CERTIFICATE OF ACCREDITATION

Fire Insurers Laboratories of Korea

Accreditation No. : KT018

Corporation Registration No. : 111221-0000165

Address of Laboratory : 1030, Gyeongchung-daero, Ganam-eup, Yeoju-si, Gyeonggi-do, Korea

date of Initial Accreditation : September 28, 1995

Duration : December 31, 2013 ~ December 30, 2021

Scope of Accreditation : Attached Annex

Date of issue : December 6, 2017

This testing laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025 : 2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 8 January 2009).

No. KT018

01. Mechanical Test

01.016 Construction and construction materials

Test method	Standard designation	Test range
KS F 2292 : 2013	Test method of air tightness for windows and doors	Class (1 ~ 120)
KS F 1515 : 1999	Modular dimensional coordination for windows and doors in building	-
KS F 2630 : 2007	Doorsets - Static torsion test	(0.01 ~ 100) ㎜
KS F 2631 : 2007	Doorsets - Vertical load test	(0.01 ~ 50) ㎜
KS F 2237 : 1999	Windows and doors - Determination of opening and closing forces	(1 ~ 80) N
KS F 2632 : 2007	Doorsets - Repeated opening and closing test	-
KS F 2236 : 1999	Doorsets - Soft heavy body impact test	-
KS F 3109 : 2016	Doorsets	
	7. Modular dimensional coordination	(0.1 ~ 5 500) ㎜
	9.2 Static torsion test	(0.01 ~ 100) ㎜
	9.3 Vertical load test	(0.01 ~ 50) ㎜
	9.4 Determination of opening and closing forces	(1 ~ 80) N
	9.5 Repeated opening and closing test	-
	9.6 Soft heavy body impact test	-
KS F 2846 : 2013	Methods for measuring smoke penetration through door assemblies	(0 ~ 500) Pa
KS F 2293 : 2008	Test method of water tightness for windows and doors	(100 ~ 1 000) Pa
KS F 2296 : 1999	Windows and doorsets－Wind resistance test	(100 ~ 3 500) Pa
Notification No. 2017-61 of Ministry of Trade, Industry and Energy (2017.5.1.)	The Energy Efficiency Standard & Labeling Program	
	25. Window sets	Class (1~120)

04. Heat & Temperature Test

04.001 Temperature and humidity

Test method	Standard designation	Test range
KS L 9016 : 2010	Test methods for thermal transmission properties of thermal insulations	(0.015 ~ 0.43) W/(m·K)

No. KT018

04.001 Temperature and humidity

Test method	Standard designation	Test range
ISO 8990 : 1994	Thermal insulation – Determination of steady-state thermal transmission properties – Calibrated and guarded hot box	(0.01 ~ 5.5) W/(m^2·K)
KS F 2273 : 2009	Methods of performance test for building construction panels	
	7.5 Thermal transmittance test	(0.01 ~ 5.5) W/(m^2·K)
KS F 2277 : 2017	Thermal insulation - Determination of steady-state thermal transmission properties - Calibrated and guarded hot box	(0.01 ~ 5.5) W/(m^2·K)
KS F 2278 : 2017	Standard test method for thermal resistance for windows and doors	(0.1 ~ 5.5) W/(m^2·K)
JIS A 1420 : 1999	Determination of steady-state thermal transmission properties - Hot box method	(0.01 ~ 5.5) W/(m^2·K)
JIS A 4710 : 2015	Windows and doorsets - Thermal resistance test	(0.182 ~ 10) W/(m^2·K)
ASTM C 1363 - 11	Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus	(0.01 ~ 5.5) W/(m^2·K)
KS F 2295 : 2004	Test method of dew condensation for windows and doors	(-20 ~ 20) ℃ (15 ~ 50) ℃
Notification No. 2017-61 of Ministry of Trade, Industry and Energy (2017.5.1.)	The Energy Efficiency Standard & Labeling Program	
	25. Window sets	(0.1 ~ 5.5) W/(m^2·K)
Notification No.2016-835 of Ministry of Land, Transport and Maritime Affairs (2016.12.7.)	Design criteria of dew condensation for multifamily housing	(-20 ~ 50) ℃

