

SINTEF Technical Approval

TG 2536



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SINTEF hereby verifies that

Modum Original rescue ladder

has been assessed suitable for use and fulfils the requirements for product documentation in accordance with regulations about Sales and documentation of products for constructions (DOK) and regulations for technical demands for constructions (TEK) for TG 2536's properties, applications and conditions of use specified in this document.



1. The proprietor of this authorisation is Modum Systems AS, Luramyrvеien 19 4313 Stavanger, Norway www.modum.com

2. Description of said product

Modum Original rescue ladder is a foldable rescue ladder for escaping buildings in case of fire. The ladder is to be mounted vertically at the external wall, balcony or in such a way that it may be used by escape from a window, a balcony, or similar and all the way down, see figure 1 When pulling the release pin, the rescue ladder unfolds from the escape point all the way down. Any overhead ladder units may be triggered separately from overhead floors.

The ladder is available in 16th standardized lengths, from 0.9 meter to 5.4 meter, with an interval length of 0.3 meters. The units may be connected to other lengths and made to fit individual needs. When closed, the ladder appears as a wide aluminium cast on the wall, where the steps are hidden inside the ladder, see figure 2.

The Modum Original rescue ladder is produced from extruded aluminium sections. The quality of the ladders rungs and stiles are according to EN AW 6060 T66, while the brackets are in quality EN AW-6063 T66, in accordance with EN 573-3 and EN 755-2. The profiles are anodised in accordance with ISO 7599. Figure 3 shows the dimensions of the profiles. Step bolts and nuts are made from A4-70 acid-proof steel according to EN ISO 3506. Release/locking pins are made from stainless steel quality 1.4301 according to EN 10088-1.

As a supplement to the riser sections, matching wall brackets, connectors, release pins and top covers are supplied in addition to fixation bolts.

The stirrup ladder consists of a back stirrup mounted to two Modum Original rescue ladders on each side, see figure 4.



Fig. 1
Modum Original rescue ladder in use during escape

3. Usage areas

The Modum Original rescue ladder may be installed as a rescue ladder on villas, terraced houses, cabins, work sheds, office buildings, low-rise blocks, etc. where escape from windows, balconies, terraces, etc. may be required.

The Modum Original rescue ladder is to be used as a measure to improve safety and security through improved escape from buildings where the requirements for escape routes in accordance with the Building Technology Regulations (TEK) otherwise are satisfied.

The application area for the ladder is escape from windows with a maximum distance of 5 metres above level ground for ladders without back braces. With back braces the ladder may be used for escape from windows with a distance max 7,5 meter above level ground. In both cases the distance has to be measured from lower frame of the window.

To be used as approved rescue ladder, please see bullet #6 about demands for use.

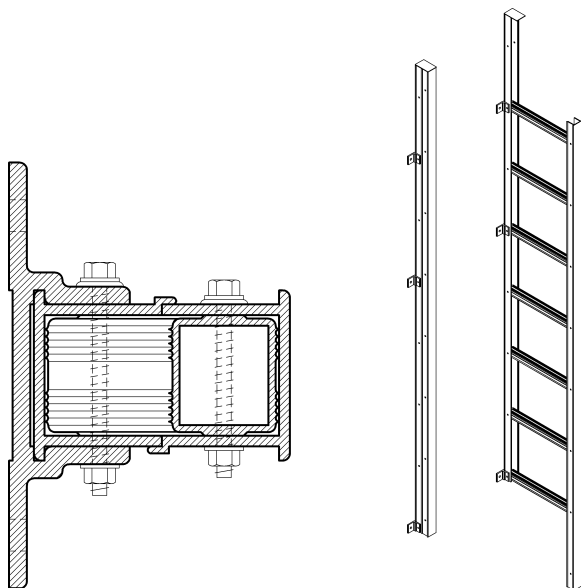


Fig. 2
Cross section of merged and precipitated ladder. When folded, the outer dimensions are 72 mm x 47 mm. When precipitated the outer dimensions are 398 x 47 mm. The step width is 311 mm and the step spacing is 300 mm.

