



Ex Requirements and Access to Market in China

By Xu Jianping, NEPSI/SITIIS

IECEX Industry Symposium

Calgary, Canada

5 Sept., 2012



Contents

- 1** Ex Standardization in China
- 2** China Ex Regulations
- 3** Ex Certification Systems in China
- 4** Certification Processes for Ex products
- 5** Use of IECEx Scheme for Entry to China
- 6** Conclusions



Ex history in China

- The R&D on Ex started for safety of mining industry in 1930's.
- The 1st ministerial Ex regulation for mine published in 1955.
- In 1960's, limited Ex apparatus were available in the market.
- Joined in IEC in 1957, being as a member of IEC TC31 in 1970's.
- In 1977, the first national Ex standard published - GB 1336 "Regulation on manufacturing and testing of electrical apparatus for explosive atmospheres".
- In 1983, a national TC on Ex standardization established, and a series standards GB3836 were issued, including general requirements, Ex d, e and i.
- Under the policy of preferential adoption of int'l standards, for safety of booming Ex-related industries, China has being intensified Ex standardization in last decade.
- 24 new Ex standards were published in 2010.
- Now a complete national standard systems have been established



Ex standard systems

GB 12476 series for dust

- DIP A/B(tD)
- iD
- mD
- pD

GB 3836 series for gas:

- | | |
|-----------|-------------|
| - General | - Ex q |
| - Ex d | - Ex n |
| - Ex e | - Ex m |
| - Ex i | - IS system |
| - Ex p | - FISCO |
| - Ex o | - EPL Ga |

Ex Standard
Systems

Mainly including:

- Gas & dust
- Electrical & non-electrical

GB 25286 series
for non-electrical:

- General
- Ex fr
- Ex d
- Ex c
- Ex b
- Ex k



Ex standard systems (con't)

■ List of GB 3836 series for Gas

China GB standards	Standard Name/Subject	Adoption of int'l standards
GB 3836.1-2010	General requirements	mod IEC 60079-0:2007
GB 3836.2-2010	Flameproof “d”	mod IEC 60079-1:2007
GB 3836.3-2010	Increased safety “e”	idt IEC 60079-7:2006
GB 3836.4-2010	Intrinsic safety “i”	mod IEC 60079-11:2006
GB 3836.5-2004	Pressurization “p”	mod IEC 60079-2:2001
GB 3836.6-2004	Oil immersion “o”	idt IEC 60079-6:1995
GB 3836.7-2004	Powder filling “q”	idt IEC 60079-5:1997
GB 3836.8-2003	Non-sparking “n”	mod IEC 60079-15:2001
GB 3836.9-1990	Encapsulation “m”	idt IEC 60079-18:1992
GB 3836.18-2010	Intrinsically safe system	idt IEC 60079-25:2003
GB 3836.19-2010	FISCO	idt IEC 60079-27:2008
GB 3836.20-2010	EPL Ga	idt IEC 60079-26:2006

👉 Detailed deviations from IEC standards are available at www.iecex.com/bulletin.htm.



Ex standard systems (con't)

■ List of GB 12476 series for Dust

China GB standards	Standard Name/Subject	Adoption of int'l standards
GB 12476.1-2000	Dust ignition protection “DIP tD”	idt IEC 61241-1-1:1999
GB 12476.4-2010	Protection by intrinsic safety “iD”	idt IEC 61241-11:2005
GB 12476.6-2010	Protection by encapsulation “mD”	idt IEC 61241-18:2004
GB 12476.7-2010	Protection by pressurization “pD”	idt IEC 61241-4:2001

