



ExMC/306/DV  
March 2006

**INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME  
FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR  
USE IN EXPLOSIVE ATMOSPHERES (IECEX SCHEME)**

**Ex Management Committee, ExMC**

**TITLE: IECEx Assessment Report for acceptance of China National Quality  
Supervision & Test Centre for Explosion-proof and Safety Products for Coal  
Mines (CMExC) as an IECEx Test Laboratory (ExTL)**

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**INTRODUCTION**

**This document contains the IECEx Assessment Report for the acceptance of China  
National Quality Supervision & Test Centre for Explosion-proof and Safety Products  
for Coal Mines (CMExC) within the IECEx Scheme.**

**The report is hereby submitted for 2006 05 03**

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ExMC/306/DV  
March 2006

## IECEX ASSESSMENT REPORT (TEST LABORATORY – ExTL)

### Type of Assessment:

Initial Assessment for Candidate ExTL   
Surveillance Assessment for existing ExTL

### 1. OBJECT AND FIELD OF APPLICATION

#### 1.1 *Country:*

People's Republic of China

#### 1.2 *Name of Candidate TL*

Testing Laboratory for Explosion-proof and Safety Products of Fushun Branch of China Coal Research Institute / China National Quality Supervision & Test Centre for Explosion-proof and Safety Products for Coal Mines (CMEExC)

#### 1.3 *Members of the Assessment Team*

On site:  
Jim Munro, Lead assessor  
Heinz Berger, Assessor

Offsite  
Michel Brenon, Assessor

#### 1.4 *Place and Date of Assessment*

West Section 10,  
Dandong Road, Wanghua District,  
Fushun City, Liaoning Province, P.R.China  
Postcode: 113001

11 to 12 July 2005 (Jim Munro and Heinz Berger)  
28 to 29 November 2005 (Jim Munro)

#### 1.5 *Assessment References*

Documents:

- i) IECEx 02 Second Edition 2003-06
- ii) IECEx Operational Document OD/003 and OD009
- iii) ISO/IEC 17025
- iv) IECEx Technical Guidance Documents and Decision Sheets
- iv) ExTL application documents



**1.6 Scope of Application**

<b>Product Category</b>	<b>Standard</b>
General Requirements	IEC 60079-0
Flameproof enclosure “d”	IEC 60079-1
Increased safety “e”	IEC 60079-7
Intrinsic safety “i”	IEC 60079-11
Non sparking “n”	IEC 60079-15
Encapsulation “m”	IEC 60079-18
Combustible dust –General Requirements	IEC 61241-0
Combustible dust - Protection by Enclosures “tD”	IEC 61241-1

All gas standards are for Group II only, where relevant.

Ex d capability is for Groups IIA, IIB and IIB+H<sub>2</sub>

**1.7 Candidate TL Persons Interviewed**

<b>Name</b>	<b>Position</b>
Zu Guolin	Standing Vice Director
Chen Zaixue	Advisor CMExC
Zhu Shi-an	Deputy Director CMExC
Dong ChunHai	Deputy Director

Plus a wide range of laboratory staff.

**1.8 Legal Entity of the Candidate TL**

According to the certificate, CMExC is an independent enterprise since May 19, 2000. The explosion-proof and Safety Products (Testing) Laboratory of the Fushun Branch, CCRI is established by Fushun Branch of CCRI (China Coal Research Institute). Its professional work is led and instructed by higher level responsible organizations including State General Administration of Quality Supervision, Inspection and Quarantine, State Administration of Work Safety (State Administration of Coalmine Safety) and National Supervision Committee for Certification and Approval Activities. The LAB exercises its quality inspection functions and power independently.

**1.9 Associated ExCB**

China Certification Centre for Quality Mark (CQM)  
12th Floor, Bldg. B of Keyuan Plaza, A-105 Xisanhuan North Road., Haidian District, Beijing City,  
People's Republic of China  
Postal code: 100037  
Tel: +86 10 88411888  
Fax: +86 10 68415026/88414325  
E-mail: cqm@cqm.com.cn

CQM have advised that the Certification and Accreditation Administration of the People's Republic of China (CNCA) exercises unified management, supervision and overall coordination of nation-wide certification and accreditation activities in China, and China operates a unified Ex certification system.

China National Accreditation for Laboratories (CNAL) is responsible for accreditation and supervision of testing laboratories.



**ExMC/306/DV  
March 2006**

CQM, as a Certification Body, engages in certification activities based on unified Ex certification rules and procedures announced by CNCA.

There is a contract between CQM and CMExC.

**1.10 *Financial Support***

There is no financial support.

**1.11 *History***

The CMExC was approved by National Metrology Administration and former National Standard Bureau in 1987, and passed the metrology and approval re-examination of the former National Technical Supervision Administration. Furthermore, CMExC passed the 'three in one' examination and appraisal by CNAL in 1998. CMExC also passed examination and appraisal for extended items in 2000 and 2002, 'A' class quality approval certification for safety mining products in 2003 (authorized as "Fushun Mining Equipments Inspection Centre for State Work Safety" by State Administration of Work Safety in 2004). CMExC passed the 'three in one' re-examination and appraisal in 2004 and supervised examination and appraisal in early 2005. The LAB consists of 2 functional departments and 6 Test divisions and a standard substance division. Functional departments include multi-function office; quality supervision divisions. Test divisions include explosion-proof product, haulage and transportation, industrial explosive material, safety and rescue equipment, coalmine electrical equipment and mining cable divisions. There are 85 staff and workers, 65 of which are technicians (76.5%), 45 of which have a professional post higher than Engineer (53%).

**1.12 *Subcontracting***

In the IECEx field, CMExC uses subcontractors for three tests; locked rotor, battery capacity and CTI. During the first assessment visit a chart was developed showing the subcontractors doing these tests, along with their accreditation information. CMExC has comprehensive contracts with its subcontractors. These include provision for CMExC to supervise subcontractors' quality systems. CQM has a consistent system of delegating the subcontracting responsibility.

