

ICS 77.120
CCS H 14



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

GB/T 23602-2009

**Methods of descaling and cleaning for titanium and titanium
alloy surfaces**

钛及钛合金表面除鳞和清洁方法

(English Translation)

Issued on: April 15, 2009

Implemented on: February 1, 2010

Issued by: Standardization Administration of China

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Foreword

This revised standard adopts ASTM B600:1991 (2002 Confirmation) "Titanium and titanium alloy surface cleaning and descaling Standard Guide." for ease of use, this standard ASTM B600:1991 made the following changes.

- a) "The Guide" to the "standard";
- b) delete the part of the range;
- c) the original standard Note 1 to Note 9 to Chapter 5, "Handling Precautions." the standard proposed by China Nonferrous Metals Industry Association.

This standard Nonferrous Metals by the National Standardization Technical Committee.

This standard was drafted. Baoji Titanium Group Ltd., Baoji Titanium Industry Co., Ltd.

1 Scope

This standard specifies the method of descaling and cleaning the surface of titanium and titanium alloy products.

This standard applies to the removal of titanium and titanium alloy products are generally pollution generated in the production, use and heat treatment process, oxides, dirt and in the presence of surface contamination in the form of foreign matter.

2 General

For grease products titanium and titanium alloy machining, casting and pressure processing of used oils and lubricants, recommended base or milk the immersion-type alkaline cleaning agents and electrolytic cleaning system. In electrolysis, the workpiece may be an anode, a cathode may be. These should be the removal of dirt Before pickling heat treatment or prescribed conduct 4.2. When electrolysis voltage should be controlled to prevent spark discharge, resulting in products table Surface pits appear.

3 Impact Cleaning

3.1

mechanical descaling such as sand blasting, shot peening, steam shower and other methods to clear the surface of the titanium material and thermal processing scales skin lubricant, but then should be used Chapter 4 of the cleaning.

3.2

sand blasting should be used for high-quality, cleaned, iron-free silica sand.

3.3

If the entire surface of the product using the blast method to clean the exposed surface due to grit or sand pill roughened. To ensure the surface finish Degree should be the preferred local cleaning and pickling with appropriate cleaning.

3.4

grit or sand containing iron proceeds blast cleaning the surface of the titanium material, pickling method should be used to remove embedded surface after blast Steel particles.

3.5

abrasive blasting or are likely to cause the titanium surface residual compressive stress, and cause local deformation should be used or chemical milling wheel Profile machining processing.

3.6

Under normal circumstances, the sand and can not replace pickling. Grinding contaminated layer can not be removed by the interstitial elements (such as carbon, oxygen and nitrogen) cause.

When these elements are present in excess, according to the provisions of 4.3 for the elimination of pickling.

4 Pickling and descaling

4.1

In addition to the recommended quick sand blasting or grinding method for processing titanium material surface, for the guarantee complete removal of metallic iron, oxides, and other scaly skin table Surface contamination, 4.3.2 shall also be pickled. If chemical milling to remove the surface oxide product contaminated layer, or the product is not conducive to the overall appearance when sandblasting, salt treatment can be used to prevent surface localized corrosion.

4.2

For scaly and residual lubricant titanium rolling, casting, forging or assembly formed before pickling 4.3.2 regulations, may Using one of the following methods may be treated to completely remove surface contamination.

4.2.1

All corrosion based solution recommended by the manufacturer requirements mixed with tap water.

4.2.2

base molten salt bath according to the procedure laid carried out at 399 °C ~ 454 °C.

4.2.3

base molten salt bath according to the procedure laid carried out at 204 °C.

Oxide and oxide colors 4.2.4 below 593 °C heat generated can be used pickling clear. Acid ratio (by volume). 10% - 20% (150g/L ~ 300g/L) of nitric acid (70%) + 1% ~ 2% (12g/L ~ 24g/L) hydrofluoric acid (60%) + water temperature of 49 °C.

4.2.5

forging and heat-treating with graphite or titanium are usually formed by mixing glass lubricant heat scaly, scaly skin this heat can melt in the 454 °C the base was completely dissolved in a salt bath. Then the provisions of 4.3.2 may then be pickled.

4.2.6

can be heat-treated alpha + beta titanium and titanium alloys beta solution treatment at above 593 °C generated containing graphite and molybdenum disulfide lubricant