

# styrenic polymers



## styrenic polymers 2006



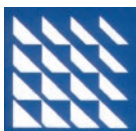
Crystal Polystyrene  
High Impact Polystyrene  
FR HIPS  
FR HIPS  
HIPS

GPPS  
HIPS  
Halogen Free  
Brominated  
Alloys



ABS  
SAN  
PC/ABS

Polylac  
Kibisan  
Wonderloy



ABS

Arbelac



ASA  
PC/ABS  
PA/ABS  
PC/ASA

Rotec  
Romiloy  
Romiloy  
Romiloy



BDS

Clearen



PET-G  
APET

Raditer PET-G  
Variety of grades available –  
please enquire for more details.



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## Crystal Polystyrene

Total Petrochemicals is the 5th largest chemicals group in the world and is positioned globally in polystyrene with manufacturing in North America, Europe and Asia. The UK plant, one of four in Europe, primarily services the local extrusion and injection markets, producing both GPPS and HIPS grades.

### Standard Grades

GRADE	MFI	TYPICAL APPLICATIONS
1160	2.4	Foam trays and boxes, heat resistant packaging, industrial sheets
1340	4.0	HIPS dilution: disposable, sheets for thermoforming, CD & DVD boxes, toys, injection moulding
1450 N	6.5	Insulation boards
1540	12.0	General purpose injection moulding grade, HIPS dilution in packaging, glossy coextruded top layer
1810	20.0	High fluidity injection moulding, thin walls, glossy coextruded top layer
1960 N	30.0	Insulation boards

# Crystal Polystyrene

DESCRIPTION PROPERTIES*	REFERENCES	MELT INDEX	VICAT TEMP.		IZOD IMPACT STRENGTH	TENSILE MODULUS	TENSILE STRENGTH AT BREAK	ELONGATION AT BREAK	FLEXURAL MODULUS	EXTRUSION	INJECTION
			°C (1kg)	°C (5kg)							
Units		g/10 min				MPa	MPa	%	MPa		
Test Method	ISO	1133 H	306A50	306B50	180/1 A	527-2	527-2	527-2	178		
	ASTM	D 1238 G	D 1525 A			D 638 M	D 638 M	D 638 M	D 790		
	JIS	K 7210-8	K 7206 A	K 7206 B	K 7111 ED	K 7113	K 7113	K 7113	K 7203		
High heat resistance, high molecular weight	1160	2.4	105	101	-	3200	48	3	2900	•	•
High molecular weight	1340	4.0	98	93	-	3100	44	2,5	2900	•	•
High heat, easy flow	1450 N	6.5	106	102	-	3200	48	3	2900	•	•
Easy flow	1540	12.0	91	86	-	3100	42	2	2900	•	•
Very easy flow	1810	20.0	90	85	-	3100	42	2	2900	•	•
Very easy flow	1960 N	30.0	105	101	-	3100	35	2	2900	•	•

\*All properties are measured according to the standard quality control procedures.



## High Impact Polystyrene (HIPS)

Total Petrochemicals is the 5th largest chemicals group in the world and is positioned globally in polystyrene with manufacturing in North America, Europe and Asia. The UK plant, one of four in Europe, primarily services the local extrusion and injection markets, producing both GPPS and HIPS grades.

### Standard Grades

GRADE	MFI	IZOD IMPACT	TYPICAL APPLICATIONS
3630	15.0	6.0	General injection moulding, grade. Toys, disposables, office equipment
3450	7.0	8.0	Aesthetic high impact heat resistant grade. Heat resistance in packaging (hot-filled), improved clarity. Heat resistant injection moulding.
4440	10.0	10.0	Improved fluidity high impact injection moulding. Complex moulding, TV fronts and backs
7240	4.5	11.0	Standard high impact for extrusion, in dilution with GPPS, packaging
8350	4.5	13.0	Improved ESCR properties. Packaging (low temperature, high fat foods). Sheets for printing. Fridge parts. (High rubber content – matt/porous surface)