The assessment team conducted a thorough review of the CMExC procedures for subcontracting noting that:

Each sub-contracted laboratory has national accreditation

- A comprehensive contract exists between CMExC and the subcontracted laboratory
- Close supervision over the subcontracted laboratories was observed by the assessment team



## 2. ORGANISATION

### 2.1 Names, Titles and Experience of the Senior Executives

Name	Title and responsibility	Experience
Luo Haizhu	Director of CMExC	23 years
Zu Guolin	Administrative vice director of CMExC	23 years
Dong Chunhai	Vice director of CMExC Technical responsible person	19 years
Zhu Shi-an	Vice director of CMExC Quality responsible person	8 years
Fan Guang	Director of Ex Testing Division of the CMExC	25 years
Fu Shuling	Deputy director of Ex Testing Division of the CMExC	23 years
Chen Zaixue	CMExC advisor	41 years

### 2.2 Name, Title and Experience of the Quality Management Representative

Name	Title and responsibility
Zhu Shi-an	Quality responsible person

### 2.3 Name and Title of Nominated Principal Contact

Name	Title and responsibility
Dong Chunhai	Vice director of CMExC Technical responsible person
Fu Shuling	Deputy director of Ex Testing Division of the CMExC

### 2.4 Employees

#### 2.4.1 Total numbers

There are total 85 staff members and workers, of which 65 are technical personnel, 45 have a technical title higher than engineer.

#### 2.4.2 Ex test personnel

There is a total of 27 staff members in the ExTL, 22 are test personnel, 17 of whom are test professional technical personnel.

### 2.5 Organisational Structure

See  
Annex A - Related areas of CMExC organisation chart  
and Annex - B for the organizational and CMExC.



### 3. RESOURCES

CMExC is well resourced with experienced staff and a comprehensive management system. The construction area is 9000m<sup>2</sup>, fixed assets 10.3 million Yuan (RMB). There is a very wide range of facilities with 515 items of test equipment in the CMExC. In the presentation of the opening meeting of the assessment Luo Haizhu provided a large selection of photos of the equipment available. Some of these included:

- Over pressure and non-transmission testing facilities with 4 Ex d test chambers
- Spark ignition test apparatus
- Test gas mixing apparatus
- Test equipment for resistance to Impact
- Testing machine for cable entry
- Pressure measurement system
- Mechanical Dimension measuring instruments
- Temperature measurement system
- IP test facilities with two large dust chambers
- Facility for insulation test
- Climate Test chambers with temperature and humidity
- Impact and drop test apparatus
- Thermal shock test
- Test for resistance to light
- Metrology facilities
- Temperature rise room
- Static pressure test device

### 4. TEST METHODS

#### 4.1 Procedures

CMExC has procedures covering its key activities. These are listed in Chapter 7 of the Quality Manual and address all critical requirements in ISO/IEC 17025, IECEx Scheme requirements and the relationship of CMExC to its ExCB, CQM.

#### 4.2 Staff Work Instructions

In addition to the above procedures, there a large number of work instructions covering all important aspects of testing. Where facilities were upgraded after the first visit, new or revised procedures were produced to address all new or changed testing, or areas addressed as deficient in the first visit.

Work instructions are divided into categories;

- maintenance of equipment,
- operation instructions for the equipment and test rules

There are also safety instructions to be followed when testing. At the first visit, some of the work practices were found not to be captured in the work instructions but this was corrected by the second visit.



A number of practical test methods were examined as part of the assessment process during both visits, including temperature rise testing of a luminaire, Ex d pressure determination, Ex d flame transmission, and IP54 testing. Measurement techniques for Ex d and Ex i were also examined.

## **5. TEST REPORTS AND RECORDS**

### **5.1 Test Reports Issued (according to Chinese National Ex Scheme)**

Statistics for the year 2003 to 2005

Type of Protection	2003	2004	2005
d	870	920	1072
E	26	32	1
i	300	380	286
m	10	12	12
n	3	5	1
DIP	-	-	1

### **5.2 Test Records**

Test records are carefully prepared by CMExC and stored for at least 10 years. CMExC has established an archive and a full time archivist.

## **6. CALIBRATION**

The procedure for test and calibration is described in Procedure Document FFA 23015-2005 of the Quality System Document FFA20001-2005.

The equipment is listed on forms (FFA43054-2002) showing all relevant information. The files with the forms were presented during the assessment and found well updated.

All equipment checked had current calibration certificates.

## **7. DOCUMENTATION**

### **7.1 Quality Manual**

Two manuals are in use. The Quality Manual document FFA10001-2005, last approved on November 1, 2005 and the Procedure Document FFA20001-2005, last approved on January 10, 2005. The documents are kept in good order.

### **7.2 Document Change Control**

Document change control is described in the Quality Manual clause 4.3.3 and Procedure Document FFA23003-2005. Change forms FFA43008-2005 are used.

## **8. CONFIDENTIALITY**

Procedure Document FFA23001-2005 "Procedure for to ensure the protection information and proprietary rights of the client" of the Quality System Document



deals with the confidentiality issue. Several files were checked for the confidentiality declaration and found to meet IECEX requirements.

**9. NATIONAL ACCREDITATION**

CMExC holds accreditation according to certificate and scope of standards issued by the Chinese National Accreditation Board for Laboratories (CNAL) under number L 1335. The certificate presented during the assessment shows a validity date of April 1<sup>st</sup>, 2009. Annex C contains the CNAL Certificate and Annex D for the Scope of Standards.

**10. RECOGNITION AND AGREEMENTS**

There are presently no agreements other than the one with CQM (see above).

**11. INTERNAL AUDIT AND PERIODIC REVIEW**

Internal audits are conducted according to Clause 4.13.1 of the Quality Manual and the Procedure Document FFA23011. Several audit files were checked and found to meet IECEX requirements. Internal audits are performed 1 – 2 times a year.

Quality Manual clause 4.14 and Procedure Document FFA012-2005 deal with management reviews. The 2005 files were checked and found to meet IECEX requirements. Management reviews are performed once a year.

The assessors noted Procedure FFA23003 which covers document control and specifically references IECEX documentation, including decision sheets.

