	***Vízkutató Vízkémia Kft.***
Sampling:	***Accredited***
On-site test:	***Accredited***
Date of sampling:	***04.10.2017***
Laboratory:	***Vízkutató Vízkémia Kft.*** (Accreditation No.: NAH-1-1217/2014) ***Bálint Analitika Kft.*** *(NAH-1-1666/2015)* ***BGYH ZRt.*** *(NAH-1-1264/2015)* ***Hydrosys Labor Kft.*** (NAH-1-1714/2017)

Classification:

On the basis of the Mineral water test report No. 40720:
From the point of the components examined, the water is suitable for bottling, according to the requirements of 65/2004. (IV.27.) FVM-ESZCSM-GKM decree about "the bottling...of natural mineral water".
According to the annex no. 5 of the decree the indications on the label shall be authorised: „low mineral content".

The water contains a small amount of mineral substances. The sample is a very soft water of a sodium-hydrogen-carbonate-carbonate character containing significant amount of sulphide.

The chemical components determining the water's character, and having a biological effect, out of the detailed test result:

Sodium	82	mg/l	Bicarbonate	177	mg/l
Potassium	1,7	mg/l	Carbonate	24,0	mg/l
Calcium	2,1	mg/l	Total mineral content	299	mg/l
Magnesium	0,6	mg/l	Sulphide	0,56	mg/l
Total hardness	4	CaOmg/l	pH	9,0	

The water doesn't contain objectionable amounts of inorganic macropollutants (nitrate, nitrite, ammonium), micropollutants (cyanide, metals), organic micropollutants (phenols, TPH-oil, BTEX, VOCl, PAH, Pesticides), furthermore bacteriologically is appropriate.
The methan content of the water is significant, therefore safety instructions have to be applied.

Qualification of the water as acknowledged „natural mineral water" is the Budapest Capital Goverment Office's competence.

Enclosure: Mineral water test report No. 40720

Date: 08.11.2017, Budapest

Szakács Imre
Managing Director

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Analysis Number
40720

REPORT OF WATER ANALYSIS
Mineral water for certficate

CLIENT:

Name: ***MKV "Alex"***

Address: ***89300, Kárpátalja, Szolyva, M. Maskina u. 1.***

SAMPLE:

Name ***№ 1-L(SV), 48°36' 24" N 23°05' 07" E***

Sample: ***Drilled well***

Depth [m]: ***260,0***

Place of sample: ***Water pipe of the well-house***

Water flow rate [l/min]: -

SAMPLING:

Sampler: ***Vízkutató VÍZKÉMIA KFT. Vizsgálólaboratóriuma***

Sampling: ***Accredited***

Date of sampling:	***04/10/2017***	Start of test:	***05/10/2017***
Date of receive:	***05/10/2017***	End of test	***16/10/2017***

Date of issue: ***16/10/2017, Budapest***

Szakács Imre
Head of Laboratory

This report only have connection with the sample(s) specified above. The sample identification is the Sampler's responsibility. This report may copy only in its entirety.

VÍZKUTATÓ VÍZKÉMIA KFT

VIZ KUTATÓ KÉMIA

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*

Sample: *Drilled well*

Depth[m]: *260,0* Date of sampling: *04/10/2017*

REPORT OF MINERAL WATER ANALYSIS

Cation	mg/l	meq/l	meq %	Anion	mg/l	meq/l	meq %
Na^+	82	3,57	93,87	NO_3^-	< 1,0	0,00	0,00
K^+	1,7	0,04	1,14	NO_2^-	< 0,02	0,00	0,00
Li^+	0,08	0,01	0,30	Cl^-	< 1,0	0,00	0,00
NH_4^+	0,43	0,02	0,63	Br^-	< 0,02	0,00	0,00
Ca^{2+}	2,1	0,10	2,76	I^-	< 0,01	0,00	0,00
Mg^{2+}	0,6	0,05	1,30	F^-	0,26	0,01	0,36
Fe_{solute}	< 0,05	0,00	0,00	SO_4^{2-}	1,4	0,03	0,77
Mn_{solute}	< 0,02	0,00	0,00	HCO_3^-	177	2,90	76,78
Fe	-			CO_3^{2-}	24,0	0,80	21,17
Mn	-			PO_4^{3-}	< 0,05	0,00	0,00
				S^{2-}	0,56	0,03	0,92
Sum Cations	86,91	3,80	100,00	Sum Anions	203,22	3,78	100,00
Total cations and anions:	290	mg/l		Spec. el. cond. 20°C [o]	320	µS/cm	

