



## Manufacturer of Powder Coatings Lisenced by

# HYUDDAI





Ala Fam Asia Co., has been producing Hyundai Chemtech powder coatings based on the worldwide technology with continuous R&D and strict quality control.

Hyundai Chemtech is solvent free coatings of 100% solid content and an environment-friendly powder coatings that can overcome the pollution problems caused by VOCs and waste water.

Hyundai Chemtech also provides the excellent durability and economical efficiency through one coat application when compared with liquid coating systems. Hyundai Chemtech can be used for the wide range of applications such as home appliance, steel furniture industrial appliance, durable architectural materials, reinforced bars, electric insulators and pipes for water, gas, oil etc.

#### User Guide

- Hyundai chemtech products from Ala Fam Asia do not use raw material that includes environment regulated substance (mercury, lead, cadmium hexavalent chrome, PBB, PBDE) in both domestic and overseas
- Before applying, make sure to verify data sheet, as well as product description. Also, please contact corporation for further questions.
- Excepting durable metallic, make sure to use a method of transparent coating for colors that include metallic components such as, silver, copper, gold, etc., because they are highly sensitive about humidity, as well as chemical resistance.
- Special pattern, metallic, and pearl powder coatings may be changed in terms of color, as well as pattern, in accordance to coating thickness, category of spray guns, powder discharge, cure conditions, pretreatment condition of substrate, and reclaimed powder mixing ratio.
- These standard color examples that are registered in the catalog may be slightly different from the actual colors in the production process. Therefore, please make sure to pre-check the colors before using.
- Hyundai Chemtech also provides standard colors (such as MUNSELL, RAL FS. NC, PANTONE COLOR) that are being used in both domestic and overseas but are not listed in the catalog

# HYUNDAI CHEMTECH CODE SYSTEM

# HS82-WH241

①	Resin type	Н	► Hybrid
2	Appearance	S	► Smooth
3	Curing temperature	8	▶ 180°C
4	Gloss	2	▶ 20~29 Gloss
6	Color	WH	► White color
6	Serial number	241	

1. Resin Type

Product Typical Name	Abbreciation	Resin Type	Character
EP 1000	Е	Ероху	Chemical resistance, Insulation
HB 2000	Н	Hybrid(Epoxy-Polyester)	General use, Indoor field
PF 3500	F	Polyester β-H.A.A	TGIC Free Outdoor field
PU 4000	U	Polyurethane	High pencil hardness, Outdoor field
AR 5000	Α	Acrylic polyester / Epoxy	Weather reistance, Clear
UV 6000	V	UV(Ultra violet)	UV cure, Low cure, MDF use
SI 7000	S	Silicone polyester / Epoxy	Heat resistance

2. Appearance 3. Curing Temperature 4. Gloss(60°) 5. Color

Abbreciation	Character	Abbreciation	Metal	Abbreciation	Gloss Range	Abbreciation	Color
		Abbicoddoll	Temperature		Silver Si		35000,000
Α	Aluminium effect	1	Radiation Cure	0	0~9	BE	Beige
В	Bronze effect	2	120℃	1	10~19	BK	Black
C	Copper effect	3	130°C	2	20~29	BL	Blue
G	Gold effect	4	140°C	3	30~39	BR	Brown
Н	Colored hammer effect	5	150°C	4	40~49	CL	Clear
1	Metallic hammer effect	6	160°C	5	50~59	GN	Green
J	Pearl hammer effect	7	170℃	6	60~69	GY	Grey
L	Multi-colored hammer effect	8	180°C	7	70~79	IV	lvory
K	Crack effect	9	190℃	8	80~89	MN	Maroon
М	Multi-colored effect	0	200°C	9	90~	0E	Orange
N	Multi-colored metallic effect	А	210°C			PK	Pink
Р	Pearl effect	В	220°C			RD	Red
S	Smooth	С	230°C			VT	Violet
Т	Texture effect	D	240°C			WH	White
V	Sandtexture effect	Е	250°C			YG	Yellow-green
X	Sandtexture metallic effect					YW	Yellow
W	Wrinkle effect					PS	Pearl silver
Υ	Tinted effect					MS	Metallic silver
Z	Clear					MG	Metallic gold
#	Others					MC	Metallic copper
						PR	Pearl red