**12. COMPLAINTS MECHANISM**

Quality Manual clause 4.8 and Procedure Document FFA23006-2005 deals with complaints. Complaint forms FFA43024-2005 are used to log the complaints. There were very few complaints and they were primarily minor. Complaints were solved within a short time to clients' satisfaction.

**13. SPECIAL FACTS TO BE NOTED**

Under contract # CQM-00-00596 between CQM and CMExC, Zhu Shi-an, Quality Manager of CMExC, is acting as an auditor concerning IECEX ExTR operations.

IECEX ExTL operations at CMExC are described in clause 5.10.1 of the Quality Manual and in Quality Procedures FFA23028-2005 and FFA23029-2005. Operations are controlled and supervised by Zhu Shi-an.

CMExC Quality Manual, clause 5.4.6 and Procedure Manual, procedure FFA23017-2005 are deal with the Estimation of uncertainty of measurements. CMExC is aware of ExTAG document (Braunschweig/Sec)/02). In the case of non SI unit measurements, procedure 5.6.2.2.2 of the Quality Manual describes the method of back tracing to SI units. The relevant employees receive training in this technical field, on an annual basis.





**ExMC/306/DV  
March 2006**

Copies of additional supporting information for this assessment have been provided to the applicant and the IECEx Secretariat. These include:

- Details of issues raised and their resolution.
- Technical guidance documents for Ex i, Ex d and Dust.
- Checklist for ISO/IEC 17025.
- Photographs of the facility.

#### **14. COMMENTS**

There were a number of outcomes from the first assessment visit that required additional attention by CMExC. The issues found included metrology equipment condition and use, temperature rise testing, lack or inadequacy of test/assessment procedures in some areas, dust and water testing, gas mixing system, some calibration procedures, recording of data, control of records, and some lack in facilities (e.g. for static pressure test). After an excellent program of corrective action by CMExC, these were resolved at the second assessment visit to the satisfaction of the assessment team.

#### **15. RECOMMENDATION**

Based on the initial assessment performed during 11 to 12 July 2005 and the follow-up assessment 28 to 29 November 2005, it is recommended that CMExC be accepted into the IECEx Scheme as an Ex Testing Laboratory (ExTL) according to the scope of the standards listed in this document.

#### **LIST OF ANNEXES**

- ANNEX A: Related areas of CMExC organisation chart**
- ANNEX B: Organisational chart of CMExC**
- ANNEX C: CNAL accreditation certificate**
- ANNEX D: Accredited scope of facilities**

