



Bio-Rad Laboratories
Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	02/21/2025
Analyte	SODIUM
Method	SItr
Product Name	Liquicheck Urinalysis Control
Lot Number	98070
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	86.1	86.0	86.1	-0.243	0.0588	0.1	0.01
2	86.3	86.8	86.6	0.258	0.0663	0.5	0.25
3	86.6	86.3	86.5	0.157	0.0248	0.3	0.09
4	85.8	86.3	86.1	-0.242	0.0588	0.5	0.25
5	86.3	86.0	86.2	-0.142	0.0203	0.3	0.09
6	85.6	86.8	86.2	-0.093	0.0086	1.2	1.44
7	86.1	86.2	86.2	-0.142	0.0203	0.1	0.01
8	86.4	85.8	86.1	-0.192	0.0371	0.6	0.36
9	85.6	85.8	85.7	-0.593	0.3511	0.2	0.04
10	87.2	86.3	86.8	0.458	0.2093	0.9	0.81
11	85.1	86.0	85.6	-0.743	0.5513	0.9	0.81
12	86.1	86.8	86.5	0.157	0.0248	0.7	0.49
13	87.7	86.3	87.0	0.708	0.5006	1.4	1.96
14	86.1	86.0	86.1	-0.243	0.0588	0.1	0.01
15	86.3	86.8	86.6	0.258	0.0663	0.5	0.25
16	86.6	86.3	86.5	0.157	0.0248	0.3	0.09
17	86.0	85.8	85.9	-0.392	0.1541	0.2	0.04
18	86.8	85.8	86.3	0.008	0.0001	1.0	1.00
19	86.1	86.8	86.5	0.157	0.0248	0.7	0.49
20	87.7	86.3	87.0	0.708	0.5006	1.4	1.96



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G	20	Xr = 86.293	10.45
CV _{Horwitz} =	$2^{1-0,5 \log C}$		Σ 2.7614
Kons	86.293 mg/dL		0.1453
C =	0.0008629	Sx	0.3812
log C =	-3.064027	Sx ²	0.1453
0,5 log C =	-1.532013		0.26125
1-0,5 log C =	2.5320135	Sw	0.511126
$2^{1-0,5 \log C} =$	5.7837832	Sw ²	0.261
CV _{Horwitz} =	5.7837832	Sw ² /2	0.1306
SDPA(S _{Horwitz}) =	4.9910	Sx ² -(Sw ² /2)	0.0147
0.3 x S _{Horwitz}	1.4972913	Ss	0.121
0.3SDPA	1.4972913		

Ss < 0.3 x S_{Horwitz}
0.121 < 1.497
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	86.3	86.6	86.5
2	86.2	87.4	86.8
3	86.2	87.0	86.6
4	86.8	87.0	86.9
5	87.3	86.7	87.0
6	87.3	86.5	86.9
7	86.5	86.8	86.7
8	86.1	87.5	86.8
9	86.5	87.0	86.8
10	87.2	86.5	86.9
11	86.4	86.7	86.6
12	86.5	86.1	86.3
13	86.8	86.3	86.6
14	87.0	86.3	86.7
15	84.7	85.7	85.2
16	85.2	85.1	85.2
17	85.5	84.7	85.1
18	84.9	84.7	84.8
19	85.7	85.2	85.5
20	85.2	85.5	85.4

Yr = 86.240

Xr – Yr = 0.052

0.3SDPA = 1.4972913

[Xr-Yr] < 0.3 SDPA

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Prepared by : RA

Date : Feb 21, 2025

Reviewed by : AS

Date : Feb 21, 2025



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Date Tested	02/21/2025
Analyte	SODIUM
Method	SItr
Product Name	Liquicheck Urinalysis Control
Lot Number	98070
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	145.2	147.5	146.4	-0.882	0.7788	2.3	5.29
2	149.0	145.4	147.2	-0.032	0.0011	3.6	12.96
3	146.0	147.4	146.7	-0.532	0.2836	1.4	1.96
4	147.5	147.3	147.4	0.168	0.0281	0.2	0.04
5	147.5	144.1	145.8	-1.432	2.0521	3.4	11.56
6	148.5	146.9	147.7	0.468	0.2186	1.6	2.56
7	148.5	147.2	147.9	0.618	0.3813	1.3	1.69
8	148.8	148.4	148.6	1.368	1.8701	0.4	0.16
9	145.2	146.9	146.1	-1.182	1.3983	1.7	2.89
10	149.0	147.2	148.1	0.868	0.7526	1.8	3.24
11	149.4	146.0	147.7	0.468	0.2186	3.4	11.56
12	145.2	147.5	146.4	-0.882	0.7788	2.3	5.29
13	149.0	147.5	148.3	1.018	1.0353	1.5	2.25
14	149.0	146.9	148.0	0.718	0.5148	2.1	4.41
15	149.4	147.2	148.3	1.068	1.1396	2.2	4.84
16	145.4	146.0	145.7	-1.533	2.3486	0.6	0.36
17	148.4	147.5	148.0	0.718	0.5148	0.9	0.81
18	148.4	147.5	148.0	0.718	0.5148	0.9	0.81
19	145.2	144.1	144.7	-2.582	6.6693	1.1	1.21
20	148.2	148.0	148.1	0.868	0.7526	0.2	0.04



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G	20	Xr =	147.233	73.93
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 22.2514
Kons		147.233	mg/dL	0.1711
C =		0.00147233		Sx 1.0822
log C =		-2.8319963		Sx ² 1.1711
0,5 log C =		-1.4159982		1.84825
1-0,5 log C =		2.41599815		Sw 1.359504
$2^{1-0,5 \log C} =$		5.33688586		Sw ² 1.848
CV _{Horwitz} =		5.33688586		Sw ² /2 0.9241
SDPA(S _{Horwitz}) =		7.8576		Sx ² -(Sw ² /2) 0.2470
0.3 x S _{Horwitz}		2.35728914		Ss 0.497
0.3SDPA	2.35728914			

Ss < 0.3 x S_{Horwitz}
0.497 < 2.357
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	144.1	144.9	144.5
2	147.9	146.4	147.2
3	148.3	146.4	147.4
4	144.1	146.9	145.5
5	147.9	147.4	147.7
6	144.1	147.7	145.9
7	147.9	147.4	147.7
8	144.9	144.9	144.9
9	146.4	146.4	146.4
10	146.4	144.3	145.4
11	147.4	146.3	146.9
12	147.7	146.2	147.0
13	144.1	143.0	143.6
14	147.9	145.8	146.9
15	148.3	146.1	147.2
16	144.3	144.9	144.6
17	147.3	146.4	146.9
18	147.3	146.4	146.9
19	144.1	143.0	143.6
20	147.1	146.9	147.0

Yr = 146.130

Xr – Yr = 1.102

0.3SDPA = 2.35728914

[Xr-Yr] < 0.3 SDPA

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Date Tested	01/06/2025
Analyte	Free T4
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	1
Analyst Name	RF
SIUnit	ng/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	0.87	0.90	0.885	-0.012	0.0001	0.03	0.0009
2	0.87	0.90	0.885	-0.012	0.0001	0.03	0.0009
3	0.87	0.90	0.885	-0.012	0.0001	0.03	0.0009
4	0.93	0.95	0.940	0.043	0.0018	0.02	0.0004
5	0.88	0.87	0.875	-0.022	0.0005	0.01	0.0001
6	0.96	0.97	0.965	0.068	0.0046	0.01	0.0001
7	0.96	0.95	0.955	0.058	0.0034	0.01	0.0001
8	0.85	0.88	0.865	-0.032	0.0010	0.03	0.0009
9	0.90	0.91	0.905	0.008	0.0001	0.01	0.0001
10	0.90	0.91	0.905	0.008	0.0001	0.01	0.0001
11	0.90	0.92	0.910	0.013	0.0002	0.02	0.0004
12	0.90	0.92	0.910	0.013	0.0002	0.02	0.0004
13	0.90	0.92	0.910	0.013	0.0002	0.02	0.0004
14	0.80	0.88	0.840	-0.057	0.0032	0.08	0.0064
15	0.80	0.88	0.840	-0.057	0.0032	0.08	0.0064
16	0.80	0.87	0.835	-0.062	0.0038	0.07	0.0049
17	0.90	0.91	0.905	0.008	0.0001	0.01	0.0001
18	0.90	0.91	0.905	0.008	0.0001	0.01	0.0001
19	0.90	0.92	0.910	0.013	0.0002	0.02	0.0004
20	0.90	0.92	0.910	0.013	0.0002	0.02	0.0004



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G	20	Xr =	0.897		0.0244
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0232
Kons		0.897	ng/dL		0.0012
C =			8.97^{-9}	Sx	0.034959
log C =			-8.0472075	Sx ²	0.001222
0,5 log C =			-4.0236037		0.00061
1-0,5 log C =			5.02360378	Sw	0.024698
$2^{1-0,5 \log C} =$			32. 527855	Sw ²	0.00061
CV _{Horwitz} =			32. 527855	Sw ² /2	0.00031
SDPA(S _{Horwitz}) =			0.2918	Sx ² -(Sw ² /2)	0.0009
0.3 x S _{Horwitz}			0.08753246	Ss	0.030284
0.3SDPA	0.08753246				

Ss < 0.3 x S_{Horwitz}
0.030 < 0.080
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	0.86	0.88	0.870
2	0.86	0.88	0.870
3	0.86	0.88	0.870
4	0.92	0.93	0.925
5	0.87	0.85	0.860
6	0.95	0.95	0.950
7	0.95	0.93	0.940
8	0.84	0.86	0.850
9	0.89	0.89	0.890
10	0.89	0.89	0.890
11	0.89	0.90	0.895
12	0.89	0.90	0.895
13	0.89	0.90	0.895
14	0.79	0.86	0.825
15	0.79	0.86	0.825
16	0.79	0.85	0.820
17	0.89	0.89	0.890
18	0.89	0.89	0.890
19	0.89	0.90	0.895
20	0.89	0.90	0.895

Yr = 0.882

Xr – Yr = 0.015

0.3SDPA = 0.08753246

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF
Date : Jan 06, 2025

Reviewed by : HS
Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	Free T4
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	2
Analyst Name	RF
SIUnit	ng/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	1.90	1.91	1.905	-0.023	0.0005	0.01	0.0001
2	1.91	1.92	1.915	-0.013	0.0002	0.01	0.0001
3	1.95	1.94	1.945	0.017	0.0003	0.01	0.0001
4	1.94	1.95	1.945	0.017	0.0003	0.01	0.0001
5	1.93	1.91	1.920	-0.008	0.0001	0.02	0.0004
6	1.98	1.98	1.980	0.052	0.0027	0.00	0.0000
7	1.93	1.93	1.930	0.002	0.0000	0.00	0.0000
8	1.93	1.92	1.925	-0.003	0.0000	0.01	0.0001
9	1.94	1.93	1.935	0.007	0.0000	0.01	0.0001
10	1.91	1.90	1.905	-0.023	0.0005	0.01	0.0001
11	1.94	1.92	1.930	0.002	0.0000	0.02	0.0004
12	1.89	1.93	1.910	-0.018	0.0003	0.04	0.0016
13	1.95	1.96	1.955	0.027	0.0007	0.01	0.0001
14	1.95	1.88	1.915	-0.013	0.0002	0.07	0.0049
15	1.93	1.96	1.945	0.017	0.0003	0.03	0.0009
16	1.93	1.92	1.925	-0.003	0.0000	0.01	0.0001
17	1.94	1.93	1.935	0.007	0.0000	0.01	0.0001
18	1.91	1.92	1.915	-0.013	0.0002	0.01	0.0001
19	1.94	1.91	1.925	-0.003	0.0000	0.03	0.0009
20	1.89	1.92	1.905	-0.023	0.0005	0.03	0.0009



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G	20	Xr =	1.928		0.0111
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0069
Kons		1.928	ng/dL		0.0004
C =		1.928^{-8}		Sx	0.019076
log C =		-7.7148366		Sx ²	0.000364
0,5 log C =		-3.8574183			0.0002775
1-0,5 log C =		4.85741833		Sw	0.016658
$2^{1-0,5 \log C} =$		28.9886919		Sw ²	0.00028
CV _{Horwitz} =		28.9886919		Sw ² /2	0.000139
SDPA(S _{Horwitz}) =		0.5590		Sx ² -(Sw ² /2)	0.0002
0.3 x S _{Horwitz}		0.167692336		Ss	0.015004
0.3SDPA		0.167692336			

Ss < 0.3 x S_{Horwitz}
0.015 < 0.168
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	1.86	1.88	1.870
2	1.87	1.89	1.880
3	1.91	1.91	1.910
4	1.90	1.92	1.910
5	1.89	1.88	1.885
6	1.94	1.95	1.945
7	1.89	1.90	1.895
8	1.89	1.89	1.890
9	1.90	1.90	1.900
10	1.87	1.87	1.870
11	1.90	1.89	1.895
12	1.96	1.99	1.977
13	1.94	1.94	1.940
14	1.91	1.94	1.925
15	1.95	1.93	1.940
16	1.87	1.89	1.880
17	1.88	1.90	1.890
18	1.85	1.89	1.870
19	1.88	1.88	1.880
20	1.87	1.89	1.880

Yr = 1.902

Xr – Yr = 0.027

0.3SDPA = 0.167692336

[Xr-Yr] < 0.3 SDPA

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Date Tested	01/06/2025
Analyte	Free T4
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	3
Analyst Name	RF
SIUnit	ng/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt ²
1	3.42	3.43	3.425	0.030	0.0009	0.0	0.00
2	3.42	3.40	3.410	0.015	0.0002	0.0	0.00
3	3.41	3.44	3.425	0.030	0.0009	0.0	0.00
4	3.40	3.39	3.395	0.000	0.0000	0.0	0.00
5	3.36	3.38	3.370	-0.025	0.0006	0.0	0.00
6	3.43	3.43	3.430	0.035	0.0012	0.0	0.00
7	3.38	3.38	3.380	-0.015	0.0002	0.0	0.00
8	3.37	3.38	3.375	-0.020	0.0004	0.0	0.00
9	3.38	3.39	3.385	-0.010	0.0001	0.0	0.00
10	3.35	3.36	3.355	-0.040	0.0016	0.0	0.00
11	3.37	3.39	3.380	-0.015	0.0002	0.0	0.00
12	3.47	3.45	3.462	0.067	0.0044	0.0	0.00
13	3.42	3.43	3.425	0.030	0.0009	0.0	0.00
14	3.42	3.40	3.410	0.015	0.0002	0.0	0.00
15	3.41	3.44	3.425	0.030	0.0009	0.0	0.00
16	3.37	3.36	3.365	-0.030	0.0009	0.0	0.00
17	3.38	3.37	3.375	-0.020	0.0004	0.0	0.00
18	3.37	3.34	3.355	-0.040	0.0016	0.0	0.00
19	3.36	3.37	3.365	-0.030	0.0009	0.0	0.00
20	3.37	3.36	3.365	-0.030	0.0009	0.0	0.00



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G	20	Xr = 3.394	0.0058
CV _{Horwitz} =	$2^{1-0,5 \log C}$		Σ 0.0175
Kons	3.394	ng/dL	0.0009
C =		3.394^{-8}	Sx 0.030388
log C =		-7.4693106	Sx ² 0.000923
0,5 log C =		-3.7346552	0.0001457
1-0,5 log C =		4.7346552	Sw 0.012072
$2^{1-0,5 \log C} =$		26.6239971	Sw ² 0.000146
CV _{Horwitz} =		26.6239971	Sw ² /2 0.000073
SDPA(S _{Horwitz}) =		0.9036	Sx ² -(Sw ² /2) 0.0009
0.3 x S _{Horwitz}		0.27107156	Ss 0.029164
0.3SDPA	0.27107156		

Ss < 0.3 x S_{Horwitz}
0.029 < 0.271
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	3.31	3.39	3.350
2	3.32	3.36	3.340
3	3.34	3.39	3.365
4	3.35	3.45	3.400
5	3.31	3.43	3.370
6	3.38	3.40	3.390
7	3.33	3.38	3.355
8	3.32	3.38	3.350
9	3.33	3.39	3.360
10	3.30	3.36	3.330
11	3.32	3.39	3.355
12	3.42	3.45	3.437
13	3.37	3.43	3.400
14	3.37	3.40	3.385
15	3.36	3.44	3.400
16	3.32	3.36	3.340
17	3.33	3.37	3.350
18	3.32	3.34	3.330
19	3.31	3.37	3.340
20	3.32	3.36	3.340

Yr = 3.364

Xr – Yr = 0.029

0.3SDPA = 0.27107156

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Laboratories**

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Tel: (949) 598-1200
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Bio-Rad Laboratories
Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	01/06/2025
Analyte	T3, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	1
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	0.64	0.62	0.630	0.028	0.0008	0.02	0.0004
2	0.66	0.63	0.645	0.043	0.0019	0.03	0.0009
3	0.65	0.63	0.640	0.038	0.0015	0.02	0.0004
4	0.62	0.58	0.600	-0.002	0.0000	0.04	0.0016
5	0.66	0.63	0.645	0.043	0.0019	0.03	0.0009
6	0.61	0.67	0.640	0.038	0.0015	0.06	0.0036
7	0.66	0.63	0.645	0.043	0.0019	0.03	0.0009
8	0.60	0.59	0.595	-0.007	0.0000	0.01	0.0001
9	0.58	0.56	0.570	-0.032	0.0010	0.02	0.0004
10	0.59	0.58	0.585	-0.017	0.0003	0.01	0.0001
11	0.54	0.60	0.570	-0.032	0.0010	0.06	0.0036
12	0.59	0.58	0.585	-0.017	0.0003	0.01	0.0001
13	0.56	0.59	0.575	-0.027	0.0007	0.03	0.0009
14	0.59	0.58	0.586	-0.016	0.0003	0.01	0.0001
15	0.60	0.59	0.596	-0.006	0.0000	0.01	0.0001
16	0.60	0.58	0.590	-0.012	0.0001	0.02	0.0004
17	0.60	0.59	0.595	-0.007	0.0000	0.01	0.0001
18	0.58	0.57	0.575	-0.027	0.0007	0.01	0.0001
19	0.60	0.58	0.590	-0.012	0.0001	0.02	0.0004
20	0.60	0.56	0.580	-0.022	0.0005	0.04	0.0016



