

since 1957

***novoferm***<sup>®</sup>  
**DONGBANG**

*Doors and Frames*



**Dongbang Novoferm Inc.**

  
**55<sup>th</sup>**  
since 1957

55 years of Dongbang Novoferm is  
the Door **History** of Korea.



Since the Dongbang Novoferm Inc. is founded in 1957, we have been in the business of manufacturing quality hollow metal products for the building and construction industry.

During that time, The Dongbang Novoferm Inc. has earned, its reputation for the best quality and top performance throughout the residential, commercial, industrial and institutional construction market through reliable performance for many years.

- Fire Labeled Steel Door
- Acoustic Door
- Energy Saving Door



- Fire Rated Glass Door  
Dongbang **Zenith**<sup>GL</sup>



- Disabled Door (Balance type)  
Dongbang **Eldor**



- Sliding Door  
Dongbang **Smoode**



- Fire Rated Wooden Door  
Dongbang **Zenith**<sup>WD</sup>



## UL

1. Door & Window Frames, File No. R10522
2. Pair & Single Swing Hollow-Metal Type Swing Fire Door, 1 1/2hr - File No. R18674
3. Pair & Single Swing Hollow-Metal Type Swing Fire Door, 2hr - File No. R18674
4. Pair & Single Swing Hollow-Metal Type Swing Fire Door, 3hr - File No. R18674
5. Pair & Single Swing Hollow-Metal Type Swing Fire Door, UL Canada  
Certificate No.051110-R19674, Report Reference No. R18674



## BS (Warring Fire Research consultancy Testing)

1. Fire Resistance Test in Accordance with BS 476: Part 22: 1987, Clause 8 on Two Single-Acting, Single-Leaf Steel Doorsets, 2hr, WARRES No. C68110
2. Fire Resistance Test in Accordance with BS 476: Part 22: 1987, Clause 8 on a Single- Acting, Double-Leaf Steel Doorsets, 1 1/2hr, WARRES No. C68109



## ANSI 250.4

- Hollow-Metal Door & Fire Door Frame, No. AU10074031-1  
Twist Test / Cycle Test - 1,000,000 Cycles



## GOST (Russia)

1. Single Swing Hollow-Metal Type Swing Fire Door, 1hr, No.001.B05914
2. Pair Swing Hollow-Metal Type Swing Fire Door, 1hr, No.001.B05915



## Middle East

1. Fire Rated Steel Door, No.9/2006 (Kuwait Governmental authorization)
2. Swing Type Fire Door, No. PS-21124-PA (Qatar Governmental authorization)



## KS (Korean Standard)

- KS F 3109 Door Sets, No. 99-0856  
Fire Resistance Test in Accordance with KS F 2268-1, 1hr, 2hr

## ISO 9001

## ISO 9001

- ISO 9001, No.QSC80914

## Material

Material	Specification	Usage and Application
Cold Rolled Steel	ASTM A1008, A568, A569, KS D 3512	Interior Doors
Electro Galvanized Steel	ASTM A591, KS D 3528	Interior & Exterior Doors
Galvannealed Steel	ASTM A653, KS D 3520	Exterior & High Humidity Location
Stainless Steel	ASTM A167, A176, KS D 3698	Interior & Exterior Doors

## Product Selection Guide

Model	Type	Minimum Steel Thickness					
		Door			Frame		
		Min. THK	MSG	DB STD (mm)	Min. THK	MSG	DB STD (mm)
Level - 1 Standard Duty	Full Flush	0.8	20	1.0	0.8	20	1.0
	Seamless	0.8	20	1.0	0.8	20	1.0
Level - 2 Heavy Duty	Full Flush	1.0	18	1.2	1.0	18	1.2
	Seamless	1.0	18	1.2	1.0	18	1.2
Level - 3 Extra Heavy Duty	Full Flush	1.3	16	1.6	1.3	16	1.6
	Seamless	1.3	16	1.6	1.3	16	1.6
	Stile and Rail	1.3	16	1.5	1.3	16	1.5
Level - 4 Maximum Duty	Full Flush	1.7	14	2.0	1.7	14	2.0
	Seamless	1.7	14	2.0	1.7	14	2.0

## Conversion Table

MSG	Minimum Thickness			Conversion		
	Inch	mm	mm(Min.)	Inch	Decimal	mm
4	0.214	5.436	5.4	1	1.000	25.40
5	0.199	5.055	5.1	15/16	0.937	23.80
6	0.184	4.674	4.7	7/8	0.875	22.23
7	0.167	4.242	4.2	13/16	0.812	20.62
8	0.152	3.861	3.9	3/4	0.750	19.05
10	0.123	3.124	3.1	11/16	0.687	17.45
12	0.093	2.362	2.4	5/8	0.625	15.88
14	0.067	1.702	1.7	9/16	0.562	14.27
16	0.053	1.346	1.3	1/2	0.500	12.70
18	0.042	1.067	1.1	7/16	0.437	11.10
20	0.032	0.813	0.8	3/8	0.375	9.53
22	0.026	0.660	0.7	5/16	0.312	7.92
24	0.020	0.508	0.5	1/4	0.250	6.35
26	0.016	0.406	0.4	3/16	0.187	4.75
28	0.013	0.330	0.3	1/8	0.125	3.18
				1/16	0.062	1.57

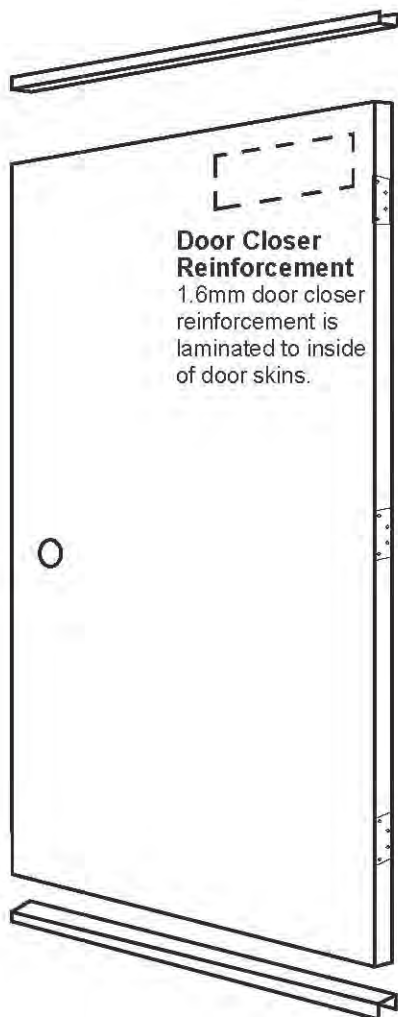
# Fire Labeled Steel Doors

## Doors

Dongbang Novoferm's fire labeled steel doors are 1 3/4"(45mm) in thickness and are available in 1.6mm or 1.2mm steel sheets. Door skins are mechanically interlocked vertically along the hinge and lock edge. Door edges are bevelled 1/8"(3mm) in 2"(50mm) and door surfaces are flush, welds or seams. All standard doors are manufactured from galvanized steel and are prepared and reinforced to receive specified architectural hardware in accordance to **ANSI A115 Standards**.

### Fire Labels:

Dongbang Novoferm's fire labeled steel doors are approved by both Underwriters Laboratories (UL) and Warrington fire research (BS) Fire Labelling Programs. Fire labeled steel doors must be installed with an equivalent fire labeled frame with approved fire listed hardware. For fire labelling restrictions and limitations refer to the Fire Labelling Guide for Steel Door.

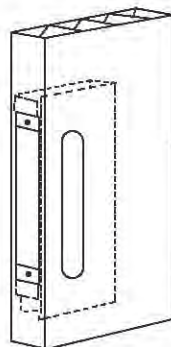


### Door Closer Reinforcement

1.6mm door closer reinforcement is laminated to inside of door skins.

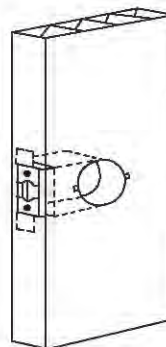
### Top Channel

1.2mm inverted end channel is spot welded to door skins and tack welded at each corner of the door for extra rigidity.



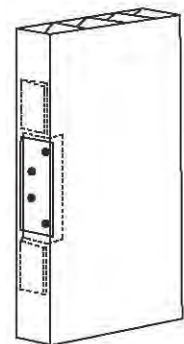
### Mortise Lock Prep

Government Series 86 edge door prep is reinforcement with a 1.6mm reinforcement box to help hold mortise lock in its proper position in accordance to ANSI A115.1 requirements. 2-3/4"(70mm) backset



### Cylindrical Lock Prep

Government Series 161 Cylindrical Lockset door prep is equipped with 1.6mm reinforcement and an added barrel support spot welded to the edge of the door in accordance to ANSI A115.2 requirements. 2-3/4"(70mm) backset



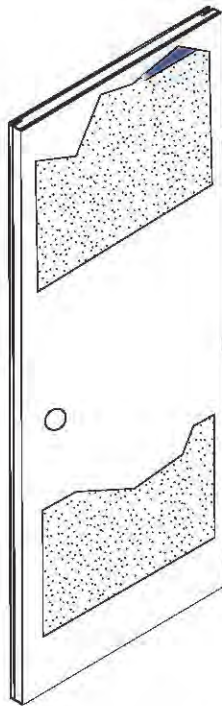
### Hinge Reinforcement

3.5mm high frequency hinge reinforcement with return bend for added strength.

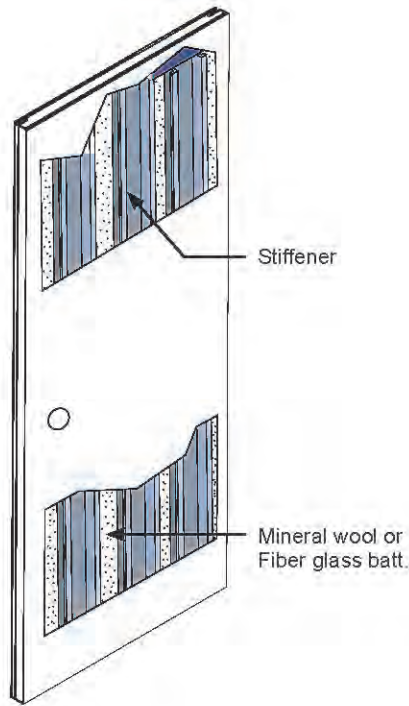
### Bottom Channel

1.2mm inverted end channel is spot welded to door skins and tack welded at each corner of the door for extra rigidity.

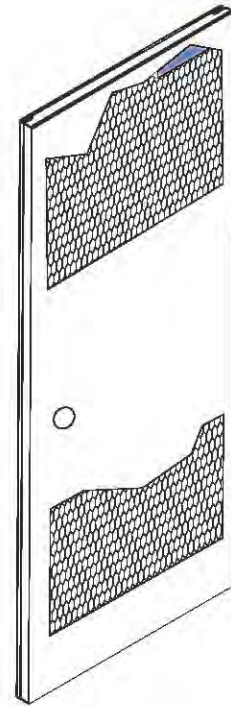
## Cores



Mineral Board



Steel Stiffener



Honeycomb

## Fire Labelling Guide for Steel Doors

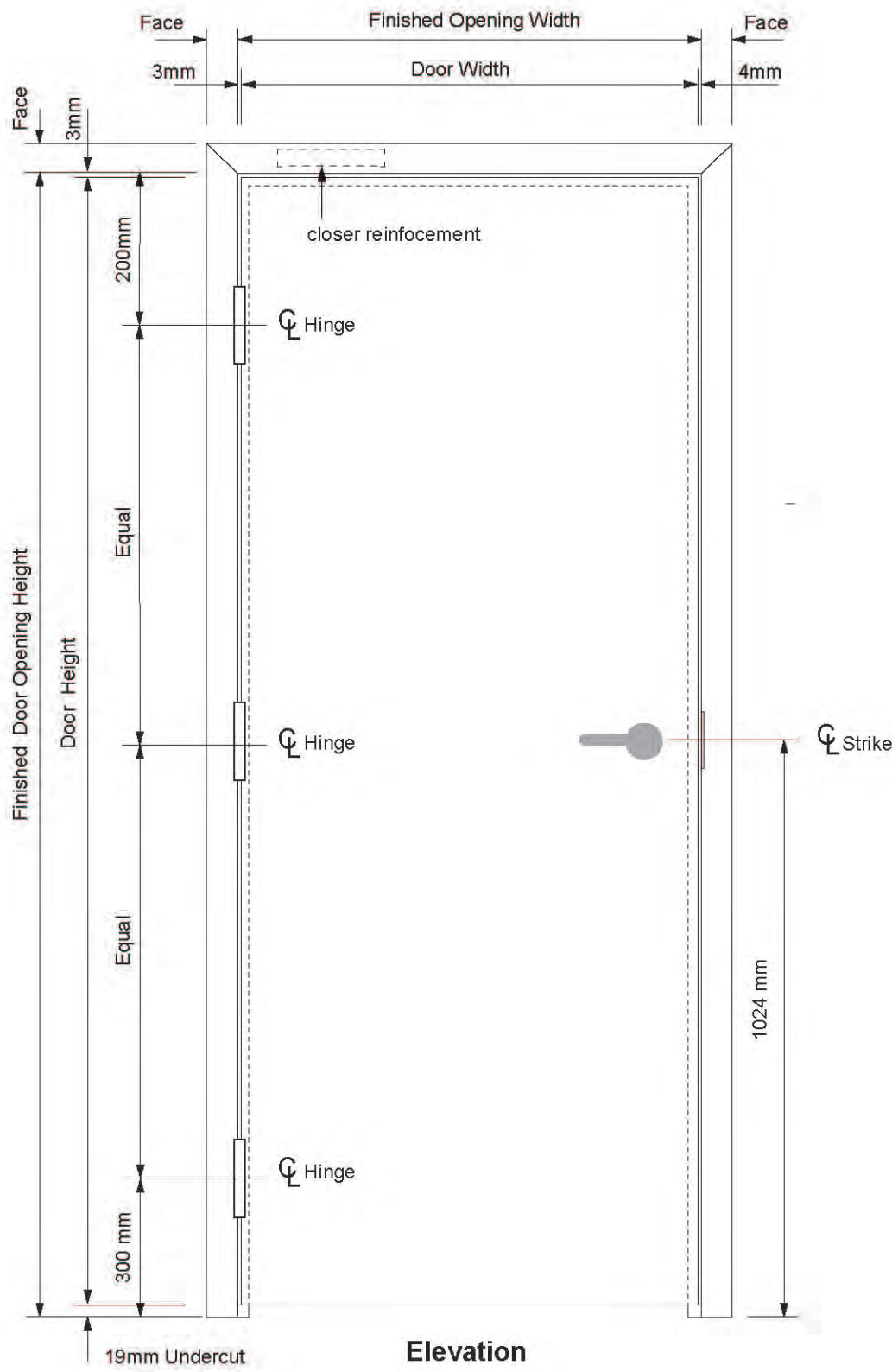
(UL Label)