Metaboric acid [HBO_2]	0,11	Bmg/l	pH [o]	9,0	
Metasilicic acid [H_2SiO_3]	13,3	mg/l	pH poise		
Aluminium [Al]	16	µg/l	Corrosion index:	-	
Antimony [Sb]	< 2,0	µg/l	M-alkalinity	3,7	mmol/l
Arsenic [As]	< 2,0	µg/l	P-alkalinity	0,4	mmol/l
Barium [Ba]	160	µg/l	Total hardness	4	CaO mg/l
Zinc [Zn]	< 5	µg/l	Carbonate hardness	4	CaO mg/l
Mercury[Hg]	< 0,10	µg/l	Non-carbonate hardness	0	CaO mg/l
Cadmium [Cd]	< 0,2	µg/l	COD KMnO4/ac	0,30	O_2 mg/l
Chromium [Cr]	< 2,0	µg/l	Dry residues in 105°C	-	mg/l
Nickel [Ni]	< 2,0	µg/l	Dry residues in 180°C	211	mg/l
Lead [Pb]	< 2,0	µg/l	Dry residues in 260°C	200	mg/l
Copper [Cu]	<10	µg/l	Total dissolved material	299	mg/l
Selenium [Se]	< 2,0	µg/l	TOC	< 0,5	mg/l
Cobalt [Co]	-	µg/l	Total phosphorus	-	Pmg/l
Molybdenum [Mo]	-	µg/l	Phenol index	< 5	µg/l
Tin [Sn]	-	µg/l	TPH-oil index (GRO+DRO)	<20	µg/l
Silver[Ag]	-	µg/l	ANA detergent	-	mg/l
Strontium [Sr]	-	µg/l	Cyanide (total)	< 5	µg/l
			Free carbonic acid [o]	0	mg/l
Chlorite	-	mg/l	Dissolved oxygen [o]	0,2	mg/l
Chlorate	-	mg/l	Turbidity	-	NTU
Bromate	-	µg/l	Suspended Solids	-	mg/l
Bromoform	-	µg/l	Temperature [o]	14,9	°C
Ozone	-	µg/l	Nitrate/50+ nitrite/3	0,00	

Physical characteristics: on-site: Colourless, clear.
in the laboratory: Colourless, clear.

Comments: [-] non tested component [o] onsite

From the tested compounds view the water sample contains small amount of mineral substances. The sample is a very soft water of a sodium-hydrogen-carbonate-carbonate character containing significant amount of sulphide.

VIZ KUTATÓ KÉMIA

Erdélyi Ferenc
Head of Department

12/10/2017, Budapest

Szakács Imre
Head of Laboratory

Vízkutató VÍZKÉMIA KFT. Vizsgálólaboratóriuma
A NAH által NAH-1-1217/2014 számon akkreditált vizsgálólaboratórium. (Accredited laboratory)

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*

Sample: *Drilled well*

Depth[m]: *260,0* Date of sampling: *04/10/2017*

REPORT OF MINERAL WATER ANALYSIS

Organic Constituents

Volatile Aromatic Hydrocarbons (BTEX)		*Volatile Chlorinated Hydrocarbons (VOCl)*	
Components	µg/l	Components	µg/l
benzene	< 0,1	1,1 dichloroethylene	< 0,1
toluene	< 0,1	trans-1,2-dichloroethylene	< 0,1
chlorobenzene	< 0,1	cisz-1,2-dichloroethylene	< 0,1
ethylbenzene	< 0,1	chloroform [a]	< 0,1
m-, p-xylene	< 0,1	1,1,1 trichloroethane	< 0,1
o-xylene	< 0,1	carbon tetrachloride	< 0,1
styrene	< 0,1	1,2 dichloroethane	< 0,1
1,2-dichlorobenzene	< 0,1	trichloroethylene [b]	< 0,1
1,4-dichlorobenzene	< 0,1	1,2 dichloropropane	< 0,1
		bromodichloromethane [a]	< 0,1
		tetrachloroethylene [b]	< 0,1
		dibromochloromethane [a]	< 0,1
		bromoform [a]	< 0,1
		Total [a] trihalomethanes	< 0,1
		Total [b]	< 0,1

