

Aluminium treatment by Vecom Bergen op Zoom exceeds the highest requirements

Application of the light metal, aluminium, has compared with other frequently used metals like iron, copper, tin, silver and gold a relatively short history.

Aluminium was discovered at the beginning of the nineteenth century and only at the beginning of the twentieth century did it become freely available for industrial application. Less than one hundred years later life would be inconceivable without aluminium. It has proved itself to be a relatively abundant, versatile and durable material for a variety of functions in a broad spectrum of products.

Aluminium is a base metal that, provided the conditions to which it is exposed are not severe, is able to protect itself using its own natural corrosion layer.

In many circumstances aluminium is pickled because its surface has been contaminated with grease, oil, atmospheric pollutants and potential initial corrosion (aluminium oxides). In order to remove these "contaminants" the aluminium must be pickled.



During the pickling process:

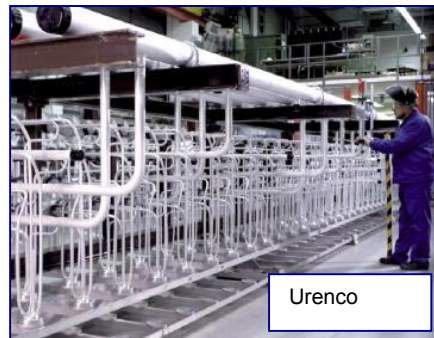
- 1) the aluminium surface is relieved of the contaminants mentioned above in order to render it suitable for the application if required of a conversion coating.
- 2) the surface is given an even, matte or semi-matte appearance.

After the pickling process the part is rinsed with demineralized water whereby the aluminium forms an oxide layer thus protecting itself from corrosion due to aerial oxidation. This allows the aluminium to be processed even when a conversion coating has not been applied. This process of natural oxidation is called passivation.

When pickling/passivation is not applied or not applied adequately, the aluminium remains inadequately protected. In this condition, depending on whether the aluminium is post-treated or not, the following will apply:

- The aluminium lacks satisfactory corrosion resistance because the metal's oxide skin is not fully sealed. All kinds of inclusions in the oxide skin can, certainly in a damp environment, initiate corrosion causing aluminium oxides (white deposit) to appear on the aluminium surface. This process is autocatalytic.
- Aluminium is an amphoteric metal, dissolving in both acid and alkaline media.
This is also the case for aluminium oxide (Al_2O_3).

Urenco is of course familiar with the foregoing and that was their reason for honouring our operation in Bergen op Zoom with a visit. Urenco conducted an audit at our unit in Bergen op Zoom on the 18th of February of this year. This company enriches Uranium and places extremely high standards on the quality of materials that are used for Uranium processing. The cleaning specifications are of an extremely high standard resulting in pickling companies in the Netherlands and beyond not meeting them and being rejected. With the exception of Vecom in Bergen op Zoom. Only it met the terms and conditions stipulated and was found to be willing to pickle the aluminium tubes to Urenco's specifications. One of the conditions that other companies did not meet was the specification for the rinsing process. The demineralized water must meet a minimum attainable conductivity level in the final phase of the rinsing process. Vecom fulfilled the quality requirements for the rinse water with flying colours, even those more stringent ones that Urenco England had set relative to the German standards.



Since Vecom has long-term experience in the nuclear energy sector it should come as no surprise that we came out of the testing well. Many companies where extremely high requirements are placed on the surface condition of materials know of us because these companies communicate with each other and are convinced of our qualities in this area.

We shall indulge in no further discussion in this technical bulletin of the exact concentrations and the pickling and passivation solutions employed.

The entire complex post-treatment with respect to times and temperatures, the drying cycle, the rolling, the removal of reference marks, the conductivity of the rinse water, the removal of stains, the refreshment of the medium and the rinse water, the positioning, the nitrogen treatment, the phased cooling, the UV light inspection, the packaging, the final inspection and finally the special method of transportation, remain secret. Firstly in the interests of our clients and secondly and unfortunately, and we hope you will understand, to protect our competitive interests. That is also why other metal surface treatment firms did not meet the conditions that were set by Urenco, while Vecom of Bergen op Zoom did.

For that reason congratulations to Vecom Bergen op Zoom for passing this audit and for the quality that made it possible, that quality that we as Vecom Metal Treatment aim at all times to maintain at the highest level.



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