HECKER DICHTUNGEN
DICHTER
DICHTS
GEHTS
NICHT

HECKER® STUFFING BOX PACKINGS

HECKER® STUFFING BOX PACKINGS

GARNITURES DE PRESSE-ÉTOUPE HECKER®

GUARNIZIONI DI TENUTE A PREMISTOPPA HECKER®

italiano

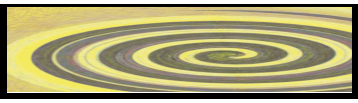
una dinastia al servizio della nostra clientela

SOMMARIO PAGINA

I dati riportati sul presente opuscolo vanno intesi come indicativi e non vincolanti in quanto, date le molteplici possibilità di impiego e le varie esigenze che i materiali devono soddisfare, i valori gernali da noi stabiliti non tengono conto di tutti i casi particolari.

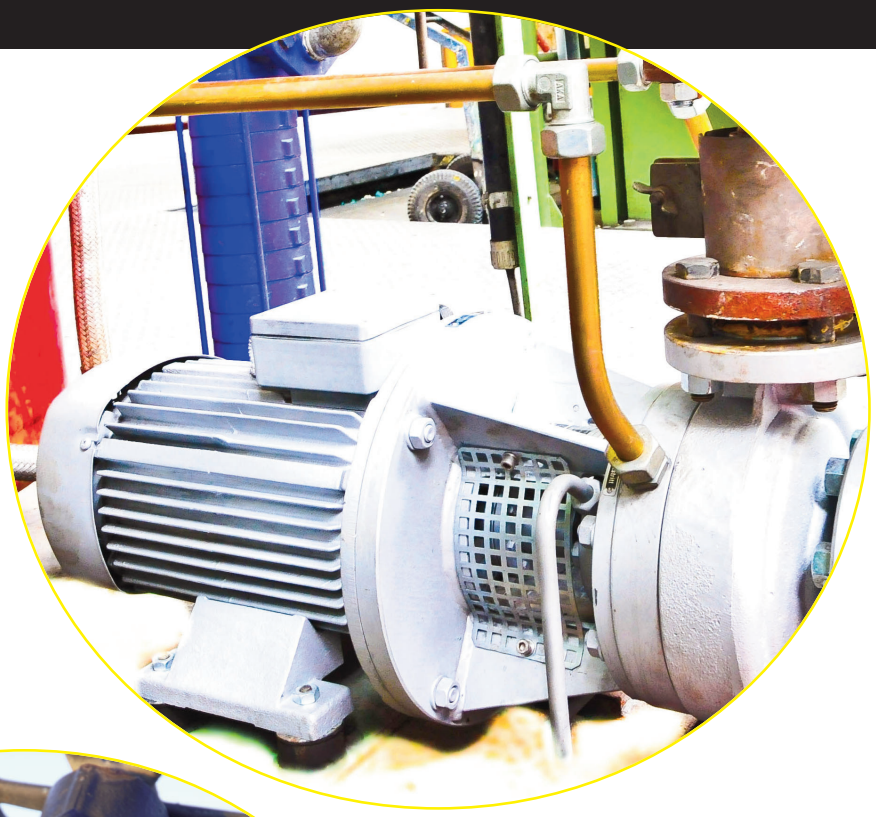
In particolare, non si accettano richieste di garanzia basate sui dati riportati sull’opsucolo in riferimento all’idoneità o alla durate di un sistema di tenuta in quanto vi sono fattori essenziali, quali le condizioni d’esersizio e di impiego, che vanno al di là delle nostre possibilità di intervento. Pertanto non assumiamo alcuna responsabilità per le indicazione date.

EDIZIONE NO. 35 GENNAIO 2023



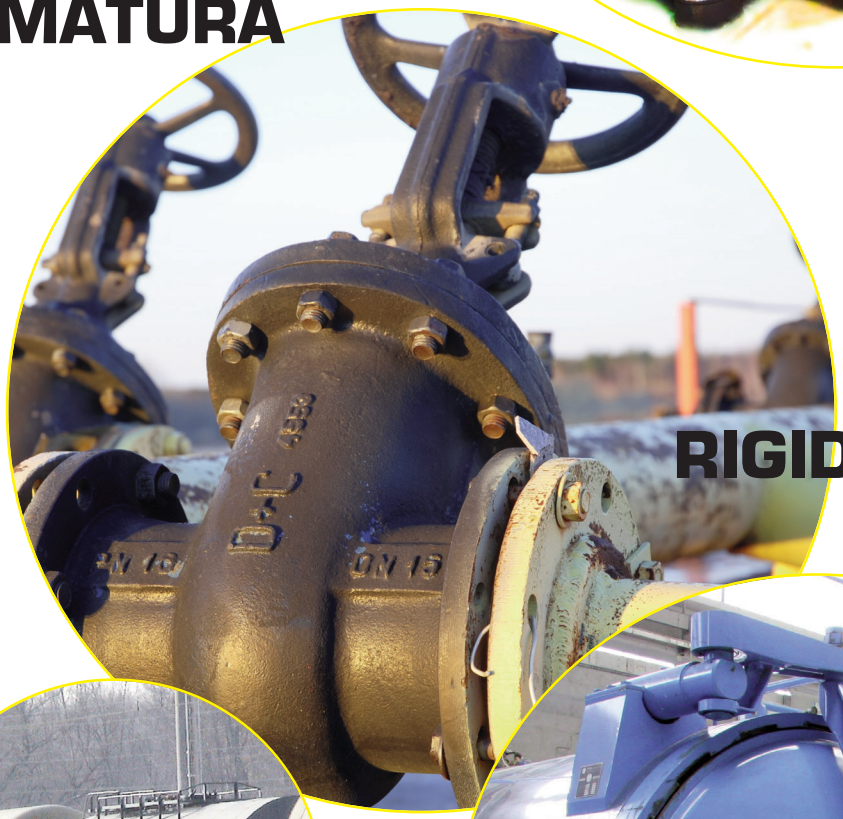
POMPA

1485 1636 1681
1683 1689 1690
1700 1710 1720
1727 1761 1771
1784 1785 1786
1787 1788 1794
1795 1796 1797
1798 1799 1820
1832 1931 1941
1943 1955



ARMATURA

1409
1410
1420
1421
1432
1433
1601
1682
1699
1721
9500
9525
9590



RIGIDITÀ STATICA

1309
1360
1369
1382
1721
1730
6000
6001
6260
6360
7015
7621

PORTELLO SERBATOIO

1670 1671
1675 1678
1938 PEREL®

HECKER®
STUFFING
BOX PACKINGS

STUFFING BOX PACKINGS
Braided:
with threads made of natural fibers, synthetic fibers (for example PTFE, aramide, polymer, polybenzimide azole), graphite, glass
Pressed:
from expanded graphite,
moulded fibrous composites
Available forms:
uncut continuous length
preformed rings ready for installation
Applications:
centrifugal and piston pumps, ventilators, agitating devices and fittings

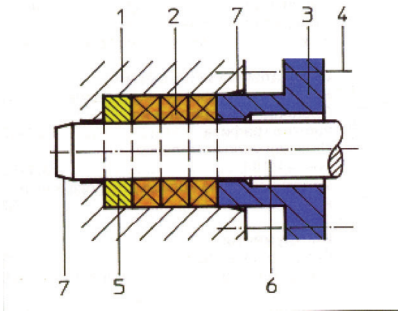
LIDS AND STATIC SEALING
Wrapped:
with lamers made of natural fibers, synthetic fibers (for example aramide, glass, ceramic)
Pressed:
out of expanded graphite
Available forms:
uncut continuous length
preformed rings ready for installation
Static Applications:
hand and manhole covers, boiler covers and doors, tank dome lids and lever flaps
Graphite applications:
self-sealing closures (for example according to the Bredtschneider principle)

INTRODUCTION
APPLICATION

Stuffing box serve for sealing the connecting passages of the shafts through the housing. Typical ranges of application are:

1. Sealing of rotary shafts, e.g. in circulation pumps or agitators
2. Sealing of axially moving shafts e.g. in pumps
3. Sealing of spindles, e.g. in valves
4. static sealing of frames and covers
5. heat insulations on frames, fire doors

DESIGN



Design of a stuffing box:

1 stuffing box housing
2 packing space and stuffing box rings
3 stuffing box cup
4 stud bolts
5 basic ring
6 shaft, spindle, rod, plunger
7 entry bush

SYMBOLS OF AGGREGATES

Circulating pump
(rotary shaft)

piston pump
(reciprocating piston)

armature (sealing of the spindle)

static seal (flanges, frames etc.)

