

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-47

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN15 Bronze Gate Valve with Screw End (Body)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-003-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____

Lau Hiu Yat
Senior Chemist

Certified by : _____

Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

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Castco LRN: MS0170901-47

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.006	0.03 max.
¹⁾ Bismuth	Bi %	0.055	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.030	0.30 max.
¹⁾ Nickel	Ni %	0.16	0.60 max.
¹⁾ Phosphorus	P %	0.012	0.04 max.
¹⁾ Lead	Pb %	2.91	3.0 max.
¹⁾ Sulphur	S %	0.033	0.04 max.
¹⁾ Antimony	Sb %	0.058	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.43	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.30	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.0	84.0 min. 88.0 max.

Executive Summary

The chemical composition of the tested specimen complies with Grade CC499K in Table 23a of BS EN 1982:2008 except for Bismuth content, which is higher than the upper limit 0.02 of the specification.

End of Report

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-48

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN15 Bronze Gate Valve with Screw End (Bonnet)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-003-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by :

Lau Hiu Yat
Senior Chemist

Certified by :

Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-48

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.004	0.03 max.
¹⁾ Bismuth	Bi %	0.019	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.030	0.30 max.
¹⁾ Nickel	Ni %	0.10	0.60 max.
¹⁾ Phosphorus	P %	0.025	0.04 max.
¹⁾ Lead	Pb %	2.15	3.0 max.
¹⁾ Sulphur	S %	0.016	0.04 max.
¹⁾ Antimony	Sb %	0.034	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.79	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.21	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.6	84.0 min. 88.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23a, Grade CC499K

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-49

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN15 Bronze Gate Valve with Screw End (Seat)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-003-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Certified by : _____


Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-49

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.003	0.03 max.
¹⁾ Bismuth	Bi %	0.095	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.020	0.30 max.
¹⁾ Nickel	Ni %	0.15	0.60 max.
¹⁾ Phosphorus	P %	0.008	0.04 max.
¹⁾ Lead	Pb %	2.10	3.0 max.
¹⁾ Sulphur	S %	0.013	0.04 max.
¹⁾ Antimony	Sb %	0.033	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.92	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.03	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.6	84.0 min. 88.0 max.

Executive Summary

The chemical composition of the tested specimen complies with Grade CC499K in Table 23a of BS EN 1982:2008 except for Bismuth content, which is higher than the upper limit 0.02 of the specification.

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-50

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN15 Bronze Gate Valve with Screw End (Stem)
Specification : BS EN 1982:2008, Table 23b, Grade CC491K
Specimen No. : BC0170725-003-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand


Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Approved Signatory: _____


Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-50

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23b, Grade CC491K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Iron	Fe %	0.058	0.3 max.
¹⁾ Nickel	Ni %	0.18	2.0 max.
¹⁾ Phosphorus	P %	0.058	0.10 max.
¹⁾ Lead	Pb %	4.53	4.0 min. 6.0 max.
¹⁾ Sulphur	S %	0.040	0.10 max.
¹⁾ Antimony	Sb %	0.095	0.25 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.05	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	5.62	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	84.3	83.0 min. 87.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23b, Grade CC491K.

End of Report

Form No.: CHM Cu&Cu Alloy-3 T dd 03/02/2016

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-51

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN25 Bronze Gate Valve with Screw End (Body)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-004-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by :

Lau Hiu Yat
Senior Chemist

Certified by :

Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-51

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.002	0.03 max.
¹⁾ Bismuth	Bi %	>0.45	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.011	0.30 max.
¹⁾ Nickel	Ni %	0.12	0.60 max.
¹⁾ Phosphorus	P %	0.025	0.04 max.
¹⁾ Lead	Pb %	0.65	3.0 max.
¹⁾ Sulphur	S %	0.010	0.04 max.
¹⁾ Antimony	Sb %	0.012	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.33	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	5.68	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.3	84.0 min. 88.0 max.

Executive Summary

The chemical composition of the tested specimen complies with Grade CC499K in Table 23a of BS EN 1982:2008 except for Bismuth content, which is higher than the upper limit 0.02 of the specification.