# High Impact Polystyrene (HIPS)

DESCRIPTION PROPERTIES*	REFERENCES	MELT INDEX	VICAT TEMP.		IZOD IMPACT STRENGTH	TENSILE MODULUS	TENSILE STRENGTH AT BREAK	ELONGATION AT BREAK	EXTRUSION	
			°C (1kg)	°C (5kg)					FLEXURAL MODULUS	INJECTION
Units		g/10 min				MPa	MPa	%	MPa	
Test Method	ISO	1133 H	306A50	306B50	180/1 A	527-2	527-2	527-2	178	
	ASTM	D 1238 G	D 1525 A			D 638 M	D 638 M	D 638 M	D 790	
	JIS	K 7210-8	K 7206 A	K 7206 B	K 7111 ED	K 7113	K 7113	K 7113	K 7203	
Easy flow. Works as high gloss	3630	15.0	89	82	6.0	2300	25	30	2400	•
High heat resistance	3450	7.0	103	95	8.0	2250	28	55	2250	•
High heat easy flow	4440	10.0	96	88	10.0	2050	20	55	2000	•
Improved dilution capability	7240	4.5	97	87	11.0	1950	21	60	1850	•
Improved stress crack resistance	8350	4.5	96	84	13.0	1600	20	60	1600	•

\*All properties are measured according to the standard quality control procedures.



## FR HIPS – Halogen Free

Total's UK plant, one of four in Europe, primarily services the local extrusion and injection markets, producing both GPPS and HIPS grades. The UK compounding plant produces a wide range of products - flame retardant grades (including halogen free systems), light stabilised materials and colour compounds.

### Standard Grades

GRADE	FLAME RETARDANT PROPERTIES	GENERAL INFORMATION
FT 875	V1@2.5mm	Typical application: LCD TV cabinets
FT 877	V0@3.0mm	Typical application: LCD TV cabinets
FT 878	V0@2.5mm	Typical application: LCD TV cabinets
853	V2@1.6mm	V2 with very low combustion time. Typical applications: TV cabinets, printers cartridges
855	V1@3.0mm	No dripping. Specially designed for TV cabinets. (1) 855 is also available with higher vicat (87°C), 855HV
856	V0@3.0mm	Typical application TV cabinets
857	V0@3.0mm	Improved fluidity. Typical application: TV cabinets. Also available with light stabilization (LS)

# FR HIPS – Halogen Free

TYPICAL APPLICATIONS		REFERENCES		PROPERTIES*										CONSUMER ELECTRONICS	
•	Consumer Electronics	Units	Test Method	ISO ASTM	Flame Retardant Properties	Melt Flow Index	Density	Vicat Temp.	IZOD Impact Strength	Tensile Yield Strength	Elongation at break	Flexural Modulus	TV Covers Compliance	Flat TV LCD & Plasma	CRT
•	Electrical Appliances				UL 94	D-1238	D-792	D-1525	D-256	D-638	D-638	D-790			
•	Office Automation				V1 @ 2.5mm	4	1.08	90	6	30	40	2400			
•	Packaging				V0 @ 3.0mm	3	1.1	90	5	44	30	2300			
•			FT 875		V0 @ 2.5mm	3	1.1	90	6	45	30	2300			
•			FT 877		V2 @ 1.6mm	5	1.06	81	7	32	40	2500			•
•			FT 878		V1 @ 3.0mm	5	1.07	81	7	32	40	2400			•
•			853		V0 @ 3.0mm	4	1.1	81	7	35	40	2300			•
•			855		V0 @ 3.0mm	7	1.1	81	5	35	40	2300			•
•			856												
•			857												

\*All properties are measured according to the standard quality control procedures.



## FR HIPS – Brominated (non-deca)

Total's UK plant, one of four in Europe, primarily services the local extrusion and injection markets, producing both GPPS and HIPS grades. The UK compounding plant produces a wide range of products - flame retardant grades (including halogen free systems), light stabilised materials and colour compounds.

### Standard Grades

GRADE	FLAME RETARDANT PROPERTIES	GENERAL INFORMATION
801	V0@1.6mm	Suitable for UL 94 5VB @2.5mm
807	V2@1.6mm	Suitable for Hot Glow Wire Test at 960°C. Typical application: fuse boxes
820	V2@1.6mm	Typical applications: covers for electrical equipment, internal enclosures for office automation, toner cartridges
827	–	Suitable for Hot Glow Wire Test at 750°C. Typical application: fuse boxes

