

Standard Methods for Testing Fei Cui for Hong Kong (extract) 香港翡翠標準測試方法(節錄)

The Gemmological Association of Hong Kong

香港寶石學協會

本文節錄自由香港寶石協會製定及執行，並由香港檢測和認證局贊助的香港翡翠標準測試方法。此標準測試方法的完整版可於以下網址下載：

[http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20\(20170327\).pdf](http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20(20170327).pdf)

A full version of this standard can be downloaded from:

[http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20\(20170327\).pdf](http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20(20170327).pdf)



The development of this Standard was executed by The Gemmological Association of Hong Kong, and is sponsored by the Hong Kong Council for Testing and Certification.

Foreword

This Standard Methods for Testing Fei Cui for Hong Kong presents the recommended standard methods for testing of Fei Cui for gemstone identification and verification purposes in Hong Kong. This Standard was issued on 19 February 2016 and is published by The Gemmological Association of Hong Kong Limited (GAHK).

This Standard was prepared by a working group consulting with gemmologists and academics who are experts in this field from Mainland China and around the world. To ensure its acceptance as a consensus document in Hong Kong, a draft version of this standard was widely circulated to relevant gemstone and jewellery trade associations and their opinions were sought. A number of useful comments were received, and these were taken into account in finalizing this Standard. All such contributions are gratefully acknowledged.

Those working in the gemstone industry are encouraged to send their comments on the contents of this standard to GAHK, so that improvements may be made in future editions.

Introduction

Fei Cui (Chinese: 翡翠) is a family name that is applied to three related and often visually similar members, Jadeite Jade, Kosmochlor Jade and Omphacite Jade. Accredited Fei Cui test reports are in great demand especially during the auction season. In order to assist both the Fei Cui trading industry and gem testing

laboratories to benefit from this increasing demand and to enhance the credibility of the local gemstone industry, this document was developed and is issued by GAHK with a view to regularising the following:

- [1] The practice and methodology of Fei Cui (green, black, white and colourless) testing,
- [2] The technical specifications to be set and the formats and contents to be used when issuing Fei Cui test reports or test certificates, and
- [3] The definition and nomenclature of Fei Cui.

Definition of Fei Cui - Jadeite Jade, Omphacite Jade, Kosmochlor Jade

Fei Cui is a granular to fibrous polycrystalline aggregate, which is composed solely, or principally of any of the following or any combination of the following: Jadeite, Omphacite and Kosmochlor.

Fei Cui, Jadeite Jade is a granular to fibrous polycrystalline aggregate. Its major mineral component is Jadeite ($\text{NaAlSi}_2\text{O}_6$).

Other minerals such as Omphacite and Kosmochlor may also be present.

Fei Cui, Omphacite Jade is a microgranular to microfibrinous polycrystalline aggregate. Its major mineral component is Omphacite $[(\text{Ca},\text{Na})(\text{Mg},\text{Al})\text{Si}_2\text{O}_6]$. Other minerals such as Jadeite and Kosmochlor may also be present.

Fei Cui, Kosmochlor Jade is a granular to fibrous polycrystalline aggregate. Its major mineral component is Kosmochlor ($\text{NaCrSi}_2\text{O}_6$). Other minerals such as Jadeite and Omphacite may also be present.

When there is a need to differentiate of the three Fei Cui members: Jadeite Jade, Omphacite Jade and Kosmochlor Jade. The Fei Cui Infrared Spectrum Fingerprint Identification Testing Method is considered diagnostic and is recommended as a means of distinguishing between the three Fei Cui members.

A diagrammatic flow chart of the testing procedures for the classification of the types of Fei Cui is provided for the use of laboratories.