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G	20	Xr =	0.602		0.0167
CV _{Horwitz} =		2 ^{1-0,5 log C}		Σ	0.0145
Kons		0.602	ng/mL		0.0008
C =		6.02 ⁻⁷		Sx	0.027616
log C =		-6.220548		Sx ²	0.000763
0,5 log C =		-3.110274			0.0004165
1-0,5 log C =		4.1102739		Sw	0.020410
2 ^{1-0,5 log C} =		17.270935		Sw ²	0.0004
CV _{Horwitz} =		17.270935		Sw ² /2	0.0002
SDPA(S _{Horwitz}) =		0.1039		Sx ² -(Sw ² /2)	0.0006
0.3 x S _{Horwitz}		0.03118094		Ss	0.023546
0.3SDPA	0.03118094				

Ss < 0.3 x S_{Horwitz}
0.024 < 0.031
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	0.63	0.60	0.615
2	0.65	0.61	0.630
3	0.76	0.68	0.720
4	0.61	0.56	0.585
5	0.65	0.61	0.630
6	0.60	0.65	0.625
7	0.65	0.61	0.630
8	0.59	0.57	0.580
9	0.57	0.54	0.555
10	0.58	0.56	0.570
11	0.53	0.58	0.555
12	0.58	0.56	0.570
13	0.55	0.57	0.560
14	0.58	0.56	0.571
15	0.59	0.57	0.581
16	0.59	0.56	0.575
17	0.59	0.57	0.580
18	0.57	0.52	0.545
19	0.59	0.56	0.575
20	0.59	0.54	0.565

Yr = 0.591

Xr – Yr = 0.011

0.3SDPA = 0.03118094

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Reviewed by : HS

Date : Jan 06, 2025

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	T3, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	2
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	2.04	2.01	2.025	0.003	0.0000	0.03	0.0009
2	2.05	2.00	2.025	0.003	0.0000	0.05	0.0025
3	2.06	2.00	2.030	0.008	0.0001	0.06	0.0036
4	2.00	2.05	2.025	0.003	0.0000	0.05	0.0025
5	2.05	2.09	2.070	0.048	0.0023	0.04	0.0016
6	2.09	2.04	2.065	0.043	0.0018	0.05	0.0025
7	2.05	2.09	2.070	0.048	0.0023	0.04	0.0016
8	2.01	2.03	2.020	-0.002	0.0000	0.02	0.0004
9	1.98	2.01	1.995	-0.027	0.0007	0.03	0.0009
10	2.00	2.02	2.010	-0.012	0.0001	0.02	0.0004
11	2.02	2.07	2.045	0.023	0.0005	0.05	0.0025
12	2.00	2.01	2.005	-0.017	0.0003	0.01	0.0001
13	2.01	1.99	2.000	-0.022	0.0005	0.02	0.0004
14	2.00	2.02	2.011	-0.012	0.0001	0.02	0.0004
15	2.01	2.03	2.021	-0.002	0.0000	0.02	0.0004
16	2.00	2.01	2.006	-0.016	0.0003	0.01	0.0001
17	2.01	2.02	2.015	-0.007	0.0001	0.01	0.0001
18	1.96	2.01	1.985	-0.037	0.0014	0.05	0.0025
19	2.00	2.03	2.015	-0.007	0.0001	0.03	0.0009
20	1.98	2.03	2.005	-0.017	0.0003	0.05	0.0025



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G	20	Xr =	2.022		0.027
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0109
Kons		2.022	ng/mL		0.0006
C =		2.022 ⁻⁶		Sx	0.023922
log C =		-5.6941973		Sx ²	0.000572
0,5 log C =		-2.8470986			0.0006672
1-0,5 log C =		3.84709868		Sw	0.025829
$2^{1-0,5 \log C} =$		14.3910373		Sw ²	0.0007
CV _{Horwitz} =		14.3910373		Sw ² /2	0.0003
SDPA(S _{Horwitz}) =		0.2910		Sx ² -(Sw ² /2)	0.0002
0.3 x S _{Horwitz}		0.08730035		Ss	0.015450
0.3SDPA	0.08730035				

Ss < 0.3 x S_{Horwitz}
0.015 < 0.087
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	1.97	2.02	1.995
2	2.01	2.00	2.005
3	1.99	2.01	2.000
4	2.02	2.00	2.011
5	2.03	2.01	2.021
6	2.01	2.00	2.006
7	2.02	2.01	2.015
8	2.01	1.96	1.985
9	2.03	2.00	2.015
10	2.03	1.98	2.005
11	1.95	1.92	1.935
12	1.95	2.00	1.975
13	2.09	2.05	2.070
14	1.93	1.94	1.935
15	1.94	2.05	1.995
16	2.03	2.01	2.020
17	2.01	1.98	1.995
18	2.02	2.00	2.010
19	1.97	2.02	1.995
20	2.01	2.00	2.005

Yr = 2.000

Xr – Yr = 0.023

0.3SDPA = 0.08730035

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF
Date : Jan 06, 2025

Reviewed by : HS
Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	T3, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	3
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	3.32	3.35	3.335	0.048	0.0023	0.03	0.0009
2	3.29	3.39	3.340	0.053	0.0028	0.10	0.0100
3	3.28	3.36	3.320	0.033	0.0011	0.08	0.0064
4	3.28	3.31	3.295	0.008	0.0001	0.03	0.0009
5	3.31	3.35	3.330	0.043	0.0019	0.04	0.0016
6	3.35	3.30	3.325	0.038	0.0015	0.05	0.0025
7	3.31	3.35	3.330	0.043	0.0019	0.04	0.0016
8	3.27	3.29	3.280	-0.007	0.0000	0.02	0.0004
9	3.24	3.27	3.255	-0.032	0.0010	0.03	0.0009
10	3.26	3.28	3.270	-0.017	0.0003	0.02	0.0004
11	3.28	3.23	3.255	-0.032	0.0010	0.05	0.0025
12	3.26	3.27	3.265	-0.022	0.0005	0.01	0.0001
13	3.27	3.25	3.260	-0.027	0.0007	0.02	0.0004
14	3.26	3.28	3.271	-0.016	0.0003	0.02	0.0004
15	3.27	3.29	3.281	-0.006	0.0000	0.02	0.0004
16	3.26	3.27	3.266	-0.021	0.0004	0.01	0.0001
17	3.27	3.28	3.275	-0.012	0.0001	0.01	0.0001
18	3.22	3.27	3.245	-0.042	0.0018	0.05	0.0025
19	3.26	3.29	3.275	-0.012	0.0001	0.03	0.0009
20	3.24	3.29	3.265	-0.022	0.0005	0.05	0.0025



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G	20	Xr =	3.287		0.035
CV _{Horwitz} =		2 ^{1-0,5 log C}		Σ	0.0183
Kons		3.287	ng/dL		0.0010
C =		3.287 ⁻⁶		Sx	0.031033
log C =		-5.4832201		Sx ²	0.000963
0,5 log C =		-2.7416100			0.000887
1-0,5 log C =		3.74161005		Sw	0.029743
2 ^{1-0,5 log C} =		13.3763264		Sw ²	0.0001
CV _{Horwitz} =		13.3763264		Sw ² /2	0.0004
SDPA(S _{Horwitz}) =		0.4397		Sx ² -(Sw ² /2)	0.0005
0.3 x S _{Horwitz}		0.13189793		Ss	0.022820
0.3SDPA	0.13189793				

Ss < 0.3 x S_{Horwitz}
0.023 < 0.132
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	3.27	3.24	3.255
2	3.31	3.21	3.260
3	3.28	3.20	3.240
4	3.13	3.20	3.165
5	3.17	3.13	3.150
6	3.12	3.17	3.145
7	3.17	3.13	3.150
8	3.11	3.09	3.100
9	3.09	3.06	3.075
10	3.10	3.08	3.090
11	3.05	3.10	3.075
12	3.09	3.08	3.085
13	3.07	3.09	3.080
14	3.10	3.08	3.091
15	3.11	3.09	3.101
16	3.09	3.08	3.086
17	3.10	3.09	3.095
18	3.09	3.04	3.065
19	3.11	3.08	3.095
20	3.11	3.06	3.085

Yr = 3.124

Xr – Yr = 0.162

0.3SDPA = 0.13189793

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	T4, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	1
Analyst Name	RF
SIUnit	µg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt ²
1	4.97	4.96	4.965	-0.037	0.0014	0.01	0.0001
2	4.96	4.95	4.955	-0.047	0.0022	0.01	0.0001
3	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
4	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
5	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
6	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
7	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
8	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
9	4.99	4.98	4.985	-0.017	0.0003	0.01	0.0001
10	4.98	4.99	4.985	-0.017	0.0003	0.01	0.0001
11	5.02	5.01	5.015	0.013	0.0002	0.01	0.0001
12	5.00	5.01	5.005	0.003	0.0000	0.01	0.0001
13	5.00	4.99	4.995	-0.007	0.0000	0.01	0.0001
14	5.00	4.99	4.995	-0.007	0.0000	0.01	0.0001
15	5.02	5.03	5.025	0.023	0.0005	0.01	0.0001
16	5.01	5.00	5.005	0.003	0.0000	0.01	0.0001
17	5.01	5.00	5.005	0.003	0.0000	0.01	0.0001
18	5.02	5.00	5.010	0.008	0.0001	0.02	0.0004
19	5.01	4.99	5.000	-0.002	0.0000	0.02	0.0004
20	5.01	4.99	5.000	-0.002	0.0000	0.02	0.0004



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G	20	Xr =	5.002		0.003
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0061
Kons		5.002	µg/dL		0.0003
C =		5.00175 ⁻⁵		Sx	0.017865
log C =		-4.30087802		Sx ²	0.000319
0,5 log C =		-2.15043901			7.25 ⁻⁰⁵
1-0,5 log C =		3.15043901		Sw	0.0085
$2^{1-0,5 \log C} =$		8.879257308		Sw ²	0.00007
CV _{Horwitz} =		8.879257308		Sw ² /2	0.000036
SDPA(S _{Horwitz}) =		0.4441		Sx ² -(Sw ² /2)	0.0003
0.3 x S _{Horwitz}		0.133235476		Ss	0.016819
0.3SDPA	0.133235476				

Ss < 0.3 x S_{Horwitz}
0.017 < 0.133
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	4.99	4.88	4.935
2	5.02	4.92	4.970
3	4.89	4.90	4.895
4	4.90	4.88	4.890
5	4.99	4.91	4.950
6	4.98	4.98	4.980
7	5.01	4.91	4.960
8	5.00	5.00	5.000
9	5.00	5.00	5.000
10	5.03	5.03	5.030
11	5.00	5.00	5.000
12	5.00	5.00	5.000
13	5.00	5.00	5.000
14	5.02	5.03	5.025
15	5.01	5.00	5.005
16	5.01	5.00	5.005
17	5.02	5.00	5.010
18	5.01	4.99	5.000
19	4.89	4.99	4.940
20	4.91	5.01	4.960

Yr = 4.978

Xr – Yr = 0.024

0.3SDPA = 0.133235476

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Reviewed by : HS

Date : Jan 06, 2023

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	T4, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	2
Analyst Name	RF
SIUnit	µg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	9.22	9.14	9.180	0.002	0.0000	0.08	0.006
2	9.24	9.12	9.180	0.002	0.0000	0.12	0.014
3	9.06	9.17	9.115	-0.063	0.0040	0.11	0.012
4	9.06	9.10	9.080	-0.098	0.0096	0.04	0.002
5	9.17	9.10	9.135	-0.043	0.0018	0.07	0.005
6	9.20	9.23	9.215	0.037	0.0014	0.03	0.001
7	9.21	9.13	9.170	-0.008	0.0001	0.08	0.006
8	9.03	8.95	8.990	-0.188	0.0353	0.08	0.006
9	9.13	9.07	9.100	-0.078	0.0061	0.06	0.004
10	9.15	9.06	9.105	-0.073	0.0053	0.09	0.008
11	9.17	9.08	9.125	-0.053	0.0028	0.09	0.008
12	9.15	9.28	9.215	0.037	0.0014	0.13	0.017
13	9.13	9.26	9.195	0.017	0.0003	0.13	0.017
14	9.16	9.28	9.220	0.042	0.0018	0.12	0.014
15	9.14	9.27	9.205	0.027	0.0007	0.13	0.017
16	9.22	9.30	9.260	0.082	0.0067	0.08	0.006
17	9.22	9.30	9.260	0.082	0.0067	0.08	0.006
18	9.23	9.33	9.280	0.102	0.0104	0.10	0.010
19	9.29	9.33	9.310	0.132	0.0174	0.04	0.002
20	9.16	9.28	9.220	0.042	0.0018	0.12	0.014



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Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

G	20	Xr =	9.178		0.177
CV _{Horwitz} =		2 ^{1-0,5 log C}		Σ	0.1136
Kons		9.178	µg/dL		0.0060
C =			0.00009178	Sx	0.077330
log C =			-4.0372519	Sx ²	0.005980
0,5 log C =			-2.0186259		0.00442
1-0,5 log C =			3.01862597	Sw	0.0665
2 ^{1-0,5 log C} =			8.10395393	Sw ²	0.00442
CV _{Horwitz} =			8.10395393	Sw ² /2	0.002210
SDPA(S _{Horwitz}) =			0.7438	Sx ² -(Sw ² /2)	0.0038
0.3 x S _{Horwitz}			0.22313427	Ss	0.061400
0.3SDPA	0.22313427				

Ss < 0.3 x S_{Horwitz}
0.061 < 0.223
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	9.03	9.09	9.060
2	9.06	9.02	9.040
3	9.03	9.05	9.040
4	9.05	9.15	9.100
5	9.05	9.02	9.035
6	9.05	9.08	9.065
7	9.05	9.08	9.065
8	9.00	9.00	9.000
9	9.12	9.10	9.110
10	9.11	9.11	9.110
11	9.13	9.13	9.130
12	9.32	9.04	9.180
13	9.04	9.04	9.040
14	9.02	9.13	9.075
15	9.01	9.12	9.065
16	9.05	9.15	9.100
17	9.06	9.15	9.105
18	9.06	9.08	9.070
19	9.08	9.08	9.080
20	9.12	9.10	9.110

Yr = 9.079

Xr – Yr = 0.099

0.3SDPA = 0.22313427

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	T4, Total
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	3
Analyst Name	RF
SIUnit	µg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt ²
1	15.13	15.09	15.110	-0.019	0.0004	0.040	0.0016
2	15.15	15.08	15.115	-0.014	0.0002	0.070	0.0049
3	15.15	15.10	15.125	-0.004	0.0000	0.050	0.0025
4	15.14	15.12	15.130	0.001	0.0000	0.020	0.0004
5	15.14	15.12	15.130	0.001	0.0000	0.020	0.0004
6	15.14	15.15	15.145	0.016	0.0002	0.010	0.0001
7	15.14	15.15	15.145	0.016	0.0002	0.010	0.0001
8	15.16	15.17	15.165	0.036	0.0013	0.010	0.0001
9	15.16	15.17	15.165	0.036	0.0013	0.010	0.0001
10	15.16	15.17	15.165	0.036	0.0013	0.010	0.0001
11	15.12	15.11	15.115	-0.014	0.0002	0.010	0.0001
12	15.12	15.08	15.100	-0.029	0.0009	0.040	0.0016
13	15.14	15.09	15.115	-0.014	0.0002	0.050	0.0025
14	15.12	15.11	15.115	-0.014	0.0002	0.010	0.0001
15	15.12	15.13	15.125	-0.004	0.0000	0.010	0.0001
16	15.12	15.10	15.110	-0.019	0.0004	0.020	0.0004
17	15.13	15.10	15.115	-0.014	0.0002	0.030	0.0009
18	15.12	15.15	15.135	0.006	0.0000	0.030	0.0009
19	15.12	15.07	15.095	-0.034	0.0012	0.050	0.0025
20	15.16	15.17	15.165	0.036	0.0013	0.010	0.0001



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G	20	Xr =	15.129		0.020
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0095
Kons		15.129	µg/dL		0.0005
C =			0.00015129	Sx	0.022318
log C =			-3.8201826	Sx ²	0.000498
0,5 log C =			-1.9100913		0.0004875
1-0,5 log C =			2.9100913	Sw	0.022079
$2^{1-0,5 \log C} =$			7.51665766	Sw ²	0.0005
CV _{Horwitz} =			7.51665766	Sw ² /2	0.0002
SDPA(S _{Horwitz}) =			1.1372	Sx ² -(Sw ² /2)	0.0003
0.3 x S _{Horwitz}			0.341164179	Ss	0.015948
0.3SDPA			0.341164179		

Ss < 0.3 x S_{Horwitz}
0.016 < 0.341
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	15.02	14.63	14.825
2	15.07	15.06	15.065
3	15.07	15.06	15.065
4	15.06	15.04	15.050
5	15.06	15.04	15.050
6	15.06	15.07	15.065
7	15.06	15.07	15.065
8	15.08	15.09	15.085
9	15.08	15.09	15.085
10	14.98	14.99	14.985
11	14.94	14.93	14.935
12	14.94	14.94	14.940
13	14.96	14.96	14.960
14	14.94	14.93	14.935
15	14.94	14.95	14.945
16	14.94	14.94	14.940
17	14.92	14.92	14.920
18	14.94	14.94	14.940
19	14.94	14.94	14.940
20	14.98	14.99	14.985