# HYUNDAI CHEMTECH PATTERN TYPES

Туре	Product name			sin ty			Character	Purpose
77		EP	НВ	PE	PU	AR	For the state of t	
	EP 1000 Series	0					Excellent chemical and corrosion resistance	Indoor, Idustrial and architectural field
	HB 2000 Series		0				Anticorrosion, Mechanical property	Indoor, Idustrial and architectural field
Smooth	PF 3500 Series			0			Durable, Toxic free	Outdoor, Idustrial and architectural field
	PU 4000 Series				0		Excellent durability and chemical resistance	Outdoor, Idustrial and architectural field
	AR 5000 Series					0	Excellent durability and hardness	Outdoor, Idustrial and architectural field
	Texture	•					Leader feel effect	Indoor/outdoor, Idustrial and architectural field
	Sandtexture						Sand feel effect	Outdoor, Idustrial and architectural field
	Metal texture						Metallic sand feel effect	Indoor/outdoor, Idustrial and architectural field
	Hammer effect	•					Hammer and vein effect	Indoor/outdoor, Idustrial and architectural field
	Crack effect	•					Surface cracked feel	Indoor/outdoor, Idustrial and architectural field
	Multi effect	•					Multi colored effect	Indoor/outdoor, Idustrial and architectural field
Pattern	Tinted clear			•			Semi-clear, Excellent clearness	Indoor/outdoor and architectural field
effect	Sparkle metallic				=		Sparkle metallic effect	Indoor/outdoor, Idustrial and architectural field
	Metallic	•	•				Metallic effect	Indoor/outdoor, Idustrial and architectural field
	Chrome silver						Chrome metallic effect	Indoor and architectural field
	Wrinkle effect						Wrinkle and alligator skin effect	Indoor/outdoor and architectural field
	Mica effect						Mica appearance effect	Indoor/outdoor and architectural field
	Suade effect						Soft feel	Indoor and Idustrial field
	Galaxy effect						Galaxy effect	Indoor field
	Anti-fungi & bacterial powder coating		0				Antifungi and bacterial activity, 99,99%	Indoor field
	Degassing powder coating		0	0	٥		Degassing and out gassing of substrate	Indoor/outdoor and architectural field
	Antistatic powder coating	0	0	0	0		Antistatic function	Cleanroom, Semiconductor equipment
	Bus bar powder coating	0					Excellent insulation, Flame retardation, Adhesion	Bus bar and duct
Special performance	Capacitor powder coating	0					Excellent insulation, Flame retardation, Laser marking	Condenser
Halice	Stator powder coating	0					Excellent insulation, Flame retardation, Adhesion	Stator slot
	Durable powder coating			O		0	Durable and super durable Meet AAMA specification	Outdoor and architectural field
	Durable metallic powder coating			0			Durable metallic	Outdoor and architectural field
	Easy cleaning powder coating		0	0	٥		Easy clean & antigraffiti effect	Screen door, Subway train panel



