

SOUNDSTEEL / SOUND ALLOY

This Installation Guide provides recommendations for working on Soundmetal panels ie joining, bending, welding and fastening.

WORKING HEALTH AND SAFETY

- Make sure that the premises are well ventilated when welding panels.
- Personal Protection Equipment (PPE), including eye protection, gloves and safety clothing is recommended. Refer to MSDS, use in a well ventilated area.

Note: This product is suitable for professional and experienced users only.

CONDITIONS BEFORE WORKING ON PANELS

All panels must be at room temperature (15°C - 35°C) before they can be worked on. If you have no heated storage space, the panel must be brought into heated premises at least 24 hours prior to any working operations. If the temperature of the panel is below room temperature, bending and like operations may cause the thermoplastic layer to separate from the facing.

PROCESSING PANELS

CUTTING:

Panels are easily cut with guillotine shears. Cutting edges should be well sharpened. Set the clearance between cutting edges as for a sheet metal thickness equal to 60% of the thickness of the panel. Standard MPM panels come with outer layers of equal thicknesses. Panels with outer layers of unequal thickness, should be cut with the thinner side facing up. MPM panels can also be laser cut. Water jet cutting is not recommended.

SAWING AND SLOTTING:

If the panel is to be sawn or slotted with a cutting wheel or similar tool, it should first be spot or tack welded on both sides of the cutting line. Use minimum heat.

BEADING AND FLANGING:

These operations can be performed in the same way as with single sheets of metal. As the operation takes place under compressive force, there is no risk of separation at the edges of the panel.

PUNCHING:

Any drilling or piercing should be done after bending, as the holes will otherwise be displaced.

BENDING:

Panels can be bent and edged without trouble provided that a few essential points are kept in mind. The bending radius should be at least 1.5 - 2.0 times the thickness of the panel. For best results with heavier-gauge panels, the radius of the die should be slightly larger than that of the tool.

When bent, it behaves like two sheets of metal lying loosely one on the other, and the facings are displaced by the difference in bending radius between the inner and outer facing.



Pyrotek's 'Soundmetal' range of products include two standard damping sandwich panels - Soundalloy™ MPM (Refer to TDS '111IP') and Soundsteel® MPM (Refer '121IP').

applications

- Engine rooms for high speed craft/vessels
- Machinery and equipment, compressor and generator set enclosures
- Acoustic hoods and chutes
- Conveyor systems
- Crushers / Granulators
- Coin counters
- Air conditioner casings
- Automotive sumps and panels
- Acoustic wall panels and doors

Please refer to our website pyroteknc.com for latest information



PROCESSING PANELS (cont.)

BENDING (cont.)

The amount of displacement can be calculated according to the formula:

$$\delta = \alpha \times \pi / 180 \times (R_{II} - R_I) \text{ mm}$$

$$R_I = R + t_1/3$$

$$R_{II} = R + t_1 + p + t_2/3$$

where δ = displacement

α = bending angle in degrees

t_1 = thickness of facing nearest tool

t_2 = thickness of facing nearest die

R_I = bending radius of inner facing (t_1)

R_{II} = bending radius of outer facing (t_2)

p = thickness of plastic inlay

As a result of the displacement, you cannot make several successive bends without taking certain precautions. Always bend nearest a free edge to allow for displacement. If you bend on the side nearest a bent edge, the layers of the panel will split apart.

Note: Powder-coated panels should not be bent. Bending should be completed on plain panels and painted on site. We recommend conducting trials on small samples pieces first..

JOINING & FASTENING

MPM panels are readily joined by both resistance and arc welding.

Weldability of MPM Panels

Care must be taken to adjust current settings and to use the correct clamp design to form an electrical bridge between the two sheets of the sandwich system. In all welding operations you should try to limit both the duration and extent of heating of the thermoplastic inlay.

Resistance Welding

MPM panels lends itself well to resistance welding. The strength of the joints is equivalent to that normally obtained in solid steel sheet welding.

Before resistance welding begins, the insulating plastic inlay must be punctured. This is most easily done by making a centre punch mark under the first spot. For heavier gauge panels you can use a clip or clamp. Once electrical contact is established between the metal facings, no further punch marks are needed. (See fig RW1)