Yr = 14.989

Xr – Yr = 0.140

0.3SDPA = 0.341164179

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	Ferritin
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	1
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	89	87	88.000	-1.850	3.4225	2.00	4.00
2	90	93	91.500	1.650	2.7225	3.00	9.00
3	87	88	87.500	-2.350	5.5225	1.00	1.00
4	94	95	94.500	4.650	21.6225	1.00	1.00
5	87	88	87.500	-2.350	5.5225	1.00	1.00
6	89	88	88.500	-1.350	1.8225	1.00	1.00
7	91	88	89.500	-0.350	0.1225	3.00	9.00
8	90	89	89.500	-0.350	0.1225	1.00	1.00
9	91	95	93.000	3.150	9.9225	4.00	16.00
10	94	92	93.000	3.150	9.9225	2.00	4.00
11	87	90	88.500	-1.350	1.8225	3.00	9.00
12	87	89	88.000	-1.850	3.4225	2.00	4.00
13	88	92	90.000	0.150	0.0225	4.00	16.00
14	87	89	88.000	-1.850	3.4225	2.00	4.00
15	89	91	90.000	0.150	0.0225	2.00	4.00
16	90	88	89.000	-0.850	0.7225	2.00	4.00
17	90	88	89.000	-0.850	0.7225	2.00	4.00
18	89	90	89.500	-0.350	0.1225	1.00	1.00
19	90	95	92.500	2.650	7.0225	5.00	25.00
20	88	92	90.000	0.150	0.0225	4.00	16.00



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G	20	Xr =	89.850	134.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 78.0500
Kons		85.850	ng/mL	4.1079
C =		8.985 ⁻⁰⁵		Sx 2.026794
log C =		-4.0464819		Sx ² 4.107895
0,5 log C =		-2.023241		3.35
1-0,5 log C =		3.023241		Sw 1.830301
$2^{1-0,5 \log C} =$		8.12991889		Sw ² 3.350
CV _{Horwitz} =		8.12991889		Sw ² /2 1.6750
SDPA(S _{Horwitz}) =		7.3047		Sx ² -(Sw ² /2) 2.4329
0.3 x S _{Horwitz}		2.19141964		Ss 1.559774
0.3SDPA	2.19141964			

Ss < 0.3 x S_{Horwitz}
1.560 < 2.191
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	91	95	93.000
2	94	92	93.000
3	87	90	88.500
4	87	89	88.000
5	88	92	90.000
6	87	89	88.000
7	89	91	90.000
8	90	88	89.000
9	90	88	89.000
10	94	92	93.000
11	87	90	88.500
12	87	89	88.000
13	88	92	90.000
14	87	89	88.000
15	89	91	90.000
16	90	88	89.000
17	90	88	89.000
18	89	90	89.500
19	90	95	92.500
20	88	92	90.000

Yr = 89.800

Xr – Yr = 0.050

0.3SDPA = 2.19141964

[Xr-Yr] < 0.3 SDPA

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Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	01/06/2025
Analyte	Ferritin
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	2
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	291	284	287.5	-7.375	54.3906	7.00	49.00
2	291	286	288.5	-6.375	40.6406	5.00	25.00
3	295	291	293.0	-1.875	3.5156	4.00	16.00
4	289	297	293.0	-1.875	3.5156	8.00	64.00
5	302	293	297.5	2.625	6.8906	9.00	81.00
6	280	292	286.0	-8.875	78.7656	12.00	144.00
7	290	299	294.5	-0.375	0.1406	9.00	81.00
8	292	299	295.5	0.625	0.3906	7.00	49.00
9	292	302	297.0	2.125	4.5156	10.00	100.00
10	296	303	299.5	4.625	21.3906	7.00	49.00
11	296	300	298.0	3.125	9.7656	4.00	16.00
12	296	295	295.5	0.625	0.3906	1.00	1.00
13	296	303	299.5	4.625	21.3906	7.00	49.00
14	295	296	295.5	0.625	0.3906	1.00	1.00
15	296	304	300.0	5.125	26.2656	8.00	64.00
16	291	295	293.0	-1.875	3.5156	4.00	16.00
17	293	299	296.0	1.125	1.2656	6.00	36.00
18	295	297	296.0	1.125	1.2656	2.00	4.00
19	299	297	298.0	3.125	9.7656	2.00	4.00
20	291	297	294.0	-0.875	0.7656	6.00	36.00



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G	20	Xr =	294.875	885.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 288.9375
Kons		294.875	ng/mL	15.2072
C =		0.00029488		Sx 3.899646
log C =		-3.5303620		Sx ² 15.207237
0,5 log C =		-1.7651810		22.125
1-0,5 log C =		2.76518102		Sw 4.703722
$2^{1-0,5 \log C} =$		6.79833296		Sw ² 22.125
CV _{Horwitz} =		6.79833296		Sw ² /2 11.0625
SDPA(S _{Horwitz}) =		20.0466		Sx ² -(Sw ² /2) 4.1447
0.3 x S _{Horwitz}		6.01397529		Ss 2.035863
0.3SDPA	6.01397529			

Ss < 0.3 x S_{Horwitz}
2.036 < 6.014
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	292	296	294.000
2	294	299	296.500
3	295	291	293.000
4	295	292	293.500
5	291	292	291.500
6	291	300	295.500
7	293	294	293.500
8	293	294	293.500
9	291	297	294.000
10	291	298	294.500
11	290	297	293.500
12	291	297	294.000
13	291	292	291.500
14	289	291	290.000
15	290	293	291.500
16	283	287	285.000
17	286	292	289.000
18	283	293	288.000
19	283	294	288.500
20	285	292	288.500

Yr = 291.950

Xr – Yr = 3.925

0.3SDPA = 6.01397529

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Date Tested	01/06/2025
Analyte	Ferritin
Method	Abrcht
Product Name	Lyphocheck Immunoassay Plus Control
Lot Number	40470
Level	3
Analyst Name	RF
SIUnit	ng/mL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	825	823	824.0	-13.125	172.2656	2.00	4.00
2	835	833	834.0	-3.125	9.7656	2.00	4.00
3	831	837	834.0	-3.125	9.7656	6.00	36.00
4	836	829	832.5	-4.625	21.3906	7.00	49.00
5	818	823	820.5	-16.625	276.3906	5.00	25.00
6	822	831	826.5	-10.625	112.8906	9.00	81.00
7	838	843	840.5	3.375	11.3906	5.00	25.00
8	848	841	844.5	7.375	54.3906	7.00	49.00
9	844	840	842.0	4.875	23.7656	4.00	16.00
10	845	842	843.5	6.375	40.6406	3.00	9.00
11	844	841	842.5	5.375	28.8906	3.00	9.00
12	841	847	844.0	6.875	47.2656	6.00	36.00
13	846	839	842.5	5.375	28.8906	7.00	49.00
14	847	842	844.5	7.375	54.3906	5.00	25.00
15	841	836	838.5	1.375	1.8906	5.00	25.00
16	840	835	837.5	0.375	0.1406	5.00	25.00
17	835	843	839.0	1.875	3.5156	8.00	64.00
18	842	836	839.0	1.875	3.5156	6.00	36.00
19	841	834	837.5	0.375	0.1406	7.00	49.00
20	833	838	835.5	-1.625	2.6406	5.00	25.00



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G	20	Xr =	837.125	641.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 903.9375
Kons		837.125	ng/mL	47.5757
C =		0.00083713		Sx 6.897511
log C =		-3.0772097		Sx ² 47.575658
0,5 log C =		-1.5386048		16.025
1-0,5 log C =		2.53860484		Sw 4.003124
$2^{1-0,5 \log C} =$		5.81026854		Sw ² 16.025
CV _{Horwitz} =		5.81026854		Sw ² /2 8.0125
SDPA(S _{Horwitz}) =		48.6392		Sx ² -(Sw ² /2) 39.5632
0.3 x S _{Horwitz}		14.59176316		Ss 6.289925
0.3SDPA	14.59176316			

Ss < 0.3 x S_{Horwitz}
6.290 < 14.592
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	832	835	833.500
2	831	835	833.000
3	835	839	837.000
4	833	836	834.500
5	829	833	831.000
6	834	837	835.500
7	831	833	832.000
8	829	832	830.500
9	831	837	834.000
10	830	833	831.500
11	831	837	834.000
12	828	832	830.000
13	833	837	835.000
14	834	838	836.000
15	828	832	830.000
16	827	831	829.000
17	829	834	831.500
18	829	833	831.000
19	828	832	830.000
20	830	834	832.000

Yr = 832.550

Xr – Yr = 4.575

0.3SDPA = 14.59176316

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : RF

Date : Jan 06, 2025

Reviewed by : HS

Date : Jan 06, 2025



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Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	12/16/2025
Analyte	HEMOGLOBIN
Method	Smxx
Product Name	Liquicheck Hematology Control
Lot Number	82370
Level	1
Analyst Name	PY
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	5.8	5.8	5.8	0.072	0.0053	0.00	0.00
2	5.7	5.9	5.8	0.072	0.0053	0.20	0.04
3	5.7	5.9	5.8	0.072	0.0053	0.20	0.04
4	5.6	5.7	5.7	-0.078	0.0060	0.10	0.01
5	5.7	5.8	5.8	0.022	0.0005	0.10	0.01
6	5.6	5.6	5.6	-0.128	0.0163	0.00	0.00
7	5.8	5.7	5.8	0.022	0.0005	0.10	0.01
8	5.8	5.7	5.8	0.022	0.0005	0.10	0.01
9	5.7	5.6	5.7	-0.078	0.0060	0.10	0.01
10	5.7	5.9	5.8	0.072	0.0053	0.20	0.04
11	5.8	5.7	5.8	0.022	0.0005	0.10	0.01
12	5.7	5.8	5.8	0.022	0.0005	0.10	0.01
13	5.8	5.7	5.8	0.022	0.0005	0.10	0.01
14	5.7	5.8	5.8	0.022	0.0005	0.10	0.01
15	5.7	5.8	5.8	0.022	0.0005	0.10	0.01
16	5.8	5.7	5.8	0.022	0.0005	0.10	0.01
17	5.7	5.8	5.8	0.022	0.0005	0.10	0.01
18	5.7	5.6	5.7	-0.078	0.0060	0.10	0.01
19	5.6	5.7	5.7	-0.078	0.0060	0.10	0.01
20	5.6	5.7	5.7	-0.078	0.0060	0.10	0.01



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www.bio-rad.com/qualitycontrol

Bio-Rad Laboratories Homogeneity & Stability Testing Workbook, Revision 5

Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

G	20	Xr = 5.728	0.27
CV _{Horwitz} =	$2^{1-0,5 \log C}$		Σ 0.0724
Kons	5.728	g/dL	0.0038
C =	0.057275		Sx 0.0617
log C =	-1.2403490		Sx ² 0.0038
0,5 log C =	-0.6210175		0.00675
1-0,5 log C =	1.6210175		Sw 0.082158
$2^{1-0,5 \log C} =$	3.07591887		Sw ² 0.007
CV _{Horwitz} =	3.07591887		Sw ² /2 0.003
SDPA(S _{Horwitz}) =	0.1762		Sx ² -(Sw ² /2) 0.0004
0.3 x S _{Horwitz}	0.05285198		Ss 0.020838
0.3SDPA	0.05285198		

Ss < 0.3 x S_{Horwitz}
0.021 < 0.053
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	5.6	5.7	5.7
2	5.7	5.8	5.8
3	5.7	5.7	5.7
4	5.6	5.8	5.7
5	5.7	5.8	5.8
6	5.7	5.7	5.7
7	5.6	5.7	5.7
8	5.6	5.7	5.7
9	5.7	5.6	5.7
10	5.7	5.8	5.8
11	5.7	5.7	5.7
12	5.7	5.8	5.8
13	5.6	5.7	5.7
14	5.6	5.8	5.7
15	5.6	5.8	5.7
16	5.6	5.7	5.7
17	5.6	5.8	5.7
18	5.6	5.8	5.7
19	5.6	5.7	5.7
20	5.8	5.7	5.8

Yr = 5.695

Xr – Yr = 0.032

0.3SDPA = 0.05285198

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Bio-Rad Laboratories
Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	12/16/2025
Analyte	HEMOGLOBIN
Method	Smxx
Product Name	Liquicheck Hematology Control
Lot Number	82370
Level	2
Analyst Name	PY
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	12.1	12.1	12.1	-0.072	0.0053	0.00	0.00
2	12.3	12.2	12.3	0.078	0.0060	0.10	0.01
3	12.3	12.2	12.3	0.078	0.0060	0.10	0.01
4	12.0	12.2	12.1	-0.072	0.0053	0.20	0.04
5	12.1	12.2	12.2	-0.023	0.0005	0.10	0.01
6	12.3	12.2	12.3	0.078	0.0060	0.10	0.01
7	12.2	12.1	12.2	-0.023	0.0005	0.10	0.01
8	12.2	12.1	12.2	-0.023	0.0005	0.10	0.01
9	12.0	12.1	12.1	-0.123	0.0150	0.10	0.01
10	12.0	12.2	12.1	-0.072	0.0053	0.20	0.04
11	12.1	12.2	12.2	-0.023	0.0005	0.10	0.01
12	12.3	12.3	12.3	0.128	0.0163	0.00	0.00
13	12.1	12.3	12.2	0.027	0.0008	0.20	0.04
14	12.2	12.0	12.1	-0.073	0.0053	0.20	0.04
15	12.4	12.1	12.3	0.078	0.0060	0.30	0.09
16	12.2	12.1	12.2	-0.023	0.0005	0.10	0.01
17	12.0	12.1	12.1	-0.123	0.0150	0.10	0.01
18	12.3	12.1	12.2	0.027	0.0008	0.20	0.04
19	12.3	12.2	12.3	0.078	0.0060	0.10	0.01
20	12.3	12.2	12.3	0.078	0.0060	0.10	0.01



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G	20	Xr =	11.373	0.41
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.1074
Kons		12.173	g/dL	0.0057
C =		0.121725		Sx 0.0752
log C =		-0.914620		Sx ² 0.0057
0,5 log C =		-0.457310		0.01025
1-0,5 log C =		1.4573101		Sw 0.101242
$2^{1-0,5 \log C} =$		2.7459591		Sw ² 0.010
CV _{Horwitz} =		2.7459591		Sw ² /2 0.005
SDPA(S _{Horwitz}) =		0.3343		Sx ² -(Sw ² /2) 0.0005
0.3 x S _{Horwitz}		0.10027556		Ss 0.022942
0.3SDPA	0.10027556			

Ss < 0.3 x S_{Horwitz}
0.023 < 0.100
HOMOGENOUS



2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	12.1	12.0	12.1
2	12.0	11.9	12.0
3	12.1	12.0	12.1
4	12.0	12.1	12.1
5	12.1	12.1	12.1
6	12.2	12.1	12.2
7	12.1	12.2	12.2
8	12.1	12.2	12.2
9	12.0	12.2	12.1
10	12.1	12.2	12.2
11	12.0	12.1	12.1
12	12.1	12.2	12.2
13	12.3	12.3	12.3
14	12.1	12.3	12.2
15	12.2	12.2	12.2
16	12.1	12.1	12.1
17	12.1	12.1	12.1
18	12.1	12.1	12.1
19	12.2	12.1	12.2
20	12.0	12.1	12.1

Yr = 12.115

Xr – Yr = 0.057

0.3SDPA = 0.10027556

[Xr-Yr] < 0.3 SDPA

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Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	12/16/2025
Analyte	HEMOGLOBIN
Method	Smxx
Product Name	Liquicheck Hematology Control
Lot Number	82370
Level	3
Analyst Name	PY
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
2	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
3	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
4	16.4	16.5	16.5	0.040	0.0016	0.10	0.01
5	16.4	16.5	16.5	0.040	0.0016	0.10	0.01
6	16.5	16.7	16.6	0.190	0.0361	0.20	0.04
7	16.4	16.4	16.4	-0.010	0.0001	0.00	0.00
8	16.4	16.3	16.4	-0.060	0.0036	0.10	0.01
9	16.4	16.3	16.4	-0.060	0.0036	0.10	0.01
10	16.4	16.3	16.4	-0.060	0.0036	0.10	0.01
11	16.3	16.4	16.4	-0.060	0.0036	0.10	0.01
12	16.3	16.4	16.4	-0.060	0.0036	0.10	0.01
13	16.5	16.6	16.6	0.140	0.0196	0.10	0.01
14	16.3	16.5	16.4	-0.010	0.0001	0.20	0.04
15	16.3	16.3	16.3	-0.110	0.0121	0.00	0.00
16	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
17	16.3	16.4	16.4	-0.060	0.0036	0.10	0.01
18	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
19	16.5	16.4	16.5	0.040	0.0016	0.10	0.01
20	16.2	16.3	16.3	-0.160	0.0256	0.10	0.01



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G	20	Xr =	16.410	0.24
CV _{Horwitz} =		2 ^{1-0,5 log C}		Σ 0.1280
Kons		16.410	g/dL	0.0067
C =		0.164		Sx 0.0821
log C =		-0.784891		Sx ² 0.0067
0,5 log C =		-0.392446		0.006
1-0,5 log C =		1.3924457		Sw 0.077460
2 ^{1-0,5 log C} =		2.6252334		Sw ² 0.006
CV _{Horwitz} =		2.6252334		Sw ² /2 0.003
SDPA(S _{Horwitz}) =		0.4308		Sx ² -(Sw ² /2) 0.0037
0.3 x S _{Horwitz}		0.1292402		Ss 0.061130
0.3SDPA	0.1292402			

Ss < 0.3 x S_{Horwitz}
0.0611 < 0.129
HOMOGENOUS



2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	16.3	16.5	16.4
2	16.4	16.5	16.5
3	16.3	16.4	16.4
4	16.2	16.4	16.3
5	16.3	16.5	16.4
6	16.3	16.3	16.3
7	16.5	16.4	16.5
8	16.3	16.4	16.4
9	16.5	16.4	16.5
10	16.5	16.4	16.5
11	16.4	16.5	16.5
12	16.4	16.5	16.5
13	16.5	16.7	16.6
14	16.4	16.4	16.4
15	16.2	16.3	16.3
16	16.4	16.3	16.4
17	16.4	16.3	16.4
18	16.3	16.4	16.4
19	16.3	16.4	16.4
20	16.5	16.6	16.6

Yr = 16.400

Xr – Yr = 0.010

0.3SDPA = 0.1292402

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Date Tested	12/16/2025
Analyte	HEMATOCRIT
Method	Smxx
Product Name	Liquicheck Hematology Control
Lot Number	82370
Level	1
Analyst Name	PY
SIUnit	%