No. KT018

04.002 Fire

Test method	Standard designation	Test range
Notification No.2016-52 of Ministry of Public Safety and Security (2016.5.27.)	Model approval and inspection standard of detector	
	16. ① and ② Sensitivity test of fixed temperature detector	Special class, 1st class, 2nd class
	18. ① and ② Sensitivity test of ionization smoke detector	1st class, 2nd class, 3rd class
	19. ① and ② Sensitivity test of photoelectric smoke detector	1st class, 2nd class, 3rd class
ISO 6182-1 : 2014	Fire Protection – Automatic sprinkler systems – Part 1: Requirements and test methods for sprinklers	
	7.4.1 Test of static operation	(95 ~ 115) %
	7.16 Dynamic heating test	(191 ~ 300) ℃ (2.4 ~ 2.6) m/s
UL 199 : 2005	Automatic Sprinklers for Fire-Protection Service	
	31. Sensitivity Tests	(11 ~ 180) s
UL 1626 : 2008	Residential Sprinklers for Fire-Protection Service	
	29.1 Oven heat test	(11.2 ~ 18.8) s
FM Class Series 2000 : 2006	Automatic Control Mode Sprinklers for Fire Protection	
	4-30 Conductivity(C-Factor)	(1.0 ~ 2.0) $(m/s)^{1/2}$
	4-31 Sensitivity - Response Time Index (RTI)	(197 ~ 291) ℃ (2.56 ± 0.07) m/s
Notification No.2016-39 of Ministry of Public Safety and Security (2016.4.1.)	Model approval and inspection of sprinkler heads	
	5. Strength test	(52 ~ 80) ℃, 2.5 MPa
	12. Functional test	(97 ~ 103) %
	13. Sensitivity test	(191 ~ 300) ℃ (1.65 ~ 2.6) m/s
	Clause 3. Fire early suppression 16. Sensitivity test	(135 ~ 197) ℃ (2.56 ± 0.03) m/s
	Clause 4. Resident type 22. Sensitivity test	(129 ~ 203) ℃ (1.65 ~ 1.85) m/s
	Clause 5. Large Drop type 25. Sensitivity test	(191 ~ 300) ℃ (1.65 ~ 2.6) m/s

No. KT018

04.002 Fire

Test method	Standard designation	Test range
Notification No. 2015-744 of Ministry of Land, Infrastructure and Transport (2015.10.13.)	Performance criteria for incombustibility of finishing materials in buildings and fire spread-proof structure	(0 ~ 1 000) ℃ (0 ~ 100) kW/㎡ (0 ~ 15) min
Notification No.2017-86 of Ministry of Oceans and Fisheries (2017.6.1.)	Model approval and inspection standard of Ship goods	
	32. Sprinkler head (3) Pressure resistance test	(1 ~ 1.4) MPa
	77. Fire extinguishing pump (2) Water pressure test	1.8 times of working pressure
	78. Fire hose (6) Pressure resistance test	Vertical state : 1.8 MPa Bending state : 1.3 MPa
	79. Nozzle (6) Pressure resistance test	1.8 MPa
	80. Water spray equipment (6) Pressure resistance test	1.8 MPa
	81. International shore connections (2) Material inspection	1.0 N/㎟
	106. High pressure tank valve Ⅲ. Pressure resistance test	Not less than 10 MPa
	69.Da.1.(Na) Fixed temperature spot detector	Special class, 1st class, 2nd class
	69.Da.1.(Da) Ionization smoke detector	1st class, 2nd class, 3rd class
	69.Da.1.(Ra) Photoelectric smoke detector	1st class, 2nd class, 3rd class
ISO 6182-7 : 2004	Fire Protection - Automatic sprinkler systems - Part 7: Requirements and test methods for early suppression fast response(ESFR) sprinklers	
	7.7.1 Test of static operation	(0.5 ± 0.1) ℃/min
Notification No.2015-69 of Ministry of Public Safety and Security (2015.3.19.)	Model approval and inspection of automatic extinguisher for residential kitchen	
	4. Detector	(191 ~ 300) ℃ (2.4 ~ 2.6) m/s
Notification No.2015-1 of Ministry of Public Safety and Security (2015.1.6.)	Performance approval and inspection of automatic extinguisher for commercial kitchen	
	8. Detector	(191 ~ 300) ℃ (2.4 ~ 2.6) m/s

