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Technical Reference

Topic: Electrocoat Current Draw

E-coat paint is deposited in direct proportion to the electric current flowing between the anode and the cathode over a certain period of time. The rate at which paint is deposited is called deposition efficiency. In order to calculate the current draw, the following information is required:

- Deposition Efficiency = Amp-Min/Mil-ft² (from paint supplier)
- Film Thickness Desired = Mils
- Area per job to be Painted = ft²
- Number of Jobs per minute

Example:

- Deposition efficiency is 2.2 amp-min/mil-ft² (black cathodic ED paint)
- Area per job is 800 ft²
- Film Thickness is 0.8 Mil
- 72 jobs per hour, or 1.2 jobs/minute

Therefore, current required is:

AMPS = Deposition Efficiency x Painted Throughput x Film Thickness

$$\text{AMPS} = \frac{2.2 \text{ Amps} - \text{Min}}{\text{Mil} - \text{ft}^2} \times 800 \text{ SF} / \text{job} \times 1.2 \text{ jobs} / \text{min} \times 0.8 \text{ Mil} = 1689.6 \text{ Amp}$$

The voltage required to operate the e-coat process is dependent upon two factors. The first is the conductivity of the paint (and anolyte). The second is the distance between the anode and the cathode. Generally speaking, the higher the conductivity and the shorter the current path, the lower the voltage.

For more information, call UFS at the phone number shown above.