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## HECKER®

PLATTEN

PLAQUES **D'ÉTANCHÉITÉ** 

**GUARNIZIONE** 

**HECKER<sup>®</sup> FOGLI DI** 

ENGLISH

**HECKER<sup>®</sup>** 

**HECKER<sup>®</sup> DICHTUNGS-**

















Adm Henry Unitwelluber





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James Jubuerkeeks







Established in 1904 now in il/ fourth generation !



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54th. edition september 2022 / The information given in this brochure is not binding and should only be seen as a general guideline. Due to the great range of application possibilities and demands placed on the materials we produce, we are unable to offer standard values for every individual application. The information given in this brochure cannot offer guarantees with respect to suitability or lifetime of a particular sealing system since operating and application conditions play an important role and are not subject to our control. Also changes can arise with the called releases in the course of time. Therefore we cannot assume liability for the information given.



### MEDIA RESISTANCE

#### CENTELLEN®-CS 3880 / CENTELLEN® OE 3850



#### **CENTELLEN® HD WS 3822**



#### Europil WS 3640 / UDP 3620



#### DSL 3670



#### **CENTELLEN®-C WS 3825**



#### **CENTELLEN® WS 3820**





MEDIA Hydrocarbon oils Aliphatic hydrocarbons Aromatic hydrocarbons Chlorinated hydrocarbons Ethers Esters Ketones Aldehydes Alcohols Water Steam 200°C Steam 250°C Steam 300°C



### DIAGRAMS | T- / p-

#### Reference thickness: 2,0 mm



### DIAGRAMS II T- / p-



### GAS THIGHTNESS TO DIN 3535/6





### **RELEASES / APPROVALS**

GRAFOTHERM	3000	BAM DVGW
GRAFOTHERM	3054	BAM DVGW G_LLOYD FIRE TA- SAFE LUFT
GRAFOTHERM	3064	BAM DVGW
GRAFOTHERM	3200	КТЖ
GRAFOTHERM	3202	BAM DVGW
GRAFOTHERM	3204	BAM DVGW
GRAFOTHERM	3250	BAM DVGW
GRAFOTHERM	3252	BAM DVGW G_LLOYD SAFE
GRAFOTHERM	3262	
GRAFOTHERM	3264	BAM DVGW
UDP	3620	BAM
EUROPIL®	3640	BAM
DSL	3670	BAM
CELL®	3805	
PACKING®	3815	
<b>CENTELLEN®</b>	3820	BAM DVGW HTB DIN 30653 W270
<b>CENTELLEN® HD</b>	3822	BAM DVGW HTB DIN 30653 W270 WrC LIAT KTW
<b>CENTELLEN® R</b>	3825	BAM
<b>CENTELLEN® W</b>	3831	
<b>CENTELLEN®</b> C	3844	BAM LIFT
<b>CENTELLEN® OE</b>	3850	BAM
<b>CENTELLEN® 200</b>	3855	
<b>CENTELLEN® NP</b>	3860	
<b>EURAFLON®</b>	3710	EUET FMPA BAM
EURAFLON® B	3770	
EURAFLON® A	3780	BAM DVGW
EURAFLON® S	3790	BAM

Hint:

In the time course the release situation can change. Please, request regularly us for the certificates required and inform us about your specific demands.



### EUROPIL® 3640



#### UNIVERSAL SEALING SHEET WITH EXTREMELY HIGH **TEMPERATURE AND PRESSURE RESISTANCE (DIN** 28091 FA-MA 1Z-0)

#### **TECHNICAL CHARACTERISTICS**

The material basis of EUROPIL® WS 3640 is comprised of inorganic fibres as well as mineral reinforcement materials, bonded with high grade NBR rubbers.

The resulting, the following material profile has the following characteristics:

- High temperature resistance
- High degree of mechanical stability
- Very good gas tightness at high temperatures
- Good chemical resistance

Production of EUROPIL® WS 3640 is based on calendering process, during which the product is given an anti-adhesive surface with an extremely low coating thickness. The chemical properties remain unchanged thereby.

