PPE Grid for Polystryrene Plant (Thailand)

Polystyrene PPE Grid/ Tasks

Operations

Chemical	Task	Chemical Toxicity & Physical Hazards	Pathway of Exposure and Affected Body Part	Degree of Exposure	Head			Respirator				Body					Hands										Feet		Comments
					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
A: Loading/ Unloading/ Handling Liquid Raw Materials and Chemicals																													
DOWTHERM A	Unloading, adding of Dowtherm (drums) < 60°C (140°F)				X	X				X											X								Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first PPE Disposal: - Dispose gloves after use - Decontaminate PPE after use
N DODECYL MERCAPTAN	Unloading, adding of Mercaptans (NDM) (drums)				X	X				X											X								Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash hazard/ NDM can be absorbed through skin PPE Disposal: - Dispose gloves after use - Decontaminate other PPE after use
Ethybenzene Styrenemonomer	Loading of excess recycle (drums)				X	X				X			X							X									Cartridge Model: 1053(Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash hazard PPE Disposal: - Dispose gloves after use - Decontaminate other PPE after use
TARS/OLIGOMERS (HEAVY BY-PRODUCT)	Loading of tars (drums)				X	X				X										X									Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash hazard PPE Disposal: - Dispose gloves after use - Decontaminate other PPE after use
TBC	Adding of TBC, dissolved in Methanol				X	X				X			X								X							X	Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash and body hazard PPE Disposal: - Decontaminate PPE after use
SFR	Adding SFR to drum					X				X						X					X								Cartridge Model: 1003 (Yellow) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first PPE Disposal: - Decontaminate PPE after use
DEHA	Unloading DEHA from drum to process					X				X											X								Cartridge Model: 1003 (Yellow)
Rubberized, SM, Recycle, MO, NDM, Initiator, Additive Slurry	Draining of liquid raw materials or chemicals < 60°C (140°F) e.g. Rubberized, SM, Recycle, MO, NDM, Initiator, Additive Slurry					X				X			X							X								Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash and body hazard PPE Disposal: - Decontaminate PPE after use

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					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Full Body Suit for Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
Silicone Oil	Unloading, adding of Silicon Oil, < 60°C (140°F)					X															X								Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash and body hazard Waste Disposal: - Dispose gloves after use - Decontaminate other PPE after use
SM & Rubberized	Draining of liquid raw materials or chemicals> 60°C (140°F)					X				X										X								X	Cartridge Model: 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first Hazard: - Be aware of splash and body hazard - (*1) This type of job is considered to be critical line & equipment opening due to high risk of fire and exposure to chamical. It shall not be done without permission and proper review with Operation Leader. Follow SITE L&EO Standard for specific requirements for critical L&EO NOTE: where there is risk of fire and chemical exposure use the ChemTech II suit PPE Disposal: - Decontaminate PPE after use
Diesel	Unloading of Disel Fuel					X															X								**PPE Disposal:** - Dispose gloves after use
Hydraulic oil	Adding hydraulic oil @HPU					X	X														X								**PPE Disposal:** - Dispose gloves after use - Decontaminate faceshield after use
Initiator / Trigonox	Unloading of Initiator, preparing Initiator batches				X	X				X			X								X								**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Dispose gloves after use - Decontaminate PPE after use
C7C8 n-Paraffin	Cleaning equipments or contaminated floor									X											X								Strong smell
WATERSOLUBLE MULTI PURPOSE CLEANER	Cleaning heavy hydrocarbon																				X								
B: Handling of Powder Additives/ Chemicals																													
IRGANOX	Handling, connecting, removing big bags of Antioxidant (Supersacks)				X			X																					**PPE Disposal:** - Dispose dust mask after use
Zn Stearate	Handling, connecting, removing big bags of Zn Stearate (Supersacks)				X			X																					**PPE Disposal:** - Dispose dust mask after use
Blue Tone	Making up of Blue Tone powder				X			X														X							**Be ware:** - Dust exposure when weighing blue tone then dust mask is required*. **PPE Disposal:** - Dispose gloves after use
Potential of Additive chemical	Making up of Blue Tone batch,				X	X				X			X								X								**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Chemical vapor exposure when open manhole then half-face is required*. **PPE Disposal:** - Dispose gloves after use - Decontaminate half-face after use

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					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
FLOGARD MS6209	Unload/load FLOGARD MS6209				X	X				X								X									X		**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Decontaminate other PPE after use
GENGARD GN7004	Unload/load GENGARD GN7004				X	X				X								X									X		**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Decontaminate other PPE after use
SPECTRUS NX1100	Unload/load SPECTRUS NX1100				X	X				X								X									X		**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Decontaminate other PPE after use
NaOCl [Sodium Hypochlorite]	Unload/load Sodium Hypochlorite (NaOCl), 10% conc				X	X				X							X	X									X		**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Decontaminate other PPE after use
Sulfuric Acid (H2SO4)	Unload/load Sulfuric Acid (H2SO4), 98% conc				X	X				X							X	X			X						X		**Cartridge Model:** 1003 (Yellow) or 1053 (Yellow & Purple) **Cartridge Change Schedule:** Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **PPE Disposal:** - Decontaminate other PPE after use
Dowtherm SR-1	Unload/load Dowtherm SR-1 at storage tank				X																X								**Hazard:** - Be aware of splash and body hazard
C: Process Sampling																													
EB & SM	Sample recycle - enclosed system,					X																X							Decontaminate or Dispose of Gloves
EB & SM	- Sample recycle - Clean magnetic additive				X	X				X										X									**Cartridge Model:** 1053 (Yellow & Purple) Cartridge Change Schedule: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **Hazard:** - Be aware of splash and body hazard **Waste Disposal:** - Dispose gloves after use - Decontaminate other PPE after use
Dowtherm A < 60oC (140oF)	Sample Dowtherm *** For Turnaround					X				X											X								**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
Dowtherm A > 60oC (140oF)	Sample Dowtherm					X				X											X								**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate gloves after use
Polymer Ethybenzene Styrenemonomer	Sample reactor solids				X	X				X								X											**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
Irganox	Sample powders - Irganox				X			X														X							**PPE Disposal:** - Dispose PPE after use
Zn Stearate	Sample powders - ZnSt and Irganox				X			X														X							**PPE Disposal:** - Dispose PPE after use

