

EVALUATION OF THE EMISSIONS OF HCl AND THE LEVEL OF NOISE FROM AN INSTALLATION OF THE METAL COVER

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ABSTRACT: *The metal coating medically used rooms used in the process and nitric acid, hydrochloric acid, which in the case of an incorrect determinations of the neutralization solutions can be evacuated into the atmosphere by suction medically used rooms. The work shall submit to the assessment of the concentration of hydrochloric acid from due and due and the assessment of the level of noise at a metal coating.*

KEY WORDS: *Monitoring, Coverage metallic, Noise, Emission, HCl,*

1. INTRODUCTION

The activity of the coverage of the metals through the weak technology galvanizing acid involves the passage of metal parts by eight successive baths (Fig.1), in which the following activities:

1. Degreasing

Using an alkaline solution consisting of water and sodium hydroxide solution at a temperature of 40 - 60°C. Heating of the bath liquid should be carried out using an electrical installations. Degreasing is carried out only for the parts treated with oil. For clean parts, degreasing is not carried out. For cleaning the bath degreasing, filter the solution alkaline by recirculation pump with a filter. Waste deposited is taken manually and stored in a plastic container.

2. Pre-stripping

Pre-stripping shall be carried out in the bath no. 3. Money laundering shall be carried out with water at room temperature by immersing repeated of parts. The washing water is replaced every 3-4 weeks.

3. Stripping

This operation is carried out in a water-bath no. 2. Stripping is carried out in a solution of hydrochloric acid for 1 to 1.5 hours. The stripping replacing shall be made once a year.

After washing, parts are subject to galvanizing.

4. Galvanizing

Zinc plating is done through electrolysis by a process of galvanizing weakly acid from cold. Depending on the dimensions of the parts, this operation is carried out in the bath no. 4 or no. 5. Galvanizing operation takes 1-1.5 hours. The concentration of the correction shall be carried out whenever necessary. Cleaning of the electroplating galvanizing is carried out annually. Anodes shall be replaced as they consume.



Figure 1. Galvanizing bath

5. Post-washing

This operation is carried out in a water-bath no. 6, using water at room temperature by immersing repeated of parts. The washing

water is replaced on a monthly basis. The waste waters are pumped into the bath of pre-stripping no. 3.

6. Passivation

This operation is carried out in a water-bath no. 7. This bath containing water with Proseal XZ-111 and concentrated nitric acid. This operation is carried out by a brief immersion in solution of metal parts. This bathroom does not require any maintenance.

7. Final stripping

This operation is carried out in a water-bath no. 8 with water at room temperature. The Washings are replaced on a monthly basis.

After the final flush, parts are allowed to dry on a concrete platform.

Post-stripping

2. THE ASSESSMENT OF THE EMISSION OF HYDROCHLORIC ACID

In accordance with the technical standards in force, in order to assess the emission of hydrochloric acid has been taken a gas sample from the basket of emissions for 2.5 hours, by means of the technical equipment of the latest generation. (Fig.2 and Fig.3)



Figure 2. The place of sampling exhaust emissions



Figure 3. The emission sampling equipment

In accordance with the Authorization of the Environment No 129 of 10.7.2009, revised at the date of 15/06/2015, the limit values laid down in the Order 462/1993 for chlorinated compounds from emissions, expressed in hydrochloric acid (HCl) is 30 mg/m^3 .

By referring to the test report no 1239/29.10.2018 issued by the laboratory S.C. AROTOPROD S.R.L, following the analysis of the sample taken from the exhaust gases on the basket omits the installation of the company taken in the study, I found that there has been a concentration of 2.05 mg/m^3 for hydrochloric acid (HCl).

By comparing the values recorded in the test report referred to above to the maximum amounts set out in the Order

462/1993 be found that there is an overrun on the maximum values for the hydrochloric acid in the exhaust gases discharged into the atmosphere.

3. THE HYDROCHLORIC ACID EMISSIONS ASSESSMENT OF AMBIENT AIR

During the sampling exhaust emissions from shopping basket has been taken for 30 minutes and a sample of the gaseous emissions on the ground in front of the hall of production (Fig. 4).



Figure 4. Equipment and place of sampling HCl emissions

In accordance with the Authorization of the Environment No 129 of 10.7.2009, revised at the date of 15/06/2015, the limit values laid down by STAS 12574/1987 for hydrochloric acid in ambient air, for a period of sampling of short duration (30 minutes) is 0.30 mg/m^3 .

By referring to the test report no 1240/29.10.2018 issued by the laboratory S.C. AROTOPROD S.R.L as a result of the analyzes performed on the air sample taken from land in the vicinity of the production hall belonging to the company taken in the study, I found that there has been a concentration of 0.07 mg/m^3 of hydrochloric acid in ambient air.

By comparing the values recorded in the test report referred to above, with the maximum values set by STAS 12574/1987 reveal that there is an overrun on the maximum levels laid down in the technical regulations in force.

4. THE ASSESSMENT OF THE LEVEL OF NOISE

The representatives have been carried out by the laboratory accredited 4 measurements of the noise of which one of the Fund, the measurements have been carried out in the vicinity of the nearest dwellings from the hall in which the machining operations on the metal coating.

In order to determine the background noise (noise from domestic activities, transport, etc., which do not depend on the activity of the subject of the evaluation) I willing decommission of all equipment belonging to the company during the period of the measurement of background noise (10 minutes).

The 4 noise measurements have been carried out with the sound level meter model Solo db 01 Black Edition, class of measurement I. (Fig.5).



Figure 5. The equipment used for the measurement of the noise level

In accordance with the authorization of the Environment No 129 of 10.7.2009, revised at the date of 15/06/2015, the limit values for noise established by STAS 10009/2017 is 65 dB at the limit of ownership of industrial activity and 55 dB at the outside of the dwelling on the measurement range of the day in accordance with the order of the Health Minister no. 119/2014.

By referring to the test report no 1241/29.10.2018 issued by the laboratory S.C. AROTOPROD S.R.L after performing measurements of noise we found the following:

- The background noise with implements removed from service was 45,1 dB. The

mentioned is the fact that while performing this measurement on the road near to the point of measurement have passed a number of 6 vehicles with a mass of less than 3,5 tonnes.

- The noise to be measured in the same location as the one in which it has carried out background noise, but with the machinery running, was 47,7 dB.

- The noise to be measured on the SV limit of ownership and in the vicinity of a dwelling was 42.3 dB.

- The noise to be measured at the limit of ownership and near the path of access to installations was 46,0 dB.

By comparing the values recorded in the test report referred to above, with the maximum values set by STAS 10009/2017 reveal that there is an overrun on the value of the 65 dB established at the limit of industrial areas. The mentioned is the fact that the noise level measured in the four measurements, nor does not exceed the limit of 55 dB established by the provisions of the Order 119/2014, on the period of the day.

5. CONCLUSIONS

- The activity of the coverage of the metals through the weak technology galvanizing acid involves the passage of metal parts by eight successive baths.
- Measured concentration of hydrochloric acid in the exhaust gases is 14,63 times smaller than the maximum laid down by the legislation in force.
- The hydrochloric acid concentration in the ambient air is 4.28times less than the maximum amount determined by STAS 12574/1987.
- Not be recorded overrun in the value of the 65 dB established at the limit of industrial areas.

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