Type	Elevation	Min. THK.	Max. Nominal Door Sizes	Available Rating	Notes
Flush		1.2mm	42" X 91" (1070mm X 2310mm) Single 84" X 91" (2140mm X 2310mm) Double	1 1/2hr	
Flush		1.2mm	42" X 95" (1070mm X 2414mm) Single 84" X 95" (2140mm X 2414mm) Double	2hr	
Flush		1.2mm	46" X 93" (1165mm X 2350mm) Single 92" X 93" (2330mm X 2350mm) Double	3hr	
Narrow		1.2mm	42" X 91" (1070mm X 2310mm) Single 84" X 91" (2140mm X 2310mm) Double	3/4hr	Glass area 100 ≤ sq.in(.064m <sup>2</sup> )

# Fire Labeled Steel Doors

## Standard Hardware Location

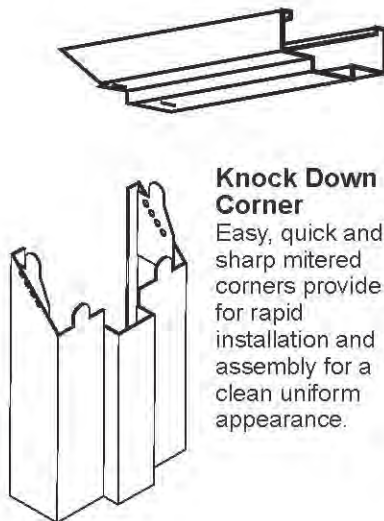


## Frames

Dongbang Novoferm's manufactures full range of a Fire Labeled Steel Frames of standard sizes and profiles to custom sizes and profiles. Steel frames are available in 1.6mm for 1 3/4" (45mm) doors. All standard frames are manufactured from galvanized steel and are prepared and reinforce to receive specified architectural hardware in accordance to ANSI A115 Standards.

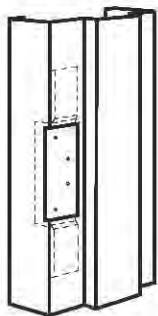
### Fire Labels:

Dongbang Novoferm's fire labeled steel frames are approved by both Underwriters Laboratories (UL) and Warrington Fire Research (BS) Fire Labelling Programs. Fire Labeled steel frames must be installed with an equivalent fire labeled door with approved fire listed hardware. For fire labelling restrictions and limitations refer to the Fire Labelling Guide for Steel Frames.



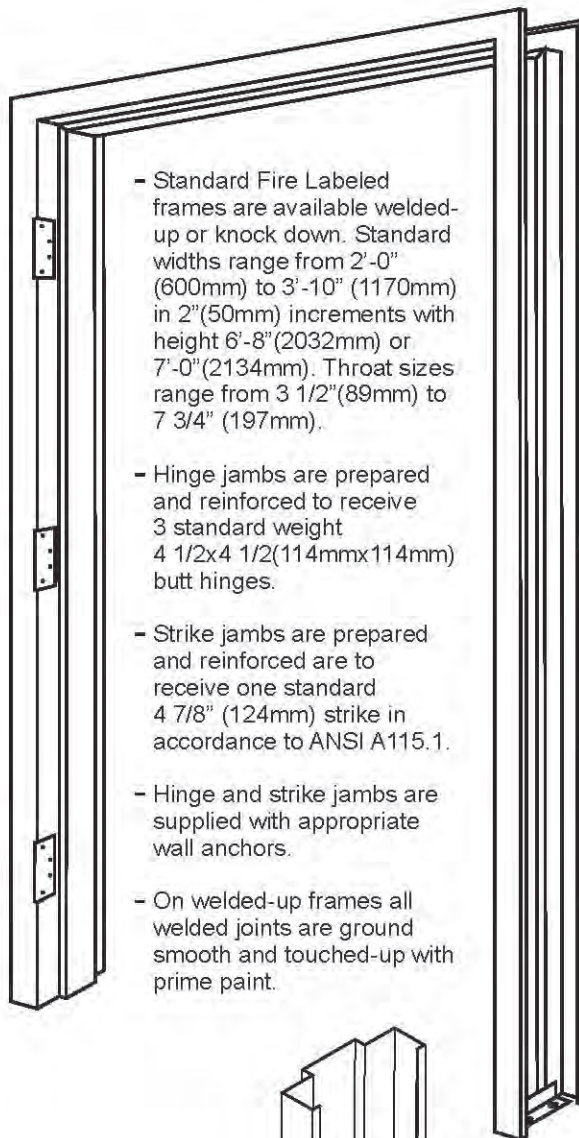
### Knock Down Corner

Easy, quick and sharp mitered corners provide for rapid installation and assembly for a clean uniform appearance.

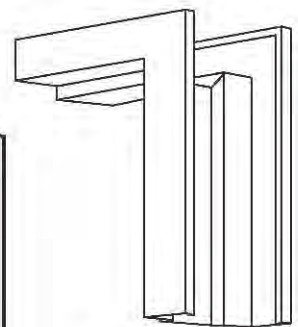


### Hinge Reinforcement

3.5mm high frequency hinge reinforcement with return bend for added strength.

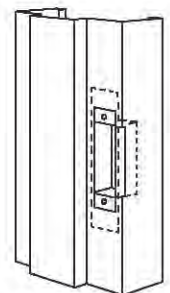


- Standard Fire Labeled frames are available welded-up or knock down. Standard widths range from 2'-0" (600mm) to 3'-10" (1170mm) in 2" (50mm) increments with height 6'-8" (2032mm) or 7'-0" (2134mm). Throat sizes range from 3 1/2" (89mm) to 7 3/4" (197mm).
- Hinge jambs are prepared and reinforced to receive 3 standard weight 4 1/2x4 1/2 (114mmx114mm) butt hinges.
- Strike jambs are prepared and reinforced are to receive one standard 4 7/8" (124mm) strike in accordance to ANSI A115.1.
- Hinge and strike jambs are supplied with appropriate wall anchors.
- On welded-up frames all welded joints are ground smooth and touched-up with prime paint.



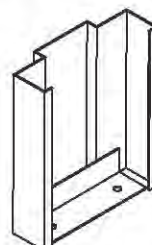
### Welded Corner

Welded corners are ground smooth and prime painted (touched up) to provide a seamless look.



### Strike Reinforcement

1.6mm strike reinforcement supplied with closed back eliminating the need to install an additional dust or mortar protection cover in accordance to ANSI A115.1 reinforcements.

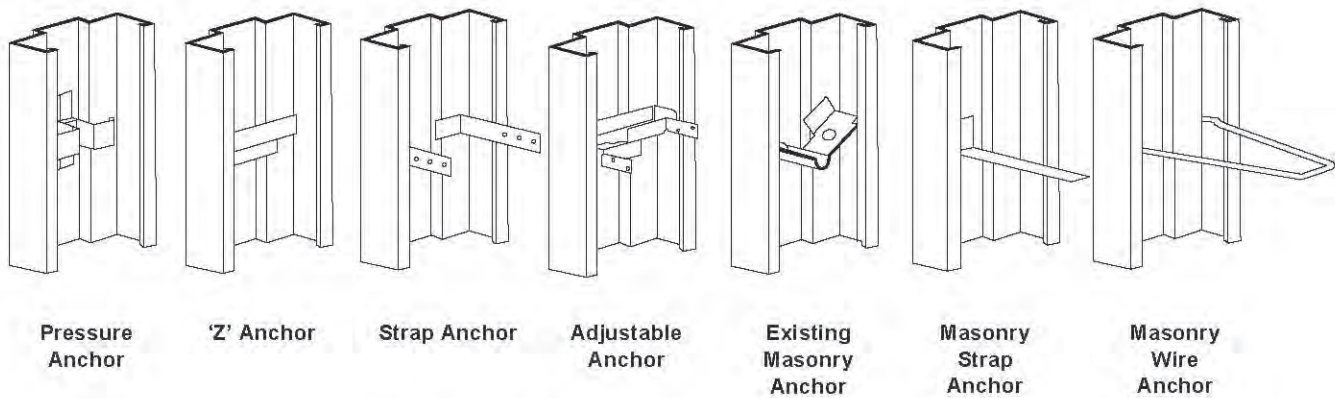


### Floor Anchor

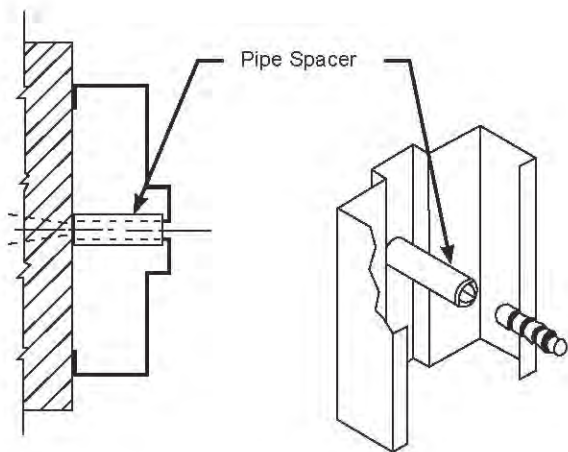
1.0mm

# Fire Labeled Steel Doors

## Wall Anchors



Common Types of Jamb Anchor for Pre-set Frames

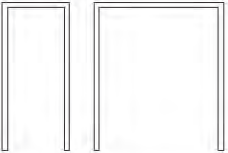


Expansion-Shell Anchors  
Anchorage of frames in Prepared Openings

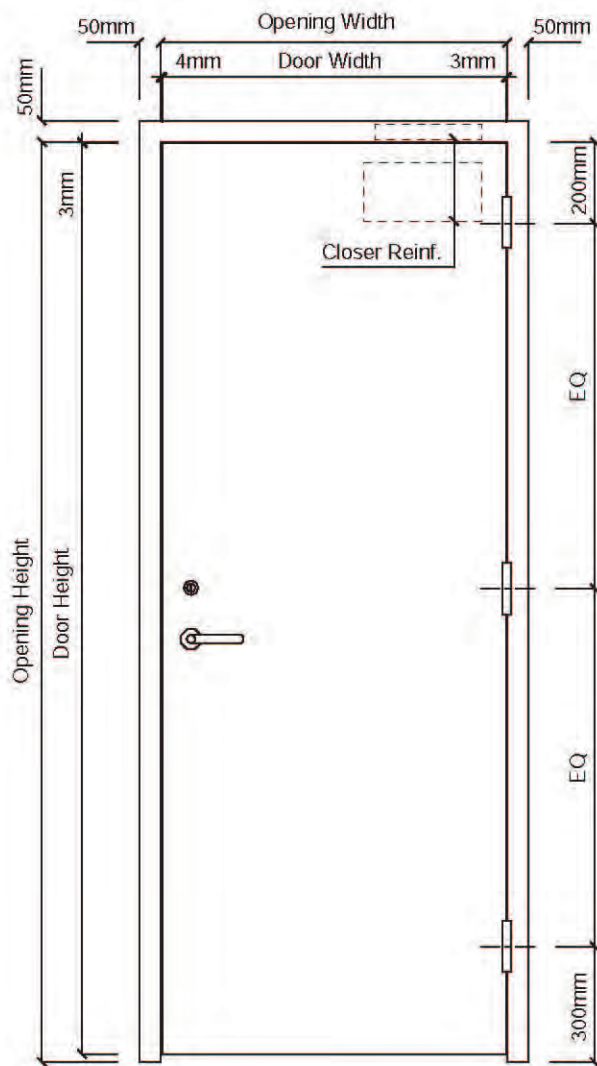
## Fire Labelling Guide for Steel Frames

**FIRE DOOR FRAME**  
LISTED NO. HN387200

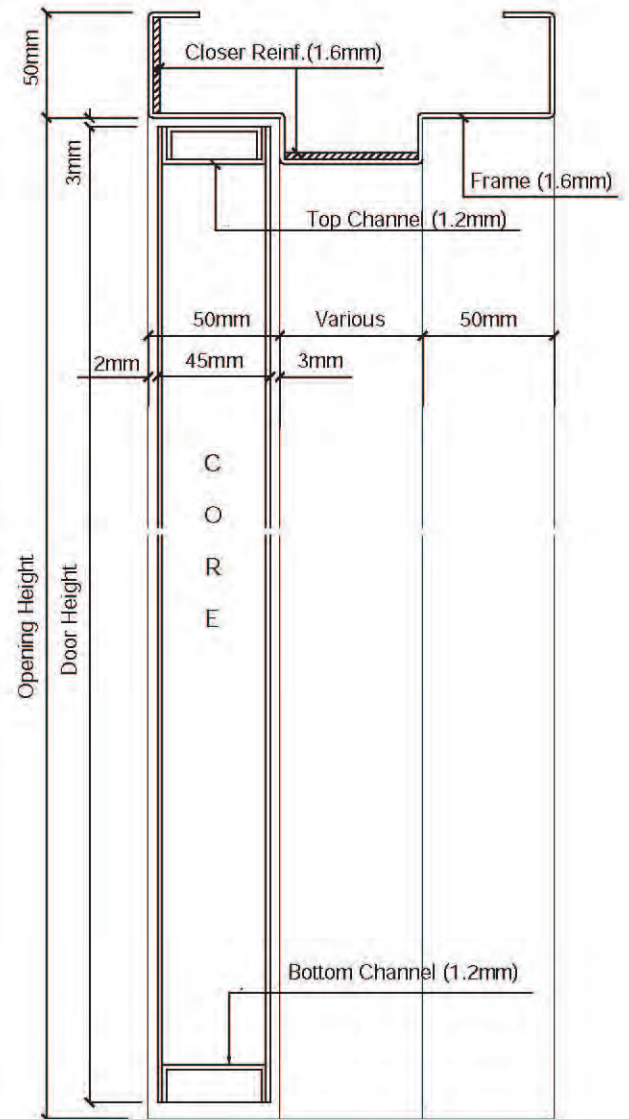
0063-1.1-S0902

Type	Elevation	Min. THK.	Max. Nominal Frame Sizes	Available Rating	Notes
Basic Frames		1.2mm	48" X 120" (1220mm X 3050mm) Single  96" X 120" (2440mm X 3050mm) Double	2 hr 1 1/2 hr 3/4hr	For Drywall or Masonry Openings. Available Knock Down or Welded Up.