UNITS :

Sliding speed
Pressure
Temperature
Acid and lye concentration

Symbols for application in the table of media
= well suited, and recommended quality

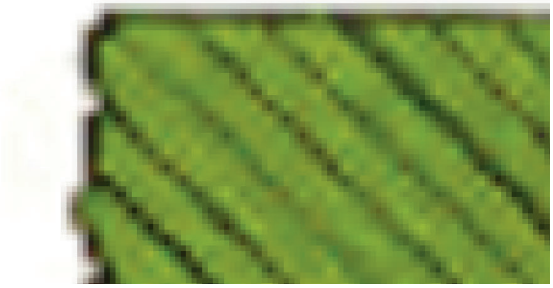
= applicable
= limited application

= not suitable

Registered trademarks of the HECKER®:
EURAFLON®, EURASIL®, AK®,
EURAFLEX®,

PLAITING METHODS

2-diagonally



3-diagonally 4-diagonally braid-over-braid

DESIGN

For all requirements HECKER® - stuffing box packings are plaited from yarns made of the following fibres:

Natural fibres:
Ramie, cotton

synthetic fibres:
Polytetrafluorethylen (PTFE), Polyaramidr and Polyimide, Polybenzimidacole (PBI)
Polyacrylate, Graphite, Carbon

anorganic fibres:
Glass

By means of impregnation with special compounds the packing is adapted to every respective application purpose, e.g. lubricants for pump packings, binding and filling agents and dry lubricants for valve packings or PTFE for piston pump packings.

For the sealing of stuffing boxes which are exposed to higher temperatures and pressures where plaited packings cannot be used, the application of packing rings and bushings of expanded graphite, the HECKER® Grafotherm® seals are recommended.

HECKER® EURAFLON® (PTFE) universal flat seals with adhesive strip as well as the so-called AK-seals (asbestos-free fabric caoutchouk), which are produced of gummed fabrics are available for the static sealing of covers.

NOTES FOR SELECTION

The selection of stuffing box packings must be effected under consideration of the following factors:

1. application conditions
   e.g. aggregates (pump, valve), maximum values of temperature, pressure and sliding speed
2. media
   the tables on the following pages indicate the technical values, the suitability for the different applications as well as the resistance to various media of the packings.

SHAPES AVAILABLE

Plaited packings
with a cross section of 3x3 mm to 50x50 mm
as yarded goods or rolled packings
as prepressed rings, bushes or combined packing sets

Grafotherm
As rings, continuous or open (diagonal cut, jump jointed cut) or
As half rings
As bushes

AK®-seals
As rings, closed or open (diagonal cut, jump jointed cut, stepped cut)
As yard ware (as a rule up to 15 m)
As cut lengths
As frames
As special profiles like bunt strips

PTFE: As flat seal with adhesive strip from 3 x 1,5mm to 20 x 7 mm

NOTES FOR INSTALLATION ON STARTING-UP OF GLANDBOX PACKINGS IN CIRCULATION PISTON PUMPS, AS WELL AS IN ARMATURES

TECNICAL REQUIREMENTS FOR AN OPTIMAL FUNCTION

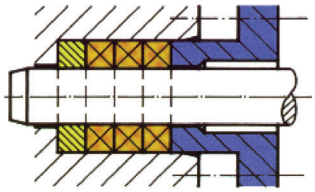
Stroke of shaft max. 0,001 x shaft diameter at sliding speed > 2 m/s. Surface roughness of the shaft, spindle or piston Rt < 5 mm. Surface within sealing area smooth, without any scores or rust formation !

Gap between shaft and housing or cup < 0,2 mm. In the case of a larger gap, extrusion-free packings or supporting rings of such packing are necessary.

Install well dimensioned packings only (for the range of dimensions 6 to 20 mm: +0,3mm/-0,5mm). Packings which do not fit exactly are not allowed to be aligned by hammering. After installation they are subject to expansion causing increased friction. Such packings applied in circulating pumps may start burning !

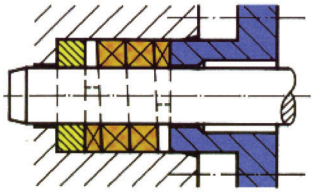
MOUNTING OF PACKING RINGS

Mounting of single rings, never install the packing as spiral.



Correct

Wrong



When yard ware is applied: selection of appropriate length of packing !

CUTTING BY USE OF YARD WARE

Lay the Packing rings provisioriosly round the shaft and mark them as shown on figure 1. So you geht the straight length of the packing L , figure 2.
!! Please pay attention, that the packing rings have fully contact with the shaft. !!

Figure 1 Mark

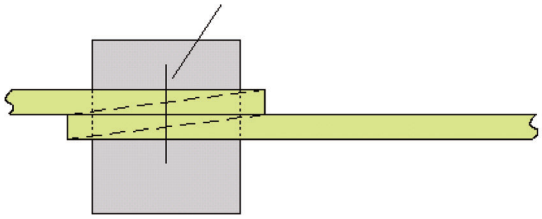
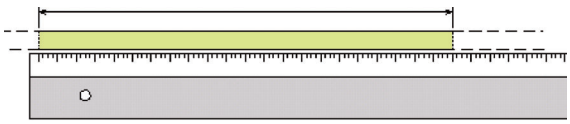


Figure 2: L = straight length of packing round the shaft



a) Take the packing away and add the width of packing s x 1,2 to the length L. You get the length for mounting (EL, figure 3).
b) Cut on both marks of the length for mounting (EL) by approx. 45° (Figure 4).
Use our HECKER® packing cutter for accurate cuts of packings.

Figure 3

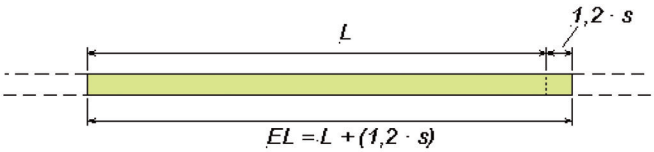
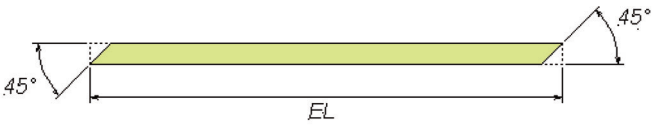


Figure 4

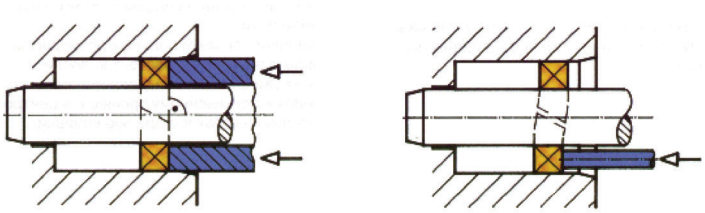


As an alternative, application of prepressed packing rings are recommended.

MOUNTING OF PACKING RINGS

Packing rings to be inserted one after the other. Carefully bend up the packing ring in axial direction and insert cut end first, with longitudinally divided sleeve and press rectangularly against the axis of the shaft.

Cutting mark CORRECT WRONG



MOUNTING OF CIRCULATIONG PUMP PACKINGS

a) Packing set during idle running to be well compressed (min. approx. 5 N/mm²)
b) Afterwards pressure on packing set to be released
c) Remove cap by approx. 8% of the hight of packing set.
d) If a cooling device exists it has to opened
e) Start pump and wait for mounting procedures for 1 hour. Interference will be necessary only in the case of vapour, then slightly release cap a little bit. As per experiences, overhe ating of the packing occures only in the case of very unfavourable conditions – in most cases no interference will be necessary.
f) An obvious heating of the packing during this starting time is normal and there is no cause for alarm.

As a rule the packing becomes stable after 1 hour. If necessary, the leakage can now be adjusted by carefully retightening the cap screws.

A minimum leakage is necessary in all cases. In the case of sliding speed up to 5 m/s there will be drip leakage. In the case of sliding speed up to 20 m/s leakage min. 20 ml/min.

STARTING-UP OF VALVE PACKINGS

Packing set to be well pressed. Release cap as far as the handlever can be actuated.