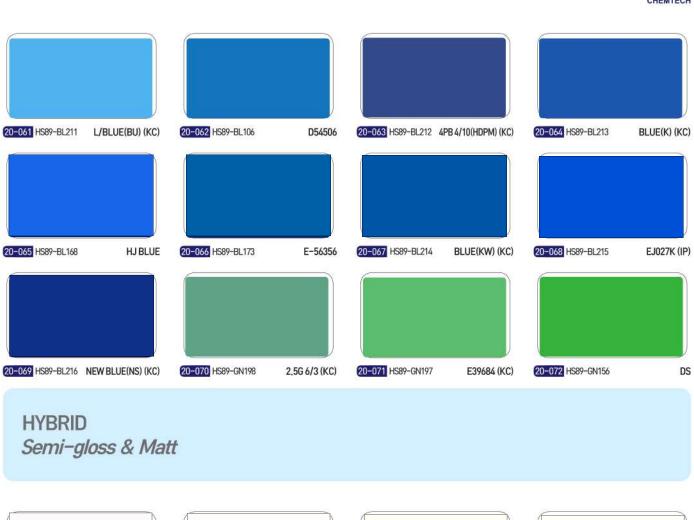
## HYBRID Gloss

















# HYUNDAI CHEMTECH FUNCTIONAL TYPES

Туре	EP HB PE PU AR		Resin type			Character	Purpose			
Туре			Character	r di pose						
	Fast curab powder co			0				Fast cure schedule	Indoor, Industrial and architectural field	
	Flame reta powder co			0	0			Flame retardation effect, Meet UL94 V-0 specification	Industrial and architectural field	
	Film trans powder co	cription ating		0	0	0		Dye sublimilation effect	Architectural, Aluminum chassis	
	Corrosion primer por	resistance wder	0					Zinc rich primer	Indoor, Industrial and architectural field	
	Hot dip galvanized plating			0	0			Excellent adhesion	Architectural field, Guard rail	
	Heat sink powder co	ating		0	0			Temperature down by heat emission	Industrial field, LED cover, Brake pad	
	High gloss powder co	ating		0	0			High gloss and levelling	Architectural and industrial field	
	High reflect powder co	ction ating			0			Reflection rate 94%	Architectural, light reflector Architectural field	
	High penci powder co	l hardness ating		0	0	0		Pencil hardness 3–5H & scrach resistance	Architectural and industrial field	
	erfor-			0	0	٥			EP: 120°C Curable HB: 140°C Curable PE: 150°C Curable	Thick substrate
Special		er-repulsion ating	0	0	0	0		Excellent spray workability into corner part	Radiator and fence screener	
mance			0	0			Medium density fiberboard coating	Wood		
				0			Nonstick effect	Outdoor, Architectural field, Lamp post		
			0					Super chemical resistance and durability	Semiconductor equipment, Cooling tower, Plating hanger	
	Tribo charging powder coating		0	0	0			Tribo charging	Radiator, Wheel, Brake pad	
	Stressed v powder co	vire strand ating	0					Strong tensile strengh, flexibility and durability	Guard rail, Bridge wire	
	Light stori	ng ating		0	0			Long lasting light emission	Fire fighting & indicator equipment	
	Rebar powder coating	0					Excellent flexibility and corrosion resistance	Reinforced bar		
		Single layer	0					Excellent corrosion resistance, adhesion and mechanical property	Pipe coating	
		Dual layer	0					Dual top & primer coating	Pipe coating	
	Pipe powder coating	3-Layer	0					Excellent adhesion to adhesive, corrosion resistance	Pipe coating	
		Water pipe	0					Water pipe inner coating	Iron casting inner coating	
		Fitting, valve	0					Excellent impact and adhesion	Pipe fitting and valve	

