INSTITUT PRO TESTOVÁNÍ A CERTIFIKACI, a. s.
třída Tomáše Bati 299, Louky, 763 02 Zlín, Czech Republic
TESTING LABORATORY - TESTING DIVISION

Issues

ATTEST
No. 472118404-01

on samples:

Calido S30 ball valves
(this product contains materials:
black EPDM sealing, white PTFE material and CW617N brass)

client:
Arka Sp. Z o.o.
Ul. Ogrodowa 5, 76-004 Sianów, Poland
VAT reg. No.: PL6692224025

Values obtained and the assessment of the technical parameters:
Evaluated technical parameters of **the leaching tests from samples "Black EPDM sealing and white PTFE material" meet hygienic requirements** of the **article 3 paragraph 2 of the Decree of the Czech Health Ministry No. 409/2005 Coll.** *Hygienic requirements for articles intended to come into contact with water and for the water treatment,* **as amended by the Decree of the Czech Health Ministry No. 446/2021 Coll., for articles intended into the long time contact with drinking water**.

Evaluated samples do not negatively influence the sensorial properties of the drinking water.

Complete assessment of raw materials as required by article 10 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended, is not a part of this attest.

The evaluated **sample of CW617N brass meets hygienic requirements of the article 9 paragraph (1) d) and (2) of the Decree of the Czech Health Ministry No. 409/2005 Coll.** *Hygienic requirements for articles intended to come into contact with water and for the water treatment*, **as amended, for the products made of brass intended into the direct contact with drinking water.**

This Attest was issued on the basis of following document: ALTR No. 472118404-01 from January 27, 2025, issued by Institut pro testování a certifikaci, a.s. Zlín.

Issued on: January 27, 2025
Valid till: January 31, 2028

ZKUŠEBNÍ LABORATOŘ Institut pro testování a certifikaci, a.s.

Dipl. Ing. Jiří Samsonek, Ph.D.
Head of the testing laboratory

Conditions for use of the Attest and associated information:
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ATTEST

No. 472118404-01

on sample:

Calido S30 ball valves

(this product contains materials:
black EPDM sealing, white PTFE material and CW617N brass)

Fig. 1: supplied sample No. 472118404/01

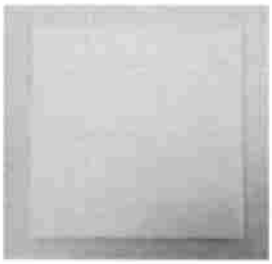

Fig. 2: supplied sample No. 472118404/02

Fig. 3: supplied sample No. 472118404/03

According to the client´s declaration, the supplied materials are the parts of the product **"Calido S30 ball valves"**.

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ATTEST

No. 472118404-01

on sample:

EPDM sealing, black colour

Determination of selected elements in the mass

Parameter	Unit	Result of measurement [1)]	Uncertainty [2)]
Pb - lead	mg/kg	< 20	-
Cd - cadmium	mg/kg	< 20	-
Ba - barium	mg/kg	< 150	-
Se - selenium	mg/kg	< 20	-
Hg - mercury	mg/kg	< 20	-
Sb - antimony	mg/kg	< 50	-
As - arsenic	mg/kg	< 20	-
Cr - chromium	mg/kg	< 20	-
Ni - nickel	mg/kg	< 20	-
V - vanadium	mg/kg	< 20	-
Sn - tin	mg/kg	< 50	-
Cu - copper	mg/kg	25	3
Fe - ferrum	mg/kg	49	5
Mn - manganese	mg/kg	< 20	-
Zn - zinc	mg/kg	> 300	-

Notes to the table:

1) symbol „<" means less than limit of quantification (LOQ) of the analytical method, symbol „>" means more than the highest calibration standard
2) uncertainty type B, 10 rel. % from measured value

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ATTEST

No. 472118404-01

on sample:

EPDM sealing, black colour

Evaluated parameters of the leachate prepared according to the annex No. 1 of the Decree of the Health Ministry No. 409/2005 Coll.