ARAMIDE, FILAMENT



MATERIAL	1700	1720	1771	
Fibre:	aramide	aramide	aramide	
Fibre type:	filamento	filament	filament	
Impregnation:	PTFE	PTFE	PTFE	
Lubricant:	Olio silicone	Olio paraffina	Olio silicone	
Density [g/cm³]	1,35	1,3	1,35	
T [°C]	-100 to 280	-100 to 280	-50 to 280	
pH [ ]	2 fino a 13	2 fino a 13	1 fino a 13	
p [bar]	35	35	25	
v [m/s]	25	25	25	
p [bar]	200	200	50	
v [m/s]	10	10	2	
p [bar]	250	250	100	
v [m/s]	2	2	2	
p [bar]	--	--	25	

Particolarità:

WS 1700:
Elevata resisenza all'attrito. Impiego nei riguardi di mezzi con sostanze ad azione abrasiva.

WS 1720:
Elevata resistenza all'attrito. Impiego nei riguardi di mezzi con sostanze ad azione abrasiva.

WS 1771:
Tenute a premistoppa "bianche', salvaguardano l'albero, resistenti all'usura ed ai fluidi abrasivi, nessuna contaminazione dei fluidi.

Struttura: Treccia diagonale EURAFLEX®

Formati fornibili: Metri lineari, sezione quadrata da 3mm fino a 50mm

Resistenza ai fluidi: Idoneo contro la maggior parte dei fluidi. Non adatto contro acidi concentrati, soluzioni alcaline, combinazione organiche, metalli alcalini, fluoro e composti di fluorio

Osservazioni: Le baderne WS 1700 e WS 1720 presentano una altra resistenza meccanica e un excellente proprietà discorrimento.

ARAMIDE, FIBRA SOVRAPPOSTA

MATERIAL	1721	1727
Fibre:	aramide	aramide
Fibre type:	fibra sovrapposta	filamento
Impregnation:	PTFE	PTFE
Lubricant:	Olio paraffina	
Density [g/cm³]	1	1,1
T [°C]	-100 to 280	-100 to 280
pH [ ]	2 fino a 13	2 fino a 13

p [bar]	-	20	
v [m/s]	-	20	
p [bar]	-	100	
v [m/s]	-	2	
p [bar]	300	100	
v [m/s]	-	2	
p [bar]	5	-	

Particolarità:

WS 1721: particolarmente per l'uso in rubinetterie, resistente all'usura, resistente all'acqua calda, resistente al vapore fino a circa 200 ° C.

WS 1727:
Morbido ma comunque resistente all'usura, delicato sulle onde. Utilizzare contro fluidi con componenti abrasivi.

Struttura:

Treccia diagonale EURAFLEX®

Forma di consegna:

Al metro da 3 mm a 50 mm quadrati

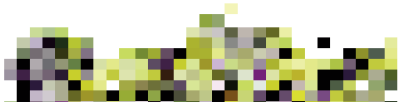
Resistenza:

Adatto per la maggior parte dei media. Non adatto contro acidi concentrati e alcali, pochi composti organici, metalli alcalini, fluoro e composti del fluoro.

Ossvervazioni:

Le Guarnizioni in fibra in fiocco sono morbide, flessibili e delicate sull'albero. Le baderne WS 1721 e WS 1727 hanno un'elevata resistenza meccanica e ottime proprietà di scorrimento.

ARAMIDE, BLACK



MATERIAL	1710	1751	1761	1799
Fibre:	aramide	aramide	aramide	Aramide/glass
Fibre type:	filament	Staple fibre	filament	filament/core
Impregnation:	graphite	graphite	PTFE/graph.	graphite
Lubricant:	silicon oil	silicon oil	silicon oil	parafin oil
Density: [g/cm³]	1,35	1,1	1,25	1,4
T (°C)	-100 to 280	-100 to 280	-100 to 280	-100 to 280
pH	2 to 13	2 to 13	2 to 13	2 to 13
P [bar]	25	20	25	20
V [m/s]	30	20	30	15
P [bar]	100	100	100	--
V [m/s]	2	2	2	--
P [bar]	100	100	100	100
V [m/s]	2	2	2	2
P [bar]	--	--	--	--

Peculiarities:
1710: Surface graphited. In centrifugal pumps packing has already rendered a service live of more than 15.000 hours.
1751: Silicon free. Good dimension stability and high cross-section density.
1761: In centrifugal pumps this packing has already rendered a service life of more than 15.000 hours.
1799: Cheap alternative for low mechanical requirements. Core serves as reservoir for lubricant.

Releases: -- -- -- --

Structure: EURAFLEX®-diagonal plaiting

Form of delivery: piece goods from 3 mm to 50 mm square

Media resistance: Applicable against most media.
Not applicable against concentrated acids and alcaline-solutions, few organic compounds, alkali metals, elementary fluorine and fluorine compounds.

Notes: The packings “Aramide,black” are suitable for applications with high sliding speeds e.g. piston- and centrifugal pumps. Through the use of a graphite as an impregnation on the fibre, the heat conductivity has been increased.

ARAMIDE-COMBINATED, “EDGE”BLACK

MATERIAL	1787	1788	1794	1798
Fibre:	Aramide/G4®	Aramide/PTFE	Aramide/gPTFE	Aramide/PTFE
Fibre type:	Filament/filament	Filament/filament	Filament/filament	Filament/fil.
Impregnation:	PTFE/Incorp. GR	--	Incorp. GR	PTFE
Lubricant:	--	--	silicon oil	silicon oil
Density:[g/cm³]	1,4	1,4	1,4	1,5
T (°C)	-100 to 280	-100 to 280	-100 to 280	-100 to 280
pH	2 to 13	2 to 13	2 to 13	2 to 13
P [bar]	--	--	20	20
V [m/s]	--	--	10	25
P [bar]	1400	1400	500	500
V [m/s]	2	2	2	2
P [bar]	500	500	500	500
V [m/s]	2	5	2	2
P [bar]	2	1	--	--

Peculiarities:
1787: for use in poston-pumps at extrem pressures. Yarn combination results in low friction and good heat conductivity.
1788: especially developed for piston-pumps. The aramide fibre prevents an extrusion of the PTFE-yarn.
1794: high strength and good sliding properties. Suitable for high sliding speed in piston-pumps

Releases: -- -- -- --

Structure: EURAFLEX®-diagonal plaiting, “edge reinforced”
Form of delivery: piece goods from 5 mm to 50 mm square
Media resistance: Applicable against most media. Not applicable against concentrated acids and alcaline-solutions, few organic compounds, alkali metals, elementary fluorine and fluorine compounds.
Notes: “Edge reinforced” qualities are especially for piston pumps. Through the aramide reinforcement the extrusion of packing can be decreased. The PTFE in the sliding surface makes ist possible to seal against high pressure and support very good sliding properties of the pump rod.

ARAMIDE-COMBINATED, “ZEBRA”

MATERIAL	1785	1786	1795	1796
Fibre:	Aramide/PTFE	Aramide/PTFE	Aramide/gPTFE	Aramide/PTFE
Fibre type:	Filament/filament	Staple fibre/filament	Filament/filament	Filament/filamt.
Impregnation:	graphite/PTFE	PTFE	PTFE/ Incorp.gr.	PTFE
Lubricant:	Silicon oil	Paraffin oil	silicon oil	Silicon oil
Density: [g/cm³]	1,5	1,4	1,4	1,4
T (°C)	-100 to 280	-100 to 280	-100 to 280	-100 to 280
pH	2 to 13	2 to 13	2 to 13	2 to 13
P [bar]	20	20	25	20
V [m/s]	20	20	30	20
P [bar]	100	200	200	200
V [m/s]	5	2	5	5
P [bar]	200	200	200	200
V [m/s]	2	2	2	2
P [bar]	2	2	--	--

Peculiarities:

1785: The good sliding properties make it possible to be used in centrifugal pumps at high sliding speeds.

1786: Through the use of aramide staple-fibre the packing is very pilant and elastic.

1795: High strength and good sliding properties. Suitable for higher sliding speed in centrifugal pumps.

1796: Suitable for higher sliding speed in centrifugal pumps.

Structure: EURAFLEX®-diagonal plaiting, “Zebra”

Form of delivery: piece goods from 3 mm to 50 mm square

Media resistance: Applicable against most media. Not applicable against concentrated acids and alcaline-solutions, few organic compounds, alkali metals, elementary fluorine and fluorine compounds.