09/10/2017, Budapest

Head of Department

Szakács Imre
Head of Laboratory

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Analysis Number
40720

Name:	***№ 1-L(SV), 48°36' 24" N 23°05' 07" E***	Sampling method:	***By-pass separation***
Sample:	***Drilled well***	Sampler:	***Kovács Péter***
Depth [m]:	***260,00***	Sampling date:	***04.10.2017***

RE PORT OF GAS ANALYSIS

SEPARATED GAS COMPOSITION:

Components	volume %	
	sample	without air
OXIGEN	4,40	0,00
NITROGEN	85,80	87,64
METHANE	**9,80**	**12,36**
CARBON-DIOXIDE	0,00	0,00
TOTAL	100,00	100,00

GWR sep[l/m^3]: 5,67 **MWRsep [l/m^3]: 0,56**

DISSOLVED GAS COMPOSITION:

Components	volume %		
	sample	without CO_2	without air
OXIGEN	2,85	2,85	0,00
NITROGEN	77,64	77,64	78,67
METHANE	**19,51**	**19,51**	**21,33**
CARBON-DIOXIDE	0,00	0,00	0,00
TOTAL	100,00	100,00	100,00

GWRsolv [l/m^3]: 25,6 **MWR solv [l/m^3]: 4,99**

Total gas-water ratio (GWR): 31,2 l/m^3
Total methan water ratio(MWR): 5,54 l/m^3

Comments :

The methan content exceed the allowed limit (According to the Guideline No. 12/1997. (VIII.29.) KHVM).

Tested method: *MSZ 448-43:1985*

[l/m^3] *20 °C / 1013 mbar according to the guideline 12/1997. (VIII.29.) KHVM*

Analyst

09.10.2017 , Budapest

Szakács Imre
Head of laboratory

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ANALYTICAL METHODS

Components	Method
Na^+	MSZ 1484-3:2006 6.
K^+	MSZ 1484-3:2006 6.
Li^+	MSZ 1484-3:2006 6.
NH_4^+	MSZ ISO 7150-1:1992
Ca^{2+}	MSZ 1484-3:2006 6.
Mg^{2+}	MSZ 1484-3:2006 6.
Fe^{3+}	MSZ 1484-3:2006 6. / MSZ EN ISO 15586:2004
Mn^{2+}	MSZ 1484-3:2006 6. / MSZ EN ISO 15586:2004

Components	Method
NO_3^-	MSZ 1484-13:2009 / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
NO_2^-	MSZ 1484-13:2009 / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
Cl^-	MSZ 1484-15:2009 / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
Br^-	US Stand. Meth.: 4500-Br^- / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
I^-	MSZ 448-16:1987 (withdrawn standard) / MSZ EN ISO 10304-3:1999
F^-	MSZ 448-17:1986 2. / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
SO_4^{2-}	MSZ 448-13:1983 3. / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
HCO_3^-	MSZ 448-11:1986
CO_3^{2-}	MSZ 448-11:1986
o.PO_4^{3-}	MSZ EN ISO 6878:2004 4. / EPA Method 300.1:1999 / MSZ EN ISO 10304-1:2009
S^{2-}	MSZ 448-14:1990 3.

