

Professional TPU Manufacturer



KOSLEN

崑仲 | 昆勝高分子

Professional TPU Manufacturer



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專業TPU製造商

歷史沿革

崑仲股份有限公司（臺灣）創立於1993年，以生產熱可塑性彈性體為主之專業廠商，產品均為綠色環保材料。主要生產 TPU熱可塑性彈性體，產品行銷世界各地，品質及服務深受廣大客戶讚譽。

本公司創立以來一直秉持『精益求精、服務至上、永續發展』為經營理念，在品質管理、生產安全、社會環保方面建立了一套合乎國際品質保證之標準。同時，我們不斷地追求技術創新，擁有高素質的研發團隊，精密的分析儀器，使我們保持市場之競爭優勢。

公司本著對保護自然環境負責態度，通過了ISO9001質量管理體系標準和ISO14001環境管理體系標準。崑仲股份有限公司以新概念、多功能的KOSLEN TPU品牌材質滿足不同之客戶需求。

History

Established in 1993, KINJOIN CO., LTD. (Taiwan) is a professional manufacturer of thermoplastic elastomers which are green and environmentally friendly products. We mainly produce TPU thermoplastic elastomer and sold all over the world with outstanding quality and considerate service. With the responsible attitude towards natural environmental protection, our company has developed KOSLEN® TPU which enjoy great and consistent stabilized quality reputation among customers.

Since the establishment, the company has been upholding the business philosophy of “pursuing excellence, service-oriented and sustainable development” and setting up a set of standards in line with international quality assurance in quality management, production safety and social and environmental protection. Mean-while, we continue to pursue the technical innovation, own a smartR&Dteam and have high-tech analytical instruments. Therefore we have the advantages and features to keep market competitiveness in various applications.

With the responsible attitude towards natural environmental protection, our company has pass ISO9001 and ISO14001. KOSLEN TPU meet the needs of different customers by new concept and multi-functional materials.



KOSLEN TPU
崑仲/昆胜高分子

- 2001年成立福州廠
- 2004年設立東莞廠
- 2010年建立泉州廠

- Fuzhou factory was established in 2001
- Dongguan factory was established in 2004
- Quanzhou factory was established in 2010

專業TPU製造商

Professional TPU
Manufacturer



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TPU

Thermoplastic Polyurethane

熱可塑性聚氨酯彈性體

熱可塑性聚氨酯彈性體(TPU)是一種嵌段共聚物,由軟硬交替的鏈段序列組成,可以調整軟硬鏈段的比例以實現各種硬度。TPU 硬度範圍廣,既可以像橡膠一樣柔軟,也可以像硬質塑膠一樣堅硬。TPU 商品通常都是粒狀,加工方法有:射出、擠出、壓延、吹塑、模壓、紡絲加工等等,具有高強度、高韌性、耐磨、耐油、耐高低温和耐黴菌性等優異的綜合性能,廣泛應用於鞋材、服裝、汽車、醫藥衛生、管材、電纜、改性、薄膜和片材等許多領域。TPU 是新一代工程塑膠,屬經濟可循環再利用環保型塑膠彈性體之一,其應用幾乎遍及所有領域。

TPU產品特性:

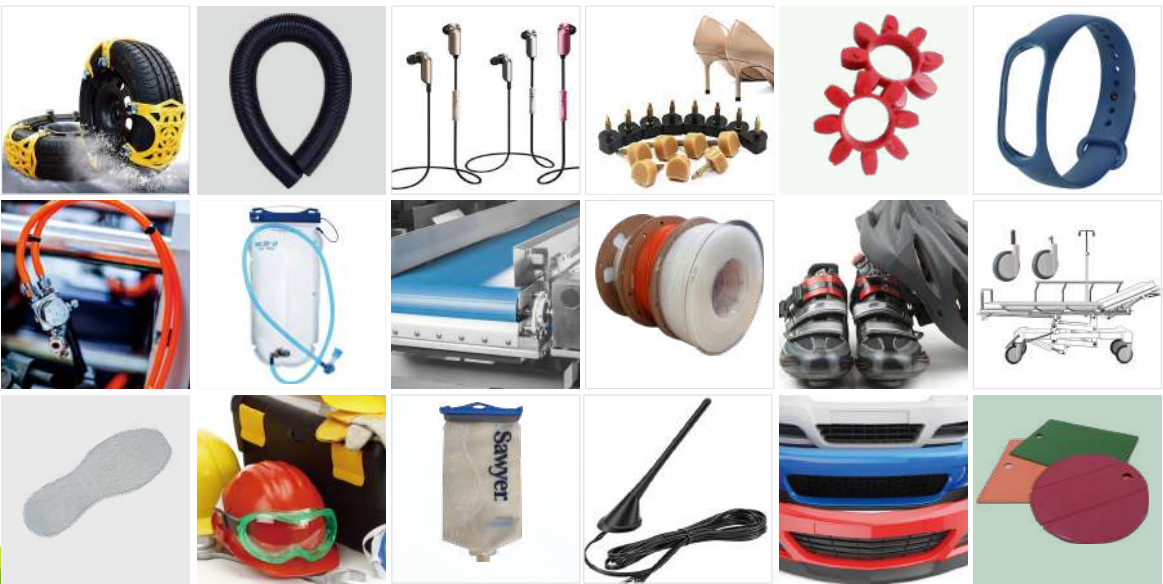
- 1.優越的耐磨與抗撕裂性能。
- 2.具有抗水解和抗菌的效果。
- 3.耐寒及耐曲折性能優越。
- 4.有阻燃和耐油特性屬綠色環保型塑膠材料。
- 5.由於加工特性佳兼具橡膠和塑膠寶貴特性,是同類型塑膠無法相比。