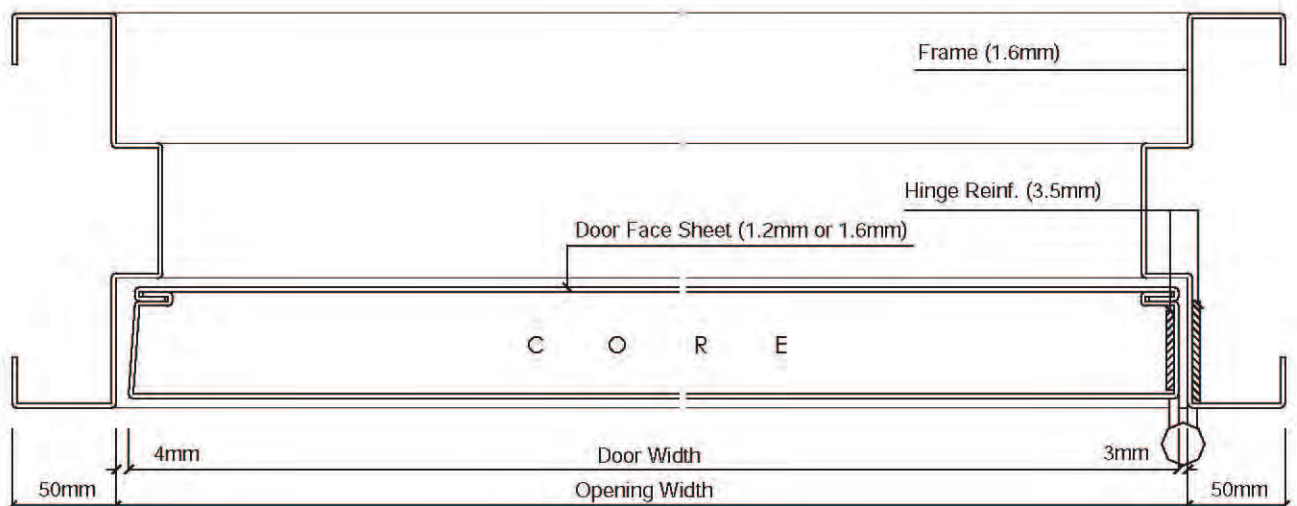
## Drawing



ELEVATION



VERTICAL SECTION



HORIZONTAL SECTION

# Thick Rebated Door

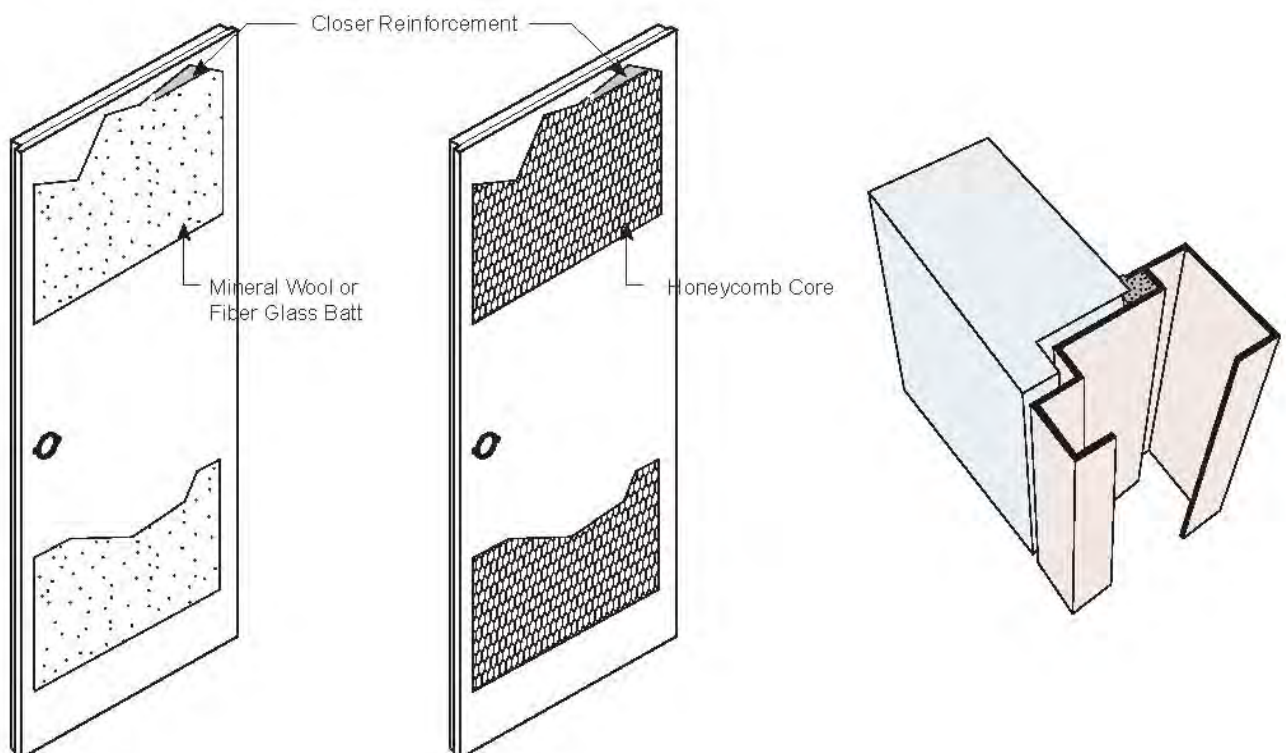


*"Here we offer Your Building the value Added Elegance!"*

Dongbang Zenith is a synonym of masterpiece door products providing the outstanding performance and graceful appearance.



## Door Construction



## Zenith 2.5D Pocket Hinge

*"Innovative concealed ball-bearing technology"*



Loading capacity  
each hinge 120Kg



Adjustable



Innovative concealed  
ball-bearing technology



- 200,000 cycles test  
on 160Kg door  
- Life time guarantee  
- EN1935 Class 11

# Door Sealing Rebated Door



*"Dual Gasket Construction Provides the Excellence of Sealing Performance!"*

Dongbang ZenithII products of excellence come with the highest level of sealing performance.

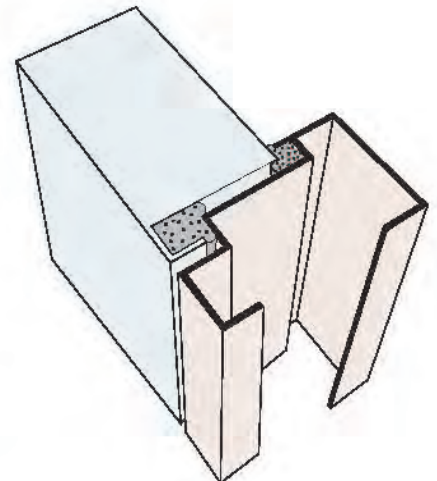


## Door Construction

### Zenith



### ZenithII



## Feature

- Noise, condensation and heat loss caused by draft gushing in between the doors and door frames are perfectly interrupted with the outstanding sealing performance.
- Dual gasket installed with Dongbang ZenithII Door product completely interrupts the harmful gases which may come through the doors and door frames in the event of fire accident.

## Purpose

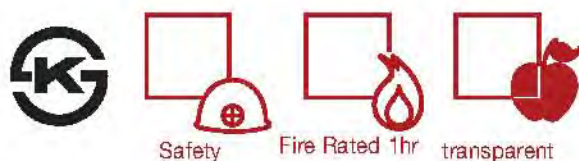
- ZenithII Door are specified when better soundproof, better airtight and better security are required
- Zenith door leaf rebated on 3 or 4 sides is 45mm thick. Either one or two securing pins prevent the door leaf from bending out in the case of fire. double rubber gasket improve sound proof and airtight which is very effective energy savings.

# Fire rated Glass Door

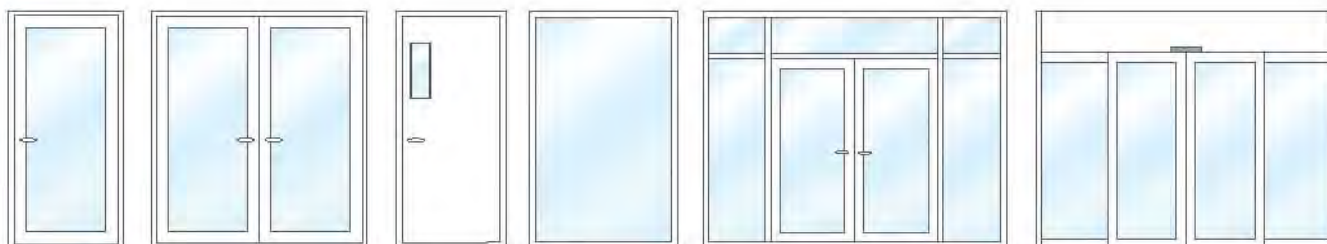


*"keeps the Safety at Invisible Spots!"*

The definition of safety in daily living becomes totally different as you live with the Fire Rated Glass Door. The Dongbang novoferm's Zenith Fire Rated Glass Door as processed by the in-house technology are made with the special fire protecting glass of best quality, which is capable to interrupt the flame for over 1 hour in the event of fire accident while safekeeping the transparency for long period of time allowing people on the fire spot safely evacuate.



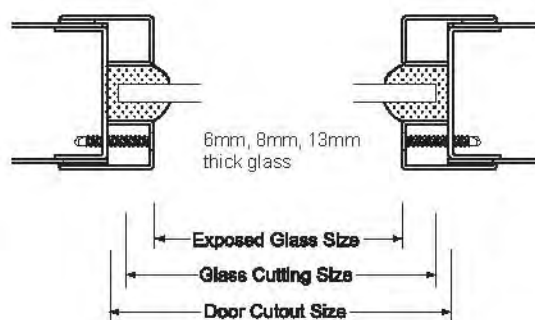
## Designs



## Specification

Spec.	Detail	Remark
Steel Thickness	SUS 1.2T / ST'L EG 1.6T	
Frame Max. Size	2000mm(W) X 3000mm(H)	Fixed Windows
	1200mm(W) X 2400mm(H)	Single Door
	2200mm(W) X 2500mm(H)	Double Door
	3000mm(W) X 2700mm(H)	Double Auto
Glass Thickness	8mm	
Glass Weight	21Kg/m <sup>2</sup> ±0.5	
Glass Color	Extra Clear	
Light transmission	88.60%	

## Glazing Type



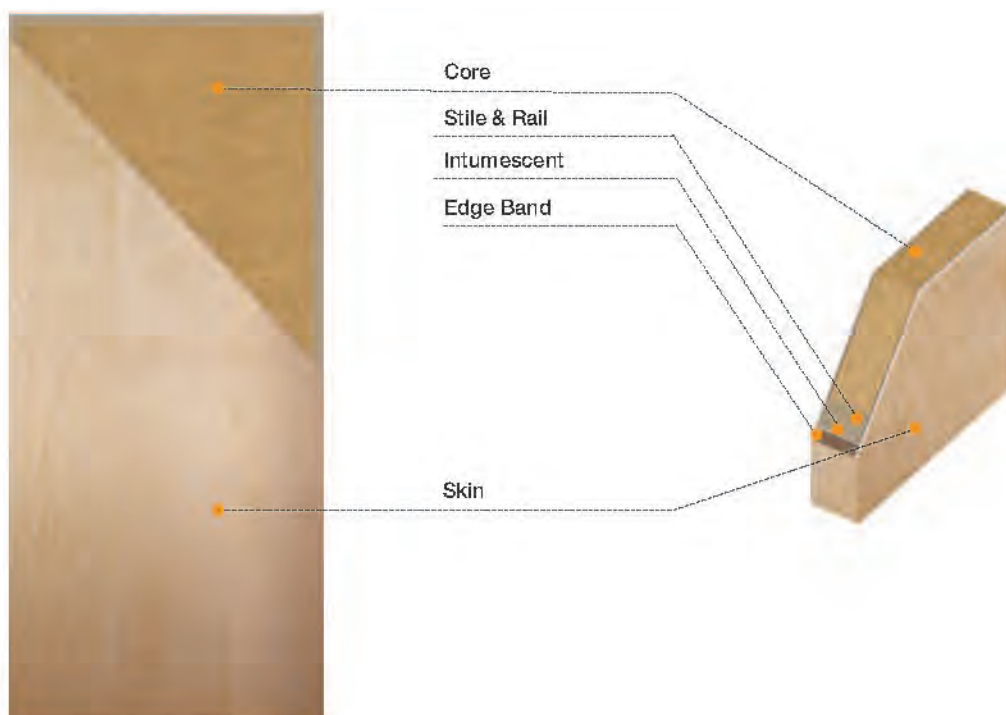


*"Elegant Living Space, Dongbang Novoferm's door offers the Safety with Beauty!"*

Dongbang novoferm's Fire Rated Wooden Door products are made with the fire protecting core of environmental friendly materials, providing the non-heat isolating, fire protecting performance for 20min ~ 1 1/2hour even employing the wooden finish.



