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## CERTIFICATE OF APPROVAL

### No CF 5885

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This is to certify that, in accordance with  
TS00 General Requirements for Certification of Fire Protection Products  
The undermentioned products of

## WENZHOU AKADA FOREIGN TRADE CO. LTD.

Room 2001 Building B5, Daziran,  
No, 103 Shifu Road, Wenzhou  
CHINA

Phone: +86 577 2880 7086

Email: frankchen3099@akada.com.cn

Have been assessed against the requirements of the Technical Schedule(s)  
denoted below and are approved for use subject to the conditions  
appended hereto:

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#### CERTIFIED PRODUCT

Bearing Stainless Steel Hinges

#### TECHNICAL SCHEDULE

TS24 The Contribution of  
Single Axis Hinges to the Fire  
Resistance of Door Assemblies

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan  
Certification Manager



Issued:  
Audit Test Frequency:  
Valid to:

28<sup>th</sup> July 2020  
Annually  
27<sup>th</sup> July 2025





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### WENZHOU AKADA FOREIGN TRADE CO. LTD.

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#### Wenzhou Akada Ball Bearing Stainless Steel Hinges

1. This approval relates to the use of the following specific Wenzhou Akada stainless steel ball bearing, single axis hinges:

Model Number	Size (W x H x T)
AKBH4.543	102 x 114 x 3mm
AKBH533	76 x 127 x 3mm
AKBH533.5	76 x 127 x 3.5mm
AKBH4.543.5	102 x 114 x 3.5mm
AKBH433	76 x 102 x 3mm
AKBH43.53	89 x 102 x 3mm
AKBH443	102 x 102 x 3mm

2. This certification is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

3. This approval relates to their use with the following door assemblies:-

**Latched and unlatched, intumescent sealed door assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores in timber frames having a fire resistance up to 120 minutes (Code ITT).**

**Latched and unlatched, door assemblies consisting of uninsulated or insulated metal door assemblies in metal frames with or without intumescent seals having a fire resistance up to 240 minutes (Code IMM/MM).**

4. This approval relates to the use of the above single axis hinges in contributing to the fire resistance performance of timber based doorsets and metallic based doorsets, as defined in BS EN 1634-1 or BS 476: Part 22: 1987.

5. The hinges are approved on the basis of:

- i) Initial type testing to EN1935 and EN 1634-1
- ii) An appraisal against TS24
- iii) Certification of quality management system.
- iv) Inspection and surveillance of factory production control
- v) On-going audit testing in accordance with TS24 requirements

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J/142

Page 2 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025



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**CERTIFICATE No CF 5885**  
**WENZHOU AKADA FOREIGN TRADE CO. LTD.**

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**Wenzhou Akada Ball Bearing Stainless Steel Hinges**

6. The door assembly shall be a CERTIFIRE approved product or have achieved the appropriate fire resistance performance when tested at a UKAS accredited laboratory in accordance with BS 476: Part 22: 1987 and/or BS EN 1634:1 with hinges of a similar size.
7. The hinges should only be used with door assemblies of proven fire resistance (as defined in BS EN 1634-1 or BS 476: Part 22: 1987), the critical aspects of the doorset construction are considered to be the material of the door frame, the leaf to frame clearance gaps and the lipping material. Attention should be paid to these details and these should not be amended from that previously fire tested. The following minimum specification shall be followed:
- a. 30 and 60 minute timber and mineral-based assemblies (ITT):
    - i) Door frame density - 460 kg/m<sup>3</sup> (30 minutes), 640 kg/m<sup>3</sup> (60 minutes)
    - ii) Door leaves shall have a minimum thickness of 44 mm for 30 minute applications and 54 mm for 60 minute applications.
    - iii) Lipping density - 640 kg/m<sup>3</sup>.
    - iv) For ITT 20 and 30 applications, a maximum of 42 mm blade width shall be recessed into the door edge/frame rebate.
  - b. Steel-based assemblies (MM/IMM)
    - i) Door leaves shall have a minimum thickness of 44 mm for up to 240 minute applications.

Signed  
J/142

Page 3 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025

## CERTIFICATE No CF 5885

### WENZHOU AKADA FOREIGN TRADE CO. LTD.

#### Wenzhou Akada Ball Bearing Stainless Steel Hinges

8. For 90 minute and 120 minute timber and mineral-based assemblies (ITT), Wenzhou Akada hinges shall only be fitted to doorsets which have previously been tested with hinges of a similar size, subject to the following requirements:
- i) The required intumescent protection shall be as tested by the chosen door manufacturer. In all cases this shall be a minimum of a 2 mm thick 'Interdens' or graphite based intumescent sheet material incorporated beneath each hinge blade, however, this protection shall be increased as required based on the chosen doorset manufacturers test data.
  - ii) Where the perimeter intumescent fire seal tested within the chosen doorset by-passes the hinge, this detail shall be maintained.
  - iii) The critical dimensions of the Wenzhou Akada hinge to be used shall be based on the size of the hinge tested originally by the chosen doorset manufacturer, with the following tolerance:

Hinge specification of chosen doorset	
Component/dimension	Tolerance/Rule
<b>Hinge blade</b>	
Width	+0/-5% of tested hinge
Height	+/-10% of tested hinge
Thickness	+/-15% of tested hinge
<b>Knuckle</b>	
Diameter	Minimum 13 mm
<b>Fixings</b>	
Quantity	Maximum 4No. fixings tested
Size	4.5 mm dia. Minimum
Length	No shorter than that tested
Position (width)	+/-10% from the positions of the fixings in the tested hinge when measured with respect to the centre lines of the blade

**Note:** Where the Wenzhou Akada hinge does not comply with the parameters identified above it shall not be used in conjunction with the chosen 90 minute and 120 minute timber and mineral-based assemblies (ITT).

