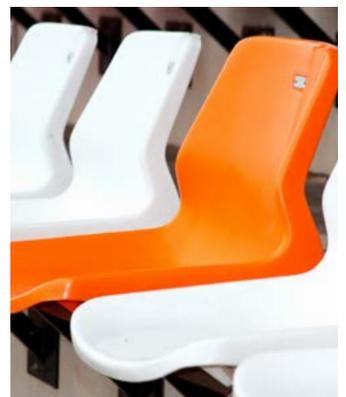


POLIMAXX[®]
Innovative plastics for the world to you





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INTEGRATED REFINERY AND PETROCHEMICAL COMPLEX

IRPC is the first Southeast Asia integrated petrochemical business. With its oil refining total capacity of 215,000 barrels per day, IRPC is one of Thailand's largest oil refinery company. Its production process is related from upstream to downstream petrochemical business, while its business covers other infrastructure necessary to support its diverse and autonomous business operations from deep sea port to oil depot and power plants.

1. Petrochemical Business

The coverage of products consist of polymers comprising HDPE, PP, ABS/SAN, PS, EPS, composite & compound resins as well as high performance product, such as polyols (polyester and polyether), UHMWPE, synthetic polyethylene wax, polyethylene wax, C4-raffinate, acetylene carbon black, acetylene gas.

2. Petroleum Business

The petroleum products of the company are classified into 3 product groups: petroleum fuel products, lube base oil and related products as well as aromatic products

3. Port Business

IRPC's port is located in the adjacent area to its refinery, in the province of Rayong, comprising of both Liquid & Chemical Terminal as well as Bulk & Container Terminal.

4. Asset Management Business

IRPC new business unit provides asset management services, based on IRPC's own properties in Rayong and other provinces with a total area of about 3,000 acres, to support the operations of the IRPC and PTT Groups as well as outside industries.

POLIMAXX® INNOVATIVE PLASTICS FOR THE WORLD TO YOU

IRPC is at the forefront of polymers and chemical development under POLIMAXX® brand in order to serve the most diverse customer requirements, in parallel to social and environmental responsibility for sustainable growth.



PP HOMO | Polypropylene Homopolymer

GRADE	MFI D1238 2.16 kg, 230°C (g/10 min)	TSY D638 (N/mm ²)	FM D790 (MPa)	CHARPY NI DIN 53453 at 23°C (mJ/mm ²)	HDT D648 at Load 0.45 N/mm ² (°C)	APPLICATION
1100NK	11	36	1500	2.9	110	Injection
1100NN	11	33	1300	3.0	95	Injection
1100PK	15	36	1500	2.5	110	Multifilament, Injection
1100RC	20	36	1500	2.4	110	Multifilament, Injection
1100S	30	36	1350	2.0	100	Injection
1102H	2	37	1600	6.0	110	Sheet, Blow
1102K	4	37	1600	4.5	110	Yarn, Monofilament
1103H	2	34	1400	6.2	90	Sheet
1105RC	25	34	1350	3.0	105	Spunbond
1105SC	35	33	1350	2.5	105	Spunbond
1111R	20	40	1850	2.3	129	Injection (High Heat)
1125NA	11	36	1550	2.9	110	CPP film
1126NK	11	35	1450	3.0	100	Blown film
1140H	2.3	38	1605	5.8	106	High clarity sheet
1140U	60	33	1600	1.8	120	Injection (Thin wall)
1150H	2	37	1800	6.0	120	High clarity sheet
1202J	3	37	1600	5.0	110	Yarn, Monofilament

PP COPO | Polypropylene Copolymer

GRADE	MFI D1238 2.16 kg, 230°C (g/10 min)	TSY D638 (N/mm ²)	FM D790 (MPa)	CHARPY NI DIN 53453 at 23°C (mJ/mm ²)	HDT D648 at Load 0.45 N/mm ² (°C)	APPLICATION
5175SM	35	30	1200	2	100	Laminated yarn



