



**SLOVENSKI STANDARD**  
**SIST EN 4213:2005**

**01-november-2005**

---

**Aerospace series - Aluminium alloy AL-P6061-T651 - Plate - 6 mm <a <80 mm**

Aerospace series - Aluminium alloy AL-P6061-T651 - Plate - 6 mm <a <80 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P6061-T651 - Platten - 6 mm <a <80 mm

Série aérospatiale - Alliage d'aluminium AL-P6061-T651 - Tôles épaisses - 6 mm <a <80 mm

**iTeh STANDARD PREVIEW**

(standards.iteh.ai)

[SIST EN 4213:2005](https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-810649055a6/sist-en-4213-2005)

**Ta slovenski standard je istoveten z: EN 4213:2005**

---

**ICS:**

49.025.20      Aluminij

Aluminium

**SIST EN 4213:2005**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 4213:2005

<https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005>

EUROPEAN STANDARD

EN 4213

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2005

ICS 49.025.20

English version

**Aerospace series - Aluminium alloy AL-P6061-T651 - Plate - 6  
mm  $<a \leq 80$  mm**Série aérospatiale - Alliage d'aluminium AL-P6061-T651 -  
Tôles épaisses - 6 mm  $<a \leq 80$  mmLuft- und Raumfahrt - Aluminiumlegierung AL-P6061-T651 -  
Platten - 6 mm  $<a \leq 80$  mm

This European Standard was approved by CEN on 22 April 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 4213:2005](https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005)

<https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005>



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Foreword

This document (EN 4213:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 4213:2005

<https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005>

## Introduction

This standard is part of the series of EN metallic material standards for aerospace applications. The general organization of this series is described in EN 4258.

This standard has been prepared in accordance with EN 4500-2.

## 1 Scope

This standard specifies the requirements relating to:

Aluminium alloy AL-P6061-  
T651  
Plate  
6 mm <  $a$  ≤ 80 mm

for aerospace application.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use.*

EN 4400-1, *Aerospace series — Aluminium and aluminium alloy wrought products — Technical specification — Part 1: Plate.*<sup>1)</sup>

EN 4500-2, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 2: Specific rules for aluminium, aluminium alloys and magnesium alloys.*<sup>1)</sup>

---

1) Published as AECMA Prestandard at the date of publication of this standard.

## EN 4213:2005 (E)

1	Material designation		Aluminium alloy AL-P6061-										
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others		Al
		min.	0,40	–	0,15	–	0,8	0,04	–	–	–	–	Base
		max.	0,8	0,7	0,40	0,15	1,2	0,35	0,25	0,15	0,05	0,15	
3	Method of melting		–										
4.1	Form		Plate										
4.2	Method of production		Rolled										
4.3	Limit dimension(s)	mm	6 < a ≤ 80										
5	Technical specification		EN 4400-1										

6.1	Delivery condition		T451					T651				
	Heat treatment		520 °C ≤ θ ≤ 540 °C / WQ θ ≤ 40 °C + 1,5 % ≤ controlled stretched ≤ 3 % + θ = ambient / t ≥ 5d					520 °C ≤ θ ≤ 540 °C / WQ θ ≤ 40 °C + 1,5 % ≤ controlled stretched ≤ 3 % + 160 °C ≤ θ ≤ 186 °C / 4 h ≤ t ≤ 16 h				
6.2	Delivery condition code		K					U				
7	Use condition		T651					T651				
	Heat treatment		Delivery condition + 160 °C ≤ θ ≤ 186 °C / 4 h ≤ t ≤ 16 h					Delivery condition				

Characteristics  
(standards.iten.ai)

8.1	Test sample(s)		See EN 4400-1.												
8.2	Test piece(s)		See EN 4400-1.												
8.3	Heat treatment		Use condition.												
9	Dimensions concerned	mm	6 < a ≤ 12,5				12,5 < a ≤ 25				25 < a ≤ 80				
10	Thickness of cladding on each face	%	–												
11	Direction of test piece		LT				LT				LT				
12	Temperature	θ	°C		Ambient				Ambient				Ambient		
13	Proof stress	R <sub>p0,2</sub>	MPa		≥ 240				≥ 240				≥ 240		
14	T Strength	R <sub>m</sub>	MPa		≥ 290				≥ 290				≥ 290		
15	Elongation	A	%		A <sub>50 mm</sub> ≥ 10				≥ 9				≥ 6		
16	Reduction of area	Z	%		–										
17	Hardness		–												
18	Shear strength	R <sub>c</sub>	MPa		–										
19	Bending	k	–		–										
20	Impact strength		–												
21	Temperature	θ	°C		–										
22	Time		h		–										
23	C Stress	σ <sub>a</sub>	MPa		–										
24	Elongation	a	%		–										
25	Rupture stress	σ <sub>R</sub>	MPa		–										
26	Elongation at rupture	A	%		–										
27	Notes (see line 98)		–												

44	External defects	–	See EN 4400-1.				
61	Internal defects	–	See EN 4400-1.				
82	Batch uniformity	–	See EN 4400-1.				
		5	–			T451	T651
		7	Electrical conductivity	$\gamma$	MS/m	23,0 (Typical value)	25,0 (Typical value)
<p><b>iTeh STANDARD PREVIEW</b>  <b>(standards.iteh.ai)</b></p> <p>SIST EN 4213:2005  <a href="https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005">https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005</a></p>							
95	Marking inspection	–	See EN 4400-1.				
96	Dimensional inspection	–	See EN 4400-1.				
98	Notes	–	–				
99	Typical use	–	–				

## EN 4213:2005 (E)

100	-	Product qualification	-	See EN 4400-1.
				Qualification programme to be agreed between manufacturer and purchaser.
<p><b>iTeh STANDARD PREVIEW</b> <b>(standards.iteh.ai)</b></p> <p>SIST EN 4213:2005 <a href="https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005">https://standards.iteh.ai/catalog/standards/sist/e9f9c4b8-71f7-44db-89e4-8f06f49055a6/sist-en-4213-2005</a></p>				