# HYUNDAI CHEMTECH TROUBLE SHOOTING GUIDE

Improper oven exhaust Improper oven exhaust Eake time too long Oven temperature too high Veriation of film thickness Hardened with different thicknesses of the substrate Off color  Off color after assembling perts  Work with substrate thickness,  Work with the same application company as possible, Check inequal agas combustion and ask powder for anti- direct gas onen.  Check with powder manufacturer,  Check the oil compressed system and use a debrumdifier exclusively.  Contamination from outside  Check the silicone contamination and clean the gun.  Contamination with incompatible powder  Contamination with incompatible powder  Contamination with incompatible powder  Office the silicone contamination and clean the gun.  Film thickness too thick  Control with standard film thickness.  Complex shape of the part  Office with powder manufacturer,  Onder-cured  O	Trouble shooting	guide line of powder coating	
Bake time too long  Oven temperature too high  Lower own temperature.  Very kill his peed,  Oven temperature too high  Lower own temperature.  Very kill his andard coating thickness.  Hardened with different thicknesses of the substrate  Different color after assembling parts  Heat source by LNG or LPG of direct fired oven Powder formula  Powder formula  Poor pretreatment  Oil in the compressed air Contamination with incompatible powder  Contamination with incompatible powder  Contamination with incompatible powder  Film thickness too thick  Complex shape of the part  Adjust gun voltage and powder feeding.  Powder characteristic  Under-cured  Poor cleaning or pretreatment  Check with powder manufacturer.  Check with powder manufacturer.  Check with powder and even the contamination and clean the gun.  Evaluate with a virgin powder efter contriming the cleaning conditions and recycling system of the booth.  Complex shape of the part  Adjust gun voltage and powder feeding.  Complex shape of the part  Adjust gun voltage and powder feeding.  Complex shape of the part  Check with powder manufacturer.  Under-cured  Under-cured  Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment  Film thickness too high  Reduce film thickness by adjusting the application equipment.  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check with the powder manufacturer.  Conveyor speed too fast  Heating speed too slow  Check own temperature and adjust heat power.  Check own temperature and adjust heat power.  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Check the storage and lump conditions of the powder with a sieve.	Trouble	Possible cause	Possible solution
Oven temperature too high Variation of film thickness Hardened with different thicknesses of the substrate  Different color after assembling parts Heat source by LNG or LPG of direct fired oven Powder formula Check with powder manufacturer.  Poor pretreatment Oil in the compressed air Contamination from outside Contamination from outside Contamination from outside Contamination with incompatible powder  Contamination with incompatible powder  Eilm thickness too thick Control with standard film thickness.  Complex shape of the part  Adjust gun voltage and powder feeding, Poor deaning or pretreatment Check with powder manufacturer.  Under-cured Increase oven temperature or increase dwell time in the oven.  Poor deaning or pretreatment Check with powder manufacturer.  Under-cured Increase oven temperature or increase dwell time in the oven.  Poor deaning or pretreatment Check with the powder manufacturer.  Poor deaning or pretreatment Film thickness too high Reduce film thickness by adjusting the application equipment.  Powder resin type or formula Conveyor speed too fast Heating speed too slow Check oven temperature and adjust heat power.  Check with the powder manufacturer.  Check with the powder manufacturer.  Check oven temperature and adjust heat power.  Check oven temperature and adjust heat power.  Check oven temperature and adjust heat power.  Check air supply.  Reclaim used exclusively Mix with the virgin powder.  Poor fluidization Powder blocking Check the powder fluidizing and adjust air.  Powder blocking Check the storage and lump conditions of the powder with a sieve.		Improper oven exhaust	Check exhaust-vent fans.
Variation of film thickness Hardened with different thicknesses of the substrate  Different color after assembling parts Heat source by LNG or LPG of direct fired oven Powder formula Check irregular gas combustion and ask powder for anti direct gas oven, Check with powder manufacturer, Check the all compressed system and use a dehumidifier exclusively. Contamination from outside Contamination from outside Contamination with incompatible powder  Contamination with incompatible powder  Eilm thickness too thick Control with standard film thickness.  Complex shape of the part  Adjust gun voltage and powder feeding.  Powder characteristic Check with powder manufacturer,  Under—cured Increase oven temperature or increase dwell time in the oven.  Poor leaning or pretreatment Film thickness too high Reduce film thickness by adjusting the application equipment. Film thickness too high Reduce film thickness by adjusting the application equipment. Film thickness too high Reduce film thickness by adjusting the application equipment. Conveyor speed too fast Heating speed too slow Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long Check oven temperature and adjust heat power.  Check with the virgin powder.  Check air supply.  Ununiformity of the powder spraying  Ununiformity of the powder spraying  Check the powder fluidizing and adjust air.  Powder blocking Check the storage and lump conditions of the powder with a sieve.		Bake time too long	Adjust line speed.