■ List of GB 25286 series for Non-Electrical

China GB standards	Standard Name/Subject	Adoption of int'l standards
GB 25286.1-2010	Basic method and requirements	mod EN 13463-1:2001
GB 25286.2-2010	Protection by flow restricting enclosure “fr”	mod EN 13463-2:2004
GB 25286.3-2010	Protection by flameproof enclosure “d”	mod EN 13463-3:2005
GB 25286.5-2010	Protection by constructional safety “c”	mod EN 13463-5:2003
GB 25286.6-2010	Protection by control of ignition source “b”	mod EN 13463-6:2003
GB 25286.8-2010	Protection by liquid immersion “k”	mod EN 13463-8:2003



Ex standard systems (con't)

In addition, following standards also available in China:

- Standards for products (idt/eqv to IEC or EN standards):
 - gas detectors (GB 20936/IEC 61779)
 - heating trace (GB 19518/IEC 62086)
 - gasoline dispenser (GB 22380/EN 13617)
 - caplights (GB 7957/IEC 62013)
 - reciprocating internal combustion engines (GB 20800/EN 1834)
 - Industries truck (GB 19854/EN 1755),
 - Standards for application (idt/eqv to IEC standards):
 - fundamental (MESG, AIT, MIE), area classification, selection, installation, inspection, maintenance, overhaul and repair
 - Rules and/or regulations on design and acceptance of Ex engineering projects
- [about 70 technical Ex standards in total]**



Regulations for Ex Products

- In order to ensure the personal & property safety, Ex certification is mandatory by the majority of countries in the world.
- In China the certification of Ex equipment is mandatory according to following Chinese Laws:
 - ◆ Standardization Law of PRC, and its Implementation Rules
 - Standards are divided as mandatory (GBXXXX), voluntary (GB/TXXXX) & instructive (GB/ZXXXX) by the law
 - all Ex-related standards (GB 3836, GB 12476...) are mandatory
 - Compulsory standards must be complied with, it is forbidden to produce, sell or import products that are not up to the mandatory standards.
 - ◆ Product Quality Law of PRC, ...
 - Industrial products relating to personal and property safety must comply with national mandatory standards.