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					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Full Body Suit for Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
Product	Sample Finished Product						X	X																					**PPE Disposal:** - Dispose PPE after use
C: Filter Changes																													
Ethybenzene Styrenemonomer Tars	Change feed, recycle, tars filter				X	X	X			V										X									**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
Dowtherm > 60oC (140oF)	Change Dowtherm				X	X				X											X								**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
Hydraulic oil	Change hydraulic oil filter @HPU					X	X															X							**Hazard:** - Be aware of splash hazard **PPE Disposal:** - Dispose gloves after use - Decontaminate other PPE after use
Dust	Change Air Filter of Transfer Blower				X					X		X																	**Cartridge Model: 1050 (Purple)** **PPE Disposal:** - Dispose dust mask after use

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					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
D: Miscellaneous																													
Vapor High Temperature	Stranding up polymer						X											X											**PPE Disposal:** - Clean PPE after use Note: Half face is recommended to use during start up / shutdown period.
Dust	Cleaning cutter, screens, classifier (dusty environment)				X		X	X																					**PPE Disposal:** - Dispose dust mask after use
SM	Clean Rubber chute , rubber grinder, rubber slurry systems					X				X										X									**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
EB & SM Tars	Venting reactor to atmosphere >60°C (140°F)				X	X				X				X						X									**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
EB & SM Tars	Drain water from recycle tanks				X	X				X										X									**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
High Temperature, EB&SM Vapor	Change die head and screen die head					X	X			X*													X						- Use leather with Cut resistant Sleeves (Kevlar Level 5) to prevent skin contact with hot surface.
Non chemical	Work with polymer cutter						X																	X	X	X			- Can select to use Cut Resistant Gloves (WireMesh) **Or** Cut Resistant Gloves (Kevlar Level 5)
EB & SM High temperature	Vent line reactor >60 degree C. (140 degree F.)				X	X				X				X						X									**Cartridge Model**: 1053 (Yellow & Purple) **Cartridge Change Schedule**: Replace after use accumulatively for 40 hours or 60 days after installation, whichever comes first **PPE Disposal:** - Decontaminate PPE after use
1. Contaminate container from related activity 2. Hydrocarbon waste 3. Use lube oil 4. Contaminate material (พวกเศษผ้า/ oil pad) 5. Organic waste water	Waste handling that not direct contact with chemical																				X								**Use Nitrile plant type as minimum.**
1. Contaminate container from related activity 2. Hydrocarbon waste 3. Use lube oil 4. Contaminate material (พวกเศษผ้า/ oil pad) 5. Organic waste water	Waste handling that have potential to direct contact l or direct contact with chemical																				X								**PPE refer to related activity required.** **Use Nitrile plant type as minimum.**

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					Goggles	Faceshield	Hearing Protection Devices	Dust Mask (N95)	Dust Mask (P100)	Half-Face Respirator	Full-Face Respirator	Full Body Suit for Particulates, Fiber (Tyvek)	Light/Minor Chemical Use (Saranex)	Full Body Fire Retardant Cloth (Nomex)	Flash Suit with Hood (Nomex)	Harness and Lanyard	PVC with long sleeves (showa) Gloves	Neoprene (NEOX) Gloves-Insolated gloves	Long Leather Gloves	FLUOTEX 344	Nitrile Plant Gloves	Nitrile Lab (Touch N Tuff) Gloves	Insulated Chemical Resistant Gloves (Crusader)	Cut Resistant Gloves (WireMesh)	Cut Resistant Gloves (Kevlar Level 5)	Cut resistant Sleeves (Kevlar Level 5)	PVC Boots	Neoprene Boots	Additional Information
Refactory Ceramic Fiber	Clean and Inspect heater				X Option 2				X Option 2		X Option 1	X				X														- For RPE and Eye protection can select with 2 options. 1. Use full face respirator with cartridge model 1053 (Yellow & Purple) or 2. Use Dust mask P100 and goggle - Change P100 dust mask after end of shift or when dirty, damage, or difficult to breathe through whichever come first. - Wear Safety Harness and connected to Self Retracting Lanyard (SRL) when working on scaffold.
LPG	Change forklift gas cylinder																		X											Use long leather glove that provide by SCO at LPG storage rack when change LPG gas cylinder

Remarks :

1. Minimum PPE Requirements: 1) Hard Hat, 2) Safety Glasses, 3) Safety Shoes, 4) Long Sleeves, 5) Leather Gloves, and 6) Hearing Protection in designated areas
2. Abbreviation:
   - X as Required PPE
   - X* = Commited to use present a respirator while IH proved that IH monitoring result and priority risk shown "low",
   - V as the tasks are proved that very low level so respirators can be reduced to voluntary use.

Cartridge	Protection/ description
1003 (Yellow)	Combination Organic Vapors & Acid gases