Notes: Packings with “zebra” plait are especially for centrifugal pumps. This plaid makes it possible to combine materials with good supporting behaviour (aramide) and materials with good sliding behaviour (PTFE) in the face. So running-in can be avoided.

MATERIALE	1941	1943
Fibae:	cotone	cotone
Fibra tipo:	fibra lunga	fibra lunga
Impregnazione:	grafite	-
Lubrificante:	grasso	grassü
Densità: [g/cm³]	1,4	1,4
T [°C]	-20 to 120	-20 to 120
pH [ ]	5 fino à 13	5 fino à 13
p [bar]	15	15
v [m/s]	10	10
p [bar]	100	100
v [m/s]	2	2
p [bar]	150	150
v [m/s]	2	2
p [bar]	-	-

Particolarità:

WS 1941:
economico.

WS 1943:
Per applicazioni sensibili alla impurità

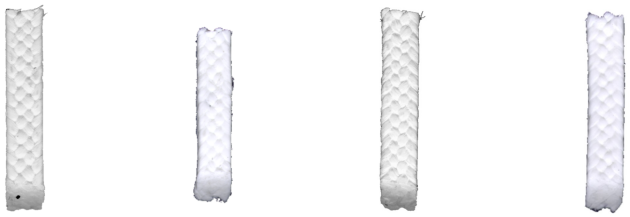
Struttura: Treccia diagonale EURAFLEX®

Formati fornibili: Sezione quadrata da 3mm fino a 50mm

Resistenza ai fluidi: Contra acqua clada e fredda, soluzioni acquose, alcalini diluiti, olio e grasso. Non addati contro fluidi acidi e abrasivi.

Osservazioni: Valide alternative economiche per applicazioni di limitate esigenze alla baderna.

EURAFLON® (PTFE)



MATERIAL	1601	1690	1699	1693	
Fibra:	PTFE	PTFE	PTFE	ePTFE	
Fibra tipo:	filamento	filamento	filamento	filamento	
Impregnazione:	PTFE	PTFE	PTFE	talco/PTFE	
Lubrificante:	-	olio paraffina	-	olio silicone	
Densità:[g/cm³]	1,7	1,7	1,7	1,8	
T [°C]	-200 fino a 280	-200 fino a 280	-200 fino a 280	-200 fino a 280	
pH [ ]	0 fino a 14	0 fino a 14	0 fino a 14	0 fino a 14	
p [bar]	-	10	-	20	
v [m/s]	-	12	-	20	
p [bar]	1000	150	1000	100	
v [m/s]	2	2	2	2	
p [bar]	500	150	500	100	
v [m/s]	2	2	2	2	
p [bar]	5	-	5	-	

Particolarità:

WS 1601:
Nessuna restrizione su temperatura e pressione se usato contro l'ossigeno liquido.

Omologazioni:

WS 1601:
BAM, TA-Luft, FDA CFR Title 21§177, 1550, EU 10/2011

WS 1699:
BAM

Struttura:

treccia diagonale EURAFLEX®

Forma di consegna:

Al metro da 3 mm a 50 mm quadrati

Resistenza:

Adatto a quasi tutti i media. Non può essere usato contro metalli alcalini in forma fusa o disciolta, nonché fluoro elementare e composti di fluoro ad alte temperature o pressioni.

Note:

Queste qualità di baderna in PTFE sono consigliate per applicazioni in cui è importante un'elevata resistenza chimica.

EURAFLON® (PTFE), GRAFITE




MATERIAL	1636	1681	1682	1683
Fibra:	PTFE	100% GFO®	gPTFE	gPTFE
Fibra tipo:	filamenti	filamenti	filamenti	filamenti
Impregnazione:	grafite	incorp. GR	incorp GR	incorp. GR
Lubrificante :	olio paraffina	olio silicone	-	olio silicone
Densità[g/cm³]:	1,73	1,54	1,38	1,57
T [°C]:	-200 fino a 280	-200 fino a 280	-200 fino a 280	-200 fino a 280
Omologazioni:	-	FMPA	BAM/FMPA	-
pH [ ]	0 fino a 14	0 fino a 14	0 fino a 14	0 fino a 14
p [bar]	20	50	-	25
v [m/s]	20	25	-	20
p [bar]	300	300	200/500*)	300
v [m/s]	2	5	5	2
p [bar]	300	400	250	300
v [m/s]	2	2	5	2
p [bar]	-	-	-	-

*)camera

Particolarità :

WS 1636:
Buona conducibilità. Termica tramite copertura di grafite.

WS 1681:
Alta resistenza chimica. Buona proprietà lubrificanti e conductibilità termica.

WS 1682:
Alta resistenza chimica. Con un controllo del calore si ha una pressione stabile.

Struttura:

Treccia diagonale EURAFLEX®

Fornati fornibili:

Sezione quadrata da 3 mm fino a 50 mm.

Resistenza ai fluidi:

Adatto pressocheé contro tutti i fluidi. Non applicabile contro metalli alcalini sotto forma fusa o liquida, come anche fluori elementari o composti di fluori a temperature e pressioni elevate.

Osservazioni:

Le guarnizioni WS 1636 e WS 1638 hanno un ottima resistenza chimica. Solo tramite sostanze altamente ossidanti può venir antaccata la grafite e di conseguenza rovinare la baderna. La grafite nella WS 1681 e WS 1682 non si stacca. Tramite la struttura microporosa, le tenute a premistoppa sono molto elastiche.

GLASS & GLASS CHORDS

MATERIAL	1309	1382	6000	6001	6002
Fibre:	E-glass	E-glass	C-glass	E-glass	C&E-glass
Fibre type:	Filament	Filament	Textured	Textured	Textured
Impregnation:	Graphite	-	-	-	-
Lubricant:	-	-	-	-	-
Density: [g/cm³]	1,2	1,1	0,9	0,9	0,9
T (°C)	-200 to 600	-200 to 600	-20 to 450	-20 to 450	-200 to 500

	pH	2 to 14	2 to 14	0 to 13	2 to 14	2 to 12
	P [bar]	-	-	-	-	-
	V [m/s]	-	-	-	-	-
	P [bar]	-	-	-	-	-
	V [m/s]	-	-	-	-	-
	P [bar]	-	-	-	-	-
	V [m/s]	-	-	-	-	-
	P [bar]	2	-	1	1	1

Peculiarities:

1309: Higher gasproof as 1300, 1382
1382: Good temperatur resistance
6000: C-glass hydrolysis class3 according to 12111, high chemical resistance, good acid resistance. Many parallel/lightly turned robes with braiding.
6001: Made of a special fibre pliable and comfortable to skin core and wrapping 100% glass. Many parallel/lightly turned robes with braiding.
6002: Compactly wrapped with special fibre which is pliable and comfortable to skin
Core: predominat c-glass
Wrapping: e-glass
Many parallel/lightly turned robes with braiding.

Form of delivery:

1309 / 1382: Piece goods from 3 mm to 50 mm square
6000 / 6001 / 6002: at enquiry

Media resistance:

Applicable against air, vapour and gases, aggressive and acid gases too.
Not applicable against hydrofluoric acid and fluorides
6000, 6001 and 6002 are additionally resistant against organic solvents.

