

UTEK SEALING MATERIALS



UTEK

sealing solutions

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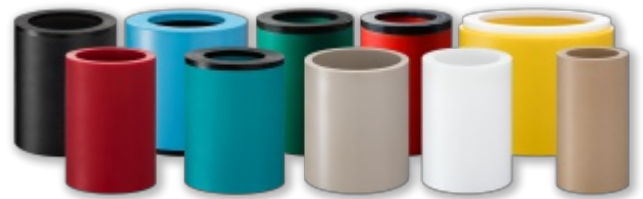
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Sealing Materials

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 esthers) 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 | HTQ-PU | FG-PU | LT-PU | SL-PU | HT-PU | X-PU | XH-PU | XSL-PU

Rubber Elastomers

NBR | NBR-FDA | H-NBR | H-NBR_LT | EPDM | EPDM_FG | FPM | FPM-Black | MVQ | TFE/P

PTFE + Engineering Plastics

PTFE-Virgin | PTFE +15% glass +5% MoS2 | PTFE +40% Bronze | PTFE +20% Carbon | PTFE +10% Graphite
PTFE +10% Ekonol | PTFE +20% Ekonol | PTFE +10% PEEK | PEEK | UHMW-PE

Thermoplastics

POM White | POM Black | PA White | PA Black



sealing solutions

Polyurethanes 95 Shore A

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.

UTECH 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). FDA-certified.

UTECHANE-HTQ Turquoise

UTECHANE-HTQ has the same mechanical and chemical characteristics UTECHANE-H, except that it is Turquoise-colored. Contrary to its red variant, it is not FDA-compliant.

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

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. FDA-certified.

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 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.

Polyurethanes 57 Shore D

UTECHANE-HT Yellow

UTECHANE-HT is a cast polyurethane elastomer on MDI/PCDL-basis with a low compression set, outstanding abrasion resistance, excellent physical properties, excellent chemical resistance and outstanding temperature resistance.

UTECHANE-HT is mainly used for high temperature application where high chemical resistance is required. It can be used in mineral oils, water and biodegradable hydraulic fluids up to 90°C (194F).

As a single searing material, it can withstand pressures up to 400bar (5800psi) in standard applications.

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 – Polyurethanes

| | | POLYURETHANES 95 SH. A | | | |
|--|-----------------------|------------------------|----------------|--------------------|----------------------|
| Property | DIN norm ASTM norm | Unit | UTECHANE PU | UTECHANE-H H-PU | UTECHANE-HTQ H-PU |
| Color | | | | | |
| Hardness | 53505 2240 | Shore A | 94±2 | 95±2 | 95±2 |
| Hardness | 53505 2240 | Shore D | 48±3 | 50±3 | 50±3 |
| Density | 53479 | g/cm ³ | 1,17 | 1,17 | 1,17 |
| Modulus 100% | 53504 | N/mm ² | ≥12 | ≥14 | ≥10 |
| Modulus 300% | D412 | N/mm ² | ≥30 | ≥33 | ≥21 |
| Tensile strength | 53504 / 53455 D412 | N/mm ² | ≥55 | ≥55 | ≥50 |
| Elongation at break | 53504 / 53455 D412 | % | ≥440 | ≥430 | ≥400 |
| Compression set 70°C / 23h 25% deflection | 53517 D395 | % | ≤20 | ≤21 | ≤10 |
| Rebound resilience | 53512 D2632 | % | ≥51 | ≥49 | ≥45 |
| Tear strength | 52512 D624 | N/mm ² | ≥115 | ≥125 | ≥100 |
| Abrasion | 53516 | mm ³ | ≤15 | ≤15 | ≤40 |
| Min. service Temp. | | °C / F | -35 / -31 | -35 / -31 | -20 / -4 |
| Max. service Temp. | | °C / F | +110 / +230 | +110 / +230 | +110 / +230 |
| FDA-Compliance +: YES / -: NO | | | - | + | - |