PP BLOCK | Polypropylene Block Copolymer

GRADE	MFI D1238 2.16 kg, 230°C (g/10 min)	TSY D638 (N/mm ²)	FM D790 (MPa)	CHARPY NI DIN 53453 at -20°C (mJ/mm ²)	HDT D648 at Load 0.45 N/mm ² (°C)	APPLICATION
2100N	11	30	1350	4.2	100	Injection
2300K	4	28	1300	7.0	98	Injection
2300LC	6	28	1300	6.5	98	Injection
2300NC	10	28	1300	5.8	98	Injection
2300NCA	10	30	1450	7.5	120	Injection (Battery case)
2300SC	30	27	1300	4.5	98	Injection
2363LC	6	28	1300	6.5	98	Injection (UV)
2440TC	55	24	1300	6.0	125	Injection (Thin wall)
2500H	2	25	1100	12.5	92	Sheet
2500M	8	25	1130	7.2	92	Injection (Pail)
2500PC	15	23	1100	8.0	90	Injection
2500TC	45	21	1100	7.2	90	Injection (Thin wall)
2540S	30	23	1230	7.2	120	Injection (Washing tub)

PP RANDOM | Polypropylene Random Copolymer

GRADE	MFI D1238 2.16 kg, 230°C (g/10 min)	TSY D638 (N/mm ²)	FM D790 (MPa)	CHARPY NI DIN 53453 at 23°C (mJ/mm ²)	HDT D648 at Load 0.45 N/mm ² (°C)	APPLICATION
3340H	2	29.5	1000	11.0	83	Sheet, Blow
3325M	9	26	850	4.5	75	CPP film
3140NN	11	36	1500	3.0	105	ISBM, Baby bottle
3342M	9	30	1080	5.5	83	Injection, ISBM
3342R	20	30	1080	4.5	83	Injection
3342S	30	30	1080	4.5	83	High Speed Injection
3370RM	24	24	750	3.5	76	Laminated film
3375RM	24	24	750	3.5	76	Extrusion Coating and Laminated yarn
3375SM	35	24	750	3.0	76	Extrusion Coating and Laminated yarn



PP COMPOUND | Polypropylene Compound

GRADE	MFI D1238 2.16 kg/230°C (g/10 min)	TSY D638 (kg/cm ²)	FM D790 (x10 ⁴ kg/cm ²)	IZOD NI D256 at 23°C (kg-cm/cm ²)	HDT D648 load 0.45 N/mm ² (°C)	DENSITY D792 (g/cm ³)	APPLICATION
PP Reinforced							
1111NXBA4	12	345	2.0	3.1	120	1.06	Electrical appliances
1111NXGA6	4	680	8.5	5.5	161	1.11	Electrical appliances
1111NXTA4	11	370	3.7	3.0	142	1.06	Auto parts
1111NXTA8	10	365	7.5	2.2	147	1.26	Auto parts
1163RXTA8	17.4	337	5.1	2.6	142	1.30	Auto parts
2311LCXGA4	3	500	4.7	6.6	158	1.04	Auto parts, Electrical appliances
2311LCXTA6	6	290	3.9	4.7	143	1.13	Auto parts, Electrical appliances
2311SCXTA4	30	283	2.7	3.3	138	1.05	Auto parts, Electrical appliances
2346SXTA2	30	293	1.9	4.2	121	0.99	Auto parts
2363SCXTA4	30	280	2.4	3.7	130	1.06	Auto parts
2511HXGA5	1.1	645	4.9	20.5	159	1.07	Auto parts, Electrical appliances
2511PCXTA6	13	255	3.6	5.0	140	1.14	Electrical appliances
PP Specialty							
1196NN	13.5	310	2.2	4.5	130	1.03	Electrical appliances
C3104BKC	1.95*	281.4	1.76	94.5	106	1.06	Electrical appliances

* 5 kg/230°C

PP COMPOUND | Polypropylene Compound (inline)

