

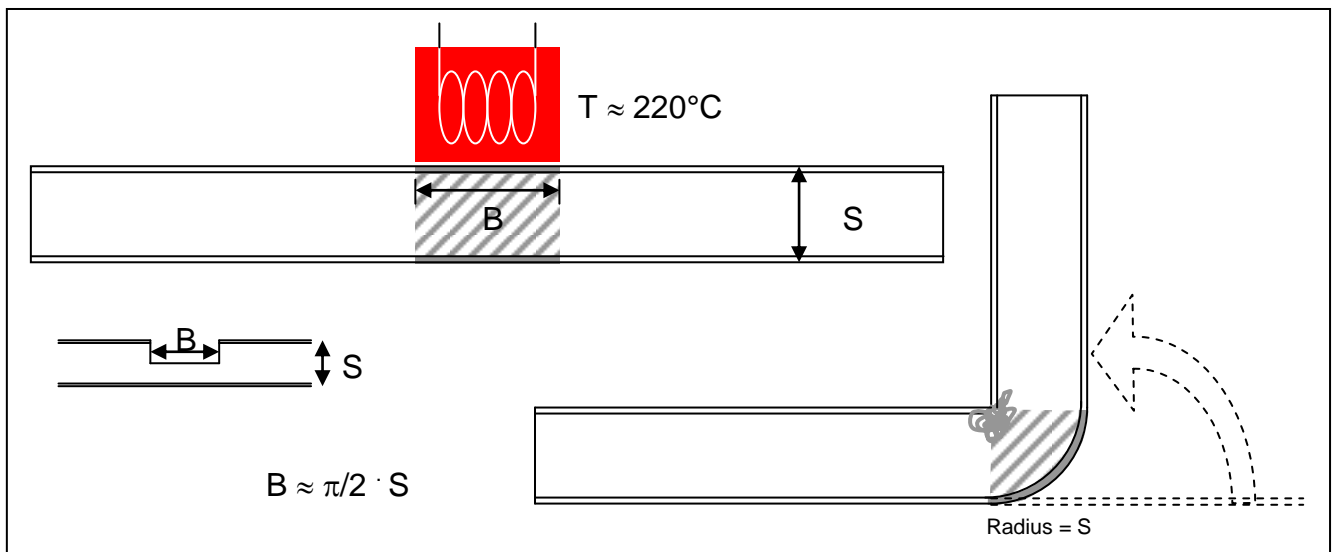
Bending (Thermal and mechanical forming methods)

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Thermal forming methods (or alternatively a mechanical method by removing the face sheet)

MonoPan® 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 will disappear into the core when the panel is bent. In the ideal situation this excessive skin material will strengthen the panel in the bending area.

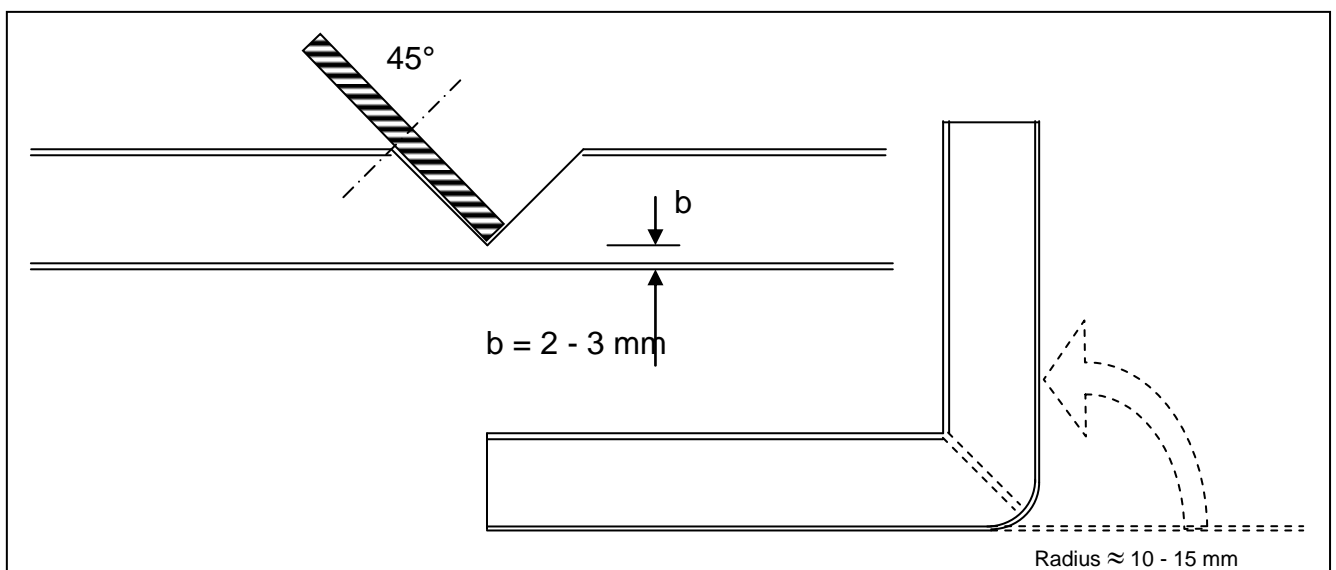
Alternatively to heating the skin and pressing it into the core it can be removed by milling. In the area where the inside skin is removed the outside skin can function as a hinge. The panel can be bent until the inner cut out sides meet. The sides can then be welded together to create a strong connection. Without welding the shaped panel can fold back.



