



October 2018

TECHNICAL BULLETIN

How moisture curing products cure:

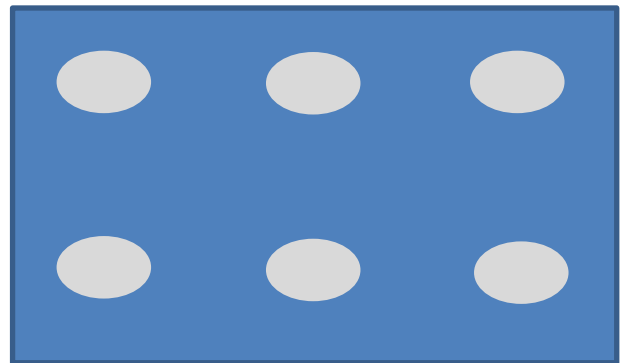
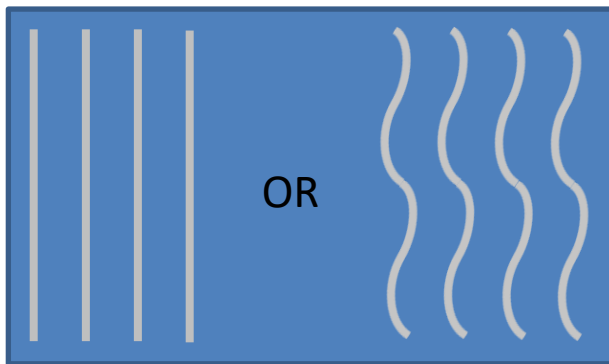
Moisture curing products include all 1 component silicones, polyurethanes and hybrid polymers that are used for bonding and sealing. All these products require atmospheric moisture to cure. When the products are in contact with porous substrates, then the moisture from within the substrate will also react and cause the product to cure. Curing speed is increased / accelerated with > higher temperature and higher humidity.

Here are some examples,

- 1) Bonding of aluminum (non-porous) to steel (non-porous) > the adhesive will only have access to atmospheric moisture to cure. This results in the slower full cure time.
- 2) Bonding of timber (porous) to steel (non-porous) > the adhesive has access to atmospheric moisture and will draw moisture from within the timber.
- 3) Bonding of timber (porous) to timber (porous) > the adhesive has access to atmospheric moisture and moisture from both substrates. Resulting in the fastest full cure time.

Bonding applications:

When using a moisture cure product for bonding, the ideal way to apply the adhesive is in beads, rather than in daubs.



When a moisture cure adhesive is applied in beads, the adhesive will reach full cure 5-10 times faster than daubs as the moisture from the air needs to go through the cured adhesive and reach the centre.

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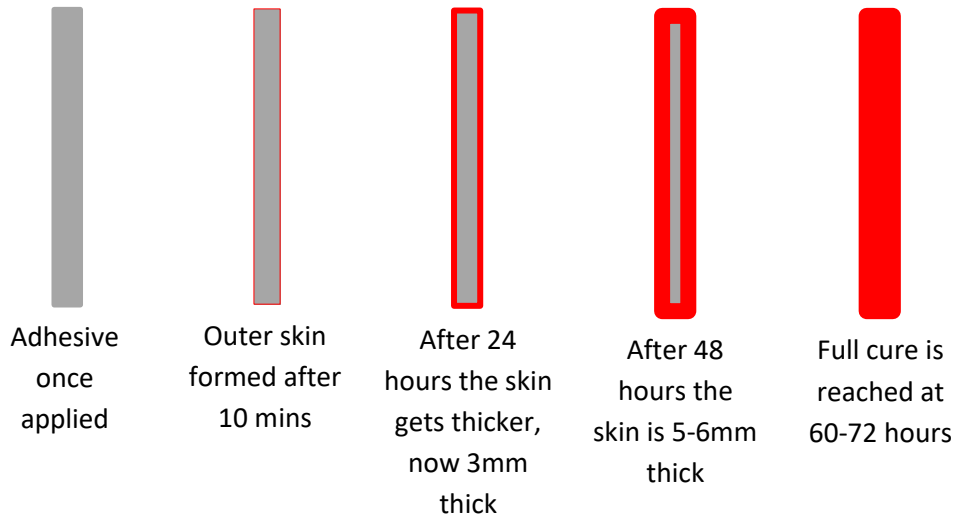


Here are 2 examples of how an adhesive will cure between 2 non-porous substrates;

Curing time for beads,

Here we have an example how the adhesive cures over time. For this example, we have shown...