No. KT018

04.002 Fire

Test method	Standard designation	Test range
Notification No.2016-41 of Ministry of Public Safety and Security (2016.4.1.)	Model approval and inspection of automatic spread extinguisher	
	4. Detector	(191 ~ 300) ℃ (2.4 ~ 2.6) m/s
KS F 2271 : 2016	Testing method for incombustibility of internal finish material and element of buildings	(0 ~ 15) min (1 s)
ISO 834-1 : 1999	Fire resistance test - Elements of building construction - Part 1: General requirements	Furnace temp. (0 ~ 1 200) ℃
ISO 834-4 : 2000	Fire resistance test - Elements of building construction - Part 4: Specific requirements for loadbearing vertical separating elements	Heating hour : (0.5 ~ 4) h Load : (0 ~ 392) kN
ISO 834-5 : 2000	Fire resistance test - Elements of building construction - Part 5: Specific requirements for loadbearing horizontal separating elements	Heating hour : (0.5 ~ 4) h Load : (0 ~ 588) kN
ISO 834-6 : 2000	Fire resistance test - Elements of building construction - Part 6: Specific requirements for beams	Heating hour : (0.5 ~ 4) h Load : (0 ~ 588) kN
ISO 834-7 : 2000	Fire resistance test - Elements of building construction - Part 7: Specific requirements for columns	Heating hour : (0.5 ~ 4) h Load : (0 ~ 2 940) kN
ISO 834-8 : 2002	Fire-resistance tests - Elements of building construction - Part 8: Specific requirements for non-loadbearing vertical separating elements	Heating hour : (0.5 ~ 4) h
ISO 834-9 : 2003	Fire-resistance tests - Elements of building construction - Part 9: Specific requirements for non-loadbearing ceiling elements	Heating hour : (0.5 ~ 4) h
KS F 2257-1 : 2014	Method of fire resistance test for elements of building construction - General requirements	Furnace temp. (0 ~ 1 200) ℃
KS F 2257-4 : 2015	Method of fire resistance test for elements of building construction - Specific requirements for loadbearing vertical separating elements	Heating hour : (0.5 ~ 4) h Load : (0 ~ 392) kN
KS F 2257-5 : 2014	Methods of fire resistance test for elements of building construction - Specific requirements for loadbearing horizontal separating elements	Heating hour : (0.5 ~ 4) h Load : (0 ~ 588) kN

No. KT018

04.002 Fire

Test method	Standard designation	Test range
KS F 2257-6 : 2014	Methods fire resistance test for elements of building construction - Specific requirements for beams	Heating hour : (0.5 ~ 4) h Load : (0 ~ 588) kN
KS F 2257-7 : 2014	Methods of fire resistance test for elements of building construction - Specific requirements for columns	Heating hour : (0.5 ~ 4) h Load : (0 ~ 2 940) kN
KS F 2257-8 : 2015	Methods of fire resistance test for elements of building construction - Specific requirements for non-loadbearing vertical separating elements	Heating hour : (0.5 ~ 4) h
KS F 2257-9 : 2013	Methods of fire resistance test for elements of building construction - Specific requirements for non-loadbearing ceiling elements	Heating hour : (0.5 ~ 4) h
KS F 2845 : 2013	Fire resistance test for glazed elements	Heating hour : (0.5 ~ 4) h
KS G 4500 : 2015	Fire-resistive containers	
	9.7.5 Standard fire test d.2 and d.3 Fire-resistive containers for normal papers	Heating hour : (0.5 ~ 4) h
KS F 2268-1 : 2014	Fire resistance test for door assemblies	Heating hour : (0.5 ~ 4) h
BS 476 Part 20 : 1987	Fire tests on building materials and structures - Part 20: Method for determination of the fire resistance of elements of construction(general principles)	Furnace temp. (0 ~ 1 200) ℃
BS 476 Part 21 : 1987	Fire tests on building materials and structures - Part 21: Method for determination of the fire resistance of loadbearing elements of construction	Heating hour : (0.5 ~ 4) h
BS 476 Part 22 : 1987	Fire tests on building materials and structures - Part 22: Method for determination of the fire resistance of non-loadbearing elements of construction	Heating hour : (0.5 ~ 4) h
IMO Res MSC 307(88) Annex 1 Part 3	Fire test procedures (Test for “A”, “B” and “F” class divisions)	Furnace temp. : (0 ~ 1 200) ℃ Heating hour : (0.5 ~ 1) h
KS F 2819 : 2016	Testing method for incombustibility of thin materials for buildings	0.1 ㎝ 1 s

