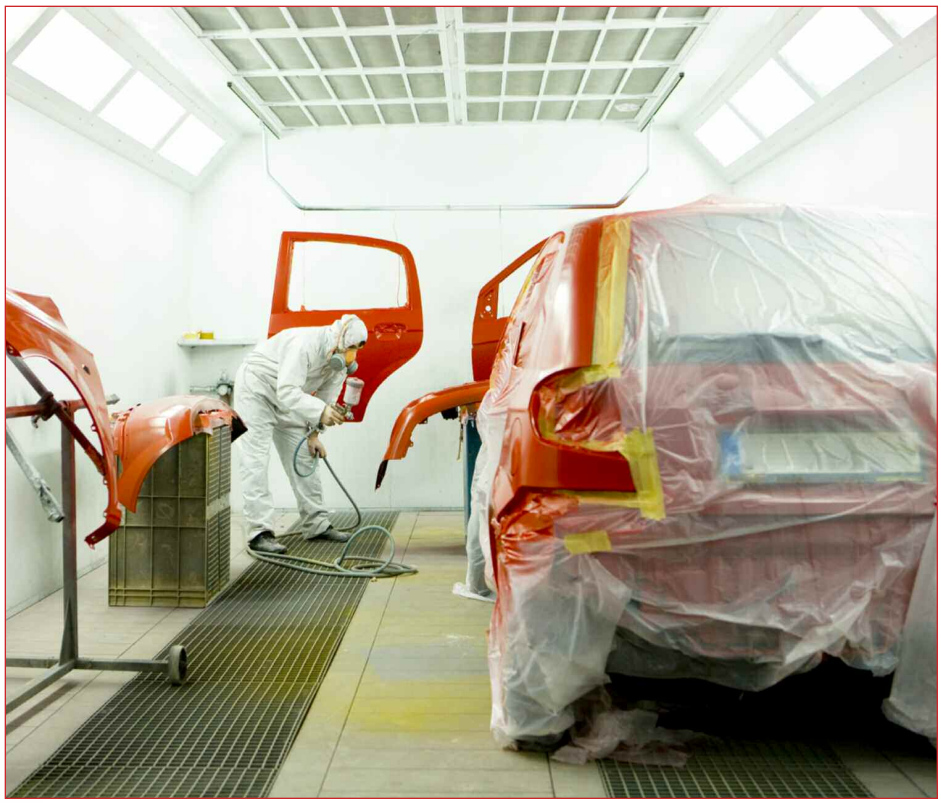
Industrial Spray Painting

Spray painting in general

Spray painting has existed since the late 1800's. The technique was developed in a bid to accelerate painting times compared to brush painting. Spray painting is a method of painting where paint is atomized onto a surface via a spray gun. The paint is mixed together with a solvent or water (called a carrier) so that it can be applied correctly.

Cars, aircraft, boats and other such equipment are often spray painted in a booth or room specifically designed for spray painting.

A spray painting booth is an enclosed room, designed for spray painting. Depending on the requirements, the booth may be equipped with filtered air to avoid getting dust in the room and an exhaust air system to clear the fumes of any evaporating solvents used during the spray painting process.



Regulations, such as the Occupational Safety & Health Administration from the United States Department of Labor establish a criteria for design and construction of spray booths. The guidelines state that a spray booth is a power-ventilated structure provided to enclose or accommodate a spraying operation to confine and limit the escape of spray, vapor and residue, and to safely conduct or direct them to an exhaust system.

Spray paint booths usually include instruments for measuring and controlling relative humidity, temperature, airflow and pressure to ensure a quality coating and a perfect curing.

Certain paints contain flammable solvents which release flammable fumes. In such cases explosion-proof components are required for all measuring equipment that comes in contact with the fumes.

continued

Paint Dry & Cure Times

Water Based/Latex Paint – Dry Time 1-2 hrs
Cure Time 21-30 days

Oil Based Paint – Dry Time 6-8 hrs
Cure Time 3-7 days

Chalk Brand Paints – Dry Time 30-60 min
Cure Time 30 days

Homemade Chalk Paint – Dry Time 1-2 hrs
Cure Time 21-30 days

Milk Paint – Dry Time 30-60 min
Cure Time 30 days

Why the need to measure humidity?

In order for paint to dry correctly within the paint booths, the relative humidity and temperature levels should be between 65 and 75% RH and between 20 and 24C.

Based upon the intake air, there may be a requirement to either dry or humidify the air in order to reach the desired values. The air might need to be cooled or heated depending on the outside temperature in order to meet the stringent requirements for air temperature.

Additionally, a paint booth might have a separate monitoring system inside the booth in addition to the monitoring system in the air intake system. In order to ensure that the paint is applied correctly to the element to be painted, it is important to ensure that the surface temperature of the element is not too close to the dew point level in the booth.

If the surface temperature of the element to be painted is close to the dew point temperature, there will be a risk of condensation forming on the surface of the element. If this were to happen, the coating will not be optimal and the drying and curing phase will not be completed properly resulting in poor quality and unacceptable results.

Curing and drying

Curing and drying are two different things. When paint dries, the carrier will evaporate (along with the stabilizers that prevent the paint from drying out). After the carrier is evaporated, the curing begins. Curing is the process where the paint joins together and forms a protective coating.

135 Engineers Road, Hauppauge, NY 11788
Tel. 631-427-3898 • Fax. 631-427-3902 • info@rotronic-usa.com

rotronic MEASUREMENT SOLUTIONS