# FR HIPS – Brominated

TYPICAL APPLICATIONS		REFERENCES		PROPERTIES*										CONSUMER ELECTRONICS			
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging	Flame Retardant Properties	Melt Flow Index	Density	Vicat Temp.	IZOD Impact Strength	Tensile Yield Strength	Elongation at break	Flexural Modulus	TV Covers Compliance	
																Test Method	Units
•	Electrical Appliances	•	Electrical Appliances	•	Office Automation	•	Packaging	Class	g/10 min	g/cm <sup>3</sup>	°C (5kg)	kJ/m <sup>2</sup>	MPa	%	MPa	Flat TV LCD & Plasma	CRT
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging	UL 94	D-1238	D-792	D-1525	D-256	D-638	D-638	D-790	•	•
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging	V0 @ 1.6mm	5	1.09	87	8	24	40	2300	•	•
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging	V2 @ 1.6mm	10	1.04	88	7	27	39	2400	•	•
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging	V2 @ 1.6mm	14	1.09	87	7.5	24	45	2400	•	•
•	Consumer Electronics	•	Electrical Appliances	•	Office Automation	•	Packaging		6	1.04	90	7	27	39	2400	•	•

\*All properties are measured according to the standard quality control procedures.



## HIPS – Alloys

Total Petrochemicals is the 5th largest chemicals group in the world and is positioned globally in polystyrene with manufacturing in North America, Europe and Asia. The UK plant, one of four in Europe, primarily services the local extrusion and injection markets, producing both GPPS and HIPS grades. The UK compounding plant produces a wide range of products - flame retardant grades (including halogen free systems), light stabilised materials and colour compounds.

Two compound grades, which are alloys of Polystyrene and Polyethylene, are also available. The first of these is intended for the food packaging market where the ease of processing of Polystyrene is combined with enhanced properties of stress crack resistance, flexibility and barrier properties, which are associated with Polyethylene.

The second grade exhibits a very high impact strength, which makes this grade particularly suitable for the addition of significant quantities of filler without the normal loss of physical properties, which is found when conventional grades of Polystyrene are filled.

## Standard Grades

GRADE	IZOD IMPACT	GENERAL INFORMATION
9217	40/20	High level of stress crack resistance. Typical application: packaging for aggressive foodstuffs. Base polymer for conductive polystyrene compounds.
9218	37/15	High level of stress crack resistance. Typical application: packaging for aggressive foodstuffs, lids.

# HIPS – Alloys

TYPICAL APPLICATIONS		REFERENCES		PROPERTIES*							
		Units		Melt Flow Index	Density	Vicat Temperature		IZOD Impact Strength (23/ -30°C)	Tensile Strength at break	Elongation at break	Flexural Modulus
		Test Method	ISO ASTM			°C (1kg)	°C (5kg)				
Consumer Electronics	Office Automation			g/10 min	g/cm <sup>3</sup>						
	Electrical Appliances			1133 H	1183	306A50	306B50	180/1 A	527-2	527-2	178
	Packaging			D-1238	D-792	D-1525	D-1525	D-256	D-638	D-638	D-790
		•		4	1.02	101	76	40/20	22	80	1450
		•		5	1.00	100	63	37/15	20	100	1000

\*All properties are measured according to the standard quality control procedures.



## ABS

### Polylac – General Purpose

- World's largest ABS producer, capacity in excess 1.2 million t/pa
- Utilising state-of-the-art continuous emulsion technology
- High quality materials with an excellent grade range
- Superb technical facilities
- Exceptionally consistent base colour
- Exceptional colour consistency with colour compounding at source.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
PA-709	5	45	Super impact & extrusion
PA-747	13	41	High impact
PA-717C	14	28	Medium impact
PA-727	19	26	Electroplating
PA-757	22	20	High gloss, medium impact

The above grades are food contact approved and meet with FDA requirements.

## ABS Polylac

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE				
			PA-709	PA-747	PA-717C	PA-727	PA-757
Melt Flow Index (10kg @ 200°C)	ISO 1133	g/10min	5	13	14	19	22
Specific Gravity	ISO 1183	g/cm <sup>3</sup>	1.03	1.03	1.04	1.04	1.05
Izod Impact 3.2mm (Notched)	D-256	1/8" kg-cm/cm	45	41	28	26	20
Flexural Modulus (2mm/min)	ISO 178	GPa	1.8	1.8	1.9	2.1	2.2
Flexural Strength (2mm/min)	ISO 178	MPa	58	58	69	73	76
Tensile Elongation (50mm/min)	ISO 527	%	55	45	20	15	20
Tensile Strength (50mm/min, yield)	ISO 527	MPa	40	39	49	52	54
Ball Indentation Hardness (H358/30)	ISO 20391	-	86	88	97	103	110
Vicat Softening Temp (1kg/120t/hr)	ISO 306	°C	104	103	105	105	105

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## ABS

### High Flow – Polylac

- World's largest ABS producer, capacity in excess 1.2 million t/pa
- Utilising state-of-the-art continuous emulsion technology
- High quality materials with an excellent grade range
- Superb technical facilities
- Exceptionally consistent base colour
- Exceptional colour consistency with colour compounding at source.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
PA-737	33	25	High flow, medium impact
PA-756	45	17	High flow, high rigidity

The above grades are food contact approved and meet with FDA requirements.

