Sworn Translation from Polish into English

[logo]

"SIMP-ZORPOT'
Expertise and Consulting Centre
90-303 Łódź, ul. Brzeżna 16/2, phone/fax: 0-42 636-27-94, phone: 0-42 636-39-23

FRANCHISING COMPANY OF POLISH ENGINEER AND MECHANIC ASSOCIATION

Ordering party:

Service company "ROSA" Sp. z o.o.
43-100 Tychy, ul. Towarowa 13

Order dated:

02-12-2016

Topic:

Technical approval of life of anodised aluminium-alloy lighting posts.

		Date	Signature
	Team Leader		
	prof. dr hab. inż. Tadeusz Marciniak	06-12-2016	*[rectangular stamp reading:]* *[mark]* cert. no. 637 / Certified SIMP expert / prof. dr hab. inż. Tadeusz Marciniak / 115 – OHS and environment protection systems / 830 – appraisal of machines, devices and vehicles *[illegible signature]*
	Verifier		
Symbol:	Centre Principal		
9/191/16/W	prof. dr hab. inż. Tadeusz Marciniak	06-12-2016	*[rectangular stamp reading:]* Principal prof. dr hab. inż. Tadeusz Marciniak *[illegible signature]*

[circular stamp reading:] TŁUMACZ PRZYSIĘGŁY JĘZYKA ANGIELSKIEGO NR TF/313/01 AGATA KOSIŃSKA

TABLE OF CONTENTS

1.0 FORMAL DATA

- **1.1 FOUNDATION FOR THE STUDY**
- **1.2 EMPLOYER**
- **1.3 PURPOSE OF THE STUDY**

2.0 SUPPLEMENTARY DATA

3.0 MATERIALS USED IN PREPARATION OF OPINION

4.0 SUBJECT OF DECISION

- **4.1 RESULTS OF EXPERT'S OPINION**

5.0 FINAL DECISION

1.0 FORMAL DATA

1.1 FOUNDATION FOR THE STUDY

The foundation for the opinion was the order of 2016-12-02 placed by ROSA Stanisław Rosa for issue of technical approval of life of anodised aluminium lighting posts.

1.2 EMPLOYER

The direct employer is the following:

ROSA Stanisław rosa
43-100 Tychy, ul. Strefowa 1

1.3 PURPOSE OF THE STUDY

The purpose of the study was to decide whether the life of the anodised aluminium lighting posts produced in the plant of the Employer is not shorter than 50 years.

The expert's opinion was registered under number 9/191/16/W.

The direct author of the opinion was:

Certified expert no. 657/82 of the Polish Engineer and Mechanic Association – prof. dr hab. inż. Tadeusz Marciniak.

2.0 SUPPLEMENTARY DATA

2.1 An explanatory talk was held on 2016-12-02

2.2 On the part of the employer, explanations were provided by:

- representative of Rosa – Tomasz Czop, Technological Manager, Technologist General

2.3 The employer explained that the decision would be used to present the above posts in a commercial offer

3.0 MATERIALS USED IN PREPARATION OF REPORT

The following documents were used in the preparation of this opinion:

3.1 Expert's opinion of 2003-03-31, no. 9/85/03, made by the SIMP ZORPOT Expertise and Technical Progress Centre in Łódź, entitled: "Metallurgy Expert's Opinion and Technical Approval."

3.2 Website of the producer of the lighting posts SAL ROSA www.rosa.pl/Anodownia

3.3 Materials available to the public and scientific materials in terms of anodised aluminium alloys

4.0 SUBJECT OF DECISION

The subject of the decision is to define the life of the lighting posts made from anodised aluminium alloys.

Characteristic data of the posts:

- Producer:
  ROSA Stanisław Rosa, 43-100 Tychy, ul. Strefowa 1
- Purpose:
  Posts are intended for lighting installation

The lighting posts made from aluminium alloys will be composed of the following parts:

- the foundation (parts made from rolled aluminium (foundation, parts of setting) – Al 5005 (AlMg1), Al5754 (AlMg3)
- cones, piping parts of the post (parts made from pressed aluminium – Al6060 (AlMgSi0.5)

Those are alloys dedicated for the methods of production of posts with anodising (type II anodising – the so-called architectonic one (protective and decorative))

The company obtained the technical approval of the Aluminium Coat Producer Association – **QUALANOD**, along with the right to use the **QUALANOD** Quality Mark, which certifies the highest quality of services provided by the ROSA anodising plant.