## Door Construction



## Frame Profiles



## Skin

- Wood Veneered Door
- Hardboard Door
- Plastic Laminated Door

## Fire Reistance Performance

- 20min
- 45min
- 1hr
- 1 1/2hr

# Sliding Door

## Dongbang Smoode

*"Ease of Light Sliding Action, Convenience for Everyone!"*

Dongbang Smoode Sliding Door offers the maximum space utilization with the minimal dead space, which is a sloped rail type sliding door provided with convenience and smooth sliding action. Just a little bit of force is required to open and close the door offering convenience to patients, children, senior citizens, and everyone, which is most appropriate for applications at the hospitals, welfare facilities, and nursing homes for senior citizens.



### Feature

#### Silence

The unique roller as designed and developed using the special materials allows the door automatically closed thanks to the sloped rail reducing the opening & closing noise below 45dB.

The hydraulic breaking device minimizes the noise produced from the door striking to door frame during the closing of door by regulating the self closing speed.



Smoode Noise : **45dB**

#### Smooth

As manufactured with the door opening force below 6.5N for 40kg weighing door, even the patients, children and elderly persons are able to open the door with ease smoothly.








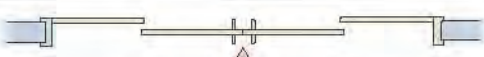




Smoode Opening Force : **6.5N**

#### Safety

- Hydraulic breaking device safely regulates the door closing speed.
- Rubber gaskets preventing impact on door/door frame and getting fingers caught in the pocket section are provided to prevent the accident in advance.
- No presence of rail on the bottom allows convenience and safety of passages for wheel chairs, medical devices & equipments, patient beds and other stuffs at those locations like hospitals.
- HOLD OPEN Feature Offering Safety and Convenience.

### Smoode Type

Pocket Type	Single	Double
Double Pocket		
None		
None		
Single Pocket		
Single Pocket		

# Disabled Door (Balance type)

## Dongbang Eldor

*"Simply open with Light Force to Automatically closes after Passage!"*

Dongbang Eldor product is developed making the best use of those advantages of conventional swing door and sliding door as well as supplementing the disadvantages, which provides the outstanding convenience of passages for wheelchairs requiring the minimal space.

Dongbang Eldor is most suitable for doors at disabled persons for its convenience and comfort of use, and as well appropriate for entrance/exit doors for hospital rooms and welfare facilities.



## Feature

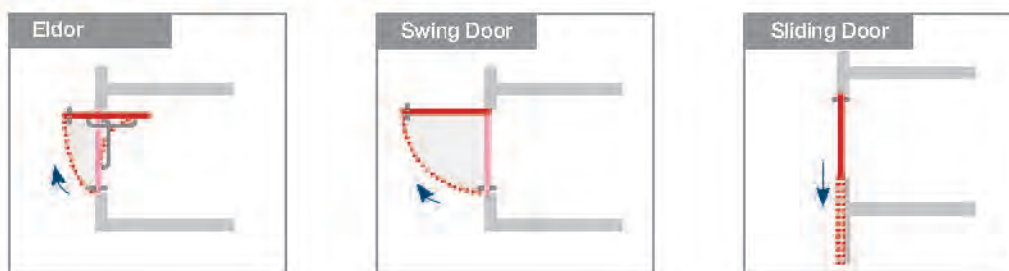
### Safety

Dongbang Eldor product works like avoiding the passing persons when opening & closing the door.



Dongbang Eldor has no rail component on the bottom surface offering the convenience and safety for passages of wheelchairs, patients, elderly and weak persons, and prevents the risk of potential accidents in advance by installing the impact preventing rubber gaskets at both corners of door frames. The pulling type Lever Handle prevents the unexpected opening of door by negligence.

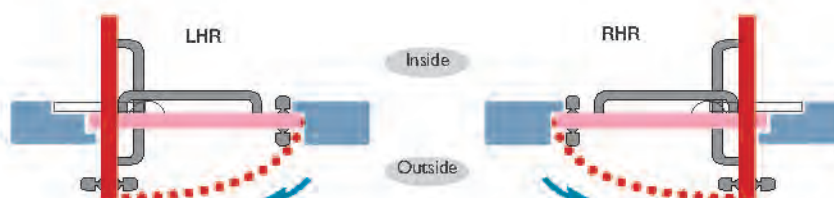
### Only Bit of Small Space Required



### Convenience

Automatic Closing after Opening with Light Force.

## Handing

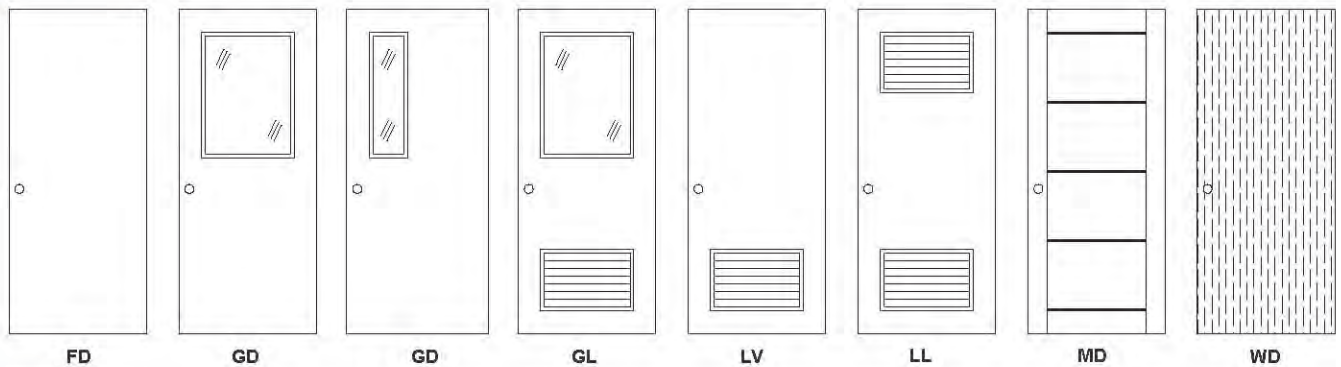


## Doors

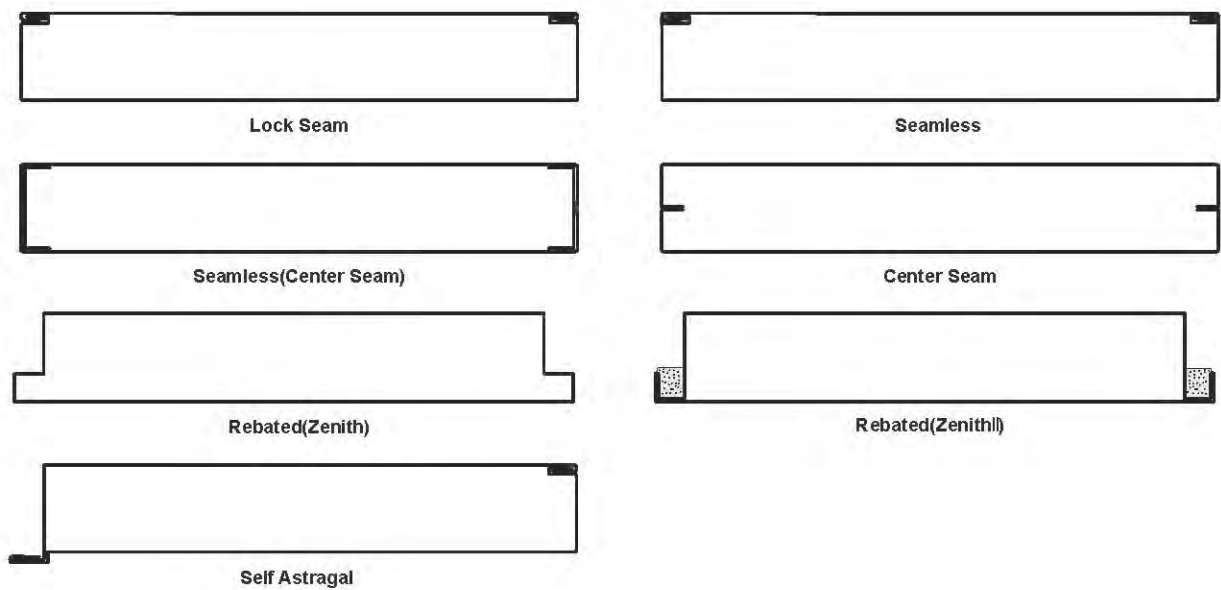
### Steel Thickness

0.8mm, 1.0mm, 1.2mm, 1.6mm

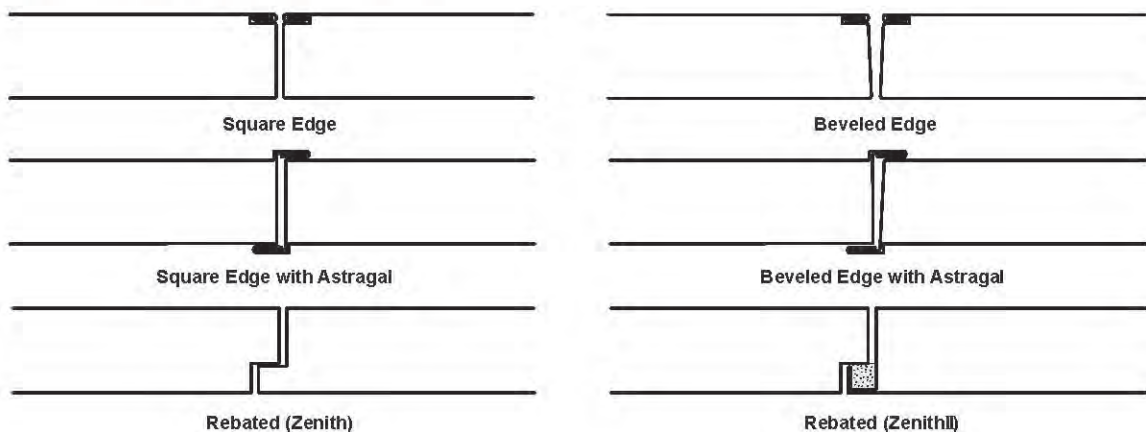
### Door Designs



### Door Profiles



### Meeting Edge - Double Door



## Edge

- **Square Edge** - 90° to the face
- **Beveled Edge** - beveled 3.2mm/50.8mm

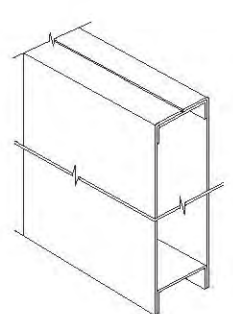
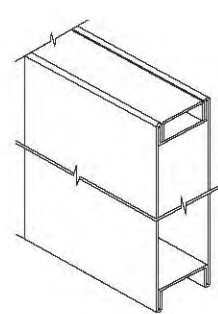
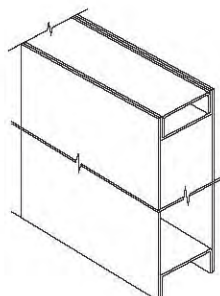
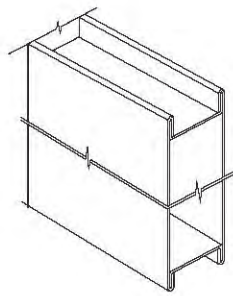
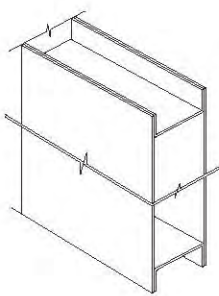


