April 6, 2015

For Immediate Release

Sumitomo Forestry Co., Ltd.

Four-story fire-resistant housing, built using the evolving Big-Frame (BF) construction method

Release of the **"BF-Fireproof"** Detached Housing Product and the **"Forest Maison BF-Fireproof"** Owner-Occupied Rental Product

Made even stronger using "twin-bolt columns"

Sumitomo Forestry Co., Ltd. has developed the "twin-bolt column," evolving its "large columns" used in its proprietary Big-Frame construction method (hereinafter "BF construction method") and making them 1.5 times as strong. In addition, by developing new fire-resistance specifications for the BF construction method, Sumitomo Forestry will expand the range of buildings to which this method can be applied to include four-story buildings. On April 6, Sumitomo Forestry will release the "BF-Fireproof" detached housing product and the "Forest Maison BF-Fireproof" rental housing and owner-occupied rental product, as products of the new BF construction method, capable of meeting diverse construction needs by uniting fire resistance technologies with the outstanding seismic resistance of the BF construction method.

In fire protection districts and quasi-fire protection districts[1] of urban areas, where there is a requirement for buildings to be compliant with fire-resistance, there has recently been an increase in demand for houses of at least three stories. A number of factors underlie this increase, including: an increase in the need for rebuilding, etc. in fire protection districts in the Tokyo metropolitan area as a consequence of the "10-year Project to Advance Fire Resistance in Close-set Wooden Housing Areas," which is designed to promote a shift to greater fireproofing and earthquake-proofing in areas with a high concentration of old wooden houses; the ability to effectively utilize limited space even on sites with a narrow frontage, by increasing the number of floors; and an increase in the need for three- and four-story rental units in urban areas as a consequence of the increased demand for rental housing following amendments to inheritance tax. Compared with heavy-gauge steel-framed buildings and reinforced concrete buildings, an advantage of wooden buildings in particular is the ease of ensuring an expansive living space given the same floor space.

Exterior view of the BF-Fireproof (four-story)

Sumitomo Forestry had previously being offering fire-resistant housing products, but on the back of the abovementioned market trends, it will release these new products, reducing costs and strengthening its large columns, with an aim of further expanding the market. "Twin-bolt columns" are a new evolution of the "large columns," one of the features of Sumitomo Forestry's proprietary BF construction method, and through their development, the company will realize a wall ratio equivalent to 33.6, representing the strength of the shear wall supporting a building in the event of an earthquake, etc. Since fewer internal walls are required, in addition to strength, the twin-bolt columns mean that open living spaces can be designed. It is the first time for Sumitomo Forestry to offer a four-story, fire-resistant detached housing product built using the BF construction method, which is resistant to both tremors and fire, as well as a rental housing product with guaranteed fire resistance for one hour.

Twin-bolt column

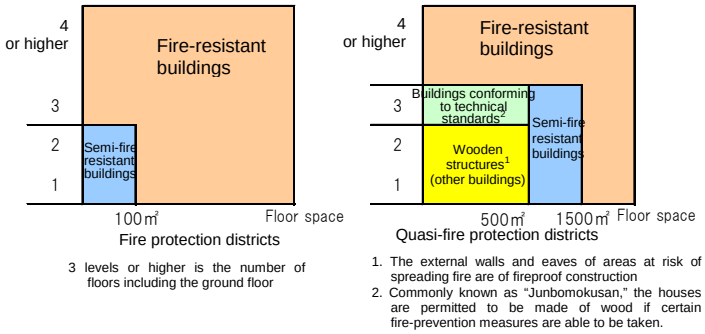
Both the detached and rental housing products use "LS30" as standard, a stain-resistant exterior material of excellent durability lasting 30 years. This reduces maintenance costs for the first 30 years. In addition, by enabling a sprayed render finish on external walls for the first time on fire-resistant housing products, Sumitomo Forestry will broaden its range of exterior designs.

In urban areas where there is a requirement for making buildings fireproof and fire-resistant, as well as facilitating the provision of safe and capacious living spaces, the release of these products will also expand

new sales channels for Sumitomo Forestry.

1. The terms “fire protection districts” and “quasi-fire protection districts” refer to specified zones within a city planning area where fire resistance regulations have been established for buildings for the purpose of minimizing any damage from fires in urban areas where there is a high density of buildings. Even outside of these districts, buildings, such as apartment houses that have shared passageways and stairwells, are sometimes required to be built as fire-resistant buildings depending on their size, structure and plan.

■ Building conditions in fire protection and quasi-fire protection districts



3 levels or higher is the number of floors including the ground floor

1. The external walls and eaves of areas at risk of spreading fire are of fireproof construction
2. Commonly known as “Junbomokusan,” the houses are permitted to be made of wood if certain fire-prevention measures are able to be taken.

■ Product overview

Product names:	BF-Fireproof / Forest Maison BF-Fireproof
Launch date:	April 6, 2015
Sales area:	Nationwide (restrictions in target construction areas)
Construction:	Big-Frame construction method
Plan:	Free design

■ Product features

(1) Newly developed “twin-bolt columns” achieve strength and capacious interior spaces

With an aim of further improving the load-bearing capacity of large columns, Sumitomo Forestry has developed “twin-bolt columns” in which the metal joints at the column ends have been increased to four, thereby achieving a wall ratio equivalent of 33.6. By further strengthening the “metal-touch joints” which integrally join the post, beam and base, even fewer internal walls are now required, room layouts can be arranged with a greater degree of freedom, and proposals for open interior spaces can be made even for confined sites.