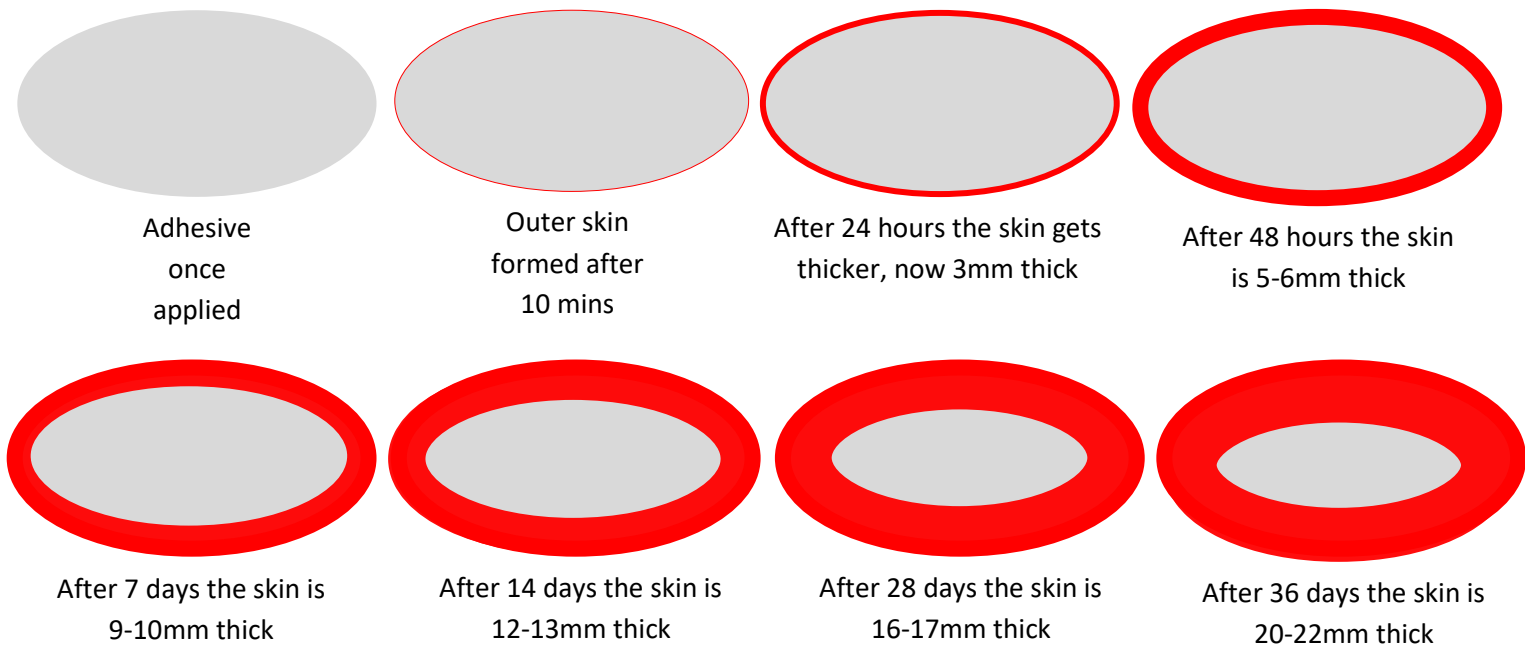
- Bead width of 12mm
- Skin Time of 10 mins
- Curing rate of 3mm per 24 hours