Evaluation of the 1st leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;1}$ [1]	Uncertainty [2]	$K_{0;1}$ [3]
		18404/01-A	18404/01-B			
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
Turbidity (nephelometry)	ZF_n	< 0,5	< 0,5	< 0,5	-	< 0,5
pH	-	6,2	6,3	6,3	0,2	5,8
TOC [4]	mg/l	1,72	1,74	1,73	0,11	< 0,60
$CHSK_{Mn}$ [5]	mg/l	0,44	0,38	0,41	0,07	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Zn	mg/l	0,27	0,28	0,28	0,03	< 0,01
Ba	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Cu	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Fe	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Phenols	mg/l	< 0,005	< 0,005	< 0,005	-	< 0,005
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
PAH [7]	µg/l	< 0,001	< 0,001	< 0,001	-	< 0,001
Benzo(a)pyrene	µg/l	< 0,0004	< 0,0004	< 0,0004	-	< 0,0004

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ATTEST

No. 472118404-01

on sample:

EPDM sealing, black colour

Evaluation of the 2nd leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;2}$ [1]	Uncerta-inty [2]	$K_{0;2}$ [3]
		18404/01-A	18404/01-B			
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
Turbidity (nephelometry)	ZF_n	< 0,5	< 0,5	< 0,5	-	< 0,5
pH	-	6,0	6,0	6,0	0,2	5,9
TOC [4]	mg/l	1,50	1,46	1,48	0,10	< 0,60
$CHSK_{Mn}$ [5]	mg/l	0,41	0,38	0,40	0,04	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Zn	mg/l	0,09	0,09	0,09	0,01	< 0,01
Ba	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Cu	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Fe	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Phenols	mg/l	< 0,005	< 0,005	< 0,005	-	< 0,005
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
PAH [7]	µg/l	< 0,001	< 0,001	< 0,001	-	< 0,001
Benzo(a)pyrene	µg/l	< 0,0004	< 0,0004	< 0,0004	-	< 0,0004

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ATTEST

No. 472118404-01

on sample:

EPDM sealing, black colour

Evaluation of the 3rd leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;3}$ [1]	Uncerta-inty [2]	$K_{0;3}$ [3]
		18404/01-A	18404/01-B			
Flavour	TFN [8]	< 1 [9]		< 1	-	< 1
Odour	TON [8]	< 1 [9]		< 1	-	< 1
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
Turbidity (nephelometry)	ZF_n	< 0,5	< 0,5	< 0,5	-	< 0,5
pH	-	5,8	5,8	5,8	0,2	5,9
TOC [4]	mg/l	0,99	1,01	1,00	0,07	< 0,60
$CHSK_{Mn}$ [5]	mg/l	0,28	0,31	0,30	0,04	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Zn	mg/l	0,05	0,06	0,06	0,02	< 0,01
Ba	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Cu	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Fe	mg/l	< 0,01	< 0,01	< 0,01	-	< 0,01
Phenols	mg/l	< 0,005	< 0,005	< 0,005	-	< 0,005
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
PAH [7]	µg/l	< 0,001	< 0,001	< 0,001	-	< 0,001
Benzo(a)pyrene	µg/l	< 0,0004	< 0,0004	< 0,0004	-	< 0,0004

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ATTEST

No. 472118404-01

on sample:

EPDM sealing, black colour

Notes to the tables:

1) $K_{72;n}$ is the concentration of the analyte after 72 hours of leaching, expressed as an average value from two tested samples of parallel leachates after the subtraction of the blank value,
   in the case of sensory analysis, $K_{72;3}$ is the concentration of the analyte after 72 hours of leaching, the blank values are not subtracted in case of: flavour, odour, pH and TOC
2) the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%
3) $K_{0;n}$ is the concentration of the analyte after 72 hours of leaching in the blank, expressed as an average value from two tested parallels leachates,
   in the case of sensory analysis, $K_{0;3}$ is the concentration of the analyte after 72 hours of leaching in the blank
4) TOC = total organic carbon
5) $CHSK_{Mn}$ = Permanganate Index
6) PAA = primary aromatic amines;
   these PAAs were screened by LC-MS/MS method: CAS No. 92-67-1, CAS No. 92-87-5, CAS No. 95-69-2, CAS No. 91-59-8, CAS No. 97-56-3, CAS No. 99-55-8, CAS No. 106-47-8, CAS No. 615-05-4, CAS No. 101-77-9, CAS No. 91-94-1, CAS No. 119-90-4, CAS No. 119-93-7, CAS No. 838-88-0, CAS No. 120-71-8, CAS No. 101-14-4, CAS No. 101-80-4, CAS No. 139-65-1, CAS No. 95-53-4, CAS No. 95-80-7, CAS No. 137-17-7, CAS No. 90-04-0, CAS No. 60-09-3, CAS No. 108-45-2, CAS No. 80-08-0, CAS No. 88-68-6, CAS No. 106246-33-7 with limit of detection (LOD) of individual PAA = 0,002 mg/l
   and detection of presence of selected other PAAs: CAS No. 95-68-1, CAS No. 87-62-7, CAS No. 2243-62-1, CAS No. 62-53-3, CAS No. 95-51-2, CAS No. 108-42-9, CAS No. 106-49-0, CAS No. 106-50-3, CAS No. 823-40-5, CAS No. 121-69-7, CAS No. 6582-52-1, CAS No. 1208-52-2, CAS No. 6358-64-1, CAS No. 95-82-9, CAS No. 94-70-2, CAS No. 2835-68-9, CAS No. 81-16-3, CAS No. 88-44-8, CAS No. 49564-57-0, CAS No. 95-23-8, CAS No. 132-32-1, CAS No. 95-54-5, CAS No. 67014-36-2, CAS No. 156-43-4, CAS No. 90-41-5 with limit of detection (LOD) of individual PAA = 0,005 mg/l
7) PAH = Polycyclic aromatic hydrocarbon, sum of benzo(b)fluorantene, benzo(k)fluorantene, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene
8) TFN = threshold flavour number; TON = threshold odour number
9) number of the tested sample for sensory analysis is 1

symbol „<" means less than limit of quantification (LOQ) of the analytical method

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ATTEST
No. 472118404-01
on sample:
EPDM sealing, black colour

Summary results of evalution 1st – 3rd leachate into the testing water at 23 °C

Parameter	Unit	$K_{72;1}$ [1]	$K_{72;2}$ [1]	$K_{72;3}$ [1]	Limit [2]
Flavour	TFN [7]	-	-	**< 1**	acceptable (max. 2)
Odour	TON [7]	-	-	**< 1**	max. 2
Colour	mgPt/l	< 5	< 5	**< 5**	max. 20
Turbidity (by nephelometry)	ZF_n	< 0,5	< 0,5	**< 0,5**	max. 5
pH	-	6,3	6,0	**5,8**	-
TOC [3]	mg/l	1,73	1,48	**1,00**	max. 1,0
$CHSK_{Mn}$ [4]	mg/l	0,41	0,40	**0,30**	max. 0,90
Pb	µg/l	< 0,90	< 0,90	**< 0,90**	max. 1,0
Cd	µg/l	< 0,20	< 0,20	**< 0,20**	max. 0,50
Zn	mg/l	0,28	0,09	**0,06**	max. 0,30 [8]
Ba	mg/l	< 0,01	< 0,01	**< 0,01**	max. 0,07 [8]
Cu	mg/l	< 0,01	< 0,01	**< 0,01**	max. 0,10
Fe	mg/l	< 0,01	< 0,01	**< 0,01**	max. 0,02
Phenols	mg/l	< 0,005	< 0,005	**< 0,005**	max. 0,005 [8]
Sum of PAAs [5] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	**no PAA detected**	∑ max. 0,01 [8]
Sum of PAAs [5] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	**no PAA detected**	
PAH [6]	µg/l	< 0,001	< 0,001	**< 0,001**	max. 0,010
Benzo(a)pyrene	µg/l	< 0,0004	< 0,0004	**< 0,0004**	max. 0,0010

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ATTEST
No. 472118404-01
on sample:
EPDM sealing, black colour

