

POKETONE for Copper Refinery (BUSBAR Insulation)

Global Warming Potential

* PA6	6.70	
* PA66	6.40	
* PC	3.40	
* POM	3.20	
* ABS	3.10	
** PK	3.08	(kg CO ₂ eq)

* Other ETP data is based upon the Eco-profiles data from www.plasticseurope.org

** PK Data is based upon Korea LCI database and Ecoinvent database.



Non Toxic High Efficiency

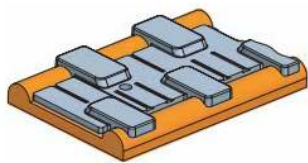
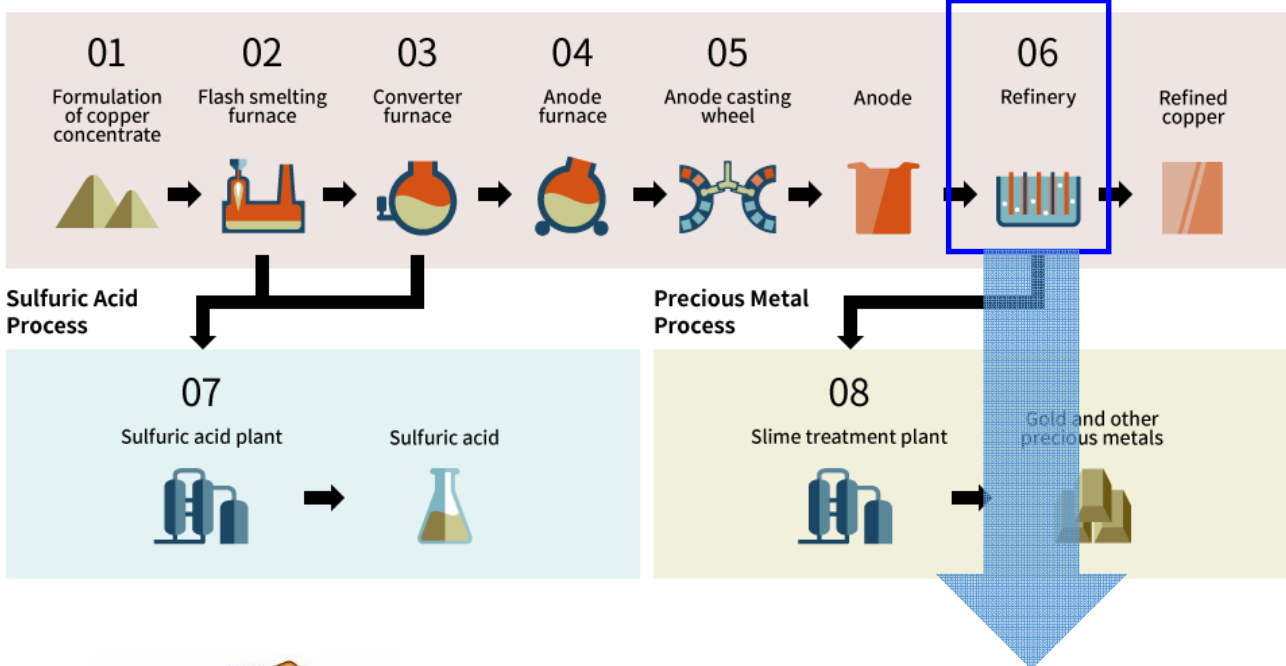
Acrylate Free
Melamine Free
Bisphenol A Free
Formaldehyde Free
Lead/ Chrome/ Free
Phthalate Free

POKETONE
HYOSUNG POLYKETONE

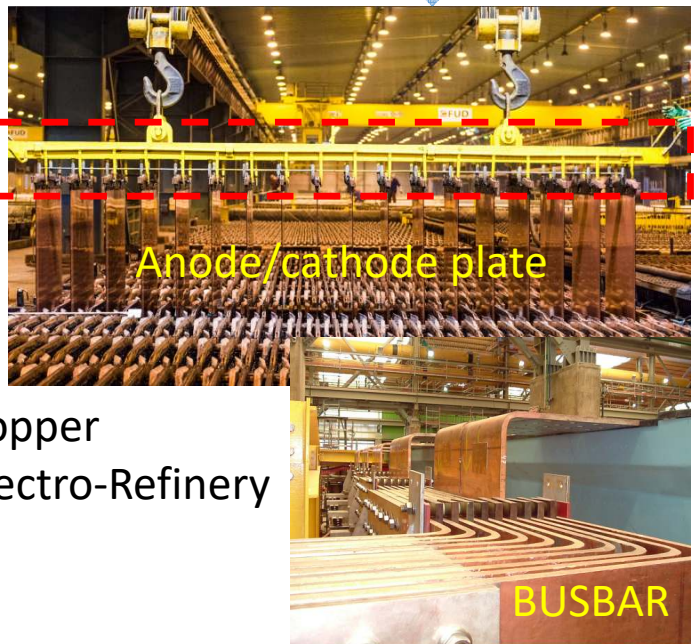
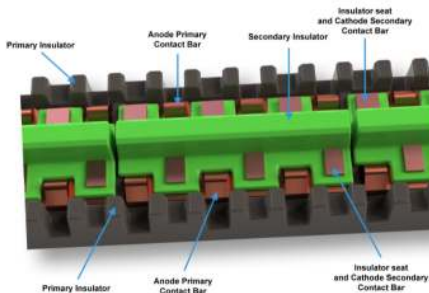
POKETONE in Copper Refinery Process