Curing over time for daubs,

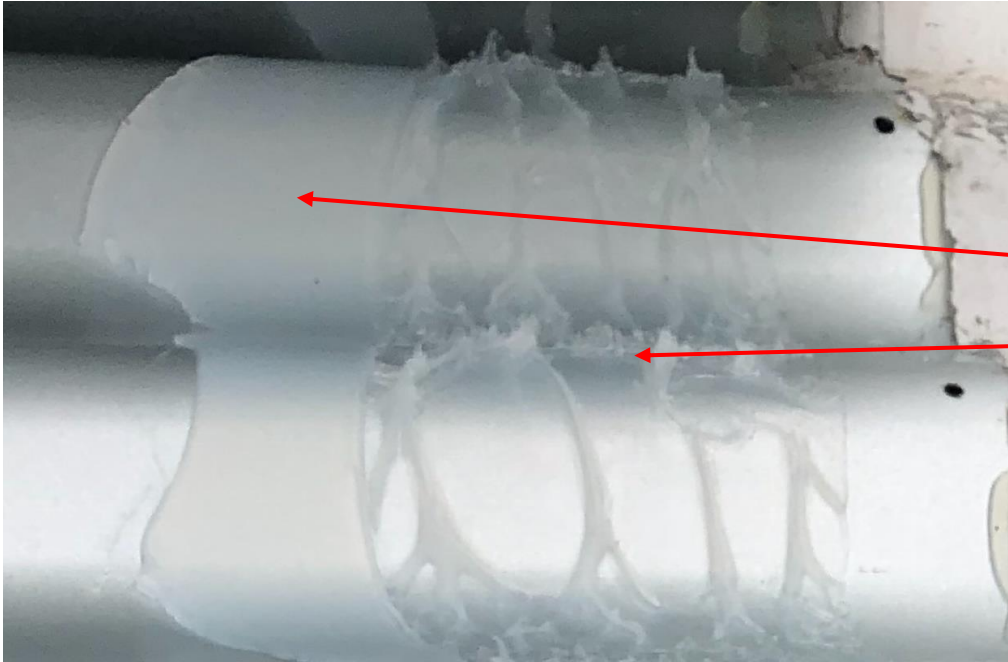
Here we have an example how the adhesive cures over time. For this example, we have shown...

- Daub size of 90mm x 50mm
- Skin Time of 10 mins
- Curing rate of 3mm per 24 hours



As shown above, over time the adhesive will eventually cure, but as the moisture needs to travel through the outer skin and as this skin gets thicker, the curing rate per 24 hours reduces. If the 2 substrates were separated prior to the full cure of the adhesive, then the adhesive in the centre will still be wet.

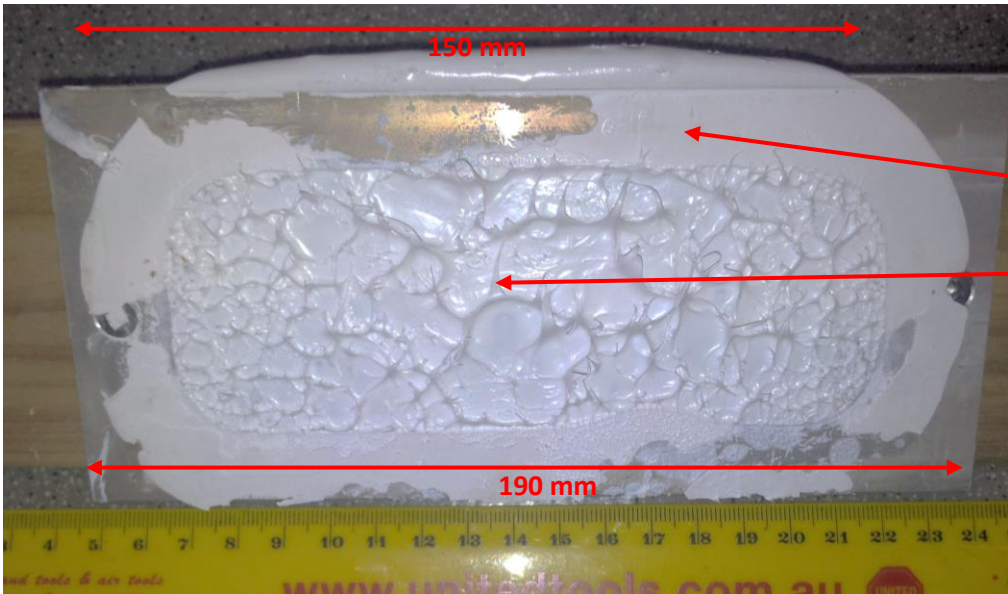
Here are some examples of 2 applications where moisture curing products were applied between 2 pieces of metal. As you can see the centre is still wet, you can tell this by the “ripple” effect.



This is a neutral curing Roof & Gutter Silicone. The outside section has full cured. The centre is still wet after months of application.

Cured on the edge.

Wet in the centre.



This is a SMX® Hybrid Polymer sealant / adhesive. The centre is still wet after 6 weeks of application.

Cured on the edge.

Wet in the centre.

Conclusion,

For best results and the fastest full cure rate, applying the adhesive in beads / lines is best. The alternative is to use 2 component such as Soudal Soudaseal 2K. As these chemically cure, the full cure rate is 1 hour in all cases.

Regards,
Scott Robinson

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