Major Physical Properties of Fei Cui - Jadeite Jade, Omphacite Jade, Kosmochlor Jade

	Jadeite Jade	Omphacite Jade	Kosmochlor Jade
Texture	Polycrystalline, uneven granular to fibrous interlocking texture	Polycrystalline, uneven, fibrous to granular interlocking texture	Polycrystalline, uneven, granular to fibrous interlocking texture
Common Colour	Colourless, white and green, yellow, reddish orange, brown, grey, black, light purplish red, violet, blue and pink etc.	Green to black and bluish green in reflected light; green to dark green and bluish green in transmitted light; usually even	Intense bright green to dark green to black; usually uneven
Transparency	Transparent to opaque	Transparent to opaque	Transparent to opaque
¹Lustre	Vitreous to greasy. The polycrystalline crystal aggregate may show some glistening on the surface (due to Jadeite's two directions of perfect cleavages)	Vitreous, due to fine-grained texture, and smooth polished surface	Vitreous to dull vitreous, due to coarse-grained texture and rough polished surface
Mohs' Hardness	6.5 – 7	7	5.5 – 6, brittle
^{2,3}Specific Gravity	3.25 – 3.40	3.30 – 3.45 (Usually slightly higher than Jadeite Jade)	3.35 – 3.50 (Usually higher than Jadeite Jade)
Optical Nature	Anisotropic (polycrystalline aggregate)	Anisotropic (polycrystalline aggregate)	Anisotropic (polycrystalline aggregate)
Refractive Index	1.65 – 1.67 (± 0.01), by spot reading method (distance vision method) normally read as 1.66	1.67 – 1.68 (± 0.01), by spot reading method (distance vision method) normally read as 1.67 (slightly higher than Jadeite Jade)	1.68 – 1.72 (± 0.01), by spot reading method (distance vision method) normally read as 1.72 (higher than Jadeite Jade and Omphacite Jade)
Ultraviolet Fluorescence	None to faint	Inert	Inert
Absorption Spectrum	Fe absorption band may appear at 437nm; Cr absorption line(s) approximately at 630nm, 660nm and 690nm may be observed on bright green Jadeite Jade	Fe absorption band may appear at 437nm as Jadeite Jade; Cr absorption line(s) may be observed in the red at 630nm, 660nm and 690nm	Cr absorption lines may appear in the red at 630nm, 660nm and 690nm; Fe absorption band may appear at 437nm

Notes:

¹ Tests for lustre and hardness are not within the scope of the Standard Methods for Testing Fei Cui for Hong Kong.

² The standard testing method of Determination of Specific Gravity is not applicable for mounted Fei Cui.

³ The range of Specific Gravity results may vary because of the texture of Fei Cui and the presence of associated minerals.



Natural Fei Cui and Treatment Types

Type	Known as	Definition
Natural Fei Cui	Type A	Refers to natural Fei Cui which has not been subjected to any form of chemical treatment ¹
Chemically Treated and Resin Impregnated Fei Cui	Type B	Refers to Fei Cui which has been chemically treated and resin impregnated
Dyed Fei Cui	Type C	Refers to Fei Cui which has been treated with dye
Chemically Treated, Resin Impregnated and Dyed Fei Cui	Type B+C	Refers to Fei Cui which has been chemically treated, resin impregnated and dyed.

Notes:

¹ To polish natural Fei Cui with colourless wax, which does not cause any damage to the crystalline structure of the Fei Cui, shall not be classified as a chemical treatment.



Standard Test Methods

There are 13 sets of Standard Test Methods. Identification execution and details of each standard test method can be referred to the original standard available at:

[http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20\(20170327\).pdf](http://www.gahk.org/attachment/feicui/HKSM%20FCT-2016%20(20170327).pdf)

