

Dependable welding of TPO with grip style nozzle for VARIMAT V

## More grip on the roof

### Choosing the right welding tool

In today's roofing market there are many different plastic sheets: PVC-P, ECB, EVA, TPO and other materials that require different welding techniques and experience. Naturally, this makes it more difficult for roofers to choose the right welding tool. In most cases, an automatic welding machine with a 40 mm nozzle is being used for overlap welding.

### TPO aging effects

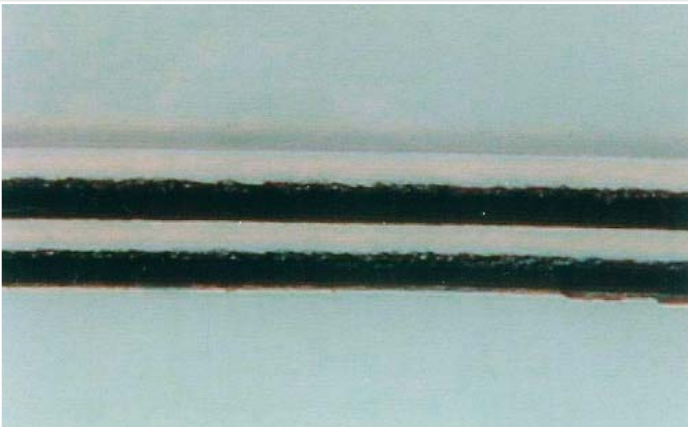
Although a 40 mm standard nozzle is widely accepted, problems can sometimes appear when using TPO material. An example would be if the material lies on the roof overnight; the TPO shows aging effects and the material can absorb moisture.



*Lower part of grip-nozzle with burls or grips.*

### Higher shear forces

By using a grip style nozzle, the impact of these negative effects can be reduced considerably. Additionally, the peeling and shear forces (seam strength) can be up to 30% higher, which increases the reliability of the weld significantly as many independent tests have shown (e.g. [www.ddDach.org](http://www.ddDach.org)).



*Above: cross-section of a TPO-sheet with standard nozzle (sevenfold enlargement).*

*Below: cross-section of a TPO-sheet with grip-nozzle (sevenfold enlargement).*



*Upper part of grip-nozzle with (sheet pressure plate) downholder – the burls (grips) are hidden underneath.*

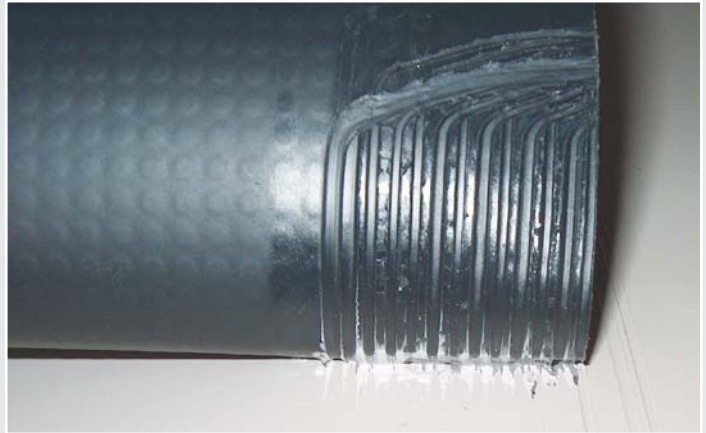


**How does it work?**

A metal pressure plate (downholder) presses the upper sheet towards the nozzle and little grips (burls) on both sides of the nozzle to expose “new” material from below the surface and increase the total surface area of the TPO to be welded (roughened). This way, the surface is being pre-treated to ensure perfect welding quality.

**High welding speed**

The higher friction force of the grip nozzle doesn't affect the welding speed at all because the VARIMAT V is a closed-loop controlled, automatic welding machine. Welding speed up to 5 m/min can be



*Rough TPO surface thanks to the grip nozzle.*

reached (depending on the material type). The grip style nozzle can only be retrofitted onto a VARIMAT V. It can quickly and easily be mounted directly at the work site.

**Article no.**

Grip nozzle for VARIMAT 30 mm:	113.995
Grip nozzle for VARIMAT 40 mm:	113.600
VARIMAT V 40 mm, 400 V / 5700W:	115.996
VARIMAT V 40 mm, 230 V / 4600W:	115.939

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