

THE IMPORTANCE OF STANDARDS

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The importance of coal standards is vital to improve business processes and facilitate trade nationally and internationally in this presentation the use of national and international standards are highlighted giving reference to its uses, development and participation.

ISO TC27 the technical committee responsible for the formation of standards for solid mineral fuels with participation of 20 countries meets every two years to deliberate the necessity of required standards for industry. The secretariat of this TC presently held in South Africa (SABS) is responsible to oversee the workings of various sub committees and working groups.

Coal preparation and its associated activities have a need to use required standards for sampling, analysis, environmental, safety and management aspects.

1. INTRODUCTION

Standards and their use in technical regulations on products, products methods and services play an important role in sustainable development and trade facilitation through the promotion of safety, quality and technical compatibility.

The benefits that are derived are significant, standardization contributes to the basic infrastructure that underpins society including health and environment while promoting sustainability and good regulatory practice.

International Standards, or national or regional adoptions of International Standards, assist in the operation of

domestic markets, and also increase competitiveness and provide an excellent source of technology transfer. They play an integral role in the protection of consumers and the environment.

With the increasing globalization of markets, International Standards (as opposed to regional or national standards) have become critical to the trading process, ensuring a level playing field for exports, and ensuring imports meet internationally recognized levels of performance and safety.

Standards can be broadly sub-divided into three categories, namely product, process and management system standards of which includes to mention a few USI9000

series, ISO19000, ISO18000 and ISO17025 on laboratory accreditation.. The first refers to characteristics related to quality and safety for example. Process standards refer to the conditions under which products and services are to be produced, packaged or refined. Management system standards assist organizations to manage their operations. They are often used to help create a framework that then allows the organization to consistently achieve the requirements that are set out in product and process standards.

The main empirical benefits of standards are:

- 13% of the growth in labour productivity is attributed to the role of standards;
- Standards are an enabler of innovation and a facilitator of technological change;
- The economic return from investment in standards makes sound business sense at both a macro- and a micro-economic level.

Standards contribute to business by:

- Encouraging innovation : Standards stimulate innovation and provide support for businesses from concept to market. They have the power to shape the way sectors work by sharing knowledge and creating effective synergies that accelerate the speed to market for products and services.
- Foundation for growth : Standards increase profitability by improving business efficiency and reducing costs, increasing consumer confidence and providing a foundation for growth.
- Promoting market access : Standards provide better access to

markets and facilitate trade. They promote competition in the market place by helping industries capture knowledge, share insight and, with it, reduce risk.

To this end company Standards have the greatest positive effect on business, for they help improve processes of which coal processing is no stranger to this process. Standards play a vital role in coal beneficiation and its associated quality, safety and process requirements.

ISO TC 27 Solid Mineral Fuels through its subcommittee on coal preparation, terminology and performance has various working groups with distinct mandate from most coal producing and user countries in supporting the development of selected standards in support of these processes.

South Africa through its standards body SABS has a Technical Committee on Solid Mineral Fuels represented by industry mainly aimed to set up guidelines and to promote standardization fostered by technical developments and changing trade conditions. These standards South Africa national Standards (SANS) are developed to achieve the widest possible acceptability in the South African industry. Active support for aligning with those of ISO is imperative.

2. INTERNATIONAL STANDARDIZATION AND THE ROLE OF ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the resolution of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is

responsible for all sectors excluding Electro technical, which is the responsibility of IEC (International Electro technical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 130 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

3. STANDARDIZATION IN THE COAL BUSINESS

Coal is a heterogeneous substance showing considerable non-homogeneity even in a finely ground state. A number of the chemical tests by which its properties are determined are empirical and subjective, and emphasise the need for standard procedures.

Standards for sampling and analysis are used by industries involved in the generation of electricity, production of steel, gas, cement and chemicals, to name but a few.

Plant and equipment manufacturers use the standards for sampling and coal preparation, and coal scientists throughout the world use those relating to fundamental coal structure.

In all cases it is essential that the terminology used in the description of structure, physical and chemical properties can satisfy academic, utilization and commercial objectives.

The increase in the movement of coal on the international market is increasing commercial competition. As a result the need for rapid methods of analysis backed up by standardized methods has become a priority. International Standards should, however, not be written so as to disadvantage any individual sources of fuel and also to be fair to both the buyer and the seller.

4. QUANTITATIVE INDICATORS OF THE COAL INDUSTRY BUSINESS ENVIRONMENT

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the standardization.

Recoverable coal reserves are spread over almost 70 countries at current production levels, proven coal reserves are estimated to last 133 years. In contrast proven oil and gas reserves are equivalent to around 42 and 60 years at current prod levels respectively.

Coal provides 25% at global primary energy needs and generates 40% at world's electricity.

In 1995 world production of hard coal was 4 973 million metric tonnes (Mt) a 7,4% increase in production over the previous year and 78% growth over the past 25 years.