Other high flow grades are available to order upto MFI 77. Please contact our office for details.

## ABS High Flow

PROPERTIES	TEST METHOD (ASTM)	UNITS	TYPICAL VALUE	
			PA-737	PA-756
Melt Flow Index (10kg @ 200°C)	ISO 1133	g/10min	33	45
Specific Gravity	ISO 1183	g/cm <sup>3</sup>	1.04	1.05
Izod Impact 3.2mm (Notched)	D-256	1/8" kg-cm/cm	25	17
Flexural Modulus	ISO 178	GPa	1.9	2.1
Flexural Strength	ISO 178	MPa	60	72
Tensile Elongation	ISO 527	%	20	15
Tensile Strength	ISO 527	MPa	38	49
Rockwell Hardness	ISO 20391	-	94	106
Vicat Softening Temp.	ISO 306	°C	101	106

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## ABS

### High Heat – Polylac

- World's largest ABS producer, capacity in excess of 1.2 million t/pa
- Utilising state-of-the-art continuous emulsion technology
- High quality materials with an excellent grade range
- Superb technical facilities
- Exceptionally consistent base colour
- Exceptional colour consistency with colour compounding at source.

### Standard Grades

GRADE	MFI	HDT	DESCRIPTION
PA-777E	5.0	120	Ultra high heat
PA-777D	6.0	115	Super high heat
PA-777B	6.7	107	High heat & high impact

## ABS High Heat

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE		
			PA-777E	PA-777D	PA-777B
Melt Flow Index (10kg @ 200°C)	ISO 1133	g/10min	5.0	6.0	6.7
Specific Gravity	ISO 1183	g/cm <sup>3</sup>	1.07	1.06	1.03
Izod Impact (Notched)	D-256	1/8" kg-cm/cm	11	12	19
Flexural Modulus	ISO 178	GPa	2.2	2.3	2.2
Flexural Strength	ISO 178	MPa	71	73	70
Tensile Elongation	ISO 527	%	13	13	18
Tensile Strength	ISO 527	MPa	44	45	45
Rockwell Hardness	ISO 20391	-	99	102	101
Vicat Softening Temp.	ISO 306	°C	131	127	115
HDT (annealed, 118MPa)	D-648	°C	120	115	107



## ABS

### Flame Retardant – Polylac

- World's largest ABS producer, capacity in excess 1.2 million t/pa
- Utilising state-of-the-art continuous emulsion technology
- High quality materials with an excellent grade range
- Superb technical facilities
- Exceptionally consistent base colour
- Exceptional colour consistency with colour compounding at source.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
PA-765	60	22	High flow, V0 @ 1.6mm
PA-765A	48	24	V0 @ 2.0mm

The above grades have full UL Yellow Card certification. Colours also available on request. Yellow card status maintained on colours when compounded at source.

## ABS Flame Retardant

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE	
			PA-765A	PA-765
Melt Flow Index (10kg @ 200°C)	ISO 1133	g/10min	48	60
Specific Gravity	ISO 1183	g/cm <sup>3</sup>	1.17	1.19
Izod Impact (Notched)	D-256	1/8" kg-cm/cm	22	24
Flexural Modulus	ISO 178	GPa	1.7	1.8
Flexural Strength	ISO 178	MPa	54	55
Tensile Elongation	ISO 527	%	10	10
Tensile Strength	ISO 527	MPa	39	39
Rockwell Hardness	ISO 20391	-	74	79
Flammability	ISO 306	°C	V-0@2.0mm (1/8")	V-0@1.59mm (1/16")

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## ABS Polylac Clear

- Latest addition to Chi Mei's ABS range
- Very high clarity
- High impact strength
- Good flow properties
- UL and C-UL certified.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
PA-758	34	16	Domestic appliance assemblies Food utensils, jugs Computer peripherals, toys

The above grade is food contact approved and meets with FDA requirements.

