Here is a brief description of the KTL process:

Dipping degreasing

This is an alkaline degreasing at 65°C. The aim is to eliminate the remaining oil and fats, which are at the product. The advantage of this is dipping degreasing is that this degreasing will work in the areas and places that the spray degreasing can't reach. By this technique every place will be degreased and guarantees a higher quality.

Rinsing 1

The first rinsing happens by immersion into tap water which is continuously refreshing. This needs to be done to make sure that the last elements of the degreasing products are well cleared.

Activation

This bath excists out of demineralised water and titanium cristals. Thes titanium cristals will be put on to the metal surface and they will be functioning as germs. Around the whole area of these germs, phosphated cristals will be formed in the phosphating by zinc bath.

Zinc phosphatation

This is a tri-catione zinc phosphate (Zinc, Nickel and Manganese). Around the Titanium Crystal, of the activation, phosphate crystals will grow. This process will end when the entire metal surface is covered by a zinc phosphate film. This phosphate layer provides a very good adhesion of the paint layers which will be applied afterwards. This process is mainly based on a chemical reaction and guarantees, after the painting process, a very good corrosion resistance.

Rinsing 2

The rinsing happens by a mix of tap water and demineralized water.

Passivation

This is a bath with demineralized water and Zinkonium. The intention is that small holes in the phosphate layer have to be filled up with Zinkonium, so that the phosphate layer is completed.

Rinsing 3

Rinsing in demineralized clearly water. This is a wash in clear water. In this section the pre-treatment of the metal parts and components is completed.

Electro coating

E-coat-BATH: this is a water based bath filled up with paste and pigment with a temperature of 28°c. By putting current and voltage in the bath, paint particles will cover the metal surface. Due to the flow of the voltage the paint particles will be bonded to the metal surface. The higher the

voltage, the more paint particles will be bonded. And the higher the thickness of the e-coat paint will be.

Rinsing 4 & 5

First Ultrafiltrate bath:
This water based bath has almost the same composition as the E-coat bath. The only difference is that this bath contains no paint particles. This is obtained by ultrafiltration of the liquid of the E-coat bath. The purpose is to remove paint particles from the surface. This bath is in cascade with the E-coat bath and the paint particles which have been removed go back to the E-coat bath of the previous step.
Second Ultrafiltrate bath:
This is the same as in the first Ultrafiltrate bath. The intention is to flush off the few loose paint particles, which are carried away from the first Ultrafiltrate bath. This bath is in cascade with the first Ultrafiltrate bath and so the paint particles eventually come back in the E-coat bath.

Curing/Baking

Curing of the paint in the oven: In this oven the products are brought to a temperature of ± 180 °C. The time the products spend in the oven, can be set. The paint will, by means of a polymerization reaction, harden. This gives the paint its final mechanical and chemical properties.

More on E-coating:

Thickness: 20-35 microns (subject to end use).

Uniformity: Very uniform.

Hardness: Pencil Hardness 4H+.

Wear resistance: Paint-like, subject to product formulation.

Gloss: From clear/wet look to matt films (subject to volumes).

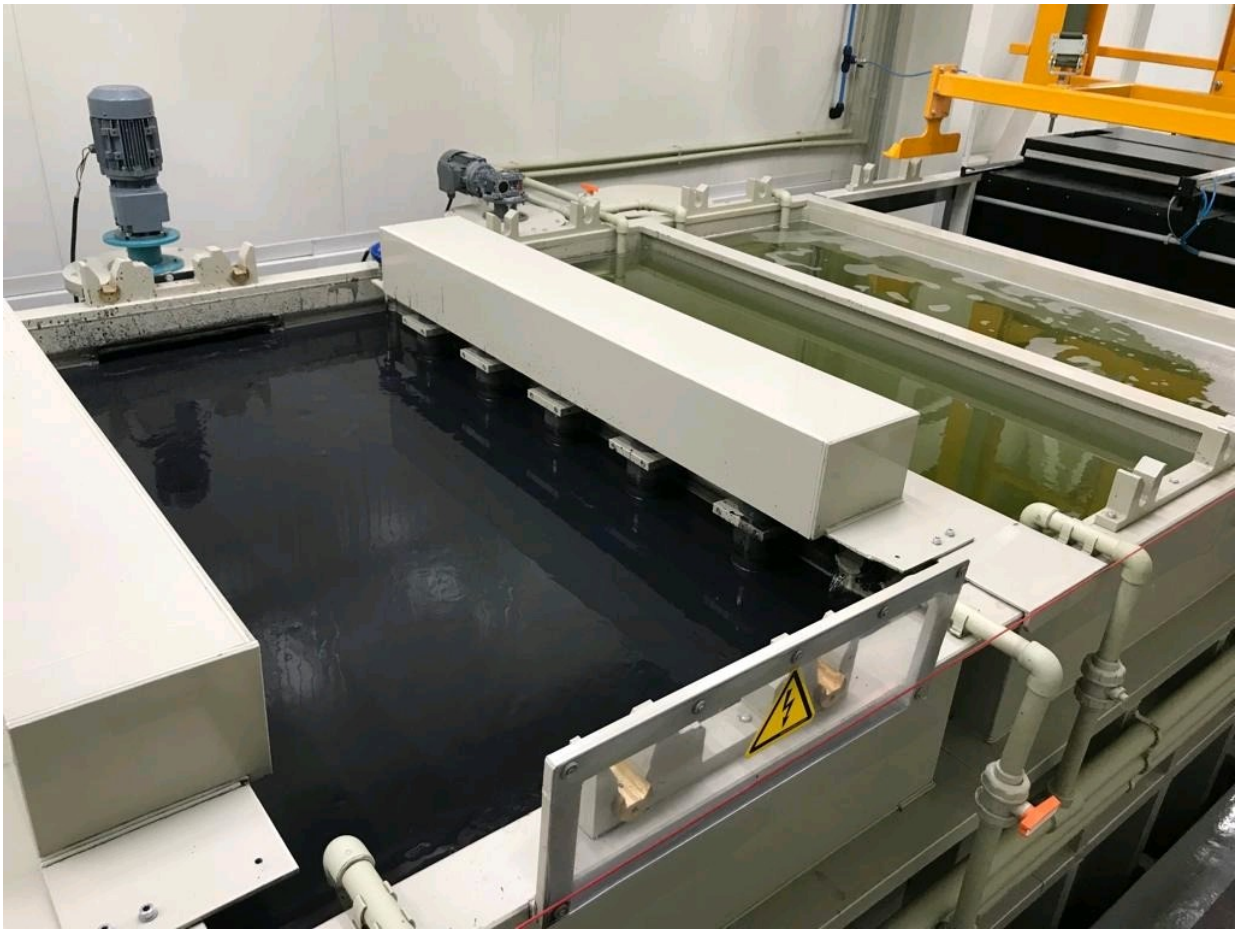
Colours: Semi-gloss black RAL 9005.

