

# Insulation system for primary aluminium



# Challenges in the aluminium industry

## Save time and optimize the energy consumption

Some of the challenges often faced in the aluminium industry are the high energy consumption and keeping a constant heat balance inside the pots. Many smelters wish to minimize the specific energy consumption, increase production capacity and reduce costs during relining.

Through an open dialogue, Skamol develops the right insulation system for i.e. your pots. Our broad product range makes it possible to mix the products and achieve the best insulation for your needs.

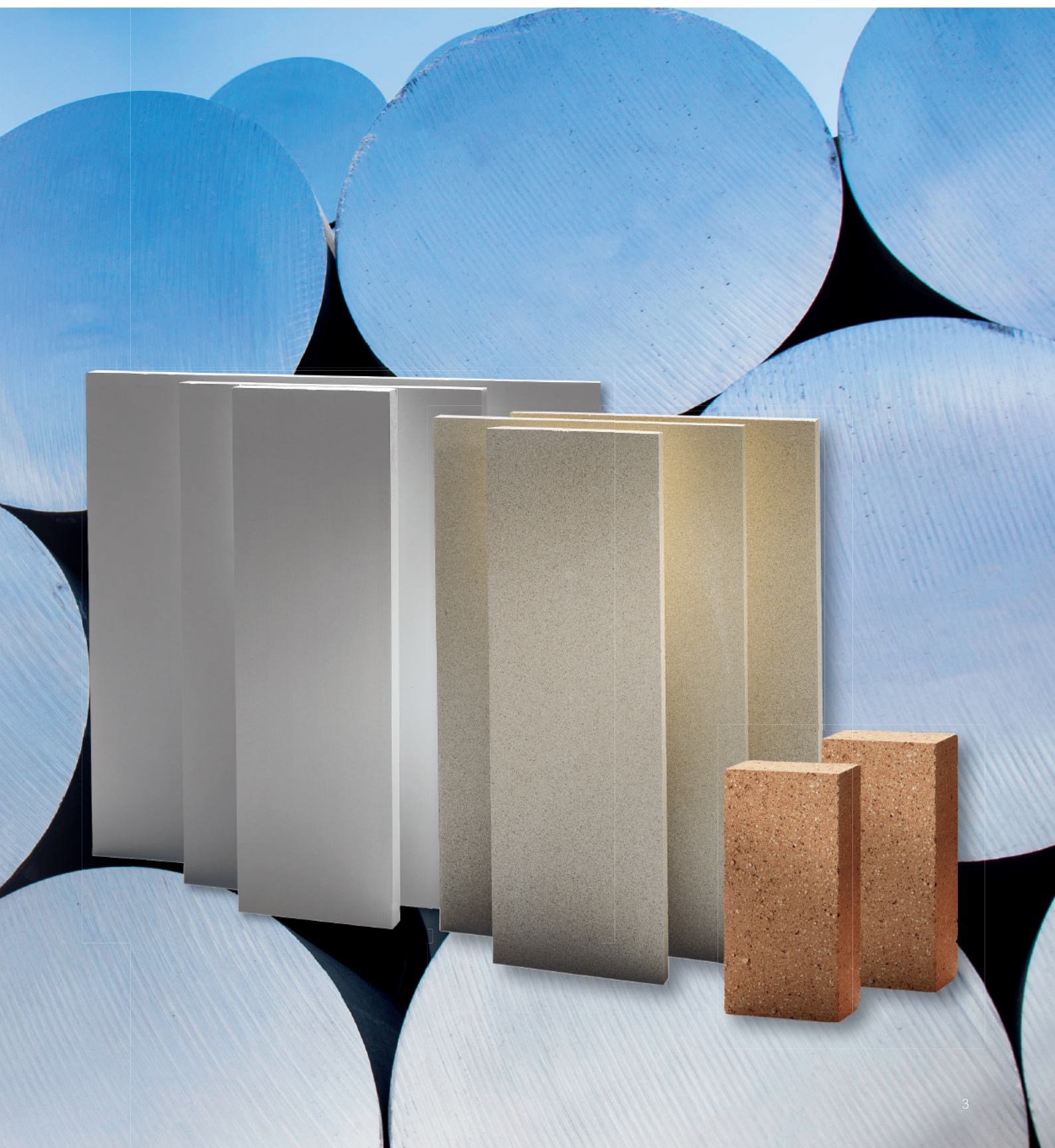
The open dialogue will also provide us with knowledge, making us able to palletize the products according to the sequence in which they are used on site. This will make it possible for you to save time relining the pots, and hereby valuable savings can be achieved.



