



Subject: CURTAINED LIMITED FINISHING WORKSTATIONS

Model: NA

Date: Tuesday, August 11, 2020

File: NA

System: IS

Amerex Industrial Systems Recommended Protection for Curtained Limited Finishing Workstations

Introduction and Background

Curtained Limited Finishing Workstations have continued to grow in popularity. Listing agencies do not consider these booths to be substantially different from existing hard sided booths and consider current manufacturer's listings sufficient for Curtained Limited Finishing Workstations. Amerex and FEMA (Fire Equipment Manufacturers' Association) continue to stress the importance of special coverage for Curtained Limited Finishing Workstations.

In 2003 FEMA tested Curtained Limited Finishing Workstations utilizing a common listed coverage between member bodies. This testing provided three conclusions (from page 4 of FEMA's white paper):

- 1) Some form of vehicle paint spray booth protection should be adopted ensuring adequate protection underneath the vehicle.
- 2) Local application by itself is inadequate to extinguish fires in the upper reaches of the prep station.
- 3) In all but the most catastrophic of conditions, there will be enough enclosure remaining to allow for sufficient build-up of dry chemical.

FEMA testing revealed that the worst-case scenario created a hole of approximately 21 square feet, or 3.3% of the total area of the 7.5' wide x 14' long x 10'tall module. This hole was created with a wood crib and a preburn time of 2 minutes per UL 1254.

Additional unclosable openings are included in the FEMA test program as a 3" air gap at the top and a 6" air gap at the bottom. This adds an additional 32.25 ft² of unclosable opening to the module. The total unclosable opening in the FEMA test module comes to 53.25 ft² or 8.3% of the total area of the booth. The FEMA recommendation for this hazard is to double the listed Vehicle Paint Spray Booth coverage for Curtained Limited Finishing Workstations.

In the test module the 21 ft² (or 3%) opening burned in the curtained workstation module is compensated by an additional 11.25 lbs of dry chemical or an additional 0.54 lb./ ft² of dry chemical by doubling the listed Vehicle Paint Spray Booth coverage. Considering the area of the air gap around the module, then the total unclosable opening is 53.25 ft² or 8.3% of the total booth area. The additional dry chemical compensation is 0.21 lbs/ft² when considering the total unclosable opening.

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Conservative coverage

The maximum module floor area covered per nozzle on a 10' tall booth is 105 ft². As the height of a module increases beyond 10 feet the maximum module size decreases for Amerex Industrial Systems. At the maximum height of 23'4" the module floor area has decreased to 45 ft² per nozzle with a maximum side of 9'. Thus, the maximum module dimensions are 9' x 5' x 23'4".

The FEMA test utilized a 3" air gap at the top of the module and a 6" air gap at the bottom of the module for an unclosable opening of 32.25 ft². Using the same air gap at the top and bottom of a module of maximum height yields an unclosable opening of 21 ft². With the anticipated maximum hole burn through of 21 ft², the total unclosable opening anticipated in the module is 42 ft², or 5.65 % of the total area of the booth. Doubling the listed coverage compensates the unclosable area with 11.25 lbs of dry chemical or 0.54 lbs/ft². By including the additional area of the air gap in the module the total additional dry chemical comes to 0.27 lb./ft²; a slightly larger compensation than a shorter curtained workstation.

Conclusions

The examples above show that as the height increases in the module, the percentage of open area decreases.

Based on these calculations it is evident that doubling the listed coverage of any Curtained Limited Finishing Workstation within the Vehicle Paint Spray Booth parameters provides conservative fire protection, regardless of height. **Therefore, it is recommended that Curtained Limited Finishing Workstations of any height within the Amerex listing limitations can be protected using twice the listed Amerex Vehicle Paint Spray Booth standard work area coverage.**

The above explanations are written to explain Amerex's FEMA White Paper Coverage for Curtained Limited Finishing Workstations. Any further explanation you can reach out Amerex Technical Services at tech.services@amerex-fire.com or call the Amerex Technical Service Line directly at 205-508-6400.

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