Smell, taste	MSZ EN 1622:2007
Colour	MSZ EN ISO 7887:1998 (withdrawn standard)
Free CO_2	MSZ 448-23:1983
Fixed CO_2	MSZ 448-23:1983
TOC	MSZ EN 1484:1998
HBO_2	MSZ 10889-2:1981
H_2SiO_3	MSZ 448-26:1991
Cyanide (total)	MSZ 260-30:1992 4.1.-4.6.
Phenol	MSZ 1484-1:2009
Anionic surf.	MSZ 448-49:1981
Total P	MSZ EN ISO 6878:2004 4.f.
Org. N	MSZ 448-27:1985 6.
Cr (VI)	MSZ 260-32:1989 2.
UV $SZOE_{cyclohexane}$	MSZ 12750-23:1976 4. (withdrawn standard)
Dissolved O	MSZ ISO 5813:1992 / MSZ EN 25814:1998 (withdrawn standard)
Turbidity	MSZ EN ISO 7027:2000 (withdrawn standard)

pH	MSZ 1484-22:2009
m-alkalinity	MSZ 448-11:1986
p-alkalinity	MSZ 448-11:1986
Total hardness	MSZ 448-21:1986
Carb. hardness	MSZ 448-21:1986
Non-carb. hard.	MSZ 448-21:1986
Spec. el. cond.	MSZ EN 27888:1998
$COD_{KMnO4/ac}$	MSZ 448-20:1990
COD_{Cr}	ISO 15705:2002
Dry residues	MSZ 448-19:1986
Floating substance	MSZ 448-33:1985
Temperature	MSZ 448-2:1967 (withdrawn standard)
Active chlorine	MSZ EN ISO 7393-2:2000
Ozone	US Standard Methods: 4500-O_3 / DIN 38408-G3 2.
Chlorite, chlorate	EPA Method 300.1:1999 / MSZ EN ISO 10304-4:2000
Bromate	EPA Method 300.1:1999 / EN ISO 15061:2001

Aluminium	MSZ EN ISO 15586:2004
Antimony	MSZ EN ISO 15586:2004
Arsenic	MSZ EN ISO 15586:2004
Barium	MSZ EN ISO 15586:2004
Zinc	MSZ 1484-3:2006 6.
Silver	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Mercury	MSZ 1484-3:2006 9.f.
Cadmium	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Cobalt	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.

Chromium	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Molybdenum	MSZ EN ISO 15586:2004
Nickel	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Lead	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Tin	MSZ EN ISO 15586:2004
Copper	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Strontium	MSZ EN ISO 15586:2004 / MSZ 1484-3:2006 6.
Selenium	MSZ EN ISO 15586:2004
Vanadium	MSZ EN ISO 15586:2004

BTEX / GC-FID, -MS	MSZ 1484-4:1998 / ASTM D6520:2000 (WS)
VOCl / GC-ECD, -MS	MSZ 1484-5:1998 / ASTM D6520:2000 (WS)
Oil index / GC	EPA 8015C / ASTM D6520:2000

CH4, O2, N2, CO2	MSZ 448-43:1985
methane, ethane propane, butane, pentane, hexane	MSZ ISO 6974-3:2001

WS= withdrawn standard

04.04.2017 **[e_1.0]**

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*

Sample: ***Drilled well***

Depth[m]: ***260,0*** Date of sampling: ***04/10/2017***

REPORT OF MINERAL WATER ANALYSIS

Organic Constituents

PAH (Policyclic Aromatic Hydrocarbons)	µg/l
naphthalene	0,006
2-methyl-naphthalene	0,002
1-methyl-naphthalene	0,001
acenaphthylene	nd
acenaphthene	0,001
fluorene	0,001
phenanthrene	0,001
anthracene	nd
fluoranthene	nd
pyrene	nd
benzo(a)anthracene	0,001
chrysene	nd
benzo(b)fluoranthene [a] benzo(k)fluoranthene [a]	nd
benzo(e)pyrene	nd
benzo(a)pyrene	nd
indeno(1,2,3-cd)pyrene [a]	nd
dibenzo(a,h)anthracene	nd
benzo(g,h,i)perylene [a]	nd
Total [a]	< 0,001
Total naphthalene	0,009
Total PAH without naphthalene	0,004
Total PAH	0,013

Tested: **Bálint Analitika Kft.**
NAH-1-1666/2015 accredited laboratory

Method: MSZ 1484-6:2003

Detection limit of the method (nd): 0,0005 µg/l / component

No. of sample at Bálint Analitika Kft.: **17-106/81**

Start of test: 10/10/2017
End of test: 12/10/2017

The part of this report marked with broken line contains just the information what the original report of testing laboratory.