Hardened with different thicknesses of the substrate  Different color after assembling parts  Work with the same application company as possible.  Heat source by LNG or LPG of direct fired oven direct gas diven.  Powder formula  Powder formula  Poor pretreatment  Oil in the compressed air  Contamination from outside  Contamination with incompatible powder  Control with standard film thickness  Complex shape of the part  Adjust gun voltage and powder feeding.  Check with powder manufacturer.  Under-cured  Under-cured  Poor cleaning or pretreatment  Check pretreatment equipment and chemicals.  Film thickness too high  Powder resist type or formula  Conveyor speed too slow  Check with the powder manufacturer.  Check with powder manufacturer.  Check with powder manufacturer.  Check pretreatment equipment and chemicals.  Film thickness too high  Powder resist type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Check powder-feed hoses.  Clean hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Reclaim used exclusively  Mix with the virgin powder.  Powder blocking  Check the powder fluidizing and adjust air.  Powder blocking  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Oven temperature too high	Lower oven temperature.
Different color after assembling parts Heat source by LNG or LPG of direct fired oven Powder formula Check with powder manufacturer. Check the oil compressed system and use a defundifier exclusively. Contamination from outside Crater Contamination with incompatible powder Contamination with incompatible powder Contamination with incompatible powder  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick Control with standard film thickness.  Complex shape of the part Adjust gun voltage and powder feeding.  Powder characteristic Check with powder manufacturer.  Under-cured Increase oven temperature or increase dwell time in the oven. Poor cleaning or pretreatment Film thickness too high Powder resin type or formula Conveyor speed too slow Check with the powder manufacturer.  Hoses kinked, flattened or too long Check oven temperature and adjust heat power.  Hoses, pump venturies or gun clogged with powder Insufficient air pressure or volume Rectains used exclusively Poor fluidization Powder blocking Check the storage and lump conditions of the powder with a sieve.		Variation of film thickness	Work with standard coating thickness,
Heat source by LNG or LPG of direct fired oven Powder formula  Poor pretreatment Oil in the compressed air Contamination from outside Crater  Contamination with incompatible powder  Contamination with incompatible powder  Control with standard film thickness.  Film thickness too thick  Complex shape of the part  Adjust gun voltage and powder feeding.  Check with powder manufacturer.  Check with powder manufacturer.  Control with standard film thickness.  Complex shape of the part  Adjust gun voltage and powder feeding.  Check with powder manufacturer.  Check with thickness by adjusting the application equipment.  Poor impactresistance/ poor fiexibility/ poor adhesion  Hoses kinked, flattened or too long  Check oven temperature and adjust heat power.  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve,		Hardened with different thicknesses of the substrate	Work by substrate thickness,
Powder formula  Powder formula  Check with powder manufacturer,  Check the pretreatment of substrate surface,  Check the pretreatment of substrate surface,  Check the pretreatment of substrate surface,  Check the oil compressed system and use a dehumidifier exclusively,  Contamination from outside  Contamination with incompatible powder  Contamination with incompatible powder  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick  Complex shape of the part  Adjust gun voltage and powder feeding.  Check with powder manufacturer,  Under-cured  Increase oven temperature or increase dwell time in the oven.  Poor impact resistance/ poor flexibility/ poor adhesion  Hoses kinked, flattened or too long  Hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Reclaim used exclusively  Powder spraying  Powder fluidization  Powder fluidization of the powder with a sieve.	Off color	Different color after assembling parts	Work with the same application company as possible.
Poor pretreatment Oil in the compressed air Check the eil compressed system and use a dehumidifier exclusively. Contamination from outside Crater Contamination with incompatible powder  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick Control with standard film thickness.  Complex shape of the part Adjust gun voltage and powder feeding.  Powder characteristic Check with powder manufacturer.  Under-cured Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment Film thickness too high Powder resin type or formula Conveyor speed too fast Heating speed too slow Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long Check powder-feed hoses.  Clean hoses, pump venturies or gun clogged with powder Insufficient air pressure or volume Reclaim used exclusively Poor fluidization Powder blocking Check the powder fluidizing and adjust air. Check the powder fluidizing and adjust air. Check the powder fluidizing of the powder with a sieve.		Heat source by LNG or LPG of direct fired oven	Check irregular gas combustion and ask powder for anti direct gas oven.