| POLYURETHANES 95 Sh. A | | | POLYURETHANES 57 Sh. D | | | |
|------------------------|----------------------|----------------------|------------------------|--------------------|----------------------|------------------------|
| UTECHANE-FG FG-PU | UTECHANE-LT LT-PU | UTECHANE-SL SL-PU | UTECHANE-HT HT-PU | UTECHANE-X X-PU | UTECHANE-XH XH-PU | UTECHANE-XSL XSL-PU |
| | | | | | | |
| 92±2 | 92±2 | 94±2 | | | | |
| 45±3 | 45±3 | 48±3 | 57±3 | 60±3 | 60±3 | 60±3 |
| 1,17 | 1,17 | 1,20 | 1,17 | 1,18 | 1,18 | 1,21 |
| ≥11 | ≥11,5 | ≥11,5 | ≥18 | ≥20 | ≥22 | ≥20 |
| ≥27 | ≥28 | ≥29 | ≥35 | ≥38 | ≥39 | ≥38 |
| ≥53 | ≥55 | ≥55 | ≥50 | ≥54 | ≥54 | ≥54 |
| ≥450 | ≥450 | ≥440 | ≥350 | ≥410 | ≥400 | ≥400 |
| ≤19 | ≤19 | ≤20 | ≤40 | ≤24 | ≤25 | ≤26 |
| ≥53 | ≥52 | ≥51 | ≥18 | ≥44 | ≥44 | ≥44 |
| ≥96 | ≥105 | ≥112 | ≥120 | ≥151 | ≥165 | ≥158 |
| ≤15 | ≤15 | ≤15 | ≤15 | ≤16 | ≤16 | ≤16 |
| -35 / -31 | -55 / -67 | -35 / -31 | -15 / 5 | -35 / -31 | -35 / -31 | -35 / -31 |
| +110 / +230 | +110 / +230 | +110 / +230 | +130 / +266 | +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-N White (NBR)

UTECRUBBER-N White is an acrylonitrile-butadiene rubber commonly known as NBR, Nitrile or BUNA. It has good mechanical properties and chemical resistance to mineral oils and greases, 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-N White is approved for the use of applications in contact with foodstuff.

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-HN_LT (HNBR) Black

UTECRUBBER-HN_LT is a hydrogenated NBR-rubber, with identical chemical properties as UTECRUBBER-HN. However, UTECRUBBER-HN_LT has been specially designed for use in low-temperature applications for temperatures down to -40°C/-40F.



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-E_FG (EPDM) Black

UTECRUBBER-E_FG is based on ethylene-propylene rubber and has the same chemical and physical properties as UTECRUBBER-E. However, UTECRUBBER-E_FG is also approved for use in applications in contact with foodstuffs.

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.

UTECRUBBER-AF (TFE/P) Black

UTECRUBBER-AF is a Tetrafluoroethylene-Propylene copolymer (TFE/P), commonly referred to as FEPM or AFLAS®. It has very high resistance to hydraulic fluids, all brake fluids, acids, Methanol, water steam up to 160°C, bases and amines.

Technical Data – Rubber Elastomers

| RUBBER ELASTOMERS | | | | | |
|----------------------------------|-----------------------|-------------------|---------------------|-----------------------------|------------------------|
| Property | DIN norm ASTM norm | Unit | UTECRUBBER-N NBR | UTECRUBBER-N White (NBR) | UTECRUBBER-HN H-NBR |
| Color | | | | | |
| 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 | 1,62 | 1,23 |
| Modulus 100% | 53504 | N/mm ² | ≥11 | ≥5 | ≥10 |
| Tensile strength | 53504 / 53455 D412 | N/mm ² | ≥17 | ≥8 | ≥18 |
| Elongation at break | 53504 / 53455 D412 | % | ≥155 | ≥300 | ≥200 |
| Compression set 100°C / 22h | 53517 | % | ≤15 | ≤20 | ≤20 |
| Compression set 175°C / 22h | 53517 | % | | | |
| Rebound resilience | 53512 D2632 | % | ≥28 | ≥29 | ≥29 |
| Tear strength | 52512 D624 | N/mm ² | ≥20 | ≥20 | ≥30 |
| Abrasion | 53516 | mm ³ | ≤90 | ≤90 | ≤90 |
| Min. service Temp. | | °C / F | -30 / -22 | -30 / -22 | -25 / -13 |
| Max. service Temp. | | °C / F | +100 / +212 | +100 / +212 | +150 / +302 |
| FDA-Compliance +: YES / -: NO | | | - | + | - |

