

RISK REGISTER – POWDER COATING TUBULAR STEEL

Risk Rating Matrix

Likelihood Rating

- 1- Almost Certain
- 2 - Likely
- 3 - Possible
- 4 - Unlikely
- 5 - Rare

Consequence Rating

- 1- Catastrophic
- 2 - Major
- 3 - Moderate
- 4 - Minor
- 5 - Insignificant

		Consequence				
		5	4	3	2	1
Likelihood	5	MEDIUM	HIGH	HIGH	HIGH	HIGH
	4	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
	3	LOW	MEDIUM	MEDIUM	HIGH	HIGH
	2	LOW	LOW	MEDIUM	MEDIUM	HIGH
	1	LOW	LOW	LOW	MEDIUM	MEDIUM

Risk Item	Consequence	Likelihood Rating	Consequence Rating	Risk Rating	Mitigation
Contaminants or oxidisation (rust) on the surface of the steel tube.	The powder will not adhere to the surface of the tube. This result in poor barrier corrosion protection of the base material and poor aesthetics.	3	2	HIGH	Operator to use steel that is clean and free of oxidisation. Bluedog source from reputable suppliers and rejects tube that is contaminated or oxidised.
Mild steel (or black) weld used in fabrication.	The powder will not adhere to the black weld. This result in poor barrier corrosion protection of the base material and poor aesthetics.	3	2	HIGH	Operator to use silicon bronze weld. Bluedog uses silicon bronze weld that is about three times as expensive as mild steel weld.
Quality of powder coating: use of low cost low quality powders.	Powder has poor mechanical and corrosion protection qualities. This results in poor corrosion protection of the base material and poor aesthetics including fading, chalking, chipping and cracking of powder.	3	2	HIGH	Operator to uses powders in compliance with AS 4506-2005 Metal finishing - Thermoset powder coatings (“ AS4506 ”). Bluedog only uses Akzo Nobel powders (a world leader) allowing us to offer a 10 year warranty of the quality of powder coat (conditions apply).
Chemical pre-treatment: inadequate cleaning preparation of steel tube using a manual wipe down of product with a solvent/degreaser to remove organic matter, mill oil, grease and dirt.	The steel surface (substrate) is not cleaned properly leaving contaminants to which the powder will not adhere resulting in delamination of the film and corrosion of the film early in service life.	3	2	HIGH	Operate system in compliance with AS 4506. Bluedog uses a 7 stage metal pre-treatment system. Materials are completely immersed and the process includes two heated alkali degreasing stages followed by three rinse stages. This comprehensively cleans the product.

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Chemical pre-treatment: absence of a conversion coating/ passivation stage. This stage applies a fine crystalline structure on the substrate that prevents oxidisation before powder coating and provides a 'key' for the powder coating to bind to for improved adhesion. Many coaters do not have a conversion coating stage.	The steel surface oxidises before powder coating and the surface is not 'best prepared' for powder adhesion resulting in reduced powder film adhesion service life.	3	2	HIGH	Operate system in compliance with AS4506. Bluedog uses a metal pre-treatment system that includes a final passivation/ conversion coating stage to enhance powder adhesion.
Powder coating: manual application resulting in inconsistency in the depth of powder applied to the product.	Application of too much or too little powder will compromise the mechanical and corrosion protection qualities of the powder coat. This results in poor film adhesion service life.	3	2	HIGH	Apply powder per manufactures guidelines. We use a conveyorised powder coating line with automatic reciprocating application guns. This allows us to achieve a very high level of consistency and accuracy in powder application.
Powder coating: under or over cure of the powder coat due to inadequate or poor operation of curing ovens.	Under or over cure will compromise the mechanical and corrosion protection qualities of the powder coat.	3	2	HIGH	Operate system in compliance with AS4506. We use a conveyorised powder coating line with oven. This allows us to achieve a very high level of consistency and accuracy in curing time of the product.
Quality Management: Failure to regularly and properly test the chemistry of the pretreatment process, operation of powder coating line and test the quality of the powder coating outcome.	Failure to identify systemic issues and poor powder coating outcomes.	3	3	MEDIUM	Operate system in compliance with AS4506. Bluedog's QA systems are JAZ-ANZ certified to ISO 9001. Our systems are tested on a daily basis.
Quality Management: Failure to do Neutral Salt Spray (NSS) test for the barrier protection qualities of the film.	Poor film adhesion service life resulting in poor aesthetics and corrosion of the fencing.	3	3	MEDIUM	Operator to achieve NSS performance benchmarks set out AS4506. We regularly send powder coated samples away for independent NSS testing and achieve or exceed the benchmarks in AS4506.