All calcium silicate and vermiculite products within SkamoAlu have an EPD (Environment product declaration) which is verified by third party and published through EPD Denmark.

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# Benefit from the insulation system **SkamoAlu**



## ROI

Our products are approved by most smelting technologies so we can document energy savings because of:

- Reduced relining time during installation
- Excellent insulation materials which contribute to the perfect heat balance in your pots



## Improved production conditions

- On time delivery of high quality products with narrow tolerances
- Customized system with shapes, sizes and properties that fit your need



## Reliable and efficient performance

- We have installation globally
- We have technical experts inhouse
- We have more than 60 years' experience in the primary aluminium industry

ystem



**Yunnan Aluminium Co., Ltd:**

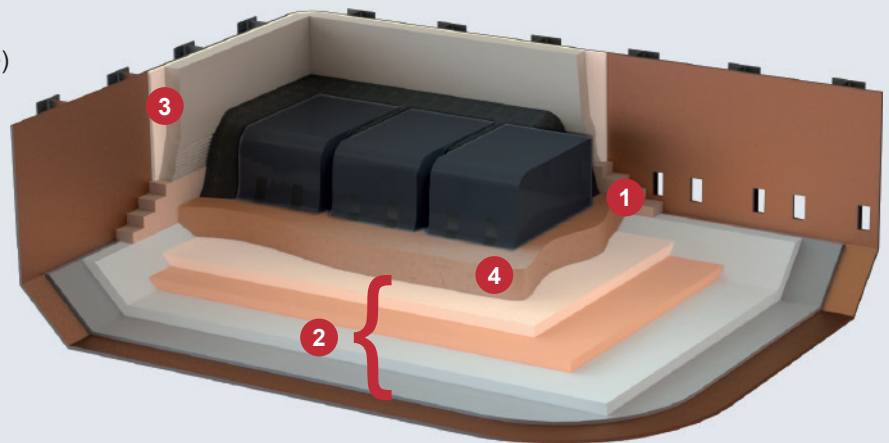
Comparing with reference pot, testing pot is 46mV lower on avg. voltage, 9mV lower on cathode voltage drop, 0.4% lower on CE, 17.2°C lower on pot shell temperature, 19.4°C lower on collector bar temperature, 4.5°C lower on bottom temperature, 88kWh/t lower on AC consumption. It helps to reduce the costs of aluminium production. AIF3 consumption is also getting lower. Taking the cost into account, it is possible to recover the extra investment in one year.



# SkamoAlu for reduction cells

- 1 Lower side wall**
- SkamoAlu Barrier LE (vermiculite)
  - SkamoAlu Hipor (moler)
  - SkamoAlu Hiporos (moler)
  - SkamoAlu M-Bir (moler)
  - SkamoAlu V-1100 (375) (vermiculite)

- 2 Sub cathodic lining**
- SkamoAlu Hipor (moler)
  - SkamoAlu Hiporos (moler)
  - SkamoAlu Poros (moler)
  - SkamoAlu Supra (moler)
  - SkamoAlu S-1100E (calcium silicate)
  - SkamoAlu V-1100 (375) (vermiculite)
  - SkamoAlu V-1100 (475) (vermiculite)
  - SkamoAlu Vip 12 (vermiculite)



- 3 Upper side wall**
- SkamoAlu V-1100 USW (vermiculite)

- 4 Barrier layer**
- SkamoAlu Barrier LE (vermiculite)

## Benefit from

- Excellent insulation materials contributing to the perfect heat balance in your pots
- Contribution to the minimization of the specific energy consumption
- Flexible solutions regarding shapes, sizes and properties
- Products are approved by most smelting technologies
- Reduction of costs due to reduced relining time
- On time delivery of high quality products with narrow tolerances
- Experience in the development of new insulation solutions

The good insulation value of Skamol's products can contribute to a reduction in energy consumption, and all products can be delivered according to the shapes required by the specific smelter – securing a high degree of flexibility.

The density of the material and the fact that Skamol can cut and machine the products and palletize them in the sequence, they will be used on site, make the products easy to handle and also contribute to a quicker relining process. These factors can reduce both time and costs.

