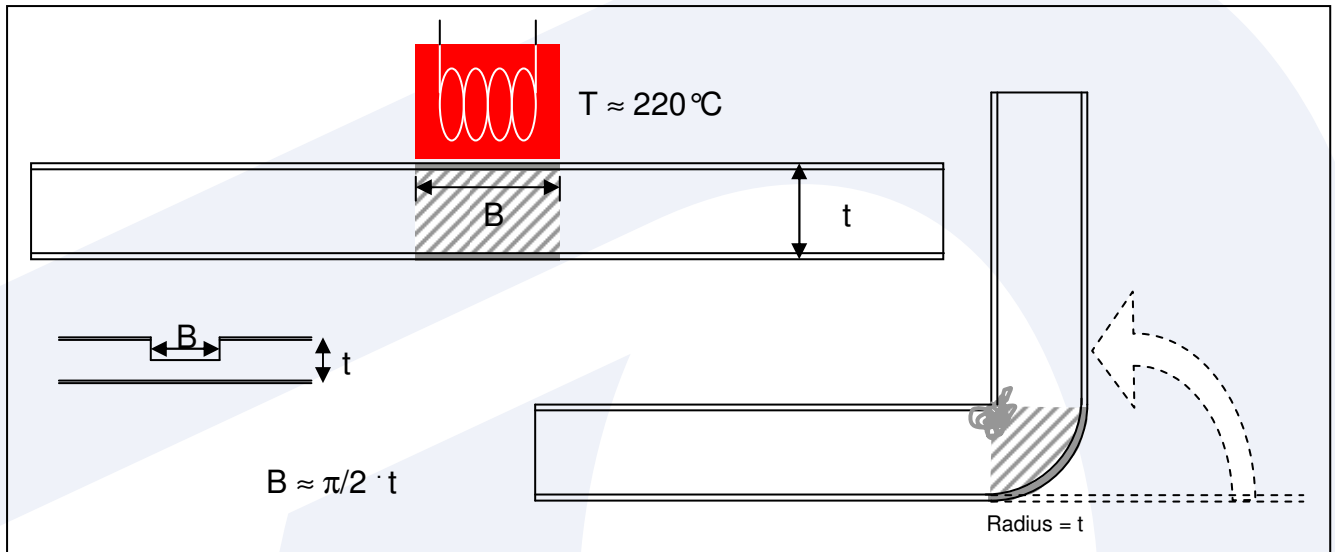


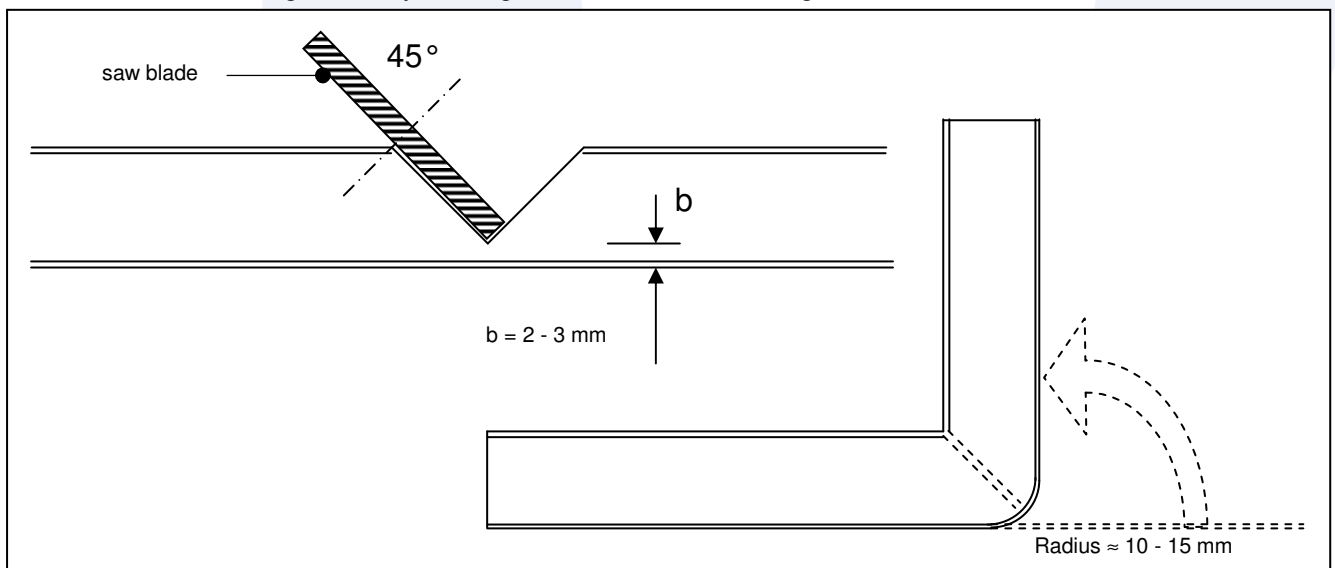
Thermal forming methods (or mechanically by removing the face sheet)

The Omnia panel can be easily shaped by thermal methods because of the thermoplastic material properties. Two-dimensional shaping like bending is achieved with heating of a localised strip of skin material. This heated strip is lightly pressed down and sinks into the core when the panel is bent. Alternatively, instead of heating the skin it can be removed by milling. In the area where the inside skin is removed the outside skin can function as a hinge. The panel can be bent until the inner cut out sides meet. The sides can then be welded together to create a strong connection. Without welding the shaped panel can fold back.