https://www.ppcu.co.jp/eng/about_ppc/processes.html

Copper Smelting and Refining Process



BUSBAR & BUSBAR Insulator



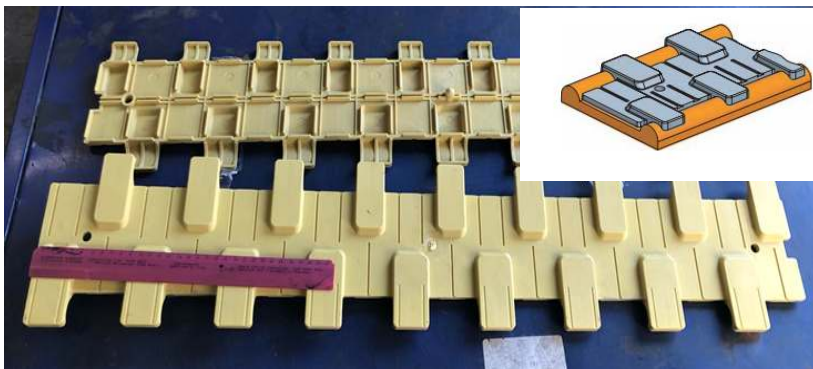
Copper Electro-Refinery

At copper smelting and refining process, electro-refining process to increase the copper purity from 99.5wt% to 99.99wt% is essential. Since it uses $\text{CuSO}_4/\text{H}_2\text{SO}_4$ as an electrolyte under large current, plastic parts used in this electrodeposition process should satisfy the following:

- 1) Chemical resistance against $\text{CuSO}_4/\text{H}_2\text{SO}_4$
- 2) Insulation under large current, and flame retardancy to prevent fire accident
- 3) Dimensional stability against heat & chemical attach to prevent short circuit between anode & cathode

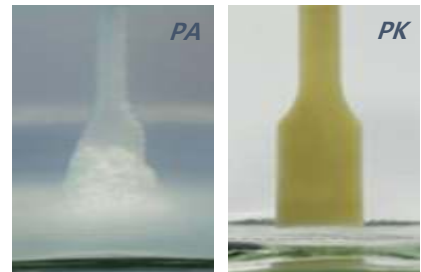
POKETONE in Copper Refinery & Mining Conveyor

Thanks to its excellent chemical resistance, insulation and Dimensional stability, Poketone M93FA7Y is applied to BUSBAR Insulator frame on Copper Electro-refining process, and Mining conveying system.

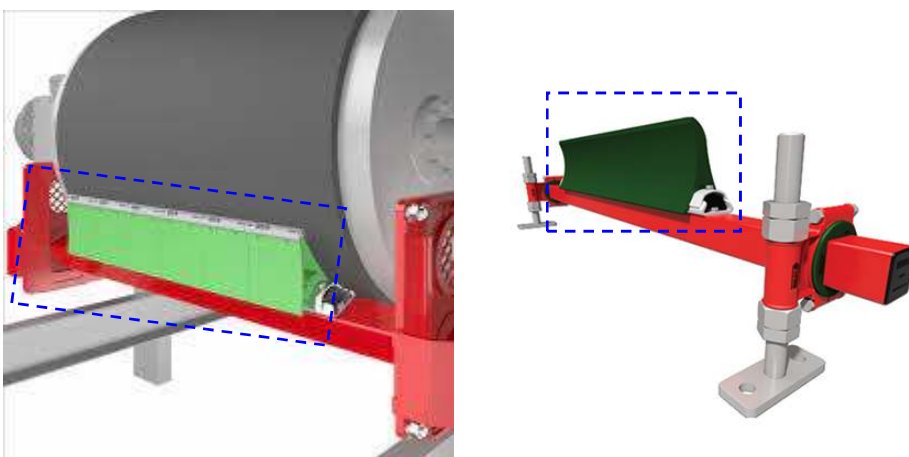


Poketone BUSBAR Insulator frame(M93FA7Y)

※ Method : 38% H₂SO₄ (Battery acid)



*Chemical resistance
against H₂SO₄*



Torsion holder parts at mining conveyor assembly (M93FA7Y)

POKETONE Flame Retardant Grade Portfolio

We support 8 flame retardant Poketone grades portfolio for electrical, electronics, and appliance markets.