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-52

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN25 Bronze Gate Valve with Screw End (Bonnet)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-004-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____

Lau Hiu Yat
Senior Chemist

Certified by : _____

Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-52

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.003	0.03 max.
¹⁾ Bismuth	Bi %	0.016	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.022	0.30 max.
¹⁾ Nickel	Ni %	0.081	0.60 max.
¹⁾ Phosphorus	P %	0.022	0.04 max.
¹⁾ Lead	Pb %	1.89	3.0 max.
¹⁾ Sulphur	S %	0.016	0.04 max.
¹⁾ Antimony	Sb %	0.031	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.71	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.28	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.9	84.0 min. 88.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23a, Grade CC499K

End of Report

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-53

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN25 Bronze Gate Valve with Screw End (Seat)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-004-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Certified by : _____


Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-53

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.004	0.03 max.
¹⁾ Bismuth	Bi %	0.015	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.018	0.30 max.
¹⁾ Nickel	Ni %	0.13	0.60 max.
¹⁾ Phosphorus	P %	0.027	0.04 max.
¹⁾ Lead	Pb %	1.87	3.0 max.
¹⁾ Sulphur	S %	0.017	0.04 max.
¹⁾ Antimony	Sb %	0.021	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.81	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.39	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.7	84.0 min. 88.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23a, Grade CC499K

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-54

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN25 Bronze Gate Valve with Screw End (Stem)
Specification : BS EN 1982:2008, Table 23b, Grade CC491K
Specimen No. : BC0170725-004-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Approved Signatory: _____


Cheng Chi Fai
Senior Manager

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-54

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23b, Grade CC491K castings
1) Aluminium	Al %	<0.003	0.01 max.
1) Iron	Fe %	0.12	0.3 max.
1) Nickel	Ni %	0.22	2.0 max.
1) Phosphorus	P %	0.057	0.10 max.
1) Lead	Pb %	5.62	4.0 min. 6.0 max.
1) Sulphur	S %	0.042	0.10 max.
1) Antimony	Sb %	0.057	0.25 max.
1) Silicon	Si %	<0.002	0.01 max.
1) Tin	Sn %	4.34	4.0 min. 6.0 max.
1) Zinc	Zn %	5.83	4.0 min. 6.0 max.
1) Copper	Cu %	83.7	83.0 min. 87.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23b, Grade CC491K.

End of Report

Form No.: CHM Cu&Cu Alloy-3 T dd 03/02/2016

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-55

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN50 Bronze Gate Valve with Screw End (Body)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-005-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by :

Lau Hiu Yat
Senior Chemist

Certified by :

Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-55

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
1) Aluminium	Al %	<0.003	0.01 max.
1) Arsenic	As %	0.004	0.03 max.
1) Bismuth	Bi %	0.013	0.02 max.
1) Cadmium	Cd %	<0.005	0.02 max.
1) Chromium	Cr %	<0.005	0.02 max.
1) Iron	Fe %	0.018	0.30 max.
1) Nickel	Ni %	0.14	0.60 max.
1) Phosphorus	P %	0.024	0.04 max.
1) Lead	Pb %	1.86	3.0 max.
1) Sulphur	S %	0.017	0.04 max.
1) Antimony	Sb %	0.018	0.10 max.
1) Silicon	Si %	<0.002	0.01 max.
1) Tin	Sn %	5.19	4.0 min. 6.0 max.
1) Zinc	Zn %	4.61	4.0 min. 6.0 max.
1) Copper	Cu %	88.1	84.0 min. 88.0 max.

Executive Summary

The chemical composition of the tested specimen complies with Grade CC499K in Table 23a of BS EN 1982:2008 except for Copper content, which is higher than the upper limit 88.0 of the specification.

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-56

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN50 Bronze Gate Valve with Screw End (Bonnet)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-005-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand


Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Certified by : _____


Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-56

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
1) Aluminium	Al %	<0.003	0.01 max.
1) Arsenic	As %	0.003	0.03 max.
1) Bismuth	Bi %	0.028	0.02 max.
1) Cadmium	Cd %	<0.005	0.02 max.
1) Chromium	Cr %	<0.005	0.02 max.
1) Iron	Fe %	0.020	0.30 max.
1) Nickel	Ni %	0.068	0.60 max.
1) Phosphorus	P %	0.029	0.04 max.
1) Lead	Pb %	2.01	3.0 max.
1) Sulphur	S %	0.013	0.04 max.
1) Antimony	Sb %	0.016	0.10 max.
1) Silicon	Si %	<0.002	0.01 max.
1) Tin	Sn %	5.42	4.0 min. 6.0 max.
1) Zinc	Zn %	4.41	4.0 min. 6.0 max.
1) Copper	Cu %	88.0	84.0 min. 88.0 max.

