

TriClad
DETACOUPLE JOINTS

TriClad® aluminium-steel transition joints are used to provide an efficient and maintenance free welded connection between aluminium and steel structures on board vessels.

TriClad® Structural Transition Joints

PRODUCTS

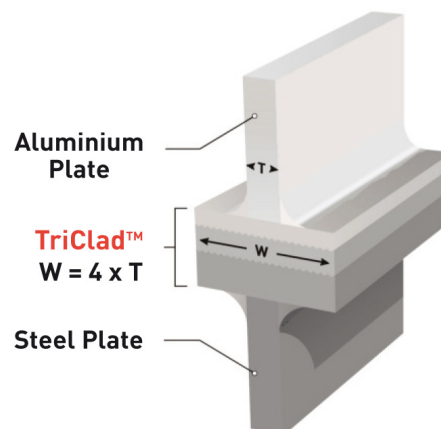
- As a world leader in explosion welding, NobelClad offers structural transition joints dedicated to the shipbuilding industry. Under the name TriClad; bars, plates or custom pieces are the strongest solutions for welding steel to marine aluminium grade.

DESIGN

- The width of the TriClad bar shall be four times (4x) the width of the connecting structural component.
- We recommend that the connecting structural components be placed in the middle of the TriClad strip.

QUALIFICATION

- Products are available with approval from Lloyd's, RINA, DNV, BV or ABS on demand.



Example: A webbing of 6 mm in the aluminium superstructure calls for a TriClad® strip 24 mm wide minimum.

Standard grades and dimensions

	STEEL	INTERLAYER	AL ALLOY	NOM. THICKNESS (MM)	BAR LENGTH (MM)	BAR WIDTH (MM)
Standard TriClad®	A516 gr.55	Al 1050A	Al 5086	34.5 (19+9.5+6)	3800	On demand
TriClad® 19		Al 1050A	Al 5083	19 (10+5+4)		
TriClad® 28	Shipbuilding steel gr. D	Al 1050A	Al 5083	28 (15+3+10)		
TriClad® 33		Al 1050A	Al 5083	33 (20+3+10)		
Titanium TriClad®	A516 gr.55	Titanium	Al 3003	31.5 (19+1.5+10)	2750	
Stainless TriClad®	316L			31.5 (20+1.5+10)		

FABRICATION

Cutting

- TriClad is sawn, milled, or water-jet cut.
- Flame cut is forbidden as interface shall not be used above 300°C.

Bending

TriClad bars can be bent at room temperature, around a curve surface. The minimum bending radius is:

- R = 300 mm for tension/compression bend.
- R = 10T for a side bend, where T is the width of the strip.

FABRICATION DRAWINGS SHOULD CONTAIN THE FOLLOWING WARNINGS

- Never weld across the interface
- Never make sharp bends in the joint
- Never preheat the joint prior to welding
- Never allow the interface to exceed 300°C
- Never flame cut TriClad

PROTECTION

- Painting is recommended to seal the joint from the environment
- Paints containing copper, mercury, or lead salts are not recommended as they may encourage galvanic corrosion.

WELDING

Temperature limitation

- The aluminium/steel interface must be kept below 300°C.
- Because of this requirement we strongly suggest to draw up WPS/WPQ and have personnel thoroughly trained and qualified.

Seam weld must never get closer than 3 mm from aluminium/steel interface.

Extra care must be taken with butt welds

- Prepare the joint as indicated in below sketch.
- Ends should be chamfered, butted firmly together and clamped.
- The aluminum weld should be made first, using several straight passes in order to minimize temperature rise of the interface.
- The un-welded area of the TriClad should be hammer peened if a water tight joint is required.

