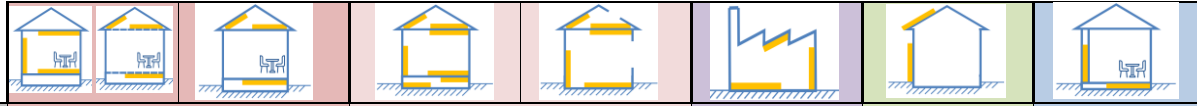


SAFETY-MATRIX FOR HIGH-PRESSURE SPRAY AND INJECTED POLYURETHANE FOAM (SPF)

In addition to manufacturers guidelines, including safety datasheets, and obviously legal requirements (EU/national/local), the below matrix is the PU Europe recommended minimum safety measures



Cases	Description	BUILDINGS' RENOVATIONS Spraying inside an occupied building		NEW BUILDINGS Spraying inside an unoccupied building		INDUSTRIAL BUILDINGS New and renovations	Spraying outside	Dispensing	
		in an occupied closed space	in an unoccupied closed space	in a closed space	in an open space				
Examples		<ul style="list-style-type: none"> Spraying on ceiling, wall or floor of an occupied space Spraying inside suspended ceiling of an occupied space Spraying in attic or under floor, separated from the occupied space by a non airtight slab (e.g. wood) 	<ul style="list-style-type: none"> Spraying inside an unoccupied attic, cellar or crawl space separated from the occupied space by an airtight slab (e.g. concrete) 	<ul style="list-style-type: none"> Spraying in spaces without openings, in buildings under construction: <ul style="list-style-type: none"> Indoor bathrooms Under the roof Inside crawl space Machine room Inside a vessel/boat 	<ul style="list-style-type: none"> Spraying in spaces with at least one opening to the outside, in buildings under construction: <ul style="list-style-type: none"> Rooms with at least one door or window to the outside Open garages Open industrial buildings Open agricultural buildings 	<ul style="list-style-type: none"> Spraying inside a big open-plan spaces: <ul style="list-style-type: none"> Industrial buildings Agricultural buildings Warehouses Exhibition hall Sports hall 	<ul style="list-style-type: none"> External insulation Roof Outside a vessel/boat Porch ceilings 	<ul style="list-style-type: none"> Cavity injection foam 	
Fire safety	Prevention	Multi-layer systems (typical closed-cell system) Maximum layer thickness and waiting time between application layers as stated by the supplier in TDS. If unknown the guideline is 2 minutes waiting period per cm of layer thickness. Thickness should not exceed 4 cm per layer. Above total thickness of 12 cm a waiting period of 12 hours must be respected. One-layer systems (typical open-cell system) Can be sprayed in one layer. Or otherwise stated by the supplier in TDS.	X	X	X	X	X		
	Prevention (exposure to external sources)	Unprotected foam should not be exposed to open flames, cutting and welding torches, excessive heat sources or sparks.	X	X	X	X	X	X	
Personal safety SPF applicators, helpers, other workers	Skin protection	Gloves from nitrile, neoprene, or butyl gloves, Disposable chemical resistant coveralls from PVC or tyvek, rubber boots.	X	X	X	X	X	X	X
	Respiratory protection for SPF applicator	An approved, full-face or hooded-type supplied air respirator (SAR)	X	X	X	X	X	X	
	Respiratory protection for helper & inspector	SAR if the helper/inspector is within the working area (< 10 m) during the projection or up to 15 min after. APR with A2P3 filters (full mask or half mask with goggles) if the helper/inspector is close to the working area (> 10 m) or enters after 15 min, and there is proper air ventilation.	X	X	X	X	X	X	
	Respiratory protection for sander, trimmer	Half-face or full-face air purifying respirator with an A2P3 filter until curing is complete, unless otherwise recommended by the supplier.	X	X	X	X	X	X	
Re-entry Non SPF workers and residents safety	Sprayed areas	Safe re-entry after 2 h when mechanical ventilation with a capacity of at least 300 m³/h is available or when natural ventilation by openable windows or doors is available.	X	X	X	X	X	X	
		Safe re-entry after 24 h when only basic (mechanical) ventilation system is available.	X	X	X	X	X	X	
		Safe re-entry after 14 days when non or only minimum (100 mm² per m² floor area) natural ventilation is available.	X	X	X	X	X	X	
	Other areas	Safe re-entry after 2 h.	X	X	X	X	X	X	X
	Outside	Stay upwind at a distance of 10 m or further within 2 h after spraying. Alternative: seal off spray area to protect other material/people. Spray with wind speed up to a maximum of 30 km/h. Use wind screens whenever necessary.						X	
Sealing and ventilation	Sealing	Shut off Heating, Ventilation and Air Conditioning (HVAC) systems, and seal their air intakes with plastic sheeting and tape (at least 24 h) & seal off access to closed areas air tight.	X	X			X		
		Seal off the area being sprayed from occupied areas to prevent migration.		X			X		
	Natural ventilation	Recommended to open windows regularly for a week.	X		X		X		
		Natural ventilation openings, size min 100 mm³ per m² of floor area. Openings are preferably created opposite each other.		X	X				
Forced ventilation during application	Min capacity 300 m³/h during and 15 min after the SPF application.	X	X	X		X*			

* Except for very large spaces

Disclaimer:
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