Oil in the compressed air Check the oil compressed system and use a dehumidifier exclusively. Contamination from outside Check the silicone contamination and clean the gun.  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick Control with standard film thickness.  Complex shape of the part Adjust gun voltage and powder feeding.  Powder characteristic Check with powder manufacturer.  Under-cured Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment Film thickness too high Powder resin type or formula Conveyor speed too fast Heating speed too slow Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long Check powder-feed hoses.  Ununiformity of the powder spraying Poor fluidization Powder blocking Check the powder fluidizing and adjust air. Powder blocking Check the storage and lump conditions of the powder with asieve.		Powder formula	Check with powder manufacturer.
Crater  Contamination from outside  Crater  Contamination with incompatible powder  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick  Control with standard film thickness.  Complex shape of the part  Adjust gun voltage and powder feeding.  Powder characteristic  Under-cured  Poor cleaning or pretreatment  Film thickness too high  Powder resistance/ poor flexibility/ poor adhesion  Hoses kinked, flattened or too long  Hoses, pump venturies or gun clogged with powder  Reclaim used exclusively  Poor fluidization  Poor fluidization  Poor fluidization  Poor fluidization  Powder blocking  Check the storage and lump conditions of the powder with asieve,	and the same	Poor pretreatment	Check the pretreatment of substrate surface.
Crater  Contamination with incompatible powder  Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.  Film thickness too thick  Control with standard film thickness.  Complex shape of the part  Adjust gun voltage and powder feeding.  Powder characteristic  Check with powder manufacturer.  Under-cured  Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment  Check pretreatment equipment and chemicals.  Film thickness too high  Reduce film thickness by adjusting the application equipment.  Powder resin type or formula  Check with the powder manufacturer.  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check oven temperature and adjust heat power.  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Powder blocking  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Oil in the compressed air	Check the oil compressed system and use a dehumidifier exclusively.
Film thickness too thick  Complex shape of the part  Adjust gun voltage and powder feeding,  Powder characteristic  Check with powder manufacturer.  Under-cured  Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment  Check pretreatment equipment and chemicals.  Film thickness too high  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Reclaim used exclusively  Poor fluidization  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Contamination from outside	Check the silicone contamination and clean the gun.
Complex shape of the part  Adjust gun voltage and powder feeding.  Powder characteristic  Check with powder manufacturer.  Under-cured  Poor cleaning or pretreatment  Poor feeding or pretreatment  Film thickness too high  Powder resistance/ poor fexibility/ poor adhesion  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature or increase dwell time in the oven.  Check with the powder manufacturer.  Ruduce conveyor speed.  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses,  Hoses, pump venturies or gun clogged with powder  Clean hoses, pump venturies and gun inside.  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Poor fluidization  Powder blocking  Check the storage and lump conditions of the powder with a sieve.	Crater	Contamination with incompatible powder	Evaluate with a virgin powder after confirming the cleaning conditions and recycling system of the booth.
Too much film flow-Sagging  Powder characteristic  Check with powder manufacturer.  Under-cured  Increase oven temperature or increase dwell time in the oven.  Poor cleaning or pretreatment  Check pretreatment equipment and chemicals.  Film thickness too high  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses,  Hoses, pump venturies or gun clogged with powder  Check air supply.  Poor fluidization  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Film thickness too thick	Control with standard film thickness.