#### **APPLICATIONS**

Due to these properties, EUROPIL® WS 3640 seals can be employed in situations where which asbestos seals (in particular the former HECKER® grade EUROPIL® WS 3440) were previously required.

Of particular interest is the improved leakage rate of EUROPIL® WS 3640 over asbestos seals when prevailing conditions involve up to 100 bar and 300°C. (Specific leakage rate according to DIN 28090 part 2. [ < 0,1 mg/s(s\*m)].

#### **CHEMICAL RESISTANCE**

Resistant to

- Hydrocarbons such as oil or solvents,
- Alcohols, glycols, aqueous solutions, water and steam
- Weak alkaline solutions and organic acids.

Partially resistant to

- Ketones and esters,
- Chlorinated solvents
- Strong alkaline solutions and inorganic acids Not resistant to
- Hydrofluoric acid and concentrated nitric acid.

#### **RELEASES APPLIED FOR:**

#### BAM

#### STANDARD VERSION

Black-white Anti - adhesive coating OBSW

Delivery formats 1000 x 1500 mm

1500 x 1500 mm

1500 x 3000 mm

Other dimensions on enquiry

Thickness from 0,3 up to 6 mm

#### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	6,0	%	DIN 28090 (2)
Cold resilience value (KRW)	3,1	%	DIN 28090 (2)
Warm setting value (WSW)	6,5	%	DIN 28090 (2)
Warm resilience value (WRW)	1,2	%	DIN 28090 (2)
Spec. leakage rate	0,05	mg/s*m	DIN 28090 (2)
Gas tightness	0,5	cm³/min	DIN 3745
-	0,9	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	34	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	34	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	10	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	30 / 20	N/mm²	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	300	°C	
Max. temperature (temporary)	500	°C	
Max pressure	150	bar	

### UDP 3620



#### UNIVERSAL SEALING SHEET FOR HIGH TEMPERATURES (DIN 28091 FA – MA 1/-0)

#### **TECHNICAL CHARACTERISTICS**

The material basis of UDP 3620 consists of inorganic fibers and synthetic aramide fibres as well as mineral reinforcement materials, bonded by high grade NBR rubbers.

This combination of raw materials gives the following material characteristics:

- Very good resistance to high temperature
- High mechanical strength
- Good chemical resistance
- Able to substitute It-C

UDP 3620 is produced according to the calender process and is given a thin anti adhesive surface when produced. The chemical properties are not affected by this process.

#### **APPLICATIONS**

According to the properties of the materials being used, gaskets made of UDP 3620 should be prefered wherever occuring temperatures exceed those covered by the application range of CENTELLEN<sup>®</sup> WS 3820.

#### **CHEMICAL RESISTANCE**

Resistant to:

- Hydrocarbons such as oils or solvents,
- Alcohols, glycols, aqueous solutions, water and steam up to 250°C
- Weak alkaline solutions and organic acids
- Partially resistant to:
- Ketones and esters
- Chlorinated solvents
- Strong alkaline solutions and inorganic acids

Not resistant to:

Hydrofluoric acid and concentrated nitric acid.





#### **STANDARD VERSION**

Incolored-blue Anti-adhesive coating OBFB Delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm others on demand Thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	5,5	%	DIN 28090 (2)
Cold resilience value (KRW)	2,8	%	DIN 28090 (2)
Warm setting value (WSW)	6,7	%	DIN 28090 (2)
Warm resilience value (WRW)	1,6	%	DIN 28090 (2)
Spec. leakage rate	0,05	mg/s*m	DIN 28090 (2)
Gas tightness	0,5	cm³/min	DIN 3745
	2,0	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	37	N/mm²	DIN 52913
Compressive strength (16h, 300°C)	35	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	11	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	30 / 20	N/mm <sup>2</sup>	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	300	°C	
Max. temperature (temporary)	500	°C	
Max. pressure	150	bar	



