

Performance and Specification

There are two types of safes, “Burglary resistant safe” and “Fire resistant safe”

Burglary resistant safe

Burglary resistant safe has performance against burglary in addition to fire resistance. The standard of burglary resistant test is stipulated by the Japan Federation of Safe Furniture Manufacture Cooperative*1 that assumes the situation of burglary attack using by various tools.

*1 They are Business Federation that manufactures and sells steel furniture and safes. Also, they establish the standard of fire resistance and burglary resistance for safes.



Tool-proof test TS-15

Tool-proof test TS-15

Most of safecrackers attempt “Forced open a safe” by using specific tools like crowbar and metal cutting saw etc. for safe door in a short time. The test is conducted on the assumption of the attacks such as cutting hinges and forced-open the door for 15 minutes.

* This tool-proof test belongs to fire resistant safe, not burglary resistant safe.

* Added to JIS test requirement since 2006.



Test method *Outline <JIS S 1037:2006 Testing requirement>

- ① Applicant submits test sample and the drawings indicating construction of it. Testing team learns and looks for the weak points before testing.
- ② Conduct 2 types of burglary test.
 - A : Attack for locking mechanism.
 - B : Forced-open for door and locking bolt.

* Test A is exempted because Eiko safes passed TS-15 are equipped with relocking device.
- ③ 2 persons of testing team attack the test sample with several tools in specific time.
 - * Possible to change to another person.

Judgment Safe door can not open and time of attack test is over 15 min.

* The illustration of tools is for reference only. The details are stipulated. (kinds, size and weight etc.)

* Time of attack does not include the time of preparing and changing tools, learning method of attacks and taking a rest.

Fire resistant safe

Fire resistant safe has performance against fire. The standard is stipulated by JIS (Japanese Industrial Standards) that assumes the difficult cases of fire fighting such as building on fire and earthquake or disastrous fire etc.



Standard heating test



Combined explosion and hazard-impact test

Standard heating test

Assumption of fire spread

Test method *Outline		<JIS S 1037:2006 Testing requirement>	
Affix newspaper inside safe and place sheets of paper in.	Place the safe in furnace, heat it in accordance with JIS standard temperature curve and measure the internal temperature.	Stop heating at the specific time and cool it naturally in furnace.	Check the condition of newspaper inside safe.
Judgment	Fire resistant performance for general paper <ul style="list-style-type: none"> Temperature limit inside safe is less than 177°C. Newspaper inside safe does not have appreciable discoloration or deterioration and they are legible. 	Fire resistant performance for flexible disk cartridge <ul style="list-style-type: none"> Temperature limit is less than 52°C and humidity limit is less than 80%. 	

Combined explosion and hazard-impact test

Assumption of temperature increase by ignition and impact by explosion

Test method *Outline		<JIS S 1037:2006 Testing requirement>			
Affix newspaper inside safe and place sheets of paper in.	Place the safe in the furnace heated to 1,090 °C and keep heating for the specific time.	Check if there are any explosions on safe and heat again in accordance with temperature curve.	Take out from furnace and drop on a pile of bricks from 9.1m height.	Place the safe upside-down in furnace and heat for the specific time again.	Stop heating at the specific time and cool it naturally in furnace.
Judgment	Fire resistant performance for general paper <ul style="list-style-type: none"> No cracks on test specimen Locking is maintained Newspaper inside safe does not have appreciable discoloration or deterioration and they are legible. 				* Data safe for flexible disk cartridge is excluded.

20 years of fire resistant performance

Structure of fire resistance

Temperature increases slowly by vaporization heat of moisture in insulation materials.

In case the temperature increases by fire, the moisture contained in insulation material vaporizes naturally around 100°C and decreases the temperature inside safe. After that, until about 600°C, water of crystallization contained in cement materials which is main component of insulation materials vaporizes and the vaporization heat makes the temperature increase slow.

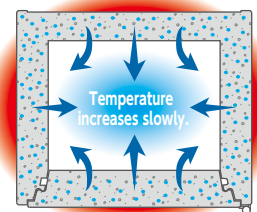
Why fire resistant performance is for 20 years?

Because the moisture contained in insulation materials decrease year by year.

The moisture and water of crystallization in the insulation materials vaporize little by little after 20 years and about 20% of moisture is lost. As a result, the fireproof performance declines in 20 years after manufactured.

* Durability of electronic parts and locking device etc. is not for 20 years.

Cross section



- Vaporization heat
- Water of crystallization
- Fire
- Insulation materials