Executive Summary

The chemical composition of the tested specimen complies with Grade CC499K in Table 23a of BS EN 1982:2008 except for Bismuth content, which is higher than the upper limit 0.02 of the specification.

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

Page 1 of 2

Castco LRN: MS0170901-57

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN50 Bronze Gate Valve with Screw End (Seat)
Specification : BS EN 1982:2008, Table 23a, Grade CC499K
Specimen No. : BC0170725-005-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : _____


Lau Hiu Yat
Senior Chemist

Certified by : _____


Cheng Chi Fai
Senior Manager

Test Report

Chemical Analysis of Copper and Copper Alloy

Date of issue: 14-09-2017

Page 2 of 2

Castco LRN: MS0170901-57

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23a, Grade CC499K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Arsenic	As %	0.003	0.03 max.
¹⁾ Bismuth	Bi %	0.017	0.02 max.
¹⁾ Cadmium	Cd %	<0.005	0.02 max.
¹⁾ Chromium	Cr %	<0.005	0.02 max.
¹⁾ Iron	Fe %	0.015	0.30 max.
¹⁾ Nickel	Ni %	0.063	0.60 max.
¹⁾ Phosphorus	P %	0.024	0.04 max.
¹⁾ Lead	Pb %	1.92	3.0 max.
¹⁾ Sulphur	S %	0.013	0.04 max.
¹⁾ Antimony	Sb %	0.015	0.10 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	5.73	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	4.41	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	87.8	84.0 min. 88.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23a, Grade CC499K

End of Report

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

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Castco LRN: MS0170901-58

Details as supplied by customer

Name of Customer : Gate Way Valve & Fitting Ltd.
Address : Flat A1, 4/F., Galaxy Factory Bldg., 25-27 Luk Hop Street, San Po Kong, Kowloon, Hong Kong
Job Title : --
Contract No. : --
Customer's Ref. No. : --

Sample details as supplied by customer

Date of Sample Received : 01-09-2017
Date Sampled : --
Test Period : 09-09-2017
Sample Description : DN50 Bronze Gate Valve with Screw End (Stem)
Specification : BS EN 1982:2008, Table 23b, Grade CC491K
Specimen No. : BC0170725-005-MISL
Location of Work : -- / Brand Name: Toyo / Model no.: Fig. 318A
Sample Identification No.: -- / Manufacturer: Kitz (Thailand) Ltd. / Origin: Thailand

Test Method(s):-

1) In House Method: ST-Multi-4 (Spark-OES)

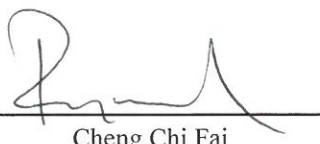
Remarks:

I. Test results only relate to the specimen tested.

Checked by :


Lau Hiu Yat
Senior Chemist

Approved Signatory:


Cheng Chi Fai
Senior Manager

Test Report**Chemical Analysis of Copper and Copper Alloy**

Date of issue: 14-09-2017

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Castco LRN: MS0170901-58

Chemical Analysis		Result	Specification BS EN 1982:2008, Table 23b, Grade CC491K castings
¹⁾ Aluminium	Al %	<0.003	0.01 max.
¹⁾ Iron	Fe %	0.019	0.3 max.
¹⁾ Nickel	Ni %	0.18	2.0 max.
¹⁾ Phosphorus	P %	0.065	0.10 max.
¹⁾ Lead	Pb %	4.88	4.0 min. 6.0 max.
¹⁾ Sulphur	S %	0.047	0.10 max.
¹⁾ Antimony	Sb %	0.045	0.25 max.
¹⁾ Silicon	Si %	<0.002	0.01 max.
¹⁾ Tin	Sn %	4.14	4.0 min. 6.0 max.
¹⁾ Zinc	Zn %	5.87	4.0 min. 6.0 max.
¹⁾ Copper	Cu %	84.7	83.0 min. 87.0 max.

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 1982:2008, Table 23b, Grade CC491K.

End of Report

Form No.: CHM Cu&Cu Alloy-3 T dd 03/02/2016