4.1 RESULTS OF EXPERT'S OPINION

The results of studies defining the type of corrosion of and degree of corrosive damage to the surface of the tube and foundation of the post after use and definition of the minimal life of those posts in terms of corrosion were presented in the expert's opinion of 13.03.2003, number 9/85/03, made in the SIMP ZORPOT Expertise Centre in Łódź. The technical approval issued to that opinion stated that the life of those posts in terms of corrosion is not shorter than 50 years.

In a new technology, it was decided to subject the posts to anodising.

Anodising is a superficial processing of aluminium and its alloys consisting in a controlled electrolytic formation of a protective layer of aluminium oxide. The coat produced in that manner in 2/3 settles into the surface of the metal and in 1/3 emerges over it, thanks to which it efficiently protects aluminium against further oxidation, i.e. corrosion. A porous structure of the oxide coat allows for permanent colouring of the metal with electrochemical or interference-based methods. In those technologies, the metallic fraction becomes permanently bound with the structure of the anodic layer and a proper geometry and orientation of pores is responsible for the colour to be visible. Anodising is used for the following purposes:

- anticorrosive and mechanical protection of the surface of metal, particularly against atmospheric corrosion, especially against effect of more aggressive environmental factors, such as sea water, acid rains, etc.;
- decorative purposes – anodised surfaces obtain a smooth, satin finishing and additional colouring guarantees exceptional aesthetics of surface finishing;

5.0 FINAL DECISION

On the basis of the conducted actions and available knowledge, it is stated as follows:

- once anodised, the posts obtain much elevated protection against corrosion compared to the posts not processed in such a fashion,
- it allows to determine that the life of those posts in terms of corrosion will not be shorter than fifty years.

This decision is the basis for issuing a technical approval for the producer, i.e. Lighting Equipment Production Plant "ROSA" Stanisław Rosa, with its registered office in Tychy at ul. Strefowa 1

[rectangular stamp reading:]

EXPERTISE AND CONSULTING CENTRE
"SIMP-ZORPOT"
90-303 Łódź, ul. Brzeżna 16/2
phone: (042) 636 39 23, phone/fax: (042) 636 27 94
Franchising Company of Polish Engineer And Mechanic Association
REGON *[Official National Business Register]*: 100061889
NIP *[Tax Identification Number]*: 7251904145

Łódź, 2016-12-03

TECHNICAL APPROVAL

on anodised lighting posts made from aluminium alloys, produced by
Lighting Equipment Production Plant "ROSA" Stanisław Rosa
with its registered office in Tychy at ul. Strefowa 1

On the basis of the expert's opinion of 31.03.2003 made by the SIMP ZORPOT Expertise and Technical Progress Centre in Łódź and in-house studies, it is determined that the life of lighting posts made from aluminium alloys, once they are anodised with observance to the mounting requirements provided in the mounting manual, in terms of corrosion is not shorter than fifty years.

Certified Expert
of Polish Engineer and Mechanic Association no. 657/82

[rectangular stamp reading:]

[mark] cert. no. 637	Certified SIMP expert prof. dr hab. inż. Tadeusz Marciniak
115 – OHS and environment protection systems 830 – appraisal of machines, devices and vehicles	

[illegible signature]
prof. dr hab. inż. Tadeusz Marciniak

[initials] 5

I, Małgorzata Kostrowska, Sworn English Translator, do hereby certify that the above document is a true and lawful translation of the document prepared in Polish.

Translation No. 8931/2016

Date: 19.12.2016

1/02

[rectangular stamp reading:]
MAŁGORZATA KOSTROWSKA
TŁUMACZ PRZYSIĘGŁY JĘZYKA ANGIELSKIEGO
NR TP/313/07