Notes to the table:

1) $K_{72;n}$ is the concentration of the analyte after 72 hours of leaching, expressed as an average value from the dual samples of parallel leachates after the subtraction of the blank value, in the case of sensory analysis, $K_{72;3}$ is the concentration of the analyte after 72 hours of leaching, the blank values are not subtracted in case of: odour, flavour, pH and TOC; symbol „<" means less than limit of quantification (LOQ) of the analytical method
2) 10% of the hygienic limit for drinking water according to the Czech Ministry of Health Decree No. 252/2004 Coll., as amended, annex 1; according to the article 3 paragraph 2 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended, the limit valid for TOC is 20 % of the hygienic limit, for $CHSK_{Mn}$ is 30 % of the hygienic limit, for sensorial properties are valid the hygienic limits of the above mentioned Decree; limits are valid for parameter values of the third leachate $K_{72;3}$
3) TOC = total organic carbon
4) $CHSK_{Mn}$ = Permanganate Index Method
5) PAA = primary aromatic amines; these PAAs were screened by LC-MS/MS method: CAS No. 92-67-1, CAS No. 92-87-5, CAS No. 95-69-2, CAS No. 91-59-8, CAS No. 97-56-3, CAS No. 99-55-8, CAS No. 106-47-8, CAS No. 615-05-4, CAS No. 101-77-9, CAS No. 91-94-1, CAS No. 119-90-4, CAS No. 119-93-7, CAS No. 838-88-0, CAS No. 120-71-8, CAS No. 101-14-4, CAS No. 101-80-4, CAS No. 139-65-1, CAS No. 95-53-4, CAS No. 95-80-7, CAS No. 137-17-7, CAS No. 90-04-0, CAS No. 60-09-3, CAS No. 108-45-2, CAS No. 80-08-0, CAS No. 88-68-6, CAS No. 106246-33-7 with limit of detection (LOD) of individual PAA = 0,002 mg/l and detection of presence of selected other PAAs: CAS No. 95-68-1, CAS No. 87-62-7, CAS No. 2243-62-1, CAS No. 62-53-3, CAS No. 95-51-2, CAS No. 108-42-9, CAS No. 106-49-0, CAS No. 106-50-3, CAS No. 823-40-5, CAS No. 121-69-7, CAS No. 6582-52-1, CAS No. 1208-52-2, CAS No. 6358-64-1, CAS No. 95-82-9, CAS No. 94-70-2, CAS No. 2835-68-9, CAS No. 81-16-3, CAS No. 88-44-8, CAS No. 49564-57-0, CAS No. 95-23-8, CAS No. 132-32-1, CAS No. 95-54-5, CAS No. 67014-36-2, CAS No. 156-43-4, CAS No. 90-41-5 with limit of detection (LOD) of individual PAA = 0,005 mg/l
6) PAH = Polycyclic aromatic hydrocarbon, sum of benzo(b)fluorantene, benzo(k)fluorantene, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene
7) TFN = threshold flavour number; TON = threshold odour number
8) 10% of the hygienic limit for drinking water according to the Czech Ministry of Health Decree No. 409/2005 Sb., as amended; for PAA are valid the hygienic limit of the above mentioned Decree; limits are valid for parameter values of the third leachate $K_{72;3}$

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ATTEST

No. 472118404-01

on sample:

PTFE material, white colour

Determination of selected elements in the mass

Parameter	Unit	Result of measurement [1)]	Uncertainty
Pb - lead	mg/kg	< 20	-
Cd - cadmium	mg/kg	< 20	-
Ba - barium	mg/kg	< 150	-
Se - selenium	mg/kg	< 20	-
Hg - mercury	mg/kg	< 20	-
Sb - antimony	mg/kg	< 50	-
As - arsenic	mg/kg	< 20	-
Cr - chromium	mg/kg	< 20	-
Ni - nickel	mg/kg	< 20	-
V - vanadium	mg/kg	< 20	-
Sn - tin	mg/kg	< 50	-
Cu - copper	mg/kg	< 20	-
Fe - ferrum	mg/kg	< 20	-
Mn - manganese	mg/kg	< 20	-
Zn - zinc	mg/kg	< 20	-

