



## 3.2 Plasma cutting

Plasma cutting offers the prime advantage of speed over conventional flame cutting processes. Cutting speeds in thinner sections are typically two to three times higher for plasma cutting processes for steel thicknesses up to 25mm, especially at the lower end of the thickness range. Thicker sections can be cut with plasma processes but speed advantages diminish rapidly beyond 25mm. Conversely, plasma cutting typically produces a wider kerf than flame cutting processes, with cut quality considered inferior due to rounding of the top edge and the difficulty in obtaining a square cut face on both edges.

The hardened heat-affected zone of plasma cut steels is typically narrower than flame cut steels, being less than a millimetre wide in 25mm thick steels compared with

in excess of 2.5mm when the same steels are flame cut. While the peak hardness of the heat-affected zone is less than that generated by flame cutting processes, it is still considered hard and potentially troublesome for subsequent machining or forming, especially where severe cold forming of the edge is envisaged, or in critical applications where a risk of brittle fracture or fatigue exists.

BlueScope Steel recommends that the surface layers of the plasma cut face be at least lightly ground to remove the hardest layers prior to subsequent processing.



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