**Jim Munro**  
Lead Assessor

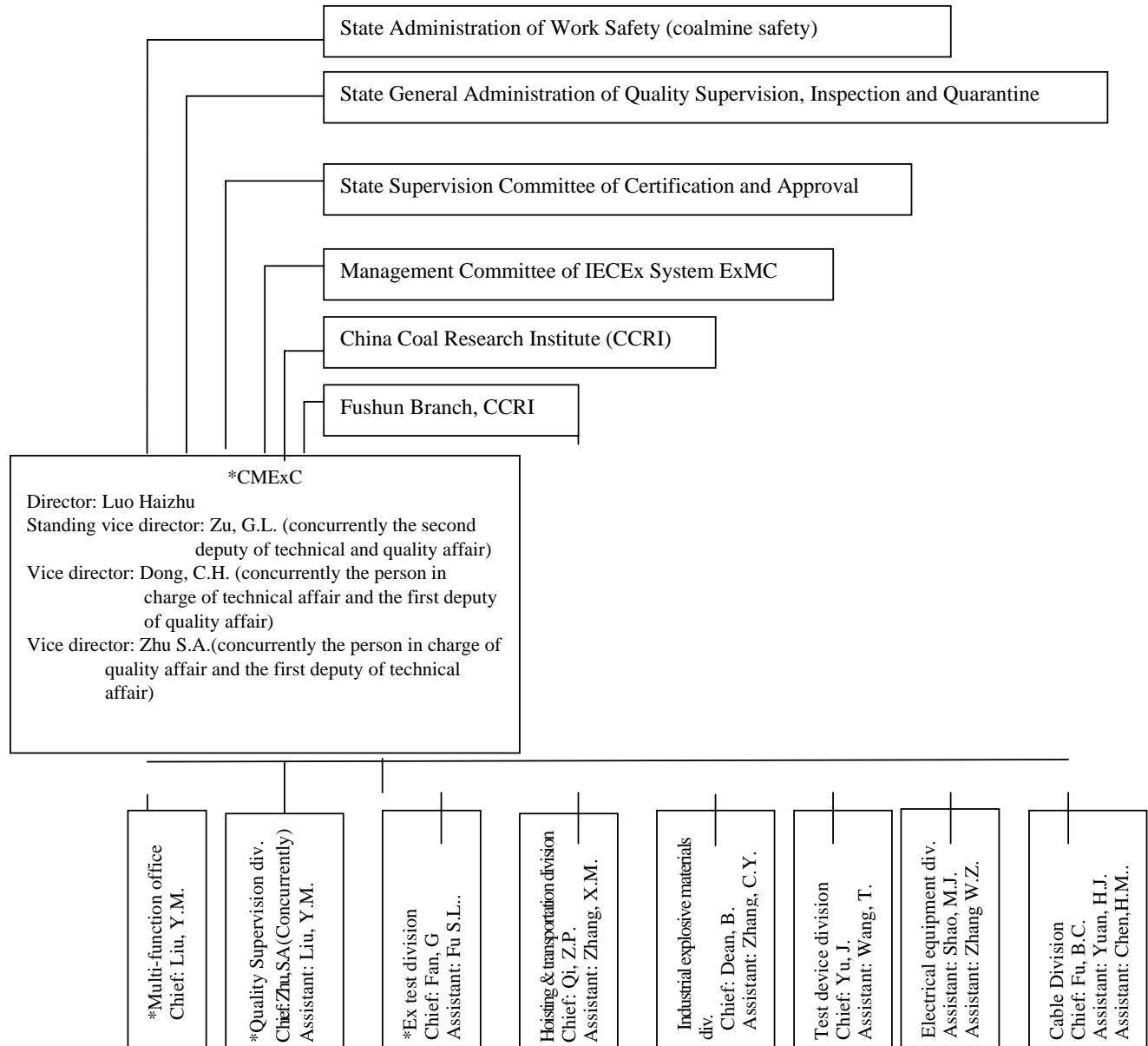
**Heinz Berger**  
Assessor

**Michel Brénon**  
Assessor

**23 January 2006**

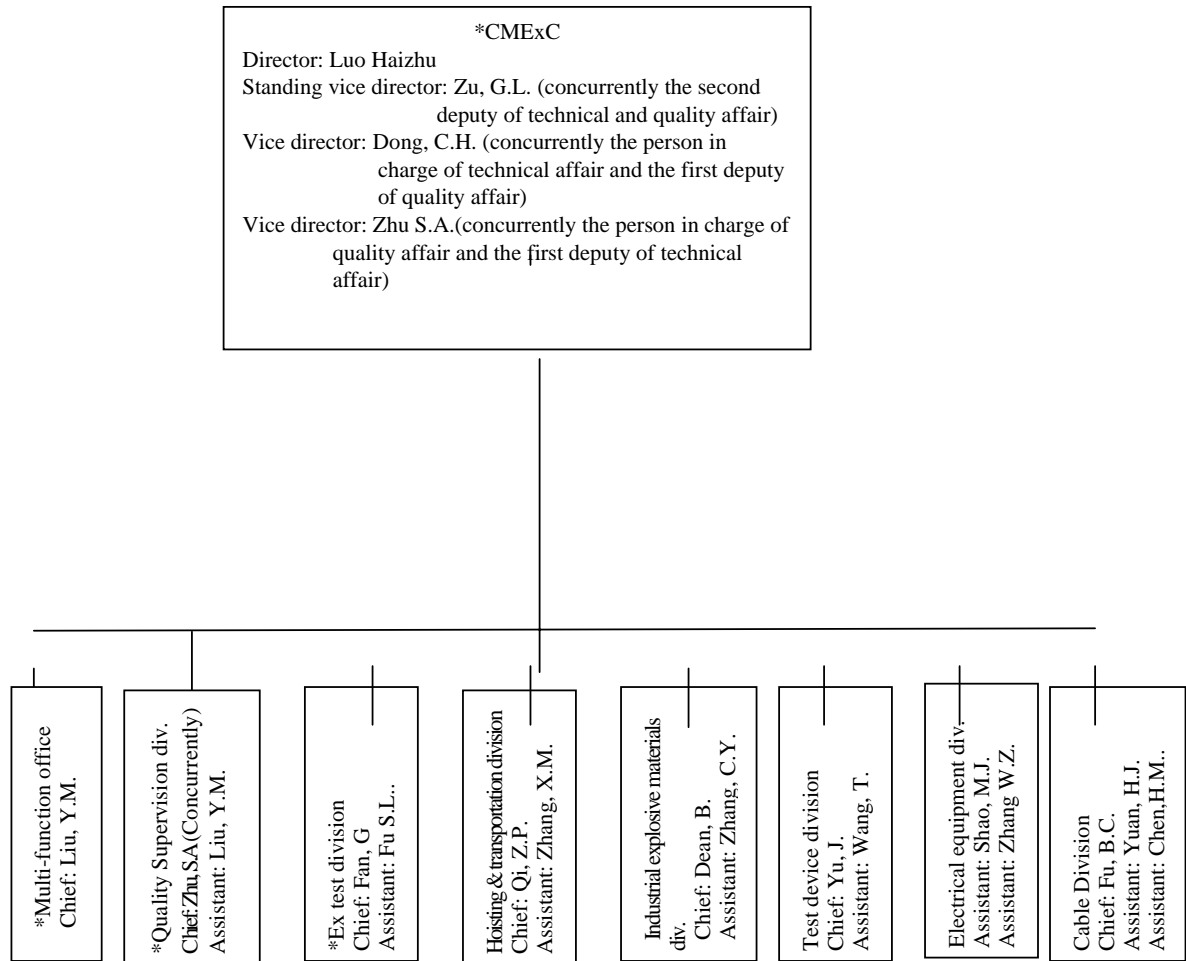


### Annex A Organization chart of related areas to CMExC





## Annex B Organization chart of CMExC



ANNEX C





ANNEX D

附表1

任务编号:

推荐批准的实验室检测能力范围 (英文)

No	Products, Materials, Type of activity	Items, Parameter, Types of tests		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		No	Name			
1	Explosion-proof Electrical apparatus		Whole item	0423	《Explosion-proof Electrical apparatus》GB3836.1—2000	
2	Flameproof electrical apparatus		Whole item	0423	《Flameproof electrical apparatus “d” 》GB3836 .2—2000	
3	Increased safety electrical apparatus		Part of item	0423	《Increased safety electrical apparatus “e” 》GB3836 .3—2000	T <sub>E</sub> time test can't test
4	Intrinsically safe circuits and electrical apparatus		Whole item	0423	《Intrinsically safe circuits and electrical apparatus “i” 》GB3836 .4—2000	
5	Pressurized electrical apparatus		Whole item	0423	《Pressurized electrical apparatus “p” 》GB3836 .5—2004	
6	Oil type electricity equipments		Whole item	0423	《Oil type electricity equipments “o” 》GB3836.6-2004	
7	Sandtype electricity equipments		Whole item	0423	《Sandtype electricity equipments “q” 》GB3836.7-2004	
8	Non-sparking electrical apparatus		Whole item	0423	《Non-sparking electrical apparatus “n” 》GB3836 .8—2003	
9	Sprinkle to sand the type electricity the equipments		Whole item	0423	《Sprinkle to sand the type electricity the equipments “m” 》GB3836.9-90	
10	Hermetically sealed electrical apparatus		Whole item	0423	《Hermetically sealed electrical apparatus “h” 》GB3836 .10—91	



