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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 13149-2009

Replacing GB/T 13149-1991

**Specification for welding of titanium and titanium alloy clad
steel plates**

钛及钛合金复合钢板焊接技术要求

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Foreword

This standard replaces GB/T 13149-1991 "titanium and titanium alloy clad steel plate welding conditions." This standard compared with GB/T 13149-1991, the main changes are as follows:

- Standard name changed to "titanium and titanium alloy clad steel plates welded technical requirements";
 - Adjusted normative references;
 - Increased titanium and titanium alloy clad steel plates welded principle terms;
 - Clear titanium and titanium alloy clad steel plate by flame or plasma arc cutting composite plate height from the ground when cutting;
 - Increased detailed breakdown titanium weld and heat affected zone of surface color;
 - Revised Appendix A and Appendix B;
 - Table 4 to Information Appendix C "steel plate welded titanium and titanium alloy composite material";
 - Security to press GB 9448 "welding and cutting safety" requirement;
 - Remove the butt joint connector type II;
 - Remove the prolonged absence of production and orders for primary steel 22g and 15MnVR available and base metal plate cut strips for manual welding wire Notes to Table.
- The Standard Appendix A, Appendix C is a normative appendix, Appendix B is an informative annex. The standard proposed by China Shipbuilding Industry Corporation. This standard by the National Standardization Technical Committee Marine boat marine materials application process Technical Committee (SAC/TC12/SC4) Centralized. This standard was drafted. China Shipbuilding Industry Corporation seventh twenty-five. The main drafters of this standard. standard Li Feng, Wang Xiaohua, Suyu Pei Yu Wei, Wang

Jun, Ren Jiangyi, Xuming Lin, Lijing Yong. This standard replaces the standards previously issued as follows:

--- GB/T 13149-1991. Titanium and titanium alloy clad steel plate welding requirements

1 Scope

GB/T 13149-2009 is the Chinese national standard on specification for welding of titanium and titanium alloy clad steel plates, in the field of shipbuilding and marine structures. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 23 March 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 November 2009. Classification: ICS 47.020.01, CCS U05. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the materials titanium and titanium alloy clad steel plate welding, welders, welding preparation, welding process, welding and weld quality inspection Defect repair and other technical requirements. This standard applies to titanium and titanium alloy is stratified, with carbon steel, low alloy steel or stainless steel as the base layer in the total thickness of 8mm or more Welding of titanium and titanium alloy clad steel plate.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB 150 steel pressure vessels

GB/T 983 stainless steel electrode

GB/T 985.1 gas welding, arc welding, gas welding and beam welding Recommended groove (GB/T 985.1-2008, ISO 9692-1.2003, MOD)

GB/T 985.2 SAW recommended groove (GB/T 985.2-2008, ISO 9692-2.1998, MOD)

GB/T 2650 welded joint impact test method (GB/T 2650-2008, ISO 9016.2001, IDT)

GB/T 2651 welded joint tensile test method (GB/T 2651-2008, ISO 4136.2001, IDT)

GB/T 2653 welded joint bending test method (GB/T 2653-2008, ISO 5173.2000, IDT)

GB/T 3323 metal fusion welded joints radiography

GB/T 3620.1 titanium and titanium alloys and chemical composition

GB/T 3623 titanium and titanium alloy wire

GB/T 4241 stainless steel welding rod

GB/T 4340.1 Vickers hardness test - Part 1. Test method (GB/T 4340.1-1999, eqv ISO 6507-1. 1997)

GB/T 4698 (all parts) Sponge titanium, titanium and titanium alloys GB/T 4842 Ar GB/T 4844.2 pure helium