GRADE	MFI ISO 1133 2.16 kg/230°C (g/10 min)	TSY ISO 527-1 (kg/cm ²)	FM ISO 178 (MPa)	CHARPY NI ISO 179 at 23°C (kJ/m ²)	HDT ISO 75 load 0.45 N/mm ² (°C)	DENSITY ISO 1183 (g/cm ³)	APPLICATION
BCX1045	30	20	1000	Not Break	90	0.90	Auto parts: Door Trim, Interior Part
BCX1136TA3	40	20	1800	39	110	0.99	Auto parts: Bumper, Fender
BCX0936TA4	20	20	2230	35	110	1.05	Auto parts: Body side molding
BCX1035TA4	35	20	1950	Not Break	113	1.03	Auto parts: Air bag door, Console
BX1010TA4	25	27	2750	3.0	125	1.05	Auto parts: Underhood, Engine room part
MX1010TA6	30	37	4450	1.5	135	1.13	Auto parts: Engine room part



HDPE PIPE | High Density Polyethylene (Black Pipe)

PROPERTIES	TEST METHOD	UNIT	P901BK	LOW SAG PIPE	MARINE PIPE	BM3245PC
Minimum Required Strength (MRS)	ISO 9080	MPa	10	10	10	8
Melt Flow Rate (190°C, 5kg)	ISO 1133	g/10 min	0.25	0.2	0.25	0.55
Density	ISO 11831	g/cm ³	0.959	0.958	0.957	0.956
Tensile Strength at Break (TSB)	ISO 527	MPa	≥31	≥31	≥31	31
Carbon Black Content	ISO 6964	%	2.25	2.25	2.25	2.3
Carbon Black Dispersion	ISO 18553	%wt	≤2.5	≤2.5	≤2.5	≤3
ESCR (F50)	ASTM D1693	hrs	≥10,000	≥10,000	≥10,000	≥5,000
Special Propertiy	IRPC	-	-	Low Sagging Property	Immune to Bivalves*	-

* *Martesia Striata*

HDPE WIRE & CABLE | High Density Polyethylene (Wire & Cable)

PROPERTIES	TEST METHOD	UNIT	P702BK
Density	ISO 1183	g/cm ³	0.968
Melt Flow Rate (190°C, 5kg)	ISO 1133	g/10 min	1.50
Dielectric Constant (1 MHz)	ASTM D150	ε	2.53
Dissipation Factor	ASTM D150	D	0.0024
Volume Resistivity (1 MHz)	ASTM D257	Ω-cm	5.03x10 ¹⁶



UHMWPE | Ultra High Molecular Weight Polyethylene

PHYSICAL PROPERTIES	TEST METHOD	UNIT	U311	U321	U511	U512FB	U521	U320F	U510B
Average Molecular Weight	-	X10 ⁶ g/mol	3.5	3.5	5.5	5.5	5.5	3.5	5.5
Average Particle Size, X50	ASTM D1921	μm	150	250	150	150	200	250	150
Density	ISO 1183-1	g/cm ³	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Bulk Density	ISO 60	g/cm ³	≥ 0.40	≥ 0.40	≥ 0.40	≥ 0.40	≥ 0.40	≥ 0.40	≥ 0.40
Intrinsic Viscosity	ISO 1628 part 3	ml/g	1800	1800	2350	2350	2350	1800	1800
MECHANICAL PROPERTIES									
Tensile Strength @ Yield	ISO 527	MPa	≥17	≥17	≥17	≥17	≥17	≥17	≥17
Tensile Strength @ Break	ISO 527	MPa	>30	>30	>30	>30	>30	>30	>30
Ultimate Elongation	ISO 527	%	>400	>400	>400	>400	>400	>400	>400
Izod Notched Impact	ASTM D256	J/m	Not Break	Not Break	Not Break	Not Break	Not Break	Not Break	Not Break
Hardness	ISO 868	Shore D	≥60	≥60	≥60	≥60	≥60	≥60	≥60
THERMAL PROPERTIES									
Melting Temperature (10°C/min)	ASTM D3418	°C	130-135	130-135	130-135	130-135	130-135	130-135	130-135
Application			Ram Extrusion	Extrusion Pipe	Ram Extrusion	Spinning Fiber	Compression	Sintering Porous Tube	Calendering Sheet