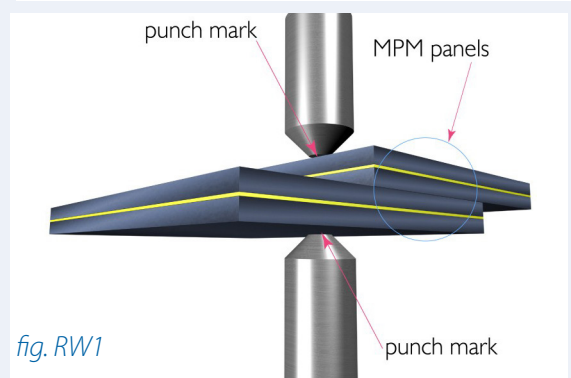
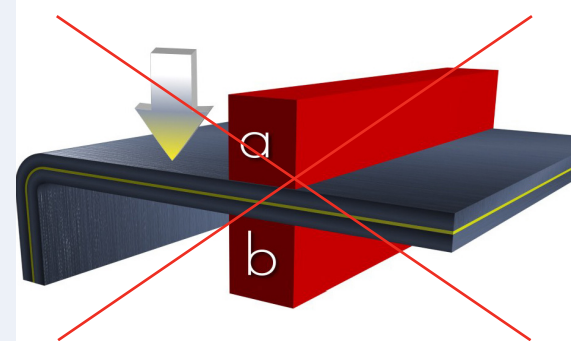
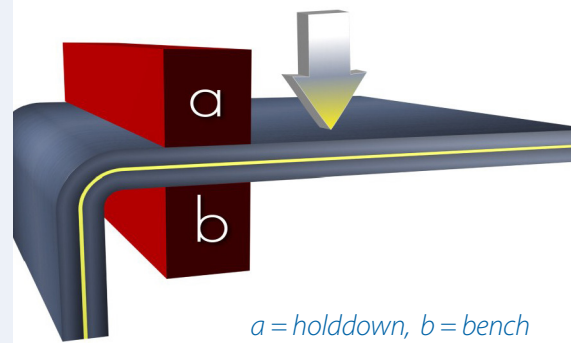
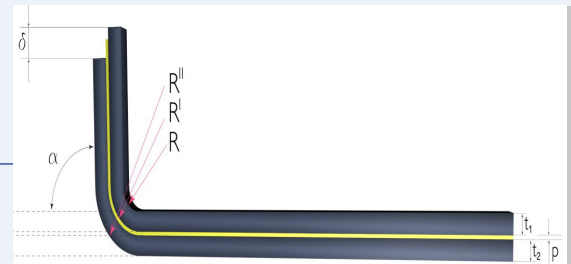
The electrode pressure should be increased by 50-80 % compared to solid metal; this is to ensure that the spot will penetrate the plastic inlay and deform the facings to establish electrical contact. The power should be increased by 20% compared to solid sheeting of the same thickness. With small spot welders developing less than 35kVA, the welding time should be prolonged.

When long edges are spot welded to prevent the panel from splitting apart, the intervals between spots should not be longer than 5cm (2inches) and shorter than that for asymmetrical panels.

Seam Welding

An overlapping form of spot welding is also a suitable method. Bolts, brackets and similar fittings can also be welded to the panel by application of double electrodes on the same side of the panel. In such cases, it isn't necessary to puncture the inlay.

Make sure that premises are well ventilated when you weld MPM panels.



VARIOUS TYPES OF JOINT

Fillet Welding to a heavier gauge material or between panels

First secure the edges of the MPM panel with spot welds. Continuous fillet welds should be avoided. Joints 15mm long, spaced 20mm apart are right. Intermittent fillet welding in a staggered pattern gives best results.

Butt Welding

Edges of the MPM panels should first be secured by spot welds and then built up as shown in the three figures.

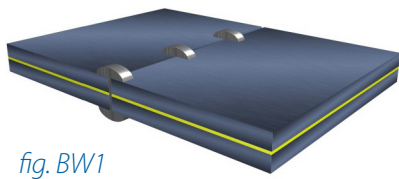
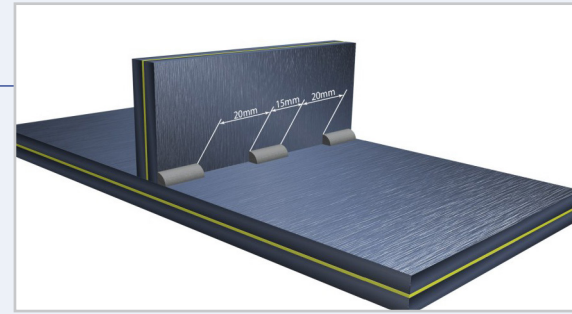


fig. BW1

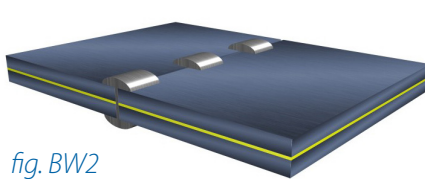


fig. BW2

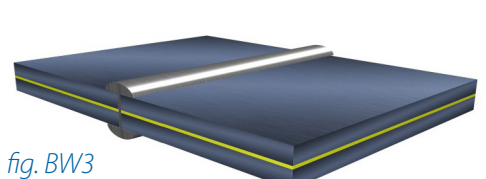


fig. BW3

Plug Welding

Panel edges should first be secured by spot welds. Welding data should be selected according to the thickness of the panel. Basic electrodes are recommended. (See fig. PW1)

Corner Welding

Locate the panels so that one covers the thermoplastic inlay of the other one. (See fig. CW1)

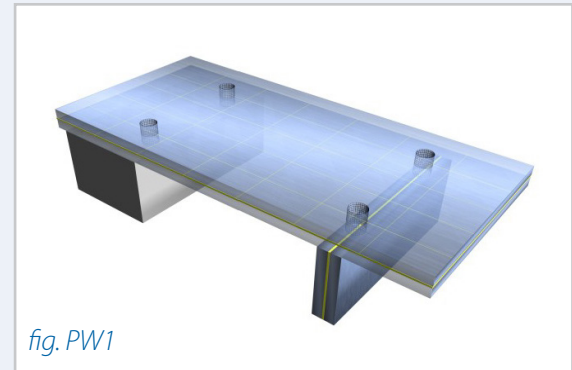


fig. PW1

Make sure that premises are well ventilated when you weld MPM panels.



fig. CW1

Please contact Pyrotek® for further information or detailed advice on your specific application.