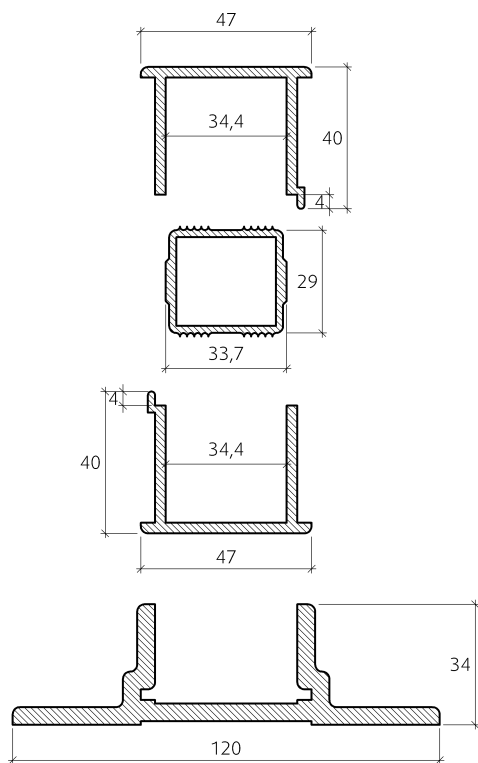


Fig. 3
Profiles for outer casing, steps, inner casing and bracket with wall thickness of 3.0, 2.0, 3.0 and 5.0 mm respectively. The profiles are fastened together with M6 x 47 mm step bolts and M6 lock nuts.

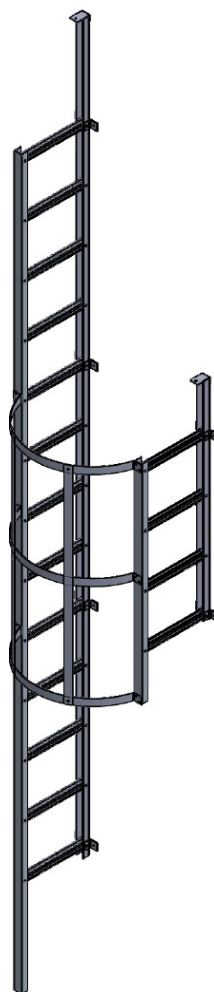


Fig. 4
Back braced Ladder in extended position.

4. Properties

Load capacity

Modum Original rescue ladder fulfils the load requirements specified in EN 131 Ladders - Portable ladders. Modum original rescue ladder may be loaded with 2.6 kN in the centre of a step and at the outer rail. This corresponds to two people at the same time standing in each ladder unit, provided sufficient anchoring in the wall as specified in section 'Anchoring'. 6

Behaviour under the influence of fire

Modum Original rescue ladder is made from anodised aluminium in quality EN AW-6060 T66 and EN AW-6063 T66, which has fire resistance class A1 in accordance with EN 13501-1.

Durability

On the basis of the material qualities specified in section 2 the Modum Original rescue ladder has been evaluated to have satisfactory durability.

Modum Original rescue ladders are made with special bushings to prevent the release/locking pin and step screws from corroding in combination with the ladder's aluminium components.

5. Environmental factors

Chemicals hazardous to health and environment

The product does not contain prioritised pollutants or other relevant substances in quantities that are considered hazardous your health and/or the environment. Prioritised pollutants covers CMR, PBT and vPvB-substances.

Impact on soils and groundwater

The products has not been tested regarding leakage to soil and/or water

Waste management/recycling options

The product is to be sorted as metal during disposal. The product must be delivered to an approved reception centre where it may be recycled.

Environmental declaration

No environmental product declaration (EPD) has been prepared for the product.

6. Requirements for usage

Project planning

The Modum Original rescue ladder is intended for use during the early stages of escaping fire from buildings. The ladder should be installed at a distance of at least 2.0 metres from the underlying window, or be shielded from flames and radiant heat from underlying floors.

Modum Original rescue ladder should be installed with the bottom rung at least 0.6 metres and the outer rung at least 0.5 metres above ground. The height above the terrain should be increased if it is expected that precipitation of the ladder will may hindered by snow storage or placement of objects along the wall. The distance from the lower backrest to the ground should be between 2.2 m and 3.0 m. The ladder should otherwise be installed according to the installation instructions.