Notes to the table:

1) symbol „<" means less than limit of quantification (LOQ) of the analytical method

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ATTEST
No. 472118404-01
on sample:
PTFE material, white colour

Test results of substances identifiable by TD-GC-MS method

Identified compound [1] – chemical name	CAS No.	FCM No.	Comment
Oleamide	301-02-0	335	substance listed in Annex I, with no SML

Notes to the table:

[1] identified substances can be either original ones, presented in the sample, or it can be degradation products; match of the MS spectra of found substances with standard MS spectra from D-base are in the range of 70-95 %

Abbreviations used:
CAS No. = Unique numerical identifier assigned by the Chemical Abstracts Service
FCM No. = Food Contact Material number
Annex I = Annex I of Commission Regulation (EU) 10/2011 as amended – list of authorised substances
SML = Specific Migration Limit

Evaluated parameters of the leachate prepared according to the annex No. 1 of the Decree of the Health Ministry No. 409/2005 Coll.

Evaluation of the 1st leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;1}$ [1]	Uncerta-inty [2]	$K_{0;1}$ [3]
		18404/02-A	18404/02-B			
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
pH	-	6,2	6,2	6,2	0,2	5,8
TOC [4]	mg/l	< 0,60	< 0,60	< 0,60	-	< 0,60
$CHSK_{Mn}$ [5]	mg/l	0,13	< 0,10	- [9]	- [9]	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected

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ATTEST
No. 472118404-01
on sample:
PTFE material, white colour

Evaluation of the 1st leachate into the testing water after 72 hours – continuation

Parameter	Unit	Parallel leachate		$K_{72;1}$ [1]	Uncertainty [2]	$K_{0;1}$ [3]
		18404/02-A	18404/02-B			
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected

Evaluation of the 2nd leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;2}$ [1]	Uncertainty [2]	$K_{0;2}$ [3]
		18404/02-A	18404/02-B			
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
pH	-	5,9	5,9	5,9	0,2	5,9
TOC [4]	mg/l	< 0,60	< 0,60	< 0,60	-	< 0,60
$CHSK_{Mn}$ [5]	mg/l	< 0,10	< 0,10	< 0,10	-	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected

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ATTEST

No. 472118404-01

on sample:

PTFE material, white colour

Evaluation of the 3rd leachate into the testing water after 72 hours

Parameter	Unit	Parallel leachate		$K_{72;3}$ [1]	Uncertainty [2]	$K_{0;3}$ [3]
		18404/02-A	18404/02-B			
Flavour	TFN [7]	< 1 [8]		< 1	-	< 1
Odour	TON [7]	< 1 [8]		< 1	-	< 1
Colour	mgPt/l	< 5	< 5	< 5	-	< 5
pH	-	5,8	5,8	5,8	0,2	5,9
TOC [4]	mg/l	< 0,60	< 0,60	< 0,60	-	< 0,60
$CHSK_{Mn}$ [5]	mg/l	< 0,10	< 0,10	< 0,10	-	-
Pb	µg/l	< 0,90	< 0,90	< 0,90	-	< 0,90
Cd	µg/l	< 0,20	< 0,20	< 0,20	-	< 0,20
Sum of PAAs [6] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected
Sum of PAAs [6] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	no PAA detected	-	no PAA detected

Notes to the tables:

1) $K_{72;n}$ is the concentration of the analyte after 72 hours of leaching, expressed as an average value from two tested samples of parallel leachates after the subtraction of the blank value,
in the case of sensory analysis, $K_{72;3}$ is the concentration of the analyte after 72 hours of leaching, the blank values are not subtracted in case of: flavour, odour, pH and TOC
2) the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%
3) $K_{0;n}$ is the concentration of the analyte after 72 hours of leaching in the blank, expressed as an average value from two tested parallels leachates,
in the case of sensory analysis, $K_{0;3}$ is the concentration of the analyte after 72 hours of leaching in the blank
4) TOC = total organic carbon
5) $CHSK_{Mn}$ = Permanganate Index