STANDARD TEST METHOD 1:
SHAPE AND CUT IDENTIFICATION OF FEI CUI

STANDARD TEST METHOD 2:
MEASUREMENT OF DIMENSIONS OF FEI CUI

STANDARD TEST METHOD 3:
MEASUREMENT OF WEIGHT OF FEI CUI

STANDARD TEST METHOD 4:
IDENTIFICATION OF TRANSPARENCY OF FEI CUI

STANDARD TEST METHOD 5:
IDENTIFICATION OF COLOUR OF FEI CUI

STANDARD TEST METHOD 6:
FEI CUI POLARISCOPE EXAMINATION

STANDARD TEST METHOD 7:
DETERMINATION OF REFRACTIVE INDEX OF FEI CUI

STANDARD TEST METHOD 8:
DETERMINATION OF SPECIFIC GRAVITY OF FEI CUI

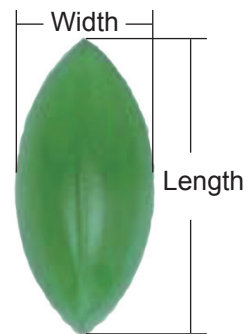
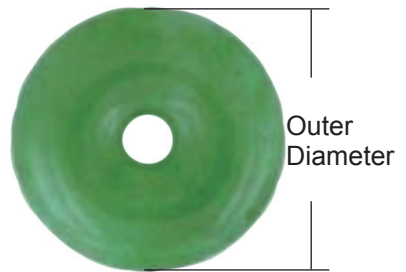
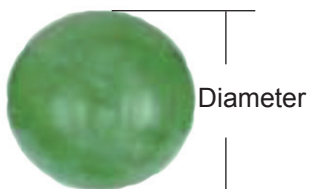
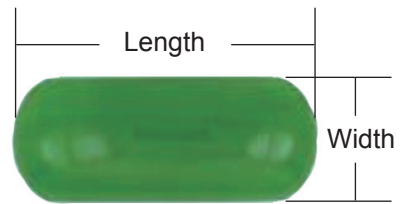
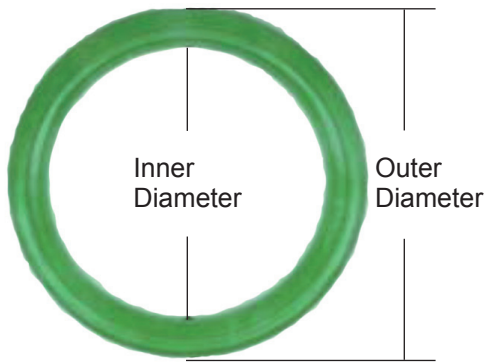
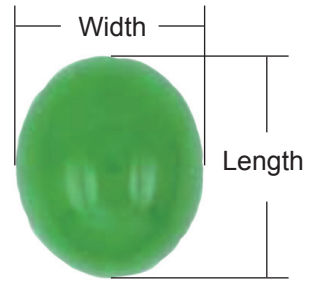
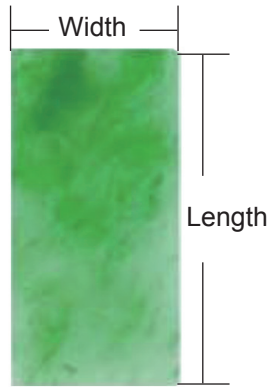
STANDARD TEST METHOD 9:
EXAMINATION OF FLUORESCENCE OF FEI CUI