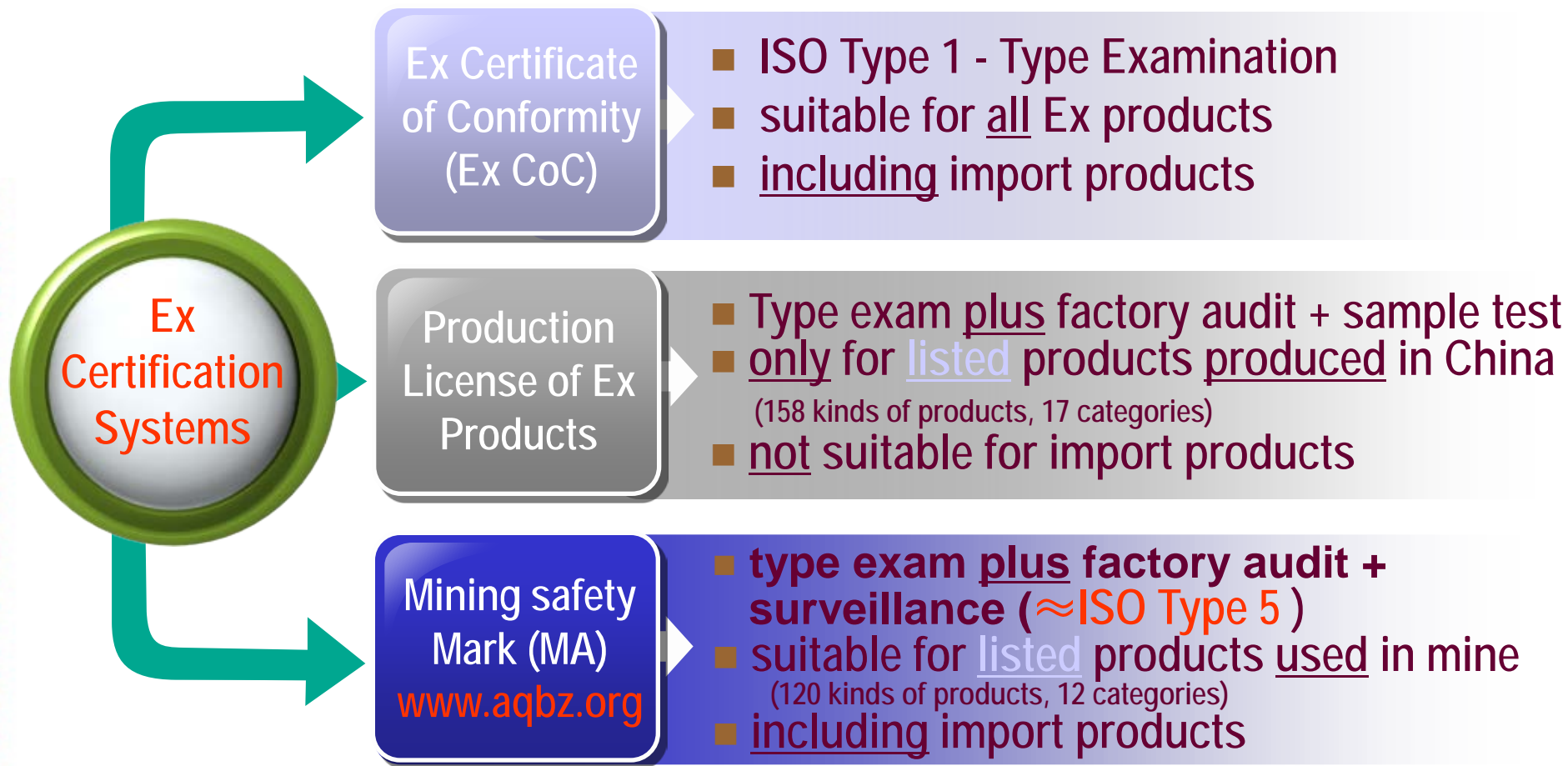


Regulations for use of Ex Products

- Production Safety Law of PRC, 2002
 - The design, installation, usage, maintenance and rebuild of safe equipments/products must comply with national standards.
- Regulations on production safety license, 2004
 - A Production Safety License is required for enterprises manufacturing, storing, transporting and using hazardous chemicals
 - Every engineering project with explosion hazards is required to be assessed and inspected against explosion protection and safety
 - To verify the validity of Ex CoC, check the products' conformity to standards, suitability of equipment selected, correctness of installation, and finally confirm the compliance of "Entity Explosion Protection" .
 - Every 3 years, re-assessment on explosion protection is necessary for maintaining the Production Safety License.



Ex Certification Systems in China





Certification Process of Ex Products

Certification Processes

Ex Certificate of Conformity

PROCESSES

- ❑ App & contract (eg. NEPSI)
- ❑ Documentation review
- ❑ Sample check and type testing
- ❑ Issuing ExTR and ExCoC

Notes: 1. without factory audit
2. CoC valid for 5 years

APPLICATION DOCUMENTS

- ❑ detailed list of all products
- ❑ technical description on Ex
- ❑ Ex related key drawings;
- ❑ instruction manual
- ❑ previous cert. documents
- ❑ copy of ISO9001 or QAR

Production License of Ex Products

PROCESSES

- ❑ Application to local gov. office
- ❑ Doc. review and acceptance
- ❑ site audit & sampling organized by assessment office
- ❑ sample test & reporting by ExTL
- ❑ summarizing doc for approval
- ❑ Issuing license by AQSIQ office

Notes: license valid for 5 years

APPLICATION DOCUMENTS

- ❑ completed application form
- ❑ business license
- ❑ copy of Ex CoC
- ❑ copy of license when relevant
- ❑ necessary explanation

Mining safety Mark (MA)

PROCESSES

- ❑ App. & contract (MA center)
- ❑ Tech. review, type test by ExTL
- ❑ site assessment –not for batch
- ❑ final document review
- ❑ Issuing MA certificate, or with series numbers for batch