Further mechanical bending methods

Small radius: For small radius bending the preparation is best done by milling the face sheet off. A wig is cut in the panel and face sheet and core material are 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 by mounting a corner profile.



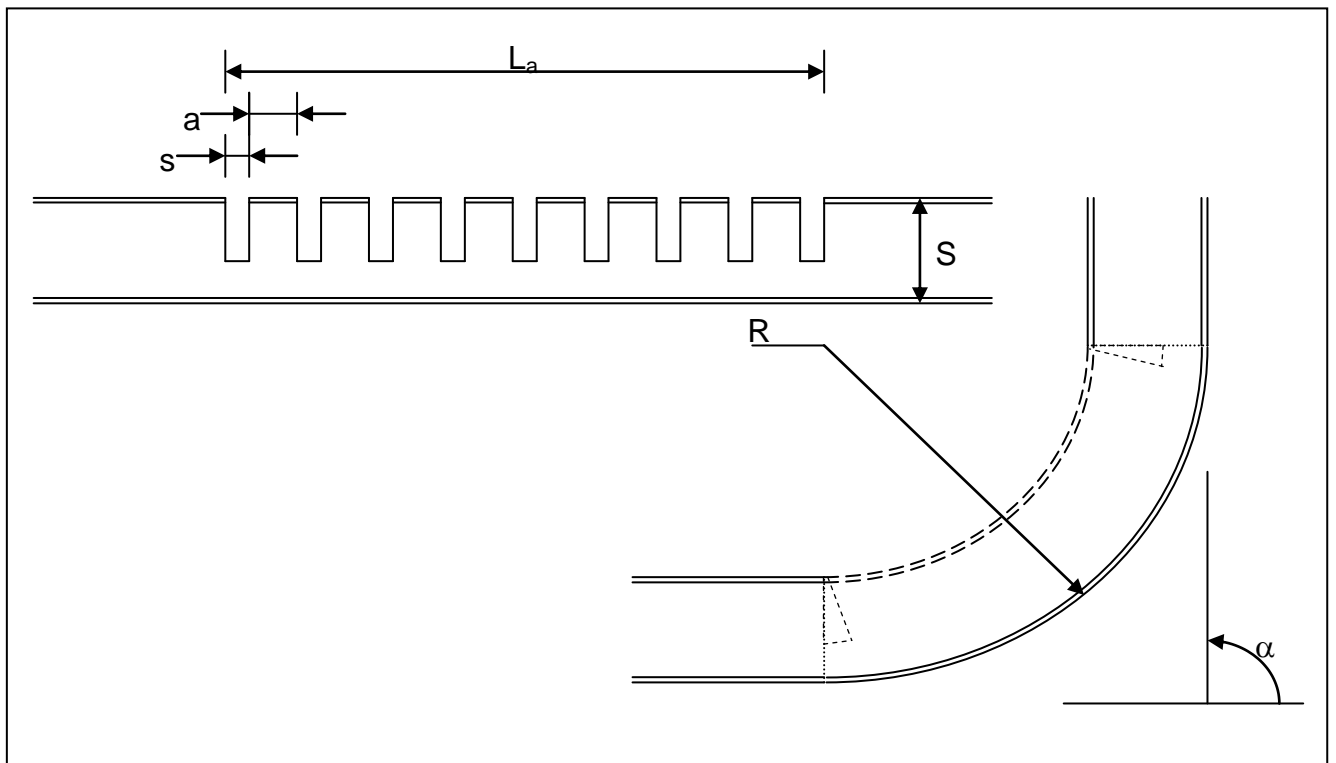
Large radius: The bending of a large radius can be done by cutting many small slits in the inside face sheet. By choosing the right combination of the number and width of the slits the desired radius can be achieved. For large series it is also possible to heat the inside face sheet instead of cutting strips out, and bend them into the core.

Following tables and diagram show the preparation of the bending.

start data		i.e.	calculated data	
outside radius	R_a	100 mm	outside curve length	L_a $L_a = R_a \cdot \pi/2$
panel thickness	S	30 mm	i.e.	$L_a = 100 \cdot \pi/2 = 157,1$ mm
bending angle	α	$\pi/2$ (90°)	total cutting width	l_s $l_s = S \cdot \pi/2$
			i.e.	$l_s = 30 \cdot \pi/2 = 47,1$ mm

parameter of choice		z. B.	resulting parameter	
number of slits	n	10	slit width	s $s = l_s/n$
or			i.e.	$s = 47,1/10 = 4,7$ mm
slit width	s	5 mm	number of slits	n $n = l_s/s$
			i.e.	$n = 47,1/5 = 9,4$ rounded: 9

resulting calculation			
material width between slits	a	$a = (R_a \cdot \pi/2 - s) / (n - 1) - s$	
	i.e.	$a = (157,1 - 5) / (9 - 1) - 5 = 14$ mm	



For applications, treatment and storage please pay attention to the „Technical Data Sheet“ of the manufacturer.

The specifications in this data sheet represent the current state of our technical knowledge and its purpose is to inform about MonoPan® 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.