**ExMC/306/DV  
March 2006**

11	Dust ignition-proof apparatus		Whole item	0423	《Dust ignition-proof apparatus》GB12476.1—2000	
12	Tools for explosive atmospheres		Whole item	0423	《Tools for explosive atmospheres》GB10686~GB10693-89	
13	Mining electrical apparatus for non hazardous area		Whole item	0423	《Mining electrical apparatus for non hazardous area》GB12173—90	
14	The explosion-proof accumulator-type electrical trimmer for coal mine		Part of item	0423	《The explosion-proof accumulator-type electrical trimmer for coal mine》MT491-1995	Motorcycle and accumulator performance can't prove
15	Specific explosion-proof electrical power device with lead - acid-accumulator for coal mine		Part of item	0423	《Specific explosion-proof electrical power device with lead - acid-accumulator for coal mine》MT334-93	Accumulator performance can't prove
16	The specific lead-acid accumulator for coal mine		Part of item	041402	《The specific lead-acid accumulator for coal mine》MT658-1997	Accumulator performance can't prove
17	The safety cap-lamp for mine		Part of item	1612	《The safety cap-lamp for mine》GB7957-2003	Accumulator performance can't prove
18	Type-KS safety cap-lamp		Part of item	1612	《Type-KS safety cap-lamp》MT26-1998	Accumulator performance can't prove
19	Type -kj safety cap-lamp		Part of item	1612	《Type -kj safety cap-lamp》MT242-1998	Accumulator performance can't prove
20	Cap-lamp with a alarm to methane		Part of item	0423	《Cap-lamp with a alarm to methane》MT409-1995	Accumulator performance can't prove
21	The short-circuit protector device for mine lamp		Whole item	0423	《The short-circuit protector device for mine lamp》MT395-1995	



**ExMC/306/DV  
March 2006**

22	The explosion-proof illuminator for coal mine		Whole item	0423	《The explosion-proof illuminator for coal mine》 MT221-91	
23	The secondary fan for coal mine		Part of item	0423	《The secondary fan for coal mine》 MT222-1996	Fans performance can't prove
24	Safety to friction spark metallic material for coal mine		Whole item	0423	《Safety to friction spark metallic material for coal mine》 GB13813-2001	
25	The flameproof hand-held electric coal drill		Part of item	050501	《The flameproof hand-held electric coal drill》 MT136-92	Electric drill lock eddy can't prove
26	The electrical rocking drill for coal mine		Part of item	050501	《The electrical rocking drill for coal mine》 MT52-1996	Motor performance can't prove
27	The flameproof low-voltage three phase induction motor safety performance for coal mine		Part of item	0422	《The flameproof low-voltage three phase induction motor safety performance for coal mine》 MT451-1995	Motor performance can't prove
28	Series YBC flameproof three phase induction motor for coal - mining machine		Part of item	0422	《Series YBC flameproof three phase induction motor for coal -mining machine》 MT476-1996	Motor performance can't prove
29	Series YBU flameproof three phase induction motor for development machine		Part of item	0422	《Series YBU flameproof three phase induction motor for development machine》 MT477-1996	Motor performance can't prove
30	Series YBU flameproof three phase induction motor for scraper-conveying machine		Part of item	0422	《Series YBU flameproof three phase induction motor for scraper-conveying machine》 MT478-1996	Motor performance can't prove



**ExMC/306/DV  
March 2006**

31	Series YBRB flameproof three phase inductive motor for pumping station		Part of item	0422	《Series YBRB flameproof three phase inductive motor for pumping station》 MT/T575-1996	Motor performance can't prove
32	Series YBI flameproof three phase inductive motor for rocking machine		Part of item	0422	《Series YBI flameproof three phase inductive motor for rocking machine》 MT/T411-1995	Motor performance can't prove
33	Flameproof mining type double three-phase induction motors		Part of item	0422	《Flameproof mining type double three-phase induction motors》 MT/T249-1997	Motor performance can't prove
34	Flameproof submersible sewage motor pump for mining and tunneling face of mine		Part of item	0346	《Flameproof submersible sewage motor pump for mining and tunneling face of mine》 MT/T671-1997	Motor performance can't prove
35	steel wire ropes		Whole item	0304	《steel wire ropes》 MT716-1997; MT717-1997; IS03154-88 “E” ; GB8918-1996; GB352-2002; GB/T16269-1996	
36	Inclined shaft cable car		Whole item	0304	《Inclined shaft cable car》 MT388-1995	
37	drift shaft cable car		Whole item	0304	《drift shaft cable car》 MT389-1995	
38	Prevent falled device		Whole item	0304	《Prevent falled device》 MT355-94	
39	vehicle join device		Whole item	0304	《vehicle join device》 MT244. 1-1997 MT244. 2-1997	
40	Mine narrow-gauge tub		Whole item	0304	《Mine narrow-gauge tub》 MT387-1995	





ExMC/306/DV  
March 2006

41	Vertical pit single rope cage		Whole item	0304	《Vertical pit single rope cage》 GB16542-1996	
42	1t mine car vertical pit more ropes cage		Whole item	0304	《1t mine car vertical pit more ropes cage》 MT232-91	
43	1.5t mine car vertical pit more ropes cage		Whole item	0304	《1.5t mine car vertical pit more ropes cage》 MT233-91	
44	3t mine car vertical pit more ropes cage		Whole item	0304	《3t mine car vertical pit more ropes cage》 MT234-91	
45	Rolling guide shoes		Whole item	0304	《Rolling guide shoes》 MT236-91	
46	The B type hangs the device		Whole item	0304	《The B type hangs the device》 MT20-90	
47	Wedge mold joining device for container		Whole item	0304	《Wedge mold joining device for container》 MT284-94	
48	Hanging device for hoisting		Whole item	0304	《Hanging device for hoisting》 MT214.1~214.5-90	
49	B mold hanging device		Whole item	0304	《B mold hanging device》 MT237.1~237.5-91	
50	Basic number and size of car of coal mine		Whole item	0304	《Basic number and size of car of coal mine》 GB3322.1~3322.4-82	
51	explosives contained ammonium nitrate and trinitrotoluene		Whole item	0218	《explosives contained ammonium nitrate and trinitrotoluene》 GB12437-2000 MT60-1995 GB18098-2000 MT61-1997 GB18097-2000 MT378-1995	
52	ANFO. AN-rosin-wax explosive		Whole item	0218	《ANFO. AN-rosin-wax explosive》 WJ610-77	



