

Guidance Designer to selection the suitable process treatment and finishing metal product surface

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Abstract

Over the last few decades many methods of treatment and coating have been developed and used to reduce friction and to protect surfaces from damage, especially in metal products.

Scientists have become aware that the surface is the most important part of many engineering products, and most of the usability problems have to do with surface characteristics.

Many functionally important properties depend on surface treatment, such as corrosion protection and functional, aesthetic and environment-friendly properties.

It is therefore very clear that the process of selecting suitable coatings or surface treatment requires a clear and specific methodology. This process should be carried out at an early stage of product development. It is essential that developers consider the surface requirements during the initial stages of ideas immediately after Meet the requirements of users and market.

The problem of the research is the need for precise systems to choose the surface treatment of metal products to meet the needs of the user will be easier and faster in the application and less expensive in production and environmentally friendly and result in the surfaces are compatible functionally.

- The objective of the research is to develop a scientific methodology for the selection of surface treatment of metal products through an analytical study of the most important methods used and know the most important advantages and disadvantages and determine how the designer chooses the appropriate way to the materials of the product and its function.

This will be done by the assumption that determining the appropriate way to end the surface of the product reduces many of the problems that can be experienced by the product later. And achieved a great deal of technical, functionally and economic consensus.

Results & Discussion

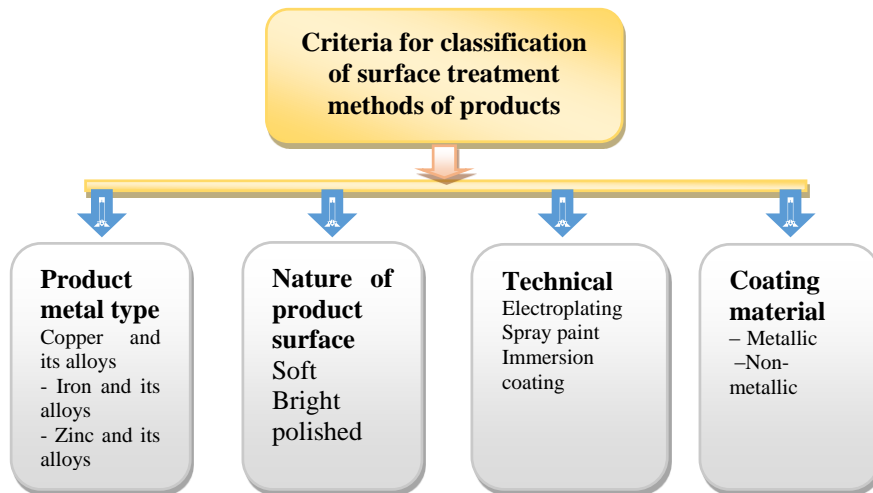
1. Surface treatment techniques are often the main motivation to achieve product specifications and meet user needs.

2. Many of the functionally important properties depend on surface treatment, such as aesthetic, electronic, magnetic, optical and environmentally friendly properties.

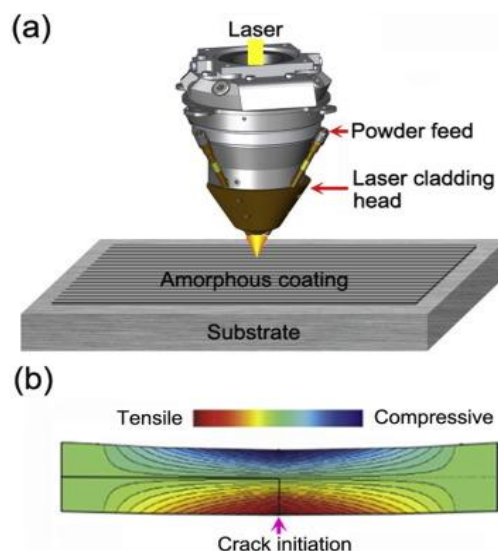
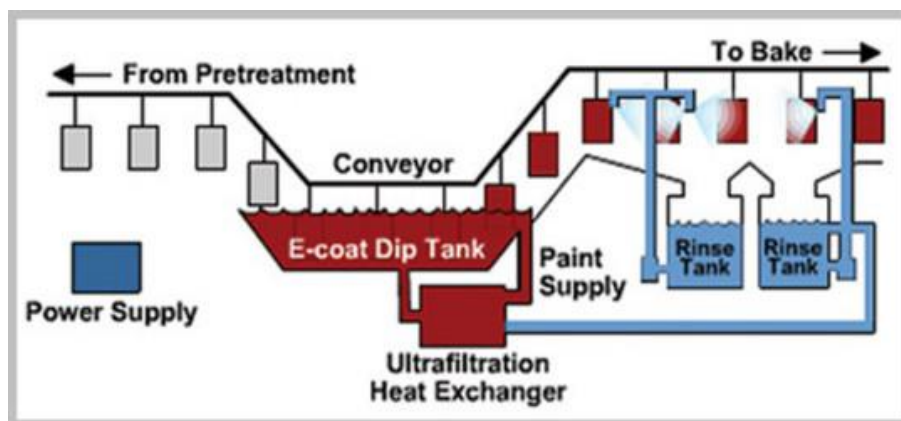
3. There are three main elements that contribute to the good choice of surface treatment and then the coating layer-The goal of processing- product design and metal- influential environmental considerations.

(4) The surface treatment and coating of metal products shall be classified in a number of ways based on specific elements

(Coating layer material -Technical application of process -Product surface nature -Metal type of product)



5. Determining the advantages and disadvantages of metal surface treatment and coating processes helps design engineers to properly and accurately select the appropriate treatment for the product.



6- The surface of the product is exposed to many problems as a result of the wrong practice of choosing the surface treatment including (protection problems and corrosion resistance - problems of appearance and aesthetic properties of the surface - problems of performance and use - economic problems - environmental problems)

7 - Appropriate selection of treatment and coating layer reduces or may eliminate the problems faced by the product as a result of inappropriate treatment of the surface.

8 - The choice of surface treatment and coating layer should be based on a strictly controlled system so that the function of the coating layer is known (aesthetic, usable, environmental, etc...)

9. The criteria that the designer should consider when choosing the surface treatment of the product are environmental standards and factors - economic criteria and considerations - product-specific criteria (design-function-surface condition)

10 - the importance of implementing the process selection process technology at an early stage of product development, and that the designer to consider the surface requirements during the stages of initial ideas.

11. The results of the matrices to choose the appropriate treatment, **which was the following outputs:** -

- Each type of metal products has a suitable treatment and coating for its various uses and functions.

- The metal of the product is not suitable for all the coating processes available and applied in the manufacture of metal products (but one or some of them)

- Methods of surface treatment of the product concerned with varying performance towards the required surface characteristics of the product.

Recommendations

Conducting further research dealing with this problem, especially its economic and environmental dimensions

2 - Development of design programs using the computer to facilitate the selection process accurately according to the required specifications.

3 - Attention to advanced research in the treatment and coating of Egyptian metal products and increase their competitiveness.

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