### **CENTELLEN® HD 3822**



#### SPECIAL GRADE FOR HIGH PRESSURES WITH GOOD CREEP RESISTANCE AND GOOD GAS TIGHTNESS (DIN 28091 FA – MA1/-0)

#### **TECHNICAL CHARACTERISTICS**

This is a further development of our proven tested CENTELLEN<sup>®</sup> WS 3820. CENTELLEN<sup>®</sup> HD-3822 was developed particularly for applications that would mechanically overburden our CENTELLEN<sup>®</sup> WS 3820 grade. Due to a similar structure, the resistance data for CENTELLEN<sup>®</sup> WS 3820 can be assumed for CENTELLEN<sup>®</sup> HD 3822 as well. The material basis of CENTELLEN<sup>®</sup> HD 3822 consists of high grade aramide and anorganic fibres as well as mineral reinforcement materials bonded with NBR rubber. This combination of raw materials gives the following material characteristics:

- High compressive strength
- Very low gas leakage
- Very good oil resistance
- Good tensile strength

CENTELLEN<sup>®</sup> HD 3822 is produced according to the calender process and is given a thin anti-adhesive surface when produced. The chemical properties are not affected by this process.

#### **APPLICATIONS**

Due to these material characteristics, seals made of CENTELLEN<sup>®</sup> HD 3822 can be used wherever extreme conditions in the form of higher pressure and medium temperature strain exist. Typical applications are pipes in the general chemical industry, the systems, apparatures and machines building industry, in the sanitary industry and in the food and beverage industry.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Hydrocarbons such as oil or solvents,
- Alcohols, glycols, aqueous solutions, water and steam up to 250°C,

Weak alkaline solutions and organic acids

Partially resistant to

- Ketones and esters
- Chlorinated solvents,
- Strong alkaline solutions and inorganic acids

Not resistant to

•

Hydrofluoric acid and concentraded nitric acid

#### RELEASES



#### **STANDARD VERSION**

Green-yellow, Anti adhesive coating OBGY Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm

Other formats on enquiry, thickness 0,3 up to 6 mm

#### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	4,8	%	DIN 28090 (2)
Cold resilience value (KRW)	2,0	%	DIN 28090 (2)
Warm setting value (WSW)	16,9	%	DIN 28090 (2)
Warm resilience value (WRW)	2,2	%	DIN 28090 (2)
Spec. leakage rate	0,04	mg/s*m	DIN 28090 (2)
Gas tightness	0,5	cm³/min	DIN 3745
	0,6	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	35	N/mm²	DIN 52913
Compressive strength (16h, 300°C)	25	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	14	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm <sup>2</sup>	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90 / 60 / 60	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	250	°C	
Max. temperature (temporary)	400	°C	
Max. pressure	150	bar	

### **CENTELLEN® C WS 3844**



#### UNIVERSAL SEALING SHEET FOR THE CHEMICAL INDUSTRY (DIN 28091 FA - A13 -0)

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN<sup>®</sup> C WS 3844 is produced according to the calander process. It consists of aramide fibres as well as inorganic reinforcement materials and contains a special mixture of rubbers as a bonding agent. The sheets are given a thin antiadhesive surface during production. The chemical properties are not affected by this process.

#### **CHEMICAL RESISTANCE**

Resistant to

 Aliphatic, aromatic and chlorinated hydrocarbons, mineral oils and mineral oil products,

Alcohols, glycols, esters, aldehydes and ketones, aqueous

solutions, water and steamup to 200°C

Weak alkaline solutions and organic acids

#### Partially resistant to

• Up to ca. 50°C to strong alkaline solutions such as sodium bicarbonate and potassium alkaline solutions, acids such as hydrochloric acid, sulphuric acid and pure acedic acid

#### Not resistant to

 Strong oxidizing acids such as concentrated hydrofluoric acid or nitric acid at high temperatures