**Square Edge**

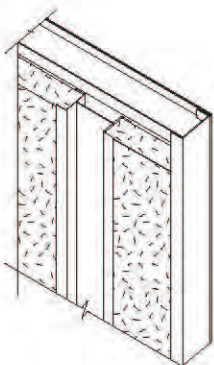


**Beveled Edge**

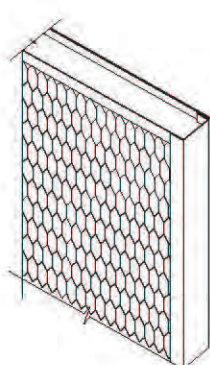
## Top & Bottom Edge Details



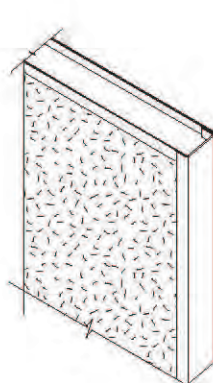
## Cores



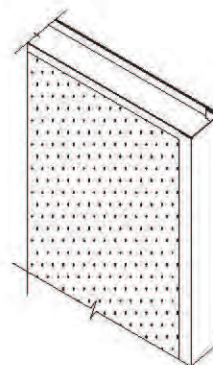
**Steel Stiffened  
Mineral Wool**



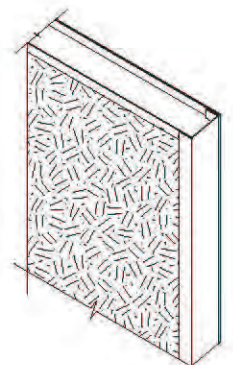
**Honey Comb**



**Mineral Wool  
Board**



**Polystyrene**



**Polyester**

## Door Finishing

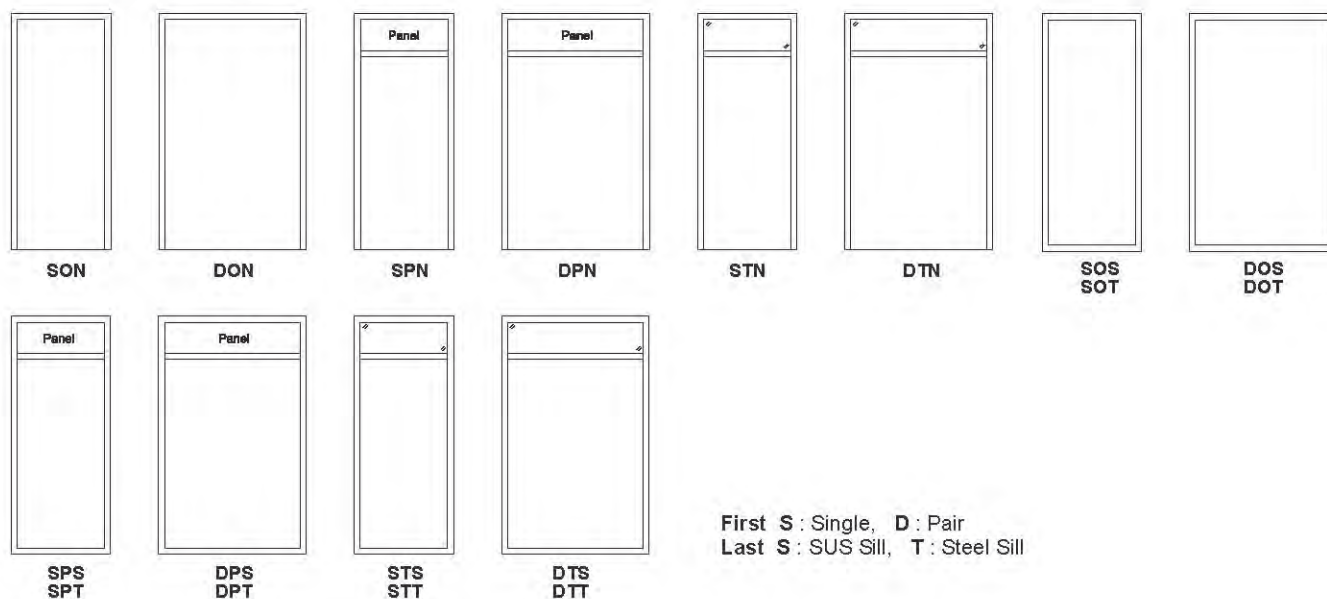
- **Powder Coating**
- **Primer Coating**

## Frames

### Steel Thickness

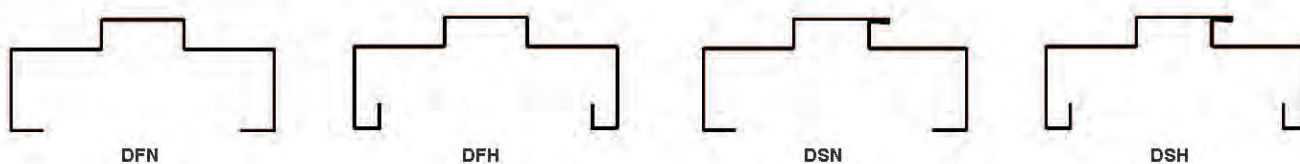
1.6mm, 2.0mm

### Frame Designs

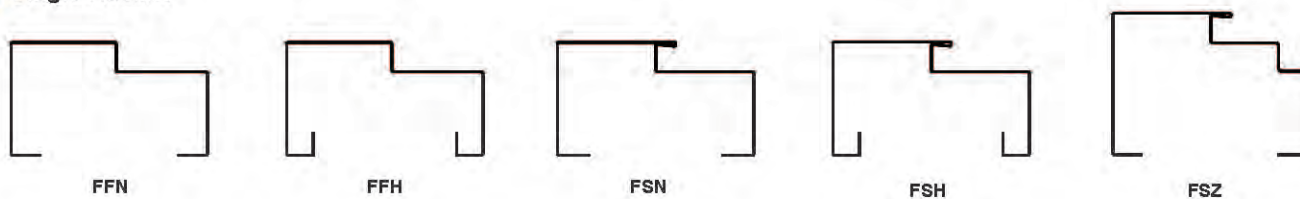


### Frame Profiles

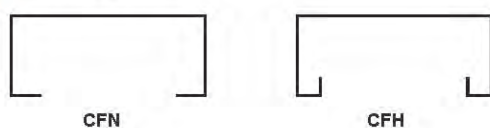
#### Double Rabbet



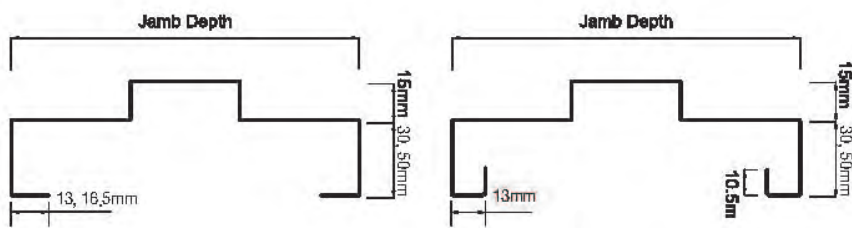
#### Single Rabbet



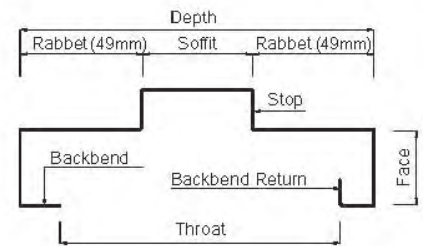
#### Cased Open



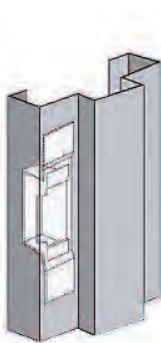
## Standard Jamb Size



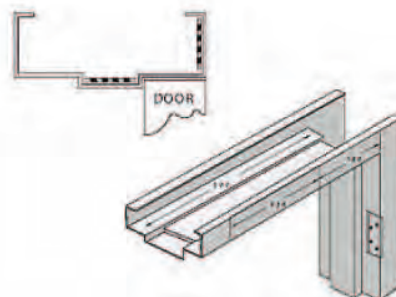
## Frame Components



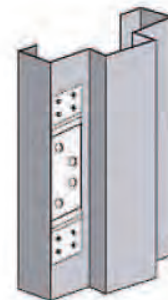
## Hardware Preparation



Strike Box



Closer Reinforcement

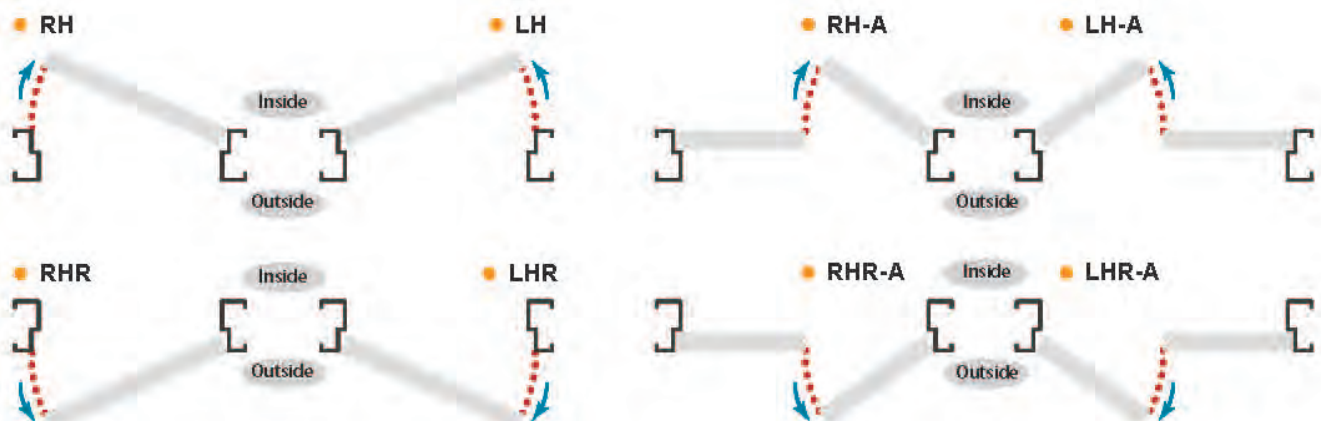


Hinge Reinforcement

## Frame Finishing

- Primer Coating

## Door Handing





**BD-T300D**  
Standard Size  
1400mm(W) x 2400mm(H)



**BD-T302D**  
Standard Size  
1400mm(W) x 2400mm(H)



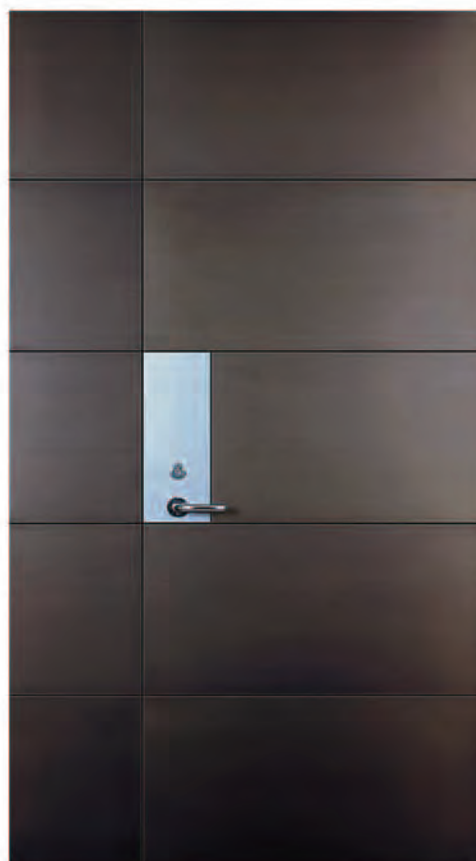
**BD-T303D**  
Standard Size  
1400mm(W) x 2400mm(H)



**BD-T673D**  
Standard Size  
1400mm(W) x 2400mm(H)



**BD-T674D**  
Standard Size  
1400mm(W) x 2400mm(H)



**BD-S201D**  
Standard Size  
1400mm(W) x 2400mm(H)



**BD-S653D**  
Standard Size  
1400mm(W) x 2400mm(H)



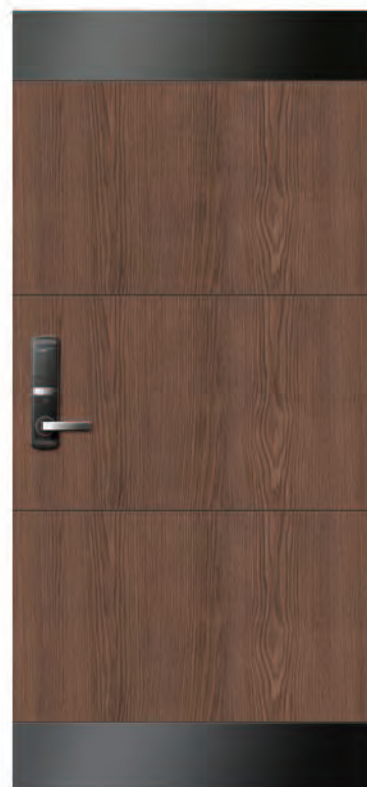
**MS-S365D**  
Standard Size  
1400mm(W) x 2400mm(H)



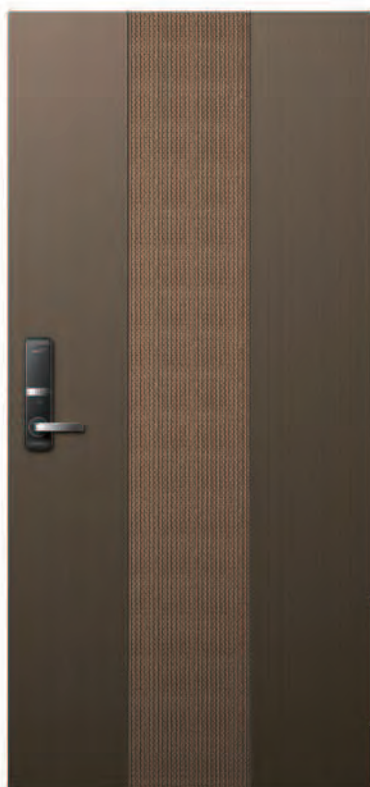
**MD-C672**  
Standard Size  
1000mm(W) x 2100mm(H)



**MC-S690**  
Standard Size  
1000mm(W) x 2100mm(H)



**MC-S642**  
Standard Size  
1000mm(W) x 2100mm(H)



**MC-T670**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-T671**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S687**  
Standard Size  
1000mm(W) x 2100mm(H)

\* The color of image may be different from actual product.



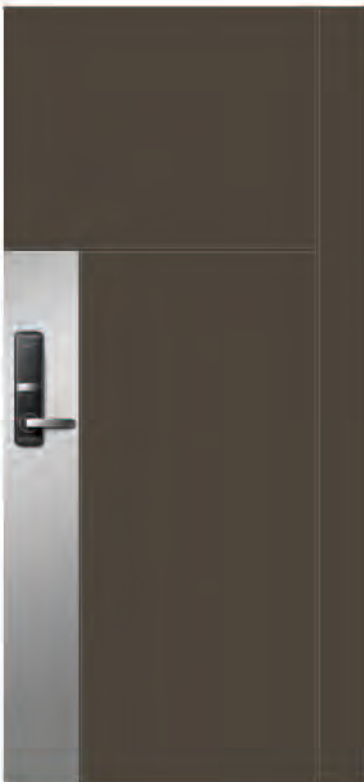
**MD-S235**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S233**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S314**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S407**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S428**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-O445**  
Standard Size  
1000mm(W) x 2100mm(H)

# Product Design



**MD-S243**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-M211**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S193**  
Standard Size  
1000mm(W) x 2100mm(H)



**MD-S221**  
Standard Size  
1000mm(W) x 2100mm(H)

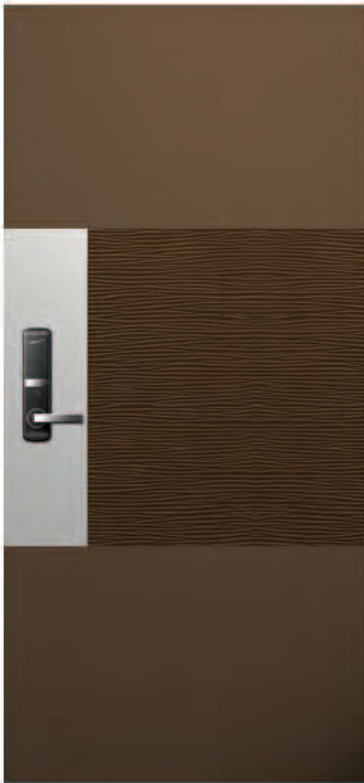


**MD-S219**  
Standard Size  
1000mm(W) x 2100mm(H)



**ME-S251**  
Standard Size  
1000mm(W) x 2100mm(H)

\* The color of image may be different from actual product.