ExMC/306/DV  
March 2006

53	Emulsion explosive		Whole item	0218	《Emulsion explosive》 MT66-1995 GB18095-2000	
54	small diameter cartridge explosive		Whole item	0218	Technical requirements of small diameter cartridge explosive	
55	water gel explosive		Whole item	0218	《water gel explosive》 MT65-1995 GB18094-2000	
56	Electric detonators		Whole item	0218	《Electric detonators》 GB/T8031-87 MT62-1997 GB18096-2000	
57	Plain detonators		Whole item	0218	《Plain detonators》 GB/T13230-91	
58	Nonel detonators		Whole item	0218	《Nonel detonators》 GB19417-2003	
59	Nonel detonating tube		Whole item	0218	《Nonel detonating tube》 WJ2019-2004	
60	Blasting main lead		Whole item	0218	《Blasting main lead》 MT376-1995	
61	Insulating leading wire for electric detonator		Whole item	0218	《Insulating leading wire for electric detonator》 MT377-1995	
62	Safety fuse		Whole item	0218	《Safety fuse》 GB9108-1995	
63	Common detonating cord		Whole item	0218	《Common detonating cord》 GB9786-1999	
64	Detonating cord for coal mine		Whole item	0218	《Detonating cord for coal mine》 MT519-1995	
65	Gelatinous. nitr oglycering. expl osive		Whole. item	0218	《Gelatinous. nitroglycering. explosive》 GB13229-91	
66	Seismic. explosive. columns		Whole. item	0218	《Seismic. explosive. columns》 GB15563-1995	



**ExMC/306/DV**  
**March 2006**

67	Seismograph. electric. blasting. cap		Whole. item	0218	《Seismograph. electric. blasting. cap》 GB/T16625-96	
68	Rock powdery AN-TNT-FO explosive		Whole item	0218	《Rock powdery AN-TNT-FO explosive》 WJ9005-92	
69	Powdery emulsion explosive		Whole item	0218	《Powdery emulsion explosive》 WJ/T9025-2004	
70	Expanded AN explosive		Whole item	0218	《Expanded AN explosive》 WJ/T9026-2004	
71	Seismic detonating cord		Whole item	0218	《Seismic detonating cord》 GB12439-90	
	Ammonium nitrate fuel oil explosive		Whole item	0218	《Ammonium nitrate fuel oil explosive》 GB17583—1998	
	Fireworks and firecracker-Safety and quantity		Whole item	0218	《Fireworks and firecracker-Safety and quantity》 GB10631—2004	
	GTG Initiating explosive		Whole item	0218	《GTG Initiating explosive》 WJ/T9040-2004	
	Industrial explosive. detonation velocity		Whole item	0218	《Industrial explosive. detonation velocity》 WJ/T2019-2004	
	Powdery emulsion explosives calibration		Whole item	0218	《Powdery emulsion explosives calibration》 WJ/T9025-2004	
	Expanded ammonium nitrate explosives		Whole item	0218	《Expanded ammonium nitrate explosives》 WJ/T9026-2004	



**ExMC/306/DV**  
**March 2006**

	No. 4 rock powdery AN-TNT FO explosive		Whole item	0218	《No. 4 rock powdery AN-TNT FO explosive》 WJ/T9024-87	
	Shock-conducting tube with plastic sheath		Whole item	0218	《Shock-conducting tube with plastic sheath》 WJ/T2019-2004	
	Electric detonator calibration		Whole item	0218	《Electric detonator calibration》 WJ9047-2004	
72	methane alarm detector		Whole item	1505	《methane alarm detector》 GB13486-2000 MT564-1996	
73	Methane testing instrument		Whole item	1505	《Methane testing instrument》 MT444-1995	
74	Fan-stoppage methane-monitor breaker		Whole item	1505	《Fan-stoppage methane-monitor breaker》 MT631-1966	
75	Methane element		Whole item	1505	《Methane element》 MT281-94	
76	Moveable methane-monitor breaker		Whole item	1505	《Moveable methane-monitor breaker》 MT282-94	
77	Fixed methane-monitor breaker		Whole item	1505	《Fixed methane-monitor breaker》 MT283-94	
78	Carbon monoxide sensor		Whole item		《Carbon monoxide sensor》 MT446-1995	
79	Carbon monoxide detector tube		Whole item	0327	《Carbon monoxide detector tube》 GB7230-87; MT67-94	
80	self rescuer for carbon monoxide		Part of item	0327	《self rescuer for carbon monoxide》 GB8159~8160-87 MT709-1997	smoke ability and visual field can't test



**ExMC/306/DV**  
**March 2006**

81	Isolated chemical oxygen self-rescuer		Whole item	023702	«Isolated chemical oxygen self-rescuer» MT425-1995	
82	Self-rescuer of isolated and compressed oxygen		Whole item	023702	«Self-rescuer of isolated and compressed oxygen» MT711-1997	
83	Respirator of isolated and compressed oxygen		Whole item	023702	«Respirator of isolated and compressed oxygen» MT453-1995	
84	Sulphuretted hydrogen detector tube		Whole item	023701	«Sulphuretted hydrogen detector tube» MT51-94	
85	Sulphur dioxide detector tube		Whole item	023701	«Sulphur dioxide detector tube» MT271-94	
86	Oxynitride detector tube		Whole item	023701	«Oxynitride detector tube» MT272-94	
87	Ammonia detector tube		Whole item	023701	«Ammonia detector tube» MT273-94	
88	Carbon dioxide detector tube		Whole item	023701	«Ammonia detector tube» MT274-94	
89	Oxygen detector tube		Whole item	023701	«Oxygen detector tube» MT275-94	
90	Hydrogen detector tube		Whole item	023701	«Hydrogen detector tube» MT276-94	
91	Cylindrical positive pressure sampling unit for gas detector tube technical requirements		Whole item	023701	«Cylindrical positive pressure sampling unit for gas detector tube technical requirements» MT/T628-1996	