RUBBER ELASTOMERS

| UTECR.-HN_LT H-NBR | UTECRUBBER-F FPM | UTECRUBBER-FB FPM | UTECRUBBER-E EPDM | UTECR.-E_FG EPDM | UTECRUBBER-S MVQ | UTECRUBBER-AF TFE/P |
|-----------------------|---------------------|----------------------|----------------------|---------------------|---------------------|------------------------|
| 85±5 | 85±5 | 85±2 | 85±5 | 85±5 | 85±5 | 85±5 |
| 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| 1,23 | 2,51 | 1,88 | 1,23 | 1,23 | 1,54 | 1,76 |
| ≥10 | ≥7 | ≥7 | ≥10 | ≥10 | ≥5 | ≥7 |
| ≥18 | ≥13 | ≥12 | ≥14 | ≥14 | ≥7 | ≥9 |
| ≥200 | ≥200 | ≥180 | ≥130 | ≥130 | ≥130 | ≥200 |
| ≤20 | | | ≤15 | ≤15 | | ≤25 |
| | ≤20 | ≤20 | | | ≤15 | |
| ≥29 | ≥7 | ≥7 | ≥38 | ≥38 | ≥44 | ≥10 |
| ≥30 | ≥21 | ≥21 | ≥15 | ≥15 | ≥8 | ≥7 |
| ≤90 | ≤150 | ≤150 | ≤120 | ≤120 | - | ≤150 |
| -40 / -40 | -20 / -4 | -25 / -13 | -50 / -58 | -50 / -58 | -60 / -76 | -15 / 5 |
| +150 / +302 | +210 / +410 | +210 / +302 | +150 / +302 | +150 / +302 | +210 / +410 | +210 / +410 |
| - | - | - | - | + | - | - |

PTFE

PTFE and engineering plastics 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.

UTECFLON-1C (White)

(PTFE-virgin)

UTECFLON-1C White is a virgin 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. UTECFLO-1C White is suitable for applications in contact with foodstuffs and is also used in many applications in the healthcare and pharmaceutical industries.

UTECFLON-1C TQ (Turquoise)

(PTFE-virgin)

UTECFLON-1C TQ an unfilled (virgin) PTFE (Polytetrafluorethylene) compound with Turquoise pigment. PTFE is the most chemically resistant thermoplastic polymer and has outstanding chemical resistance to almost all chemicals and solvents. It has the lowest coefficient of friction of any solid material, is resistant to weathering and water absorption and can be used over a wide temperature range. PTFE is subject to creep ("cold-flow"). It should not be used for dynamic applications in water.

UTECFLON-2C (Grey)

(PTFE + 15% glass + 5% MoS₂)

UTECFLON-2C 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 UTECFLO-1C. Glass-filled PTFE compounds have an abrasive effect on their mating surfaces, especially in rotary applications.

UTECFLON-3C (Brown)

(PTFE + 40% Bronze)

UTECFLON-3C 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-4C (Black)

(PTFE + 20% Carbon)

UTECFLON-4C 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.

UTECFLON-GR10 (Grey)

(PTFE + 10% Graphite)

UTECFLON-GR10 is a PTFE (Polytetrafluorethylene) filled with 10% graphite. It has a low coefficient of friction and improved conductivity, it is not resistant against strong oxidizing media. It has similar chemical resistance and can be used in the same temperature range as pure PTFE and is especially used in rotary applications, but it should not be used for dynamic applications in water.