Thermoplastic polyurethane elastomer

Thermoplastic Polyurethane elastomer (TPU) is a block copolymer consisting of alternating sequences of hard and soft segments. The proportion of hard and soft segments can be manipulated to produce a wide range of hardness. TPU is with wide range of hardness, it can be as soft as rubber or as hard as rigid plastics. TPU is easy to process and the processing methods of TPU granule including injection, extrusion, calendering, blow molding, molding, spinning, etc., With excellent comprehensive performance such as high mechanical strength, toughness, good wear resistance, good oil resistance and microbe resistance etc, TPU is widely used in many fields such as shoe materials, clothing, automobiles, medicine and health, pipes, cables, modification, films and sheets. TPU is a new generation of engineering plastics. It is one of the economical, recyclable and environmentally friendly plastic elastomer.

TPU product features

- 1.Excellent wear and tear resistance.
2. Hydrolysis resistance and resistance to microorganisms.
- 3.Excellent cold resistance and excellent bending resistance.
- 4.TPU is a environmental friendly plastic material with flame retardant and oil resistant properties.
- 5.Easy processing comparable to that of rubber and plastic.



TPU 產品適用範圍:

注塑級: 汽車零件, 機器零件, 電子配件, 運動鞋飾片, 鞋材大底, 女鞋天皮, 滾輪, 錶帶, 玩具, 運動護具, 特殊護具, 特殊包膠, 動物耳標, 和其它塑膠製品。

擠出級: 電線電纜, 管材, 薄膜, 薄板, 織物, 服飾膠釘, 肩帶, 其它。

吹塑級: 塑膠瓶, 充氣用水帶, 運動鞋氣墊, 玩具等。

TPU product scope:

Application in injection products: auto parts, machine parts, electronic parts, sports shoes, shoe soles, women's shoes heel, straps, toys, sports protective gear, special protective gear, overmolding, animal ear tags, and other plastic products.

Application in extrusion products: wire and cable, pipe, film, sheet, fabric, clothing nail, shoulder strap, and others.

Application in blow molding products: plastic bottles, water hoses, sports shoes, air cushions, toys, etc.



KOSLEN TPU



THERMOPLASTIC
POLYURETHANE ELASTOMER

超臨界物理發泡系列
Supercritical Physical Foaming (SCF) Series

產品簡介：

超臨界物理發泡技術是指當氣體的壓力與溫度突破臨界點，形成獨特的超臨界流體——兼具氣體的高滲透性與液體的流動性。此狀態下，氣體能均勻進入材料內部，成為極佳的物理發泡劑。

現行三種超臨界物理發泡技術：
注塑發泡、E-TPU、釜式發泡(小發大、板材發泡)

Product Introduction：

Supercritical Physical Foaming Technologies is when a gas exceeds its critical pressure and temperature, it transforms into a supercritical fluid combining the high diffusivity of a gas with the flowability of a liquid. In this state, the gas penetrates uniformly into the material, making it an ideal physical blowing agent.

Three Main Supercritical Physical Foaming technologies: SCF Injection Molding Foaming, E-TPU(Bead Foaming), Autoclave Foaming(Injection Preform, Sheet Foaming)

產品特性：

低密度、高回彈、輕量化、緩震、環保

加工方式:

鞋中底、鞋墊、板材、緩衝材

				注塑發泡/Injection Foaming				小發大 板材發泡/Autoclave Foaming	
型號/規格	Properties	檢測方法	單位	Z-385AV	Z-395AV	Z-485AV	Z-492AV	H-3042	Z-895AV
材料	Material	-	-	脂肪族聚醚 Aliphatic Polyether	脂肪族聚醚 Aliphatic Polyether	脂肪族聚酯 Aliphatic Polyester	脂肪族聚酯 Aliphatic Polyester	脂肪族聚醚 Aliphatic Polyether	脂肪族聚酯 Aliphatic Polyester
硬度C	Shore hardness C	ASTM D2240	Shore C	41±3	48±3	43±3	50±3	25-60	30-60
比重	Specific gravity	ASTM D792	-	0.12~0.20	0.12~0.20	0.14~0.20	0.14~0.20	0.05	0.07
落球回彈率	Falling ball rebound rate	-	%	≥60	≥60	≥60	≥60	≥70	≥70
拉力強度	Tensile strength	ASTM D412	kgf/cm²	≥15	≥17	≥20	≥20	≥15	≥16
延伸率	Elongation	ASTM D412	%	≥230	≥250	≥260	≥275	≥200	≥200
撕裂強度	Tear strength	ASTM D624	kg/cm	≥13	≥14	≥14	≥15	≥15	≥17
壓縮歪	Compression set	ASTM D395	%	≤30	≤30	≤25	≤25	≤35	≤33



E-TPU 發泡系列
E-TPU series

產品簡介：

E-TPU（發泡熱塑性聚氨酯）採用物理發泡形成珠粒微孔結構，並以蒸汽成型打造兼具輕量、緩震與高回彈的彈性材料。其優勢在於反覆受壓後仍能維持腳感與支撐，並可透過珠粒尺寸、密度與加工工藝進行分區調校，讓性能更可控、量產更穩定，適合各類高耐久緩衝需求。

產品特性：

低密度、高回彈、回彈維持率佳、耐疲勞、抗壓縮永久變形、低溫柔韌、性能可調、易做分區設計、耐水解、耐候、耐黃變

加工方式：

鞋中底、鞋墊、板材、填充材、球、輪胎

Polyester TPU:

E-TPU (expanded thermoplastic polyurethane) is produced via physical foaming to create a bead-based microcellular structure, then steam-bonded (sintered) into a lightweight, cushioning, and high-resilience elastic material. Its key advantage is the ability to retain underfoot feel and support under repeated compression. By adjusting bead size, density, and bonding conditions, E-TPU enables zoned tuning for more controllable performance and stable mass production, ideal for durable cushioning applications.

Properties:

Low density, High resilience, Excellent resilience retention, Fatigue resistance, Resistance to compression set, Good flexibility at low temperature,Adjustable performance, Easy for zone design,Hydrolysis resistance, Weather resistance
Yellowing resistance

Typical use:

Midsole,Insole,Sheet / Board,Filling material,Ball,Tire

型號/規格	Properties	檢測方法	單位	1040	1045	1340	1350	1360	1370	1365BK	1370BK
硬度C	Shore hardness C	ASTM D2240	Shore C	28	32	35	40	45	48	46	48
比重	Specific gravity	ASTM D792	-	0.075	0.085	0.075	0.1	0.125	0.15	0.135	0.15
分層撕裂	Split tear strength	ASTM D3574	N/cm	15	15	20	28	43	48	45	48
落球回彈率	Falling ball rebound rate	-	%	74%	74%	72%	72%	72%	70%	72%	70%
拉力強度	Tensile strength	ASTM D412	kgf/cm²	≥12	≥12	≥12	≥12	≥12	≥12	≥12	≥12
延伸率	Elongation	ASTM D412	%	≥100	≥100	≥100	≥100	≥100	≥100	≥100	≥100
耐黃變	UV level	UVA*50°C*24h	-	4~4.5	4~4.5	4~4.5	4~4.5	4~4.5	4~4.5	5	5
蒸氣成型壓力	Steam forming pressure	-	kgf	0.7	0.7	1.1	1.1	1.1	1.1	1.1	1.1
壓縮變形率	Compression set	ASTM D395	%	45%	45%	35%	35%	35%	35%	35%	35%
收縮	Shrinkage	ASTM D3575	%	< 1%	< 1%	< 1%	<0.5%	<0.5%	<0.5%	<0.5%	<0.5%



THERMOPLASTIC
POLYURETHANE ELASTOMER

TPU B-400系列 (聚酯型)

TPU B-400 series

聚酯型 TPU：	Polyester TPU:
耐磨佳，成型快，透明度好，適用於注塑，擠出	Good wear resistance, short cycle times and good transparency, Suitable for injection molding, extrusion
典型用途：	Typical use:
管材，錶帶，鞋飾片，共混改性，電子配件，輪材等等	Pipe, strap, shoe trim, blend modification, electronic accessories, wheel, etc.
硬度範圍：	Hardness range:
從 Shore A80 到 Shore D72	From Shore A80 to Shore D72

型號/規格	Properties	檢測方法	單位	B-480AL	B-485AL	B-490AL	B-495AL	B-498AL	B-464AL	B-472DL	D-490AL	D-498AL	B-3470A35
比重	Specific gravity	ASTM D792	-	1.2	1.21	1.21	1.22	1.22	1.23	1.23	1.21	1.22	1.18
硬度A	Shore hardness A	ASTM D2240	Shore A	80	85	90	95	-	-	-	90	-	77
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	-	55	64	72	-	55	-
拉力強度	Tensile strength	ASTM D412	kgf/cm²	250	300	350	400	450	450	480	350	450	135
伸長率	Elongation at break	ASTM D412	%	700	650	600	550	500	450	400	600	500	750
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	40	60	90	110	130	200	220	90	130	25
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	100	150	180	230	250	280	300	180	250	65
撕裂強度	Tear strength	ASTM D624	kgf/cm	80	95	120	140	160	220	240	120	160	70
壓縮永久歪	Compression set	ASTM D395	%	30	28	25	20	20	-	-	25	20	120
磨耗	Abrasion loss	DIN 53516	mm³	≤80									



TPU B-700系列 (聚酯型)

TPU B-700 series

聚酯型 TPU：	Polyester TPU:
透明度好，適用於注塑，擠出，流延，吹塑	Good transparency, suitable for injection molding, extrusion, casting, blow molding
典型用途：	Typical use:
管材，氣墊，薄膜，汽車配件，透明飾片 工業皮帶等等	Pipe, air cushion, film, auto parts, transparent trim, industrial belt, etc.
硬度範圍：	Hardness range:
從 Shore A80 到 Shore D72	From Shore A80 to Shore D72

型號/規格	Properties	檢測方法	單位	B-780AL	B-785AL	B-790AL	B-795AL	B-798AL	B-764DL	B-772DL
比重	Specific gravity	ASTM D792	-	1.2	1.21	1.21	1.22	1.22	1.23	1.23
硬度A	Shore hardness A	ASTM D2240	Shore A	80	82	90	95	-	-	-
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	50	55	64	72
拉力強度	Tensile strength	ASTM D412	kgf/cm²	280	320	380	400	450	450	480
伸長率	Elongation at break	ASTM D412	%	700	650	600	500	450	450	400
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	40	50	70	95	110	180	200
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	100	120	160	200	230	250	260
撕裂強度	Tear strength	ASTM D624	kgf/cm	70	80	100	150	180	210	230
壓縮永久歪	Compression set	ASTM D395	%	32	30	28	25	25	-	-
磨耗	Abrasion loss	DIN 53516	mm³	≤100						



THERMOPLASTIC
POLYURETHANE ELASTOMER

TPU S-100系列 (聚酯型)

TPU S-100 series

聚酯型 TPU：

機械強度優良，成型性好，彈性好，通用級材料
適用於注塑，擠出，壓延，流延等製造工藝

典型用途：

鞋材，管材，腳輪，保護套，電子配件，醫療器材
玩具，包膠（包 PC，ABS），共混改性等等

硬度範圍：

從 Shore A80 到 Shore D72

Polyester TPU:

Excellent mechanical strength, short cycle times, good elasticity,
general-purpose materials, suitable for injection molding, extrusion,
calendering, casting and other manufacturing processes

Typical use:

Shoes, pipe, tube, casters, protective sleeves, electronic
accessories, medical equipment, toys, overmolding with PC and
ABS , blending modification, etc.

Hardness range:

From Shore A80 to Shore D72

型號/規格	Properties	檢測方法	單位	S-180AL	S-185AL	S-190AL	S-195AL	S-198AL	S-164DL	S-172DL	S-185ALL	S-190ALL
比重	Specific gravity	ASTM D792	-	1.21	1.22	1.2	1.22	1.23	1.24	1.24	1.22	1.22
硬度A	Shore hardness A	ASTM D2240	Shore A	80	85	90	95	-	-	-	85	90
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	50	55	65	72	-	-
拉力強度	Tensile strength	ASTM D412	kgf/cm²	250	300	350	380	400	420	450	180	250
伸長率	Elongation at break	ASTM D412	%	700	650	600	550	500	450	400	650	600
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	40	60	80	100	120	150	180	50	70
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	70	100	120	150	150	180	200	80	120
撕裂強度	Tear strength	ASTM D624	kgf/cm	80	95	105	120	130	180	200	80	105
壓縮永久歪	Compression set	ASTM D395	%	30	28	25	25	20	-	-	25	20
磨耗	Abrasion loss	DIN 53516	mm³	≤100						-	-	-

TPU S-600系列 (聚酯型)

TPU S-600 series

聚酯型 TPU：

機械強度優良，耐磨耗性，成型性好，抗曲折性能
佳適用於注塑

典型用途：

鞋材，輪材，共混改性，電子配件
運動器材等等

硬度範圍：

從 Shore A70 到 Shore A98

Polyester TPU:

Excellent mechanical strength, wear resistance, good formability,
good resistance to bending and folding Suitable for injection
molding

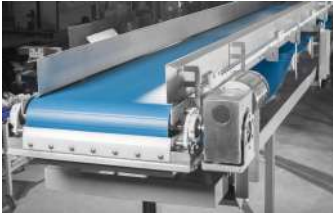
Typical use:

Sole, wheels, blending modification, compound, electronic
accessories, sports equipment etc.

Hardness range:

From Shore A70 to Shore A98

型號/規格	Properties	檢測方法	單位	S-670AL	S-675AL	S-680AL	S-685AL	S-690AL	S-695AL	S-698AL	S-675ALL	S-685ALL
比重	Specific gravity	ASTM D792	-	1.2	1.2	1.21	1.21	1.22	1.23	1.23	1.21	1.21
硬度A	Shore hardness A	ASTM D2240	Shore A	70	85	80	85	90	95	-	85	85
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	-	-	51	55	-	-
拉力強度	Tensile strength	ASTM D412	kgf/cm²	200	250	250	280	310	340	360	140	220
伸長率	Elongation at break	ASTM D412	%	850	800	750	680	650	550	500	850	700
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	25	60	40	50	60	80	100	30	50
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	50	100	100	120	140	180	220	60	90
撕裂強度	Tear strength	ASTM D624	kgf/cm	75	95	80	100	140	170	220	70	100
壓縮永久歪	Compression set	ASTM D395	%	35	35	30	28	25	25	20	28	25
磨耗	Abrasion loss	DIN 53516	mm³	≤80						-	-	-



THERMOPLASTIC
POLYURETHANE ELASTOMER

TPU U-200系列 (聚酯型)

TPU U-200 series

聚酯型 TPU：	Polyester TPU:
成型快，經濟型，適用於注塑	Fast forming, economical, suitable for injection molding
典型用途：	Typical use:
鞋材，電子配件，注塑件，運動器材，家居用品等等	Shoes, electronic accessories, injection molded parts, sports equipment, household items, etc.
硬度範圍：	Hardness range:
從 Shore A75 到 Shore D64	From Shore A75 to Shore D64

型號/規格	Properties	檢測方法	單位	U-275AL	U-280AL	U-285AL	U-290AL	U-295AL	U-298AL	U-264DL
比重	Specific gravity	ASTM D792	-	1.24	1.24	1.245	1.245	1.25	1.25	1.255
硬度A	Shore hardness A	ASTM D2240	Shore A	75	80	85	90	95	-	-
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	-	50	55	64
拉力強度	Tensile strength	ASTM D412	kgf/cm²	250	250	280	320	380	420	450
伸長率	Elongation at break	ASTM D412	%	750	700	650	600	550	500	450
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	40	60	100	110	120	150	180
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	90	100	120	150	180	200	220
撕裂強度	Tear strength	ASTM D624	kgf/cm	100	120	140	160	180	200	220
壓縮永久歪	Compression set	ASTM D395	%	30	28	28	25	23	20	18
磨耗	Abrasion loss	DIN 53516	mm³	≤80						



TPU H-600系列 (聚酯型)

TPU H-600 series

聚酯型 TPU：	Polyester TPU:
硬度軟，手感佳，成型快，經濟型，適用於注塑	Economical, very soft in part, short cycle times, suitable for injection molding
典型用途：	Typical use:
鞋材，電子配件，注塑件，運動器材，家居用品等等	Shoes, electronic accessories, injection molded parts etc.
硬度範圍：	Hardness range:
從 Shore A65 到 Shore A75	From Shore A65 to Shore A75

型號/規格	Properties	檢測方法	單位	H-665AE	H-670AE	H-675AE
比重	Specific gravity	ASTM D792	-	1.23	1.235	1.24
硬度A	Shore hardness A	ASTM D2240	Shore A	65	70	75
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-
拉力強度	Tensile strength	ASTM D412	kgf/cm²	220	250	280
伸長率	Elongation at break	ASTM D412	%	900	850	800
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	25	35	40
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	70	100	120
撕裂強度	Tear strength	ASTM D624	kgf/cm	80	90	100
壓縮永久歪	Compression set	ASTM D395	%	30	28	25
磨耗	Abrasion loss	DIN 53516	mm³	≤80		



THERMOPLASTIC
POLYURETHANE ELASTOMER

TPU C-500系列(特殊級聚酯型)

TPU C-500 series

特殊聚酯型 TPU：	Special polyester TPU:
耐油性佳，耐熱性佳，耐磨佳	Good oil resistance, good heat resistance, good wear resistance, suitable for injection molding
典型用途：	Typical use:
密封件，油封，鏡框，油管，汽車配件等等	Seals, oil seals, frames, tubing, auto parts, etc.
硬度範圍：	Hardness range:
從 Shore A93 到 Shore D64	From Shore A93 to Shore D64

型號/規格	Properties	檢測方法	單位	CW-593AL	CW-595AL	CW-598AL	CW-564DL
比重	Specific gravity	ASTM D792	-	1.18	1.18	1.19	1.21
硬度A	Shore hardness A	ASTM D2240	Shore A	93	95		
硬度D	Shore hardness D	ASTM D2240	Shore D	-	50	55	64
拉力強度	Tensile strength	ASTM D412	kgf/cm²	340	380	400	420
伸長率	Elongation at break	ASTM D412	%	580	550	500	450
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	90	1000	120	180
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	170	180	200	250
撕裂強度	Tear strength	ASTM D624	kgf/cm	120	130	150	200
壓縮永久歪	Compression set	ASTM D395	%	22	20	18	-
磨耗	Abrasion loss	DIN 53516	mm³		≦80		

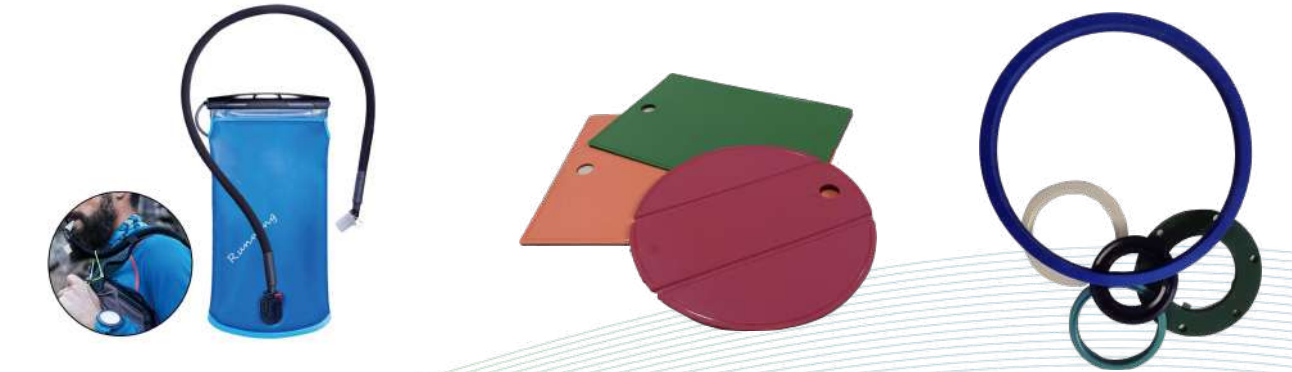


TPU E-300系列(聚醚型)

TPU E-300 series

聚醚型 TPU：	Polyether TPU:
耐水解，耐霉性，耐低溫，適用於注塑，擠出，壓延	Good hydrolytic stability and microbe resistance, good low-temperature flexibility, suitable for injection molding, extrusion, calendering
典型用途：	Typical use:
水球，電線，消防水帶，海洋探管等等	Water polo, wires, fire hoses, marine probes, etc.
硬度範圍：	Hardness range:
從 Shore A70 到 Shore D72	From Shore A70 to Shore D72

型號/規格	Properties	檢測方法	單位	E-380AL	E-385AL	E-390AL	E-395AL	E-398AL	E-364DL	E-372DL	E-275AV	E-285AV	E-295AV
比重	Specific gravity	ASTM D792	-	1.11	1.12	1.13	1.15	1.16	1.17	1.18	1.05	1.10	1.13
硬度A	Shore hardness A	ASTM D2240	Shore A	80	85	90	95	-	-	-	70	80	95
硬度D	Shore hardness D	ASTM D2240	Shore D	-	-	-	-	55	64	72			
拉力強度	Tensile strength	ASTM D412	kgf/cm²	250	300	350	380	400	420	450	180	280	320
伸長率	Elongation at break	ASTM D412	%	700	650	600	500	500	450	400	800	700	580
100%抗拉模數	100% modulus	ASTM D412	kgf/cm²	40	60	70	100	130	180	220	30	40	110
300%抗拉模數	300% modulus	ASTM D412	kgf/cm²	70	110	130	180	240	260	280	50	70	190
撕裂強度	Tear strength	ASTM D624	kgf/cm	80	98	105	120	150	200	220	60	80	150
壓縮永久歪	Compression set	ASTM D395	%	30	28	28	25	25	-	-	35	30	22
磨耗	Abrasion loss	DIN 53516	mm³						≤100				





KOSLEN TPU 技術支援

Drying And Molding Conditions

乾燥及成型條件

Drying Temperature and Time

乾燥溫度和時間

硬度 90A以上 2~4小時 100℃
硬度 90A以下 2~4小時 80℃
低硬度規格乾燥溫度過高會相黏結塊，且乾燥時間過長，易產生黃變。

Hardness 90A or more: recommended drying temperature is 100℃ and recommended drying time is 2~4 hours
Hardness below 90A: recommended drying temperature is 80℃ and recommended drying time is 2~4 hours

For Low hardness specification, drying temperature can't be too high and drying time can't be too long. Too high drying temperature may lead TPU granule agglomeration, too long drying time easy to cause TPU granule yellowing.
特性比較 ◎優 ○良 △可 Characteristics Comparison ◎ Excellent ○ Good △ Fair

型號/規格	Model/Specification	S100	E300	B400	S600	B700	U200	H600
透明性	Transparency	○	◎	○	△	◎	△	△
耐水性	hydrolysis resistance	△	◎	○	△	○	△	△
耐熱性	High-temperature flexibility	○	△	○	○	○	○	○
耐油性	Oil Resistance	○	△	○	○	○	○	○
耐寒性	Low-temperature flexibility	○	◎	○	○	○	○	○
成型性	Moldability	○	△	◎	◎	△	◎	◎
磨耗性	Abrasion resistance	○	△	◎	◎	○	○	○

注塑成型溫度參考 (單位℃) Injection Molding Temperature Reference(Unit °C)

型號/規格	模頭	C3(計量段)	C2(壓縮段)	C1(進料段)
Model/Specification	Die	C3(Metering section)	C2(Compressiong section)	C1(Feed section)
75A	180	195	190	180
85A	185	205	200	185
95A	190	215	210	195

擠出成型溫度參考 (單位℃) Extrusion Molding Temperature Reference(Unit °C)

型號/規格	模頭	C3(計量段)	C2(壓縮段)	C1(進料段)
Model/Specification	Die	C3(Metering section)	C2(Compressiong section)	C1(Feed section)
75A	180	195	190	180
85A	185	205	200	185
95A	190	215	210	195

* 以上溫度僅供參考，請依現況調整

Tips for Defect-free Injection Molding of TPU

在注塑成型中的異常處理

TPU的成型工藝有多種方法，其中以注塑為常用。注塑前需注意以下幾點：

- 1.TPU易吸濕，加工前必須充分乾燥。
- 2.根據材料的收縮率來設計模具結構。
- 3.回收料的合理配比及機臺停機時的清潔處理。

There are many TPU processing methods, in which injection molding is commonly used.
Pay attention to the following points before injection molding:

- 1.TPU is easy to absorb moisture when exposed to atmospheric humidity and must be fully dried Prior to the processing.
- 2.Design the mold structure according to the shrinkage rate of the material.
- 3.Reasonable ratio of recycled materials and fully cleaning when the machine is shut down.

不良現象	解決方法	Defect	Remdies
匯交線	1.增加注塑機的壓力 2.增加熔料溫度或噴嘴溫度 3.增加澆口尺寸或改變位置 4.改善排氣孔	Weld lines	1.Increase injection pressure 2.Increase melt temperature or nozzle temperature 3.Increase sprue cross-sections or change it's position 4.Optimize mold venting
韌性不夠	1.熔料溫度太低或過熱 2.降低回收料比例 3.材料充分乾燥 4.加大澆口尺寸	Fractures	1.Melt temperature is too low or too high 2.Reduce the proportion of recycled materials 3.Check material drying 4.Increase sprue cross-sections
成品焦化	1.降低熔料溫度 2.降低回收料比例 3.模具排氣不暢 4.重新清洗螺杆、噴嘴、料筒	Black (overheating) marks	1.Reduce melt temperature 2.Reduce the proportion of recycled materials 3.Optimize mold venting, check venting channels 4.Clean screw, nozzle, barrel
毛邊現象	1.降低注塑壓力 2.降低熔膠溫度 3.提高合模壓力與機臺噸位 4.改善模具缺陷	Flash	1.Reduce injection pressure 2.Reduce melt temperature 3.Increase clamping force 4.Adjust the defect of mold



KOSLEN TPU 技術支援

Tips for Defect-free Injection Molding of TPU 在注塑成型中的異常處理

不良現象	解決方法	Defect	Remdies
成品有凹陷	1.增加注塑壓力與機臺噸位 2.檢查逆止閥 3.加強排氣 4.降低熔料溫度或注塑速度 5.增加保壓壓力或時間 (交口附近凹陷)	Hollows	1.Increase holding pressure 2.Check the check valve 3.Optimize mold venting 4.Reduce molding temperature or injection speed 5.Extend holding pressure or holding time (Near the gate)
螺杆打滑	1.降低螺杆入料口溫度 2.降低回料回收比率 3.降低料缸溫度 4.排除螺杆進料段故障 5.確認添加擴散油是否過量	Screw slip	1.Reduce the temperature of feeding section 2.Decrease the recycle ratio 3.Reduce barrel temperature 4.Check the defect of feeding section 5.Check the dispersed oil amount
成品有氣泡	1.材料充分乾燥 2.改善模具設計 3.增加注塑機的背壓 4.降低料筒溫度	Bubbles	1.Material too moist , fully dry the material 2.Check the mold design 3.Increase the black pressure 4.Reduce the barrel temperature
表面噴紋	1.模具型腔損傷 2.降低注塑速度或溫度 3.加大澆口尺寸與溫度 4.材料充分乾燥.	Streaks	1.Mold cavity 2.Reduce injection speed and injection temperature 3.Increase the cross-sections and temperature of gate 4.Check drying process (fully dry)
成品翹曲	1.降低模具溫度 2.增加注塑壓力 3.改善澆口位置 4.降低注塑速度 5.增加保壓時間	Warpage	1.Reduce mold temperature 2.Increase holding pressure 3.Optimizing gate position 4.Reduce injection speed 5.Increase holding time
成品脫模困難	1.降低注塑壓力 2.降低保壓時間 3.增加滑劑或噴脫膜劑 4.改善模具缺陷 5.改變澆口位置與尺寸 6.增大模具拔模角度	Poor demolding behavior	1.Reduce injection pressure 2.Reduce holding time 3.Add release agent 4.Optimize mold defect 5.Optimize sprue position and size 6.Increase the draft angle of mold

Tips for Defect-free Injection Molding of TPU

擠出成型工藝可製作塑料管材、板材、帶材、異型材、棒材、薄膜等。TPU的擠出成型是其中代表。

在擠出加工前需注意以下幾點：

- 1.TPU易吸濕，加工前必須充分乾燥。
- 2.根據材料硬度、粘度來設定加工溫度。
- 3.根據材料特性考慮螺杆結構和長徑比。

The extrusion process can be used to produce plastic pipes, plates, strips, profiles, bars, films, etc. TPU is widely used in extrusion products.

Pay attention to the following points prior to extrusion processing:

- 1.TPU is easy to absorb moisture when exposed to atmospheric humidity and must be fully dried Prior to the processing.
- 2.Set the processing temperature according to the hardness and viscosity of the material.
- 3.Choose the screw structure and length to diameter ratio according to the material characteristics.

不良現象	解決方法	Defect	Remdies
皺紋	1.提高模頭溫度與加工溫度 2.降低冷卻水溫 3.排除模頭有損傷或雜質	Wrinkling	1.Increase die temperature and processing temperature 2.Reduce cooling water temperature 3.Check damage or impurities in the die
接合線	1.提高加工溫度 2.提高模頭內膜壓力 3.調整機頭位置與溫度 4.材料充分乾燥	weld lines	1.Increase processing temperature 2.Increase inner pressure of die head 3.Readjust machine head position and temperature 4.Fully dry material
透明性差	1.提高模頭溫度 2.降低螺杆速度或水槽溫度 3.選擇透明級材料 4.材料含水分高 5.滑劑添加過量	Poor transparency	1.Increase die temperature 2.Reduce screw speed or cooling water temperature 3.Choose transparent material 4.Reduce additive amount

KOSLEN TPU 技術支援

Tips for Defect-free Injection Molding of TPU

在擠出成型中的異常處理

不良現象	解決方法	Defect	Remedies
尺寸不穩定	1.材料有雜質 2.溫度太高或入料不順 3.牽引太快 4.模頭有損傷 5.材料含水分	Dimensional variations	1.Material pollution 2.Reduce temperature or change feed zone 3.Slow the traction 4.Die head is damaged 5.Check dryer and conveyor system
氣泡	1.材料充分乾燥 2.芯線夾入空氣 3.吃料不順暢 4.提高成型溫度	Blisters	1.Check dryer and conveyor system 2.Check air feeding with material 3.Material feed in insufficiently 4.Increase extrusion temperature
表面偏亮	1.生產溫度太高 2.提高水槽溫度 3.生產速度太慢 4.降低眼模溫度	Hose too glossy	1.Reduce extrusion temperature 2.Increase cooling water temperature 3.Increase speed of extruder 4.Reduce mold temperatures
有滯留物	1.生產溫度太高 2.提高水槽溫度 3.生產速度太慢 4.降低眼模溫度	Tear in hose wall	1.Increase die temperature 2.Reduce material viscosity 3.Another material pollution 4.Material coking
黑點	1.模頭殘料滯留 2.清洗螺杆 3.更換過濾網 4.生產溫度太高造成材料焦化 5.材料受污染	Specks and spots on extrudate	1.Check and clean die 2.Check and clean screw 3.Change the filter screen 4.Reduce extrusion temperature 5.Keep all material containers tightly sealed until needed to prevent material pollution
不熔顆粒	1.降低加工速度 2.提高加工溫度 3.排除材料污染 4.清理模頭與螺杆 5.增加過濾網目數	Gel matter in extrudate	1.Reduce extruder speed 2.Adjust processing temperatures 3.Check foreign material in processing material 4.Clean the die and screw 5.Change the higher mesh of screen

參考資料

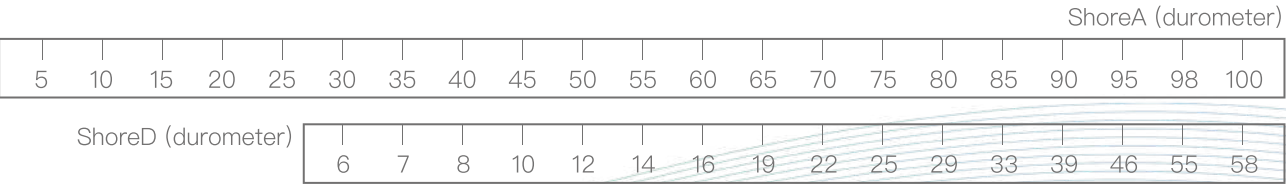
Standard Specification Comparison Table 標準規範

型號/規格	Model/Specification	ASTM	DIN	ISO	Comparability
比重	Specific Gravity	D-792	53479	2781	All comparable
硬度	Hardness	D-2240	53505	868	All comparable
熔融指數	MFI	D-1238	53735	1133	All comparable If 2.16kg
抗張程度	Tensile Strength	D-412	53455	37	All comparable
彎曲模數	Flexural Modulus	D-790	53452	178	ISO and ASTM comparable
撕裂強度	Tear Strength	D-624	53515	34	All comparable
模縮系數	Mold Shrinkage	D-955	53464	294	All comparable
衝擊強度	IZOD Impact Strength	D-256	53453	180	ASTM and ISO comparable
磨耗	Abrasion Loss	D-5963	53516	4649	All comparable

Unit Conversion Table 單位換算表

bar	Mpa	Psi	kg/cm²	N/mm²
1	0.1	14.5	1	0.1
10	1	145	10	1
0.07	0.007	1	0.07	0.007

ShoreA、D Hardness Comparison Table ShoreA、D 硬度對照表



客製化服務

Customized service

客製化服務

為求使客戶的產品條件達到最佳物性，我們的研發團隊以服務客戶達到條件最佳化一直以來都是我們最注重的領域之一。

客製化條件例如阻燃性、導電性、抗 UV、耐磨性等等，皆可在不同層面之需求量身訂做提供客戶最佳的產品條件。或者針對各項專業領域對客戶提出最佳解決方案。

In order to achieve the best physical condition of our customers' products, our R&D team has always been one of our most important areas to meet the conditions of serving customers.

Customized conditions such as flame retardancy, electrical conductivity, UV resistance, abrasion resistance, etc., can be tailored to meet the needs of different levels to provide customers with the best product conditions. Or advise customers on the optimization of each area of expertise.