Notes: Static sealings for high temperatures, for example oven doors, tunnel covers …

GRAPHITE

MATERIAL	1410	1420	1421	1433
Fibre:	graphite	Graphite	Graph./Inco.	Graphite
Fibre type:	Filament	Foil	Foil/wire	Filament
Impregnation:	Graphite	-	-	PTFE
Lubricant:	-	-	-	-
Density:[g/cm³]	0,8	1,2	1,3	0,9
T (°C)	-200 to 500	-240 to 450	-240 to 450	-200 to 300

	pH 0 to 14	1 to 14	1 to 14	0 to 14
	P [bar] 30	20	-	20
	V [m/s] 20	10	-	20
	P [bar] 30	250	450	-
	V [m/s] 3	2	2	-
	P [bar] 30	250	450	200
	V [m/s] 3	2	2	3
	P [bar] 3	5	10	-

Peculiarities:

1410: Packing consists of 100% graphite and withstands service temp. up to approx. 2000°C in non oxidizing athmosphere

1420: Packing combines the advantage of plaited packing with the good characteristics of expanded graphite

1421: Packing combines the advantage of plaited packing with the good characteristics of expanded graphite

1433: Very high heat conductivity. Very good chemical resistance

Structure: EURAFLEX®-diagonal plaiting

Form of delivery: Piece goods from 3 mm to 50 mm square

Media resistance: Applicable against near all media like acids, alkalines, organic chemicals, salt solutions, vapours, water, oils, solvents and aggressive gases.
Not Applicable against pur oxygen

Notes: These packings are well suited for very difficult sealing conditions, e.g. in the case of high temperatures and aggressive media

CARBON & PBI

MATERIAL		1409	1432	1809	1824
Fibre:		Carbon		PBI / stainless steel	
Fibre type:		Filament		staple fibre / wire	
Impregnation:		Graphite	PTFE	Graphite	PTFE
Lubricant:		-		-	
Density: [g/cm³]		1,0	0,95	1,0	1,3
T (°C)		-60 to 350	-160 to 300	-50 to 350	-50 to 350
	pH	2 to 14	0 to 14	0 to 13	0 to 13
	P [bar]	-	20	-	-
	V [m/s]	-	20	-	
	P [bar]	150	-	-	-
	V [m/s]	2	-	-	-
	P [bar]	150	200	250	300
	V [m/s]	2	3	2	2
	P [bar]	3	-	-	10

Peculiarities:

1409: Packing for valves up to 400°C. The packing is compact and compression proof
1432: The packing can be used in case of very difficult sealing conditions
1809: Applicable in steam up to 420°C
1824: Applicable in steam up to 420°C. Suitable for dirt sensitive applications

Structure:

1403 & 1432 & 1809 & 1824: EURAFLEX® - diagonal plaiting

Form of delivery: Piece goods from 3 mm to 50 mm square/round

Media resistance:

1409 & 1432: Applicable against near all media.
Not applicable against concentrated acids and oxidating media

1809 & 1824: Applicable against near all media.
Not applicable against concentrated alkaline solutions

Notes:

1409 & 1432: This packings are well suited for very difficult sealing conditions, e.g. in the case of high temperatures and aggressive media.

1809 & 1824: suitable for employments where heat resistance, but low compressive and brittle carbon- and graphite yarns on one hand and on the other hand the compressive resistant, but only up to 280°C useable synthe tic yarns like aramide or PTFE are not suitable.

PTFE TANK CAPS & PTFE EXTRUSION MOLDED

MATERIAL	1670	1671	1675	1678	7015	7621
Fibre:	CR/PTFE	CR/PP/PTFE	Rubber/PTFE	CR/PTFE	PTFE	PTFE
Fibre type:	Full/filament	Cell./stap./fil.	Tube/filament	Cell./filament	unsintered	unsintered
Impregnation:	PTFE	PTFE	PTFE	PTFE	-	graphite
Lubricant:	-	-	Paraffin oil	-	-	-
Density:[g/cm³]	1,54	0,6	0,6	1,2	1,95	1,9
T (°C)	-40 to 150	0 to 150	0 to *	-40 to 150	-100 to 250	-100 to 250

	pH	1 to 13	1 to 13	* to *	1 to 13	0 to 14	0 to 14
	P [bar]	-	-	-	-	-	-
	V [m/s]	-	-	-	-	-	-
	P [bar]	-	-	-	-	-	-
	V [m/s]	-	-	-	-	-	-
	P [bar]	-	-	-	-	2	2
	V [m/s]	-	-	-	-	1	1
	P [bar]	10 (*)	10(*)	10(*)	10	2	1

Peculiarities:

1670: High elasticity suitable to compensate uneveness (*) enclosed installation (groove)
1671: High elasticity suitable to compensate uneveness (*) enclosed installation (groove)
1675: (*) maximum conditions dependent on used rubber (*) enclosed installation (groove)
1678: Silicon free. Maximum pressure for enclosed installation
7015: Plastic extrusion. Molded material made of 100% unsintered PTFE
7621: Plastic extrusion. Molded material made of unsintered PTFE with graphite as lubricant

Structure:

1670 - 1678: rubber core wrapped with PTFE-tape and braided with PTFE- Yarn.
7015 & 7621: Homogenuous

Form of delivery:

1670 - 1678: Piece goods and rings endless bonded, cut ends wrapped with PTFE
7015 & 7621 Piece goods round from 2 mm to 12 mm, square from 3mm to 26 mm.

Media resistance:

1670 - 1678: All fluid media and vapours found in the tank business. The heat-resistance of the rubber core up to 150°C makes it possible to clean tanks through steam jet cleaning without damaging the sealing
7015 & 7621: Applicable against near all media. Not applicable against alkali metals in mel ted or dissolved form and elementary fluorine at high temperature and pressure.

Notes

1670 -1678: The qualities which are made with a rubber core have a high elasticity. Through the choice of suitable rubber cores (e.g. cellular-, hose- and solid-rubber) and the choise of suitable rubber qualities These materials can be turned to several uses
7015 & 7621: Suitable as a flange- and shaft sealing in pipeline and equipment construc tion

RAMIE & ARAMIDE TANK CAPS




MATERIAL	1931	1938	1955	1778
Fibra:	Ramie	CR/Ramie	Ramie	Rubber/aramide
Fibra tipo:	long fibre	Cell./Long f.	Long fibre	Cellular/staple fibre
Impregnazione:	PTFE	PTFE	Grafite	PTFE
Lubrificante :	olio paraffina	olio paraffina	Grease	-
Densità[g/cm³]:	1,1	0,63	1,2	0,63
T [°C]:	-50 fino a 140	-40 fino a 100	-20 fino a 140	-100 fino a 120
pH [ ]	5 fino a 14	1 fino a 13	5 fino a 14	2 fino a 13
p [bar]	20	10	20	-
v [m/s]	20	10	15	-
p [bar]	900	2	200	-
v [m/s]	2	2	2	-
p [bar]	200	10	200	-
v [m/s]	2	2	2	-
p [bar]	1	1	1	-

Particolarità :
WS 1931:Special packing for alkaline solutions.
For tank business, paper industry, water plants
WS 1938: Weatherproof rubber. Especially elastic through cellular rubber core. Not applicable against hydrocarbons
WS 1955: Special packing for alkaline solutions, heat and caustic solutions resistant
WS 1778: High mechanical stability through use of aramide, combined with high elasticity of the cellular rubber

Struttura: Treccia diagonale EURAFLEX®

Fornati fornibili: Sezione quadrata da 3 mm fino a 50 mm, qualities with core made out of rubber from 8mm.

Resistenza ai fluidi:
1931/1938/1955: Aqueous- and alkaline media, especially abrasive media and cristalline solutions, sandy soles, salt grained sludge, chemical pulp. Not applicable against acid media. Qualities with core made of NBR are applica ble against hydrocarbons
1778: Applicable against most media. Not applicable against concentrated acids and alkaline solutions, few organic compounds, alkali metals, elemen tary fluorine and fluorine compounds

Osservazioni:
1931/1938/1955:Against media with high mechanical abrasive potential, pac kings made of wear resistance ramie fibre are well suited. Through the high rotproof behaviour of the ramie fibre the packing support high durability in cases where the graphite content of the packing disturbs, we recommend 1931 with an bright PTFE-/grease-lubricant. 1778: Qualties with a rubber core have a high elasticity. Through the choice of suitable rubber cores (e.g. cellular-, hose- and solid rubber) and the choice of suitable rubber qualitites these materials can be tuned to several uses.

PACKINGS FOR HIGH TEMPERATURES & OTHERS

MATERIAL	1369	1360	1820	1832
Fibre	Modificated silicic fibre		P84 (polimide)	PAN
Fibre type:	Staple fibre		Filament	
Impregnation:	Graphite	-	PTFE	
Lubricant:	-	-	silicon oil	
Density:[g/cm³]	0,90	0,80	1,3	1,0
T (°C)	-200°C up to +700°C	-200°C up to 100°C	-100°C up to 200°C	-50°C up to 100°C

	pH	0 up to 13	0 up to 13	0 up to 12	1 up to 13
	P [bar]	-	-	20	10
	V [m/s]	-	-	20	25
	P [bar]	-	-	200	50
	V [m/s]	-	-	2	2
	P [bar]	-	-	250	30
	V [m/s]	-	-	2	2
	P [bar]	2	1	-	1

Peculiarities::

1369: Applicable against air, vapour and gases, aggresive and acid gases (except HF) too. The graphite prevents sticking of the packing to oven doors. An alternative for packings made of ceramic up to 700°C. Schott free. No known risk to health

1360: Applicable against air, vapour and gases, aggresive and acid gases (except HF) too. An alternative for packings made of ceramic up to 1000°C. Very good heat-insulating (low thermal conductivity). Schott free. No known risk to health.