## ABS Polylac Clear

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE
			PA-758
Melt Flow Index (10Kg @200°C)	ISO 1133	g/10min	34
Specific Gravity	D-972	-	1.08
Izod Impact Strength	D-256	kg-cm/cm	16
Flexural Modulus	D-790	kg/cm <sup>2</sup>	2.2
Flexural Strength	D-790	kg/cm <sup>2</sup>	650
Tensile Strength	D-638	kg/cm <sup>2</sup>	410
Vicat Softening Temp	D-1525	°C	104
Light Transmission(1/8")	D-1003	%	90
Haze (1/8")	D-1003	-	4.0
Flammability	-	UL 94	1/16" HB
H.D.T.(1/4" @120°C/hr)	D-648	-	88

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## SAN Kibisan

- Produced utilising state-of-the-art technology
- Excellent technical resources
- Consistent quality product
- Superb technical facilities.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
PN 117C	25	1.8	High clarity

The above grade is food contact approved and meets with FDA requirements.

## SAN Kibisan

PROPERTIES	TEST METHOD (ASTM)	UNITS	TYPICAL VALUE
			PN-117C
Melt Flow Index	D-1238	g/10min	25
Specific Gravity	D-792	g/cm <sup>3</sup>	1.06
Izod Impact Strength (Notched)	D-256	kg-cm.cm	1.8
Flexural Modulus	D-790	kg/cm <sup>2</sup>	3.4
Flexural Strength	D-790	kg/cm <sup>2</sup>	960
Tensile Elongation	D-790	%	3.0
Tensile Strength	D-638	kg/cm <sup>2</sup>	700
Rockwell Hardness	D-785	-	M-83
Vicat Softening	D-1525	°C	104



## Wonderloy® PC/ABS

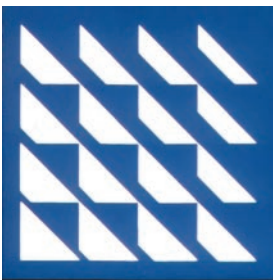
- World's largest ABS producer, capacity in excess 1.2 million t/pa
- Utilising state-of-the-art continuous emulsion technology
- High quality materials with an excellent grade range
- Superb technical facilities
- Exceptionally consistent base colour
- Exceptional colour consistency with colour compounding at source.

### Standard Grades

GRADE	IZOD IMPACT	DESCRIPTION
PC 510	60	Monitor Housing
PC 530	58	Notebook Housing
PC 540	53	OA Machine

## Wonderloy® PC/ABS

PROPERTY	UNIT	TEST METHOD	CONDITION	GENERAL PURPOSE		
				High Flow	PC 530	High Heat
				PC 510	PC 540	
Specific Gravity	-	ASTM D792	23/23°C	1.16	1.18	1.18
Water Absorption (immersion)	%	ASTM D570	24hr at 23°C	0.20	0.20	0.20
Tensile Strength at Yield	Kg/cm <sup>2</sup>	ASTM D638	23°C	500	600	600
Tensile Elongation	%	ASTM D638	23°C	110	100	100
Flexural Strength	Kg/cm <sup>2</sup>	ASTM D790	23°C	800	910	910
Flexural Modulus	Kg/cm <sup>2</sup>	ASTM D790	23°C	25000	25100	25100
Izod Impact Strength, Notched	Kg/cm/cm	ASTM D256	1/8"	60	58	53
Heat Distortion Temperature (unannealed)	°C	ASTM D648	18.6 Kg/cm <sup>2</sup> 120°C/hr	75	90	90
Coefficient of Linear Expansion	x10 <sup>-5</sup> cm/cm/°C	ASTM D696	40~100°C	6~8	6~8	6~8
Mold Shrinkage	%	ASTM D955	-	0.4~0.6	0.4~0.6	0.4~0.6
Flammability	-	UL 94	-	1.5mm V-0 2.1mm 5VB	1.5mm V-0 2.0mm 5VB	1.5mm V-0 2.0mm 5VB
Characteristics/Principal Applications				Optical Disc	Medium Viscosity	Low Viscosity



## ABS

### General Purpose – Arbelac

- General purpose with a balanced combination of mechanical properties
- Easy to process
- Produced using Miwon (Sumitomo) Technology.

### Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
ABS 770	18	28	Medium flow, medium impact
ABS 750	37	21	High flow, medium impact

The above grades are food contact approved.