**ExMC/306/DV  
March 2006**

92	Serpent-type negative pressure sampling unit for gas detector tube technical requirements		Whole item	023701	《Serpent-type negative pressure sampling unit for gas detector tube technical requirements》 MT/T629-1996	
93	Cylindrical negative pressure sampling unit for gas detector tube technical requirements		Whole item	023701	《Cylindrical negative pressure sampling unit for gas detector tube technical requirements》 MT/T630-1996	
94	Thermister high-concentration methane sensor for gas emission		Whole item	1505	《Thermister high-concentration methane sensor for gas emission》 MT/T721-1997	
95	Thermister high-concentration methane sensor for coal mine		Whole item	1505	《Thermister high-concentration methane sensor for coal mine》 MT445-1995	
96	Electro-chemical oxygen sensor for coal mine		Whole item	1505	《Electro-chemical oxygen sensor for coal mine》 MT447-1995	
97	Supersonic vortex sensor for coal mine		Whole item	1505	《Supersonic vortex sensor for coal mine》 MT448-1995	
98	Portable electrochemical type carbon monoxide instrumentation for coal mine		Whole item	1505	《Portable electrochemical type carbon monoxide instrumentation for coal mine》 MT703-1997	
99	Portable electrochemical type oxygen instrumentation for coal mine		Whole item	1505	《Portable electrochemical type oxygen instrumentation for coal mine》 MT704-1997	



**ExMC/306/DV  
March 2006**

100	Portable gas instrumentation for coal mine		Whole item	1505	《Portable gas instrumentation for coal mine》 MT/T563-1996	
101	Coal mine underground monitoring sensor		Whole item	1505	《Coal mine underground monitoring sensor》 MT/T443-1995	
102	Calibrate for optical interference methane instrumentation		Whole item	1505	《Calibrate for optical interference methane instrumentation》 MT424-1995	
103	Communication and signal system and equipment for coal mine monitoring controlling and regulating system equipment and instrument for coal mine		Whole item	0419	《Communication and signal system and equipment for coal mine monitoring controlling and regulating system equipment and instrument for coal mine》 MT209-90 MT210-90 MT211-90	
104	Signal carrier dispatching and communicating unit of trolley locomotive for coal mine		Whole item	0419	《Signal carrier dispatching and communicating unit of trolley locomotive for coal mine》 MT288-92	
105	Intrinsically safe common power supply and automatic telephone communication unit for coal mine		Whole item	0419	《Intrinsically safe common power supply and automatic telephone communication unit for coal mine》 MT289~290-92	
106	D.C constant-voltage power for coal mine		Whole item	0425	《D.C constant-voltage power for coal mine》 MT/T408-1995	
107	Coal mine signal equipment		Whole item	0419	《Coal mine signal equipment》 MT287-92	



**ExMC/306/DV**  
**March 2006**

108	Equipment on-off sensor for coal mine		Whole item	1324	《Equipment on-off sensor for coal mine》 MT/T647-1997	
109	Belt mistracking sensor for coal mine		Whole item	1324	《Belt mistracking sensor for coal mine》 MT/T648-1997	
110	The temperature spreade to feel the		Whole item	1324	《The temperature spreade to feel the machine 》 MT381-1995	
111	The smoke spreads to feel the		Whole item	1324	《The smoke spreads to feel the machine》 MT382-1995	
112	The mine uses bad press to spreads to feel the machine		Whole item	1324	《The mine uses bad press to spreads to feel the machine》 MT393-1995	
113	The coal mine safety monitors the system		Whole item	0419	《The coal mine safety monitors the system 》 MT/T772-1998	
114	Isolate type is pressing the oxygen to breathe the machine		Whole item	023702	《Isolate type is pressing the oxygen to breathe the machine》 MT867-2000	
115	The chloric acid salt livings the oxygen to start the machine		Whole item	023702	《The chloric acid salt livings the oxygen to start the machine》 MT426-1995	
116	The oxidizes to living the oxygen		Whole item	023702	《The oxidizes to living the》 MT427-1995	





**ExMC/306/DV  
March 2006**

117	The coal mine transports the machine to protect the device with take type		Whole item	0419	《The coal mine transports the machine to protect the device with take type》 MT872-2000	
118	Flameproof electrical magnetic starters		Whole item	0423	《Flameproof electrical magnetic starters》 GB5590-1985	
119	vaccum electrical magnetic starter		Whole item	0423	《vaccum electrical magnetic starter》 MT111-1998	
120	Alternating current vaccum contactor		Whole item	0423	《Alternating current vaccum contactor》 JB/T7122-93	
121	Flameproof feeding switchgear		Whole item	0423	《Flameproof feeding switchgear》 JB3956-85 MT871-2000	
122	Drill transformer synthetic apparatus		Part of item	0423	《Drill transformer synthetic apparatus》 JB6312-92	Resist electromagnetism interference can't prove
123	Explosion-proof control push-button		Whole item	0423	《Explosion-proof control push-button》 JB/T570-1998 MT624-1996	
124	Flameproof travel switch		Whole item	0423	《Flameproof travel switch》 JB/T4313-1986 MT719-1997	
125	Flameproof changeover switch		Whole item	0423	《Flameproof changeover switch》 JB9650-1999 MT/T847-2000	
126	Flameproof driven-in pins with switch		Whole item	0423	《Flameproof driven-in pins with switch》 JB9649-1999 MT/T710-1997	
127	Flameproof cable connector		Whole item	0423	《Flameproof cable connector》 JB5350-91	