1820: High working capacity and flexibility. The yarn is soft and textile. Applicable in steam up to 260°C. FMPA-Approval. EURAFLEX®-diagonal plaiting

1832: Packing made of polyacrylonitrile. Especially adapting. FMPA Approval. EURAFLEX®-diagonal plaiting

Notes:

1369 & 1360: Static sealing for high temperatures, for example oven doors, tunnel covers, ...

1820 & 1832: For uses at high pressures or abrasive media we recommend packings made of polyamide like 1700 or poliamide yarn like 1820.

Form of delivery:

1369 & 1360: 2D plait, Piece goods from 3 mm to 50 mm square

1820 & 1832: Piece goods round from 3mm to 26mm square

Media resistance:

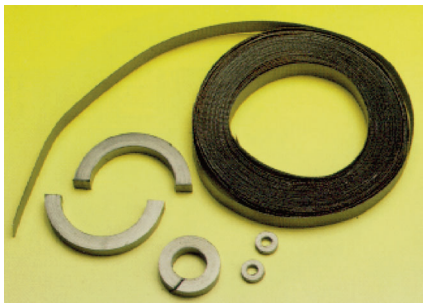
1820 & 1832: Applicable against near all organic solvents, as well as concentrated acids at low temperatures. Not applicable against alkaline solutions and strong polar solvents.

We also do have the possibility to deliver fabric ribbons out of this high-temperature yarn.

Our brand-name: **HT-GEWEBEBAND 6060**

Thickness: 2, 3, 4 and 5 mm / width: 20 up to 300 mm / Form of delivery: 25 meters on each roll

GRAFOTHERM®
FOR PUMP SHAFTS AND FITTING SPINDELS



	pump shafts	fitting spindles
Vg:	40 m/s	3 m/s
P (bar)	40 bar	100 bar at 1,2 g/cm³
		200 bar at 1,4 g/cm³
		325 bar at 1,6 g/cm³
t (°C)	- 200 up to +550°C in water	
	- 200 up to +2000°C in inert atmosphere	
pH	0 up to 14	

MEDIA:
Resistant against most media. Not applicable against strong oxidants e.g. concentrated nitric acid, sulphuric acid and perchloric acid and crome (VI) solutions, alkaline salt e.g. calium chlorate, nitrate aggressive gases with vromium, chlordioxide or sulphuric trioxide.

DESIGN:
GRAFOTHERM® consists of pure graphite, which has been expanded in a spezial procedure. This material is densified to foils without using any binders or fillers and cut in strips. These strips (as mentioned below) can be pressed as sealing rings into glandbox rings on site. As a rule, we supply finished prepressed rings of Grafotherm strips.

CHARACTERISTIC FEATURES:

- Ductility up to 50% of original thickness at a density of 1,0 g/cm³
- Resiliance of approx. 10% of the original thickness
- Continuous elasticity, resistant to thermal shocks, non-ageing, no hardening or softening, no warm- or cold flow
- High heat conductivity, depending on density 100…400 W/K*m
- Low friction value μ = 0,05 - 0,09; self lubricating
- Resistant to radiation 5 * 10^6 rad
- Good sectional density, at shafts only very low leakage is necessary.

	WS 9525	WS 9500	WS 9590
Purity	≧ 98 % C	≧ 99,8 % C	≧ 99,8 % C (+2% Inhibitor)
Chloride contents	< 50 ppm	< 20 ppm	< 20 ppm
Iron contents	< 300 ppm	< 300 ppm	< 300 ppm

WS 9525 is the standard quality, whereby WS 9500 ist applied in the case of high purity requirements. The quality WS 9590 with corrosion inhibitor (barium molybdate) is recommended in the case of spezial requirements of the corrosion safety, e.g. in the case of long storing periods, long idle running times at water- and vapour fittings of combinations of high-alloy spindle materials and low-alloy housing materials.

ADVANTAGES:

- Wide range of application, thus easy stock-keeping
- No disturbance due to a wrong selection of the gaskets
- Easy mounting, short idle running times, less maintenance service: no resealing, only re mounting in the case of increased leakage
- Long lifetime at low leakage
- Protection of shafts and spindles
- For fittings, decrease of the glandbox depth is possible

SHAPES AVAILABLE:
The following types of Grafotherm WS 9525, WS 9500 and WS 9590 with densities of 1.2 to 1.8 g/cm³ depending on the respective application are available:

- Packing-rings pressed on foil, continuos, with a cut or separated
- Profile rings, e.g. with angular cut for covers
- Profile rings with small cross sections as part of replacement for Elastomer-O-rings

MADE OF GRAFOTHERM WS 9500:

- Strips with transverse ribs 0,38 mm thick, in 10, 15, 20 and 25 mm width, for selv rolling and pressing in the glandbox
- Strips with transverse ribs, 1,0 mm thick with adhesive strip for the sealing of flanges, covers etc.
- Special widths on request.

AK PRODUCTS FOR LOCKS, COVERS, FIRE DOORS AND LEVER STOP

AK products are elastic gaskets which are manually rolled or pressed with rubber-coated fabrics.

Rubber-coated fabrics out of glass, ceramics, aramide or cotton are processed. For higher demands and for a special reinforcement, layers and sheatings out of FA-material are added. If a higher elasticity of the gasket is required, AK-gaskets can be provided with a soft core e.g. out of elastomer plaited packing or rolled fibres. Thus the rigidness and elasticity of the gasket can meet the requirements of a sealing area.

AK gaskets are applied as follows:
- as locking gaskets (e.g. handhole and manhole lockings),
- as cover gaskets (e.g. at dome and case covers)
- as door gaskets (e.g. at fire doors)
- at flap gaskets (e.g. blast furnace flaps or fire flaps)

As a rule, the following AK-gasket profiles are available:

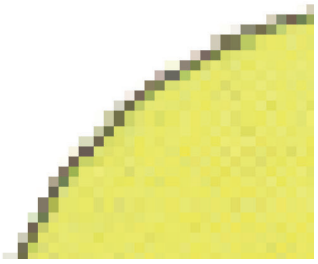
Profile	section
Narrow ware	rectangular or round
Rings	rectangular or round
Oval gaskets	rectangular or round
Frames	rectangular

For special applications, specifically adapted shapes are available, e.g. stretch band as fire door gasket, or wedge-shaped constructed and therefore slightly pre-tensioned rings for connectors (as rod or shaft seals).

The surface of the gaskets in the most cases is treated with graphite or PTFE dispersion as anti-adhesive agent. The latter thus guarantees a better locking of the surface roughness of the fabric seals.

Wenn installing narrow ware please consider that it has an angular cut (as a rule 45°) and a slight surplus length, that the joint of the gasket can be pressed against the lock. Thus leakage at the gasket joint is avoided.

LOCKING AND LEVER STOP GASKET AK 2602



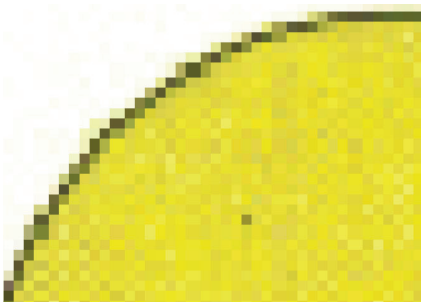
Media:
water, vapour, hydrous acids, weak acids up to strong lyes, non aggressive vapours and gases.
Design:
The core is rolled out of glass fabrics, provided with an elastomer coat on both sides. The gasket contains a gummed sheating out of glass fabrics on one side. The exterior side is impregnated with PTFE-dispersion.
Notes:
AK 2602 is applied as static seal, e.g. for hand and manholes, covers, blast furnace flabs. The PTFE-coat increases the chemical resistance and avoids adhesion of caking of the seal. The elastic packing for the most part ist used in those cases where the application of a graphitized pakking is not allowed. AK 2602 is an asbestos-free alternative to the well-proved AK 2221.
p (bar): 20 t (°C): -50 up to +280 pH: 1 up to 12

Shapes available:
Yard ware from 8 mm square / Rings from 60 x 80 mm diam. / Frames from 10 mm square

