

CLASSIFICATION OF PAINTS

Paint is a coating applied to the surface in form of a liquid dispersion, which is then hardens forming a solid film.

The functions of paints:

- ☐ **Protection** of the part surface from the environmental factors (Oxygen and other chemically active gases, moisture, dissolved salts and other chemicals, temperature, bacteria, fungi). Corrosion protection is the most important function of paints.
- ☐ **Aesthetic appearance** provided by the paint color and sheen (eggshell, satin or gloss).
- ☐ Providing a desired ability of **reflection-absorption** of heat and light.
- ☐ Changing the **surface properties**: ant-friction, hardness, electrical conductivity.
- ☐ **Identification** of products according to the color of the paint.

Classification of paints:

- ☐ **Classification of paints by physical type**
- ☐ **Classification of painting products by their functions**

Classification of paints by physical type

- ☐ **Solvent-borne paints** contain up to 80% of solid constituents (binders, pigments and additives) dispersed in the organic solvent. Solvent-borne paints dry fast and may contain a wide range of binders. The main disadvantages of the solvent-borne paints are their toxicity and combustibility.
- ☐ **Water-borne paints** contain water as the paint solvent. Waterborne paints are non-toxic and non-combustible but they are characterized by long drying time due to slow evaporation rate of water.
 - ☐ **Water-borne paints based on water-soluble binders** contain low molecular weight polymeric binders dispersed in water in form of true solutions. Water-soluble binders contain up to 15% of organic oxygen containing solvents soluble in water (alcohols, glycol ethers, etc.).
 - ☐ **Water-borne paints based on polymer dispersions (Emulsion paints)** contain 50-60% of high molecular weight polymeric binders dispersed in water in form of Colloids. Emulsion paint contain up to 5% of organic oxygen containing solvents soluble in water (alcohols, glycol ethers, etc.).
- ☐ **High-solids paints (Low VOC paints)** contain more than 80% of solid constituents (binders, pigments) dispersed in an organic solvent. **VOC** - volatile organic compounds.
- ☐ **Powder coatings** are obtained from powdered resin, particles of which are attracted by the electrostatic force to the substrate surface (electrodeposition). No solvent is involved in the process

therefore powder coatings produce no/low toxic waste. The main disadvantage of powder coatings is high cost of equipment.

- ☐ **Radiation curable coatings** are formed from a mixture of prepolymers, monomers and additives, which is cured under ultra-violet radiation. Radiation curable coatings harden fast and contain no solvents. The main disadvantage is relatively high cost.

Classification of painting products by their functions

- ☐ **Paint** - colored non-transparent protective coating.
- ☐ **Varnish** - transparent or semi-transparent protective coating. A varnish is made of binder, solvent and additives. Some varnishes contain small amounts of pigment.
- ☐ **Enamel** - hard protective coating with glossy finish.
- ☐ **Primer** - the first coating applied to the surface in order to enhance the adhesion of the final paint (topcoat) and to seal the substrate surface. Primer may be formulated to impart additional protection to the substrate (eg. anti-rust primer for steel substrates).

Source : http://www.substech.com/dokuwiki/doku.php?id=classification_of_paints