# SkamoAlu for anode baking furnaces

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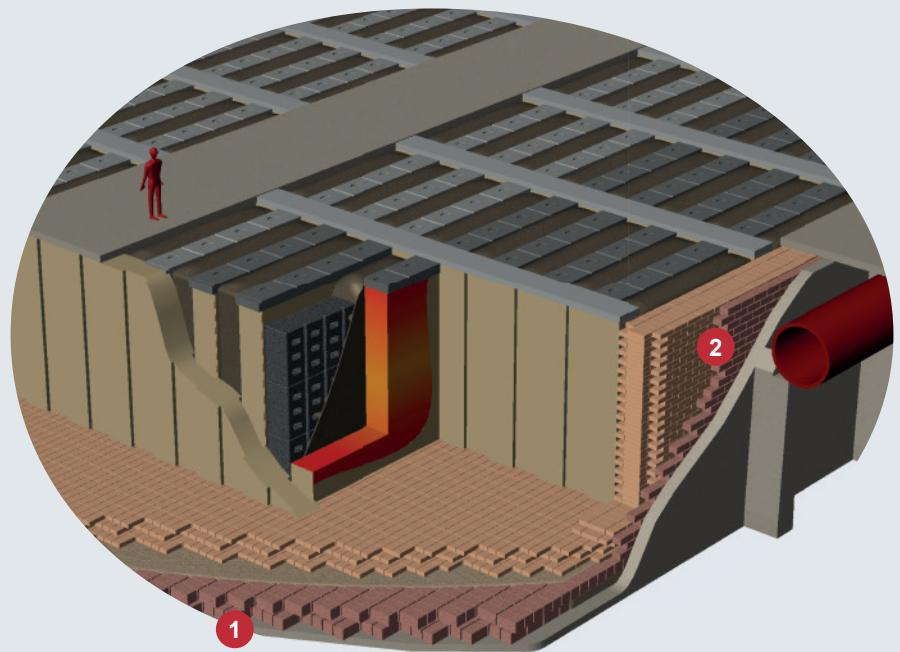
## Floor

- SkamoAlu BB-Block (moler)
- SkamoAlu Poros (moler)
- SkamoAlu Supra (moler)
- SkamoAlu BB-Filler (moler aggregate insulation material)

2

## Wall

- SkamoAlu BF-Block (moler)
- SkamoAlu Poros (moler)
- SkamoAlu Supra (moler)
- SkamoAlu S-1100E (calcium silicate)
- SkamoAlu Mortar 1450 (insulating refractory mortar)



## Benefit from

- Product stability and proven performance over time
- Excellent logistics and ability to deliver on time
- Quality assurance system implemented securing that demands from the customers and technology suppliers are met
- Flexible delivery

For many years Skamol has been the preferred supplier of insulation bricks for anode baking furnaces all over the world, and we are supplying all leading technologies – both open and closed furnaces.

An optimized insulation of the furnace is basic for reducing the energy costs and securing a stable operation of the furnace.

The advantage of the Skamol moler bricks is the high insulating properties combined with a high hot crushing strength and low compression over time.

Due to their large size the SkamoAlu BB-Block and SkamoAlu BF-Block are easy to install whereby the installation time is reduced.

# SkamoAlu standard product comparison

	Density	Max serv. temp.	LRS	CCS	MOR	Thermal Conductivity (W/mK)			
Test standard		EN 1094-6	EN 1094-6	ISO 8895	EN 993-6	ASTM C-182			
Unit	Kg/m <sup>3</sup>	°C	%	MPa	MPa	200°C	400°C	600°C	800°C
<b>Bricks</b>									
SkamoAlu Hipor	550	900	1.0	1.4	0.5	0.14	0.15	0.16	0.17
SkamoAlu Hiporos	570	900	1.0	1.6	0.5	0.12	0.14	0.16	0.18
SkamoAlu BB-Block	625	900	1.0	1.3	-	0.17	0.19	0.21	0.23
SkamoAlu BF-Block	650	900	1.0	1.0	-	0.14	0.16	0.18	0.20
SkamoAlu Poros	650	950	1.0	3.0	1.0	0.13	0.15	0.17	0.18
SkamoAlu Supra	750	950	1.0	7.5	1.8	0.15	0.17	0.19	0.21
SkamoAlu M-Bir	950	1,000	1.0	18.0	4.0	0.32	0.34	0.35	0.37
<b>Boards</b>									
SkamoAlu S-1100E	245	1,100	1.5	2.7	1.3	0.08	0.10	0.12	0.14
SkamoAlu V-1100 (375)	375	1,100	1.0	1.3	0.3	0.12	0.15	0.16	0.19
SkamoAlu V-1100 (475)	475	1,100	1.0	2.5	0.8	0.14	0.17	0.19	0.20
SkamoAlu V-1100 USW	500	1,100	1.0	2.5	0.8	0.14	0.17	0.19	0.20
SkamoAlu Vip 12	1,200	1,100	1.0	9.5	2.5	0.25	0.27	0.29	0.30
SkamoAlu Barrier LE	1,400	1,050	0.5	18.0	4.0	0.38	0.42	0.46	0.50
<b>Aggregate and mortar</b>									
SkamoAlu BB-Filler	550	900	-	-	-	0.16	0.18	0.20	-
SkamoAlu Mortar 1450	-	1,450	-	-	-	-	-	-	-