FIRE DOOR PACKINGS AK 2603

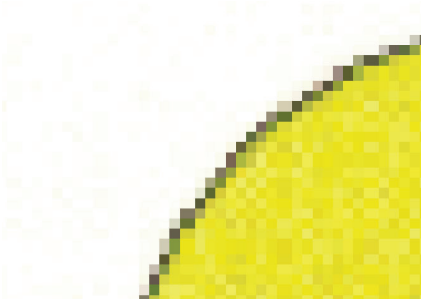
Media: hot gases, e.g. flue gas, furnace atmosperes
Design: Glass plait of E-glass, graphitized on all sides
Notes: Due to ist composition, glass plait of E-glass remains as flexible as normal C-glass up to higher temperatu res. The graphitizing prevents the adhesion of the packing.
Shapes available:
yard ware from 8 mm square
p (bar): 1 t (°C): -200 up to +650 pH: 2 up to 14

LOCKING GASKET AK 2635



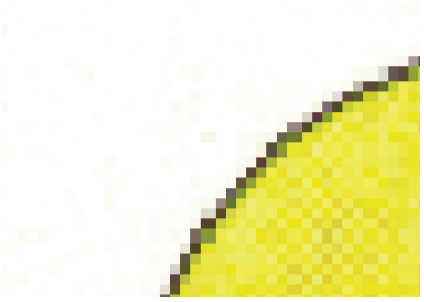
Media: water, vapour, hydrous acids, weak acids up to strong lyes, non aggressive vapours and gases.
Design: Rolled out of a stainless steel reinforced glass fabric which is provided with a special elastomer coat on both sides. The gasket ist graphitized on both sides.
Notes: AK 2650 has been developed e.g. for hand and man holes, covers, blast furnace flaps. The gasket is very smooth and elastic. It is well suited as an asbestos-free alternative to the proved AK-type 2650. Due to the gra phitizing, adhesion of the gasket to the counter surface is nearly avoided.
Shapes available:
yard ware from 8 mm square / Rings from 60 x 80 mm diam./
Frames from 10 mm square
p (bar): 20 t (°C): -50 up to +450 pH: 3 up to 12

LOCKING GASKET AK 2657



Media: water, vapour, hydrous acids, weak acids up to strong lyes, non aggressive vapours and gases
Design: Rolled out of a glass fibre fabric which is rubber-coa ted on both sides, then pressed and vulcanized. The gasket ist graphitized on all sides.
Notes: The locking gasket AK 2657 ist well suited for the sealing of hand- and manholes, covers, blast furnace flaps. Up to 250° C and 20 bar, the gasket is well suited as an asbestos-free alter native to the proved AK type 2039. In the case of higher temperatures, we recom mend the asbestos-free alternative AK2650 produced of ceramic fabrics.
Shapes available:
yarded goods from 8 mm square / Rings from 60 x 80 mm diam.
Frames from 10 mm square
p (bar): 20 t (°C): -50 up to +250 pH: 3 up to 12

BUNT SEAL AK 2670



Media: hot gases, e.g. air, flue gas, furnace atmosperes

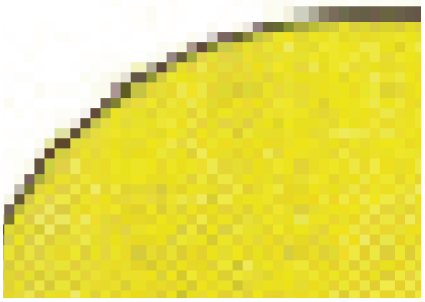
Design: a rubber coate glass fabric is layed around a packing in such way that ends are salient. The overlapping ends are now bonded.

Notes: The bunt seal is applied for the static sealing of e.g. fire doors. Due to the core of plaited packing, the seal is smooth and flexible. The bunt enables a constructi vely simple mounting of the seal.

Shapes available: Yard ware and frames from 10 mm thickness

p (bar): 1 t (°C): -50 up to +300 pH: 1 up to 13

LOCKING & LEVER STOP SEAL AK 2702 & 2757



Media: water, vapour, hydrous acids, weak acids up to strong lyes, also aggressive vapours and gases.

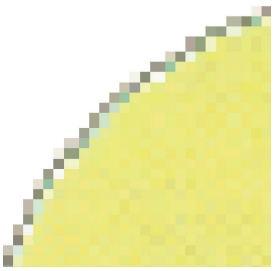
Design: Rolled out of an aramide fibre fabric which is elasto mer-coated on both sides, then pressed and vulcani zed. The gasket is produced with the following surfa ces.
AK 2702: PTFE impregnated / AK 2757: graphitized

Notes: The gaskets AK 2702 and AK 2757 are well suited for the sealing of hand- and manholes, covers, blast furnace flaps. The outstanding resistance to wear of the aramide fibre enables application as lever stop gasket in different cases where media with abrasive elements exist. The surface treatment with PTFE for AK 2702 or with graphite for AK 2757 prevents an adhesion of the gasket.
The application of AK 2702 with PTFE impregnation is recommended when any colouring of the medium should be excluded.

Shapes available: Yard ware: from 8 mm square / Rings: from 60 x 80 mm diam.
Frames: from 10 mm square

p (bar): 20 t (°C): -50 up to +250(water) / +300 (others) pH: 3 up to 12

LOCKING & LEVER STOP GASKETS AK 2747 & AK 2749



Media: water, vapour, hydrous acids, weak acids up to strong lyes, oils and hydrocarbons and aggressive vapours and gases

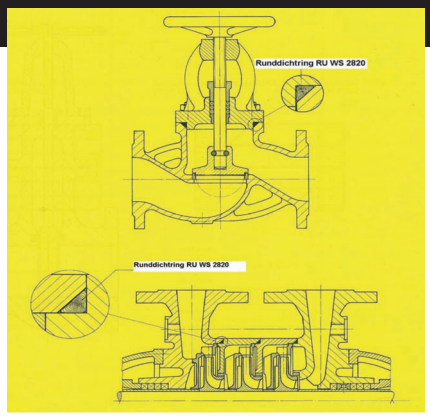
Design: rolled out of an aramide fibre fabric which ist rubber impregnated on both sides. During rolling procedure, a foil of FA material is added to the gasket AK 2747.
Both types are provided with a sheating of CENTELLEN® and are graphitized on all sides.

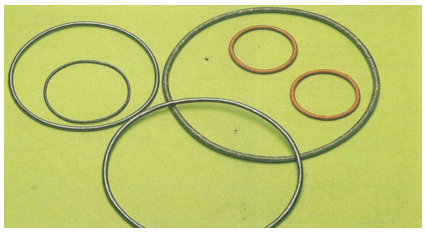
Notes: AK 2747 and AK 2749 are very solid gaskets expecially suited for the application in lever stops. They can also be used in hand- and manholes, covers and locks. The elastomer-coating guaranties high solidity and density which is reinforced by means of the Centellen®-foil sheating. Due to the Centellen®, AK 2747 is very solid and rigid and therefore well suited for applications with high contact pressure (> 1 N/mm²). For applications with a lower contact pressure (< 1 N/mm²), AK 2747 is recommended, an extended design of this type but without Centellen®-layer.
By means of graphitizing, an adhesion of the gaskets to the counterface is nearly prevented.

Shapes available: Yard ware from 8 mm square / rings from 80 x 100 mm diam.
frames from 10 mm square

p (bar): 30 (2749: 20) t (°C): -50 up to +250(water) / +300 (others) pH: 2 up to 13

HECKER SPECIAL SEAL RU - WS 2820





RU-RINGS

inside-Ø d 1[mm]	tolerances	string- Ø d 2	tolerances
> 030 up to 0070	- 1,0	up to 03	± 0,15
> 070 up to 0120	- 1,5	3 up to 04	± 0,20
> 120 up to 0200	- 2,0	3 up to 05	± 0,20
> 200 up to 0300	- 3,0	4 up to 06	± 0,30
> 300 up to 0400	- 4,0	4 up to 07	± 0,30
> 400 up to 0500	- 5,0	4 up to 07	± 0,30
> 500 up to 0700	- 6,0	5 up to 08	± 0,40
> 700 up to 1000	- 8,0	6 up to 10	± 0,40

ROUND STRINGS

string- Ø[mm]	tolerances
03	± 0,15 (length: 10m)
04	± 0,20 (length: 10m)
05	± 0,30 (length: 10m)
06	± 0,30 (length: 10m)
08	± 0,40 (length: 2,5m)
10	± 0,40 (length: 2,5m)

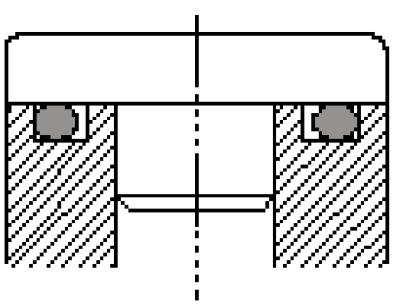
Construction and material:
Round sealing rings are wrapped from thin level sealing material and are stuck together. The density of the material is about 1,3 g/cm³.

