



# BET

**HEATING CABLES FOR  
WINTER CASTING AND  
DRYING OF CONCRETE**





# SAFELY, EFFECTIVELY AND UP TO 50% FASTER

In concrete construction, cold and humid construction conditions may be extremely challenging. BET concrete heating cables are a solution to this problem.

Freshly laid concrete may not be allowed to get frozen during the winter, while at the same time tight construction timetables pose challenges for sufficiently long drying times. Winter concreting and the drying of concrete are affected by a number of different factors. Controlling and speeding up these processes without damaging the properties or structures of the concrete casting may be challenging.

As a result of studies spanning over more than a decade, we have developed methods and products both for winter concreting and for speeding up the drying of concrete. With BET products, construction can be successfully brought to completion even with challenging conditions and a strict timetable.

## WINTER CONCRETING

Construction and concreting during the winter may be extremely challenging due to frost. Cold temperature slows down drying and weakens the structural durability of concrete. Various additives can be used for protecting against freezing, but a sufficient temperature must be reached in order for the binding of concrete to occur within the planned time.

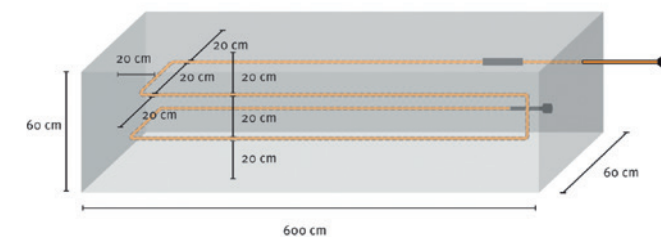
## DRYING OF CONCRETE

The drying of concrete structures has for a long time had a prolonging effect on the construction time. Nowadays, increasingly strict construction times and the indoor air problems caused by moisture that remains inside structures create a need for more effective drying of concrete. We investigated the acceleration of drying for three years and the results are now ready, saving up to -50% in drying time.

## WINTER CONCRETING PROCESS

When the average daily temperature drops below +5°C, it is always advisable to use additional heating to secure the binding and drying of concrete.

BET concrete heating cables have already been used in winter casting in many different projects for years. When the project must succeed with 100% certainty, you can rely on the studied and tested BET products.



### SAMPLE CALCULATION: Horizontal casting

- Measure and calculate the area of the **casting** in square metres (m<sup>2</sup>)
- Installation spacing of 20 cm is used in horizontal casting, so the consumption will be around 5–6 metres per square metre

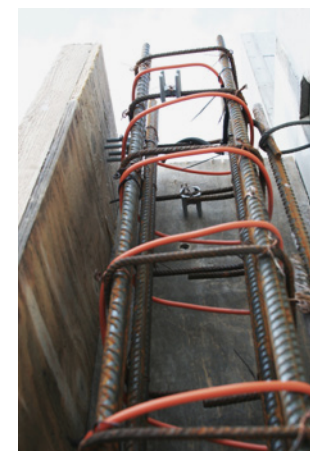
$$m^2 \times 5$$

### THINGS TO CONSIDER WHEN HEATING:

- The temperature of the concrete being heated may not rise above +60°C
- The temperature differences between different sections of uniform fresh concrete may not exceed +20°C
- The temperature of fresh concrete should be above +10°C to secure effective binding of concrete
- The optimum temperature for the binding of concrete is +30–40°C
- Protect the laid concrete volume against frost and wind with external insulation or frost protection

### THINGS TO CONSIDER IN INSTALLATION:

- The general installation spacing is 20 cm
- The cable may not come into contact with itself
- The coupler and the termination must be inside the casting
- The cable may not come into contact with the insulation or the formwork



### SAMPLE CALCULATION: Column casting

- Reinforcement** side, width (W), in centimetres
- Reinforcement** other side, depth (D), in centimetres
- Column** height (H) in centimetres
- In column casting, the installation spacing is 15 cm.