STANDARD TEST METHOD 10:
CHELSEA COLOUR FILTER EXAMINATION

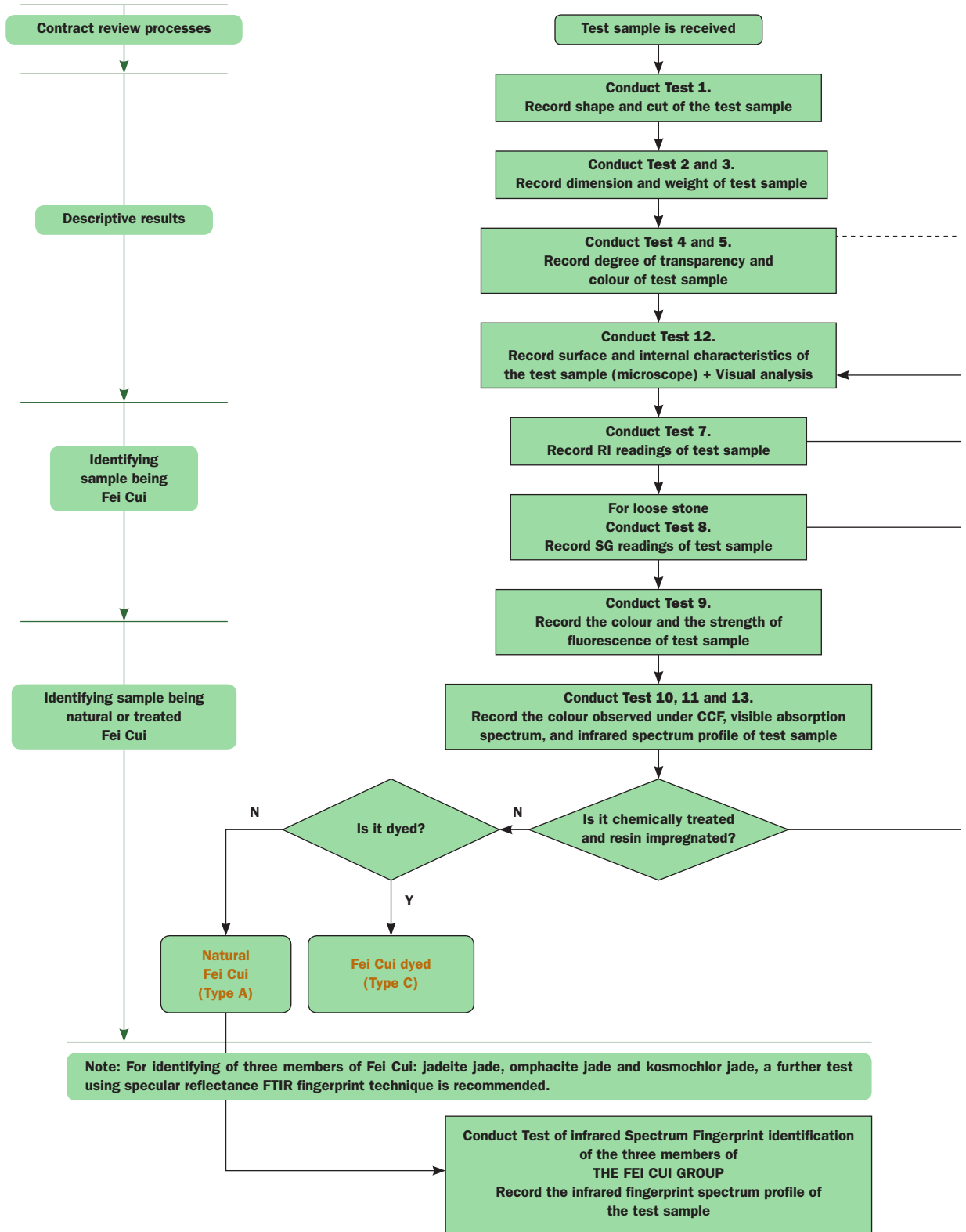
STANDARD TEST METHOD 11:
FEI CUI SPECTROSCOPIC EXAMINATION

STANDARD TEST METHOD 12:
FEI CUI MAGNIFICATION EXAMINATION

STANDARD TEST METHOD 13:
FEI CUI INFRARED SPECTRUM EXAMINATION:
Detection of Resin Impregnation



DIAGRAMMATIC FLOW CHART SHOWING TESTING PROCEDURES FOR ITEMS OF FEI CUI



Standard Methods for Testing Fei Cui:

1. Shape and Cut Identification of Fei Cui
2. Measurement of Dimensions of Fei Cui
3. Measurement of Weight of Fei Cui
4. Identification of Transparency of Fei Cui
5. Identification of Colour of Fei Cui
6. Fei Cui Polariscopes Examination
7. Determination of Refractive Index of Fei Cui
8. Determination of Specific Gravity of Fei Cui
9. Examination of Fluorescence of Fei Cui
10. Chelsea Colour Filter Examination
11. Fei Cui Spectroscopic Examination
12. Fei Cui Magnification Examination
13. Fei Cui Infrared Spectrum Examination:
Detection of Resin Impregnation