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ATTEST
No. 472118404-01
on sample:
PTFE material, white colour

6) PAA = primary aromatic amines;
these PAAs were screened by LC-MS/MS method: CAS No. 92-67-1, CAS No. 92-87-5, CAS No. 95-69-2, CAS No. 91-59-8, CAS No. 97-56-3, CAS No. 99-55-8, CAS No. 106-47-8, CAS No. 615-05-4, CAS No. 101-77-9, CAS No. 91-94-1, CAS No. 119-90-4, CAS No. 119-93-7, CAS No. 838-88-0, CAS No. 120-71-8, CAS No. 101-14-4, CAS No. 101-80-4, CAS No. 139-65-1, CAS No. 95-53-4, CAS No. 95-80-7, CAS No. 137-17-7, CAS No. 90-04-0, CAS No. 60-09-3, CAS No. 108-45-2, CAS No. 80-08-0, CAS No. 88-68-6, CAS No. 106246-33-7 with limit of detection (LOD) of individual PAA = 0,002 mg/l
and detection of presence of selected other PAAs: CAS No. 95-68-1, CAS No. 87-62-7, CAS No. 2243-62-1, CAS No. 62-53-3, CAS No. 95-51-2, CAS No. 108-42-9, CAS No. 106-49-0, CAS No. 106-50-3, CAS No. 823-40-5, CAS No. 121-69-7, CAS No. 6582-52-1, CAS No. 1208-52-2, CAS No. 6358-64-1, CAS No. 95-82-9, CAS No. 94-70-2, CAS No. 2835-68-9, CAS No. 81-16-3, CAS No. 88-44-8, CAS No. 49564-57-0, CAS No. 95-23-8, CAS No. 132-32-1, CAS No. 95-54-5, CAS No. 67014-36-2, CAS No. 156-43-4, CAS No. 90-41-5 with limit of detection (LOD) of individual PAA = 0,005 mg/l

7) TFN = threshold flavour number; TON = threshold odour number

8) number of the tested sample for sensory analysis is 1

9) average value and uncertainty are not expressed because one of the results is below than limit of quantification (LOQ) of the analytical method

symbol „<" means less than limit of quantification (LOQ) of the analytical method

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ATTEST

No. 472118404-01

on sample:

PTFE material, white colour

Summary results of evalution 1st – 3rd leachate into the testing water at 23 °C

Parameter	Unit	$K_{72;1}$ [1]	$K_{72;2}$ [1]	$K_{72;3}$ [1]	Limit [2]
Flavour	TFN [6]	-	-	**< 1**	acceptable (max. 2)
Odour	TON [6]	-	-	**< 1**	max. 2
Colour	mgPt/l	< 5	< 5	**< 5**	max. 20
pH	-	6,2	5,9	**5,8**	-
TOC [3]	mg/l	< 0,60	< 0,60	**< 0,60**	max. 1,0
$CHSK_{Mn}$ [4]	mg/l	0,13; < 0,10	< 0,10	**< 0,10**	max. 0,90
Pb	µg/l	< 0,90	< 0,90	**< 0,90**	max. 1,0
Cd	µg/l	< 0,20	< 0,20	**< 0,20**	max. 0,50
Sum of PAAs [5] (LOD = 0,002 mg/l)	mg/l	no PAA detected	no PAA detected	**no PAA detected**	∑ max. 0,01 [7]
Sum of PAAs [5] (LOD = 0,005 mg/l)	mg/l	no PAA detected	no PAA detected	**no PAA detected**	

Notes to the table:

1) $K_{72;n}$ is the concentration of the analyte after 72 hours of leaching, expressed as an average value from the dual samples of parallel leachates after the subtraction of the blank value,
in the case of sensory analysis, $K_{72;3}$ is the concentration of the analyte after 72 hours of leaching, the blank values are not subtracted in case of: odour, flavour, pH and TOC;
symbol „<" means less than limit of quantification (LOQ) of the analytical method
2) 10% of the hygienic limit for drinking water according to the Czech Ministry of Health Decree No. 252/2004 Coll., as amended, annex 1;
according to the article 3 paragraph 2 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended, the limit valid for TOC is 20 % of the hygienic limit, for $CHSK_{Mn}$ is 30 % of the hygienic limit, for sensorial properties are valid the hygienic limits of the above mentioned Decree;
limits are valid for parameter values of the third leachate $K_{72;3}$
3) TOC = total organic carbon
4) $CHSK_{Mn}$ = Permanganate Index Method