UTECFLON-E10 (Cream)

(PTFE + 10% Ekonol)

UTECFLON-E10 is a PTFE (Polytetrafluorethylene) filled with 10% Ekonol. It has good wear and extrusion resistance, especially in dry running conditions. It has similar chemical resistance, and can be used in same temperature range, as pure PTFE, especially in rotary applications at high speeds. It should not be used in hot water.

UTECFLON-E20 (Cream)

(PTFE + 20% Ekonol)

UTECFLON-E20 is PTFE (Polytetrafluorethylene) filled with 20% Ekonol. It has good wear and extrusion resistance, especially in dry running conditions. It has similar chemical resistance, and can be used in same temperature range, as pure PTFE, especially in rotary applications at high speeds. It should not be used in hot water.

UTECFLON-PEEK10 (Tan)

(PTFE + 10% PEEK)

UTECFLON-PEEK10 is a PTFE (Polytetrafluorethylene) filled with 10% PEEK. It has good chemical resistance, high creep strength and high wear resistance.

UTECFLON-PEEK10 is mainly used for applications requiring very high resistances.

Technical Data – PTFE

| Property | DIN norm ASTM norm | Unit | PTFE | | |
|--|-----------------------|----------------------|----------------------------|-------------------------------|---|
| | | | UTECFLON-1C PTFE-virgin | UTECFLON-1C TQ PTFE-virgin | UTECFLON-2C PTFE+15%glass +5%MoS2 |
| Color | | | | | |
| Hardness | 53505 2240 | Shore D | 51 – 65 | 51 – 65 | 55 – 60 |
| Density | 53479 | g/cm ³ | 2,14 – 2,18 | 2,14 – 2,18 | 2,00 – 2,30 |
| Tensile strength | 53504 / 53455 D412 | N/mm ² | ≥25 | ≥25 | ≥15 |
| Elongation at break | 53504 / 53455 D412 | % | ≥300 | ≥300 | ≥220 |
| e-Modulus | 53457 | N/mm ² | | | |
| Coeff. of friction (dyn.) | D1894 | μ | 0,06 | 0,06 | 0,08 |
| Wear factor | D3702 | K | 29 | 29 | 10 – 20 |
| Compression strength at 1% deformation | 53517 | N/mm ² | 4 – 5 | 4 – 5 | 8,5 – 9 |
| Water absorption to saturation | D570 | % | | | |
| Thermal Expansion Coeff. 25-100° (linear) | D696 | 10 ⁻⁵ /°C | 12 – 13 | 12 – 13 | 9 – 12 |
| Compression Strength | DIN 52612 | MPa | | | |
| Min. service Temp. | | °C / F | -200 / -328 | -200 / -328 | -200 / -328 |
| Max. service Temp. | | °C / F | +260 / +500 | +260 / +500 | +260 / +500 |
| FDA-Compliance +: YES / -: NO | | | + | - | - |

PTFE

| UTECFLON-3C PTFE+40% bronze | UTECFLON-4C PTFE+20% carbon | UTECFLON-GR10 PTFE+10% Graphite | UTECFLON-E10 PTFE+10% Ekonol | UTECFLON-E20 PTFE+20% Ekonol | UTECFLON-PEEK10 PEEK + 10% PEEK |
|--------------------------------|--------------------------------|------------------------------------|---------------------------------|---------------------------------|------------------------------------|
| | | | | | |
| 62 – 67 | 62 – 67 | 55 – 60 | 60 – 62 | 60 – 65 | 60 |
| 3,05 – 3,12 | 2,05 – 2,11 | 2,25 | 2,08 | 2,00 | 2,03 |
| ≥23 | ≥14 | ≥15 | ≥20 | ≥16 | ≥20 |
| ≥200 | ≥130 | ≥170 | ≥250 | ≥220 | ≥200 |
| | | | | | |
| 0,13 | 0,09 | 0,10 | 0,18 | 0,16 | 0,17 |
| 9 – 13 | 10 – 12 | | | | |
| 7 – 9 | 7 – 9 | | | | |
| | | | | | ≤0,4 |
| 10 – 11,5 | 10 – 12 | 10 | 8,4 | 10 | |
| | | | | | 12 |
| -200 / -328 | -200 / -328 | -200 / -328 | -200 / -328 | -200 / -328 | -60 / -76 |
| +260 / +500 | +260 / +500 | +260 / +500 | +260 / +500 | +260 / +500 | +300 / +572 |
| - | - | - | - | - | - |

Engineering Plastics

PTFE and engineering plastics 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.