WPC | Wood Plastic Composite

PROPERTIES	TEST METHOD	UNIT	W1315FD	W2734H1
Density	ASTM D792	g/cm ³	0.98	0.97
Melt Flow Rate (230°C, 2.16kg)	ASTM D1238	g/10 min	5	11
Tensile Strength at Yield	ASTM D638	MPa	33	33
Flexural Strength	ASTM D790	MPa	51	50
Izod Notched Impact (23°C)	ASTM D256	kJ/m ²	25	20
Heat Distortion Temperature (Load 0.45 N/mm)	ASTM D648	°C	145	140

PE WAX | Polyethylene Wax

PROPERTIES	TEST METHOD	UNIT	PE100B	PE100NXC	PE400B	PE400CR/JB
Viscosity at 140°C	ASTM D3236	cPs	1-100	1-30	101-700	101-700
Drop Melting Point	ASTM D127	°C	105-120	108-124	110-130	110-130
Penetration at 25°C	ASTM D1321	0.1 mm	5-20	3-20	1-15	1-15
Color	ASTM D1925	-	White	White	White	White
Product Form	-	-	Block	Flake	Block	Lump Bulk



ABS | Acrylonitrile Butadiene Styrene

GRADE	MFI	NI	HDT		FLAME RATING UL-94 (Thickness:mm.)	APPLICATION
	D1238 10 kg, 220°C (g/10 min)	D256 1/4", 23°C (kg-cm/cm)	1/4", 18.6 kg/cm ² (°C)	D648 1/4", 4.6 kg/cm ² (°C)		
AN450R	6*	17	75	84	V-0(1.6)	Injection (Flame rating V0)
AP102	21	25	88	96	HB(1.5)	Injection (Plating Grade)
GA300	30	22	86	94	HB(1.5)	Injection (High flow)
GA400	45	17	86	94	HB(1.5)	Injection (High flow)
GA800	20	27	87	96	HB(1.5)	Injection (High impact, general purpose)
GA850	20	27	87	96	HB(1.5)	Injection (High impact, general purpose)
KU200	6	21	97	-	HB(1.5)	Injection (High Heat)
KU650**	1.8	14	113	122	HB(1.5)	Injection (High Heat)
KU901	6	13	104	114	HB(1.5)	Injection (High Heat)
MH-1	18	26	86	94	HB(1.5)	Injection (High impact, general purpose)
SB501	6	26	85	-	-	Blow molding grade
SP100	18	34	84	90	HB(1.5)	Injection (Super high impact)
SP200	17	36	84	90	HB(1.5)	Injection (Super high impact)
SR101	7	30	85	92	HB(1.5)	Extrusion sheet (general)
SR301	6	26	85	-	HB(1.5)	Extrusion sheet (Refrigerator)
XP300	7	43	85	-	-	Injection (Extra high impact)

* AN450R MFI D1238 200°C, 5 kg (g/10 min)

** Color Compound only

ABS POWDER | Acrylonitrile Butadiene Styrene (Powder)

GRADE	ABS POWDER/SAN	TYPICAL PROPERTIES OF ABS			APPLICATION
		MELT FLOW INDEX 10 kg, 220°C (g/10 min)	IZOD NOTCHED IMPACT 1/4", 23°C (kg-cm/cm ²)	TENSILE STRENGTH AT YIELD 23°C (kg/cm ²)	
AP5000H	33/67*	19-25	≥23	≥420	ABS, PC/ABS Compound
AP6007	26/74**	8-12	≥21	≥450	ABS, Recycle ABS Compound

* SAN 230PC: AN CONTENT 27-29%, MFI 3.4-4.0 g/10min (5 kg, 200°C) with additive

**SAN 200PC: AN CONTENT 26-30%, MFI 1.4-1.8 g/10min (5 kg, 200°C) with additive



GREEN ABS | Acrylonitrile Butadiene Styrene (with Natural Rubber)