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ATTEST

No. 472118404-01

on sample:

PTFE material, white colour

5) PAA = primary aromatic amines;
these PAAs were screened by LC-MS/MS method: CAS No. 92-67-1, CAS No. 92-87-5, CAS No. 95-69-2, CAS No. 91-59-8, CAS No. 97-56-3, CAS No. 99-55-8, CAS No. 106-47-8, CAS No. 615-05-4, CAS No. 101-77-9, CAS No. 91-94-1, CAS No. 119-90-4, CAS No. 119-93-7, CAS No. 838-88-0, CAS No. 120-71-8, CAS No. 101-14-4, CAS No. 101-80-4, CAS No. 139-65-1, CAS No. 95-53-4, CAS No. 95-80-7, CAS No. 137-17-7, CAS No. 90-04-0, CAS No. 60-09-3, CAS No. 108-45-2, CAS No. 80-08-0, CAS No. 88-68-6, CAS No. 106246-33-7 with limit of detection (LOD) of individual PAA = 0,002 mg/l and detection of presence of selected other PAAs: CAS No. 95-68-1, CAS No. 87-62-7, CAS No. 2243-62-1, CAS No. 62-53-3, CAS No. 95-51-2, CAS No. 108-42-9, CAS No. 106-49-0, CAS No. 106-50-3, CAS No. 823-40-5, CAS No. 121-69-7, CAS No. 6582-52-1, CAS No. 1208-52-2, CAS No. 6358-64-1, CAS No. 95-82-9, CAS No. 94-70-2, CAS No. 2835-68-9, CAS No. 81-16-3, CAS No. 88-44-8, CAS No. 49564-57-0, CAS No. 95-23-8, CAS No. 132-32-1, CAS No. 95-54-5, CAS No. 67014-36-2, CAS No. 156-43-4, CAS No. 90-41-5 with limit of detection (LOD) of individual PAA = 0,005 mg/l

6) TFN = threshold flavour number; TON = threshold odour number

7) 10% of the hygienic limit for drinking water according to the Czech Ministry of Health Decree No. 409/2005 Sb., as amended; for PAA are valid the hygienic limit of the above mentioned Decree; limits are valid for parameter values of the third leachate $K_{72;3}$

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ATTEST

No. 472118404-01

on sample:

CW617N brass

Determination of lead and arsenic content in the mass after sample mineralization

Parameter	Unit	Result of measurement	Uncertainty [1)]
Pb content	hm. %	1,95	0,21
As content	hm. %	0,0073	0,0010

Notes to the table:

[1)] the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%

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INSTITUT PRO TESTOVÁNÍ A CERTIFIKACI, a. s.
třída Tomáše Bati 299, Louky, 763 02 Zlín, Czech Republic
Testing Laboratory – D2

ATTEST No. 472118404-01

Sample identification:

Table I: Samples description and identification

ITC's identification number	Sample identification by client	Description of submitted sample
472118404/01	EPDM sealing, black colour	black rubber parts of dimensions (10x10x0,2) cm – see Fig. 1
472118404/02	PTFE material, white colour	white plastic parts of dimensions (10x10x0,5) cm – see Fig. 2
472118404/03	CW617N brass	metal parts of dimension (3x3x1) cm – see Fig. 3

According to the client´s declaration, the supplied materials are the parts of the product **"Calido S30 ball valves"**.

Sampling method used:
The test sample was collected and supplied to the laboratory by the client. The laboratory is not responsible for this way of sampling. The results apply to the sample received.