- connectors with excellent snapping characteristics.
- complies with the safety standard *IEC 60335-1*
- *Glow Wire Tests at 750°C* (IEC 60695-2-11) on about 60 types of connectors



Grade Portfolio

Properties		Method	Unit	M33AF1Y	M33AF2Y	M33AG2Y	M33AD2Y	M33AA2Y	M93FA2Y	M93FB5Y	M93FA7Y
Flammability	t=0.4mm	UL 94	Class	V0							
	t=0.8mm			V0	V0	V0	V0	V0	V0		
	t=1.6mm			V0	V0	V0	V0	V0	V0	V0	V0
Relative Thermal Index		UL 746b						105°C(elec)			
Weatherability		UL 746c					F1-F2				
Density		ASTM D792	g/cm ³	1.25	1.26	1.29		1.48	1.48	1.48	1.46
GF contents		-	%	-	-	5	15	30	30	30	30
Tensile Strength at Yield		ASTM D638	MPa	46	50	53	65	112	120	115	135
Elongation at Break		ASTM D638	%	35	40	18	6	4.3	3.5	3.5	3
Flexural Strength		ASTM D790	MPa	65	58	79	117	176	190	180	192
Flexural Modulus		ASTM D790	MPa	1,900	1,700	2,550	4,370	7,300	8,200	7,700	7,800
Notched Impact strength		ISO 79/1eA	kJ/m ²	4.5	8	6	8	10.3	9.3	9.5	12
Melting Temperature		ASTM D3418	°C	222	222	222	222	222	222	222	222
Melt Flow Index (240°C, 2.16kg)		ASTM D1238	g/10min	35	34	25	13	8	40	33	40

UL 746b/746c Listing on M33AD2Y , M33AA2Y

Poketone M33AD2Y has UL 746c F1 rating with 0.8tV0, and M33AA2Y complies with has UL 746b long term thermal index as 105°C(EIS Class A)

Component - Plastics E163907
 Guide Information [View Certificate of Compliance](#)

Hyosung Chemical Corp
 235, Banpo-daero, Seocho-gu, Seoul Seoul 06578 KR

M33AD2Y (f1)
 Polyketone (PK) "POKETONE", furnished as pellets

Color	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec (°C)	RTI Imp (°C)	RTI Str (°C)
WT, BK, RD	0.8	V-0	-	-	50	50	50
	3.0	V-0	-	-	50	50	50


Comparative Tracking Index (CTI): -
 Dielectric Strength (kV/mm): -
 High-Voltage Arc Tracking Rate (HVTR): -
 Dimensional Change (%): -

Inclined Plane Tracking (IPT) kV: -
 Volume Resistivity (10^x ohm-cm): -
 Surface Resistivity (10^x ohms/square): -
 High Volt, Low Current Arc Resis (D495): -

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2023-03-28
 Last Revised: 2023-08-20


 ALSO CERTIFIED TO IEC REQUIREMENTS

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Component - Plastics E163907
 Guide Information [View Certificate of Compliance](#)

Hyosung Chemical Corp
 235, Banpo-daero, Seocho-gu, Seoul Seoul 06578 KR

M33AA2Y
 Polyketone (PK), furnished as pellets


Color	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec (°C)	RTI Imp (°C)	RTI Str (°C)
ALL	0.8	V-0	-	-	105	70	115
	1.6	V-0	-	-	105	70	115
	3.0	V-0	-	-	105	80	125

Comparative Tracking Index (CTI): -
 Dielectric Strength (kV/mm): -
 High-Voltage Arc Tracking Rate (HVTR): -
 Dimensional Change (%): -

Inclined Plane Tracking (IPT) kV: -
 Volume Resistivity (10^x ohm-cm): -
 Surface Resistivity (10^x ohms/square): -
 High Volt, Low Current Arc Resis (D495): -

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2022-01-17
 Last Revised: 2023-06-19


 ALSO CERTIFIED TO IEC REQUIREMENTS

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New Ecofriendly FR Poketone with Low Smoke Density

Poketone M93FE2Y is newly designed flame retardant Poketone with eco-friendliness, low smoke density and high flowability.

Properties	Unit (ISO)	M93FE2Y
MFR(240°C, 2.16kg)	g/10min	101
Tensile strength	MPa	37
Tensile elongation at break	%	17
Flexural modulus	MPa	2760
Flexural strength	MPa	58
Notched Charpy	kJ/m ²	5.3
Flammability	UL94	V0 at 1.6mm



Spiral flow length (2t, nozzle 240°C, mold 80°C)
- M93FE2Y: initial length is 900mm, and over 95% flow length retention after 30min dwelling

Smoke Density for Poketone M93FE2Y complies with EN45545 & Korean Railway Safety Law Regulation Spec for upholstery, headrest and armrest of train interior parts.

Smoke Density(Ds)		value	Test method	Regulation for Upholstery, headrest & armrest
Ds max	Non-flaming mode	111	ASTM E662-21 (25kW/m ²)	EN 45545: Ds max < 200
	Flaming mode	142		
Ds max – Dc	Non-flaming mode	108		
	Flaming mode	139		
Ds(1.5min)	Non-flaming mode	13		Korean Railway Safety Law - Ds(1.5mm) < 100 - Ds(4.0mm) < 175
	Flaming mode	44		
Ds(4.0min)	Non-flaming mode	69		
	Flaming mode	127		



· POKETONE commercial Plant in South Korea, Ul-san City, Production capacity : 50,000 MT/Year



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