No. KT018

04.002 Fire

Test method	Standard designation	Test range
Notification No.2016-138 of Ministry of Public Safety and Security (2016.10.20.)	Standard of flame retardant performance	
	7. Flame retardant performance for resin composite sheet and plywood etc.	0.1 ㎝, 0.1 ㎠, 1 s
	7-2. Flame retardant performance for site-treatment goods	0.1 ㎝, 0.1 ㎠, 1 s
KS F ISO 5660-1 : 2008	Reaction to fire test - Heat release, smoke production and mass loss rate - Part 1 : Heat release rate (Cone calorimeter method)	(0 ~ 100) kW/㎡
KS F ISO 1182 : 2016	Method of non-combustibility test of building products	(0 ~ 1 000) ℃
KS M ISO 5659-2 : 2015	Plastics-Smoke generation - Part 2: Determination of optical density by a single-chamber test	(0 ~ 1 320) (None unit)
ISO 5659-2 : 2017	Plastics - Smoke generation - Part 2: Determination of optical density by a single-chamber test	(0 ~ 1 320) (None unit)
Notification No.2016-108 of Ministry of Public Safety and Security (2016.7.15.)	Model approval and inspection of gas pipe selection valves	
	7. Pressure resistance test	1.5 times of Max. working pressure (5 minutes)
Notification No.2016-109 of Ministry of Public Safety and Security (2015.7.15.)	Model approval and inspection of fire hose nozzle	
	8. Pressure resistance	Hose nozzle : 2 MPa Hose nozzle(Emissive type) : 1.5 MPa
Notification No.2016-20 of Ministry of Public Safety and Security (2016.1.11.)	Model approval and inspection of hydrant	
	6. Pressure resistance	water pressure : 2 MPa water pressure : 1.5 MPa
Notification No.2016-22 of Ministry of Public Safety and Security (2016.1.11.)	Performance approval and inspection of flexible pipes of a sprinkler system	
	8. Pressure resistance test	1.5 times of Max. working pressure (5 minutes)

No. KT018

04.002 Fire

Test method	Standard designation	Test range
Notification No.2016-19 of Ministry of Public Safety and Security (2016.1.11.)	Performance approval and inspection of fire protection composite resin	
	6. Pressure resistance test	Class 1 pipe : 5 times of Max. working pressure (2 minutes) Class 2 pipe : 2 times of Max. working pressure (2 minutes)
ISO 9705 : 1993	Fire tests – Full scale room test for surface products	HRR (0 ~ 3 000) kW
KS F ISO 9705 : 2009	Fire tests – Full scale room test for surface products	HRR (0 ~ 3 000) kW
ISO 13784-1 : 2014	Reaction to fire test for sandwich panel building systems – Part 1: Small room test	HRR (0 ~ 3 000) kW
KS F ISO 13784-1 : 2009	Reaction-to-fire tests for sandwich panel building systems – Part 1: Test method for small rooms	HRR (0 ~ 3 000) kW
ISO 4589-2 : 1996	Plastics -- Determination of burning behaviour by oxygen index -- Part 2: Ambient-temperature test	
	Specimen(Ⅰ ~Ⅳ)	(0 ~ 50) %
KS M ISO 4589-2 : 2016	Plastics — Determination of burning behaviour by oxygen index — Part 2: Ambient-temperature test	
	Specimen(Ⅰ ~Ⅳ)	(0 ~ 50) %
IMO FTP Code (2010) Annex 1 Part5	Test for surface flammability(Test for Surface Materials and Primary Deck Coverings)	(0 ~ 100) kW/m^2
ISO 5658-2 : 2006	Reaction to fire tests — Spread of flame — Part 2: Lateral spread on building and transport products in vertical configuration	(0 ~ 100) kW/m^2
ASTM E 662 - 17	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials	(0 ~ 1 320) (None unit)