Data are average results of tests conducted under standard procedures and are subject to variation. Data contained in this data sheet are supplied in good faith as a technical service and are subject to change without notice. Misprint and errors excepted. Revision number: 2.3.2023



# SkamoAlu standard product comparison

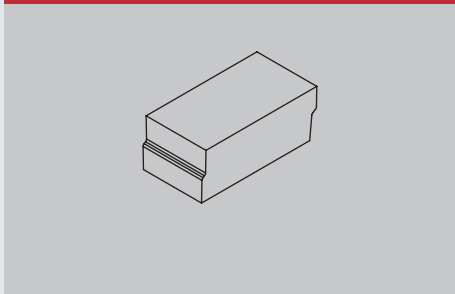
Unit	Chemical analysis (%)										
	SiO <sub>2</sub>	TiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	MgO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	Na <sub>2</sub> O + K <sub>2</sub> O	SO <sub>3</sub>	LOI
<b>Bricks</b>											
SkamoAlu Hipor	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	0.7
SkamoAlu Hiporos	72	0.7	7.0	8.0	1.2	6.5	0.4	1.5	-	1.2	1.5
SkamoAlu BB-Block	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	1.0
SkamoAlu BF-Block	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	1.0
SkamoAlu Poros	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	1.0
SkamoAlu Supra	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	1.0
SkamoAlu M-Bir	77	0.7	7.0	9.0	1.3	0.8	0.4	1.6	-	1.0	1.0
<b>Boards</b>											
SkamoAlu S-1100E	47	-	0.3	0.3	0.6	43	0.1	0.1	-	-	8
SkamoAlu V-1100 (375)	46	0.7	5.5	7.0	19.0	3.5	0.2	10.0	-	-	7.0
SkamoAlu V-1100 (475)	46	0.7	5.5	7.0	19.0	3.5	0.2	10.0	-	-	7.0
SkamoAlu V-1100 USW	46	0.7	5.5	7.0	19.0	3.5	0.2	10.0	-	-	7.0
SkamoAlu Vip 12	52	1.6	3.8	23.0	8.9	1.5	0.2	5.6	-	-	3.0
SkamoAlu Barrier LE	63.6	0.5	2.9	15.2	7.0	0.4	0.0	5.2	-	-	5.0
<b>Aggregate and mortar</b>											
SkamoAlu BB-Filler	71	1.4	8.4	10.5	1.6	2.5	-	-	2.1	-	1.4
SkamoAlu Mortar 1450	53	-	2	38	-	-	-	-	3.5	-	

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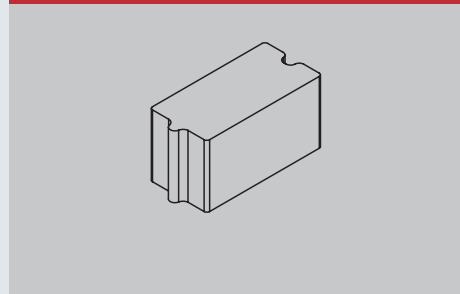
# SkamoAlu standard product dimensions

Product	Dimensions (mm)															
	Lenght	220	220	230	230	250	250	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Width	110	100	114	114	124	124	610	610	610	610	610	610	610	610	610
	Thickness	30	60	64	76	64	76	25	30	40	50	60	65	75	80	100
<b>Bricks</b>																
SkamoAlu Hipor		x	x	x	x	x										
SkamoAlu Hiporos	x	x	x	x	x	x										
SkamoAlu BB-Block																
SkamoAlu BF-Block																
SkamoAlu Poros		x	x	x	x	x										
SkamoAlu Supra		x	x	x	x	x										
SkamoAlu M-Bir		x														
<b>Boards</b>																
SkamoAlu S-1100E								x	x	x	x	x		x		x
SkamoAlu V-1100 (375)									x	x	x	x	x		x	x
SkamoAlu V-1100 (475)									x	x	x	x	x		x	x