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.

UTECPE-U (White)

(UHMW-PE)

UTECPE-U is a thermoplastic polymer UHMW-PE (Ultra-High Molecular Weight PolyEthylene). The material has high resistance to abrasive wear, good oxidation resistance, good sliding and anti-adhesive behavior. The minimum service temperature of -200°C makes it an optimal material for low temperature applications. Generally recognized as safe for foodstuff applications.



Technical Data – Engineering Plastics

| | | ENG. PLASTICS | | |
|--|-----------------------|----------------------|---------------------------|---------------------|
| Property | DIN norm ASTM norm | Unit | UTECPEEK-1 PEEK-virgin | UTECPE-U UHMW-PE |
| Color | | | | |
| Hardness | 53505 2240 | Shore D | 86 | 63 |
| Density | 53479 | g/cm ³ | 1,3 | 0,93 |
| Tensile strength | 53504 / 53455 D412 | N/mm ² | ≥105 | ≥40 |
| Elongation at break | 53504 / 53455 D412 | % | ≥30 | ≥50 |
| e-Modulus | 53457 | N/mm ² | 4200 | 680 |
| Coeff. of friction (dyn.) | D1894 | μ | | |
| Wear factor | D3702 | K | | |
| Compression strength at 1% deformation | 53517 | N/mm ² | | |
| Water absorption to saturation | D570 | % | ≤0,4 | ≤0,01 |
| Thermal Expansion Coeff. 25-100° (linear) | D696 | 10 ⁻⁵ /°C | | |
| Melting Temperature | | °C / F | +340 / +644 | +130 / +266 |
| Min. service Temp. | | °C / F | -60 / -76 | -200 / -328 |
| Max. service Temp. | | °C / F | +300 / +572 | +80 / +176 |
| FDA-Compliance +: YES / -: NO | | | + | + |

Thermoplastics

Thermoplastics complete the range of our sealing materials and are mainly used for back-up rings, guide rings, bushings, bearings and engineered parts. They have good resistance to chemicals, offer excellent sliding properties and can absorb high radial forces.

UTECTAL-1 (POM) White

UTECTAL-1 White 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 White is suitable for all applications in contact with foodstuffs and is also used in many applications in the healthcare and pharmaceutical industries.

UTECTAL-1 (POM) Black

UTECTAL-1 Black 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.

UTECMID-1 (PA6) White

UTECMID-1 White 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 White is also suitable for applications in contact with foodstuffs.

UTECMID-1 (PA6) Black

UTECMID-1 Black 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.



Technical Data – Thermoplastics

| THERMOPLASTICS | | | | | | |
|---|-----------------------|-------------------|------------------|-------------|------------------|-------------|
| Property | DIN norm ASTM norm | Unit | UTECTAL-1 POM | | UTECMID-1 PA6 | |
| Color | | | | | | |
| Hardness | 53505 2240 | Shore D | 85 | 81 | 85 | 85 |
| Density | 53479 | g/cm ³ | 1,41 | 1,41 | 1,15 | 1,13 |
| Tensile strength | 53504 / 53455 D412 | N/mm ² | ≥65 | ≥65 | ≥85 | 80 |
| Elongation at break | 53504 / 53455 D412 | % | ≥40 | ≥40 | ≥25 | 70 |
| e-Modulus | 53457 | N/mm ² | 2760 | 2400 | 2760 | 3200 |
| Coefficient of friction (dyn.) | D1894 | μ | ≤0,25 | | ≤0,25 | ≤0,2 |
| Water absorption | | | | | | |
| to saturation | D570 | % | ≤0,9 | ≤0,8 | ≤7 | ≤9 |
| in 24h | D570 | % | ≤0,2 | ≤0,2 | ≤0,6 | |
| at 50% RH | D570 | % | | | | ≤3 |
| Compression strength at 1% deformation | D695 | N/mm ² | 100 | | 100 | |
| Min. service Temp. | | °C / F | -60 / -76 | -50 / -58 | -40 / -40 | -40 / -40 |
| Max. service Temp. | | °C / F | +100 / +212 | +100 / +212 | +105 / +221 | +100 / +212 |
| FDA-compliance +: YES / -: NO | | | + | - | + | - |