## ABS Arbelac

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE	
			ABS 770	ABS 750
Melt Flow Index (5Kg @ 200°C) (21.6Kg @ 200°C) (10kg @ 220°C)	D1238	g/10min	2	4
	DIN 53735		25	45
	ISO 1133		18	37
Specific Gravity	D-792	g/cm <sup>3</sup>	1.04	1.04
Izod Impact Strength (Notched)	D-258	kg-cm/cm	28	21
Flexural Strength	D-790	kg/cm <sup>2</sup>	655	650
Tensile Strength @ Yield	D-638	kg/cm <sup>2</sup>	410	430
Elongation @ Break	D-638	%	22	20
Ball Indentation Hardness	D-785	R-scale	101	98
Vicat Softening Temp.	D-1525	°C	95	93
H.D.T.	D-648	°C	82	80
Moulding Shrinkage	D-955	%	0.4-0.7	0.4-0.7



## Rotec®

### Acrylonitrile-Styrene-Acrylate (ASA)

Romira GmbH is a compounder of polymers such as ASA, ABS, Blends with Polycarbonate, PPE/HIPS (Luranyl) and other Thermoplastics. They provide a wide range of formulations in any colour to meet the specific requirements of customers.

Sophisticated compounding facilities with twin screw extruders incorporating state of the art equipment with a diligent control of product quality, enable colour matched compounds to be supplied for any applications in all markets.

### Standard Grades

GRADE	MFI	DESCRIPTION
S 210	22	General purpose, injection moulding
S 310	23	Injection moulding, high impact
S 510	22	Injection moulding, very high impact
S 610	18	Injection moulding, huge impact
E 210	18	General purpose, extrusion
E 310	20	General purpose, extrusion, high impact
E 510	20	Extrusion, very high impact
E 610	18	Extrusion, huge impact
T115	18	Injection moulding, high heat resistance

PROPERTY	UNIT	METHOD	CONDITION	GENERAL PURPOSE			HIGH IMPACT			EXTRUSION			FLAME RETARDANT
				ROTEC ASA S210	ROTEC ASA S310	ROTEC ASA S610	ROTEC ASA S510	ROTEC ASA S610	ROTEC ASA E210	ROTEC ASA E310	ROTEC ASA E510	ROTEC ASA T115	
Tensile Modulus	N/mm <sup>2</sup>	DIN 53457	23°C	2700	2600	1800	1900	1800	2700	2600	1900	–	
Tensile Strength	N/mm <sup>2</sup>	DIN 53455	23°C	56	46	38	38	38	56	48	38	–	
Elongation at Break	%	DIN 53455	23°C	18	–	–	20	–	18	–	20	–	
Flexural Modulus	N/mm <sup>2</sup>	DIN 53457	23°C	2700	2200	1800	2000	1800	2700	2200	2000	–	
Flexural Strength	N/mm <sup>2</sup>	DIN 53452	23°C	75	68	54	57	54	75	71	57	–	
Notched Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EA	23°C	7	10	21	15	21	7	12	15	14	
Notched Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EA	23°C	6	9	20	14	20	6	11	14	13	
Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EU	23°C	80 - n.B	n.B	n.B	n.B	n.B	80 - n.B	n.B	n.B	70 - n.B	
Density	g/ml	DIN 53479	23°C, 50% RH	1.07	1.06	1.06	1.06	1.06	1.07	1.07	1.06	1.06	
Water Absorption	%	DIN 53495	23°C, 24hrs	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Heat Distortion Temperature	°C	DIN 53461		–	84	90	–	90	–	85	–	–	
Vicat Softening Temperature B 50	°C	DIN 53460		100	99	95	95	95	100	100	95	110	
Melt Index (MFR)	g/10 min	DIN 53735	220°C, 10kp	22	23	18.5	22	18.5	18	20	20	18	
Thermal Coefficient of Linear Expansion	10 <sup>-4</sup> · K <sup>-1</sup>	DIN 53752		0.95	–	–	–	–	0.95	–	–	–	
Shrinkage	%	DIN 16901	23°C	0.3 – 0.5	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.5	0.3 – 0.6	0.3 – 0.6	0.3 – 0.5	
Flammability	–	UL94	–	HB*	HB*	–	–	–	HB*	–	HB	HB	



## Romiloy®

### Polycarbonate/Acrylonitrile-Butadiene-Styrene (PC/ABS)

Romira GmbH is a manufacturer of polymers such as ASA, ABS, Blends with Polycarbonate, PPE/HIPS (Luranyl) and other Thermoplastics. They provide a wide range of formulations in any colour to meet specific requirements of customers.

