泓格生醫
ICP DAS - BMP

ICP DAS-BMP's

Medical Grade TPU

From clear to colored and radiopaque TPU (barium sulfate or tungsten) TPU, ICP DAS enables a wide range of medical applications.
Flexible solutions. Reliable quality. Fast delivery.

ICP DAS – Biomedical Polymers
Advanced Medical-Grade TPU Solutions

Biocompatibility Certification

ISO 10993-4 10993-10
10993-5 10993-11
10993-6 10993-23

USP

PFAS FREE

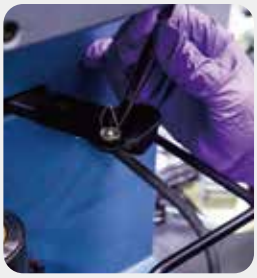
Founded in 2018, ICP DAS-BMP is an ISO 13485-certified manufacturer of medical-grade TPU.Our materials comply with USP Class VI and ISO 10993 biocompatibility standards. With comprehensive testing and strict quality control, we ensure consistent product quality. We also offer OEM/ODM services with 100% inspection to support reliable medical device manufacturing.

ISO 13485:2016

TPU Manufacturing Process

Polymerization

Underwater Pelletizing



Quality Control

Packing

TPU Quality Control

100%
Quality Control

- Molecular Weight
- Melt Index
- Radiopaque Filler Weight %
- Mechanical Properties

Injection Molding

Cytotoxicity Testing

Extrusion

Physical Property Analysis

Smart Factory Integration

Powered by ICP DAS IIoT technology and 30 years of TPU expertise.

- ✔ **Real-Time Monitoring & Control**
  Covers environment, air quality, lighting, HVAC, and access control.
- ✔ **Process & Equipment Management**
  Monitors production lines and collects key process parameters for stable manufacturing.
- ✔ **Enhanced Efficiency & Reliability**
  Reduces batch variation, improves yield, and shortens production time.

On-site Lighting & HVAC Control

Power Consumption Collection

Central Control Room Remote Monitoring

Specifications of ICP DAS-BMP Medical-Grade TPU

Specifications		Product Name
Aromatic polyether-based 55A-83D	▪ Clear ▪ Barium sulfate 20% 30% 40% ▪ Tungsten 30% 40% 50% 60% 70% 80% ▪ Color matching *	Arothane™/ARP Soft Arothane™/ARP Engineering Arothane™/EARP
Aliphatic polyether-based 75A-70D		Alithane™/ALP
Aliphatic polycarbonate-based 75A-70D		Durathane™/ALC
Aromatic polycarbonate-based) 75A-60D		Durathane™/ARC

* For tungsten series TPU, color-matching is not available

Customized Service: Color Matching

Pantone 3517C	Pantone 0131C	Pantone 7402C	Pantone 7403C	Pantone 3248C
Pantone 291C	Pantone 292C	Pantone 285C	Pantone 280C	Pantone 2577C
Pantone 2665C	Pantone 7629C	Pantone 428C	Pantone White	Pantone Black C

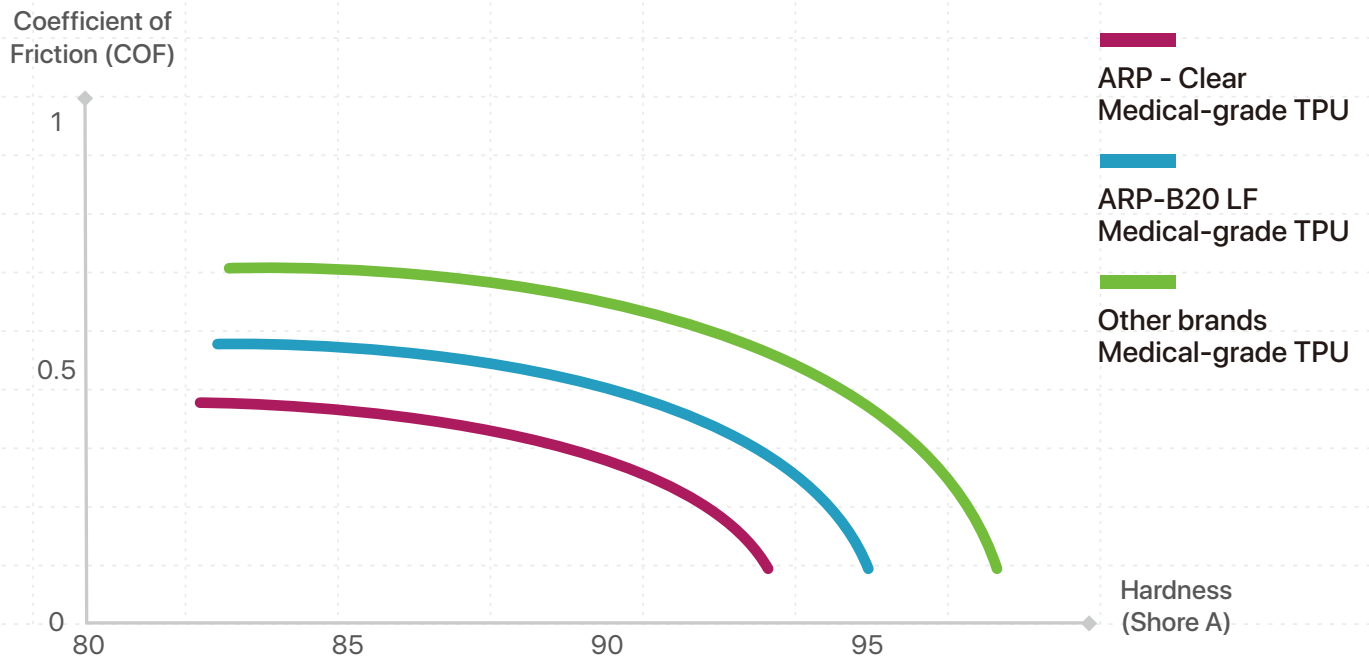
Unlisted colors can be customized ▸▸▸

Series Features

TPU Series		Arothane™ ARP	Durathane™ ARC	Alithane™ ALP	Durathane™ ALC
Aromatic / Aliphatic		Aromatic	Aromatic	Aliphatic	Aliphatic
Polyol Type		Polyether	Polycarbonate	Polyether	Polycarbonate
Hardness		55A-83D	75A-60D	75A-70D	75A-70D
Radiopacity	Barium Sulfate	B20/B40	B20	B20/B40	B20/B40
	Tungsten	W30-W80	-	-	-
Color		V *Tungsten TPU: Not colorable	V	V	V
Processing Method		Extrusion / Injection			
Biocompatibility		Good	Good	Excellent	Excellent
Implantation Test Report		ISO 10993-6 (90 days)	-	USP Class VI	ISO 10993-6 (90 days)
Flexural Modulus		Excellent	Excellent	Good	Good
Tensile Strength		Excellent	Excellent	Good	Good
Tensile Modulus		Excellent	Excellent	Good	Good
Solvent Resistance		Good	Excellent	Good	Excellent
Oxidation Resistance		Good	Excellent	Good	Excellent
Yellowing Resistance		X	X	Excellent	Excellent

Friction Coefficient Comparison of Medical-Grade TPU

- Inherently low-friction surface — no coating needed.
- Ideal for smooth insertion, e.g., nasogastric tubes with guidewires.
- Long-term stability — no additive migration or surface exudation.



Biocompatibility and Other Testing on ICP DAS Medical-Grade TPU

Items	ARP ARP-B20 ARP-B40	Soft ARP EARP ARP-W30/40/50	ALP ALP-B20 ALP-B40	ALC ALC-B20 ALC-B40
Hemolysis Test (ISO 10993-4)	●	●	●	●
In Vitro Cytotoxicity (ISO 10993-5)	●	●	●	●
Implantation Test (up to 90 Days) (ISO 10993-6)	ARP-B20			ALC-B40
Acute Systemic Toxicity (ISO 10993-11)	●	●		
Skin Sensitization (ISO 10993-10:2010, 2021)	●	●	●	●
Intracutaneous Reactivity (ISO 10993-10:2010 & ISO 10993-23:2021)	●	●	●	●
Pyrogenicity / Systemic Toxicity (ISO 10993-11, USP <151>)	●	●		
USP Class VI Biocompatibility (United States Pharmacopeia Class VI)	ARP-B20		●	ALC-B20
REACH	●	●	●	●
RoHS	●	●	●	●
IEC 61249-2-21	●			
Heavy Metal Content (GB/T14233.1-2002)	●	Soft ARP	●	●

ICP DAS may support the use of devices or component with contact less than 30 days. For permanent contact applications, manufacturers should evaluate the suitability of materials for the end-use requirements.

Category	Definition	Contact Duration	ICP DAS
A	Short term	Less than or equal to 24 hours	✔
B	Long term	More than 24 hours to 30 days (including 30 days)	✔
C	Permanent	More than 30 days	Some specifications are provided* *

* The safety of long-term implantation of materials is subject to evaluation by the device manufacturer

AROTHANE™ ARP SERIES

Aromatic Polyether-Based Thermoplastic Polyurethane (TPU)

Description

Arothane™ ARP is medical-grade aromatic polyether-based thermoplastic polyurethane (TPU).
It exhibits excellent hydralytic and chemical resistance, good mechanical properties, and blocompatibilty.
Color matching is available.
Pellets can be processed by injection malding and extrusion.

Storage

Soft Arothane™ - Soft ARP TPU pellets should be stored in cool and dry environment in their original containers until used.

Storage temperature should not exceed 85°F/30°C.

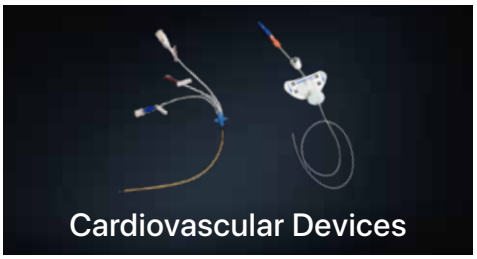
If only a portion of TPU pellets was used, the container with the remaining TPU pellets should be tightly closed.

Since aromatic-type TPU is light-sensitive, it may turn yellowish after light exposure but will not necessarily have an adverse impact on the mechanical properties when stored properly.

Processing Guidelines

TPU is highly hygroscopic and must be thoroughly dried before processing. Excess moisture (>500 ppm) may cause bubbles, streaks, or material degradation, affecting final product quality.Recommended processing temperatures should refer to the TDS of each series.

Applications



Products and Properties

SOFT ARP SERIES

Soft Arothane™ ARP	ASTM Test	ARP-55A	ARP-60A	ARP-63A	ARP-67A
Durometer(Shore hardness)	D2240	58A	62A	64A	66A
Specific Gravity	D792	1.08	1.08	1.08	1.08
Ultimate Tensile (psi)	D412	1,300	2,900	3,100	3,500
M100 (psi)	D412	230	340	410	440
M300 (psi)	D412	320	590	760	850
Ultimate Elongation (%)	D412	720	>650	>650	>650
Mold Shrinkage (%)	-	>15%	>15%	>15%	>15%

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

AROTHANE™ ARP SERIES- CLEAR GRADE

Arothane™ ARP	ASTM Test	ARP-75A	ARP-80A	ARP-85A	ARP-90A	ARP-93A	ARP-95A	ARP-60D	ARP-63D	ARP-68D	ARP-73D
Durometer (Shore hardness)	D2240	75A	82A	87A	92A	93A	95A	59D	64D	68D	74D
Specific Gravity	D792	1.08	1.09	1.11	1.14	1.15	1.15	1.16	1.17	1.18	1.18
Flexural Modulus (psi)	D790	3,000	3,300	4,750	8,800	9,000	11,000	17,000	24,000	30,000	67,000
Ultimate Tensile (psi)	D412	4,100	5,500	6,200	7,300	5,800	6,600	7,000	7,200	8,000	8,800
M100 (psi)	D412	490	720	890	1,850	2,600	2,750	3,100	3,100	3,400	3,550
M300 (psi)	D412	820	1,400	2,350	4,500	5,200	5,400	5,650	5,800	6,100	6,350
Ultimate Elongation (%)	D412	760	650	590	540	470	420	380	370	380	365
Mold Shrinkage (mm/mm)	D955	0.008-0.012	0.008-0.012	0.008-0.012	0.006-0.010	0.006-0.010	0.006-0.010	0.004-0.008	0.004-0.008	0.004-0.008	0.004-0.006

AROTHANE™ ARP- B20 SERIES (20% Barium Sulfate) • Implantation Test (up to 90 Days)

Arothane™ ARP-B20	ASTM Test	ARP-80A-B20	ARP-85A-B20	ARP-90A-B20	ARP-93A-B20	ARP-95A-B20	ARP-60D-B20	ARP-65D-B20	ARP-69D-B20	ARP-73D-B20
Durometer (Shore hardness)	D2240	80A	85A	90A	93A	95A	59D	63D	69D	75D
Specific Gravity	D792	1.26	1.28	1.31	1.33	1.33	1.35	1.36	1.37	1.37
Flexural Modulus (psi)	D790	4,000	5,600	8,200	9,300	13,000	20,000	55,000	190,000	290,000
Ultimate Tensile (psi)	D412	3,600	4,800	5,800	5,900	5,300	5,500	5,700	5,500	5,600
M100 (psi)	D412	670	900	1,300	1,700	2,050	3,000	3,800	4,500	N/A
M300 (psi)	D412	1,050	1,650	2,350	3,200	4,300	5,050	N/A	N/A	N/A
Ultimate Elongation (%)	D412	720	560	530	480	420	375	265	200	80
Mold Shrinkage (mm/mm)	D955	0.007-0.014	0.007-0.014	0.006-0.012	0.006-0.010	0.006-0.010	0.004-0.008	0.004-0.008	0.004-0.006	0.004-0.006

AROTHANE™ ARP- B40 SERIES (40% Barium Sulfate)

Arothane™ ARP-B40	ASTM Test	ARP-85A-B40	ARP-90A-B40	ARP-95A-B40	ARP-60D-B40	ARP-67D-B40
Durometer (Shore hardness)	D2240	85A	90A	95A	60D	67D
Specific Gravity	D792	1.52	1.57	1.59	1.59	1.61
Flexural Modulus (psi)	D790	5,050	10,600	15,100	26,000	58,000
Ultimate Tensile (psi)	D412	2,800	3,500	3,600	3,700	4,000
M100 (psi)	D412	610	1,300	1,800	2,400	3,700
M300 (psi)	D412	800	1,900	2,600	3,500	N/A
Ultimate Elongation (%)	D412	830	530	400	330	175
Mold Shrinkage (mm/mm)	D955	0.006-0.012	0.005-0.010	0.005-0.010	0.004-0.008	0.004-0.008

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

AROTHANE™ ARP-W SERIES (30-50% Tungsten)

ARP-W SERIES exhibits exceptional radiopacity compared to Barium Sulfate, especially for small-dimension or thin-walled devices.

Arothane™ ARP-W	ASTM Test	ARP-85A-W30	ARP-85A-W40	ARP-85A-W50
Durometer (Shore hardness)	D2240	85A	85A	85A
Specific Gravity	D792	1.50	1.71	1.98
Flexural Modulus (psi)	D790	5,200	5,500	7,250
Ultimate Tensile (psi)	D412	4,900	4,700	4,600
M100 (psi)	D412	1,000	1,000	1,000
M300 (psi)	D412	1,900	1,700	1,600
Ultimate Elongation (%)	D412	520	570	600
Mold Shrinkage (mm/mm)	D955	0.006-0.012	0.005-0.010	0.005-0.010

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

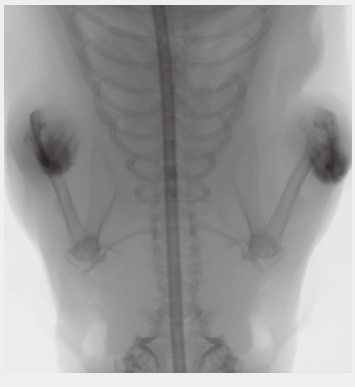
AROTHANE™ ARP-W- G SERIES (40-60% Tungsten)

• Small Particle Size • High Flowability • Better Dispersibility

Arothane™ ARP-W-G	ASTM Test	ARP-85A-W40-G	ARP-85A-W50-G	ARP-85A-W60-G
Durometer (Shore hardness)	D2240	85A	85A	85A
Specific Gravity	D792	1.71	1.98	2.4

Applications

In Vivo Radiopacity for B20/B40 vs W30/W50



ARP-B20

ARP-B40

ARP-W30

ARP-W50

Engineering Arothane™ EARP-35x3

This series of medical-grade rigid aromatic polyether-based TPU offers a high glass transition temperature (Tg). It is suitable for both injection molding and extrusion processing.

Engineering Arothane™ EARP 35x3 Series	ASTM Test	EARP-3553	EARP-3563	EARP-3583
Durometer (Shore hardness)	D2240	83D	80D	80D
Specific Gravity	D792	1.21	1.19	1.16
Tensile Strength at Yield (MPa)	D638	71	68	60
Tensile Strength at Break (MPa)	D638	57	68	69
Elongation at Yield (%)	D638	5.5	5.0	4.1
Elongation at Break (%)	D638	150	166	190
Flexural Strength (MPa)	D790	106	101	91
Flexural Modulus (MPa)	D790	2,250	2,200	2,100
Tensile Modulus (MPa)	D638	2,830	2,600	1,500
Mold Shrinkage (mm/mm)	D955	0.002-0.003	0.002-0.003	0.002-0.003
Light Transmission	D1003	90	90	92
Tg	DSC	90	85	76

Engineering Arothane™ EARP-35x2

The Engineering Arothane™ EARP-35x2 series features a higher glass transition temperature (Tg) than the 35x3 series.It is a medical-grade rigid aromatic polyether-based TPU, suitable for both injection molding and extrusion processing.

Engineering Arothane™ EARP 35x2 Series	ASTM Test	EARP-3512	EARP-3562
Durometer (Shore hardness)	D2240	82D	83D
Specific Gravity	D792	1.22	1.22
Tensile Strength at Yield* (MPa)	D638	69	65
Tensile Strength at Break* (MPa)	D638	52	66
Elongation at Yield* (%)	D638	5.1	5.2
Elongation at Break* (%)	D638	166	155
Flexural Strength (MPa)	D790	105	99
Flexural Modulus (MPa)	D790	2,400	2,140
Tensile Modulus (MPa)	D638	2,500	2,400
Mold Shrinkage (mm/mm)	D955	0.002-0.003	0.002-0.003
Light Transmission	D1003	90	90
Tg	DSC	94	96

* : 50mm/min

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

DURATHANE™ ARC SERIES

Aromatic Polycarbonate -Based Thermoplastic Polyurethane (TPU)

Description

Durathane™ ARC is a medical-grade aromatic polycarbonate-based thermoplastic polyurethane (TPU). It exhibits hydrolytic and chemical resistance, good mechanical properties, and biocompatibility. Compared with polyether-based TPU, it provides superior oxidation resistance and biostability.
Color matching is available.
Pellets can be processed by injection molding and extrusion.

Storage

DURATHANE™ ARC TPU pellets should be stored in cool and dry environment in their original containers until used.

Storage temperature should not exceed 85°F/30°C.

If only a portion of TPU pellets was used, the container with the remaining TPU pellets should be tightly closed.

Since aromatic-type TPU is light-sensitive, it may turn yellowish after light exposure but will not necessarily have an adverse impact on the mechanical properties when stored properly.

Processing Guidelines

TPU is highly hygroscopic and must be thoroughly dried before processing. Excess moisture (>500 ppm) may cause bubbles, streaks, or material degradation, affecting final product quality. Recommended processing temperatures should refer to the TDS of each series.

Products and Properties

DURATHANE™ ARC SERIES

Durathane™ ARC	ASTM Test	ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-95A
Durometer (Shore hardness)	D2240	76A	80A	84A	91A	95A
Specific Gravity	D792	1.18	1.19	1.20	1.20	1.20
Flexural Modulus (psi)	D790	2,500	2,400	2,800	3,200	4,000
Ultimate Tensile (psi)	D412	4,900	4,200	6,000	5,100	6,500
M100 (psi)	D412	320	300	570	1,400	1,600
M300 (psi)	D412	760	850	5,300	4,300	4,800
Ultimate Elongation (%)	D412	480	440	320	300	310
Mold Shrinkage (mm/mm)	D955	0.018-0.020	0.018-0.020	0.014-0.018	0.012-0.015	0.012-0.015

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

Products and Properties

DURATHANE™ ARC SERIES- ARC-B20 SERIES (20% Barium Sulfate)

Durathane™ ARC-B20 (20% Barium Sulfate)	ASTM Test	ARC-80A-B20	ARC-85A-B20	ARC-90A-B20	ARC-95A-B20	ARC-60D-B20
Durometer (Shore hardness)	D2240	82A	85A	90A	95A	63D
Specific Gravity	D792	1.39	1.4	1.4	1.41	1.41
Flexural Modulus (psi)	D790	2,900	2,800	5,300	6,700	18,000
Ultimate Tensile (psi)	D412	5,400	5,900	6,100	6,000	6,300
M100 (psi)	D412	500	780	1,300	2,100	2,900
M300 (psi)	D412	1,000	2,400	5,200	5,000	5,000
Ultimate Elongation (%)	D412	510	440	360	340	340
Mold Shrinkage (mm/mm)	D955	0.016-0.018	0.016-0.018	0.016-0.018	0.014-0.015	0.014-0.015

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

ALITHANE™ ALP SERIES

Aliphatic Polyether-Based Thermoplastic Polyurethane (TPU)

Description

Alithane™ ALP is medical grade aliphatic polyether-based thermoplastic polyurethane (TPU).
Due to the chemical structure, aliphatic-type TPU is more light-stable and bio-stable than aromatic-type TPU. ALP TPU exhibits excellent biocompatibility, hydrolytic resistance, good mechanical properties, and chemical resistance. Color matching is available.
Pellets can be processed by injection molding and extrusion.

Storage

Alithane™ ALP TPU pellets should be stored in cool and dry environment in their original containers until used.

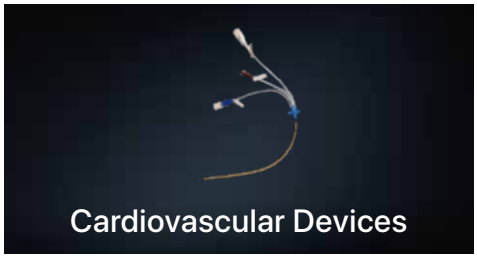
Storage temperature should not exceed 85°F/30°C.

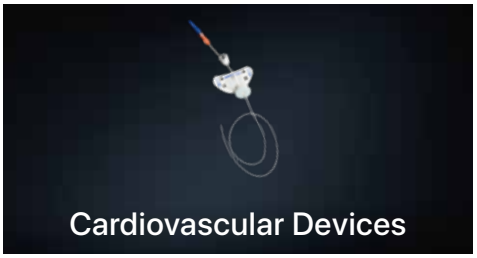
If only a portion of TPU pellets was used, the container with the remaining TPU pellets should be tightly closed.

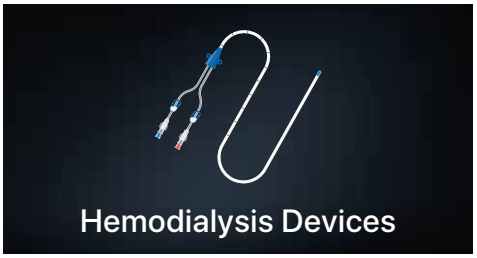
Processing Guidelines

TPU is highly hygroscopic and must be thoroughly dried before processing. Excess moisture (>500 ppm) may cause bubbles, streaks, or material degradation, affecting final product quality. Recommended processing temperatures should refer to the TDS of each series.

Applications


Cardiovascular Devices


Cardiovascular Devices


Hemodialysis Devices

Products and Properties

ALITHANE™ ALP SERIES- CLEAR GRADE

- Biocompatibility: Alithane™ Series passed the USP Class VI test

Alithane™ ALP	ASTM Test	ALP-75A	ALP-80A	ALP-85A	ALP-90A	ALP-95A	ALP-60D	ALP-65D	ALP-70D
Durometer (Shore hardness)	D2240	77A	80A	86A	93A	95A	62D	67D	72D
Specific Gravity	D792	1.06	1.07	1.08	1.09	1.10	1.10	1.10	1.10
Flexural Modulus (psi)	D790	N/A	2,800	2,800	4,300	11,400	27,000	37,000	58,000
Ultimate Tensile (psi)	D412	3,400	3,900	5,000	6,900	6,800	6,600	6,200	6,000
M100 (psi)	D412	810	1,000	1,100	1,500	2,200	2,400	3,000	3,650
M300 (psi)	D412	1,600	2,200	3,100	5,200	5,650	5,850	6,200	N/A
Ultimate Elongation (%)	D412	560	495	460	415	330	320	305	295
Mold Shrinkage (mm/mm)	D955	0.010-0.013	0.010-0.013	0.008-0.010	0.008-0.010	0.006-0.009	0.006-0.009	0.004-0.006	0.004-0.006

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

ALITHANE™ ALP-B20 SERIES (20% Barium Sulfate)

- Biocompatibility: Alithane™ ALP-B20 Series passed the USP Class VI test

Alithane™ ALP-B20	ASTM Test	ALP-75A-B20	ALP-80A-B20	ALP-85A-B20	ALP-90A-B20	ALP-95A-B20	ALP-60D-B20	ALP-65D-B20	ALP-70D-B20
Durometer (Shore hardness)	D2240	75A	80A	85A	90A	95A	62D	65D	71D
Specific Gravity	D792	1.21	1.23	1.23	1.26	1.27	1.28	1.28	1.29
Flexural Modulus (psi)	D790	2,900	3,650	4,100	5,000	6,100	13,600	19,500	43,000
Ultimate Tensile (psi)	D412	1,950	2,500	3,350	3,850	5,800	6,700	6,700	6,300
M100 (psi)	D412	650	750	1,000	1,250	1,950	2,200	2,500	3,000
M300 (psi)	D412	1,000	1,100	1,900	2,900	5,050	6,200	6,300	6,300
Ultimate Elongation (%)	D412	700	645	500	435	350	310	310	300
Mold Shrinkage (mm/mm)	D955	0.010-0.013	0.010-0.013	0.008-0.010	0.008-0.010	0.006-0.009	0.006-0.009	0.004-0.006	0.004-0.006

ALITHANE™ ALP-B40 SERIES (40% Barium Sulfate)

- Biocompatibility: Alithane™ ALP-B40 Series passed the USP Class VI test

Alithane™ ALP-B40	ASTM Test	ALP-80A-B40	ALP-85A-B40	ALP-90A-B40	ALP-95A-B40	ALP-65D-B40	ALP-70D-B40
Durometer (Shore hardness)	D2240	80A	83A	92A	97A	66D	70D
Specific Gravity	D792	1.49	1.50	1.52	1.54	1.54	1.54
Flexural Modulus (psi)	D790	3,300	4,000	4,600	6,400	19,000	30,000
Ultimate Tensile (psi)	D412	1,100	1,300	3,200	4,200	4,600	4,400
M100 (psi)	D412	600	800	1,300	2,000	2,700	3,000
M300 (psi)	D412	700	950	2,100	4,200	N/A	N/A
Ultimate Elongation (%)	D412	900	700	500	300	270	200
Mold Shrinkage (mm/mm)	D955	0.010-0.013	0.010-0.013	0.008-0.010	0.008-0.010	0.006-0.009	0.006-0.009

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

DURATHANE™ ALC SERIES

Aliphatic Polycarbonate- Based Thermoplastic Polyurethane (TPU)

Description

Durathane™ ALC is a medical-grade aliphatic polycarbonate-based thermoplastic polyurethane (TPU). It exhibits good biocompatibility and hydrolytic resistance, as well as superior oxidation resistance, mechanical properties, and chemical resistance. Compared with aromatic polyether-based TPU, it provides enhanced oxidation resistance and biostability.
Color matching is available.
Pellets can be processed by injection molding and extrusion.

Storage

Durathane™ ALC TPU pellets should be stored in cool and dry environment in their original containers until used.

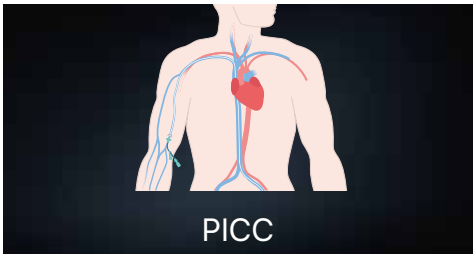
Storage temperature should not exceed 85°F/30°C.

If only a portion of TPU pellets was used, the container with the remaining TPU pellets should be tightly closed.

Processing Guidelines

TPU is highly hygroscopic and must be thoroughly dried before processing. Excess moisture (>500 ppm) may cause bubbles, streaks, or material degradation, affecting final product quality.Recommended processing temperatures should refer to the TDS of each series.

Applications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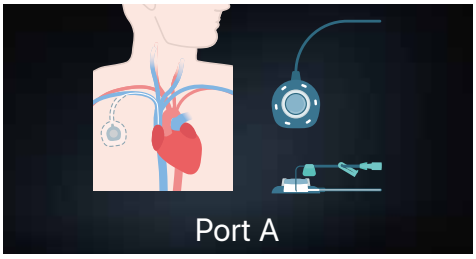
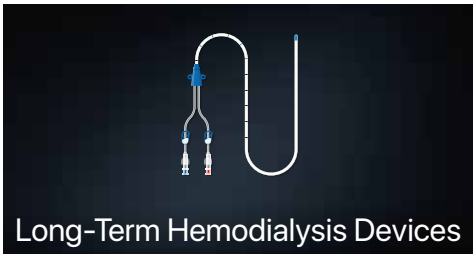

Port A


Long-Term Hemodialysis Devices

Products and Properties

DURATHANE™ ALC SERIES- CLEAR GRADE

Durathane™ ALC	ASTM Test	ALC-75A	ALC-80A	ALC-85A	ALC-90A	ALC-95A	ALC-60D	ALC-65D	ALC-70D
Durometer (Shore hardness)	D2240	75A	80A	86A	90A	95A	60D	65D	70D
Specific Gravity	D792	1.14	1.14	1.14	1.14	1.14	1.14	1.15	1.15
Flexural Modulus (psi)	D790	1,800	1,850	1,900	3,100	7,600	11,000	44,000	92,000
Ultimate Tensile (psi)	D412	3,500	4,000	4,100	4,400	4,700	5,200	5,500	6,000
M100 (psi)	D412	440	610	780	1,050	1,500	1,900	3,000	3,800
M300 (psi)	D412	920	1,450	2,000	2,900	3,900	4,600	5,200	N/A
Ultimate Elongation (%)	D412	580	490	450	395	350	320	310	290
Mold Shrinkage (mm/mm)	D955	0.025-0.028	0.018-0.020	0.013-0.016	0.008-0.009	0.007-0.008	0.006-0.007	0.003-0.004	0.003-0.004

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

DURATHANE™ ALC-B20 SERIES (20% Barium Sulfate)

- Biocompatibility: Durathane™ ALC-B20 Series passed the USP Class VI test

Durathane™ ALC-B20	ASTM Test	ALC-75A-B20	ALC-80A-B20	ALC-85A-B20	ALC-90A-B20	ALC-95A-B20	ALC-60D-B20	ALC-65D-B20
Durometer (Shore hardness)	D2240	75A	80A	85A	90A	95A	60D	65D
Specific Gravity	D792	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Flexural Modulus (psi)	D790	2,150	2,700	2,700	4,100	10,600	20,500	41,500
Ultimate Tensile (psi)	D412	2,700	3,200	4,200	4,000	4,000	4,350	4,600
M100 (psi)	D412	350	500	700	910	1,600	2,000	2,500
M300 (psi)	D412	500	750	1,500	1,800	3,400	3,600	4,000
Ultimate Elongation (%)	D412	800	650	500	450	360	350	320
Mold Shrinkage (mm/mm)	D955	0.020-0.025	0.013-0.014	0.013-0.014	0.011-0.014	0.009-0.010	0.007-0.009	0.006-0.008

DURATHANE™ ALC-B40 SERIES (40% Barium Sulfate)

- Biocompatibility: Durathane™ ALC-B40 Series passed implantation test (up to 90 Days) (ISO 10993-6)

Durathane™ ALC-B40	ASTM Test	ALC-80A-B40	ALC-85A-B40	ALC-90A-B40	ALC-95A-B40	ALC-65D-B40
Durometer (Shore hardness)	D2240	80A	85A	90A	95A	65D
Specific Gravity	D792	1.58	1.58	1.58	1.58	1.58
Flexural Modulus (psi)	D790	2,550	3,100	4,500	15,000	50,500
Ultimate Tensile (psi)	D412	2,000	2,700	3,300	3,400	3,700
M100 (psi)	D412	460	750	1,000	1,700	2,500
M300 (psi)	D412	580	1,000	1,700	2,400	3,550
Ultimate Elongation (%)	D412	770	570	450	400	310
Mold Shrinkage (mm/mm)	D955	0.012-0.013	0.009-0.010	0.009-0.010	0.009-0.010	0.009-0.010

Note: These test results are based on a limited number of samples and may not be representative of all materials. Processing parameters should be adjusted according to actual application conditions.

The Importance of Drying TPU

To ensure efficient and successful processing, the moisture content in **TPU resins is recommended to be less than 0.05%(500ppm).**

Recommended Drying Conditions

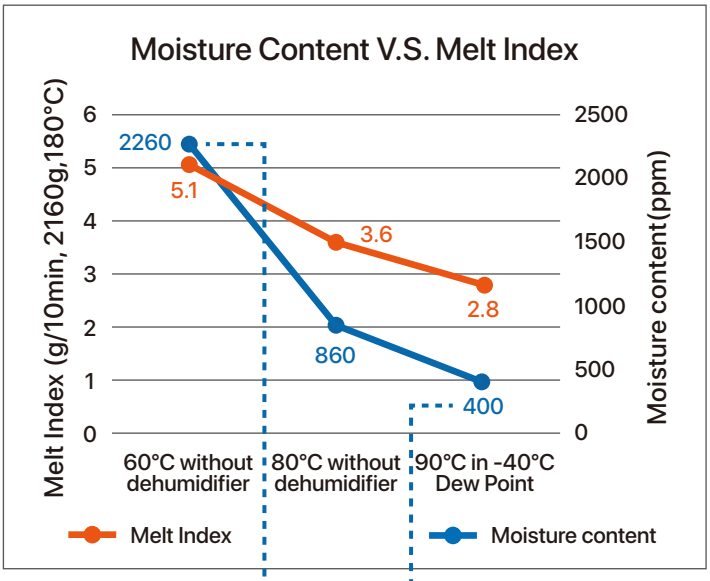
- Moisture Content : < 0.05 % (500 ppm)
- Equipment Requirement : Dehumidifying Dryer
- Dew Point : **Below -40°C / -40°F**
- Drying Time : Minimum 5 hours

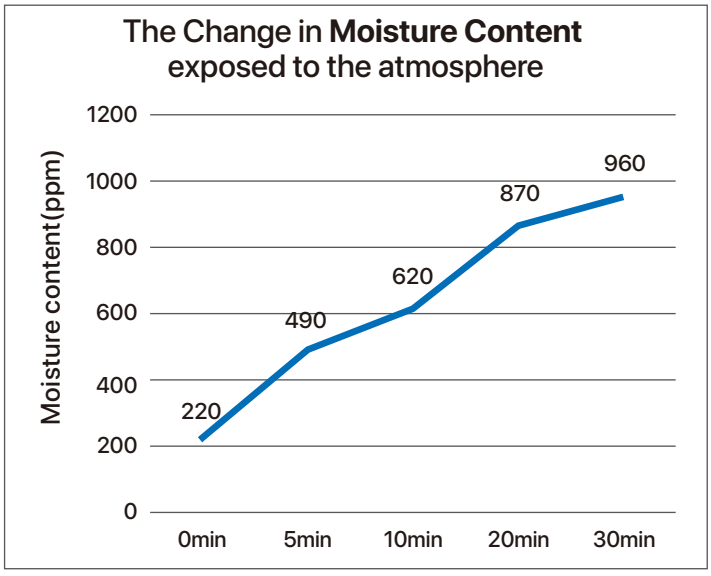
Moisture Testing After Drying

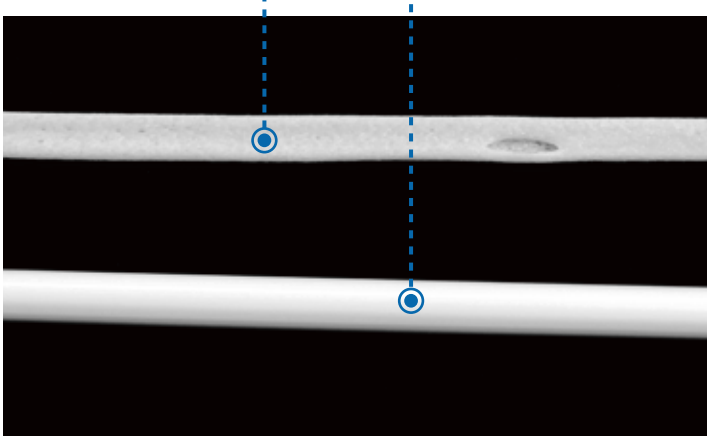
- Use a moisture analyzer with the following settings:

Test Temperature	145°C
Test Duration	Minimum 3 minutes

High moisture content may cause surface roughness in finished TPU tubing







Excess moisture may lead to the following issues:

- Material degradation affecting strength and heat resistance
- Unstable processing due to fluctuations in melt strength and pressure
- Surface defects such as bubbles, silver streaks, and roughness

Proper drying before processing is essential.

AROTHANE™ ARP SERIES

Soft ARP Series

Soft Arothane™ ARP		ARP-60A	ARP-63A	ARP-67A
Recommended Drying Temperature	(°F)	175-195	175-195	185-205
	(°C)	80-90	80-90	85-95

ARP Series- Clear Grade

Arothane™ ARP		ARP-75A	ARP-80A	ARP-85A	ARP-90A	ARP-93A	ARP-95A	ARP-60D	ARP-63D	ARP-68D	ARP-73D
Recommended Drying Temperature	(°F)	185-210	195-220	195-220	195-220	195-220	195-220	205-230	205-230	205-230	220-240
	(°C)	85-100	90-105	90-105	90-105	90-105	90-105	95-110	95-110	95-110	105-115

ARP- B20 Series (20% Barium Sulfate)

Arothane™ ARP-B20		ARP-80A-B20	ARP-85A-B20	ARP-90A-B20	ARP-93A-B20	ARP-95A-B20	ARP-60D-B20	ARP-65D-B20	ARP-69D-B20	ARP-73D-B20
Recommended Drying Temperature	(°F)	205-240							220-255	240-255
	(°C)	95-115							105-125	115-125

ARP- B40 Series (40% Barium Sulfate)

Arothane™ ARP-B40		ARP-85A-B40	ARP-90A-B40	ARP-95A-B40	ARP-60D-B40	ARP-67D-B40
Recommended Drying Temperature	(°F)	205-240	205-240	205-240	205-240	205-240
	(°C)	95-115	95-115	95-115	95-115	95-115

ARP-W Series (30-50% Tungsten)

Arothane™ ARP-W		ARP-85A-W30	ARP-85A-W40	ARP-85A-W50
Recommended Drying Temperature	(°F)	205-220		
	(°C)	105-115		

ARP-W-G Series (40-60% Tungsten)

Arothane™ ARP-W-G	ARP-85A-W40-G	ARP-85A-W50-G	ARP-85A-W60-G
Recommended Drying Temperature	205-220		
	95-115		

Engineering Arothane™ SERIES

EARP-35x3 Series

EARP-35x3		EARP-3553	EARP-3563	EARP-3583
Recommended Drying Temperature	(°F)	230-250		205-220
	(°C)	110-120		95-105

EARP-35x2 Series

EARP-35x2	EARP-3512	EARP-3562
Recommended Drying Temperature	185-195	230-250
	85-90	110-120

ALITHANE™ ALP SERIES

ALP Series- Clear Grade

Alithane™ ALP		ALP-75A	ALP-80A	ALP-85A	ALP-90A	ALP-95A	ALP-60D	ALP-65D	ALP-70D
Recommended Drying Temperature	(°F)	175-185	175-185	175-185	175-185	175-185	175-185	175-185	175-185
	(°C)	80-85	80-85	80-85	80-85	80-85	80-85	80-85	80-85

ALP-B20 Series (20% Barium Sulfate)

Alithane™ ALP-B20		ALP-75A-B20	ALP-80A-B20	ALP-85A-B20	ALP-90A-B20	ALP-95A-B20	ALP-60D-B20	ALP-65D-B20	ALP-70D-B20
Recommended Drying Temperature	(°F)	195-220	195-220	195-220	205-230	205-230	205-230	205-230	205-230
	(°C)	90-105	90-105	90-105	95-110	95-110	95-110	95-110	95-110

ALP-B40 Series (40% Barium Sulfate)

Alithane™ ALP-B40		ALP-80A-B40	ALP-85A-B40	ALP-90A-B40	ALP-95A-B40	ALP-65D-B40	ALP-70D-B40
Recommended Drying Temperature	(°F)	195-220	195-220	205-230	205-230	205-230	205-230
	(°C)	90-105	90-105	95-110	95-110	95-110	95-110

DURATHANE™ ALC SERIES

ALC Series- Clear Grade

Durathane™ ALC		ALC-75A	ALC-80A	ALC-85A	ALC-90A	ALC-95A	ALC-60D	ALC-65D	ALC-70D
Recommended Drying Temperature	(°F)	165	165	175	175	175	195	195	195
	(°C)	75	75	80	80	80	90	90	90

ALC-B20 Series (20% Barium Sulfate)

Durathane™ ALC-B20		ALC-75A-B20	ALC-80A-B20	ALC-85A-B20	ALC-90A-B20	ALC-95A-B20	ALC-60D-B20	ALC-65D-B20
Recommended Drying Temperature	(°F)	160	165	165	175	175	175	195
	(°C)	70	75	75	80	80	80	90

ALC-B40 Series (40% Barium Sulfate)

Durathane™ ALC-B40		ALC-80A-B40	ALC-85A-B40	ALC-90A-B40	ALC-95A-B40	ALC-65D-B40
Recommended Drying Temperature	(°F)	165	165	175	175	195
	(°C)	75	75	80	80	90

DURATHANE™ ARC SERIES

ARC Series- Clear Grade

Durathane™ ARC-B20		ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-95A
Recommended Drying Temperature	(°F)	165	165	175	175	175
	(°C)	75	75	80	80	80

ARC-B20 Series (20% Barium Sulfate)

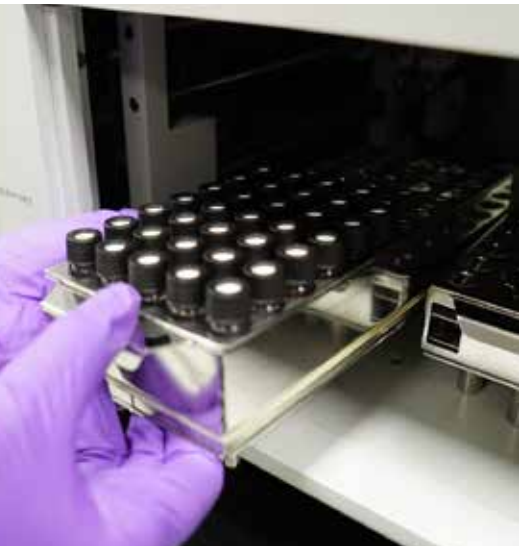
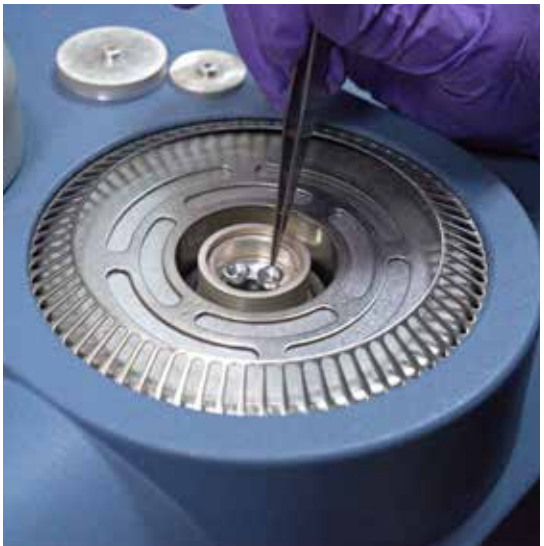
Durathane™ ARC-B20		ARC-80A-B20	ARC-85A-B20	ARC-90A-B20	ARC-95A-B20	ARC-60D-B20
Recommended Drying Temperature	(°F)	195-210	195-210	195-210	205-240	205-240
	(°C)	90-100	90-100	90-100	95-115	95-115

Production Line






Quality Control Laboratory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