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	16.5	16.6	16.6	0.014	0.0002	0.10	0.01
2	16.5	16.6	16.6	0.014	0.0002	0.10	0.01
3	16.4	16.6	16.5	-0.036	0.0013	0.20	0.04
4	16.4	16.5	16.5	-0.086	0.0074	0.10	0.01
5	16.5	16.7	16.6	0.064	0.0041	0.20	0.04
6	16.5	16.5	16.5	-0.061	0.0038	0.05	0.00
7	16.5	16.5	16.5	-0.061	0.0038	0.05	0.00
8	16.6	16.5	16.6	0.014	0.0002	0.10	0.01
9	16.7	16.6	16.6	0.089	0.0079	0.15	0.02
10	16.4	16.5	16.4	-0.111	0.0124	0.05	0.00
11	16.3	16.4	16.4	-0.186	0.0347	0.10	0.01
12	16.7	16.6	16.7	0.114	0.0129	0.10	0.01
13	16.7	16.6	16.7	0.114	0.0129	0.10	0.01
14	16.6	16.6	16.6	0.039	0.0015	0.05	0.00
15	16.5	16.5	16.5	-0.061	0.0038	0.05	0.00
16	16.5	16.5	16.5	-0.036	0.0013	0.00	0.00
17	16.6	16.5	16.6	0.014	0.0002	0.10	0.01
18	16.7	16.6	16.6	0.089	0.0079	0.15	0.02
19	16.6	16.6	16.6	0.039	0.0015	0.05	0.00
20	16.6	16.6	16.6	0.039	0.0015	0.05	0.00

G	20	Xr =	16.536	0.22
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.1193
Kons		16.536 %		0.0063
C =		0.1653625	Sx	0.0793
log C =		-0.781563	Sx ²	0.0063
0,5 log C =		-0.390782		0.0055625
1-0,5 log C =		1.3907814	Sw	0.074582
$2^{1-0,5 \log C} =$		2.6222068	Sw ²	0.006
CV _{Horwitz} =		2.6222068	Sw ² /2	0.003
SDPA(S _{Horwitz}) =		0.436	Sx ² -(Sw ² /2)	0.0035
0.3 x S _{Horwitz}		0.13008440	Ss	0.059161
0.3SDPA	0.13008440			

Ss < 0.3 x S_{Horwitz}
0.059 < 0.130
HOMOGENOUS



2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	16.4	16.5	16.5
2	16.5	16.4	16.4
3	16.4	16.5	16.5
4	16.5	16.4	16.5
5	16.4	16.5	16.5
6	16.5	16.4	16.5
7	16.5	16.5	16.5
8	16.4	16.5	16.5
9	16.5	16.4	16.4
10	16.4	16.5	16.5
11	16.5	16.4	16.5
12	16.5	16.4	16.5
13	16.5	16.4	16.5
14	16.4	16.4	16.4
15	16.4	16.5	16.5
16	16.4	16.5	16.5
17	16.4	16.3	16.4
18	16.5	16.4	16.4
19	16.4	16.4	16.4
20	16.4	16.4	16.4

Yr = 16.433

Xr – Yr = 0.104

0.3SDPA = 0.13008440

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Date Tested	12/16/2025
Analyte	HEMATOCRIT
Method	Smxx
Product Name	Lyphocheck Hematology Control
Lot Number	82370
Level	2
Analyst Name	PY
SIUnit	%

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	34.5	34.4	34.5	-0.156	0.0244	0.10	0.01
2	34.5	34.4	34.4	-0.181	0.0329	0.05	0.00
3	34.5	34.4	34.4	-0.181	0.0329	0.05	0.00
4	34.8	34.8	34.8	0.169	0.0285	0.05	0.00
5	34.8	34.8	34.8	0.169	0.0285	0.05	0.00
6	34.7	34.6	34.6	0.019	0.0004	0.05	0.00
7	34.6	34.6	34.6	-0.006	0.0000	0.00	0.00
8	34.7	34.6	34.6	0.019	0.0004	0.05	0.00
9	34.6	34.5	34.6	-0.056	0.0032	0.10	0.01
10	34.8	34.9	34.9	0.244	0.0594	0.10	0.01
11	34.8	34.9	34.9	0.244	0.0594	0.10	0.01
12	34.8	34.8	34.8	0.169	0.0285	0.05	0.00
13	34.8	34.8	34.8	0.169	0.0285	0.05	0.00
14	34.5	34.4	34.5	-0.156	0.0244	0.10	0.01
15	34.6	34.5	34.5	-0.081	0.0066	0.05	0.00
16	34.5	34.4	34.5	-0.156	0.0244	0.10	0.01
17	34.6	34.6	34.6	-0.031	0.0010	0.05	0.00
18	34.5	34.4	34.4	-0.181	0.0329	0.05	0.00
19	34.7	34.6	34.6	0.019	0.0004	0.05	0.00
20	34.7	34.5	34.6	-0.031	0.0010	0.15	0.02



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G	20	Xr =	34.606	0.11
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.4173
Kons		34.606	%	0.0220
C =		0.3460625		Sx 0.1482
log C =		-0.460845		Sx ² 0.0220
0,5 log C =		-0.230423		0.002813
1-0,5 log C =		1.2304227		Sw 0.05303
$2^{1-0,5 \log C} =$		2.3463573		Sw ² 0.003
CV _{Horwitz} =		2.3463573		Sw ² /2 0.001
SDPA(S _{Horwitz}) =		0.8120		Sx ² -(Sw ² /2) 0.0206
0.3 x S _{Horwitz}		0.24359588		Ss 0.143385
0.3SDPA	0.24359588			

Ss < 0.3 x S_{Horwitz}
0.143 < 0.244
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	34.7	34.6	34.6
2	34.7	34.6	34.6
3	34.6	34.6	34.6
4	34.6	34.5	34.5
5	34.6	34.5	34.6
6	34.7	34.6	34.6
7	34.4	34.5	34.5
8	34.5	34.5	34.5
9	34.4	34.5	34.5
10	34.5	34.4	34.4
11	34.4	34.4	34.4
12	34.7	34.6	34.6
13	34.7	34.6	34.6
14	34.6	34.6	34.6
15	34.7	34.7	34.7
16	34.6	34.6	34.6
17	34.6	34.7	34.6
18	34.7	34.6	34.7
19	34.7	34.5	34.6
20	34.7	34.6	34.6

Yr = 34.563

Xr – Yr = 0.044

0.3SDPA = 0.24359588

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Reviewed by : DN

Date : Dec 16, 2025

Date : Dec 16, 2025



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Date Tested	12/16/2025
Analyte	HEMATOCRIT
Method	Smxx
Product Name	Lyphocheck Hematology Control
Lot Number	82370
Level	3
Analyst Name	PY
SIUnit	%

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	47.3	47.4	47.4	-0.017	0.0003	0.10	0.01
2	47.2	47.3	47.3	-0.118	0.0138	0.10	0.01
3	47.2	47.3	47.3	-0.118	0.0138	0.10	0.01
4	47.5	47.3	47.4	0.032	0.0011	0.20	0.04
5	47.5	47.7	47.6	0.233	0.0541	0.20	0.04
6	47.5	47.4	47.5	0.082	0.0068	0.10	0.01
7	47.5	47.5	47.5	0.133	0.0176	0.00	0.00
8	47.4	47.4	47.4	0.032	0.0011	0.00	0.00
9	47.3	47.3	47.3	-0.068	0.0046	0.00	0.00
10	47.3	47.2	47.3	-0.118	0.0138	0.10	0.01
11	47.5	47.5	47.5	0.133	0.0176	0.00	0.00
12	47.5	47.5	47.5	0.133	0.0176	0.00	0.00
13	47.3	47.1	47.2	-0.168	0.0281	0.20	0.04
14	47.5	47.6	47.6	0.183	0.0333	0.10	0.01
15	47.4	47.4	47.4	0.032	0.0011	0.00	0.00
16	47.3	47.2	47.3	-0.118	0.0138	0.10	0.01
17	47.3	47.3	47.3	-0.068	0.0046	0.00	0.00
18	47.3	47.2	47.3	-0.118	0.0138	0.10	0.01
19	47.3	47.2	47.3	-0.118	0.0138	0.10	0.01
20	47.5	47.3	47.4	0.032	0.0011	0.20	0.04



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G	20	Xr =	47.368	0.25
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.2714
Kons		47.368	%	0.0143
C =		0.473675		Sx 0.1195
log C =		-0.324520		Sx ² 0.0143
0,5 log C =		-0.162259		0.00625
1-0,5 log C =		1.1622597		Sw 0.079057
$2^{1-0,5 \log C} =$		2.2380771		Sw ² 0.006
CV _{Horwitz} =		2.2380771		Sw ² /2 0.003
SDPA(S _{Horwitz}) =		1.0601		Sx ² -(Sw ² /2) 0.0112
0.3 x S _{Horwitz}		0.31803635		Ss 0.105631
0.3SDPA	0.31803635			

Ss < 0.3 x S_{Horwitz}
0.106 < 0.318
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	47.3	47.3	47.3
2	47.5	47.7	47.6
3	47.5	47.4	47.5
4	47.5	47.5	47.5
5	47.4	47.4	47.4
6	47.3	47.3	47.3
7	47.3	47.3	47.3
8	47.5	47.5	47.5
9	47.5	47.5	47.5
10	47.3	47.3	47.3
11	47.5	47.6	47.6
12	47.5	47.5	47.5
13	47.4	47.4	47.4
14	47.3	47.3	47.3
15	47.3	47.3	47.3
16	47.3	47.3	47.3
17	47.5	47.7	47.6
18	47.5	47.4	47.5
19	47.5	47.5	47.5
20	47.4	47.4	47.4

Yr = 47.423

Xr – Yr = 0.055

0.3SDPA = 0.31803635

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Tel: (949) 598-1200
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Date Tested	12/16/2025
Analyte	MCHC
Method	Smxx
Product Name	Lyphocheck Hematology Control
Lot Number	82370
Level	1
Analyst Name	PY
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	34.4	34.5	34.5	0.222	0.0495	0.10	0.01
2	33.8	33.5	33.7	-0.578	0.3335	0.30	0.09
3	33.9	34.3	34.1	-0.128	0.0163	0.40	0.16
4	34.7	34.4	34.6	0.323	0.1040	0.30	0.09
5	34.2	34.0	34.1	-0.128	0.0163	0.20	0.04
6	34.3	34.1	34.2	-0.028	0.0008	0.20	0.04
7	34.3	34.1	34.2	-0.028	0.0008	0.20	0.04
8	34.4	33.8	34.1	-0.128	0.0163	0.60	0.36
9	34.2	34.3	34.3	0.022	0.0005	0.10	0.01
10	34.6	34.4	34.5	0.272	0.0743	0.20	0.04
11	34.7	34.4	34.6	0.323	0.1040	0.30	0.09
12	33.8	34.3	34.1	-0.178	0.0315	0.50	0.25
13	34.5	34.3	34.4	0.172	0.0298	0.20	0.04
14	34.4	34.7	34.6	0.322	0.1040	0.30	0.09
15	34.1	33.5	33.8	-0.428	0.1828	0.60	0.36
16	34.1	34.3	34.2	-0.028	0.0008	0.20	0.04
17	34.7	34.4	34.6	0.322	0.1040	0.30	0.09
18	34.3	33.5	33.9	-0.328	0.1073	0.80	0.64
19	34.4	34.1	34.3	0.022	0.0005	0.30	0.09
20	34.3	34.1	34.2	-0.028	0.0008	0.20	0.04



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G	20	Xr =	34.228	2.61
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 1.2774
Kons		34.228	g/dL	0.0672
C =		0.342275		Sx 0.2593
log C =		-0.465625		Sx ² 0.0672
0,5 log C =		-0.232812		0.06525
1-0,5 log C=		1.2328124		Sw 0.255441
$2^{1-0,5 \log C}=$		2.3502470		Sw ² 0.065
CV _{Horwitz} =		2.3502470		Sw ² /2 0.033
SDPA(S _{Horwitz})=		0.8044		Sx ² -(Sw ² /2) 0.0346
0.3 x S _{Horwitz}		0.2413292		Ss 0.186025
0.3SDPA	0.2413292			

Ss < 0.3 x S_{Horwitz}
0.186 < 0.241
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	34.8	34.6	34.7
2	34.6	34.6	34.6
3	34.5	34.5	34.5
4	33.9	33.6	33.8
5	34.0	34.0	34.0
6	34.8	34.8	34.8
7	33.9	33.6	33.8
8	34.0	34.0	34.0
9	34.4	34.2	34.3
10	33.9	33.9	33.9
11	32.9	32.9	32.9
12	33.7	33.7	33.7
13	34.8	34.8	34.8
14	33.9	33.6	33.8
15	34.0	34.0	34.0
16	34.8	34.6	34.7
17	34.8	34.8	34.8
18	34.4	34.2	34.3
19	34.8	34.6	34.7
20	34.7	34.7	34.7

Yr = 34.233

Xr – Yr = 0.005

0.3SDPA = 0.2413292

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Date Tested	12/16/2025
Analyte	MCHC
Method	Smxx
Product Name	Lyphocheck Hematology Control
Lot Number	82370
Level	2
Analyst Name	DS
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	35.3	35.2	35.3	0.078	0.0060	0.10	0.01
2	34.9	35.1	35.0	-0.172	0.0298	0.20	0.04
3	35.4	35.1	35.2	0.053	0.0028	0.25	0.06
4	34.9	35.2	35.1	-0.123	0.0150	0.30	0.09
5	35.5	35.4	35.5	0.278	0.0770	0.10	0.01
6	34.9	35.2	35.1	-0.123	0.0150	0.30	0.09
7	34.8	34.7	34.7	-0.447	0.2003	0.05	0.00
8	35.3	35.2	35.3	0.078	0.0060	0.10	0.01
9	35.4	35.3	35.4	0.178	0.0315	0.10	0.01
10	34.9	35.6	35.3	0.078	0.0060	0.70	0.49
11	35.6	35.6	35.6	0.428	0.1828	0.00	0.00
12	35.1	35.5	35.3	0.127	0.0163	0.40	0.16
13	34.9	35.1	35.0	-0.172	0.0298	0.20	0.04
14	35.4	35.2	35.3	0.127	0.0163	0.20	0.04
15	35.3	34.8	35.1	-0.123	0.0150	0.50	0.25
16	35.2	34.9	35.1	-0.123	0.0150	0.30	0.09
17	35.2	35.5	35.4	0.178	0.0315	0.30	0.09
18	34.9	35.2	35.1	-0.123	0.0150	0.30	0.09
19	34.9	34.9	34.9	-0.273	0.0743	0.00	0.00
20	35.1	35.4	35.3	0.078	0.0060	0.30	0.09



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G	20	Xr =	35.173	1.67
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.7911
Kons		35.173	g/dL	0.0416
C =		0.351725		Sx 0.2041
log C =		-0.453796		Sx ² 0.0416
0,5 log C =		-0.226898		0.041625
1-0,5 log C=		1.2268983		Sw 0.204022
$2^{1-0,5 \log C}=$		2.3406324		Sw ² 0.042
CV _{Horwitz} =		2.3406324		Sw ² /2 0.021
SDPA(S _{Horwitz})=		0.8233		Sx ² -(Sw ² /2) 0.0208
0.3 x S _{Horwitz}		0.2469777		Ss 0.144311
0.3SDPA	0.2469777			

Ss < 0.3 x S_{Horwitz}
0.144 < 0.247
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	35.3	35.2	35.3
2	34.9	34.9	34.9
3	35.4	35.4	35.4
4	34.9	34.9	34.9
5	35.5	35.5	35.5
6	35.9	35.9	35.9
7	34.8	34.6	34.7
8	34.5	34.5	34.5
9	33.3	33.6	33.5
10	35.7	35.7	35.7
11	35.4	35.3	35.4
12	35.7	35.6	35.7
13	35.6	35.6	35.6
14	35.5	35.5	35.5
15	35.9	35.9	35.9
16	35.4	35.4	35.4
17	35.8	35.8	35.8
18	34.8	34.6	34.7
19	33.9	34.1	34.0
20	33.6	33.6	33.6

Yr = 35.079

Xr – Yr = 0.094

0.3SDPA = 0.2469777

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



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Tel: (949) 598-1200
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Date Tested	12/16/2025
Analyte	MCHC
Method	Ssmx
Product Name	Lyphocheck Hematology Control
Lot Number	82370
Level	3
Analyst Name	PY
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt ²
1	35.0	34.8	34.9	-0.080	0.0064	0.20	0.04
2	34.9	35.0	35.0	-0.030	0.0009	0.10	0.01
3	34.8	35.0	34.9	-0.080	0.0064	0.20	0.04
4	34.8	35.0	34.9	-0.080	0.0064	0.20	0.04
5	35.0	34.8	34.9	-0.080	0.0064	0.20	0.04
6	34.9	35.2	35.1	0.070	0.0049	0.30	0.09
7	34.7	35.0	34.9	-0.130	0.0169	0.30	0.09
8	35.1	34.8	35.0	-0.030	0.0009	0.30	0.09
9	34.9	34.8	34.9	-0.130	0.0169	0.10	0.01
10	34.9	35.0	35.0	-0.030	0.0009	0.10	0.01
11	35.3	35.0	35.2	0.170	0.0289	0.30	0.09
12	34.9	35.2	35.1	0.070	0.0049	0.30	0.09
13	35.0	34.9	35.0	-0.030	0.0009	0.10	0.01
14	35.0	34.8	34.9	-0.080	0.0064	0.20	0.04
15	35.0	35.2	35.1	0.120	0.0144	0.20	0.04
16	34.7	35.0	34.9	-0.130	0.0169	0.30	0.09
17	35.1	35.1	35.1	0.120	0.0144	0.00	0.00
18	35.3	34.9	35.1	0.120	0.0144	0.40	0.16
19	34.9	34.8	34.9	-0.130	0.0169	0.10	0.01
20	35.4	35.3	35.4	0.370	0.1369	0.10	0.01