No. KT018

06. Sound and Vibration Test

06.001 Sound Characteristic

Test method	Standard designation	Test range
ISO 3382-1 : 2009	Acoustics - Measurement of room acoustic parameters - Part 1: Performance spaces	-
ISO 3382-2 : 2008	Acoustics - Measurement of room acoustic parameters - Part 2: Reverberation time in ordinary rooms	50 Hz ~ 10 000 Hz
KS F 2805 : 2014	Measurement of sound absorption in a reverberation room	50 Hz ~ 10 000 Hz
ISO 354 : 2003	Acoustics - Measurement of sound absorption in a reverberation room	50 Hz ~ 10 000 Hz
KS F ISO 10140-1:2016	Acoustics—Laboratory measurement of sound insulation of building elements — Part 1: Application rules for specific products	-
KS F ISO 10140-2:2016	Acoustics—Laboratory measurement of sound insulation of building elements — Part 2: Measurement of airborne sound insulation	50 Hz ~ 10 000 Hz
KS F ISO 10140-3:2016	Acoustics—Laboratory measurement of sound insulation of building elements — Part 3: Measurement of impact sound insulation	50 Hz ~ 10 000 Hz
KS F ISO 10140-4:2016	Acoustics—Laboratory measurement of sound insulation of building elements — Part 4: Measurement procedures and requirements	-
KS F ISO 10140-5:2016	Acoustics—Laboratory measurement of sound insulation of building elements — Part 5: Requirements for test facilities and equipment	-
ISO 16283-1 : 2014	Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation	50 Hz ~ 10 000 Hz
KS F 2866 : 2003	Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it	50 Hz ~ 10 000 Hz
KS F 2809 : 2011	Field measurements of airborne sound insulation of buildings	50 Hz ~ 10 000 Hz

No. KT018

06.001 Sound Characteristic

Test method	Standard designation	Test range
ISO 140-7 : 1998	Acoustics - Measurement of sound insulation in buildings and of building elements - Part 7: Field measurements of impact sound insulation of floors	50 Hz ~ 10 000 Hz
KS F 2810-1 : 2015	Field measurements of impact sound insulation of floors – Part 1: Method using standard light impact source	50 Hz ~ 10 000 Hz
KS F 2810-2 : 2012	Field measurements of floor impact sound insulation of buildings – Part 2: Method using standard heavy impact sources	50 Hz ~ 10 000 Hz
KS F 2865 : 2015	Laboratory measurements of the reduction of transmitted impact sound by floor coverings on a heavyweight standard floor	50 Hz ~ 10 000 Hz
KS F 2863-1 : 2002	Rating of floor impact sound insulation for impact source in buildings and building elements – Part 1: Floor impact sound insulation against light impact source	50 Hz ~ 10 000 Hz
KS F 2863-2 : 2007	Rating of floor impact sound insulation for impact source in buildings and building elements – Part 2: Floor impact sound insulation against heavy impact source	50 Hz ~ 10 000 Hz
ISO 3741 : 2010	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms	50 Hz ~ 10 000 Hz
ISO 10140-1:2016	Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products	-
ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation	50 Hz ~ 10 000 Hz
ISO 10140-3:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound insulation	50 Hz ~ 10 000 Hz

No. KT018

06.001 Sound Characteristic

Test method	Standard designation	Test range
ISO 10140-4:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 4: Measurement procedures and requirements	-
ISO 10140-5:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment	-

End.