Sophisticated compounding facilities with twin screw extruders incorporating state of the art equipment with a diligent control of product quality, enable colour matched compounds to be supplied for any applications in all markets.

### Standard Grades

GRADE	DESCRIPTION
9035	Injection moulding, high impact, flame retardant UL94 VO @1.5mm
1015	Very high impact, high heat resistance
1035	High impact, good heat resistance
1055	General purpose, injection moulding

Available in high flow & glass-filled, and as a halogen free option.

## Romiloy® PC/ABS

PROPERTY	UNIT	METHOD	CONDITION	PC/ABS BLEND			FLAME RETARDANT
				1035	1015	1055	
Tensile Modulus	N/mm <sup>2</sup>	DIN 53457	23°C	2000	2100	2400	2500
Tensile Strength	N/mm <sup>2</sup>	DIN 53455	23°C	48	44	54	53
Elongation at Break	%	DIN 53455	23°C	25.4	66.5	35	–
Flexural Modulus	N/mm <sup>2</sup>	DIN 53457	23°C	2000	2200	2250	–
Flexural Strength	N/mm <sup>2</sup>	DIN 53452	23°C	70	80	85	–
Notched Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EA	23°C	33	35	34	26
Notched Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EA	23°C	32	34	-	25
Impact Strength (Charpy)	kJ/m <sup>2</sup>	ISO 179 1EU	23°C	n.B	n.B	-	n.B
Density	g/ml	DIN 53479	23°C, 50% RH	1.14	1.15	1.13	1.18
Water Absorption	%	DIN 53495	23°C, 24hrs	0.2	0.2	0.2	0.3
Heat Distortion Temperature	°C	DIN 53461		–	–	–	–
Vicat Softening Temperature B 50	°C	DIN 53460		120	130	115	103
Melt Index (MFR)	g/10 min	DIN 53735	220°C, 5kp 220°C, 5kp	–	–	–	75 100
Thermal Conductivity	W(m · K)	DIN 52612		–	–	–	30
Thermal Coefficient of Linear Expansion	10 <sup>-4</sup> · K <sup>-1</sup>	DIN 53752		5x10 <sup>-4</sup>	5x10 <sup>-4</sup>	–	–
Shrinkage	%	DIN 16901	23°C	0.4 – 0.7	0.4 – 0.7	–	0.3 – 0.6
Flammability	–	UL94	–	HB	HB	HB	V0*

\* = These are average figures, which could vary in each production batch due to addition of pigments, antistatica, slip, uv stabilizer or other.

## styrenic polymers 2006



### Romiloy® PC/ASA

Romira GmbH is a manufacturer of polymers such as ASA, ABS, Blends with Polycarbonate, PPE/HIPS (Luranyl) and other Thermoplastics. They provide a wide range of formulations in any colour to meet specific requirements of customers.

Sophisticated compounding facilities with twin screw extruders incorporating state of the art equipment with a diligent control of product quality, enable colour matched compounds to be supplied for any applications in all markets.

### Standard Grades

GRADE	MFI	DESCRIPTION
6020	35	Super high injection
6040	40	High impact injection

## Romiloy® PC/ASA

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE	
			6020	6040
Tensile Modulus	DIN 53457	N/mm <sup>2</sup>	2500	2450
Tensile Strength	DIN 53455	N/mm <sup>2</sup>	63	59
Elongation at Break	DIN 53455	%	80	60
Flexural Modulus	DIN 53457	N/mm <sup>2</sup>	2400	2400
Flexural Strength	DIN 53452	N/mm <sup>2</sup>	95	93
Notched Impact Strength (Charpy) Natural	ISO 179 1EA	kJ/m <sup>2</sup>	35	30
Notched Impact Strength (Charpy) Coloured	ISO 179 1EA	kJ/m <sup>2</sup>	—	—
Density	DIN 53479	g/ml	1.17	1.114
Water Absorption	DIN 53495	%	0.3	0.3
Heat Distortion Temp.	DIN 53461	°C	—	—
Vicat Softening Temp.	DIN 53460	°C	133	122
Melt Index	g/10 min	—	35	40
Flammability	UL94	—	HB	HB

\*ASTM unless otherwise specified.

# styrenic polymers 2006



## Romiloy® PA/ABS

Romira GmbH is a manufacturer of polymers such as ASA, ABS, Blends with Polycarbonate, PPE/HIPS (Luranyl) and other Thermoplastics. They provide a wide range of formulations in any colour to meet specific requirements of customers.