UTECRESIN – Phenolic Resin

Phenol formaldehyde (PF) resin is one of the oldest plastics, originally created in 1907 under the name "Bakelite". Despite its age, this is still a very useful material, thanks in part to its electrically insulating properties, and in part to its resistance to high bearing loads.

As a result of this, PF-impregnated paper is still very widely used in high-voltage applications as an insulator, and PF-impregnated fibers have a very wide use as guide elements in modern hydraulics.

UTECRESIN is a woven polyester fabric, impregnated with a specially modified phenolic resin and friction optimized with PTFE, which makes it an ideal material for guide elements. It has high bearing strength, good sliding properties and maximum resistances, particularly for absorbing extremely high lateral forces in hydraulic cylinders with lateral stresses. UTECRESIN can be used for applications in hydraulic cylinder production, mining, construction machinery industry and mechanical engineering.

| Property | Norm | Unit | UTECRESIN Polyester fibre +PF +PTFE |
|------------------------------------|-----------|-------------------|---|
| Color | | | |
| Flexural strength | ISO 178 | N/mm ² | 80 |
| Density | DIN 53479 | g/cm ³ | 1,2 |
| Tensile strength | DIN 53504 | N/mm ² | 50 |
| Water absorption | DIN 53495 | % | 0,12 |
| Compressive strength, flat wise | DIN 53504 | N/mm ² | 50 |
| Ball pressure hardness, vertical | ISO 2039 | N/mm ² | 150 |
| Ball pressure hardness, parallel | ISO 2039 | N/mm ² | 135 |
| Friction coefficient against steel | ASTM 1894 | μ | 1,15 |
| Temperature resistance | ISO 75-3 | °C / F | +100 / +266 |

UTECRESIN must be machined dry, i.e. on a dry machine (e.g. first thing in the morning) and without any lubrication.

The machine must be thoroughly cleaned after machining UTECRESIN.

Otherwise, the fine powder will form a very hard cement with any liquid, and will clog all tubing in the machine.

UTEC Sealing Solutions Co., Ltd. does not assume any liability resulting from buildup of UTECRESIN-residue in the machine.

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

sealing solutions

Seal Manufacturing Systems

UT250E

The small solution for your everyday needs for seals up to 250mm (9.8") OD



UT400E

The economic alternative for seals up to 400mm (15.7") OD



UT400 / UT750(DT)

The workhorses with hydraulic tool turret for seals up to 400mm/15.7" OD (UT400) and 750mm/29.5" OD (UT750)



UT1500

The BIG solution for seals between 600mm (23.6") and 1500mm (59") \varnothing with automatic centring of billets



All UTEC seal machining systems come fully equipped with a 12-station hydraulic tool turret, chip cutter, powerful suction unit, a set of tools and high-quality aluminum chuck jaws.

The highly flexible, powerful and user-friendly UTEC "FLEX" software comes pre-installed on a PC with Microsoft Windows operating system as part of the UTEC seal machining systems.

UTEC

sealing solutions

Seals

Machined seals

UTEC 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.