$$\frac{(W \times 2 + D \times 2) \times (H/15)}{100}$$

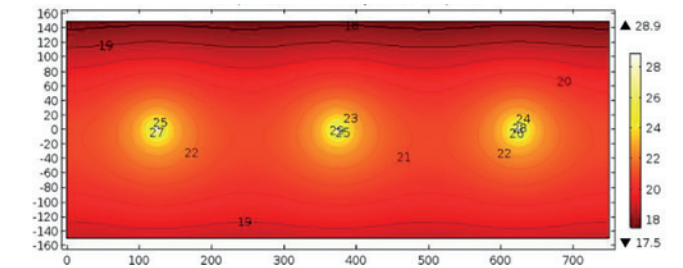




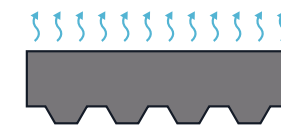
## DRYING STARTS FROM THE INSIDE

Drying a concrete slab from the inside is an effective way to speed up the construction timetable. The heat distribution of a concrete structure depends on the heating power output of the cable as well as the installation spacing and placement of the cable inside the structure.

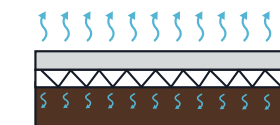
Heating the casting from inside the structures makes it possible to utilise an optimal and as high as possible a temperature without imposing a load on the structure of the cast volume or heating the surrounding site.



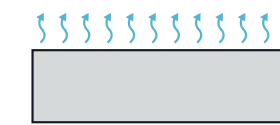
## CONCRETE STRUCTURES



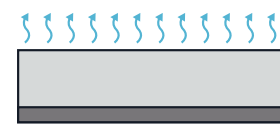
Composite, drying in one direction



On-ground, mainly one drying direction



Floor, drying in two directions



Floor, mainly one drying direction

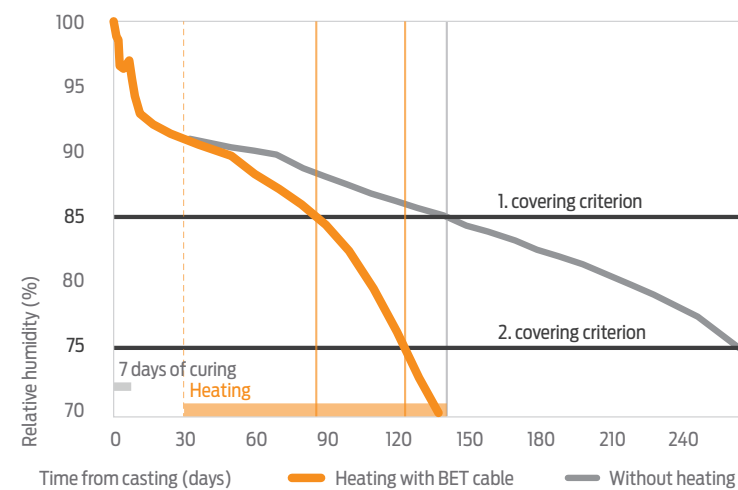
# DRYING OF CONCRETE

According to the studies conducted, concrete heating cables have a clearly enhancing effect on the drying of concrete. At best, the drying is as much as 50% faster than with unheated concrete. This time saving improves the efficiency of the entire site, and potential future moisture problems are also avoided at the same time.

Based on our studies, the greatest benefits from the heating are obtained with thick structures that dry in one direction, such as a 250 mm composite slab. This makes it possible to achieve as much as 2–3 months shorter drying times.

### Composite slab 250 mm

Cable 40 W/m, K200. Humidity measured 30 mm from the surface of the cast.