**FC-G736**  
Standard Size  
1000mm(W) x 2100mm(H)



**FC-G734**  
Standard Size  
1000mm(W) x 2100mm(H)



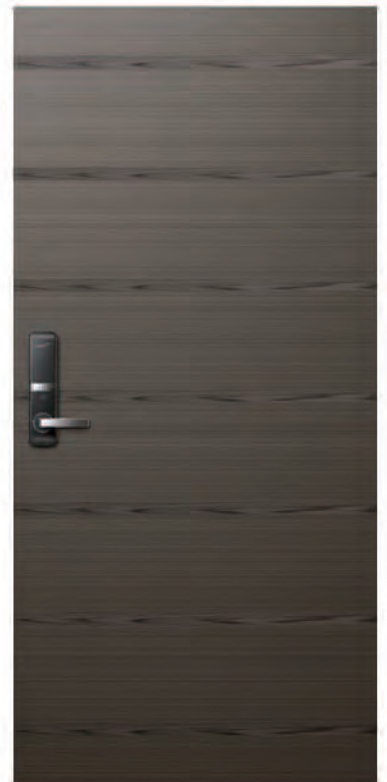
**FC-G737**  
Standard Size  
1000mm(W) x 2100mm(H)



**FC-G735**  
Standard Size  
1000mm(W) x 2100mm(H)



**FC-G679**  
Standard Size  
1000mm(W) x 2100mm(H)



**FC-G681**  
Standard Size  
1000mm(W) x 2100mm(H)

# Product Design



**FD-G312**  
Standard Size  
1000mm(W) x 2100mm(H)



**FE-G249**  
Standard Size  
1000mm(W) x 2100mm(H)



**FE-N019**  
Standard Size  
1000mm(W) x 2100mm(H)



**FD-G139**  
Standard Size  
1000mm(W) x 2100mm(H)



**FD-G079**  
Standard Size  
1000mm(W) x 2100mm(H)



**FC-G748**  
Standard Size  
1000mm(W) x 2100mm(H)



**FD-N100**  
Standard Size  
1000mm(W) x 2100mm(H)



**GD-N101**  
Standard Size  
1000mm(W) x 2100mm(H)



**LV-N100**  
Standard Size  
1000mm(W) x 2100mm(H)



**GD-N102**  
Standard Size  
1000mm(W) x 2100mm(H)



**GD-N100**  
Standard Size  
1000mm(W) x 2100mm(H)



**GD-N105**  
Standard Size  
1000mm(W) x 2100mm(H)

# Track Records

## Plant

- Vinashin Dockyard, Vietnam
- Pilay Thermoelectric Power Plant, Vietnam
- Shanghai Epson Factory, China
- Hapur Thermoelectric Power Plant, Bangladesh
- Attahaddy Gas Plant, Libya
- Sakhalin LNG Plant, Russia
- Dubai Plant Terminal, UAE
- Kaluga Samsung LCD Factory, Russia
- Moscow Pilot 4 PJT, Russia
- Olympia PJT, Kuwait
- Tripoli Sarir Power Plant, Libya
- Plant Terminal, Mexico
- Kearl Oil Sands, Canada
- Hyundai Mobis, Diamos, Motor, Brazil

## Building

- 63City, Korea
- Asem Tower, Korea
- Star Tower, Korea
- Hoam Art Hall, Korea
- I Park Tower, Korea
- LG Art Center, Korea
- Headquarter of Samsung, Korea
- Headquarter of Hyundai, Korea
- Lotte Department Store in Moscow Russia
- Astana Media Center Kazakhstan
- Esentai Shopping Mall, Kazakhstan
- Hanoi Land Mark Tower, Vietnam
- Doha Convention Center, Qatar

## Public Institution

- Incheon International Airport, Korea
- Parliament Buildings, Korea
- The National Digital Library of Korea, Korea
- Yongsan-g Office, Korea
- Sungdong-gu Office, Korea
- Sunnam City Office, Korea
- Korea Embassy in Moscow, Russia

## Residence

- Tower Palace, Korea
- Pilay Thermoelectric Power Plant, Vietnam
- Haewoondae I-Park, Korea
- Dongchun Raemian, Korea
- Yongsan Park Tower, Korea
- Budang Venture Town, Korea
- Tashkent High Vill Partment, Kazakhstan

## Hotel

- Grand Hyatt Hotel, Korea
- Shilla Hotel, Korea
- Sheraton Walker Hill, Korea
- InterContinental Hotels Seoul, Korea
- Novotel Ambassadors Hotel, Korea
- Riverside Hotel, Korea
- Park Hyatt Hotel, Korea
- Guam Dai-Ichi Hotel, USA
- Rwanda InterContinental Hotel, Angola
- Hanoi Marriot Hotel, Vietnam

## Hospital

- Pusan National University Hospital, Koreaa
- Severance Hospital, Korea
- Seoul National University Hospital, Korea
- Asan Medical Center, Korea
- Jeju National University Hospital, Korea
- SMG-SNU Boramae Medical Center, Korea

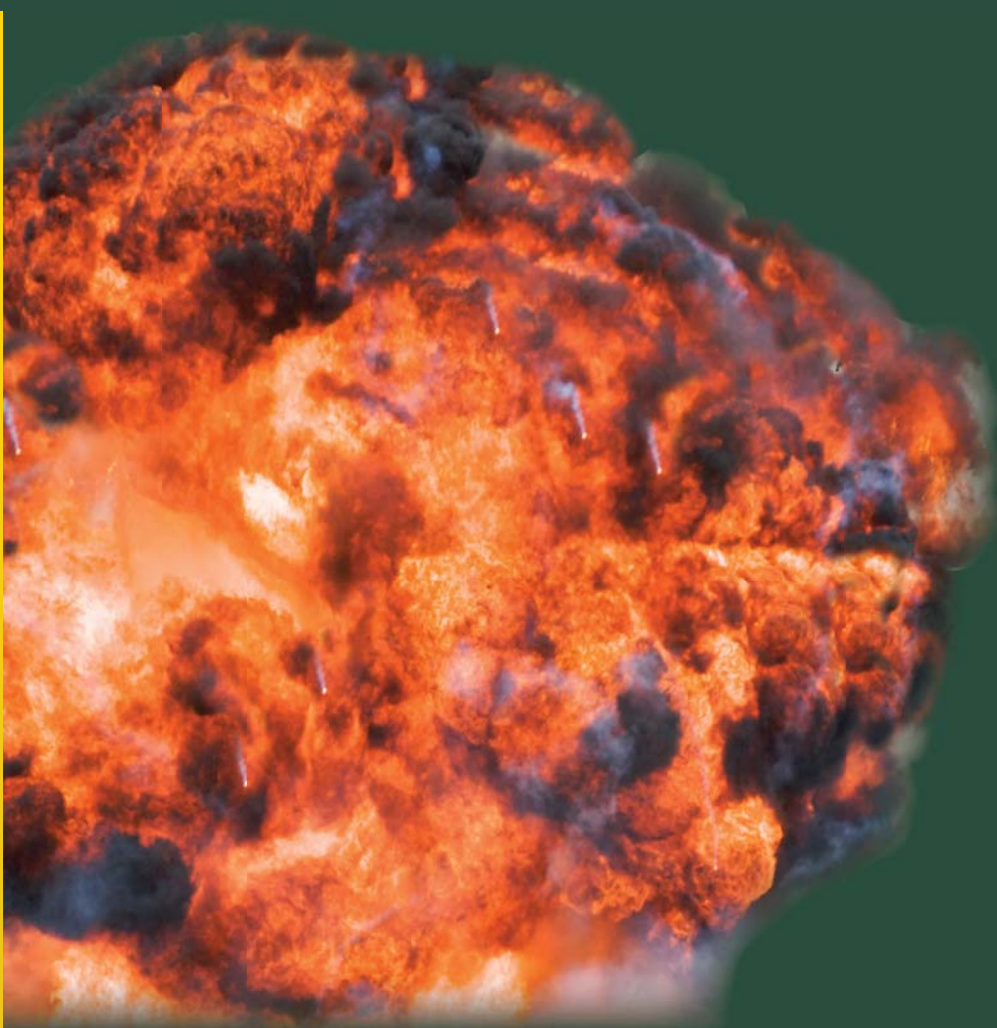


since 1957

# **novoferm**<sup>®</sup> **DONGBANG**

*Specialized Doors & Frames*

Acoustic Doors  
Blast Resistant Doors  
Bullet Resistant Doors



Dongbang Novoferm Inc.

## About Us...

Special door systems Acoustic door, Blast resistant door, Bullet resistant door, etc manufactured from Dongbang Novoferm which was founded in 1957 are produced by the technical cooperation with AMBICO, Canada which has the world class technology. Special door systems are designed for meeting the performance required by major facilities, security and safety, and then they are manufactured and supplied. Dongbang Novoferm has the best technical capabilities to design and build the products conforming to the international standards associated with all kinds of general steel doors, fire doors and special door systems.

*We make the best*

### C O N T E N T S

General Informations	4
Acoustic Doors	6
Blast Resistant Doors	10
Bullet Resistant Doors	12
Partners	14

AMBICO is a 60-year-old leading company in the industry specializing in special door systems. They have successfully performed numbers of projects in the market of North America, North Africa, Middle East Asia and South East Asia over the past 60 years. All kinds of special door systems manufactured by AMBICO have been manufactured in accordance with the performance and standards required by USDoD, U.S State Department, United States Security Service and US Standards. They transferred their accumulated technology throughout a long history and know-how to Dongbang Novoferm for the manufacturing and distribution in Korea.

- Specialized Door of AMBICO -



# General Informations

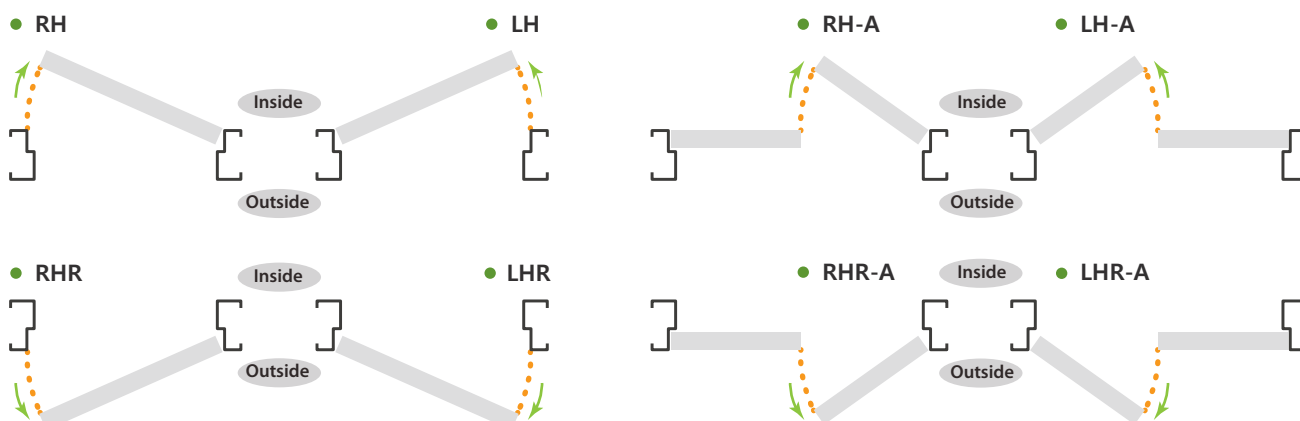
## Material

Material	Specification	Usage and Application
Cold Rolled Steel	ASTM A1008, A568, A569, KS D 3512	Interior Doors
Electro Galvanized Steel	ASTM A591, KS D 3528	Interior & Exterior Doors
Galvanized Steel	ASTM A653, KS D 3520	Exterior & High Humidity Location
Stainless Steel	ASTM A167, A176, KS D 3698	Interior & Exterior Doors

## Conversion Table

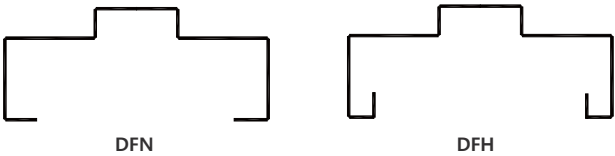
MSG	Minimum Thickness			Conversion		
	Inch	mm	mm(Min.)	Inch	Decimal	mm
4	0.214	5.436	5.4	1	1.000	25.40
5	0.199	5.055	5.1	15/16	0.937	23.80
6	0.184	4.674	4.7	7/8	0.875	22.23
7	0.167	4.242	4.2	13/16	0.812	20.62
8	0.152	3.861	3.9	3/4	0.750	19.05
10	0.123	3.124	3.1	11/16	0.687	17.45
12	0.093	2.362	2.4	5/8	0.625	15.88
14	0.067	1.702	1.7	9/16	0.562	14.27
16	0.053	1.346	1.3	1/2	0.500	12.70
18	0.042	1.067	1.1	7/16	0.437	11.10
20	0.032	0.813	0.8	3/8	0.375	9.53
22	0.026	0.660	0.7	5/16	0.312	7.92
24	0.020	0.508	0.5	1/4	0.250	6.35
26	0.016	0.406	0.4	3/16	0.187	4.75
28	0.013	0.330	0.3	1/8	0.125	3.18
				1/16	0.062	1.57