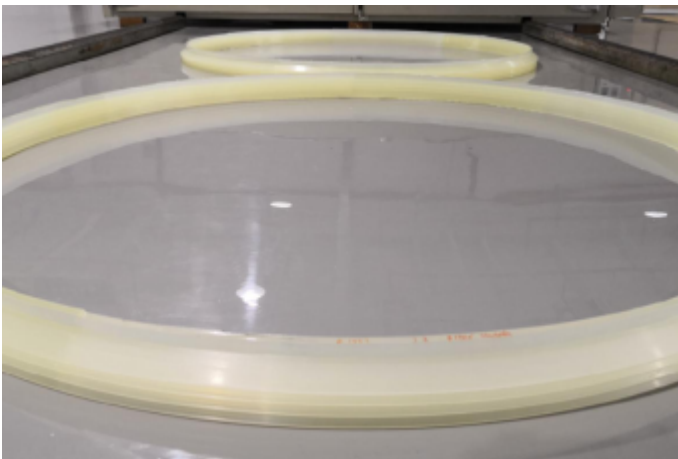


Molded seals

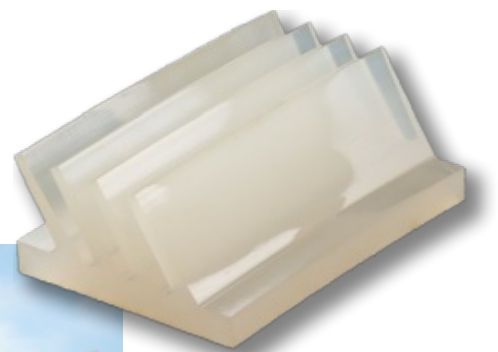
UTEC Sealing Solutions also offer a range of standard sealing components, such as guide rings and guide tapes, but also molded seals: Wiper W02 and compact piston seal type U105.



TBM seals



In addition to machined seals, UTEC 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.



Injection & Rubber Molding

Since the beginning of the 2020, UTEC Sealing Solutions now also offers In House molding for both PU and Rubber.

With our 2 injection molding machines, and our endless Rubber molding press we can now fulfill all your seal demands.

Injection Molding

We now offer injection molding for seals (Wipers, Rod and Piston Seals etc) for large quantities in dimensions up to 300mm (11.8") OD.

Our standard material is Red Polyurethane in 93 Shore A hardness.

Currently, there is a limited stock of molds, but new molds can be made on demand!

For an excellent finish, we also have a dedicated deburring machine!



Rubber Molding

In addition to our large-diameter (TBM) seals, we now also offer large diameter NBR seals in endless Rubber molding. If it can't be machined, we can mold it!

Presently, there is a limited stock of molds, but new molds can be made on demand!

Other materials may be added in the future.



Spring Welding & Laser Marking Systems

Today's sealing requirements are becoming more and more stringent, be it full traceability or welded springs.

For this reason, UTEC Sealing Solutions now also offers systems for laser welding springs and for laser engraving of the finished product.