Further mechanical bending methods

Small radius: For small radius bending a **wig-wedge** is cut out of the panel, face sheet and core material is removed as shown in the sketch. One should be careful with painted panels: the paint might crack. The inside can be strengthened by welding or reinforced with an angle section.



Large radius: The bending of a large radius can be done by cutting a number of slots in the inside face sheet. By choosing the right number of slots and the proper width, the desired radius can be achieved. It is also possible to heat strips of the inside face sheet instead of cutting slots, which allows the skin to be pushed into the core during bending. As this requires a special tool, this is more suitable for large series. Following tables and diagram show the preparation of the bending.

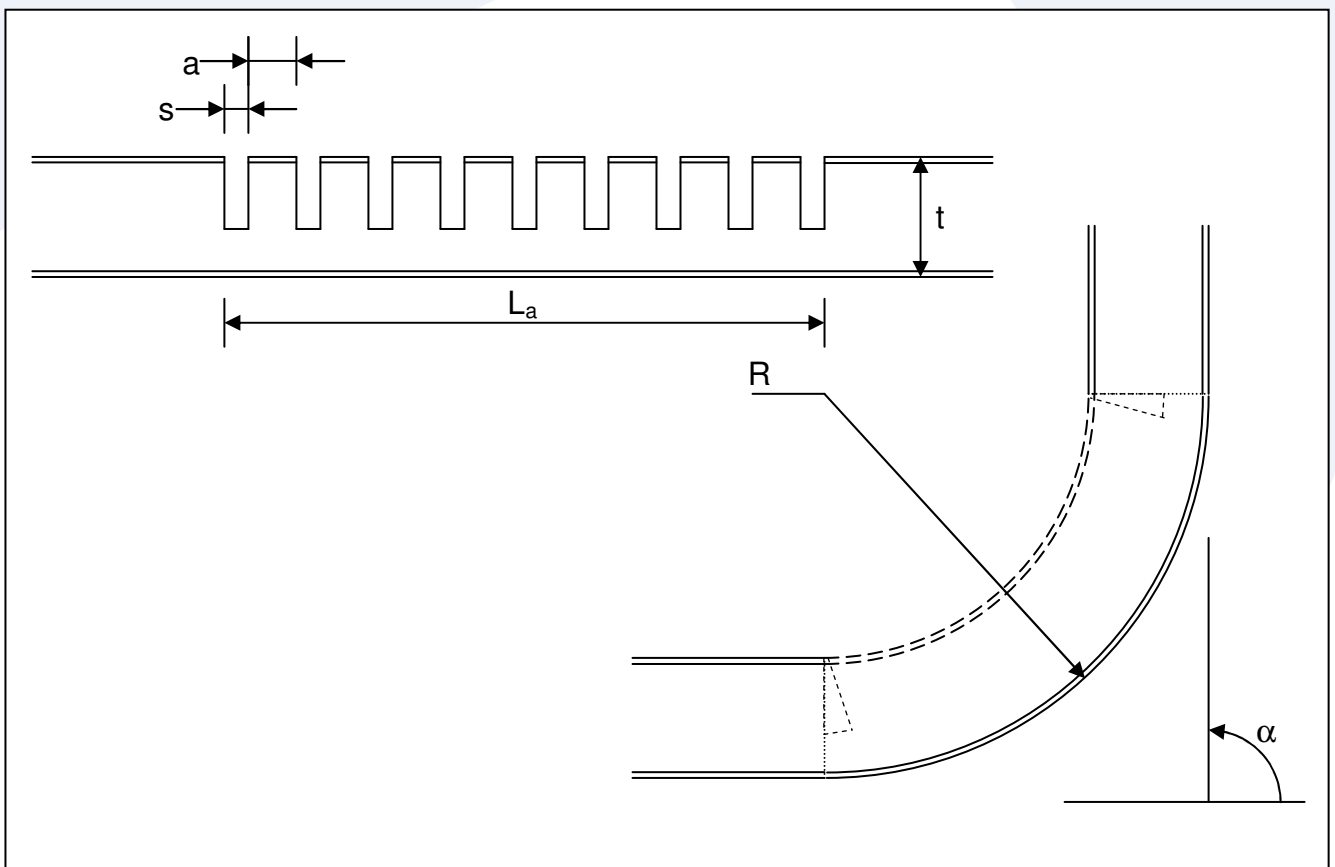
Bending

Thermal and mechanical shaping

design values		Example	calculation of cutting dimensions	
outside radius	R_a	100 mm	outside curve length	L_a $L_a = R_a \cdot \alpha$
panel thickness	t	30 mm		$L_a = 100 \cdot \pi/2 = 157,1$ mm
bending angle	α	$\pi/2$ (90°)	total width of slots	l_s $l_s = t \cdot \alpha$
				$l_s = 30 \cdot \pi/2 = 47,1$ mm

starting with		e.g.	resulting in	
a. number of slots	n	10	slot width	s $s = l_s/n$
				$s = 47,1/10 = 4,7$ mm
b. slot width	s	5 mm	number of slots	n $n = l_s/s$
				$n = 47,1/5 = 9,4$ rounded: 9

resulting calculation		
material width between slots	a	$a = (R_a \cdot \alpha - s) / (n - 1) - s$
		$a = (157,1 - 5) / (9 - 1) - 5 = 14$ mm



The specifications in this data sheet represent the current state of our technical knowledge and its purpose is to inform about the Omnia Panel and its applications. The specifications therefore do not guarantee particular properties or suitability for a specific application. We reserve the right to make changes in accordance with technological processes and other developments. We guarantee faultless quality in accordance with our conditions of sale.