Powder characteristic  Under-cured  Poor cleaning or pretreatment  Poor impact resistance/ poor flexibility/ poor adhesion  Heating speed too slow  Hoses kinked, flattened or too long  Hoses, pump venturies or gun clogged with powder  Check with the virgin powder.  Poor fluidization  Powder blocking  Powder blocking  Powder blocking  Check with powder manufacturer increase dwell time in the oven.  Check pretreatment equipment and chemicals.  Reduce film thickness by adjusting the application equipment.  Check with the powder manufacturer.  Reduce conveyor speed.  Check oven temperature and adjust heat power.  Check oven temperature and adjust heat power.  Check air supply.  Mix with the virgin powder.  Poor fluidization  Check the storage and lump conditions of the powder with a sieve.		Complex shape of the part	Adjust gun voltage and powder feeding.
Poor cleaning or pretreatment  Check pretreatment equipment and chemicals.  Film thickness too high  Poor impact resistance/ poor flexibility/ poor adhesion  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses,  Hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Check air supply.  Reclaim used exclusively  Poor fluidization  Powder blocking  Check the storage and lump conditions of the powder with a sieve,		Powder characteristic	Check with powder manufacturer.
Film thickness too high  Poor impact resistance/ poor flexibility/ poor adhesion  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses.  Hoses, pump venturies or gun clogged with powder  Check air supply.  Reclaim used exclusively  Poor fluidization  Powder blocking  Film thickness too high  Reduce film thickness by adjusting the application equipment.  Check with the powder manufacturer,  Ruduce conveyor speed.  Check oven temperature and adjust heat power.  Check powder-feed hoses.  Clean hoses, pump venturies and gun inside.  Check air supply.  Mix with the virgin powder.  Check the powder fluidizing and adjust air.  Check the storage and lump conditions of the powder with a sieve.		Under-cured	Increase oven temperature or increase dwell time in the oven.
Poor impact resistance/poor flexibility/poor adhesion  Powder resin type or formula  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses.  Hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.	19	Poor cleaning or pretreatment	Check pretreatment equipment and chemicals.
Poor impact resistance/ poor flexibility/ poor adhesion  Conveyor speed too fast  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses.  Hoses, pump venturies or gun clogged with powder  Clean hoses, pump venturies and gun inside.  Insufficient air pressure or volume  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Poor fluidization  Powder blocking  Check the powder fluidizing and adjust air.  Check the storage and lump conditions of the powder with a sieve.		Film thickness too high	Reduce film thickness by adjusting the application equipment,
poor flexibility/ poor adhesion  Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses,  Hoses, pump venturies or gun clogged with powder  Clean hoses, pump venturies and gun inside.  Insufficient air pressure or volume  Reclaim used exclusively  Mix with the virgin powder.  Poor fluidization  Powder blocking  Check the storage and lump conditions of the powder with a sieve.	Poor impact	Powder resin type or formula	Check with the powder manufacturer.
Heating speed too slow  Check oven temperature and adjust heat power.  Hoses kinked, flattened or too long  Check powder-feed hoses,  Hoses, pump venturies or gun clogged with powder  Clean hoses, pump venturies and gun inside.  Insufficient air pressure or volume  Reclaim used exclusively  Mix with the virgin powder.  Poor fluidization  Powder blocking  Check the powder fluidizing and adjust air.  Check the storage and lump conditions of the powder with a sieve.	poor flexibility/	Conveyor speed too fast	Ruduce conveyor speed.
Hoses, pump venturies or gun clogged with powder  Insufficient air pressure or volume  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Poor fluidization  Powder blocking  Check the powder fluidizing and adjust air.  Check the storage and lump conditions of the powder with a sieve.	poor auriesion	Heating speed too slow	Check oven temperature and adjust heat power.
Insufficient air pressure or volume  Check air supply.  Reclaim used exclusively  Mix with the virgin powder.  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Hoses kinked, flattened or too long	Check powder-feed hoses,
Ununiformity of the powder spraying  Reclaim used exclusively  Mix with the virgin powder.  Check the powder fluidizing and adjust air.  Powder blocking  Check the storage and lump conditions of the powder with a sieve.		Hoses, pump venturies or gun clogged with powder	Clean hoses, pump venturies and gun inside.
Ununiformity of the powder spraying  Poor fluidization  Check the powder fluidizing and adjust air.  Check the storage and lump conditions of the powder with a sieve.		Insufficient air pressure or volume	Check air supply.
powder spraying Powder blocking Check the storage and lump conditions of the powder with a sieve.		Reclaim used exclusively	Mix with the virgin powder.
Powder blocking Check the storage and lump conditions of the powder with a sieve.		Poor fluidization	Check the powder fluidizing and adjust air.
Spraygun cause Check the gun inside and consult equipment supplier.	powder spraying	Powder blocking	Check the storage and lump conditions of the powder with a sieve.
		Spraygun cause	Check the gun inside and consult equipment supplier.