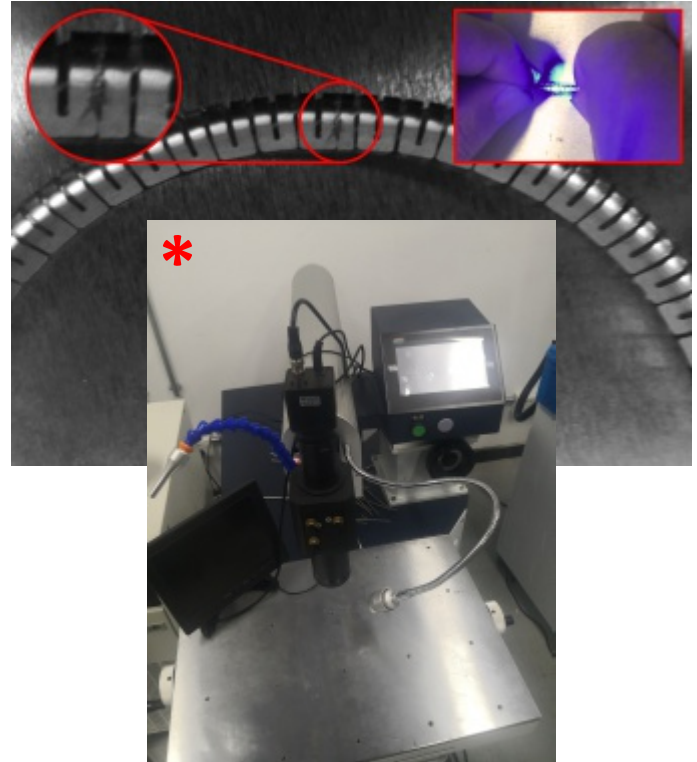
Spring Welding Systems*

In Laser welding, the parts are heated and melted in a small welding spot by controlling current, frequency and pulse of the Laser beam. The result is a neat and narrow weld seam.

Specifications:

- Nd3+YAG solid-state Laser
- Weld depth 0.1-4.0mm
- Weld width: 0.2-0.8mm
- Pulse duration: 0.5-20ms
- Wave length: 1.06µm
- Working area: 200*300mm
- Max load: 100kg

Please inquire for more information!



Laser Engraving Systems*

Laser engraving is a fast, reliable and long lasting way to write serial numbers, company names, bar codes etc onto almost any surface. The engraver comes with a piece of software to allow almost any kind of durable engraving.

Specifications:

- Line width: 0.01-0.04mm
- Marking depth: ≤0.3mm
- Speed: 5,000-7,000mm/s
- Wave length: 1.06µm
- Working area: 110*110mm
- Input file types: AI, DXF, DWG, PLT, BMP, JPG etc

Please inquire for more information!

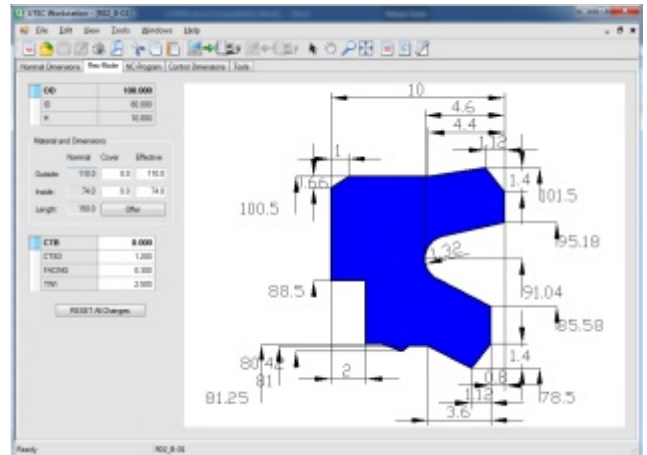


***Due to differing Occupational Safety & Health Regulations, these systems may not be available in all countries.**

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

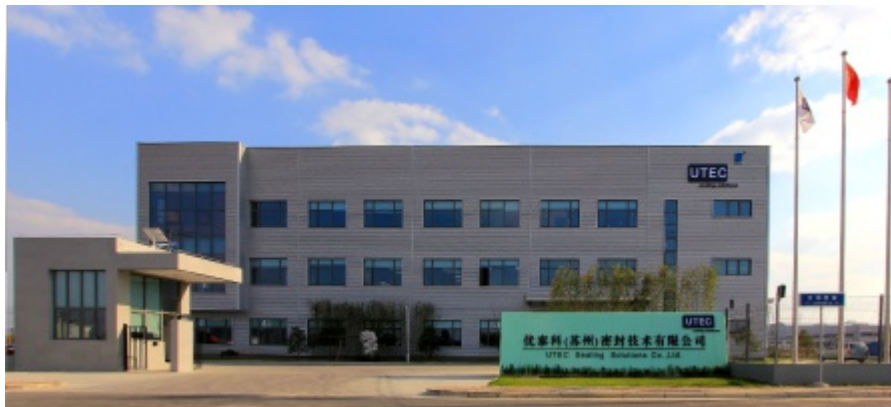
sealing solutions

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