Development of this column will allow Sumitomo Forestry to realize reliable homes, building structural frameworks with three types of strong columns: “large columns,” “twin-bolt columns” and “double columns.” With more available options now, by using the right column in the right place, Sumitomo Forestry will offer more diverse housing developments than ever before, even under site conditions such as in densely populated residential areas, including wide openings, expansive interior spaces undivided by shear walls, and proposals for plans with high degrees of freedom.

■ BF construction method

The “BF construction method” is Sumitomo Forestry’s proprietary construction method, cultivated since its three-story Proudio-BF product released in January 2005, and successfully patented (No. 3713256) as the first wooden beam Rahmen structure method in Japan. By employing large columns instead of shear walls, and by linking them using unique BF metal joints, the construction method enables extremely strong structural frameworks. Compared with the continued-pillar Rahmen structure which is formed using through pillars, since the continued-beam structure does not require through pillars, another feature of this construction method is that also allows for plans in which columns are located at different points on different floors, thereby making it easy to design large, expansive interior spaces with few internal walls.

In addition to the ordinary load of the building itself and the live load attributable to furniture, buildings are also subjected to various other forces, including external lateral forces caused by earthquakes and typhoons. The BF construction method employs “large columns” and other sizeable columns made of engineered wood with enhanced load-bearing capacity. Boasting outstanding structural strength capable of stopping all manner of forces placed on a building, the safety of the BF construction method has been confirmed as being able to withstand even the largest seismic forces (the force applied to a building at the time of an earthquake).

■ **Large column**

- At 560 mm, has a width more than 5 times that of ordinary posts. Wall ratio equivalent of 22.4.

■ **Double column**

- A column of large columns on top of each other. Wall ratio equivalent of 44.8.

(2) Outstanding fire resistance achieved using "strengthened gypsum board"

Gypsum board contains 21% water of crystallization, and so one of its properties is that it discharges steam as it absorbs heat in the event of a fire. For this reason, it is able to contain any outbreak of fire for a long period of time, slowing walls and ceilings from reaching their combustion point. By using "strengthened gypsum board," in which glass fiber is mixed in at the core of the board to provide even greater fire resistance, Sumitomo Forestry's new products have demonstrated outstanding fire resistance, making for housing of greater safety and security.

[Places where strengthened gypsum board is used]

External walls	Prevents flames and heat from penetrating from outside (double-layer)
Floors (2nd story and higher)	Prevents flames from spreading to lower floors (double-layer)
Ceilings	Prevents flames from spreading to upper floors or the roof
Internal walls	Prevents flames from spreading to adjacent rooms or to the outside (double-layer)

(3) Stain-resistant exterior material of excellent durability and a long-term maintenance program

When building a new house, using an "exterior material lasting 30 years" reduces any subsequent maintenance costs. Together with a 60-year long-term support system called the "60 Maintenance Program," Sumitomo Forestry will achieve houses that can be lived in for many years while long retaining their asset value.

(4) "External walls sprayed with a mortar undercoat" with exceptional aesthetic qualities and resistance to damage

The well-designed exterior view made possible by external walls sprayed with a mortar undercoat, which is a first among Sumitomo Forestry's products with fire-resistant specifications, not only stands out in the townscape, but also demonstrates strong resistance to damage, even against flying objects during gales. It offers both beautiful outward design and peace of mind for housing.

(5) Skeleton-infill design also adapts to future changes

The BF construction method is predicated on the skeleton-infill approach, where the building design makes a clear distinction between the skeleton (the structural frame that supports the entire building) and the infill (interior partitions, fixtures and fittings that can be configured to suit the needs of the occupants). The superior performance of the large columns allows better optimization of column numbers for greater design flexibility. From one story to four, the design can be easily adapted to accommodate lifestyle changes and major events such as the arrival of children, their independence, two and three-generation households, opening a home business, or renting out a portion of the home to generate extra revenue. This approach is also more conducive to future renovation.

(6) Strong backup for rental housing demand associated with inheritance tax

As a consequence of the amendments to inheritance tax in effect from January 1, 2015, it has been said that the ratio of payers of inheritance tax to the number of inheritance cases will increase by about 1.5 times nationally on average, and in excess of three times in the greater Tokyo metropolitan area. In urban areas where land prices are particularly high, as a step to counter inheritance tax, it is expected that the demand for rental housing and owner-occupied rental units will increase. In densely populated residential areas where land prices are high, there are many fire protection districts and quasi-fire protection districts, and here, the issue of fire-resistance needs to be addressed. By using these products, it will be possible to build rental housing units even in these kinds of areas, providing strong support for customers considering ways of dealing with inheritance tax.

[View of the product exteriors]

BF-Fireproof
(three-story)

Forest Maison BF-Fireproof
(four-story owner-occupied rental units)

About Sumitomo Forestry

Founded in 1691, Sumitomo Forestry Co., Ltd. and its Group companies have broadened business activities focused on wood. Based on its corporate philosophy—"utilize timber as a renewable, healthy and environmentally friendly natural resource, and contributes to a prosperous society through all types of housing-related services"— and with its approximately 250,000 hectares of owned and managed forest, the global network that spans more than 20 countries and expertise and technology in housing-related businesses, Sumitomo Forestry Group is developing the Forestry and Environment Business, the Timber and Building Materials Business, the Housing Business, the Overseas Business, the Lifestyle Service Business and other businesses both in Japan and abroad. Adding such businesses as wooden biomass power generation and Timber Solution, it will continue to pursue the potential of timber.
President and Representative Director: Akira Ichikawa Head Office: Chiyoda-ku, Tokyo.