Application:
Round sealing rings are suited to the static sealing of lids, cases, containers, etc.. They also serve as a substitute with elastomer-O-rings at temperatures above 200°C. Hence, their installation ist possible only in grooves open fore head-sided or plan-sided.

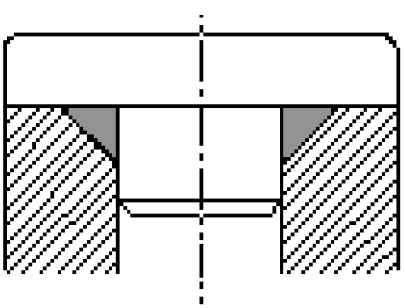
Application approx. values:
Pressure up to 250 bar in triangular grooves.
Pressure up to 5 bar in rectangle grooves.
t [°C]: -200 up to 250°C in water and steam/ up to 350°C in other media
PH [ ]: 2 up to 13

Media:
Applicable in water, oils, petrol, benzene, solvents.
Not applicable in aceton, nitroglycerine, concentrated solvents and acids.

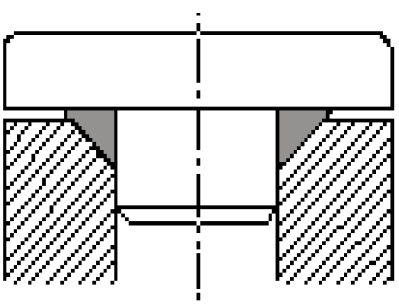
Rectangle groove:
With this often used groove form the pressure loading capacity is approximately 5 bar. Because this grooves are not standard, an individual adaptation of the cross section of the ring is necessary. Please call, hence, available groove dimensions.



Triangle groove:
Standard groove form for round sealing rings. High pressure up to approximateley 250 bar can be sealed by the high pressure in connection with the special groove geometry (wedge effect).



Overcrowding triangle groove:
Specially groove form for pressure more than 250 bar. It must be considered constructively that by the overcrowding the benefit ist not possible for a strength-logical connection of the surrounding metal parts.



HECKER® ESTRATTORI PER BADERNE PREMISTOPPA

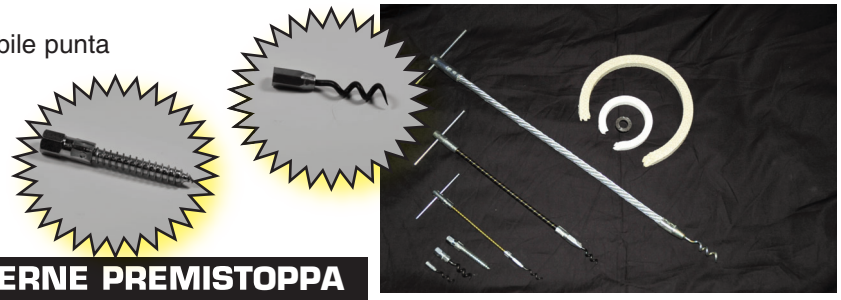
Un alberino flessibile esente da torsione permette die afferrare la baderna anche in zone difficilmente accessibili. La punta elicoidale trafora facilmente qualsiasi tipo di cordone e assicura la rimozione dello stesso senza residui. Affermatisi in migliaia di casi applicativi, gli estrattori riducono notevolmente il tempo impiegato per la sostituzione del materiale di tenuta. L'attrezzatura speciale per lo smontaggio delle baderne premistoppa consumate.

DIMENSIONI

S	Punta	lunghezzo alberino flessibile	Lunghezza totale	Numeri dei articoli
0	4	130	180	PZ 100023
1	6*	95	180	PZ 100019
2	8*	170	270	PZ 100020
3	10*	250	360	PZ 100021
4	11,5	350	490	PZ 100024
5	15,5	450	580	PZ 100025
6	15,5	625	760	PZ 100026

(dimensioni in circa [mm] *) = permutabile punta

Solo la punta		Punta elicoidale
PZ 100032	S1	PZ 100029
PZ 100033	S2	PZ 100030
PZ 100034	S3	PZ 100031



HECKER® TAGILARINA PER BADERNE PREMISTOPPA

Taglia di netto 12° (pompe)
S 1: fino a 110 mm di diametro
S 2: fino a 250 mm di diametro

campo di lavoro
fino a 25 mm

Taglia obliquo à 45° (rubinetteria)
S 1: fino a 130 mm di diametro
S 2: fino a 360 mm di diametro

campo di lavoro
fino a 30 mm

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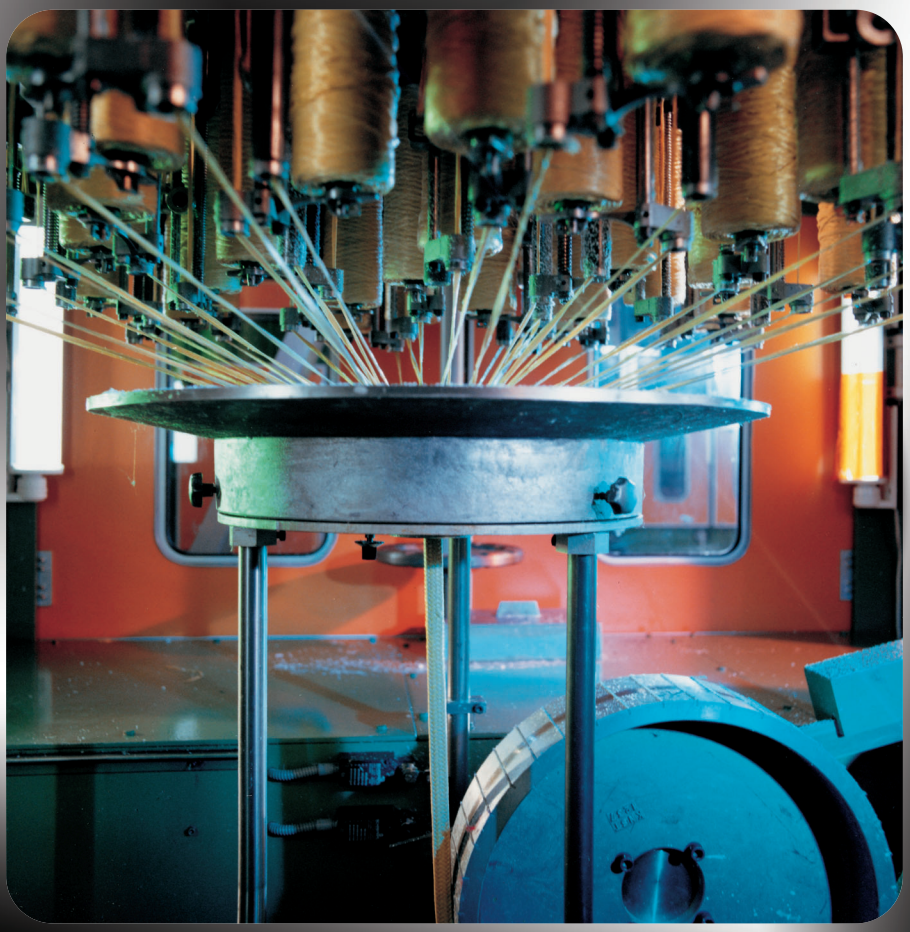

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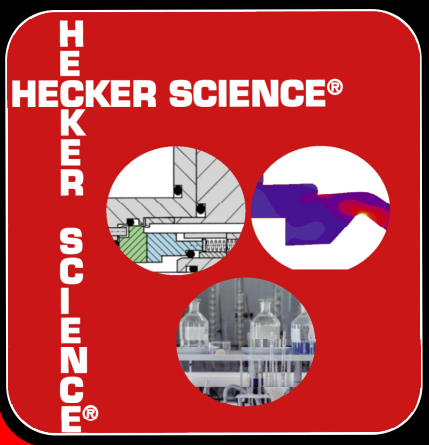

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