12/10/2017, Budapest

Szakács Imre
Head of laboratory

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*

Sample: *Drilled well*

Depth[m]: *260,0* Date of sampling: *04/10/2017*

REPORT OF MINERAL WATER ANALYSIS

Organic Constituents

Pesticides	µg/l	Pesticides	µg/l
γ-HCH/Lindane	nd	MCPA	nd
Hexachlorobenzene	nd	2,4-D	nd
Heptachlor	nd	2,4,5-T	nd
Heptachlorepoxid	nd	Atrazine-desizopropil	nd
p,p'-DDD	nd	Atrazine-desethyl	nd
o,p'-DDD	nd	Simazine	nd
Endosulfan-1	nd	Atrazine	nd
o,p'-DDE	nd	Propazine	nd
p, p'-DDE	nd	Terbuthylazine	nd
Endrin	nd	Metribuzin	nd
Endosulfan-II	nd	Prometryne	nd
o,p'-DDT	nd	Terbutryne	nd
p,p'-DDT	nd	Hexazinone	nd
Aldrin	nd	Propachlor	nd
Dieldrin	nd	AD-67	nd
Phorate	nd	Metolachlor	nd
Diazinon	nd	Acetochlor	nd
Methyl parathion	nd	Propizochlor	nd
Malathion	nd	Trifluralin	nd
Chlorpyrifos	nd		

Tested: **Bálint Analitika Kft.**
NAH által NAH-1-1666/2015 accredited laboratory
Method: MSZ 1484-6:2003

Detection limit of the method (nd): 0,0005 µg/l / component

No. of sample at Bálint Analitika Kft.: **17-106/81**

Start of test: 10/10/2017
End of test: 16/10/2017

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16/10/2017, Budapest

Szakács Imre
Head of laboratory

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*

Sample: ***Drilled well***

Depth[m]: ***260,0*** Date of sampling: ***04/10/2017***

REPORT OF MINERAL WATER ANALYSIS

Bacterological

Organism	Result	Analitical Methods
C.F.U. 22°C	0 /1 ml	*MSZ EN ISO 6222:2000*
C.F.U. 37°C	0 /1 ml	*MSZ EN ISO 6222:2000*
Total coliform bacteria	0 /250 ml	*MSZ EN ISO 9308-2:2014*
Escherichia coli	0 /250 ml	*MSZ EN ISO 9308-2:2014*
Enterococcus	0 /250 ml	*MSZ EN ISO 7899-2:2000*
Pseudomonas aeruginosa	0 /250 ml	*MSZ EN ISO 16266:2008*
Clostridium perfingens	0 /100 ml	*MSZ EN 26461-2:1994*

Tested: **Budapest Gyógyfürdői és Hévizei Zrt.**
Vízminőség-vizsgáló Laboratórium
Method: NAH-1-1264/2015 accredited laboratory

No. of sample at Budapest Gyógyfürdői és Hévizei Zrt.: **5014/2017**

Start of test: 05/10/2017
End of test: 16/10/2017

According to the requirements of Hungarian Criteria No. 65/2004 (IV.27.) the water is **"appropriate"** from the point of the tested components above.

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16/10/2017, Budapest

Szakács Imre
Head of laboratory

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Analysis Number
40720

Name: *№ 1-L(SV), 48°36' 24" N 23°05' 07" E*
Sample: ***Drilled well***
Depth[m]: ***260,0*** Date of sampling: ***04/10/2017***

REPORT OF MINERAL WATER ANALYSIS

Report of tritium analysis

component	Bq/l
Tritium	< 0,06

Tested: **HYDROSYS LABOR Laboratóriumi Szolgáltató Kft.**
NAH-1-1714/2017 accredited laboratory
Method: MSZ 19387:1987

Identity code of the testing laboratory: **2608/B636/7**

Start of test: 05/10/2017
End of test: 08/11/2017

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08/11/2017, Budapest

Szakács Imre
Head of laboratory