



MIRACTRAN

Thermoplastic Polyurethane (TPU)

Introduction

[MIRACTRAN] is the trade name for the thermoplastic polyurethane by the Nippon Miractran Co.,Ltd. established in 1965. Moreover [MIRACTRAN] is sold by the Nippon Polyurethane Industry Co., Ltd.

This industrial material, [MIRACTRAN] is most suited for injection moulding and extrusion moulding. Besides, it can be blow moulded, calendered, and inflation moulded etc.

The resultant product is far superior in physical property to that of the conventional cast type polyurethanes. [MIRACTRAN] is indeed an outstanding polyurethane elastomer. Our company answers customer's needs through the TPU business.

Characteristics of [MIRACTRAN]

[MIRACTRAN] is one of the best product among thermoplastic elastomers, which has the excellent properties.

1. [MIRACTRAN] is specifically featured by its superior Abrasion Resistance.
It is much superior in abrasion resistance to natural or synthetic rubber and other thermoplastic elastomers.
2. Remarkable Mechanical Strength
[MIRACTRAN] has far stronger tensile strength than natural or synthetic rubber by double to threefold, it serves the purpose of thinning and decreasing the weight of the final products.
3. Low Temperature Resistance.
When placed in low temperature, [MIRACTRAN] continues to have favorable elasticity and resilience, scarcely showing any change in its hardness.
4. Resistant capacity to Oil and Gasoline is most favorable.
5. Resistance to Weathering and to the effect of Ozone is considered most appropriate.
6. [MIRACTRAN] can be easily colored by mixing it with coloring agents, as by a mixer.
7. The Thermoplastic Moulding Process can be put to the same effective use as before.
Sprues, runners and other elements can be repeatedly utilized.

Applications

Moulding	Field	Applications
Injection	Automotive parts	Ball joint, Dust cover, Door locks striker, Steering assemblies, Side protection mouldings, antenna jackets, etc.
	Machinery parts	Gaskets, Packings, O' ring, Caps, Washers, etc.
	Foot Wear	Ski-boot shells, Soles of work shoes and sports shoes, Motor bike boots, etc.
	Others	Roller skate wheels, Caster, Ear-tags, Watch-band, Snow chains, Hammer heads, etc.
Extrusion	Hose·Tube	High pressure hose, Gardening hose, Irrigation hose, Liner for fire hose, Pneumatic tube, etc.
	Film	Seat cover, Artificial leather, Lifejackets, Drain linings, Keyboard covers, etc.
	Wire·Cable	Cable sheathing (car parts), Cable insulation
	Others	Rope, Round-belt, V-belt, etc.
Calender	Conveyer belt, Flexible container, Fabric laminates, etc.	
Blow	Car parts,	
Inflation	Various kinds of film (20~400 μ),	
Solution	Binder, Adhesives, Artificial leather coatings	

Standard Grade

E type

		Hardness	100%Mo (MPa)	Tensile Strength (MPa)	Elongation at break (%)	Tear Strength (kN/m)	Specific Gravity	Rebound Resilience (%)	Compressi on Set (%)	Vicat Softenin g Point (°C)	Taber Abrasion Loss H22(mg)	Glass Transitio n Point (°C)	Base Polyol
		JISA or D											
E100	E180	80A	5	43	680	93	1.21	59	30	95	20	-45	Ester
	E185	85A	7	46	630	113	1.22	50	—	110	27	—	
	E190	90A	10	46	580	137	1.22	45	32	118	35	-43	
	E195	95A、46D	12	48	530	157	1.22	38	—	122	50	—	
	E198	97A、53D	17	48	520	167	1.23	38	35	125	60	-39	
E300	E380	80A	5	35	680	88	1.11	62	32	90	17	-61	Ether
	E385	85A	7	43	580	108	1.11	56	—	97	23	—	
	E390	90A	9	46	480	123	1.12	55	40	114	30	-55	
	E395	94A、46D	12	48	480	137	1.12	45	—	120	45	—	
	E398	97A、53D	17	48	440	167	1.12	40	32	131	58	-46	
E500	E580	80A	4	47	580	93	1.16	61	30	100	15	-49	Ester
	E585	85A	6	47	530	118	1.17	55	—	116	20	—	
	E590	90A	9	51	480	137	1.18	49	31	130	25	-48	
	E595	95A、46D	12	53	480	147	1.18	42	—	131	35	—	
	E598	97A、53D	14	55	450	177	1.19	39	34	141	55	-43	
	E559	59D	18	52	450	196	1.20	—	33	—	—	—	
	E564	64D	25	54	400	226	1.21	39	35	145	70	—	
	E568	68D	29	55	350	255	1.23	—	40	—	—	—	
	E574	74D	42	56	350	294	1.23	39	42	151	90	—	
E900	E980	80A	6	47	480	98	1.17	55	40	105	20	-34	Carbo nate
	E985	85A	8	49	440	118	1.18	44	—	108	25	—	
	E990	90A	10	54	390	137	1.19	36	30	115	31	-29	
	E995	95A、46D	14	57	390	157	1.20	30	—	132	40	—	
	E998	97A、53D	20	59	390	157	1.21	30	—	140	57	-28	

* Above data is not guaranteed but the average from actual result.