Signed  
J/142



Page 4 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025



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## CERTIFICATE No CF 5885

### WENZHOU AKADA FOREIGN TRADE CO. LTD.

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#### Wenzhou Akada Ball Bearing Stainless Steel Hinges

9. When fitted to insulated timber or mineral door assemblies, the required additional intumescent protection will be as follows:
- i) The required protection for 30 minute ITT applications will be 1 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material (see 'Scope of Approval' below) behind both blades.
  - ii) The required protection for 60 minute ITT applications will be 2 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material (see 'Scope of Approval' below) behind both blades. Additionally a minimum of 4 mm of perimeter intumescent fire seal shall by-pass the hinge blades.
  - iii) The required intumescent protection for 90 and 120 minute ITT applications shall be as tested by the chosen door manufacturer. In all cases this shall be a minimum of a 2 mm thick mono ammonium phosphate tested, or graphite based intumescent sheet material (see 'Scope of Approval' below) incorporated beneath each hinge blade, however, this protection shall be increased as required based on the chosen doorset manufacturers test data.

Failure to install the protection will invalidate this certificate

10. The hinges may only be fitted in the manner described in this certificate and subject to any limitations on the inclusion of hinges specified for the door leaf. This approval is applicable only to the specified hinges used with door assemblies of proven fire resistance (as defined in BS EN 1634-1 or BS 476: Part 22: 1987) and when using appropriate intumescent protection.
11. Regard should be paid to the maximum door mass permitted to be used with the hinge (see classification).
12. For ITT timber and mineral-based doorsets the hinges shall only be fitted using the fixings supplied by the hinge manufacturer.
13. The ITT doorsets shall be installed in accordance with BS 8214.
14. The approval relates to ongoing production. The product and/or its immediate packaging is identified with the manufacturer's name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

Signed  
J/142

Page 5 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025

## CERTIFICATE No CF 5885 WENZHOU AKADA FOREIGN TRADE CO. LTD.

### Wenzhou Akada Ball Bearing Stainless Steel Hinges

15. The following table show acceptable doorset types and fire resistance periods:

Class	Approved Door Type				
	IMM	MM	ITT	ITM	ITC
FD20	✓	✓	✓	✗	✗
FD30	✓	✓	✓	✗	✗
FD60	✓	✓	✓	✗	✗
FD90	✓	✓	✓	✗	✗
FD120	✓	✓	✓	✗	✗
FD240	✓	✓	✗	✗	✗
E 20	✓	✓	✓	✗	✗
EI 20	✓	✓	✓	✗	✗
E 30	✓	✓	✓	✗	✗
EI 30	✓	✓	✓	✗	✗
E 60	✓	✓	✓	✗	✗
EI 60	✓	✓	✓	✗	✗
E 90	✓	✓	✓	✗	✗
EI 90	✓	✓	✓	✗	✗
E 120	✓	✓	✓	✗	✗
EI 120	✓	✓	✓	✗	✗
E 240	✓	✓	✗	✗	✗
EI 240	✓	✓	✗	✗	✗

**Key:**

- ✓ - approved
- ✗ - Not approved

Signed  
J/142



Page 6 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025



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## CERTIFICATE No CF 5885

### WENZHOU AKADA FOREIGN TRADE CO. LTD.

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#### Wenzhou Akada Ball Bearing Stainless Steel Hinges

16. Doors are classified as the following types:

**Type MM** - 20 minute to 240 minute doorsets that consist of metallic leaves in metallic frames that do not contain intumescent materials in the frame to leaf gap.

**Type IMM** - 20 minute to 240 minute doorsets that consist of metallic leaves in metallic frames that contain intumescent materials in the frame to leaf gap.

**Type ITT** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in timber frames

**Type ITM** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in metal frames.

**Type ITC** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in proprietary composite frames, of which the principal material is other than timber or metal but which may include any other materials.

#### Scope of Approval:

- The hinges may not be fitted to timber doorsets without perimeter intumescent fire seals within the frame rebate or edge of the door leaf.
- Where graphite based intumescent sheet material is to be used in lieu of the mono ammonium phosphate tested, the proposed graphite-based intumescent sheet material, shall have suitable test evidence in the required thickness or less, with timber/mineral-based doorset of the required classification period, in with steel hinges of a minimum size of 100 mm x 75 mm.

#### Classification codes

The approval provides the following classifications for the full range:

4	7	6	1	1	4	0	13
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#### Further Information

Further information regarding the details contained in this certificate may be obtained from Wenzhou Akada Foreign Trade Co. Ltd. (Tel: (+86 577 2880 7086)).

Further information regarding CERTIFIRE certification and other approved products can be obtained from CERTIFIRE (Tel: 01925 646777).

Signed  
J/142

Page 7 of 7

Issued: 28<sup>th</sup> July 2020  
Valid to: 27<sup>th</sup> July 2025