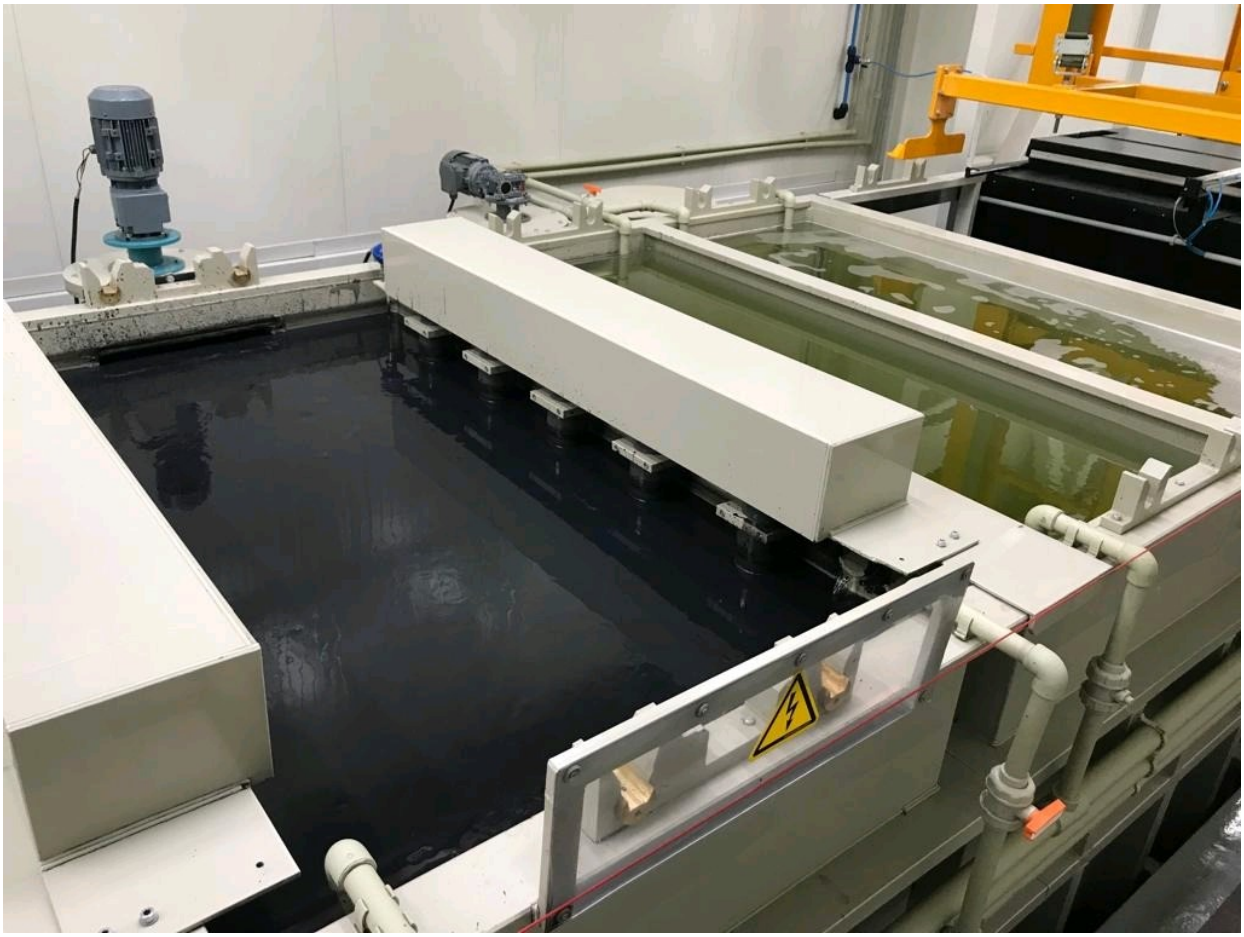
Flexibility: Similar to paint-type coatings.

Toxicity: E-coatings are not approved for food contact applications.

Corrosion resistance: Black primer grades have excellent corrosion resistance, with correctly pretreated products withstanding 1000 hours of salt spray testing.

Chemical resistance: Generally, the stock black e-coat products have very good chemical and solvent resistance.



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