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G	20	Xr =	34.980	1.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 0.3220
Kons		34.980	g/dL	0.0169
C =		0.3498		Sx 0.1302
log C =		-0.4561801		Sx ² 0.0169
0,5 log C =		-0.2280900		0.025
1-0,5 log C =		1.22809009		Sw 0.158114
$2^{1-0,5 \log C} =$		2.34256665		Sw ² 0.025
CV _{Horwitz} =		2.34256665		Sw ² /2 0.013
SDPA(S _{Horwitz}) =		0.8194		Sx ² -(Sw ² /2) 0.0044
0.3 x S _{Horwitz}		0.24582894		Ss 0.066689
0.3SDPA	0.24582894			

Ss < 0.3 x S_{Horwitz}
0.067 < 0.246
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	34.9	35.2	35.1
2	35.0	34.9	35.0
3	35.0	34.8	34.9
4	35.0	35.2	35.1
5	34.7	35.0	34.9
6	35.1	35.2	35.2
7	36.1	36.0	36.1
8	34.8	35.1	35.0
9	35.2	35.2	35.2
10	34.9	35.2	35.1
11	34.7	35.0	34.9
12	35.1	34.8	35.0
13	34.9	34.8	34.9
14	34.9	35.0	35.0
15	35.0	34.4	34.7
16	35.3	35.4	35.4
17	34.9	34.1	34.5
18	34.9	35.2	35.1
19	34.9	35.2	35.1
20	34.8	35.3	35.1

Yr = 35.028

Xr – Yr = 0.047

0.3SDPA = 0.24582894

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : BP

Date : Dec 16, 2025

Reviewed by : DN

Date : Dec 16, 2025



Bio-Rad Laboratories
Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	01/07/2025
Analyte	A1c
Method	Brid
Product Name	Lyphochek Diabetes Control
Lot Number	85901
Level	1
Analyst Name	PY
SIUnit	%

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	4.9	4.9	4.9	-0.080	0.0064	0.00	0.00
2	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
3	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
4	5.0	4.9	5.0	-0.030	0.0009	0.10	0.01
5	5.0	4.9	5.0	-0.030	0.0009	0.10	0.01
6	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
7	5.0	4.9	5.0	-0.030	0.0009	0.10	0.01
8	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
9	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
10	5.0	4.9	5.0	-0.030	0.0009	0.10	0.01
11	5.1	5.0	5.1	0.070	0.0049	0.10	0.01
12	5.1	4.9	5.0	0.020	0.0004	0.20	0.04
13	4.8	4.8	4.8	-0.180	0.0324	0.00	0.00
14	4.9	5.0	5.0	-0.030	0.0009	0.10	0.01
15	4.9	5.0	5.0	-0.030	0.0009	0.10	0.01
16	5.0	4.9	5.0	-0.030	0.0009	0.10	0.01
17	4.9	5.1	5.0	0.020	0.0004	0.20	0.04
18	4.9	5.0	5.0	-0.030	0.0009	0.10	0.01
19	5.0	5.1	5.1	0.070	0.0049	0.10	0.01
20	4.9	5.0	5.0	-0.030	0.0009	0.10	0.01



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Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

20	Xr =	4.980	Σ	0.0820	0.24
				0.0043	
			Sx	0.0657	
			Sx ²	0.0043	
					0.006
			Sw	0.077460	
			Sw ²	0.006	
			Sw ² /2	0.003	
			Sx ² - (Sw ² /2)	0.0013	
			Ss	0.036274	
CV Horwitz =	2 ^{1-0,5 log C}				
Kons =	4.980	%			
C =		0.0498			
		-			
log C =		1.302770657			
		-			
0,5 log C =		0.651385329			
1-0,5 log C=		1.651385329			
2 ^{1-0,5 log C} =		3.141351384			
CV _{Horwitz} =		3.141351384	SS < 0.3xSDPA		OK
SDPA(S _{horwitz}) =		0.1564	0.0362<0.0469		
0.3 x S _{Horwitz}		0.04693179	HOMOGEN		
0.3SDPA	0.0469318				

Prepared by : RA Reviewed by : AS
Date : Jan 07, 2025 Date : Jan 07, 2025



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Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	5.0	5.0	5.0
2	5.1	4.9	5.0
3	5.1	5.0	5.1
4	5.0	4.9	5.0
5	5.1	4.8	5.0
6	5.1	5.0	5.1
7	4.8	5.0	4.9
8	4.9	4.9	4.9
9	4.9	5.1	5.0
10	5.1	5.0	5.1
11	5.1	4.9	5.0
12	5.0	4.9	5.0
13	5.0	5.0	5.0
14	5.1	4.9	5.0
15	5.0	5.0	5.0
16	5.1	5.0	5.1
17	4.9	4.9	4.9
18	5.0	5.0	5.0
19	4.9	4.9	4.9
20	4.8	4.8	4.8

	Yr =	4.973
	Xr-Yr	0.008
[Xr-Yr]<0.3 SDPA	0.3SDPA	0.04693179
	Stabil	



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Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	01/07/2025
Analyte	A1c
Method	Brid
Product Name	Lyphochek Diabetes Control
Lot Number	85902
Level	2
Analyst Name	PY
SIUnit	%

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
2	9.8	9.9	9.9	-0.037	0.0014	0.10	0.01
3	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
4	10.0	9.9	10.0	0.062	0.0039	0.10	0.01
5	9.8	9.8	9.8	-0.088	0.0077	0.00	0.00
6	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
7	9.8	9.8	9.8	-0.088	0.0077	0.00	0.00
8	10.0	10.0	10.0	0.112	0.0127	0.00	0.00
9	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
10	9.8	9.9	9.9	-0.037	0.0014	0.10	0.01
11	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
12	10.0	9.9	10.0	0.062	0.0039	0.10	0.01
13	9.8	9.8	9.8	-0.088	0.0077	0.00	0.00
14	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
15	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
16	10.0	10.0	10.0	0.112	0.0127	0.00	0.00
17	9.8	9.8	9.8	-0.088	0.0077	0.00	0.00
18	9.9	9.9	9.9	0.012	0.0002	0.00	0.00
19	10.0	9.9	10.0	0.062	0.0039	0.10	0.01
20	9.8	9.8	9.8	-0.088	0.0077	0.00	0.00

Prepared by : RA

Reviewed by : AS

Date : Jan 07, 2025

Date : Jan 07, 2025



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20	Xr =	9.888	Σ	0.0794	0.05
				0.0042	
			Sx	0.0646	
			Sx ²	0.0042	
					0.00125
			Sw	0.035355	
			Sw ²	0.001	
			Sw ² /2	0.001	
			Sx ² -		
			(Sw ² /2)	0.0036	
			Ss	0.059604	
CV Horwitz =	2 ^{1-0,5 log C}				
Kons =	9.888	%			
C =		0.098875			
		-			
log C =		1.004913503			
		-			
0,5 log C =		0.502456752			
1-0,5 log C=		1.502456752			
2 ^{1-0,5 log C} =		2.83324773			
CV _{Horwitz} =		2.833247730	SS <		
			0.3xSDPA		OK
SDPA(S _{horwitz}) =		0.2801	0.0596<0.084		
0.3 x S _{Horwitz}		0.084041211	HOMOGEN		
0.3SDPA	0.0840412				



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	9.8	9.8	9.8
2	9.9	10.0	10.0
3	10.0	10.0	10.0
4	9.8	9.8	9.8
5	9.9	9.9	9.9
6	9.8	9.9	9.9
7	10.0	10.0	10.0
8	9.9	9.9	9.9
9	9.9	9.9	9.9
10	9.8	9.9	9.9
11	10.0	10.0	10.0
12	9.9	9.9	9.9
13	9.8	9.8	9.8
14	9.9	9.9	9.9
15	10.0	10.0	10.0
16	9.8	9.8	9.8
17	9.9	10.0	10.0
18	9.8	9.8	9.8
19	10.0	10.0	10.0
20	9.9	9.9	9.9

	Yr =	9.900
	Xr-Yr	0.013
[Xr-Yr]<0.3 SDPA	0.3SDPA	0.084041211
	Stabil	



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Date Tested	06/12/2023
Analyte	FIBRINOGEN
Method	Dstg
Product Name	Lyphocheck Coagulation Control
Lot Number	84740
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	344	345	345	4.500	20.2500	1.0	1.00
2	341	342	342	1.500	2.2500	1.0	1.00
3	341	343	342	2.000	4.0000	2.0	4.00
4	342	343	343	2.500	6.2500	1.0	1.00
5	338	340	339	-1.000	1.0000	2.0	4.00
6	337	338	338	-2.500	6.2500	1.0	1.00
7	342	340	341	1.000	1.0000	2.0	4.00
8	340	342	341	1.000	1.0000	2.0	4.00
9	337	337	337	-3.000	9.0000	0.0	0.00
10	339	339	339	-1.000	1.0000	0.0	0.00
11	340	341	341	0.500	0.2500	1.0	1.00
12	340	340	340	0.000	0.0000	0.0	0.00
13	344	344	344	4.000	16.0000	0.0	0.00
14	341	342	342	1.500	2.2500	1.0	1.00
15	338	338	338	-2.000	4.0000	0.0	0.00
16	339	338	339	-1.500	2.2500	1.0	1.00
17	338	338	338	-2.000	4.0000	0.0	0.00
18	337	337	337	-3.000	9.0000	0.0	0.00
19	339	339	339	-1.000	1.0000	0.0	0.00
20	338	339	339	-1.500	2.2500	1.0	1.00



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G	20	Xr =	340.000		24.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	93.000
Kons		340.000	mg/dL		4.8947
C =		0.0034		Sx	2.2124
log C =		-2.468521		Sx ²	4.8947
0,5 log C =		-1.234260			0.600
1-0,5 log C =		2.234260		Sw	0.774597
$2^{1-0,5 \log C} =$		4.705214		Sw ²	0.600
CV _{Horwitz} =		4.705214		Sw ² /2	0.3000
SDPA(S _{Horwitz}) =		15.9977		Sx ² -(Sw ² /2)	4.5947
0.3 x S _{Horwitz}		4.799318		Ss	2.144
0.3SDPA	4.799318				

$Ss < 0.3 \times S_{Horwitz}$
 2.144 < 4.799
 HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	340	342	341
2	337	337	337
3	342	342	342
4	343	343	343
5	337	337	337
6	336	336	336
7	338	339	339
8	338	338	338
9	337	337	337
10	339	339	339
11	341	340	341
12	340	340	340
13	344	344	344
14	342	341	342
15	338	338	338
16	343	342	343
17	340	338	339
18	338	337	338
19	340	342	341
20	339	338	339

Yr = 339.550

Xr – Yr = 0.450

0.3SDPA = 4.799318

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Reviewed by : RA

Date : June 12, 2023

Date : June 12, 2023



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Date Tested	06/12/2023
Analyte	FIBRINOGEN
Method	Dstg
Product Name	Lyphocheck Coagulation Control
Lot Number	84740
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	158	156	157.0	1.3	1.6256	2.0	4.00
2	158	155	156.5	0.8	0.6006	3.0	9.00
3	154	154	154.0	-1.7	2.9756	0.0	0.00
4	157	156	156.5	0.8	0.6006	1.0	1.00
5	157	154	155.5	-0.2	0.0506	3.0	9.00
6	159	157	158.0	2.3	5.1756	2.0	4.00
7	155	157	156.0	0.3	0.0756	2.0	4.00
8	158	155	156.5	0.8	0.6006	3.0	9.00
9	156	158	157	1.3	1.6256	2.0	4.00
10	155	157	156	0.3	0.0756	2.0	4.00
11	157	156	157	0.8	0.6006	1.0	1.00
12	157	154	156	-0.2	0.0506	3.0	9.00
13	156	154	155	-0.7	0.5256	2.0	4.00
14	155	153	154	-1.7	2.9756	2.0	4.00
15	157	155	156	0.3	0.0756	2.0	4.00
16	154	154	154	-1.7	2.9756	0.0	0.00
17	155	155	155	-0.7	0.5256	0.0	0.00
18	154	155	155	-1.2	1.5006	1.0	1.00
19	157	155	156	0.3	0.0756	2.0	4.00
20	155	155	155	-0.7	0.5256	0.0	0.00



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G	20	Xr =	155.725	75.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 23.2375
Kons		155.725	mg/dL	1.2230
C =		0.00155725		Sx 1.1059
log C =		-2.807641		Sx ² 1.2230
0,5 log C =		-1.403820		1.875
1-0,5 log C =		2.4038208		Sw 1.369306
$2^{1-0,5 \log C} =$		5.2920284		Sw ² 1.875
CV _{Horwitz} =		5.2920284		Sw ² /2 0.9375
SDPA(S _{Horwitz}) =		8.2410		Sx ² -(Sw ² /2) 0.2855
0.3 x S _{Horwitz}		2.4723034		Ss 0.534
0.3SDPA	2.4723034			

Ss < 0.3 x S_{Horwitz}
0.534 < 2.472
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	157	153	155
2	155	152	154
3	157	152	155
4	157	153	155
5	158	156	157
6	158	155	157
7	154	154	154
8	157	156	157
9	157	154	156
10	157	154	156
11	155	153	154
12	155	155	155
13	154	155	155
14	157	155	156
15	155	155	155
16	157	155	156
17	155	155	155
18	157	155	156
19	157	155	156
20	157	155	156

Yr = 155.325

Xr – Yr = 0.400

0.3SDPA = 2.4723034

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Reviewed by : RA

Date : June 12, 2023

Date : June 12, 2023



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Date Tested	06/12/2023
Analyte	FIBRINOGEN
Method	Dstg
Product Name	Lyphocheck Coagulation Control
Lot Number	84740
Level	3
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	102	101	101.5	1.1	1.1556	1.0	1.00
2	102	99	100.5	0.1	0.0056	3.0	9.00
3	102	99	100.5	0.1	0.0056	3.0	9.00
4	100	98	99.0	-1.4	2.0306	2.0	4.00
5	100	100	100.0	-0.4	0.1806	0.0	0.00
6	99	99	99.0	-1.4	2.0306	0.0	0.00
7	100	100	100.0	-0.4	0.1806	0.0	0.00
8	99	100	99.5	-0.9	0.8556	1.0	1.00
9	102	100	101.0	0.6	0.3306	2.0	4.00
10	102	101	101.5	1.1	1.1556	1.0	1.00
11	102	99	101	0.1	0.0056	3.0	9.00
12	102	102	102	1.6	2.4806	0.0	0.00
13	100	102	101	0.6	0.3306	2.0	4.00
14	103	100	102	1.1	1.1556	3.0	9.00
15	101	103	102	1.6	2.4806	2.0	4.00
16	102	99	101	0.1	0.0056	3.0	9.00
17	102	99	101	0.1	0.0056	3.0	9.00
18	100	98	99	-1.4	2.0306	2.0	4.00
19	100	100	100	-0.4	0.1806	0.0	0.00
20	99	99	99	-1.4	2.0306	0.0	0.00



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G	20	Xr =	100.425	77.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 18.6375
Kons		100.425	mg/dL	0.9809
C =		0.00100425		Sx 0.9904
log C =		-2.998158		Sx ² 0.9809
0,5 log C =		-1.499079		1.925
1-0,5 log C =		2.4990790		Sw 1.387444
$2^{1-0,5 \log C} =$		5.6532444		Sw ² 1.925
CV _{Horwitz} =		5.6532444		Sw ² /2 0.9625
SDPA(S _{Horwitz}) =		5.6773		Sx ² -(Sw ² /2) 0.0184
0.3 x S _{Horwitz}		1.70318122		Ss 0.136
0.3SDPA	1.70318122			

Ss < 0.3 x S_{Horwitz}
0.136 < 1.703
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	103	101	102
2	103	100	102
3	99	99	99
4	102	101	102
5	102	99	101
6	102	102	102
7	99	98	99
8	103	100	102
9	101	103	102
10	99	98	99
11	102	101	102
12	97	99	98
13	102	99	101
14	100	98	99
15	99	98	99
16	99	99	99
17	100	100	100
18	99	100	100
19	102	100	101
20	100	100	100

Yr = 100.200

Xr – Yr = 0.225

0.3SDPA = 1.70318122

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : June 12, 2023

Reviewed by : RA

Date : June 12, 2023



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Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	03/11/2024
Analyte	CHOLESTEROL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
sUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	240	243	242	-0.975	0.9506	3.0	9.00
2	242	244	243	0.525	0.2756	2.0	4.00
3	241	240	241	-1.975	3.9006	1.0	1.00
4	242	244	243	0.525	0.2756	2.0	4.00
5	243	245	244	1.525	2.3256	2.0	4.00
6	242	244	243	0.525	0.2756	2.0	4.00
7	242	244	243	0.525	0.2756	2.0	4.00
8	240	241	241	-1.975	3.9006	1.0	1.00
9	240	243	242	-0.975	0.9506	3.0	9.00
10	242	244	243	0.525	0.2756	2.0	4.00
11	240	243	242	-0.975	0.9506	3.0	9.00
12	245	244	245	2.025	4.1006	1.0	1.00
13	242	243	243	0.025	0.0006	1.0	1.00
14	240	243	242	-0.975	0.9506	3.0	9.00
15	243	242	243	0.025	0.0006	1.0	1.00
16	242	242	242	-0.475	0.2256	0.0	0.00
17	241	242	242	-0.975	0.9506	1.0	1.00
18	242	244	243	0.525	0.2756	2.0	4.00
19	244	245	245	2.025	4.1006	1.0	1.00
20	242	244	243	0.525	0.2756	2.0	4.00



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G	20	Xr =	242.425		75.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	25.2375
Kons		242.425	mg/dL		1.3283
C =		2.42425		Sx	1.1525
log C =		0.38466696		Sx ²	1.3283
0,5 log C =		0.19233348			1.875
1-0,5 log C =		0.80766651		Sw	1.369306
$2^{1-0,5 \log C} =$		1.75037801		Sw ²	1.875
CV _{Horwitz} =		1.75037801		Sw ² /2	0.9375
SDPA(S _{Horwitz}) =		4.2442		Sx ² -(Sw ² /2)	0.3908
0.3 x S _{Horwitz}		1.27326872		Ss	0.625
0.3SDPA	1.27326872				