PROPERTIES	UNIT	TEST METHOD	NRG320 NR 2%	NRG350 NR 10%
Tensile Strength at Yield (23°C)	ASTM D638	kg/cm ²	≥420	≥350
Izod Notched Impact (1/4", 23°C)	ASTM D256	kg-cm/cm	≥32	≥12
Flexural Strength at Yield (23°C)	ASTM D790	×10 ⁴ kg/cm ²	≥580	≥500
Flexural Modulus	ASTM D790	×10 ⁴ kg/cm ²	≥1.90	≥2.10
Rockwell Hardness (1/4", 23°C)	ASTM D785	R-Scale	≥106	≥104
RHEOLOGICAL PROPERTIES				
Melt Flow Index (10 kg/220°C)	ASTM D1238	g/10 min	6.0-8.0	16-24
THERMAL PROPERTIES				
Heat Distortion Temperature (1/4", 18.6 kg/cm ²)	ASTM D648	°C	≥80	≥80

AS/SAN | Acrylonitrile Styrene

GRADE	MFI D1238 5 kg, 200°C (g/10 min)	NI D256 1/4", 23°C (kg-cm/cm)	FS D790 at 23°C (kg/cm)	HDT D648 1/4", 18.6 kg/cm ² (°C)	COLOR	APPLICATION
120PC	2.8	2.2	1200	81	Natural	Injection (General purpose)
121PC	2.8	2.2	1200	81	Blue	Injection (General purpose)
129PC	2.8	2.2	1200	81	Slightly Blue	Injection (General purpose)
140PC	5	2.0	1100	85	Natural	Injection (High flow)
141PC	5	2.0	1100	85	Blue	Injection (High flow)
149PC	5	2.0	1100	85	Slightly Blue	Injection (High flow)
308PC	1.5	2.2	1363	88	Natural	Injection (High chemical resistance for lighter)
320PC	1.9	2.2	1365	86	Natural	Injection (High chemical resistance)

AS/SAN | Acrylonitrile Styrene (for Compounding)

GRADE	MFI D1238 5 kg, 200°C (g/10 min)	%ACN	YI	COLOR	APPLICATION
AS103	2.8	24	9	Natural	Compounding
210HF	12	27	9	Natural	Compounding
250PC	6	27	9	Natural	Compounding
280PC	9	27	9	Natural	Compounding



EPS | Expandable Polystyrene

GRADE	SIZE (mm.)	TYPE	MOLDING DENSITY RANGE (g/l)	SILO TIME (hrs.)	MIN.THICKNESS (mm.)	APPLICATION
291L	1.00-1.60	STD	14-25	6-12	>10	Insulation board, block molding
321F	0.63-1.12	Fast	16-25	6-12	>10	Packaging
361F	0.40-0.90	Fast	18-30	6-12	>10	Packaging
255E	1.00-1.60	Fast + SE (B2)	16-25	8-16	>10	Insulation board
355E	0.63-1.12	Fast + SE (B2)	18-30	12-24	>5	Insulation board, block molding
177E	1.25-2.24	Fast + SE (B1)	14-20	8-16	>15	Insulation board, block molding
277E	1.00-1.60	Fast + SE (B1)	16-25	8-16	>10	Insulation board, block molding
377E	0.63-1.12	Fast + SE (B1)	18-30	8-16	>5	Insulation board, block molding

Note: SE = Self-Extinguishing, STD = Standard

DIN 4102: Class B1 = Not easily flammable, Class B2 = Flammable

PS | Polystyrene

GRADE	MFI D1238 5 kg, 200°C (g/10 min)	NI D256 1/4", 23°C (kg-cm/cm)	FS D790 at 23°C (kg/cm)	VST D1525 1/8", 1 kg (°C)	FLAME RATING UL-94 (Thickness: mm.)	APPLICATION
GP110	1.7	-	1,019	107	HB (3.0)	XPS, Extrusion, Injection
GP150	8.0	-	844	100	HB (3.0)	Injection (General Purpose)
GP170	11	-	800	96	-	Injection (High Flow)
HG730	3.5	11	570	100	HB (1.5)	Injection (High Gloss)
HI630	6.5	9	460	95	HB (1.5)	Injection (High Gloss)
HI650	8	11	450	96	HB (1.5)	Injection (High Impact)
HI830	3	12	422	96	HB (3.0)	Extrusion sheet



AMSAN | Alpha Methyl Styrene Acrylonitrile (Heat Resistant Powder)