- Testing method : JIS K 7311、K 6262、K 7206 ● Compression Set : 70°C × 22h
- Softening Point : Vicat、Weight 1kg ● Abrasion Loss : Taber、H-22、weight 1kg、Rotation frequency 1000
- Glass Transition Point : DSC



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P type

		Hardness		100%Mo (MPa)	Tensile Strength (MPa)	Elongation at break (%)	Tear Strength (kN/m)	Specific Gravity	Rebound Resilience (%)	Compres sion Set (%)	Vicat Softening Point (°C)	Taber Abrasion Loss H22(mg)	Glass Transition Point (°C)	Base Polyol
		JISA	or D											
P400	P485	85A		5	49	560	88	1.19	46	43	101	30	-46	Ester
	P490	90A		6	52	530	98	1.20	39	42	111	50	-44	
	P495	95A、46D		8	55	500	107	1.21	34	38	117	60	-40	
P20M	P22M	82A		4	39	680	88	1.21	53	56	64	28	-40	Ester

* Above data is not guaranteed but the average from actual result.

- Testing method : JIS K 7311、K 6262、K 7206 ● Compression Set : 70°C × 22h
- Softening Point : Vicat、Weight 1kg ● Abrasion Loss : Taber、H-22、weight 1kg、Rotation frequency 1000
- Glass Transition Point : DSC

Dope-coatings

Grade	Solvent	Solid content (%)	Viscosity (CPS/25°C)	Solvent	Diluent
P22S	DMF	15	1,050-1,300	THF、DMF、DMSO Cyclohexanone	Acetone、MEK、 Toluene
	THF	15	650-800		



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Special Grade

Specialty	Grades	Hardness	100%Mo (MPa)	Tensile Strength (MPa)	Elongation at break (%)	Tear Strength (kN/m)	Specific Gravity	
		JISA or D						
Low compression set	H885FNAT	85A	7	38	550	98	1.19	21
	H890FNAT	90A	11	41	530	118	1.20	21
	H895FNAT	95A、46D	15	43	500	147	1.21	22
								Compression set (70°C × 22hr)
Low Hardness	E660MNAT	60A	2	25	900	49	1.14	Blend
	E665MNAT	65A	2	26	880	54	1.14	
	E670MNAT	70A	3	28	850	59	1.14	
	Ester	E660MZAA	60A	2	16	1200	50	1.13
		E665MZAA	65A	2	20	1000	56	1.14
		E670MZAA	70A	3	22	1100	65	1.14
		E675MNAT	75A	3	29	800	62	1.14
		E375MSJP	75A	3	25	750	69	1.11
	C565PNAT	65A	4	10	540	60	1.19	PVC/Blend
Non-yellowing	XN-2001	85A	5	49	770	76	1.15	Carbonate
	XN-2002	90A	6	57	610	117	1.15	Carbonate
	XN-2004	96A	8	56	650	131	1.15	Carbonate
Flame Retardative	E585PUOO	84A	8	34	550	108	1.23	V-2
	E590PUOO	88A	9	39	500	118	1.23	V-2
	E394PUBA	93A	12	38	530	136	1.16	V-0
	U385PSWI	85A	8	35	510	-	-	Non halogen, V-2
	U390PSWI	90A	9	38	490	-	-	Non halogen, V-2
	U385PSWJ	85A	8	34	520	-	-	Non halogen, V-2
	U385PSZX	87A	8	32	600	98	-	Non halogen, V-0
	U390PSZX	90A	11	30	540	115	-	Non halogen, V-2
Electro-conductive	K595PSJV	95A	8	29	530	98	1.23	Volume resistivity 10 ³ ~10 ⁴ Ω cm
	K22MPSJW	90A	7	20	600	88	1.24	
	K25MPSJW	95A	8	29	500	98	1.25	
Low friction, Low abrasion loss	F595FCOO	97A	12	41	450	137	1.25	
Transparent	E785PNAT	85A	7	46	550	113	1.21	
	E790PNAT	90A	8	49	500	128	1.21	
	E795PNAT	95A	12	49	500	167	1.22	
Hot melt	E785MSNN	85A	4	13	930	74	1.15	
	E790MSJR	90A	6	13	830	87	1.15	

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● Testing method : JIS K 7311、K 6262、K 7206、C60695-11-10 Method B ● Compression Set : 70°C × 22h



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Special Grade

Specialty	Grades	Hardness	100%Mo (MPa)	Tensile Strength (MPa)	Elongation at break (%)	Tear Strength (kN/m)	Specific Gravity	
		JISA or D						
Calendering	E585PKOO	85A	7	41	550	118	1.17	
	E380PKOO	80A	4	23	690	79	1.11	
Blow moulding	E585PBOO	85A	7	41	550	118	1.17	
	E890PBOO	90A	8	49	530	108	1.20	
Inflation (moulding) film	E885PFAB	85A	5	28	550	108	1.19	
	E390PFAC	90A	7	30	650	110	1.12	
Good injection mouldability	P433RNAT	81A	5	22	750	88	1.10	
	P890RSUA	90A	8	39	480	103	1.18	
Dope-coatings	P22SRNAT	82A	4	36	630	83	1.21	

* Above data is not guaranteed but the average from actual result.

● Testing method : JIS K 7311、K 6262、K 7206

* There is a product that cannot correspond immediately about special grade.

If you have any questions, please feel free to contact us.