



Risk Assessment Category: PUR Manufacturing

Sub Category: Proportioning Unit - Gusmer Gun

Date: 12-Feb-20

Assessment Completed By: J.Percy (Safety Officer)

Ref. No.	Sequence of Basic Operating Steps	Hazard Identification	Associated Risks	Existing Controls	PE	FE	MPL	NP	HRN	Controls Required	Action Timetable	Responsible	Implementation Date
1	Switch on main power supply on wall behind proportioning unit.	Electric Shock	Major burn/Death	Installed new isolator (fully insulated), Main switch and trip switch on control panel.	1	2.5	15	1	37.5	Existing controls sufficient	N/A		
2	Turn on valves on wall behind proportioning unit for PUR chemical supply of "Iso" and "Resin" from temperature controlled room. Turn on valves on proportioning unit for supply of PUR chemicals to proportioning unit.	Chemical leak from valves/hoses	Eye injury/skin irritation	Specified certified hoses for delivery of PUR chemicals to proportioning unit have been used. MSDS for PUR chemicals available. PPE -overalls to cover arms and gloves to cover hands to be worn for all operations. Goggles must be worn at times when working in the area- goggles must have full side protection and a B rating for impact from particles. PM schedule for equipment includes check on hose integrity	2	2.5	8	1	40	Ensure certified documents are available. Maintenance record for PUR operation should include check on hose integrity.	N/A		
3	Switch on main switch, timer and air supply on proportioning unit.	1.Electric shock 2. Chemical leak from valves/hoses 3. Trap/catch from moving parts.	1.Major burn/Death 2. Eye injury/skin irritation 3. physical injury- bruise laceration from falling	1. Electrical wiring has been tested. 2.All hoses are secured and sealed. 3. operator training and awareness of the risks	2	2.5	8	1	40	1. Transformer on proportioning unit needs to be enclosed. Proper signage to be attached to proportioning unit i.e. danger high voltage.	N/A		
4	Opening closing of PUR tools	1. Pinch point from opening closing lid 2. Physical knocks from operator striking the edges of the tool 3. Manual Handling- moving the tools	1. Crushing Injury 2. Laceration/ bruising 3. Sprain/ strain	1. Operators use a small piece of tape to hold down the flaps on the bottom of the box when closing the lid. 2. Operators wear bump hats and safety boots with ankle protection. 3. all operators have received full manual handling training. Tool are designed .to be easy to move and manipulate as possible. 4- for large pallet shippers, air assisted opening closing has been eliminated, replaced all lids with Aluminium lids with counter balance	5	4	1	1	20	None	N/A		
5	Movement and positioning of Gusmer gun for pouring into "PUR tool".	1. Overhanging Gusmer gun. 2. Pulling Gusmer gun into position over "PUR tool". 3. Uncovered wiring, potential for electric shock/fire	1. Striking of head. Gusmer gun falling due to cable breaking. 2. Muscle strain 3. Major burn/death	1. Gusmer gun spring loaded from overhead rail so is height adjustable. In addition, all operators in the area must wear bump hats 2. Spring loading will reduce any strain associated with pulling into position. 3. Majority of wiring is covered. 4. safety chain installed to hold gun in case of harness breaking	2	2.5	1	1	5	1. Consider colour tape on hose near Gusmer gun to increase visibility. Attach safety chain to Gusmer gun overhead rail in case cable breaks. 2. Operator movement with Gusmer gun will need to be monitored. 3. All wiring along Gusmer gun would need to be covered.	N/A		
6	Operating Gusmer gun	Repetitive pressing and continuous holding of button on Gusmer gun to deliver PUR chemical mix.	1. Repetitive Strain Injury	1. updated Gusmer guns have fair better ergonomics than previous equipment- trigger based system which is easier to use	2	2.5	4	1	20	1. Newer version of Gusmer gun could be considered.	N/A		
7	Pouring of PUR chemical mix into "PUR tool"	Splashing of PUR chemical mix	Eye injury/Skin irritation/Burn	Operators required to wear PPE when pouring PUR chemical i.e. safety glasses, overalls to cover arms, gloves to cover hands. Good overhead lighting to assist pouring operation.	2	2.5	8	1	40	Training on correct pouring method and use of correct PPE at all times.	N/A		
8	Cleaning of Gusmer gun	1. Use of solvent to clean gun. 2. Use of sharp implement (drill bit) to clean gun.	1. Inhalation of solvent 2. Laceration from use of sharp implement	1. MSDS for solvent- appropriate PPE being used to handle the material. 2.blades have been removed as tool for cleaning the gun. Currently small drill bit are being used, and these are held using a hand chuck. 3. maintenance technicians required to wear specific gloves + respirators for the task that are resistant to the solvents used in cleaning	2	2.5	4	1	20	1.Specified face mask when using present solvent. Use cleaning chemical in well ventilated area only. Source other possible cleaning chemicals 2.	N/A		
9	Exposure to Isocyanates	1. Exposure to Isocyanates during the pouring of PUR shipper. 2. Exposure to Isocyanates during "Bag Shots"	1. Isocyanate exposure	1. Current volumes of PUR production produce very low /undetectable levels of Isocyanates- isocyanate readings taken during normal production activity along with the bag shot, storage & dining areas show that they are well below the long & short term exposure limits. 2. Isocyanate monitoring has been carried out using occupational exposure limit badges- after a 9 hr working day, levels of Isocyanate present in eth working area were so low that they failed to register on the monitoring equipment	0	5	4		0	N/A	N/A		