

Brief Description of Transfer of Technology

on

Aluminium-Copper-Manganese-Zirconium-Titanium-Vanadium Based AA2219 Alclad Sheets and Plates for Missile Applications

1. Description of the technology

The technology involving optimization of parameters like alloy composition, homogenization schedule, hot and cold rolling parameters, method of imparting cold work prior to artificial aging for the production of AA2219 Alclad sheets and plates has been developed. Optimization of the aforementioned process parameters enabled the production of Alclad AA2219 sheets and plates having thicknesses ranging from 2 mm to 30 mm having reproducible tensile properties and reduced in-plane strength anisotropy.

2. Application areas

This technology has been developed and demonstrated at the industrial scale. The technology has been assessed in terms of structural tests wherein 4 mm thick Alclad AA2219 sheets were formed and joined to form a structural part of a major load bearing section of a missile.

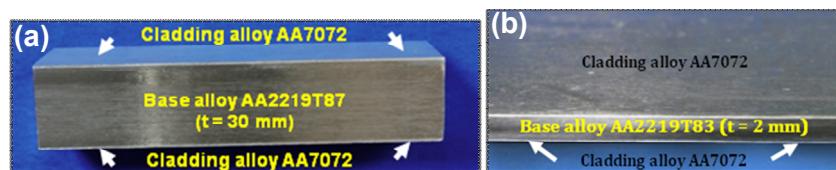
3. Its USP-such as certifications and test results etc.

The table below shows the tensile properties of the indigenized AA2219 Alclad sheets & plates.

Tensile properties of indigenized unclad & Alclad AA2219 sheets & plates			
Alloy & temper	0.2% PS (MPa)	UTS (MPa)	% Elongation (GL = 50 mm)
Alclad AA2219-T83 sheets (t = 2 mm)	(314 min.)	(402 min.)	(6 min.)
	345-368 (L)	441-468 (L)	12-13 (L)
	329-334 (LT)	425-440 (LT)	12-13 (LT)
Alclad AA2219-T87 (t = 12 mm)	(330 min.)	(415 min.)	(6 min.)
	382-385 (L)	468-470 (L)	10-12 (L)
	377-381 (LT)	466-470 (LT)	8-9 (LT)

4. Photographs of semi-products / components / final products

The photographs shown below represent 30 mm thick Alclad AA2219-T87 plate and 2 mm thick Alclad AA2219-T83 sheet.



(a) Alclad AA2219-T87 plate and (b) Alclad AA2219-T83 sheet



A structural part of a missile formed by forming and joining of 4 mm thick Alclad AA2219-T83 sheets. This part underwent successful structural tests.