Ss < 0.3 x S_{Horwitz}
0.361 < 1.273
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	240	245	243
2	242	244	243
3	241	240	241
4	242	244	243
5	241	245	243
6	242	244	243
7	242	244	243
8	240	241	241
9	240	240	240
10	242	244	243
11	240	240	240
12	245	244	245
13	242	240	241
14	240	240	240
15	243	242	243
16	242	242	242
17	241	241	241
18	242	242	242
19	246	247	247
20	242	244	243

Yr = 242.200

Xr – Yr = 0.275

0.3SDPA = 1.27326872

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Reviewed by : RA

Date : Mar 11, 2024

Date : Mar 11, 2024



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Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	03/11/2024
Analyte	CHOLESTEROL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
sUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	98	97	98	-0.1	0.0100	1.0	1.00
2	98	98	98	0.4	0.1600	0.0	0.00
3	98	96	97	-0.6	0.3600	2.0	4.00
4	99	98	99	0.9	0.8100	1.0	1.00
5	96	98	97	-0.6	0.3600	2.0	4.00
6	97	98	98	-0.1	0.0100	1.0	1.00
7	98	97	98	-0.1	0.0100	1.0	1.00
8	98	97	98	-0.1	0.0100	1.0	1.00
9	98	97	98	-0.1	0.0100	1.0	1.00
10	99	98	99	0.9	0.8100	1.0	1.00
11	97	96	97	-1.1	1.2100	1.0	1.00
12	97	98	98	-0.1	0.0100	1.0	1.00
13	97	98	98	-0.1	0.0100	1.0	1.00
14	98	99	99	0.9	0.8100	1.0	1.00
15	98	97	98	-0.1	0.0100	1.0	1.00
16	98	97	98	-0.1	0.0100	1.0	1.00
17	99	98	99	0.9	0.8100	1.0	1.00
18	97	96	97	-1.1	1.2100	1.0	1.00
19	98	97	98	-0.1	0.0100	1.0	1.00
20	99	97	98	0.4	0.1600	2.0	4.00



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G	20	Xr =	97.600	28.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 6.800
Kons		97.600	mg/dL	0.3579
C =		0.976		Sx 0.5982
log C =		-0.010550		Sx ² 0.3579
0,5 log C =		-0.005275		0.700
1-0,5 log C =		1.0052750		Sw 0.83666
$2^{1-0,5 \log C} =$		2.0073262		Sw ² 0.700
CV _{Horwitz} =		2.0073262		Sw ² /2 0.3500
SDPA(S _{Horwitz}) =		1.9592		Sx ² -(Sw ² /2) 0.0079
0.3 x S _{Horwitz}		0.5877451		Ss 0.089
0.3SDPA	0.5877451			

Ss < 0.3 x S_{Horwitz}
0.089 < 0.588
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	97	96	97
2	97	98	98
3	98	96	97
4	99	98	99
5	96	98	97
6	97	98	98
7	98	97	98
8	98	97	98
9	98	97	98
10	99	98	99
11	97	96	97
12	97	98	98
13	97	98	98
14	98	99	99
15	97	97	97
16	98	97	98
17	99	98	99
18	97	96	97
19	98	97	98
20	97	97	97

Yr = 97.450

Xr – Yr = 0.150

0.3SDPA = 0.5877451

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Bio-Rad Laboratories
Homogeneity & Stability Testing Workbook, Revision 5
Based on ISO 13528 ; 2015 ; pp. 48 – 55 ; Horwitz version

Date Tested	03/11/2023
Analyte	TRIGLYCERIDES
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
sUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	154	153	153.5	0.9	0.7656	1.0	1.00
2	154	152	153.0	0.4	0.1406	2.0	4.00
3	152	153	152.5	-0.1	0.0156	1.0	1.00
4	152	154	153.0	0.4	0.1406	2.0	4.00
5	152	155	153.5	0.9	0.7656	3.0	9.00
6	152	152	152.0	-0.6	0.3906	0.0	0.00
7	151	153	152.0	-0.6	0.3906	2.0	4.00
8	150	153	151.5	-1.1	1.2656	3.0	9.00
9	153	156	154.5	1.9	3.5156	3.0	9.00
10	150	153	151.5	-1.1	1.2656	3.0	9.00
11	153	151	152.0	-0.6	0.3906	2.0	4.00
12	153	153	153.0	0.4	0.1406	0.0	0.00
13	154	155	154.5	1.9	3.5156	1.0	1.00
14	153	151	152.0	-0.6	0.3906	2.0	4.00
15	152	151	151.5	-1.1	1.2656	1.0	1.00
16	153	151	152.0	-0.6	0.3906	2.0	4.00
17	152	152	152.0	-0.6	0.3906	0.0	0.00
18	153	154	153.5	0.9	0.7656	1.0	1.00
19	150	152	151.0	-1.6	2.6406	2.0	4.00
20	153	155	154.0	1.4	1.8906	2.0	4.00



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G	20	Xr =	152.625	98.00
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 24.300
Kons		152.625	mg/dL	1.2789
C =		1.52625		Sx 1.1309
log C =		0.18362567		Sx ² 1.2789
0,5 log C =		0.09181283		2.45
1-0,5 log C =		0.90818716		Sw 1.565248
$2^{1-0,5 \log C} =$		1.87668584		Sw ² 2.450
CV _{Horwitz} =		1.87668584		Sw ² /2 1.2250
SDPA(S _{Horwitz}) =		2.8643		Sx ² -(Sw ² /2) 0.0539
0.3 x S _{Horwitz}		0.85928752		Ss 0.232
0.3SDPA	0.85928752			

Ss < 0.3 x S_{Horwitz}
0.232 < 0.859
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	151	153	152
2	152	152	152
3	153	153	153
4	153	151	152
5	153	150	152
6	152	152	152
7	151	150	151
8	152	153	153
9	155	154	155
10	152	153	153
11	152	152	152
12	151	153	152
13	152	152	152
14	151	153	152
15	152	151	152
16	153	153	153
17	152	153	153
18	153	152	153
19	152	151	152
20	154	154	154

Yr = 152.275

Xr – Yr = 0.350

0.3SDPA = 0.85928752

[Xr-Yr] < 0.3 SDPA

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Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	TRIGLYCERIDES
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	90	89	89.500	1.638	2.6814	1.00	1.00
2	89	90	89.250	1.388	1.9252	1.50	2.25
3	88	89	88.500	0.638	0.4064	1.00	1.00
4	90	87	88.500	0.638	0.4064	3.00	9.00
5	86	87	86.500	-1.363	1.8564	1.00	1.00
6	88	87	87.500	-0.362	0.1314	1.00	1.00
7	89	88	88.250	0.388	0.1502	0.50	0.25
8	87	89	88.000	0.138	0.0189	2.00	4.00
9	89	88	88.250	0.388	0.1502	0.50	0.25
10	87	89	88.000	0.138	0.0189	2.00	4.00
11	87	88	87.250	-0.612	0.3752	1.50	2.25
12	87	88	87.250	-0.612	0.3752	1.50	2.25
13	87	88	87.250	-0.612	0.3752	1.50	2.25
14	89	86	87.500	-0.362	0.1314	3.00	9.00
15	86	86	86.000	-1.863	3.4689	0.00	0.00
16	87	88	87.500	-0.362	0.1314	1.00	1.00
17	89	88	88.250	0.388	0.1502	0.50	0.25
18	89	88	88.250	0.388	0.1502	0.50	0.25
19	89	87	87.750	-0.112	0.0127	1.50	2.25
20	87	89	88.000	0.138	0.0189	2.00	4.00

G	20	Xr =	87.863	47.25
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ 12.9344
Kons		87.863	mg/dL	0.6808
C =		0.878625		Sx 0.8251
log C =		-0.0561964		Sx ² 0.6808
0,5 log C =		-0.0280982		1.18125
1-0,5 log C =		1.0280982		Sw 1.086853
$2^{1-0,5 \log C} =$		2.03933420		Sw ² 1.181
CV _{Horwitz} =		2.03933420		Sw ² /2 0.591
SDPA(S _{Horwitz}) =		1,7918		Sx ² -(Sw ² /2) 0.0901
0.3 x S _{Horwitz}		0.53754300		Ss 0.300219
0.3SDPA	0.53754300			

Ss < 0.3 x S_{Horwitz}
0.300 < 0.538
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	87	87	87.0
2	87	87	87.0
3	89	88	88.5
4	86	88	87.0
5	88	87	87.5
6	87	86	86.5
7	88	86	87.0
8	87	86	86.5
9	88	88	88.0
10	88	88	88.0
11	89	88	88.5
12	87	88	87.5
13	88	88	88.0
14	88	88	88.0
15	87	87	87.0
16	88	88	88.0
17	87	88	87.5
18	87	88	87.5
19	87	89	88.0
20	88	89	88.5

Yr = 87.575

Xr – Yr = 0.287

0.3SDPA = 0.53754300

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	BILIRUBIN TOTAL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89750
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	1.08	1.06	1.066	-0.027	0.0007	0.02	0.00
2	1.09	1.08	1.081	-0.012	0.0001	0.01	0.00
3	1.13	1.07	1.100	0.007	0.0000	0.06	0.00
4	1.09	1.08	1.085	-0.008	0.0001	0.01	0.00
5	1.10	1.09	1.095	0.002	0.0000	0.01	0.00
6	1.10	1.09	1.095	0.002	0.0000	0.01	0.00
7	1.09	1.06	1.075	-0.018	0.0003	0.03	0.00
8	1.08	1.09	1.085	-0.008	0.0001	0.01	0.00
9	1.09	1.08	1.085	-0.008	0.0001	0.01	0.00
10	1.08	1.06	1.070	-0.023	0.0005	0.02	0.00
11	1.10	1.08	1.090	-0.003	0.0000	0.02	0.00
12	1.10	1.10	1.096	0.003	0.0000	0.00	0.00
13	1.09	1.10	1.091	-0.002	0.0000	0.01	0.00
14	1.08	1.10	1.090	-0.003	0.0000	0.02	0.00
15	1.15	1.10	1.125	0.032	0.0010	0.05	0.00
16	1.10	1.15	1.125	0.032	0.0010	0.05	0.00
17	1.09	1.10	1.095	0.002	0.0000	0.01	0.00
18	1.12	1.10	1.110	0.017	0.0003	0.02	0.00
19	1.11	1.11	1.110	0.017	0.0003	0.00	0.00
20	1.09	1.10	1.095	0.002	0.0000	0.01	0.00



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G	20	Xr =	1.093		0.012
CV Horwitz =		$2^{1-0,5 \log C}$		Σ	0.0046
Kons		1.093	mg/dL		0.0002
C =			0.010932	Sx	0.0156
log C =			-1.9613003	Sx ²	0.0002
0,5 log C =			-0.9806501		0.00031
1-0,5 log C =			1.98065018	Sw	0.017607
$2^{1-0,5 \log C} =$			3.94670910	Sw ²	0.0003
CV _{Horwitz} =			3.94670910	Sw ² /2	0.0002
SDPA(S _{Horwitz}) =			0.0431	Sx ² -(Sw ² /2)	0.0001
0.3 x S _{Horwitz}			0.01294362	Ss	0.009443
0.3SDPA			0.01294362		

Ss < 0.3 x S_{Horwitz}
0.009 < 0.013
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	1.08	1.06	1.1
2	1.09	1.08	1.1
3	1.11	1.12	1.1
4	1.12	1.11	1.1
5	1.08	1.10	1.1
6	1.10	1.08	1.1
7	1.10	1.10	1.1
8	1.09	1.10	1.1
9	1.15	1.15	1.1
10	1.08	1.10	1.1
11	1.08	1.10	1.1
12	1.10	1.09	1.1
13	1.10	1.08	1.1
14	1.10	1.07	1.1
15	1.09	1.07	1.1
16	1.11	1.07	1.1
17	1.09	1.06	1.1
18	1.09	1.09	1.1
19	1.09	1.06	1.1
20	1.08	1.09	1.1

Yr = 1.090

Xr – Yr = 0.003

0.3SDPA = 0.01294362

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	BILIRUBIN TOTAL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	3.87	3.86	3.865	0.011	0.0001	0.01	0.00
2	3.86	3.85	3.855	0.001	0.0000	0.01	0.00
3	3.85	3.85	3.850	-0.004	0.0000	0.00	0.00
4	3.84	3.86	3.850	-0.004	0.0000	0.02	0.00
5	3.87	3.81	3.840	-0.014	0.0002	0.06	0.00
6	3.87	3.80	3.835	-0.019	0.0004	0.07	0.00
7	3.85	3.86	3.855	0.001	0.0000	0.01	0.00
8	3.90	3.85	3.875	0.021	0.0004	0.05	0.00
9	3.88	3.87	3.875	0.021	0.0004	0.01	0.00
10	3.88	3.82	3.850	-0.004	0.0000	0.06	0.00
11	3.83	3.83	3.830	-0.024	0.0006	0.00	0.00
12	3.84	3.85	3.845	-0.009	0.0001	0.01	0.00
13	3.86	3.84	3.850	-0.004	0.0000	0.02	0.00
14	3.81	3.83	3.820	-0.034	0.0012	0.02	0.00
15	3.85	3.84	3.845	-0.009	0.0001	0.01	0.00
16	3.87	3.88	3.875	0.021	0.0004	0.01	0.00
17	3.87	3.83	3.850	-0.004	0.0000	0.04	0.00
18	3.88	3.87	3.875	0.021	0.0004	0.01	0.00
19	3.86	3.87	3.865	0.011	0.0001	0.01	0.00
20	3.89	3.87	3.880	0.026	0.0007	0.02	0.00



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G	20	Xr =	3.854	0.02
CV Horwitz =		$2^{1-0,5 \log C}$		Σ 0.0052
Kons		3.854	mg/dL	0.0003
C =		0.0385425		Sx 0.0166
log C =		-1.4140601		Sx ² 0.0003
0,5 log C =		-0.7070300		0.0004675
1-0,5 log C =		1.70703005		Sw 0.021622
$2^{1-0,5 \log C} =$		3.26488021		Sw ² 0.0005
CV _{Horwitz} =		3.26488021		Sw ² /2 0.0002
SDPA(S _{Horwitz}) =		0.1258		Sx ² -(Sw ² /2) 0.00004
0.3 x S _{Horwitz}		0.03775099		Ss 0.006376
0.3SDPA	0.03775099			

Ss < 0.3 x S_{Horwitz}
0.006 < 0.038
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	3.83	3.83	3.83
2	3.84	3.85	3.85
3	3.86	3.84	3.85
4	3.81	3.83	3.82
5	3.85	3.84	3.85
6	3.87	3.88	3.88
7	3.87	3.88	3.88
8	3.88	3.87	3.88
9	3.89	3.87	3.88
10	3.89	3.87	3.88
11	3.81	3.79	3.80
12	3.81	3.80	3.81
13	3.81	3.84	3.83
14	3.78	3.83	3.81
15	3.88	3.87	3.88
16	3.88	3.82	3.85
17	3.83	3.83	3.83
18	3.84	3.85	3.85
19	3.86	3.84	3.85
20	3.81	3.83	3.82

Yr = 3.844

Xr – Yr = 0.010

0.3SDPA = 0.03775099

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	PROTEIN TOTAL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	6.23	6.21	6.220	0.005	0.0000	0.02	0.00
2	6.21	6.22	6.215	0.000	0.0000	0.01	0.00
3	6.26	6.25	6.255	0.040	0.0016	0.01	0.00
4	6.26	6.25	6.255	0.040	0.0016	0.01	0.00
5	6.23	6.24	6.235	0.020	0.0004	0.01	0.00
6	6.23	6.23	6.230	0.016	0.0002	0.00	0.00
7	6.25	6.21	6.230	0.016	0.0002	0.04	0.00
8	6.19	6.21	6.200	-0.015	0.0002	0.02	0.00
9	6.21	6.34	6.275	0.061	0.0037	0.13	0.02
10	6.23	6.27	6.250	0.035	0.0013	0.04	0.00
11	6.21	6.17	6.190	-0.025	0.0006	0.04	0.00
12	6.26	6.14	6.200	-0.015	0.0002	0.12	0.01
13	6.23	6.21	6.220	0.005	0.0000	0.02	0.00
14	6.25	6.15	6.200	-0.015	0.0002	0.10	0.01
15	6.25	6.14	6.195	-0.019	0.0004	0.11	0.01
16	6.16	6.15	6.155	-0.060	0.0035	0.01	0.00
17	6.23	6.25	6.240	0.026	0.0007	0.02	0.00
18	6.21	6.06	6.135	-0.080	0.0063	0.15	0.02
19	6.22	6.06	6.140	-0.075	0.0056	0.16	0.03
20	6.24	6.26	6.250	0.035	0.0013	0.02	0.00



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G	20	Xr = 6.215	0.11
CV Horwitz =		$2^{1-0,5 \log C}$	Σ 0.0281
Kons		6.215 g/dL	0.0015
C =		0.062145	Sx 0.0385
log C =		-0.2065938	Sx ² 0.0015
0,5 log C =		-0.1032969	0.00272
1-0,5 log C =		1.10329690	Sw 0.052154
$2^{1-0,5 \log C} =$		2.14845104	Sw ² 0.003
CV _{Horwitz} =		2.14845104	Sw ² /2 0.001
SDPA(S _{Horwitz}) =		0.1335	Sx ² -(Sw ² /2) 0.0001
0.3 x S _{Horwitz}		0.04005464	Ss 0.010894
0.3SDPA	0.04005464		

Ss < 0.3 x S_{Horwitz}
0.011 < 0.040
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	6.21	6.24	6.2
2	6.18	6.22	6.2
3	6.15	6.17	6.2
4	6.22	6.24	6.2
5	6.16	6.16	6.2
6	6.15	6.15	6.2
7	6.16	6.17	6.2
8	6.13	6.13	6.1
9	6.35	6.22	6.3
10	6.13	6.24	6.2
11	6.18	6.22	6.2
12	6.20	6.21	6.2
13	6.20	6.22	6.2
14	6.17	6.19	6.2
15	6.21	6.19	6.2
16	6.18	6.19	6.2
17	6.25	6.24	6.2
18	6.38	6.24	6.3
19	6.21	6.23	6.2
20	6.27	6.25	6.3