1981 - 2 679 Mt

2004 - 4 631 Mt

2007 - 5 543 Mt

Table I
World Hard Coal Production – World Coal Institute

Country	Production (2007) (e) Mt
PR China	2 549
USA	981
India	452
Australia	323
S Africa	244

Russian	241
Poland	90
Indonesia	231
Kazakhstan	72

(e) estimate

**5. STRUCTURE OF THE MARKET:
SUPPLIERS/MANUFACTURERS
(DESCRIPTIVE AND QUANTITATIVE)**

International trade in Hard Coal amounted to 609 Mt in 2000, increasing to 775 Mt in 2005.

Table II
The distribution of International Hard Coal Trade

Year	Steam Coal Mt	Coking Coal Mt	Total Mt
1990	299	199	495
2000	421	188	609
2007	670	247	917

Table III
The major exporters of Steam coal

Country	2007	2007	Total Mt
	Steam coal Mt	Coking coal Mt	
Australia	112	132	244
Indonesia	221	31	202
Russia	85	15	100
South Africa	66	1	67
PR China	51	3	54
Colombia	67	-	67
USA	24	29	53

While it is accepted that mining does temporarily disturb nature, modern technologies, increased awareness and

radically different sensibilities are enabling today's mining industry to provide the

resources modern society requires without destroying the environment in the process.

A steady decline in combustion pollutant levels, improved water management practices and widespread land reclamation are now standard consequences of coal production and its use.

In recent years emissions of sulphur dioxide and particulates from coal-fired power stations have been significantly reduced, even in countries where the use of coal has increased. This has been achieved by the more effective cleaning of coal before it leaves the mine, increased use of clean coal technologies, flue gas desulphurisation, the greater use of low sulphur coal and the blending of coals with different sulphur and chlorine content.

Because coal-mining activities frequently come into contact with water resources, eliminating the potentially harmful environmental impact in this area has long been a primary concern of the industry. The major water quality issues include acid mine drainage control, ground water protection, and the prevention of surface water sedimentation. Each of these aspects requires careful monitoring throughout all phases of the mining process.

Land reclamation is now an integral and normal part of the coal surface mining process. Coal operators are guided by the principle that coal extraction carries with it the responsibility of managing and restoring the land.

In most countries and the formation of standards planning and legislation constraints ensure that these objectives are met. It is imperative that ISO is able to contribute with the generation of relevant

standards which will facilitate the understanding and testing of coal, related products, processes and matters relating to the environment.

6. BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC.

The availability of International Standards for solid mineral fuels will greatly assist in:

- a) the commercial evaluation of more than 5 543 million metric tonnes (Mt) (2007) each year, valued at \$110 billion; of this production 917 Mt are traded internationally;
- b) the elimination of trade barriers;
- c) the standardisation of terminology, development and maintenance of uniform techniques for the sampling, preparation, analysis and classification of solid mineral fuels;
- d) the protection of the environment.

Non-standard methods of analysis are now frequently being used by agreement between suppliers and users provided that they can be shown to provide results which are comparable with the standard method.

Because of the rapidly changing field of analytical techniques only a brief mention of alternative methods will appear in the international standards developed by ISO/TC 27, WG 9 of SC 5 is establishing uniform procedures for comparing alternative methods with International Standard methods and for assuring the quality of the results obtained.

The policy of ISO/TC 27 is to provide an open forum for all nations for the processing implementation and maintenance of ISO standards relevant to solid mineral fuels which will facilitate international trade and sustain the long term competitiveness in world markets.

7. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

There are **22** participating (P members) and **20** observing countries (O members) represented on the Technical Committee, including all the major producers and users of Hard Coal. Liaison Member Organizations include technical and

economic organizations. There is a large input into the Technical Committee, the Sub Committees and the Working Groups from participating countries and can be categorised, to indicate specific economies.

Table IV

Developed Countries	Developing Countries	Countries with economies in transition
Participating (P) Members	Participating (P) Members	Participating (P) Members
Australia (SA) Canada (SCC) China (SAC) Czech Republic (CNI) Denmark (DS) France (AFNOR) Germany (DIN) Italy (UNI) Japan (JISC) Kazakhstan (KAZMEMST) Netherlands (NEN) New Zealand (SNZ) Poland (PKN) Russian Federation (GOST R) Spain (AENOR) USA (ANSI) Ukraine (DSSU) United Kingdom (BSI)	India (BIS) Korea, Republic of (KATS) Mongolia (MASM) Portugal (IPQ) South Africa (SABS)	Serbia and Montenegro (ISSM) Ukraine (DSSU)

8. STRUCTURE, SCOPES AND WORK PROGRAMME OF THE ISO/TC

This section gives an overview of ISO/TC's structure, scopes of the ISO/TCs and any existing subcommittees and information on existing and planned standardization projects, including resources needed for their completion.

The aim of this section is to demonstrate the adequacy of the proposed programme of work in relation to the business environment and/or stakeholders' needs. Only structures directly responsible for standardization projects are listed. Therefore, no co-ordination or advisory groups are included.

