

# TREATMENT OF WELDS

## SHOULD STEEL BE PAINTED BEFORE OR AFTER WELDING?

The welding of structural steel members requires a controlled environment best suited to a fabrication shop. Steel designs that require assembly on site generally have bolted connections rather than welded, but situations arise where the steel is to be assembled and welded on site.

The question of how to schedule the painting of steel to be welded is answered in the Australian/New Zealand standard, AS/NZS 2312:2002 Section 7.6, "SHOP OR SITE APPLICATION" Part (iii) of that Standard states that:

"Field welding and other site activities may damage the shop coatings. Whenever possible, treatments should be shop applied, but if transport damage is a major concern, it may be best to specify that surface preparation, primer and intermediate coats are applied in the shop and the top coat is applied on site."

### CAUTION WHEN WELDING

In AS/NZS 2312:2002 Section 13.12, "**Welding**" the advice given is as follows:

"When welding or oxycutting through coated surfaces, **fumes**, which may be toxic to the operator can be evolved. Suitable **air-fed respirators** and ventilation should be provided in compliance with the relevant legislation.

Regulatory authority legislation requires that the welder grind away any existing paint before making a weld run or carrying out oxycutting."

Regulatory authority legislation regarding personal protection equipment can differ from state to state and is subject to changes or updates, but in any case, an air fed respirator with full face mask, thick gloves, overalls with long sleeves and safety shoes should be selected to protect eyes, lungs and skin from damage by welding.

### CLEANING WELDS

AS/NZS 2312:2002 Section 10.5, "REPAIRS AND REPAINTING OF WELDED STRUCTURES" states that:

"Corrosion damage associated with welds is generally removed by abrasive blasting to the original standard, taking care not to damage nearby sound paint or equipment.

If power tool cleaning is specified, power wire brushing can polish the surface and result in subsequent poor paint adhesion."

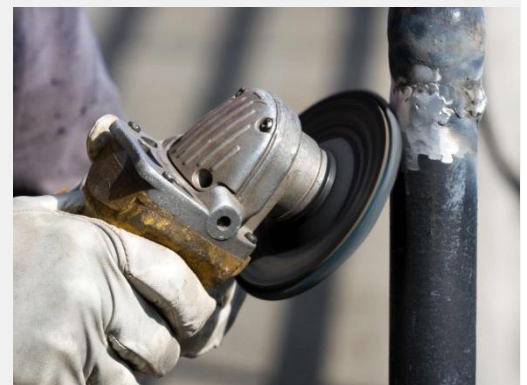
One type of power tool that won't polish the surface and in fact creates a profile in the steel is the Bristle Blaster<sup>®</sup> which is a small, hand-held device.



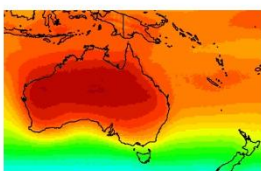
*Both welding and grinding produce sparks that are hazardous to eyes and skin*



*Heat from welding and grinding vaporises coatings and may be hazardous to inhale*



*Take care not to polish the weld*



# TREATMENT OF WELDS

## PREPARATION AND PAINTING OF WELDS

Here's how Dulux<sup>®</sup> Protective Coatings specifies the surface preparation and coating of welds:

1. Remove weld splatter.
2. Power tool clean welds to AS1627.2 Class 2 to remove excessive roughness. Remove filings, preferably by vacuum or compressed air.
3. Prime welds immediately with the nominated primer before contamination can reoccur. Ensure that the primer overlaps the sound adjacent coating by not less than 25mm or greater than 50mm.
4. Apply intermediate and topcoats over the primed welds to match the surrounding coating system, overlapping the sound adjacent coating by not less than 25mm or greater than 50mm.

The important thing to note from this specification is that the coating system over the welded area is to be identical to that of the steelwork generally, to ensure continuous corrosion protection over the entire steelwork. Overlapping ensures that there are no gaps or weak points in the coating system.

If in doubt, a stripe coat can be applied to the welded area. A stripe coat is defined as "an additional coat applied to edges, holes, welds and corners to ensure complete coverage, before spray application of the main coat."

## AESTHETIC CONSIDERATIONS

When faced with the following options:

- Option 1: Abrasive blast cleaning (or power tool cleaning) and painting the entire steelwork in situ after erection and welding, or
- Option 2: Abrasive blast cleaning and priming in shop and erecting, welding, grinding and spot priming the welds and topcoating the entire steelwork on site, or
- Option 3: Abrasive blast cleaning, priming and topcoating in shop, and erecting, welding, grinding and spot priming the welds and painting

Option 3 will offer you the best outcome with regard to performance of the coating system and a superior finish. Option 3 is also quicker and cheaper than the other options.

*For more information, please contact the Dulux Protective Coatings Technical Consultant in your state.*



*Spot priming and painting the cleaned welds and overlapping surrounding sound coating ensures continuous protection*



*Federation Square Canopy was entirely prepared and painted in shop with Quantum<sup>®</sup> FX, then welded together on site*



*Site welds can be primed and painted on site without loss of aesthetics by skilled applicators*