**ExMC/306/DV  
March 2006**

128	Flameproof driven-in pin		Whole item	0423	《Flameproof driven-in pin》 JB/T4312-1999 MT705-1997	
129	Flameproof cable connection case		Whole item	0423	《Flameproof cable connection case》 MT429-1995	
130	Flameproof electrical bell		Whole item	0423	《Flameproof electrical bell》 MT428-1995	
131	High voltage distributing apparatus		Part of item	0423	《High voltage distributing apparatus》 JB8739-1998	Opening to break sex can test
132	Flameproof mobile electrical substation		Part of item	0423	《Flameproof mobile electrical substation》 GB8286-1996	Opening to break sex can test
133	protector		Whole item	0423	《protector》 MT175-88	
134	Low voltage flameproof AC electromagnetic dual-speed vacuum starter for mining		Whole item	0423	《Low voltage flameproof AC electromagnetic dual-speed vacuum starter for mining》 MT/T592-1996	
135	Flameproof signal switch for coal mining		Whole item	041402	《Flameproof signal switch for coal mining》 MT625-1996	
136	The mine explodes the type to leak after the electric appliances		Whole item	0423	《The mine explodes the type to leak after the electric appliances 》 JB6314-92 MT189-88	
137	Exploders		Whole item	0423	《Exploders》 GB7958-2000	



138	The coal mine shuts to lock the hair to explode the machine with net road		Whole item	1604	《The coal mine shuts to lock the hair to explode the machine with net road》 MT/T722-1997	
139	The coal mine shuts to lock the hair to explode the machine with net road		Whole item	1604	《The coal mine shuts to lock the hair to explode the machine with net road》 MT/T723-1997	
140	Methane detector		Whole item	1604	《Methane detector》 MT28-94	
141	Flexible rubber-sheathed cable for mining purposes		Whole item	0424	《Flexible rubber-sheathed cable for mining purposes》 GB12972.1-91	
142	Flexible coal-cutter cable		Whole item	0424	《Flexible coal-cutter cable》 GB12972.2-91	
143	Trailing coal-cutter cables with monitoring core and semi-conducting screens		Whole item	0424	《Flexible coal-cutter cable with monitoring core and semi-conducting screens》 GB12972.3-91	
144	Flexible coal-cutter cables with individual metallic screens		Whole item	0424	《Flexible coal-cutter cables with individual metallic screens》 GB12972.4-91	
145	Flexible rubber-sheathed cable		Whole item	0424	《Flexible rubber-sheathed cable》 GB12972.5-91	
146	Flexible drill cables		Whole item	0424	《Flexible drill cables》 GB12972.8-91	
147	Flexible rubber-sheathed cables		Whole item	0424	《Flexible rubber-sheathed cables》 GB12972.9-91	
148	Miner's cap lamp cords		Whole item	0424	《Miner's cap lamp cords》 GB12972.10-91	



**ExMC/306/DV  
March 2006**

149	Polymer products used in coal mine		Whole item	0221	《Polymer products used in coal mine》 MT113-1995	
150	Cold repairing composition for mining cables		Whole item	0223	《Cold repairing composition for mining cables》 MT/T351-94	
151	Fire retarded electrical cables for mining uses		Part of item	0424	《Fire retarded electrical cables for mining uses》 MT386-1995 MT818-1999	The part turn on electricity, pound ats electric voltage can't test
152	Rubber insulated cables of rated voltages up to and including 450/750V		Whole item	050102	《Rubber insulated cables of rated voltages up to and including 450/750V》 GB5013.1-1997	
153	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V		Whole item	050104	《Rubber insulated cables of rated voltages up to and including 450/750V》 GB5023-1997	
154	Conductors of insulated cables		Whole item	0424	《Conductors of insulated cables》 GB/T3956-1997	
155	Rubber compounds of O-ring seal for general hydraulic system		Whole item	0314	《Rubber compounds of O-ring seal for general hydraulic system》 GB7038-86	
156	Rubber compounds for sealing ring of reciprocating applications		Whole item	0314	《Rubber compounds for sealing ring of reciprocating applications》 GB7039-86	



ExMC/306/DV  
March 2006

157	Glass fiber reinforced plastic pipe for coal mining		Whole item	0310	《Glass fiber reinforced plastic pipe for coal mining》 GB16413-1996	
158	Plastic pipe for coal mining		Whole item	0315	《Plastic pipe for coal mining》 MT181-88	
159	Rubber pipe for coal mining		Whole item	0220	《Rubber pipe for coal mining》 MT191-89	
160	Cellular material of polyethylene for coal mining		Whole item	0221	《Cellular material of polyethylene for coal mining》 MT558.1-1996	
161	(hard)cellualr material of polyvinyl chloride for coal mining		Whole item	0221	《(hard)cellualr material of polyvinyl chloride for coal mining》 MT558.2-1996	
162	Rubber buffer pulley for conveying belt for coal mining		Whole item	0221	《Rubber buffer pulley for conveying belt for coal mining》 MT559-1996	
163	Integral core conveying belt of flame retardant and electrostatic cloth for coal mining		Whole item	0314	《Integral core conveying belt of flame retardant and electrostatic cloth for coal mining》 MT914-2002	
164	Integral belt core of conveying belt for coal mining		Whole item	0314	《Integral belt core of conveying belt for coal mining》 MT/T317-2002	
165	Conveying belt mechanical coupler for coal mining		Whole item	0314	《Conveying belt mechanical coupler for coal mining》 MT318.1-1997	
166	U-buttoned coupler of conveying belt of coal mining		Whole item	0314	《U-buttoned coupler of conveying belt of coal mining》 MT319-92	
167	Flame retardant conveying belt of steel-core for coal mining		Whole item	0314	《Flame retardant conveying belt of steel-core for coal mining》 MT668-1997	



**ExMC/306/DV**  
**March 2006**

168	Flame retardant pull conveying belt of steel wire for coal mining		Whole item	0314	《Flame retardant pull conveying belt of steel wire for coal mining》MT669-1997	
169	Vulcanized tropical belt for mending rubber-sheathed cables for coal mining		Whole item	0314	《Vulcanized tropical belt for mending rubber-sheathed cables for coal mining》MT848.1~848.2-2000	
170	Plastic net false roof for coal mining		Whole item	0221	《Plastic net false roof for coal mining》MT141-86	

评审组长 / 组员签字: