

UTEK SEALING MATERIALS



Table of Contents

Content	Page
Sealing Materials (introduction).....	3
Polyurethanes description.....	4
Polyurethanes technical data.....	6
Elastomers description.....	8
Thermoplastics description.....	9
Elastomers technical data.....	11
Thermoplastics technical data.....	13
Material stock.....	15
Machines.....	16
Seals.....	17
Company Info.....	18
Imprint.....	19



Sealing Materials

In today's industries, the increasing technical challenges on sealing parts make it ever more important to select the appropriate sealing material for a specific application. Sealing materials are facing ever higher temperatures and pressures, higher sliding speeds and poorer lubrication fluids. Hydraulic fluids such as HFA, HFB and biodegradable fluids (vegetable oils, synthetic esters) present new, and harsher, environments for sealing materials.

UTEC Sealing Solutions offers a wide range of standard compounds, the majority of which have been developed, and are produced, in our own production plant. In addition to our own production, we also supply thermoplastics such as POM, PA, various types of PTFE and advanced engineering plastics, e.g. PEEK.



Polyurethanes

PU | H-PU | PU-FG | PU-LT | PU-SL | PU-X | PU-XH | PU-XSL

Rubber Elastomers

NBR | H-NBR | EPDM | FPM | MVQ

Thermoplastics

POM | PA | PTFE-virgin | PTFE + 15% glass + 5% MoS₂ | PTFE + 40% bronze | PTFE + 20% carbon | PEEK



Polyurethanes

Polyurethanes play an important role in today's sealing technology. They have gained an important market share in the global seal market and are mainly used as piston and rod seals (U-cups), wipers and primary sealing element in composite seals.

UTEC Sealing Solutions is able to offer our customers a wide range of polyurethane compounds. Our manufacturing technology guarantees the development of excellent physical properties during polymerization, which results in outstanding material quality.

UTECHANE green

UTECHANE is a cast polyurethane elastomer with a low compression set, an outstanding abrasion resistance and excellent physical properties.

UTECHANE is mainly used for U-cups, wipers and V-packings. It can be used in mineral oils, water and biodegradable hydraulic fluids up to 60°C (140F). As a single sealing material, it can withstand pressures up to 400bar (5800psi) in standard applications.

Depending on the seal design and tolerances of the housing, seals made of **UTECHANE** can perform well in extensively higher pressure applications.

UTECHANE-H red

UTECHANE-H is a hydrolysis-resistant cast polyurethane elastomer. It combines the excellent physical properties of **UTECHANE** with high resistance to degradation in water (hydrolysis) and can therefore be used in "water hydraulics", such as mining applications, on tunneling machines and at hydraulic presses at temperatures of up to 90°C (194F).

UTECHANE-H is especially recommended for use in seawater, HFA, HFB fire resistant pressure fluids and biodegradable hydraulic fluids (vegetable oil and synthetic esters).

UTECHANE-LT dark blue

UTECHANE-LT is a cast polyurethane elastomer with excellent physical properties, which has been specially developed for low temperature applications.

UTECHANE-LT can be used in minimum service temperatures of -55°C (-67F) and is mainly used in low temperature applications such as freezing plants, foresting machines, construction machines etc.

UTECHANE-SL dark grey

UTECHANE-SL is a cast polyurethane elastomer and was specially developed to reduce friction and wear through the addition of solid lubricants in the compound. **UTECHANE-SL** is recommended for low lubrication environments such as water hydraulics or non-lubricated pneumatic systems.

UTECHANE-FG natural white

UTECHANE-FG is a cast polyurethane elastomer with excellent physical properties, designed for use in applications in the food and beverage as well as in the healthcare industries.

Polyurethanes

UTECHANE-X dark green

UTECHANE-X is a hard-grade cast polyurethane elastomer with excellent physical properties. Its characteristics provide outstanding friction and wear properties as well as high pressure resistance. It is used in heavy duty applications as sealing element in composite seals (in combination with a rubber preloading element), for wipers and for engineered plastic parts. The excellent extrusion resistance of **UTECHANE-X** allows higher working pressure levels and larger sealing gaps compared to seals made of standard polyurethane and PTFE compounds.

UTECHANE-XH dark red

UTECHANE-XH is a hard-grade cast polyurethane with excellent physical properties, based on the chemical composition of UTECHANE-H. Its characteristics provide outstanding friction and wear properties as well as high pressure resistance. **UTECHANE-XH** is mainly used in mineral oils, biodegradable hydraulic fluids (HETG and HEES) and water-based fire-resistant pressure fluids (HFA, HFB).

UTECHANE-XSL dark grey

Due to its higher hardness, **UTECHANE-XSL** has further improved sliding properties, reduced friction and wear, higher extrusion resistance and can therefore withstand higher pressures compared to UTECHANE-SL. It is mainly used under working conditions with poor lubrication.



Technical Data

Physical Property	DIN standard ASTM standard	Unit	POLYURETHANES		
			UTECHANE PU	UTECHANE-H H-PU	UTECHANE-FG FG-PU
Color			Green	Red	White
Hardness	53505 2240	Shore A	94±2	95±2	92±2
Hardness	53505 2240	Shore D	48±3	50±3	45±3
Density	53479	g/cm ³	1,17	1,17	1,17
Modulus 100%	53504	N/mm ²	≥12	≥14	≥11
Modulus 300%	D412	N/mm ²	≥30	≥33	≥27
Tensile strength	53504 / 53455 D412	N/mm ²	≥55	≥55	≥53
Elongation at break	53504 / 53455 D412	%	≥440	≥430	≥450
e-Modulus	53457	N/mm ²			
Compression set					
70°C / 23h 25% deflection	53517 D395	%	≤20	≤21	≤19
100°C / 22h	53517	%			
175°C / 22h	53517	%			
Rebound resilience	53512 D2632	%	≥51	≥49	≥53
Tear strength	52512 D624	N/mm ²	≥115	≥125	≥96
Abrasion	53516	mm ³	≤15	≤15	≤15
Min. service Temp.		°C / F	-35 / -31	-35 / -31	-35 / -31
Max. service Temp.		°C / F	+110 / +230	+110 / +230	+110 / +230

POLYURETHANES

UTECHANE-LT LT-PU	UTECHANE-SL SL-PU	UTECHANE-X X-PU	UTECHANE-XH XH-PU	UTECHANE-XSL XSL-PU
Dark blue	Light grey	Dark green	Dark red	Dark grey
92±2	94±2			
45±3	48±3	60±3	60±3	60±3
1,17	1,20	1,18	1,18	1,21
≥11,5	≥11,5	≥20	≥22	≥20
≥28	≥29	≥38	≥39	≥38
≥55	≥55	≥45	≥45	≥45
≥450	≥440	≥410	≥400	≥400
≤19	≤20	≤24	≤25	≤26
≥52	≥51	≥44	≥44	≥44
≥105	≥112	≥151	≥165	≥158
≤15	≤15	≤16	≤16	≤16
-55 / -67	-35 / -31	-35 / -31	-35 / -31	-35 / -31
+110 / +230	+110 / +230	+110 / +230	+110 / +230	+110 / +230



Rubber Elastomers

Rubber elastomers are widely used in sealing technology due to their thermal and chemical resistance, but have been replaced in many applications by today's polyurethane materials. Nevertheless, they will maintain to play an important role in the sealing industry and remain the only solution for many applications. Seals made of rubber elastomers are mainly used as rod and piston U-cups, compact seals, O-rings and as preloading element in composite seals.

UTECRUBBER-N (NBR) black

UTECRUBBER-N is an elastomer based on acrylonitrile-butadiene rubber and is mainly used for U-cups, wipers, V-packings and special seals. **UTECRUBBER-N** has good resistance to mineral oils and greases and HFA, HFB and HFC fire resistant pressure fluids. It is not resistant to HFD fluids, aromatic fluids (benzenes), esters, ketones and amines as well as concentrated acids and bases.

UTECRUBBER-HN (HNBR) black

UTECRUBBER-HN is a saturated acrylonitrile-butadiene rubber, suitable for applications in aliphatic hydrocarbons such as propane or butane, mineral oils and greases and sulfonated crude oil. **UTECRUBBER-HN** can be used in many diluted acids and bases and salt solutions at elevated temperatures as well as in water-glycol mixtures. It is not compatible with fuels with high content of aromatic hydrocarbons, gasolines, ketones, esters and chlorinated hydrocarbons such as trichloroethylene and tetrachloroethylene.

UTECRUBBER-F (FPM) brown

UTECRUBBER-F is an elastomer based on fluororubber (Viton®) with outstanding resistance to high temperatures, weathering, ozone and many chemicals. **UTECRUBBER-F** is compatible with mineral oils and greases containing sulphur, HFD fluids, crude oil and sour gas. It is not resistant to anhydrous ammonia, amines, ketones, esters, hot water (steam) and low molecular weight organic acids.

UTECRUBBER-FB (FPM) black

UTECRUBBER-FB is an elastomer based on fluororubber. It has the same chemical resistances as UTECRUBBER-F, but lower mechanical resistance. **UTECRUBBER-FB** is an economic alternative, mainly for use as static seals.

UTECRUBBER-E (EPDM) black

UTECRUBBER-E is based on ethylene-propylene-diene rubber and has outstanding resistance to hot water, steam, washing agents and polar organic solvents. **UTECRUBBER-E** has good resistance to weathering, ozone and ageing. National recommendations have to be considered when using UTECRUBBER-E in brake fluids. It is not resistant to mineral, vegetable and animal oils.

UTECRUBBER-S (MVQ) reddish brown

UTECRUBBER-S is a silicone rubber mainly used in static applications due to its poor mechanical properties compared to other rubber materials. **UTECRUBBER-S** is highly resistant to weathering, ozone and ageing and can be used in hot air applications, in mineral oils and also for applications in contact with foodstuffs.

Thermoplastics / Engineering Plastics

Thermoplastics complete the range of our sealing materials and are mainly used for back-up rings, guide rings, bushings, bearings and engineered parts. Many have outstanding resistance to high temperatures and chemicals, offer excellent sliding properties and can absorb high radial forces. Therefore they are often also referred to as engineering plastics.

UTECFLON-1 (white)

(PTFE-virgin)

UTECFLON-1 is based on polytetrafluorethylene. Due to its composition, it has the widest application range of all sealing materials. It has an outstanding chemical resistance and is only susceptible to molten alkali metals and elementary fluorine at high temperatures. PTFE has a tendency to creep and can absorb relatively low pressure loads. **UTECFLON-1** is suitable for applications in contact with foodstuffs and is also used in many applications in the healthcare and pharmaceutical industries.

UTECFLON-2 (grey)

(PTFE + 15% glass + 5% MoS₂)

UTECFLON-2 is a PTFE filled with 15% glass and 5% MoS₂ in order to improve its compression strength, extrusion resistance and sliding properties in comparison with PTFE-virgin. The chemical resistance remains similar to UTECFLON-1. Glass-filled PTFE compounds have an abrasive effect on their mating surfaces, especially in rotary applications.

UTECFLON-3 (brown)

(PTFE + 40% bronze)

UTECFLON-3 is a PTFE filled with 40% bronze in order to improve its compression strength and has an improved thermal conductivity as well as excellent wear resistance compared with PTFE-virgin. Bronze-filled PTFE has higher friction and poorer chemical resistance than other filled PTFE compounds.

UTECFLON-4 (black)

(PTFE + 20% carbon)

UTECFLON-4 is a PTFE filled with 20% carbon, which gives it excellent compression strength, good thermal conductivity and low permeability. Carbon-filled PTFE is less abrasive than glass-filled PTFE and has excellent wear and friction properties especially combined with graphite.



Thermoplastics / Engineering Plastics

UTECTAL-1 (POM) white

UTECTAL-1 is a polyacetal-copolymer used mainly for back-up rings, guide rings, bushings and precision machined parts with tight tolerances. POM is one of the most important engineering plastics with good physical properties, low water absorption and good chemical resistance. It is used in mineral oils, water-based fire-resistant pressure fluids (HFA, HFB and HFC). It is not resistant to concentrated acids and bases. **UTECTAL-1** is suitable for all applications in contact with foodstuffs and is also used in many applications in the healthcare and pharmaceutical industries.

UTECMID-1 (PA6) white

UTECMID-1 is a cast polyamide with good sliding properties and mainly used in applications with mineral oils. Polyamide absorbs water; therefore, its swelling must be taken into consideration in the design of parts when used in applications involving water or water-based fluids. **UTECMID-1** is also suitable for applications in contact with foodstuffs.

UTECPEEK-1 (cream)

(PEEK-virgin)

UTECPEEK-1 is a high-temperature resistant thermoplastic and can be used continuously up to 250°C (482F), in hot water and steam. It has outstanding mechanical performance and excellent tribological properties with high pressure-velocity capabilities. The material has good engineering properties, as it is tough, rigid and creep resistant.



Technical Data

		Rubber Elastomers			
Physical Property	DIN standard ASTM standard	Unit	UTECRUBBER-N NBR	UTECRUBBER-HN H-NBR	UTECRUBBER-F FPM
Color			Black	Black	Brown
Hardness	53505 2240	Shore A	85±5	85±5	85±5
Hardness	53505 2240	Shore D	34	34	34
Density	53479	g/cm ³	1,32	1,23	2,51
Modulus 100%	53504	N/mm ²	≥11	≥10	≥7
Modulus 300%	D412	N/mm ²			
Tensile strength	53504 / 53455 D412	N/mm ²	≥17	≥18	≥13
Elongation at break	53504 / 53455 D412	%	≥155	≥200	≥200
e-Modulus	53457	N/mm ²			
Compression set					
70°C / 23h 25% deflection	53517 D395	%			
100°C / 22h	53517	%	≤15	≤20	
175°C / 22h	53517	%			≤20
Rebound resilience	53512 D2632	%	≥28	≥29	≥7
Tear strength	52512 D624	N/mm ²	≥20	≥30	≥21
Abrasion	53516	mm ³			
Min. service Temp.		°C / F	-30 / -22	-25 / -13	-20 / -4
Max. service Temp.		°C / F	+100 / +212	+150 / +302	+210 / +410

Technical Data

		Rubber Elastomers			
Physical Property	DIN standard ASTM standard	Unit	UTECRUBBER-FB FPM	UTECRUBBER-E EPDM	UTECRUBBER-S MVQ
Color			Black	Black	Reddish brown
Hardness	53505 2240	Shore A	85±2	85±5	85±5
Hardness	53505 2240	Shore D	34	34	34
Density	53479	g/cm ³	1,88	1,23	1,54
Modulus 100%	53504	N/mm ²	≥7	≥10	≥5
Modulus 300%	D412	N/mm ²			
Tensile strength	53504 / 53455 D412	N/mm ²	≥12	≥14	≥7
Elongation at break	53504 / 53455 D412	%	≥180	≥130	≥130
e-Modulus	53457	N/mm ²			
Compression set					
70°C / 23h 25% deflection	53517 D395	%			
100°C / 22h	53517	%		≤15	
175°C / 22h	53517	%	≤20		≤15
Rebound resilience	53512 D2632	%	≥7	≥38	≥44
Tear strength	52512 D624	N/mm ²	≥21	≥15	≥8
Abrasion	53516	mm ³	≤150	≤120	–
Min. service Temp.		°C / F	-25 / -13	-50 / -58	-60 / -76
Max. service Temp.		°C / F	+210 / +302	+150 / +302	+210 / +410

Technical Data

		Eng. Plastics		
Physical Property	DIN standard ASTM standard	Unit	UTECTAL-1 POM	UTECMID PA6
Color			White	White
Hardness	53505 2240	Shore A		
Hardness	53505 2240	Shore D	85	85
Density	53479	g/cm ³	1,41	1,15
Modulus 100%	53504	N/mm ²		
Modulus 300%	D412	N/mm ²		
Tensile strength	53504 / 53455 D412	N/mm ²	≥65	≥85
Elongation at break	53504 / 53455 D412	%	≥40	≥25
e-Modulus	53457	N/mm ²	2760	2760
Compression set				
70°C / 23h 25% deflection	53517 D395	%		
100°C / 22h	53517	%		
175°C / 22h	53517	%		
Rebound resilience	53512 D2632	%		
Tear strength	52512 D624	N/mm ²		
Abrasion	53516	mm ³		
Min. service Temp.		°C / F	-60 / -76	-40 / -40
Max. service Temp.		°C / F	+100 / +212	+105 / +221

Sealing Material Stock

Large stock

- More than 10.000 articles (raw material billets) in stock
- Large stock of guide tapes of various materials and sizes, springs etc.
- Large inventory of tools and tool holders
- Spare parts such as flexible hoses for suction unit and spendables (lubricating agent, greases etc.) always available



Shipping

- We ship worldwide, any quantity!
- Larger orders are shipped on EPAL Euro-pallets, smaller shipments in sturdy cardboard boxes.
- We have excellent tariffs for Air Freight (FedEx) as well as Sea or Rail Freight, depending on the customer's preferences (and location)!
- For your convenience, all orders come equipped with a bar code

Just send us an enquiry!



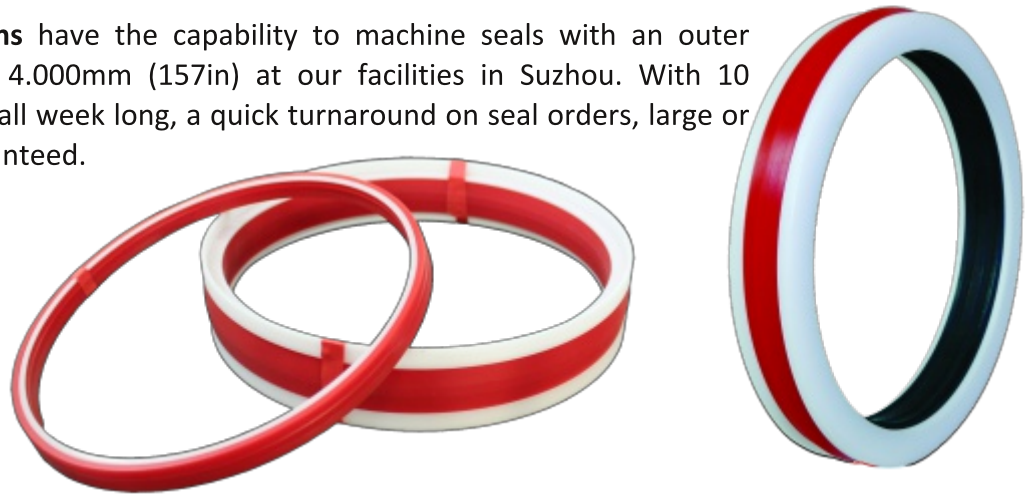
UTEC-215126



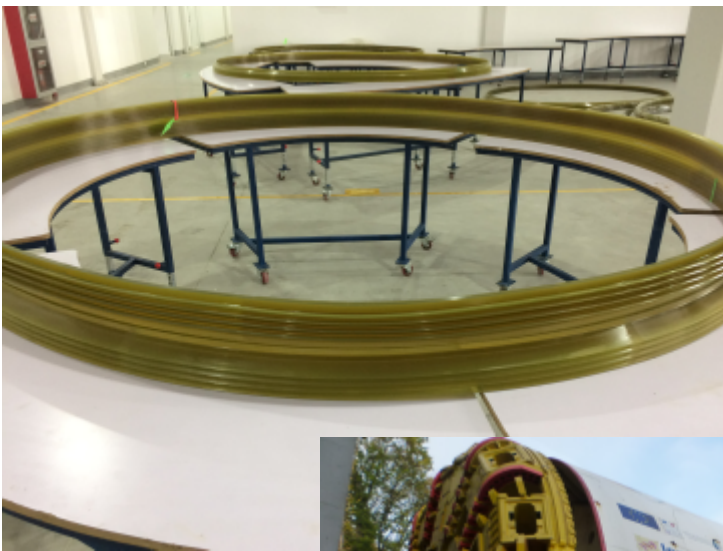
Seals

Machined seals

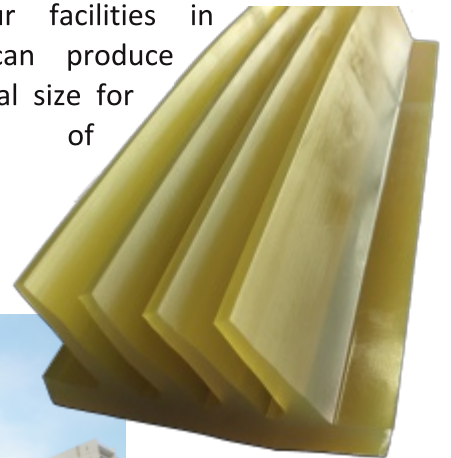
UTEK Sealing Solutions have the capability to machine seals with an outer diameter (OD) up to 4.000mm (157in) at our facilities in Suzhou. With 10 machines operational all week long, a quick turnaround on seal orders, large or small, is virtually guaranteed.



TBM seals



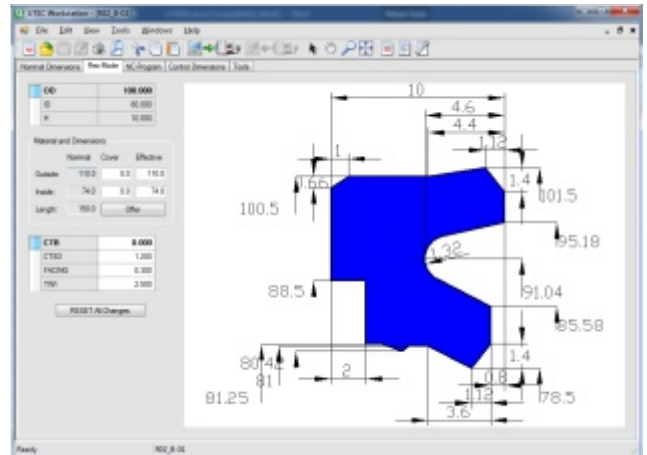
In addition to machined seals, UTEK Sealing Solutions has also improved the production process for seals for *Tunnel Boring Machines* (TBM). At our facilities in Suzhou, we can produce virtually any seal size for TBMs out of Polyurethane.



Your Partner for Sealing Technology

UTEC Sealing Solutions is a leading manufacturer and supplier of high quality hydraulic and pneumatic seals, engineered plastic parts, high performance sealing materials and turn-key seal manufacturing technology.

With our extensive expertise, **UTEC Sealing Solutions** is able to support our customers with design, prototyping, production, test and installation utilizing state-of-the-art technology. UTEC Sealing Solutions fulfills challenging service requirements, supplying standard seals in volumes or single and medium series of custom manufactured parts with shortest delivery times.



Our Mission

UTEC Sealing Solutions is a strong global partner for our customers and suppliers. We build long-term partnerships by providing leading technology and excellent service.

UTEC Sealing Solutions offers an outstandingly comprehensive range of sealing products, providing the best in elastomer, thermoplastic, PTFE and composite technologies.

UTEC Sealing Solutions provides cost-effective, durable solutions that match the specific requirements of our customers.

Today and in the Future

UTEC Sealing Solutions is excellently equipped to meet the demands of today's sealing technology. With our policy of product development and our commitment to quality and excellence, we will continue meeting the future demands of the various industries with products at the forefront of technology.

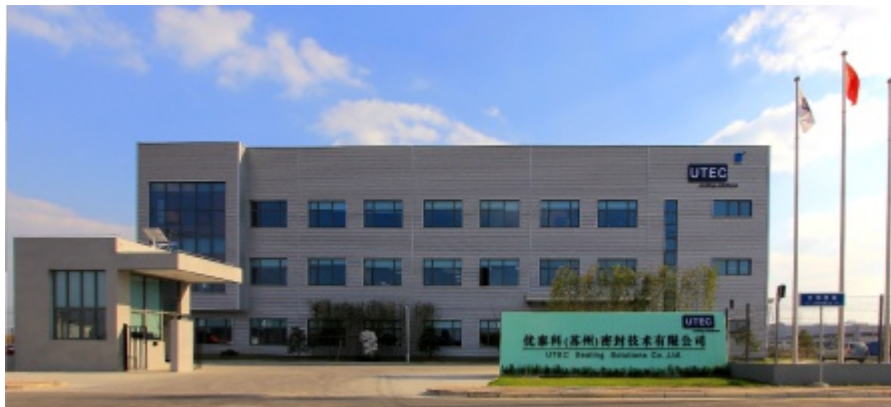


UTEC Sealing Solutions assumes no responsibility or liability for any errors or omissions in the content of this brochure. The information contained herein is provided on an "as is" basis with no guarantees of completeness, accuracy, usefulness or timeliness and without any warranties of any kind whatsoever, express or implied. **UTEC Sealing Solutions** does not warrant that this brochure will be free of errors or omissions.

www.utec.cc

Contact

UTECH Sealing Solutions Co., Ltd.
No. 25 JiangTianli Rd., South JiePu Rd., SIP
Suzhou, P.R. China



©2017 UTECH Sealing Solutions Co., Ltd.