## DRYING OF CONCRETE SLAB

Fast-drying grade C25/30 concrete,  
BET concrete heating cable 40 W/m

Structure	Casting thickness	Position of heating wires (mm from the slab top surface)	Support division of heating wires (mm)	Coatability (drying time, days)	Use of heating wires (days)	Reference casting coatability (days)	Time saved (days)
On-ground, insulated	120	60 (1/2 of the thickness)	150	37	7	90	53
			200	40	10	90	50
			250	45	15	90	45
	200	100 (1/2 of the thickness)	150	55	25	180	125
			200	66	36	180	114
Composite slab, against sheet	250	125 (1/2 of the thickness)	150	110	80	210	100
			200	120	90	210	90
			200	130	100	210	80
			250	140	110	210	70
Drying in two directions	250	125 (1/2 of the thickness)	150	46	16	95	49
			200	48	18	95	47
			250	54	24	95	41

# PRODUCTS

## BET CONCRETE HEATING CABLE

BET concrete heating cable is used for heating the cast from the inside to safely speed up the drying. The drying makes it possible to start the coating work earlier, avoiding potential problems that may arise when coating is applied on a damp concrete casting. The cable is supplied ready-to-install.

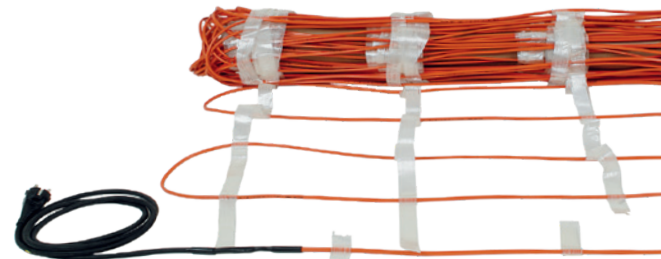


Diameter	6 mm
Standard lengths	3.3–85 m
Connecting cord	2 m (plug)
Max. operating temperature in the environment	70°C
Min. bending radius	50 mm
Voltage	230 V

TYPE	LENGTH (m)	OUTPUT (W)	RESISTANCE (ohm/m)
BET 3.3/130	3.3	130	122.5
BET 10/380	10	380	14.02
BET 20/735	20	735	3.58
BET 26/1000	26	1000	2.05
BET 35/1400	35	1400	1.04
BET 55/2200	55	2200	0.437
BET 85/3200	85	3200	0.196

## BET CABLE MAT

Convenient ready-to-install cable mat for large flat castings. The mat speeds up the cable installation by about 30%.



TYPE	SIZE (m)	OUTPUT (W)	RESISTANCE (ohm/m)
BET 5.8/1400	5.8 m <sup>2</sup> (0.95 x 5.8 m)	1400	1.04
BET 9.2/2200	9.2 m <sup>2</sup> (0.95 x 9.2 m)	2200	0.437
BET 14.2/3200	14.2 m <sup>2</sup> (0.95 x 14.2 m)	3200	0.196

# ACCESSORIES AND EQUIPMENT



## BET CENTRE

Control centre for concrete heating cables that monitors the temperature of the casting. Includes 12 sockets, fuses and residual current devices.



## TEMPERATURE LOGGER

The 4-channel temperature logger is ideal, e.g. when monitoring the drying process of a concrete casting.



## CABLE TIE

UV protected and durable cable tie for attaching cables. 200x5 mm, 100 pcs



## PST 950E FROST MAT

Frost thawing mat made of durable PVC fabric. Size 3.00 m<sup>2</sup>.



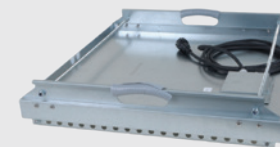
## BARREL HEATER

Ideal for heating and maintaining desired temperature of masonry water or other liquids. Power output 1500W.



## PST 2000 HEATER

For warming up liquids stored in 1000L containers.



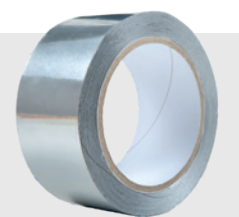
## PST DRYING HEATER

Mainly used for drying structures, e.g. in water damage sites.



## PST LIME & NIPPLE

Self-limiting heating cable with food approval. Suitable for defrosting and trace heating of pipework and drains.



## ALUMINIUM TAPE

Heat-resistant aluminium tape that can be used for fastening a heating cable outside a pipe, etc. 50 mm wide, one roll holds 50 m.

# **BET**

**CONCRETE HEATING**