## HYUNDAI CHEMTECH COVERAGE

Trouble	Possible cause	Possible solution
	Voltage too high	Turn voltage setting down.
	Powder delivery velocity too high	Turn down air setting or move gun position away from part.
	Complex shape of the part	Replace gun system with tribomatic and powder.
	Powder particles too fine	Turn voltage and powder delivery air setting down.
Poor penetration into inside corners	Poor ground	Provide ground for all equipment,
and recesses	Spray pattern too wide	Change wrong deflector plate.
	Too much reclaim added to the virgin powder	Increase virgin powder or contact powder producer.

## Theoretical coverage(m²/kg)

Specific			F	ilm thic	kness(µn	n)			Remark			
gravity	20	40	50	60	70	80	100	120	Remark			
1.0	50,0	25.0	20.0	16.7	14.3	12.5	10.1	8,3				
1,1	45,5	22,7	18,2	15,2	13,0	10.4	9,1	7.6	Powder coatings' real specific	aravity		
1,2	41,7	20,8	16.7	13.9	11,9	10.1	8.3	6.9	1 owder coatings Tear specific	gravity		
1,3	38.5	19.2	15.4	12.8	11.0	9.6	7.7	6.4	1. Pure and off white	1 1.55~1.70		
1.4	35.7	17.9	14.3	11.9	10.2	8.9	7.1	6,0	2. Ivory/Grey	1.60~1.65		
1.5	33,3	16.7	13,3	11.1	9.5	8.3	6.7	5.6	3. Light color	1.50~1.60		
1.6	31.3	15.6	12,5	10.4	8.9	7.8	6.3	5.2	4. Black/Primary color	1.30~1.45		
1.7	29.4	14.7	11.8	9.8	8.4	7.4	5.9	4.9	5. Clear	1,20~1,25		
1,8	27.8	13,9	11.1	9.3	7.9	6.9	5.6	4.6	= 0 000 2 00 8			
1.9	26.3	13.2	10.5	8.8	7.5	6.6	5.3	4.4	* Efficiency: 100% (Supposition)			
2.0	25.0	12,5	10,0	8.3	7.1	6.3	5.0	4.2				

### Coverage and cost calculator

Coverage(g/m²)	=	Film thickness(um) × Specific gravity	
Coverage(g/111)		Efficiency	
Cost(₩/m²)	=	Coverage(g/m²) × Unit price(₩/kg)	
COSt(W/III)	_	1000	

### Coverage



#### Condition

- · Substrate : Aluminum bar · Piece : 100,000
- · Size: 7m wide x 0.2m long x 0.1m high x 1mm thickness
- · Coated side: Front x Rear x Right x Left
- · Film Thickness & Efficiency(Supposition): 80um & 95%
- · Product: Hyundai Chemtech HS82-WH241 (Specfic gravity = 1,50)

Hyundai Chemtech coverage =  $(80 \,\mathrm{um} \times 1.50) / 0.95 = 126.3 \,\mathrm{g/m^2} = 0.1263 \,\mathrm{kg/m^2}$ Hyundai Chemtech theoretical coverage =  $(1/0.1263 \,\mathrm{kg/m^2}) = 7.91 \,\mathrm{m^2/kg} - (1/0.1263 \,\mathrm{kg/m^2}) = 7.91 \,\mathrm{m^2/kg} - (1/0.1263 \,\mathrm{kg/m^2}) = 1.91 \,\mathrm{m^2/kg}$ 

#### Hyundai Chemtech amount required is

- For 1 aluminum bar of four sides Front =  $7m \times 0.2m = 1.4m^2 1$  Rear =  $7m \times 0.2m = 1.4m^2 2$  Right =  $7m \times 0.1m = 0.7$  3 Left =  $7m \times 0.1m = 0.7$  4 (1)+(2)+(3)+(4))Total : 4.2m<sup>2</sup>
- · For 100,000 aluminum bar of four sides : 4,2m<sup>2</sup> x 100,000 = 420,000m<sup>2</sup>

7.91 m²(A) is coated with Hyundai Chemtech of 1kg

Therefore, Hyundai Chemtech requirement for 420,000 surface area is:

 $1 \text{kg} : 7.91 \text{m}^2 = x \text{kg} : 420,000 \text{m}^2$   $x = (1 \text{kg} \times 420,000 \text{m}^2) / 7.91 \text{m}^2 = 53,097 \text{kg}$ 









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