## Door Handing

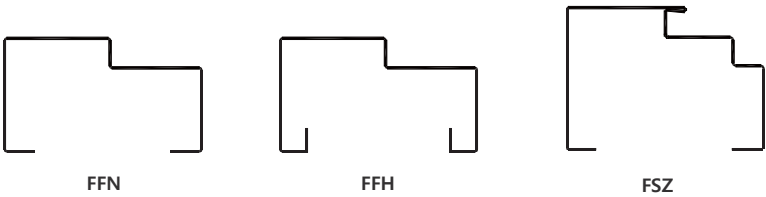


## ☉ Frame Profile

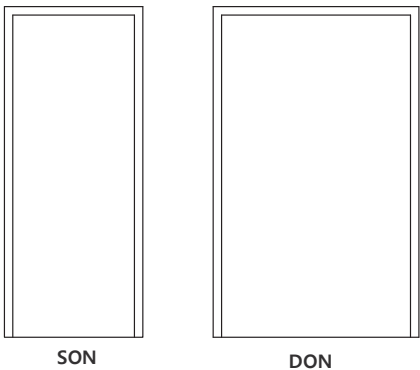
### ▶ Double Rabbet



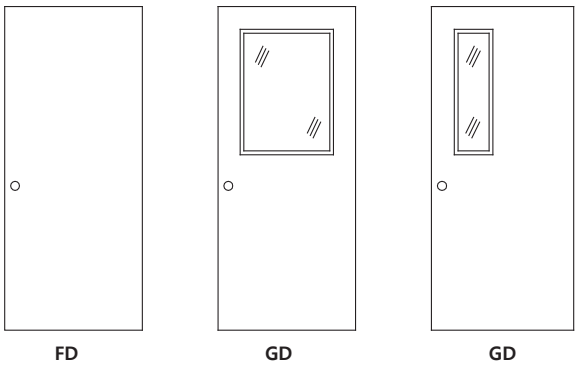
### ▶ Single Rabbet



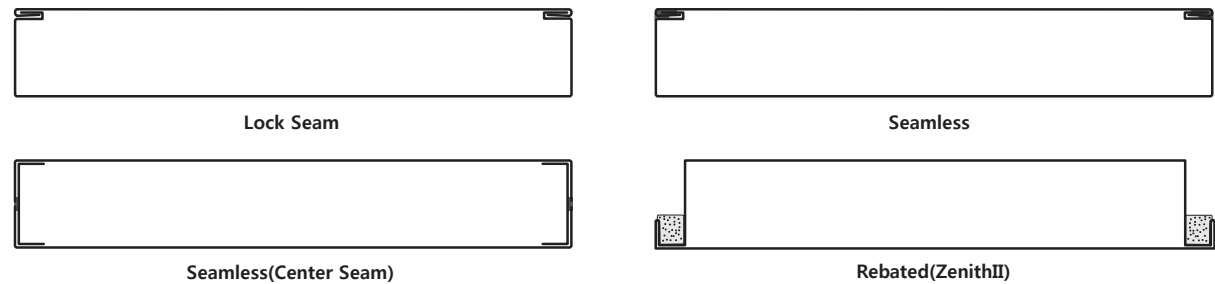
## ☉ Frame Design



## ☉ Door Designs



## ☉ Door Profiles



## Acoustic Doors

Acoustic doors from Dongbang Novoferm are designed and built with the technology cooperation between AMBICO and Dongbang Novoferm, which are in perfect harmony with their beautiful appearance and excellent sound control. In particular, record of STC53 with light and thin door is our superb technology-proven result.

### ● STC(Sound Transmission Class) ratings

*Acoustic Doors are tested in accordance with ASTM E90, E413.*

#### ▶ Steel Acoustic Door

**STC 33 ~ STC 53** Door Thk. 45mm

**STC 54 ~ STC 59** Door Thk. 46mm~150mm

#### ▶ Wood Acoustic Door

**STC 33 ~ STC 51** Door Thk. 45mm

### ● Products

Single door, Double door, Fire-rated single door, Fire-rated double door

### ● Fire Test

#### ▶ Fire test

- All fire-rated doors are tested and certified under Warnock Hersey in accordance with NFPA-80

- Fire-labeled single door, Fire-labeled double door

#### ▶ Fire- labeled Door

**STC 33 ~ STC 53** Single & Double Door

### ● Finish

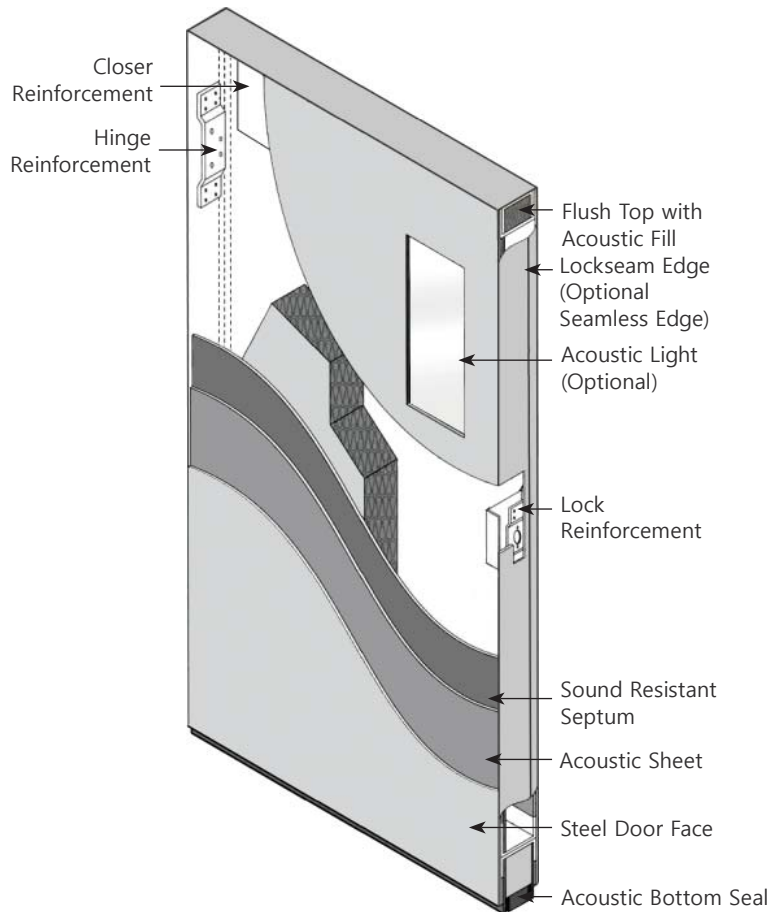
- Steel Acoustic Door : Primer Coating

- Wood Acoustic Door : Available various options –such as, Walnut, Cherry, Maple or Oak- and door edge is finished with same sliced veneer used in door face.

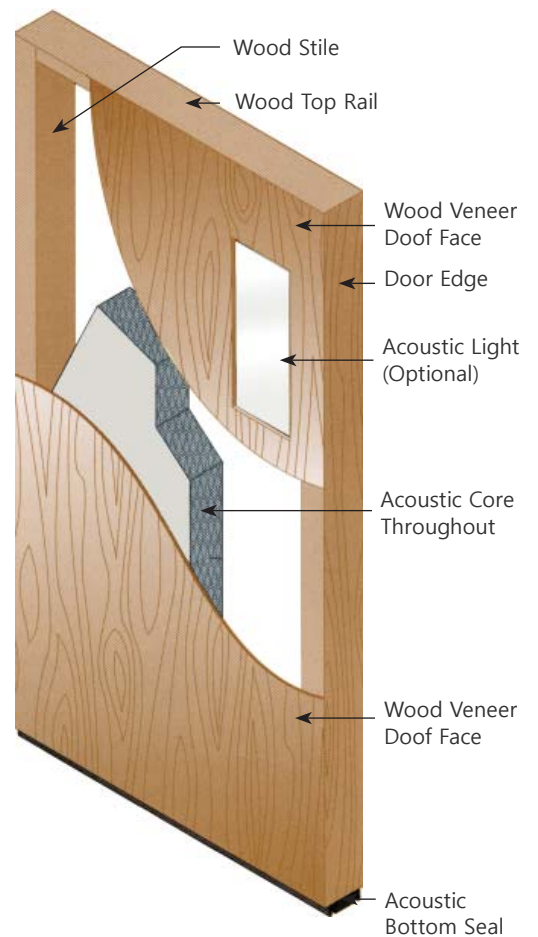
### ● Standard weight of Acoustic Steel Door

STC 46	STC 51	STC 53	STC 59
39kg/m <sup>2</sup>	49kg/m <sup>2</sup>	73kg/m <sup>2</sup>	109kg/m <sup>2</sup>

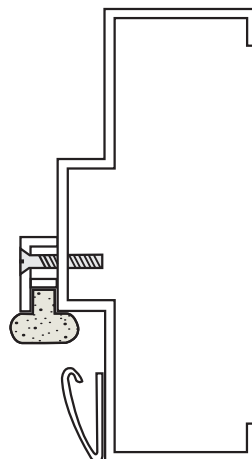
## ● Typical Profile



Typical Acoustic Steel Door Profile



Typical Acoustic Wood Door Profile



Typical Acoustic Steel Frame Profile

## Acoustic Doors

- It is very important to use material and structure that have high Sound Insulation and Absorption for high sound-resistance.

These aspects are converted to numerical value, that is called STC.

- **STC** : An integer rating of how well a door attenuates airborne sound.

### Common Decibel Levels

#### Decibel Range Chart

dB levels	Factor	Response
180	Rocket launcher	Painful Acoustic Trauma
140	Shotgun blast	
130	Jet engine 100 feet away	
120	Rock concert	
110	Car horn, snow blower	
100	Chain saw, blow dryer, subway, helicopter	Extremely Loud
90	Motorcycle, lawn mower, convertible ride on highway	
80	Factory, noisy restaurant, vacuum, screaming child	Loud
70	Car, alarm clock, city traffic	
60	Conversation, dishwasher	
50	Moderate rainfall	
40	Refrigerator	Faint
30	Whisper, library	
20	Watch ticking, rustling leaves	
10	Breathing	

#### STC ratings relate to real-world sounds

STC	Description	What can be heard
50-60	Excellent	Superior sound-resistant : most sound inaudible
40-50	Very Good	Loud speech not audible
35-40	Good	Onset of privacy
30-35	Fair	Loud speech audible but not intelligible
25-30	Poor	Loud speech can be understood fairly well, normal speech can be heard but not understood
20-25	Very Poor	Normal speech can be understood quite easily

## ● Comparison

Before		Installation	After	
Space	dB levels	STC	Space	dB level
Music room	90 dB	STC 50	Office room	40 dB
Machine room	75 dB	STC 50	Classroom	25 dB
Expressway	70 dB	STC 35	Meeting room	35 dB
Factory	80 dB	STC 40	Office in a factory	40 dB

## ● Acoustic Testing-Standards

- **Lab Test** : STC(Sound Transmission Class)

Tested and certified in accordance with ASTM E90



-Field test equipment-

## ● Acoustic Test Specification

- ASTM E90-04, E90-09 Standard test method for laboratory measurement of airborne sound transmission loss of building partitions
- SDI 128-09 Guidelines for Acoustical Performance of Standard Steel Doors and Frames
- HMMA 865-03 Guide Specification for Sound
- KS F 2235 Field measurements of sound insulation of building facades and facade elements

## Blast Resistant Doors

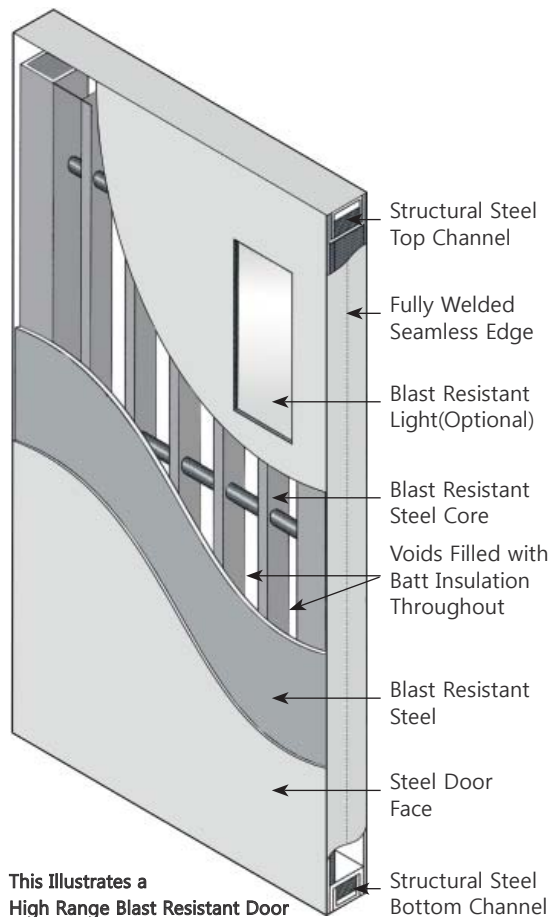
- Blast resistant doors are intended to protect lives and prevent the major facilities from destruction, the explosion and collapse of oil and gas plant, chemical plant, nuclear power plant, military facilities, evacuation facilities, etc, and the explosion wave which can be resulted from all kinds of bombings, explosions or etc.
- Blast resistant doors from Dongbang Novoferm, which comprise blast-resistant and fire-rated frame and door have 3 types of classes-Low Range units, Mid Range unit and High Range unit. Blast resistant doors are used for military facilities, storage area of dangerous materials, automobile, chemistry, petrochemical plant and nuclear facilities, etc.
- Blast resistant doors from Dongbang Novoferm are designed, produced and supplied in compliance with the performance demanded by customers through the structure calculation.
- Blast resistant doors from Dongbang Novoferm are manufactured in accordance with the requirements and specification of US DoD, U.S State Department, United States Security Service, and standards of ANSI, HMMA, NFPA. bill of the authorized engineer.
- Blast resistant doors are only tested to the limited prototype and the most products are generally verified by the structural bill of the authorized engineer.
- **Range unit**
  - Low Range units** : 60 PSF ( 3 kn/m<sup>2</sup>) to 2 PSI(14 kn/m<sup>2</sup>)
  - Mid Range units** : 3 PSI (21 kn/m<sup>2</sup>) to 8 PSI (55 kn/m<sup>2</sup>)
  - High Range units** : 9 PSI (62 kn/m<sup>2</sup>) to 50 PSI (345 kn/m<sup>2</sup>)
- **Blast test and Design Calculation**
  - Blast doors are designed and conducted structure calculation by our qualified engineer as a customer's demand. The structure calculation by the qualified engineer is a supporting document to prove the products.
  - The prototype doors are tested and certified in accordance with requirements of the official standard organization.
- ▶ **Blast test**