Notes: Certificate valid for 5 years

APPLICATION DOCUMENTS

- ❑ completed application form
- ❑ business license
- ❑ tech. description to product
- ❑ all technical documents
- ❑ self-assessment report on production resources, compliance to standards
- ❑ necessary explanation (series)



Relation with other Cert. Systems

- Pattern Approval for import Measuring Instr. operated by AQSIQ (<http://jls.aqsiq.gov.cn/>)
 - mandated by the Metrology Law of China, a type test to JJG required.
 - 75 categories 220 kinds of measuring instruments listed (e.g, level meter, flow meter, load scale/cell, dispenser, pressure instrument, gas detectors and etc.)
 - all the listed instruments used in hazardous locations, additional Pattern Approval are required. Assistance available from NEPSI/SITIIAS
- Type Approval for import fire protection products (www.cccf.net.cn)
 - mandated by the Fire Control Law of China, a type approval to CCCF required
 - 9 categories of products listed, including fire extinguishing products/agents, firefighting equipments, fire-proof door, gas detector& alarm equipment and etc.
 - for gas detector/alarm used in hazloc, additional CCCF type approval are required.
- China Compulsory Certification (CCC) – 22 categories 153 kinds of products (www.CNCA.gov.cn)
 - For CCC-listed products with Ex functions and imported for use in hazloc, no need to apply for CCC certificate, only Ex CoC required.





The role of NEPSI

- NEPSI/SITIIAS is one of Ex testing and cert. bodies in China.
 - accredited testing/calibration laboratory, inspection body (parten approval, CCC)
 - authorized training & exam. center for Ex related persons (special work)
 - 50-year product testing experience
 - 27-year testing, inspection and certification in Ex field
 - IECEx ExTL, 18 int'l partners, business covering 20 countries & regions
- The role of NEPSI in Ex field, issuing
 - national ExCoC for Ex equipment, IECExTR/CoC by cooperation CQM
 - Inspection Certificate/Report for new or in-use engineering facilities, including area classification, installation, selection, maintenance, repair/overhaul
 - Personal Competence Certificate for Ex related persons
- There are other 8 organizations serving for Ex testing and certification in China, for example CQST, PCEC, CMExC.



Use of IECEx scheme for entry to China

■ IECEx operation in China

- one of the founders of the Scheme, became ExCB and ExTLs in 2005
- hosted IECEx annual meetings and issued 1st CoC in 2006
- continuous contributions from CNCA via Mr Liu as Vice Chairman IECEx
- actively involved in various WGs, pt, peer assessment
- promotion of IECEx in China by meetings/seminars
- as of 10th Sept 2012, 173 CoCs, 224 ExTRs, 65 QARs issued for 42 manufacturers

■ Adoption of IECEx in China

- a national certificate is necessary for an Ex product to be legally used in China
- as a member, acceptance of IEC ExTRs and QARs acknowledged
- due to adoption of IEC std., IECEx does assist products entry into China
 - ✓ direct adoption of ExTRs: >90%
 - ✓ adoption of ExTRs after clarification or supplementary tests: ≤10%
 - ✓ direct adoption of QARs: 100%

【 BUT Group I excluded !!! 】



Conclusions

- China has established complete Ex standard systems, including gas/dust and electrical/non-electrical.
- Chinese Ex standards are identical/equivalent to IEC & EN standards in general.
- All the Ex-related standards are compulsory standards.
- Cert. of Ex products is mandatory in China, a national ExCoC is issued based on ISO Type 1, and factory audit is not necessary.
- For imported mining equipments, MA cert. is required based on Type 5.
- China has being one of the market center of Ex products. The import demand of Ex products will be continuously increasing in next few years.
- IECEx assists Ex-products entry into China, previous IECEx certification provides a good basis for a quick certification in China.



谢 谢!

Many thanks for your attention!

For further information, please visit:

www.nepsi.org.cn or www.sitias.com.cn