Sophisticated compounding facilities with twin screw extruders incorporating state of the art equipment with a diligent control of product quality, enable colour matched compounds to be supplied for any applications in all markets.

### Standard Grades

GRADE	MFI	DESCRIPTION
4010	22	General purpose, Injection moulding

## Rotec® PA/ABS

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE
			4010
Tensile Modulus	DIN 53457	N/mm <sup>2</sup>	1250
Tensile Strength	DIN 53455	N/mm <sup>2</sup>	40
Elongation at Break	DIN 53455	%	350
Flexural Modulus	DIN 53457	N/mm <sup>2</sup>	1100
Flexural Strength	DIN 53452	N/mm <sup>2</sup>	44
Notched Impact Strength 23°C	ISO 179 1EA	kJ/m <sup>2</sup>	75
Notched Impact Strength -20°C	ISO 179 1EA	kJ/m <sup>2</sup>	—
Density	DIN 53479	g/ml	1.06
Water Absorption	DIN 53495	%	0.2
Heat Distortion Temp.	DIN 53461	°C	—
Vicat Softening Temp.	DIN 53460	°C	120
Melt Index 260	g/10 min	—	20
Flammability	UL94	—	—

# styrenic polymers 2006



## BDS Clearen

- Produced utilising state of the art technology
- Lightweight, strong & flexible
- High gloss & excellent clarity
- Living hinge properties
- More grades available on request
- All grades are FDA compliant

## Standard Grades

GRADE	MFI	IZOD IMPACT	DESCRIPTION
730L	8	19	High impact grade. Lightweight, high gloss & clarity
TC270	6	19	Standard injection grade
TC340	6	78	Good clarity & toughness, extrusion grade
TC350	10	>500	Excellent toughness, extrusion grade
TC400	5	21	Excellent clarity, extrusion grade

## BDS Clearan

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUE			
			730L	TC270	TC340	TC350
Vicat Softening Temperature	ASTM D1525	°C	56	—	—	—
Heat Distortion Temperature	ASTM D648	°C	61	61	57	54
Izod Impact Strength	ASTM D256	J/m	19	19	78	>500
Tensile Strength	ASTM D638	MPa	29	28	25	21
Flexural Strength	ASTM D790	MPa	48	45	29	23
Flexibility	ASTM D790	MPa	1,500	1,200	1,380	1,200
Melt F @ 200 °C*50N	ASTM D1238	MPa	8	6	6	10
Specific Gravity	ASTM D792	—	1.02	1.02	1.02	1.02
Rockwell Hardness R	ASTM D785	—	68	73	21	18
Light Transmission	ASTM D1003	%	—	—	—	—
Haze	ASTM D1003	%	0.6	0.6	0.7	0.8
Mould Shrinkage	—	—	0.3~0.6	0.3~0.6	0.3~0.7	0.3~0.7
Flammability	UL94	—	1.5mmHB	—	—	—



## PETG

### Raditer

- Low aptitude for crystallisation
- Can be processed by extrusion, blow moulding and injection moulding
- Exceptional clarity and toughness
- Good chemical resistance
- Easy to decorate.

### Standard Grades

GRADE	IV	TYPICAL APPLICATIONS
E AX1 100	0.79	Toys, fridge panels, confectionery boxes, cosmetic jars, shaped bottles, profiles.

## PETG Raditer

PROPERTIES	TEST METHOD	UNTS	TYPICAL VALUE
			E AX1 100
IV	-	-	0.79
Tensile Modulus	ISO 527-2/1A	MPa	2800
Yield Stress	ISO 527-2/1A	MPa	55
Yield Strain	ISO 527-2/1A	%	3.3
Nominal Strain @ Break	ISO 527-2/1A	%	25
Flexural Modulus	ISO 178/1A	MPa	2200
Flexural Strength	ISO 178/1A	MPa	80
Charpy Impact Strength (Notched)	ISO 179 eA ISO 179 eA	KJ/m <sup>2</sup>	2.2 1.7
Melting Temperature	ISO 3146/C2	°C	80
Temp. of Deflection under load	ISO 75-2/1A	°C	70
Vicat Softening Temp.	ISO 306/B50	°C	75
Flammability	UL94	Mm/class	1.6" HB
Density	ISO 1183	kg/m <sup>3</sup>	1290





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