SkamoAlu BB-Block available shape



SkamoAlu BF-Block available shape

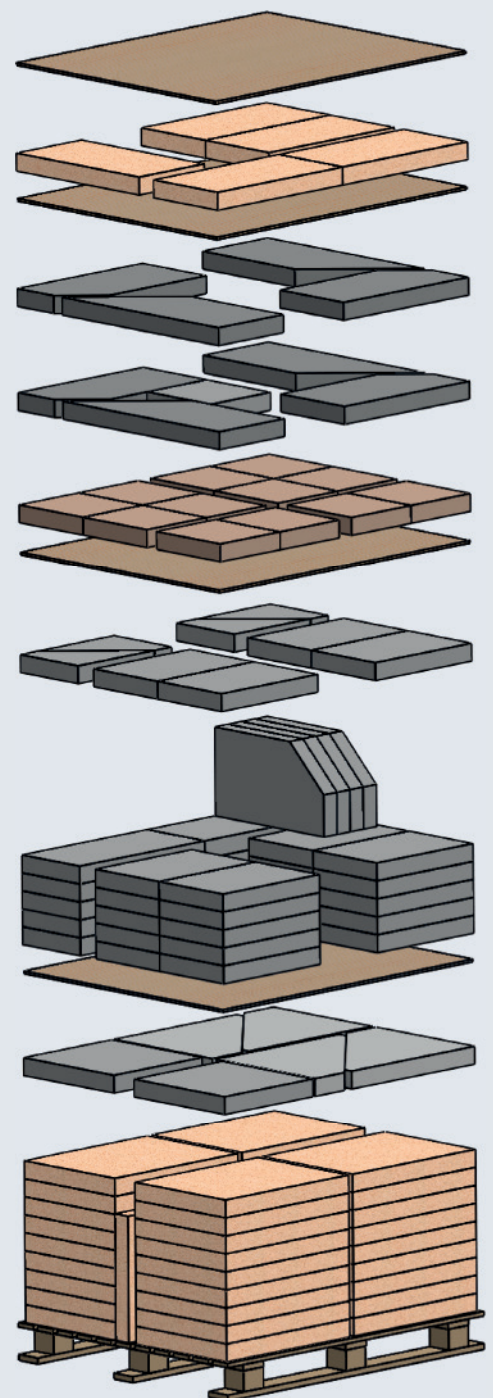
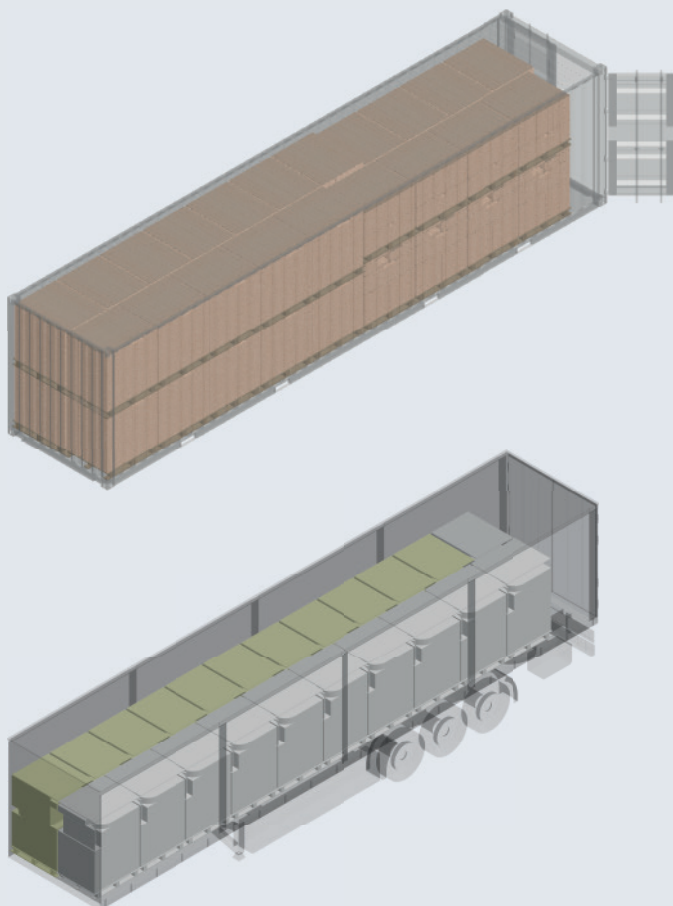


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# Speed up the on-site installation

Our insulation system for the aluminium production is tailored and delivered to each individual customer, resulting in precise, accurate and reliable deliveries.

Skamol palletizes every order while keeping in mind to help speed up the installation process. Therefore, every delivery is layered in sequence according to our customer's on-site usage. This saves valuable time on installation, and reduces time spent relining, ensuring an optimization of the production process.



All in  one



See more at [www.skamol.com](http://www.skamol.com)