

The purpose and justification

In recent years, the terrorist attacks and smuggling problems have caused extensive concern by all the fields in the world. Especially, the security situation of global container logistics is quite serious.

ISO 18185, which prescribes the read-only, non-reusable freight container electronic seal, takes the lead in putting forward the concept of electronic seal in international standards. The functions of the e-seal bases on the high security mechanical seal with electronically evidences tampering or intrusion through the container door (it record the date and time when the container door is opened or closed). The e-seal prescribed by ISO 18185 only can be used for one time, so the usage cost is much higher cost than that of traditional mechanical seal.

ISO 17363 describes the cargo shipment-specific tag, which is reusable and can be read and written. The concept of "Shipment tag" leads three terms in application of RFID on freight container, viz. container tag, e-seal and shipment tag. However, on the level of technology, the latter two functions may be realised by the multi-functional e-seal in practice.

In order to perfect the existing international standard system and meet the requirements of logistics' development, this proposal puts forward a new standard to improve safety, efficiency and economy of container transportations and makes it more practical. The RFID's applications and researches in the container transportation among countries all over the world reached a certain level at present. RFID technology applications in business and freight are far beyond what described in existing standards. The United States, Germany, Netherlands, Austria, South Korea and other countries have paid more attention to RFID technology application and raising container freight security. Industrial experiments that China has been doing for years on e-seal applied in the container liner has entered a new stage. With platform of the internet and by the reusable, multi-functional e-seal and its monitoring system, real-time monitoring for whole container logistics has been realized in China-US pilot, so the security of container transportation has been enhanced. The research and practice on this aspect shows the future direction of container transportation development. The reusable and multi-functional container e-seal is not only the seal but also the carrier of information, which should be prescribed by strict technical standards.

The implementation of this standard will have significant benefits. It can not only make all process of container logistics more controllable, more transparent, but also save the costs of a one-off seal, reduce the difficulties of taking evidence in the accident claims for both the merchants and the carriers, cut down governmental investments for port security, provide a fundamental solution to the supply chain security.

Differences of the definition of electronic seal between ISO 18185 and this standard

item	ISO 18185	this standards
using times	one-off	reusable
the way to be read and written	read and written for single time	read and written for many times
security	high	high
capacity	152 B	32 kB
memory content	inherent information of e-seal and the container+ the information of closing the container for single time	inherent information of e-seal and the container+ the information of closing the container for many times +logistics information +cargo information
function	eseal	e-seal+ tag
network environment	dedicated network	internet
the cost of single use	high	low

Practice has proved that the application of RFID system has typical industry features, and can be only generated under a network with mass and wide logistics information. Therefore, the real-time online monitoring system for the whole process of container logistics, using the reusable electronic seals combined with the global network environment, will not only raise the efficiency but also the security of container transportation, and all the links of the container logistics, such as cargo owners, shipping companies, ports, logistics companies, the customs, border protection, commodity inspection and so on, can benefit from this system.

The feasibility of this standard is based on the following: a) on the level of theory and practice, the seal and the information of shipment are relative with the freight process, and they may be synergetic; SIPG takes the leading in the practice of using reusable e-seal in domestic and international service and it is proved that the e-seal is appropriate and practicable; b) on the level of technology, at present the electronic technology, internet technology and information technology which develop rapidly provide a technical guarantee for the reusable e-seal, the turn of establishing a new standard of the e-seal has come up; c) on the level of economy, the reusable e-seal is obviously more economical and better in environment protection than the one-off e-seal and has obvious advantages if the information security technology can be insured.

This proposal is advanced in technology and can be released as one of the series standards of smart container.

The former preparation has been done fully, and now the draft has been completed. It is estimated that all the tasks could be accomplished before 2010.

The standards should follow the rules of International Telecommunication Union (ITU) and Administration Department of the Radio in different countries.