The ladder comes with holes for the locking pin at the first and third rungs from the top. There should only be mounted locking pin in one of the holes. The position of the locking pin should be such that it is easily accessible from the window, even for children. If desired, the ladder may be supplied with a hole for the locking pin at a different rung.

Should there be difficult exit conditions, e.g. in the case of tilt-and-turn window, side-hung and outward-opening windows with a centre mullion, the installation principle must be designed for each individual project to ensure safe escape.

Usage for improved evacuation

The Modum Original rescue ladder may be used for improved escape from existing buildings.

For buildings within risk classification 1, 2 and 4, windows whose lower edge are less than 5 metres above level ground may be used as an approved escape route in accordance with TEK when height and width of the window opening are as shown in Figure 4. The distance from the floor to the lower edge of the window opening must be a maximum of 1.0 meter unless measures have been taken to facilitate escape. Escape windows should be labelled as exits, unless in dwellings.

Please see further Byggforsk series Byggdetaljer 520.391 and TEK § 11-13 with guidance.

The Modum Original rescue ladder may further be used as an approved escape route from balconies, terraces, etc.

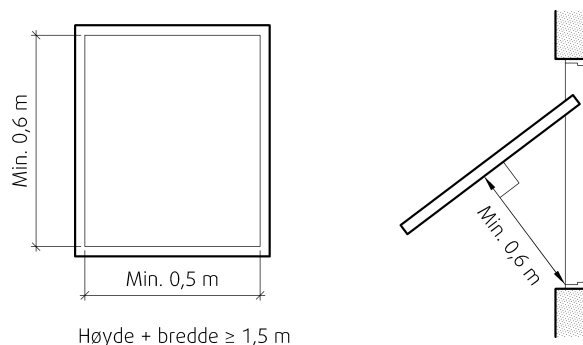


Fig. 4

Minimum dimensions of free opening to window as escape route. Windows with a centre mullion should meet the minimum dimensions on each side of the centre mullion.

Montage

In wood walls Modum Original rescue ladder should be mounted using stainless wood screws with min. diameter 6 mm. On the upper part of the ladder, tighten the bolts pair-wise with maximum vertical centre distance. 0.6 meter between the brackets and the bolt-pairs. For horizontal board-cladding, it is preferable to use extra vertical boards behind the cladding into which the screws are attached. For vertical cladding, the screws should be fastened through the boards and into the horizontal nail openings.

Fixation in wooden walls should be done with wood-screws, and the position of the ladder should be adjusted in height so that as many fixings as possible can be made in battens or nail holes behind the board-cladding. It should be assumed that the board cladding thickness is at least 19 mm and secured to the substrate as specified in the instructions of the Byggforsk series.

On masonry and concrete walls, the ladder should be fastened with suitable expansion bolts, concrete screws or similar fasteners that are adapted to said wall material.

Maintenance/control

An annual control should be performed of the ladder and its functions, including control of the fastening screws anchoring in the wall.

Transport and storage

Modum Original rescue ladder is delivered plastic-wrapped. The shipment should be accompanied by installation instructions and necessary accessories such as release pin / locking clips, screws and connecting brackets.

7. Product and - product control

The product is produced by:

Modum ApS
Linkøpingvej 8
DK-4900 Nakskov
DENMARK

The proprietor of this authorisation is responsible for production control to ensure that the product is manufactured in accordance with the conditions which the authorisation is based upon.

The factory manufacturing of the product is subjected to supervised product and production control in accordance with SINTEF's Technical Approval contract.

8. Basis for this approval

The product is evaluated on the basis of reports, which are the proprietors property.

9. Branding

The branding shall at least contain producer, the product name / quality and time of production.

It may further be branded with SINTEF's approval brand for SINTEF Technical Approval; TG 2536

10. Responsibility

The manufacturer is the proprietor of the independent product liabilities according to applicable law. Claims may not be directed towards SINTEF further than what is mentioned in NS 8402ö

for SINTEF



Susanne Skjervø
leader of the
board of approval.