Work request:
The client requested evaluation of selected hygienic parameters of the sample according to the Decree of Czech Health Ministry No. 409/2005 Coll. *Hygienic requirements for articles intended to come into contact with water and for the water treatment*, as amended by the Decree of the Czech Health Ministry No. 446/2021 Coll., in accordance with the law No. 258/2000 Coll. on Public Health Protection, as amended, for contact with drinking water.
The relevant parameters given by the Czech Ministry of Health Decree No. 409/2005 Coll., as amended, for the material were tested.

Opinions and interpretations:
Evaluation of fulfilling of the requirements of the Decree of the Health Ministry No. 409/2005 Coll. for articles intended into the long-term contact with drinking water:

Samples No. 472118404/01 and 472118404/02:

- In the supplied samples heavy metals content was determined by XRF spectroscopy. All critical elements were under limit of detection of the used analytical method, except of Cu, Fe and Zn in sample No. 472118404/01 (their content were determined in leachates) - see tables on the pages 3 and 10 of this attest.

- According to the article 10 of the Decree of the Czech Health Ministry No. 409/2005 Coll. for the manufacturing of plastics and products made from plastics intended into contact with drinking water, the products shall only be made of the monomers and other initial substances and additives included in the list of monomers and other initial substances listed in to the Decree of the Czech Health Ministry No. 38/2001 Coll., annex 3 and Commission Regulation (EU) No. 10/2011. The migration of individual components of the plastic materials and products shall not exceed specific migration limits (SML) or other restrictions included in the list of substances.
  The client did not submit documentation for white PTFE material declaring the conformity of the raw material used for manufacturing with the requirements of legislation, include the information about the substances limited by their specific migration limits.

In order to identify low molecular substances and degradation products of aditives the test TD-GC-MS was performed on the supplied sample - substance identified by this method is listed in the table on the page 11 of this Attest.

- The supplied samples are intended into the contact with drinking water.
  The article intended into the direct long time contact with drinking water shall meet requirements of the article 3 paragraph 2 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended - shall not exceed 10 % of the hygienic limit set for drinking water by to the Health Ministry Decree No. 252/2004 Coll. According to the article 3 paragraph 2 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended, the limit valid for TOC is 20 % of the hygienic limit, for $CHSK_{Mn}$ is 30 % of the hygienic limit, for sensorial properties are valid the hygienic limits.
  Three subsequent 72-hours leachates into the testing water (deionised water of temperature 23 °C according to the conditions from Annex No. 1 of the Health Ministry Decree No. 409/2005 Coll., as amended) were prepared from the supplied samples.
  The test results for parallel leachates, the average values subtracted by the blank values and blank values are listed in the tables on pages 4 – 6 and 11 - 13 of this attest. Summary results of evaluation 1st – 3rd leachate into the testing water at 23 °C, together with limit values are listed in the table on the pages 8 and 15 of this attest.

The tested parameters from the third leachate meet the requirements of the article 3 paragraph 2 of the Health Ministry Decree No. 409/2005 Coll., as amended by the Decree of the Czech Health Ministry No. 446/2021 Coll., on the products intended into the direct long time contact with drinking water.

The supplied samples **doesn't negatively influence the sensorial properties of the water.**

Complete assessment of raw materials as required by article 10 of the Decree of the Czech Health Ministry No. 409/2005 Coll., as amended, is not a part of this attest.

Sample No. 472118404/03:
The evaluated sample of CW617N brass meets hygienic requirements of the article 9 paragraph (1) d) and (2) of the Decree of the Czech Health Ministry No. 409/2005 Coll. *Hygienic requirements for articles intended to come into contact with water and for the water treatment* for the products made of brass intended into the direct contact with drinking water - determination of lead and arsenic content in the mass after sample mineralization are listed in the table on page 17 of this attest.

Evaluated by:
MUDr. Beata Janoušková, on January 28, 2025.

Conclusion:
The comparison of the obtained values of the samples with the requirements of the Health Ministry Decree No. 409/2005 Coll., as amended and the evaluation of the conformity with this regulation are listed on the page 1 of this Attest.

Dipl. Ing. Daniel Vít
Head of the laboratory of analytical chemistry and microbiology

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