Yr = 6.205

Xr – Yr = 0.009

0.3SDPA = 0.04005464

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	PROTEIN TOTAL
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	4.08	4.09	4.085	-0.009	0.0001	0.01	0.00
2	4.08	4.07	4.075	-0.019	0.0004	0.01	0.00
3	4.1	4.07	4.085	-0.009	0.0001	0.03	0.00
4	4.09	4.08	4.085	-0.009	0.0001	0.01	0.00
5	4.09	4.11	4.100	0.006	0.0000	0.02	0.00
6	4.10	4.07	4.085	-0.009	0.0001	0.03	0.00
7	4.13	4.14	4.135	0.041	0.0017	0.01	0.00
8	4.09	4.11	4.100	0.006	0.0000	0.02	0.00
9	4.09	4.11	4.100	0.006	0.0000	0.02	0.00
10	4.09	4.11	4.100	0.006	0.0000	0.02	0.00
11	4.10	4.07	4.085	-0.009	0.0001	0.03	0.00
12	4.05	4.10	4.075	-0.019	0.0004	0.05	0.00
13	4.10	4.09	4.095	0.001	0.0000	0.01	0.00
14	4.07	4.09	4.080	-0.014	0.0002	0.02	0.00
15	4.07	4.11	4.090	-0.004	0.0000	0.04	0.00
16	4.11	4.10	4.105	0.011	0.0001	0.01	0.00
17	4.09	4.13	4.110	0.016	0.0002	0.04	0.00
18	4.10	4.07	4.085	-0.009	0.0001	0.03	0.00
19	4.09	4.10	4.095	0.001	0.0000	0.01	0.00
20	4.11	4.12	4.115	0.021	0.0004	0.01	0.00

G	20	Xr =	4.098	0.01
CV Horwitz =		$2^{1-0,5 \log C}$		Σ 0.0041
Kons		4.094	g/dL	0.0002
C =		0.409425		Sx 0.0146
log C =		-0.3878256		Sx ² 0.0002
0,5 log C =		-0.193912		0.0003025
1-0,5 log C=		1.19391282		Sw 0.017393
$2^{1-0,5 \log C}=$		2.2877237		Sw ² 0.0003
CV _{Horwitz} =		2.2877237		Sw ² /2 0.0002
SDPA(S _{Horwitz})=		0.0937		Sx ² -(Sw ² /2) 0.0001
0.3 x S _{Horwitz}		0.02809953		Ss 0.007914
0.3SDPA	0.02809953			

Ss < 0.3 x S_{Horwitz}
0.008 < 0.028
HOMOGENOUS

2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	4.07	4.06	4.1
2	4.08	4.07	4.1
3	4.10	4.07	4.1
4	4.09	4.08	4.1
5	4.09	4.09	4.1
6	4.10	4.07	4.1
7	4.09	4.08	4.1
8	4.09	4.11	4.1
9	4.09	4.11	4.1
10	4.09	4.11	4.1
11	4.10	4.07	4.1
12	4.05	4.10	4.1
13	4.10	4.09	4.1
14	4.07	4.09	4.1
15	4.07	4.11	4.1
16	4.09	4.11	4.1
17	4.09	4.11	4.1
18	4.10	4.11	4.1
19	4.09	4.10	4.1
20	4.09	4.08	4.1

$$Yr = 4.089$$

$$Xr - Yr = 0.005$$

$$0.3SDPA = 0.02809953$$

$$[Xr - Yr] < 0.3 SDPA$$

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	ALBUMIN
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	3.84	3.85	3.845	0.040	0.0016	0.01	0.00
2	3.82	3.83	3.825	0.020	0.0004	0.01	0.00
3	3.83	3.78	3.805	0.000	0.0000	0.05	0.00
4	3.83	3.82	3.825	0.020	0.0004	0.01	0.00
5	3.81	3.82	3.815	0.010	0.0001	0.01	0.00
6	3.81	3.82	3.815	0.010	0.0001	0.01	0.00
7	3.78	3.77	3.775	-0.030	0.0009	0.01	0.00
8	3.81	3.82	3.815	0.010	0.0001	0.01	0.00
9	3.82	3.83	3.825	0.020	0.0004	0.01	0.00
10	3.79	3.78	3.785	-0.020	0.0004	0.01	0.00
11	3.78	3.77	3.775	-0.030	0.0009	0.01	0.00
12	3.79	3.79	3.790	-0.015	0.0002	0.00	0.00
13	3.78	3.81	3.795	-0.010	0.0001	0.03	0.00
14	3.80	3.78	3.790	-0.015	0.0002	0.02	0.00
15	3.81	3.82	3.815	0.010	0.0001	0.01	0.00
16	3.81	3.83	3.820	0.015	0.0002	0.02	0.00
17	3.80	3.81	3.805	0.000	0.0000	0.01	0.00
18	3.78	3.77	3.775	-0.030	0.0009	0.01	0.00
19	3.79	3.80	3.795	-0.010	0.0001	0.01	0.00
20	3.80	3.81	3.805	0.000	0.0000	0.01	0.00



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G	20	Xr = 3.805	0.0057
CV Horwitz =	$2^{1-0,5 \log C}$		Σ 0.0072
Kons	3.805	g/dL	0.0004
C =		0.380475	Sx 0.0194
log C =		-0.419673	Sx ² 0.0004
0,5 log C =		-0.209836	0.0001425
1-0,5 log C =		1.2098369	Sw 0.011937
$2^{1-0,5 \log C} =$		2.3131149	Sw ² 0.00014
CV _{Horwitz} =		2.3131149	Sw ² /2 0.00007
SDPA(S _{Horwitz}) =		0.0880	Sx ² -(Sw ² /2) 0.0003
0.3 x S _{Horwitz}		0.02640247	Ss 0.017502
0.3SDPA	0.02640247		

Ss < 0.3 x S_{Horwitz}
0.018 < 0.026
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	3.81	3.82	3.8
2	3.81	3.83	3.8
3	3.79	3.81	3.8
4	3.80	3.81	3.8
5	3.78	3.82	3.8
6	3.79	3.79	3.8
7	3.80	3.81	3.8
8	3.81	3.82	3.8
9	3.80	3.81	3.8
10	3.79	3.82	3.8
11	3.79	3.79	3.8
12	3.80	3.81	3.8
13	3.81	3.82	3.8
14	3.79	3.79	3.8
15	3.80	3.81	3.8
16	3.80	3.81	3.8
17	3.81	3.82	3.8
18	3.79	3.81	3.8
19	3.78	3.81	3.8
20	3.78	3.77	3.8

Yr = 3.803

Xr – Yr = 0.002

0.3SDPA = 0.02640247

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	ALBUMIN
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	g/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	2.61	2.60	2.605	-0.027	0.0007	0.01	0.00
2	2.62	2.62	2.620	-0.012	0.0001	0.00	0.00
3	2.63	2.62	2.625	-0.006	0.0000	0.03	0.00
4	2.65	2.66	2.655	0.023	0.0006	0.01	0.00
5	2.65	2.64	2.645	0.013	0.0002	0.01	0.00
6	2.63	2.65	2.640	0.008	0.0001	0.02	0.00
7	2.63	2.64	2.635	0.003	0.0000	0.01	0.00
8	2.63	2.64	2.635	0.003	0.0000	0.01	0.00
9	2.62	2.62	2.620	-0.012	0.0001	0.00	0.00
10	2.62	2.62	2.620	-0.012	0.0001	0.00	0.00
11	2.65	2.66	2.655	0.023	0.0006	0.01	0.00
12	2.62	2.61	2.615	-0.017	0.0003	0.01	0.00
13	2.63	2.64	2.635	0.003	0.0000	0.01	0.00
14	2.61	2.66	2.635	0.003	0.0000	0.05	0.00
15	2.61	2.65	2.630	-0.002	0.0000	0.04	0.00
16	2.63	2.64	2.635	0.003	0.0000	0.01	0.00
17	2.63	2.64	2.635	0.003	0.0000	0.01	0.00
18	2.63	2.63	2.630	-0.002	0.0000	0.00	0.00
19	2.63	2.63	2.630	-0.002	0.0000	0.00	0.00
20	2.63	2.63	2.630	-0.002	0.0000	0.00	0.00



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G	20	Xr =	2.6315		0.0017
CV Horwitz =		$2^{1-0,5 \log C}$		Σ	0.0029
Kons		2.632	g/dL		0.0002
C =			0.26315	Sx	0.0123
log C =			-0.579796	Sx ²	0.0002
0,5 log C =			-0.289898		0.00016
1-0,5 log C=			1.2898983	Sw	0.012649
$2^{1-0,5 \log C}=$			2.4451082	Sw ²	0.00016
CV _{Horwitz} =			2.4451082	Sw ² /2	0.00008
SDPA(S _{Horwitz})=			0.0643	Sx ² -(Sw ² /2)	0.0001
0.3 x S _{Horwitz}			0.0193029	Ss	0.008382
0.3SDPA	0.0193029				

Ss < 0.3 x S_{Horwitz}
0.008 < 0.019
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	2.61	2.66	2.6
2	2.61	2.65	2.6
3	2.62	2.61	2.6
4	2.65	2.65	2.7
5	2.64	2.62	2.6
6	2.64	2.63	2.6
7	2.65	2.63	2.6
8	2.65	2.64	2.6
9	2.63	2.60	2.6
10	2.61	2.60	2.6
11	2.62	2.62	2.6
12	2.63	2.62	2.6
13	2.63	2.62	2.6
14	2.61	2.63	2.6
15	2.61	2.63	2.6
16	2.61	2.64	2.6
17	2.62	2.63	2.6
18	2.61	2.63	2.6
19	2.63	2.63	2.6
20	2.65	2.66	2.7

Yr = 2.628

Xr – Yr = 0.003

0.3SDPA = 0.0193029

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Tel: (949) 598-1200
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Date Tested	03/11/2024
Analyte	UREASE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	31.4	31.3	31.350	-0.168	0.0281	0.10	0.01
2	31.4	31.3	31.350	-0.168	0.0281	0.10	0.01
3	31.7	31.6	31.650	0.133	0.0176	0.10	0.01
4	31.7	31.6	31.650	0.133	0.0176	0.10	0.01
5	31.3	31.4	31.350	-0.168	0.0281	0.10	0.01
6	31.4	31.3	31.350	-0.168	0.0281	0.10	0.01
7	31.7	31.6	31.650	0.133	0.0176	0.10	0.01
8	31.7	31.6	31.650	0.133	0.0176	0.10	0.01
9	31.3	31.4	31.350	-0.168	0.0281	0.10	0.01
10	31.7	32.2	31.950	0.433	0.1871	0.50	0.25
11	31.0	31.1	31.050	-0.467	0.2186	0.10	0.01
12	31.5	31.3	31.400	-0.118	0.0138	0.20	0.04
13	31.3	31.5	31.400	-0.118	0.0138	0.20	0.04
14	31.5	31.8	31.650	0.133	0.0176	0.30	0.09
15	31.5	31.8	31.650	0.133	0.0176	0.30	0.09
16	31.4	31.3	31.350	-0.168	0.0281	0.10	0.01
17	31.6	31.5	31.550	0.033	0.0011	0.10	0.01
18	31.5	31.3	31.400	-0.118	0.0138	0.20	0.04
19	31.5	31.7	31.600	0.083	0.0068	0.20	0.04
20	31.7	32.3	32.000	0.483	0.2328	0.60	0.36



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G	20	Xr =	31.518	1.07
CV Horwitz =		$2^{1-0,5 \log C}$		Σ 0.9614
Kons		31.518	mg/dL	0.0506
C =		0.315175		Sx 0.2249
log C =		-0.501448		Sx ² 0.0506
0,5 log C =		-0.250724		0.02675
1-0,5 log C=		1.2507241		Sw 0.163554
$2^{1-0,5 \log C}=$		2.3796083		Sw ² 0.027
CV _{Horwitz} =		2.3796083		Sw ² /2 0.013
SDPA(S _{Horwitz})=		0.7500		Sx ² -(Sw ² /2) 0.0372
0.3 x S _{Horwitz}		0.2249979		Ss 0.192934
0.3SDPA	0.2249979			

Ss < 0.3 x S_{Horwitz}
0.193 < 0.225
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	31.3	31.5	31.4
2	31.5	31.8	31.7
3	31.5	31.8	31.7
4	31.6	31.7	31.7
5	31.5	31.7	31.6
6	31.7	31.2	31.5
7	31.6	31.7	31.7
8	31.4	31.3	31.4
9	31.6	31.5	31.6
10	31.5	31.3	31.4
11	31.2	31.1	31.2
12	31.1	31.9	31.5
13	31.6	31.3	31.5
14	31.6	31.7	31.7
15	31.5	31.7	31.6
16	31.7	31.1	31.4
17	31.3	31.9	31.6
18	31.7	32.1	31.9
19	31.0	31.2	31.1
20	31.5	31.3	31.4

Yr = 31.505

Xr – Yr = 0.012

0.3SDPA = 0.2249979

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



**Bio-Rad
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Tel: (949) 598-1200
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Date Tested	03/11/2024
Analyte	UREASE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	96.0	96.2	96.100	0.188	0.0352	0.20	0.04
2	96.2	96.3	96.250	0.338	0.1139	0.10	0.01
3	96.2	96.3	96.250	0.338	0.1139	0.10	0.01
4	95.8	95.5	95.650	-0.262	0.0689	0.30	0.09
5	95.6	95.6	95.600	-0.312	0.0977	0.00	0.00
6	95.6	95.7	95.650	-0.262	0.0689	0.10	0.01
7	96.3	96.6	96.450	0.538	0.2889	0.30	0.09
8	95.5	95.7	95.600	-0.313	0.0977	0.20	0.04
9	96.3	96.3	96.300	0.388	0.1502	0.00	0.00
10	96.3	96.6	96.450	0.538	0.2889	0.30	0.09
11	96.0	96.6	96.300	0.388	0.1502	0.60	0.36
12	95.6	95.8	95.700	-0.212	0.0452	0.20	0.04
13	95.6	95.6	95.600	-0.312	0.0977	0.00	0.00
14	96.3	96.5	96.400	0.488	0.2377	0.20	0.04
15	95.5	95.7	95.600	-0.313	0.0977	0.20	0.04
16	96.6	96.7	96.650	0.738	0.5439	0.10	0.01
17	95.0	95.2	95.100	-0.813	0.6602	0.20	0.04
18	95.6	95.6	95.600	-0.312	0.0977	0.00	0.00
19	95.7	95.2	95.450	-0.462	0.2139	0.50	0.25
20	95.6	95.5	95.550	-0.362	0.1314	0.10	0.01



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G	20	Xr =	95.513	1.17
CV Horwitz =		$2^{1-0,5 \log C}$		Σ 3.5994
Kons		95.513	mg/dL	0.1894
C =		0.959125		Sx 0.4352
log C =		-0.0181247		Sx ² 0.1894
0,5 log C =		-0.0090623		0.02925
1-0,5 log C =		1.00906239		Sw 0.171026
$2^{1-0,5 \log C} =$		2.01260268		Sw ² 0.029
CV _{Horwitz} =		2.01260268		Sw ² /2 0.015
SDPA(S _{Horwitz}) =		1.9303		Sx ² -(Sw ² /2) 0.1748
0.3 x S _{Horwitz}		0.57910126		Ss 0.418110
0.3SDPA	0.57910126			

Ss < 0.3 x S_{Horwitz}
0.418 < 0.579
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	96.2	96.0	96.1
2	96.0	96.0	96.0
3	96.9	96.7	96.8
4	96.1	95.9	96.0
5	97.1	97.0	97.1
6	96.1	96.0	96.1
7	97.0	96.7	96.9
8	96.1	95.9	96.0
9	96.7	96.7	96.7
10	97.0	96.7	96.9
11	97.0	96.4	96.7
12	96.2	96.0	96.1
13	96.0	96.0	96.0
14	96.9	96.7	96.8
15	96.1	95.9	96.0
16	97.1	97.0	97.1
17	95.6	95.4	95.5
18	96.0	96.0	96.0
19	95.6	96.1	95.9
20	95.9	96.0	96.0

Yr = 96.318

Xr – Yr = 0.405

0.3SDPA = 0.57910126

[Xr-Yr] < 0.3 SDPA

STABIL

Prepared by : DN

Date : Mar 11, 2024

Reviewed by : RA

Date : Mar 11, 2024



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Date Tested	03/11/2024
Analyte	CREATININE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	2.21	2.23	2.220	-0.027	0.0007	0.02	0.00
2	2.22	2.20	2.210	-0.037	0.0014	0.02	0.00
3	2.25	2.26	2.255	0.008	0.0001	0.01	0.00
4	2.25	2.26	2.255	0.008	0.0001	0.00	0.00
5	2.26	2.27	2.265	0.018	0.0003	0.02	0.00
6	2.25	2.26	2.255	0.008	0.0001	0.04	0.00
7	2.22	2.24	2.230	-0.017	0.0003	0.02	0.00
8	2.26	2.27	2.265	0.018	0.0003	0.01	0.00
9	2.25	2.26	2.255	0.008	0.0001	0.01	0.00
10	2.25	2.26	2.255	0.008	0.0001	0.01	0.00
11	2.25	2.26	2.255	0.008	0.0001	0.01	0.00
12	2.26	2.24	2.250	0.003	0.0000	0.02	0.00
13	2.26	2.27	2.265	0.018	0.0003	0.01	0.00
14	2.21	2.22	2.215	-0.032	0.0010	0.01	0.00
15	2.26	2.25	2.255	0.008	0.0001	0.01	0.00
16	2.23	2.25	2.240	-0.007	0.0001	0.02	0.00
17	2.26	2.27	2.265	0.018	0.0003	0.01	0.00
18	2.24	2.26	2.250	0.003	0.0000	0.02	0.00
19	2.25	2.26	2.255	0.008	0.0001	0.01	0.00
20	2.22	2.24	2.230	-0.017	0.0003	0.02	0.00