Table V

ISO TC 27 SOLID MINERAL FUELS				
TC 27, WG 18, WG 19, SC 1, SC 3, SC 4 and SC 5 in numerical order				
ISO TC SECRETARIAT: South African Bureau of Standards (SABS)				
ISO/TC 27	Responsible ISO Member Chairperson General Secretariat			Mr J Bekker Ms E Steyn
TC 27	WG 19	Petrographic analysis	UK	Mr H Read
	WG 20	Solid mineral fuels, vocabulary, terms relating to sampling, testing and analysis	Japan	Mr S Aoki
SC 1	Coal preparation Terminology and performance		SAI	Dr DW Brown (UK)
	WG 1	Terminology	UK	Mr D Jenkinson
	WG 3	Size classifying equipment	UK	Vacant
	WG 4	Froth flotation	UK	Mr D Jenkinson
	WG 6	Flocculants	UK	Dr DW Brown
	WG 9	Shale breakdown	SAI	Vacant
	WG 12	Bin flow properties of coal	SAI	Dr J Sligar
	WG 13	Coal preparation – Determination of dust/moisture relationship for coal	SAI	Vacant
SC 3	Coke		SABS	Mr R Watts (UK)
SC 4	Sampling		SABS	Dr RJ Holmes (Aus)
	WG 6	Sampling of coal seams	NEN	Vacant
	WG 10	Revision of ISO13909	SAI	Mr P Reagan
SC 5	Methods of analysis		SAI	Mr B Isherwood (Aus) until Jan 2011
	WG 1	Moisture, volatile matter and ash	DIN	Dr K Liphard
	WG 2	Carbon, hydrogen, nitrogen, oxygen and sulphur	UK	Ms D Carraro
	WG 7	Brown coals and lignite's	SAC	Ms Li Yinghua
	WG 8	Major, minor and trace elements in coal and coal residues	SAI	Mr K Riley
	WG 9	Guidelines for validation of methods	UK	Mr R Watts
	WG 10	Plastic properties of coal	USA	Mr L Giroux
	WG 11	On-line analyzers	UK	Vacant
	WG 12	Miscellaneous Methods	USA	Dr R Graham

ISO TC 27 MEETING : CANADA 9 – 14 AUGUST 2009

To substantiate the workings in the formation of standards a brief report is presented under this heading to elaborate and give guidance on ISO meetings and outcomes and decisions made relevant to coal standards.

The 22nd meeting of ISO Technical Committee 27 (Solid Mineral Fuels) was held in Vancouver, Canada during the week 9 – 14 August 2009. The committee is responsible for the development of international standards used to evaluate the quality of coal in international trade. The objective of the meeting was to further the work on new standards currently under development as well as to review some of the existing standards.

Various sub committees met during this week of which included:

SC1 - Coal preparation, terminology and performance

SC3 - Coke

SC4 - Sampling

SC5 - Method of analysis

SC1 - Revision of present projects were discussed, specific attention was devoted to float and sink analysis and froth flotation testing of coal. Australia presented a paper on alternative liquids that may be used as a medium for float and sink in place of the presently used toxic/carcinogenic liquid were investigated and considered.

SC4 - Sub Committee – Solid Mineral Fuels – Sampling

Most of the meetings were dedicated to the periodic review of ISO 13909 (Mechanical sampling of coal and coke). All 8 parts of ISO 13909 were reviewed.

Part 2 of the standards, which contains the bulk of the methodology was reviewed in

depth and simplified by the removal of all references to “intermittent sampling”.

It is particular importance (also for South Africa) that consensus be reached on the revision of Part 8 of the standard which deals with bias testing of mechanical sampling plants. The standard in its current format is difficult to employ and does not cater for multivariate testing (for example ash and moisture content). A proposal was put forward that the “T-test” be used when testing for one variable whilst “Hotelling’s T squared test” be used for multivariate testing. This was agreed to in principle by the meeting but the statistical procedure will need further refining. It was also proposed that software (possibly in the form of spreadsheets) be considered and made available as part of the standards – this will allow the statistical evaluation of the test results to be made easier for the end-user.

Interesting to note that ISO TC27/SC1 has recommended to ISO central secretariat to possibility include hyper linked worksheets to calculate equations in future ISO standards.

CONCLUSION

It is imperative that the importance of standards cannot be underestimated. Coal due to its heterogeneous substances showing considerable non – homogeneity must lean heavily on correct standards methods and procedures.

Standardization either International or National has an important role in developing standards to improve

business, processes and facilitate trade nationally and Internationally.

REFERENCES

1. SABS Strategic Policy Statement – Solid Mineral Fuels August 2009
2. ISO – International Organization for standardization website, directives – 2009
3. GJ de Korte : delegates report, South African representative on ISO TC27 solid mineral fuels : SC1 and SC4 on meetings held in Vancouver August 2009.
4. J Bekker : Chairman ISO TC27, ISO TC27 Business Plan 2009.