To provide the blast-resistant doors tested and certified in accordance with following:

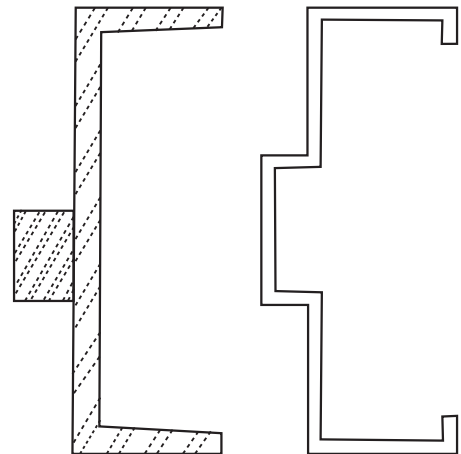
  - ASTM F2247 – 11 Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method)
  - ASTM F2927 – 12 Standard Test Method for Door Systems Subject to Airblast Loadings
- ▶ **Fire test**

All fire-rated doors are tested and certified under Warnock Hersey in accordance with NFPA-80

## ● Typical Profile



Typical Blast Resistant Door Profile



Typical Blast Resistant Frame Profile

## ● Available Options

- Vision Lites
- Sidelites and/or Transom
- Welded or Removable Mullion
- Fixed or Removable Transom Panel
- Installation of automatic hardware for automatic operable door leaves
- Available with up to 3Hrs fire-rating

## ● Hardware

- All hardware are reviewed and supplied by our engineers
- Hinge: Heavy-duty Butt hinge or Cast Stainless hinge for blast doors
- Lock: Mortised Lock, Mortised Exit Device Multi-point Lock for blast doors
- Other hardware

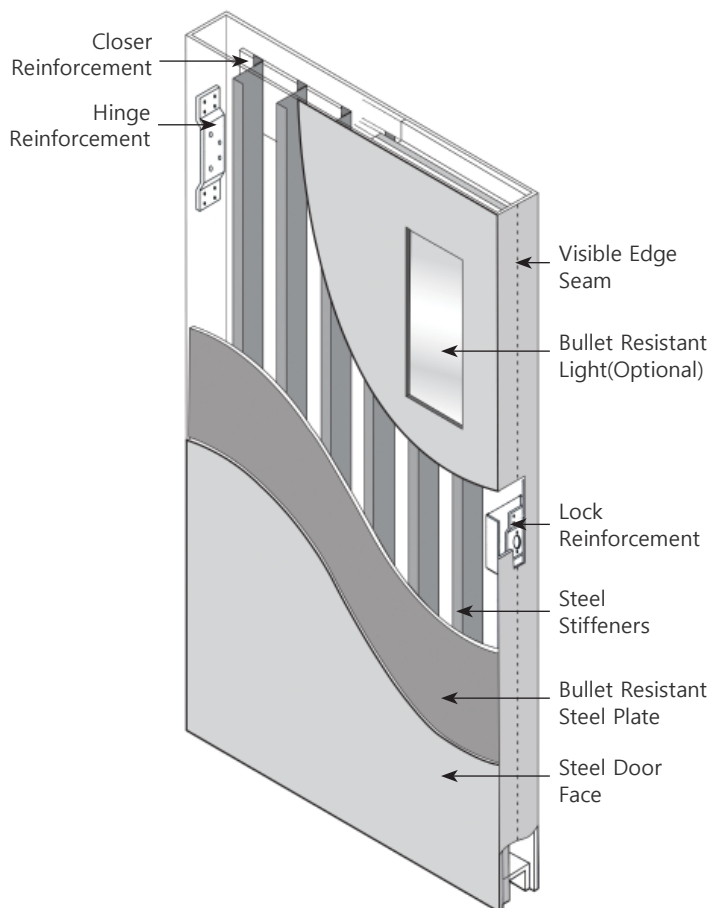
# Bullet Resistant Doors

## Bullet Resistant Doors

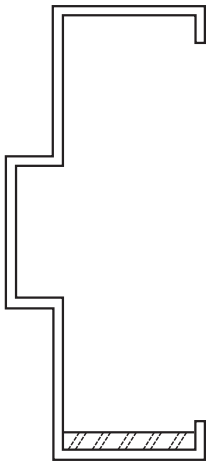
- Bullet-resistant doors are designed and supplied as two types Steel Bullet resistant doors.
- All Bullet resistant doors are in accordance with UL752 " Standard for safety for Bullet Resisting Equipment".
- **Level**  
Bullet resistant doors from Dongbang Novoferm have ratings level from **Level. 1 ~ Level. 9 in accordance with UL752**
- **Place**
  - Police station
  - Bank
  - Jail
  - Communication center
  - Court, etc...
- **Finish**
  - Steel Door : Primer Coating
- **UL 752 Bullet Resistant Levels**

Rating	Ammunition	Grain	(g)	Min. fps	Velocity m/s	Shots fired
Level 1	9mm full metal copper jacket with lead core	124	8	1175	358	3
Level 2	.357 Magnum jacketed lead soft point	158	10.2	1250	381	3
Level 3	.44 Magnum lead semi wad-cutter	240	15.6	1350	411	3
Level 4	.30 caliber rifle lead core	180	11.7	2540	774	1
Level 5	7.62mm rifle lead core full metal copper jacket military ball	150	9.7	2750	838	1
Level 6	9mm fullet metal copper jacket with lead core	124	8	1400	427	5
Level 7	5.56mm rifle full metal copper jacket with lead core	55	3.56	3080	939	5
Level 8	7.62mm rifle lead core full metal copper jacket military ball	150	9.7	2750	838	5
Level 9	armor piercing 30 caliber rifle steel core lead point full metal jacket	166	10.8	2715	828	1

● Typical Profile



Typical Bullet Resistant Door Profile

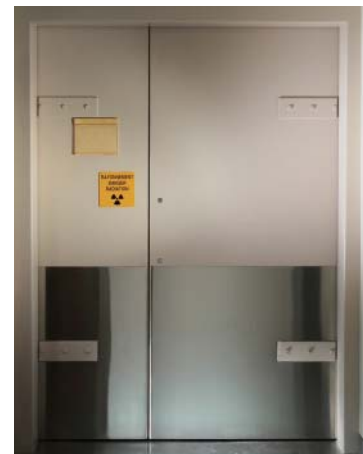
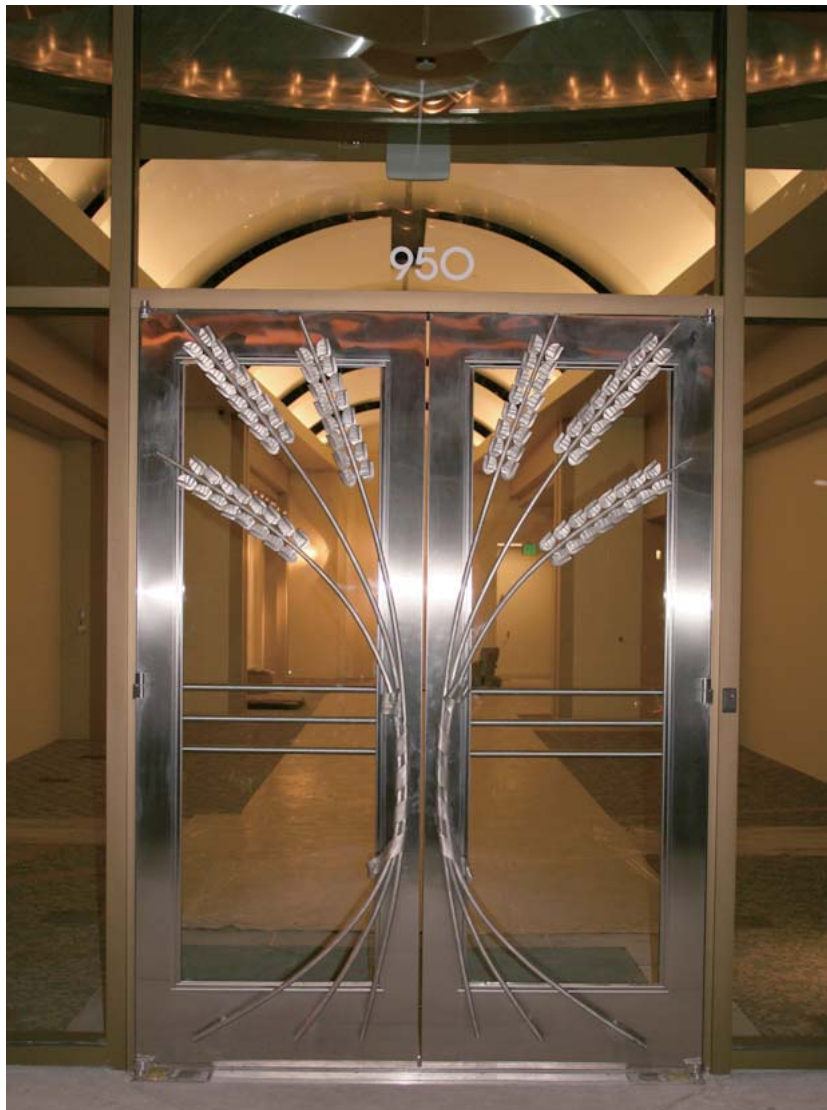


Typical Bullet Resistant Frame Profile

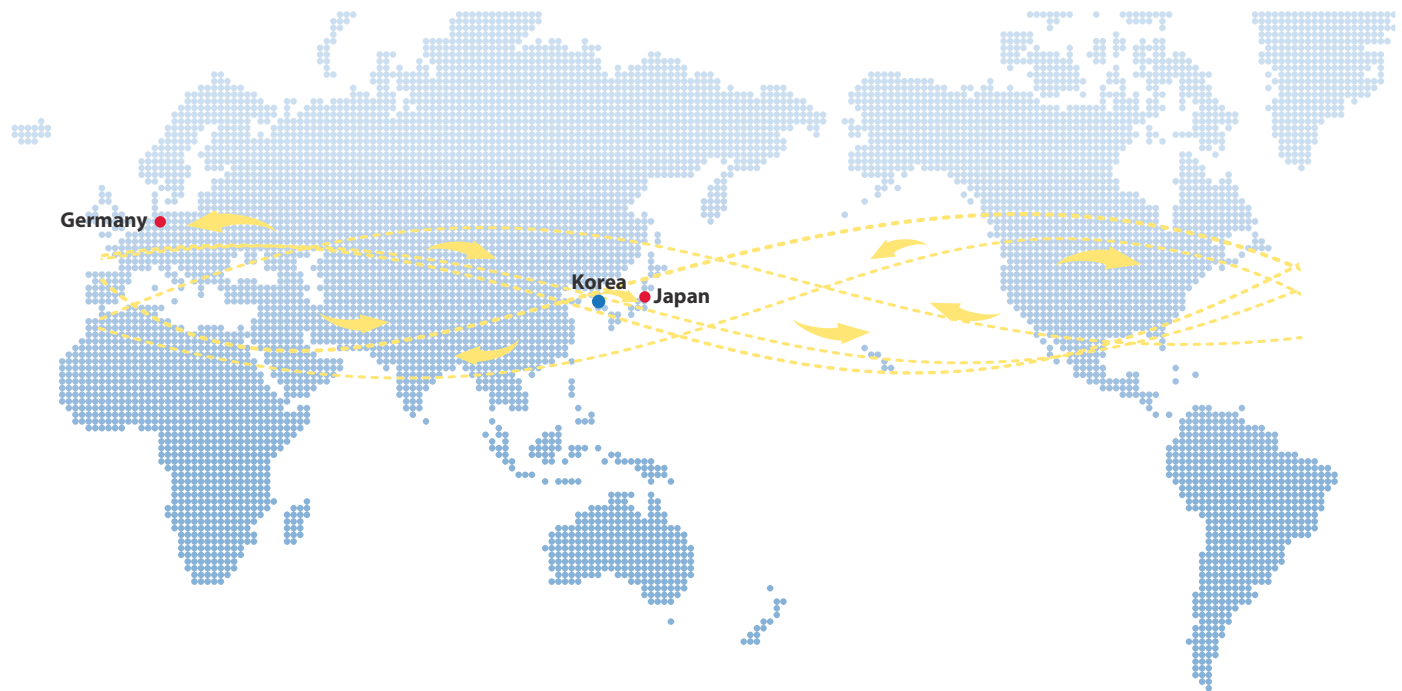


## Other special doors

- Lead lined Doors
- Marine Doors
- Oversized Doors
- Radio Frequency Doors
- Tornado Resistant Doors



## “Advanced Technology for Door”



### Novoferm GmbH.

Novoferm GmbH (Germany), which is one of the largest door manufacturer in Europe and has the total of 16 corporations within Europe. They're holding more than 2,400 staffs currently, the company has the No. 1 share in the European steel door & window market in each field of household use, fireproof, crime prevention, garage use and commercial uses.



### Sanwa Shutter Corp.

Sanwa Shutter Corp is the world's largest door manufacturer which has 9 corporations with more than 7000 staffs in Japan and 11 overseas corporations including Overhead Door Corp which is the world's largest garage door manufacturer based in the USA.



*We make the best*

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