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G	20	Xr =	2.247		0.01
CV _{Horwitz} =		$2^{1-0,5 \log C}$		Σ	0.0056
Kons		2.247	mg/dL		0.0003
C =			0.0224725	Sx	0.0171
log C =			-1.648348	Sx ²	0.0003
0,5 log C =			-0.824174		0.000145
1-0,5 log C =			1.8241743	Sw	0.012042
$2^{1-0,5 \log C} =$			3.5410428	Sw ²	0.00014
CV _{Horwitz} =			3.5410428	Sw ² /2	0.00007
SDPA(S _{Horwitz}) =			0.0796	Sx ² -(Sw ² /2)	0.0002
0.3 x S _{Horwitz}			0.0238728	Ss	0.014861
0.3SDPA	0.0238728				

Ss < 0.3 x S_{Horwitz}
0.015 < 0.024
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	2.25	2.26	2.3
2	2.26	2.24	2.3
3	2.26	2.27	2.3
4	2.21	2.22	2.2
5	2.26	2.25	2.3
6	2.23	2.25	2.2
7	2.26	2.27	2.3
8	2.24	2.26	2.3
9	2.25	2.26	2.3
10	2.22	2.24	2.2
11	2.22	2.21	2.2
12	2.25	2.26	2.3
13	2.26	2.27	2.3
14	2.25	2.26	2.3
15	2.23	2.24	2.2
16	2.17	2.16	2.2
17	2.24	2.23	2.2
18	2.23	2.22	2.2
19	2.23	2.22	2.2
20	2.24	2.23	2.2

Yr = 2.240

Xr – Yr = 0.008

0.3SDPA = 0.0238728

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

Prepared by : DN

Reviewed by : RA

Date : Mar 11, 2024

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Date Tested	03/11/2024
Analyte	CREATININE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	5.95	5.94	5.945	0.020	0.0004	0.01	0.00
2	5.95	5.92	5.935	0.010	0.0001	0.03	0.00
3	5.94	5.92	5.930	0.005	0.0000	0.02	0.00
4	5.9	5.92	5.910	-0.015	0.0002	0.02	0.00
5	5.95	5.88	5.915	-0.010	0.0001	0.07	0.00
6	5.92	5.94	5.930	0.005	0.0000	0.02	0.00
7	5.92	5.94	5.930	0.005	0.0000	0.02	0.00
8	5.92	5.94	5.930	0.005	0.0000	0.02	0.00
9	5.91	5.94	5.925	0.000	0.0000	0.03	0.00
10	5.91	5.94	5.925	0.000	0.0000	0.03	0.00
11	5.88	5.89	5.885	-0.040	0.0016	0.01	0.00
12	5.87	5.88	5.875	-0.050	0.0026	0.01	0.00
13	5.95	5.94	5.945	0.020	0.0004	0.01	0.00
14	5.95	5.94	5.945	0.020	0.0004	0.01	0.00
15	5.94	5.94	5.940	0.015	0.0002	0.00	0.00
16	5.95	5.94	5.945	0.020	0.0004	0.01	0.00
17	5.94	5.94	5.940	0.015	0.0002	0.00	0.00
18	5.96	5.94	5.950	0.025	0.0006	0.02	0.00
19	5.90	5.91	5.905	-0.020	0.0004	0.01	0.00
20	5.91	5.90	5.905	-0.020	0.0004	0.01	0.00



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G	20	Xr =	5.9255		0.011
CV Horwitz =		$2^{1-0,5 \log C}$		Σ	0.0081
Kons		5.926	mg/dL		0.0004
C =			0.059255	Sx	0.0206
log C =			-1.2272749	Sx ²	0.0004
0,5 log C =			-0.6136374		0.00027
1-0,5 log C =			1.61363749	Sw	0.016432
$2^{1-0,5 \log C} =$			3.06022451	Sw ²	0.000270
CV _{Horwitz} =			3.06022451	Sw ² /2	0.000135
SDPA(S _{Horwitz}) =			0.1813	Sx ² -(Sw ² /2)	0.0003
0.3 x S _{Horwitz}			0.05440008	Ss	0.017060
0.3SDPA			0.05440008		

Ss < 0.3 x S_{Horwitz}
0.017 < 0.054
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	5.91	5.90	5.9
2	5.91	5.90	5.9
3	5.91	5.89	5.9
4	5.94	5.93	5.9
5	5.91	5.94	5.9
6	5.91	5.95	5.9
7	5.91	5.93	5.9
8	5.90	5.94	5.9
9	5.90	5.94	5.9
10	5.94	5.93	5.9
11	5.93	5.93	5.9
12	5.93	5.93	5.9
13	5.93	5.93	5.9
14	5.93	5.93	5.9
15	5.90	5.90	5.9
16	5.89	5.89	5.9
17	5.93	5.94	5.9
18	5.91	5.91	5.9
19	5.91	5.89	5.9
20	5.94	5.94	5.9

Yr = 5.920

Xr – Yr = 0.006

0.3SDPA = 0.05440008

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

Prepared by : DN

Reviewed by : RA

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Tel: (949) 598-1200
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Date Tested	03/11/2024
Analyte	URIC ACID
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	4.51	4.52	4.515	-0.029	0.0008	0.01	0.00
2	4.53	4.56	4.545	0.001	0.0000	0.03	0.00
3	4.52	4.56	4.540	-0.004	0.0000	0.04	0.00
4	4.53	4.56	4.545	0.001	0.0000	0.03	0.00
5	4.52	4.56	4.540	-0.004	0.0000	0.04	0.00
6	4.53	4.56	4.545	0.001	0.0000	0.03	0.00
7	4.53	4.51	4.520	-0.024	0.0006	0.02	0.00
8	4.51	4.56	4.535	-0.009	0.0001	0.05	0.00
9	4.53	4.56	4.545	0.001	0.0000	0.03	0.00
10	4.58	4.57	4.575	0.031	0.0010	0.01	0.00
11	4.51	4.52	4.515	-0.029	0.0008	0.01	0.00
12	4.53	4.56	4.545	0.001	0.0000	0.03	0.00
13	4.52	4.56	4.540	-0.004	0.0000	0.04	0.00
14	4.53	4.55	4.540	-0.004	0.0000	0.02	0.00
15	4.53	4.55	4.540	-0.004	0.0000	0.02	0.00
16	4.51	4.55	4.530	-0.014	0.0002	0.04	0.00
17	4.51	4.55	4.530	-0.014	0.0002	0.04	0.00
18	4.58	4.57	4.575	0.031	0.0010	0.01	0.00
19	4.58	4.57	4.575	0.031	0.0010	0.01	0.00
20	4.58	4.57	4.575	0.031	0.0010	0.01	0.00



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G	20	Xr =	4.544		0.02
CV Horwitz =		$2^{1-0,5 \log C}$		Σ	0.0067
Kons		4.544	g/dL		0.0004
C =			0.045435	Sx	0.0187
log C =			-1.3426094	Sx ²	0.0004
0,5 log C =			-0.6713047		0.00042
1-0,5 log C =			1.67130473	Sw	0.020494
$2^{1-0,5 \log C} =$			3.18502508	Sw ²	0.0004
CV _{Horwitz} =			3.18502508	Sw ² /2	0.0002
SDPA(S _{Horwitz}) =			0.1447	Sx ² -(Sw ² /2)	0.0001
0.3 x S _{Horwitz}			0.04341348	Ss	0.011843
0.3SDPA	0.04341348				

Ss < 0.3 x S_{Horwitz}
0.012 < 0.043
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	4.53	4.51	4.5
2	4.51	4.56	4.5
3	4.53	4.56	4.5
4	4.55	4.54	4.5
5	4.53	4.58	4.6
6	4.51	4.50	4.5
7	4.52	4.54	4.5
8	4.53	4.56	4.5
9	4.53	4.56	4.5
10	4.52	4.56	4.5
11	4.52	4.51	4.5
12	4.55	4.54	4.5
13	4.55	4.54	4.5
14	4.53	4.58	4.6
15	4.57	4.58	4.6
16	4.53	4.58	4.6
17	4.49	4.50	4.5
18	4.51	4.50	4.5
19	4.55	4.54	4.5
20	4.55	4.54	4.5

Yr = 4.537

Xr – Yr = 0.006

0.3SDPA = 0.04341348

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

Prepared by : DN

Reviewed by : RA

Date : Mar 11, 2024

Date : Mar 11, 2024



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Tel: (949) 598-1200
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Date Tested	03/11/2024
Analyte	URIC ACID
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	9.62	9.61	9.615	0.098	0.0095	0.01	0.00
2	9.60	9.60	9.600	0.082	0.0068	0.00	0.00
3	9.62	9.61	9.615	0.098	0.0095	0.01	0.00
4	9.61	9.61	9.610	0.092	0.0086	0.00	0.00
5	9.57	9.68	9.625	0.108	0.0116	0.11	0.01
6	9.56	9.68	9.620	0.102	0.0105	0.12	0.01
7	9.67	9.65	9.660	0.143	0.0203	0.02	0.00
8	9.67	9.67	9.670	0.153	0.0233	0.00	0.00
9	9.62	9.61	9.615	0.098	0.0095	0.01	0.00
10	9.48	9.47	9.475	-0.043	0.0018	0.01	0.00
11	9.46	9.48	9.470	-0.047	0.0023	0.02	0.00
12	9.51	9.50	9.505	-0.012	0.0002	0.01	0.00
13	9.45	9.47	9.460	-0.058	0.0033	0.02	0.00
14	9.44	9.47	9.455	-0.063	0.0039	0.03	0.00
15	9.57	9.59	9.580	0.063	0.0039	0.02	0.00
16	9.27	9.24	9.255	-0.262	0.0689	0.03	0.00
17	9.29	9.29	9.290	-0.227	0.0518	0.00	0.00
18	9.41	9.41	9.410	-0.108	0.0116	0.00	0.00
19	9.40	9.40	9.400	-0.118	0.0138	0.00	0.00
20	9.42	9.42	9.420	-0.098	0.0095	0.00	0.00



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G	20	Xr = 9.5175	0.03
CV _{Horwitz} =	$2^{1-0,5 \log C}$		Σ 0.2804
Kons	9.518	mg/dL	0.0148
C =		0.095175	Sx 0.1215
log C =		-1.02147715	Sx ² 0.0148
0,5 log C =		-0.51073855	0.00076
1-0,5 log C=		1.510738557	Sw 0.027568
$2^{1-0,5 \log C}=$		2.849558789	Sw ² 0.00076
CV _{Horwitz} =		2.849558789	Sw ² /2 0.00038
SDPA(S _{Horwitz})=		0.2712	Sx ² -(Sw ² /2) 0.0144
0.3 x S _{Horwitz}		0.081362027	Ss 0.119902
0.3SDPA	0.081362027		

Ss < 0.3 x S_{Horwitz}
0.012 < 0.081
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	9.51	9.51	9.5
2	9.57	9.56	9.6
3	9.67	9.67	9.7
4	9.69	9.69	9.7
5	9.40	9.40	9.4
6	9.42	9.42	9.4
7	9.61	9.62	9.6
8	9.60	9.60	9.6
9	9.61	9.62	9.6
10	9.67	9.67	9.7
11	9.69	9.69	9.7
12	9.54	9.54	9.5
13	9.56	9.56	9.6
14	9.48	9.47	9.5
15	9.46	9.48	9.5
16	9.51	9.50	9.5
17	9.45	9.47	9.5
18	9.44	9.47	9.5
19	9.57	9.59	9.6
20	9.27	9.24	9.3

Yr = 9.537

Xr – Yr = 0.020

0.3SDPA = 0.081362027

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

Prepared by : DN

Reviewed by : RA

Date : Mar 11, 2024

Date : Mar 11, 2024



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Tel: (949) 598-1200
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Date Tested	03/11/2024
Analyte	GLUCOSE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	1
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	(Xt - Xr) ²	Wt	Wt ²
1	75	74	75	1.500	2.2500	1.0	1.00
2	74	74	74	1.000	1.0000	0.0	0.00
3	73	75	74	1.000	1.0000	2.0	4.00
4	73	72	73	-0.500	0.2500	1.0	1.00
5	74	73	74	0.500	0.2500	1.0	1.00
6	73	73	73	0.000	0.0000	0.0	0.00
7	73	72	73	-0.500	0.2500	1.0	1.00
8	72	74	73	0.000	0.0000	2.0	4.00
9	73	74	74	0.500	0.2500	1.0	1.00
10	74	71	73	-0.500	0.2500	3.0	9.00
11	72	73	73	-0.500	0.2500	1.0	1.00
12	73	73	73	0.000	0.0000	0.0	0.00
13	73	73	73	0.000	0.0000	0.0	0.00
14	73	73	73	0.000	0.0000	0.0	0.00
15	73	73	73	0.000	0.0000	0.0	0.00
16	74	72	73	0.000	0.0000	2.0	4.00
17	73	72	73	-0.500	0.2500	1.0	1.00
18	72	72	72	-1.000	1.0000	0.0	0.00
19	74	72	73	0.000	0.0000	2.0	4.00
20	72	72	72	-1.000	1.0000	0.0	0.00



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www.bio-rad.com/qualitycontrol

G	20	Xr =	73.000		32.00
CV Horwitz =		$2^{1-0,5 \log C}$		Σ	8.000
Kons		73.000	mg/dL		0.4211
C =		0.73		Sx	0.6489
log C =		-0.1366771		Sx ²	0.4211
0,5 log C =		-0.0683385			0.8
1-0,5 log C =		1.06833857		Sw	0.894427
$2^{1-0,5 \log C} =$		2.09701702		Sw ²	0.800
CV _{Horwitz} =		2.09701702		Sw ² /2	0.4000
SDPA(S _{Horwitz}) =		1.5308		Sx ² -(Sw ² /2)	0.0211
0.3 x S _{Horwitz}		0.45924673		Ss	0.145
0.3SDPA	0.45924673				

Ss < 0.3 x S_{Horwitz}
0.145 < 0.460
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	72	72	72
2	72	74	73
3	73	74	74
4	74	71	73
5	72	73	73
6	73	73	73
7	73	73	73
8	72	72	72
9	73	72	73
10	72	72	72
11	73	74	74
12	73	73	73
13	73	73	73
14	72	74	73
15	73	74	74
16	73	74	74
17	73	73	73
18	73	73	73
19	72	74	73
20	72	72	72

Yr = 72.825

Xr – Yr = 0.175

0.3SDPA = 0.45924673

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

Prepared by : DN

Reviewed by : RA

Date : Mar 11, 2024

Date : Mar 11, 2024



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Date Tested	04/11/2024
Analyte	GLUCOSE
Method	Abrcht
Product Name	Lyphocheck Assayed Chemistry Control
Lot Number	89770
Level	2
Analyst Name	DN
SIUnit	mg/dL

1. HOMOGENEITY

NO	DATA 1	DATA 2	RERATA (Xt)	SELISIH (Xt-Xr)	$(Xt - Xr)^2$	Wt	Wt^2
1	275	276	275.5	-0.375	0.1406	1.00	1.00
2	277	276	276.5	0.625	0.3906	1.00	1.00
3	277	278	277.5	1.625	2.6406	1.00	1.00
4	277	275	276.0	0.125	0.0156	2.00	4.00
5	277	275	276.0	0.125	0.0156	2.00	4.00
6	278	278	278.0	2.125	4.5156	0.00	0.00
7	278	275	276.5	0.625	0.3906	3.00	9.00
8	275	276	275.5	-0.375	0.1406	1.00	1.00
9	275	276	275.5	-0.375	0.1406	1.00	1.00
10	275	276	275.5	-0.375	0.1406	1.00	1.00
11	276	275	275.5	-0.375	0.1406	1.00	1.00
12	276	275	275.5	-0.375	0.1406	1.00	1.00
13	275	275	275.0	-0.875	0.7656	0.00	0.00
14	275	275	275.0	-0.875	0.7656	0.00	0.00
15	275	275	275.0	-0.875	0.7656	0.00	0.00
16	275	275	275.0	-0.875	0.7656	0.00	0.00
17	277	276	276.5	0.625	0.3906	1.00	1.00
18	277	276	276.5	0.625	0.3906	1.00	1.00
19	275	276	275.5	-0.375	0.1406	1.00	1.00
20	276	275	275.5	-0.375	0.1406	1.00	1.00



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G	20	Xr =	275.875	29.00
CV Horwitz =		$2^{1-0,5 \log C}$		Σ 12.9375
Kons		275.875	mg/dL	0.6809
C =		2.75875		Sx 0.8252
log C =		0.44071234		Sx ² 0.6809
0,5 log C =		0.22035617		0.725
1-0,5 log C =		0.77964383		Sw 0.851469
$2^{1-0,5 \log C} =$		1.71670699		Sw ² 0.725
CV _{Horwitz} =		1.71670699		Sw ² /2 0.363
SDPA(S _{Horwitz}) =		4.7360		Sx ² -(Sw ² /2) 0.3184
0.3 x S _{Horwitz}		1.42078963		Ss 0.564288
0.3SDPA	1.42078963			

Ss < 0.3 x S_{Horwitz}
0.564 < 1.421
HOMOGENOUS



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2. STABILITY

NO	DATA 1	DATA 2	RERATA (Yt)
1	275	276	275.5
2	275	276	275.5
3	275	276	275.5
4	276	275	275.5
5	276	275	275.5
6	275	275	275.0
7	275	275	275.0
8	275	275	275.0
9	275	275	275.0
10	277	276	276.5
11	277	276	276.5
12	275	276	275.5
13	276	275	275.5
14	278	278	278.0
15	275	275	275.0
16	275	275	275.0
17	275	275	275.0
18	277	276	276.5
19	277	276	276.5
20	277	276	276.5

Yr = 275.700

Xr – Yr = 0.175

0.3SDPA = 1.42078963

$[Xr - Yr] < 0.3 \text{ SDPA}$

STABIL

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