GRADE	BULK DENSITY (g/cc)	VICAT SOFTENING POINT (°C)	VOLATILE (%)	APPLICATION
HP1162	>0.4	>115	<1.0	High heat ABS compound

Anti-Dripping Additive

GRADE	APPEARANCE	CONTENT OF PTFE (%)	CONTENT OF POLYMER (%)	PARTICLE SIZE OF POWDER	PARTICLE SIZE OF PTFE (µm)	PERCENT VOLATILE (%)	FLOW ABILITY	BULK DENSITY (g/cc)
ADS5000	White Powder	48-52	52-48	Less than 2 mm. 98% minimum	≤0.5	≤0.5	Free Flow	≥0.35

AB | Acetylene Black

GRADE	APPEARANCE	ASH CONTENT (%)	POUR DENSITY (g/cc)	ELECTRICAL RESISTIVITY (Ω-cm)	HCl ABSORPTION NUMBER (cc/5kg)	COARSE PARTICLE (%)	MOISTURE CONTENT (%)	APPLICATION
AB50	Black Powder	max 0.20	0.060 - 0.080	max 0.25	min 20.0	max 0.02	max 0.30	General propose; dry cell
AB50P	Black Powder	max 0.20	0.085 - 0.095	max 0.25	min 15.0	max 0.02	max 0.30	Rubber and plastic compound



BANBAX

Antibacterial inside by **POLIMAXX®**



Anti-Bacterial Compound for Styrenics

PROPERTIES	TEST METHOD	UNIT	GA400B	GA300B	GA800B	HI650B
Tensile Strength at Yield (23°C)	ASTM D638	kg/cm ²	460	480	485	239
Izod Notched Impact (1/4", 23°C)	ASTM D256	kg-cm/cm	20	22	23	10
Flexural Strength at Yield (23°C)	ASTM D790	kg/cm ²	660	670	650	428
Flexural Modulus (23°C)	ASTM D790	×10 ⁴ kg/cm ²	2.4	2.3	2.3	2.4
Rockwell Hardness (1/4", 23°C)	ASTM D785	R-Scale	112	112	111	-
RHEOLOGICAL PROPERTIES						
Melt Flow Index (5 kg/200°C)	ASTM D1238	g/10 min	-	-	-	8.3
Melt Flow Index (10 kg/220°C)	ASTM D1238	g/10 min	40	30	18	-
THERMAL PROPERTIES						
Heat Distortion Temperature (1/4", 18.6 kg/cm ²)	ASTM D648	°C	83	81	82	86

Anti-Bacterial Powder for Polymers

PARAMETERS	TEST METHOD	UNIT	STYRENICS (ABS, PS)	POLYOLEFINS (PP, PE)
Zn	XRF	%	70	70
Particle size [D90]	Laser Diffraction Particle Size Analyzer	µm	4.1	4.2
Bulk density	Gravimetry	g/cm ³	0.36	0.38



Anti-Bacterial Compound for Polyolefins

PROPERTIES	TEST METHOD	UNIT	C1180B	C1400B	C1480B	C3408B	C3708B
Tensile Strength at Yield (23°C)	ASTM D638	MPa	36	28	34	25	27
Elongation at Yield (23°C)	ASTM D638	%	27	24	26	25	16
Izod Notched Impact (23°C)	ASTM D256	J/m	23	45	29	68	50
Flexural Modulus (23°C)	ASTM D790	MPa	1500	1300	1350	950	1050
Rockwell Hardness	ASTM D785	R-Scale	100	100	100	78	83
RHEOLOGICAL PROPERTIES							
Melt Flow Index (2.16 kg, 230°C)	ASTM D1238	g/10 min	2	10	10	1.7	31
THERMAL PROPERTIES							
Heat Distortion Temperature (0.45 N/mm ²)	ASTM D648	°C	117	120	110	95	103

TEST METHOD JIS Z 2801:2006	Tested Micro organism	%Reduction	Antimicrobial Activity
	Escherichia coli	≥ 99	≥ 2
	Staphylococcus aureus	≥ 99	≥ 2



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