#### RELEASES



#### STANDARD VERSION

Clear-clear Anti-adhesive coating OBF2 Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm Other formats on enquiry thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	11,6	%	DIN 28090 (2)
Cold resilience value (KRW)	5,6	%	DIN 28090 (2)
Warm setting value (WSW)	14,1	%	DIN 28090 (2)
Warm resilience value (WRW)	1,5	%	DIN 28090 (2)
Spec. leakage rate	0,30	mg/s*m	DIN 28090 (2)
Gas tightness	0,4	cm³/min	DIN 3745
Compressive strength (16h, 175°C)	32	N/mm²	DIN 52913
Compressive strength (16h, 300°C)	25	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	9	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm <sup>2</sup>	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 70 / 55 / 50	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	200	°C	
Max. temperature (temporary)	350	°C	
Max. pressure	100	bar	



### **CENTELLEN® WS 3820**



#### UNIVERSAL SEALING SHEET FOR USE WITH MEDIUM TEMPERATURE (DIN 28091 FA-A1-0)

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN<sup>®</sup> WS 3820 is produced according to the calander process. It consists of aramide fibres as well as inorganic reinforcement materials and contains NBR rubber as a bonding agent. The sheets are given a thin anti-adhesive surface during production. The chemical properties are not affected by this process. CENTELLEN<sup>®</sup> WS 3820 is our universal grade and can substitute IT-400, It-Ö or It-C. WS 3820 has high mechanical resistance values. The gas tightness fulfills the requirements for seals in the gas supply industry.

#### **CHEMICAL RESISTANCE**

Resistant to

- Hydrocarbons such as oil or solvents,
- Alcohols, glycols, aqueous solutions, water and steam up to 200°C possible, over 200°C please clarify the parameter of application with the manufacturer
- Weak alkaline solutions and organic acids
   Ammoniac UN 1005

Partially resistant to

- Ketones and esters
- Chlorinated solvents
- Strong alkaline solutions and inorganic acids

#### Not resistant to

Hydrofluoric acid and concentrated nitric acid

#### RELEASES



#### **STANDARD VERSION**

Green-green Anti-adhesive coating OBG2

Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm Other formats on enquiry Thickness 0,3 up to 6 mm

#### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	8,0	%	DIN 28090 (2)
Cold resilience value (KRW)	4,0	%	DIN 28090 (2)
Warm setting value (WSW)	25,4	%	DIN 28090 (2)
Warm resilience value (WRW)	3,2	%	DIN 28090 (2)
Spec. leakage rate	0,02	mg/s*m	DIN 28090 (2)
Gas tightness	0,5	cm³/min	DIN 3745
	0,8	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	30	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	25	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	11	N/mm <sup>2</sup>	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm <sup>2</sup>	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90 / 55 / 30	N/mm <sup>2</sup>	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	200	°C	
Max. temperature (temporary)	400	°C	
Max. pressure	100	bar	



### **CENTELLEN® W 3831**



#### **TECHNICAL CHARACTERISTICS**

HECKER<sup>®</sup> CENTELLEN<sup>®</sup> W 3831 is produced on calenders. It consists of Aramid and other fibres, mineral reinforcementmaterials that are bounded by a NBR-rubber. The plates receive an antiadhesive surface-coating with a low coating thickness during the production. The chemical qualities are not changed by this process.

HECKER<sup>®</sup> CENTELLEN<sup>®</sup> W 3831 is a less expensive gasketgrade for low strain thermal sealing. Due to the flexibility of the material, the sheet is very good for the use in locations with very high leakage demands combined with low surface pressure. The material is resistant against oils and hydrocarbons as well as against aqueous medias and refrigerants. Due to its gas permeability it can be employeed to seal gases.

#### **CHEMICAL RESISTANCE**

Resistant against:

- Hydrocarbons like oils or solvents
- Alcohols, glykols, aqueous solutions
- Not resistant against:
- Strong lyes and acids

#### **STANDARD VERSION**

Visual appearance: Antiadhesive-coating: Delivery-format:

Standard-thickness:

0,5 up to 3 mm

red/red OBR2

1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm

#### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,75	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	7-15	%	DIN 28090 (2)
Cold resilience value (KRW)	circa 5	%	DIN 28090 (2)
Warm setting value (WSW)	< 50	%	DIN 28090 (2)
Warm resilience value (WRW)	1-2	%	DIN 28090 (2)
Spec. leakage rate	< 0,01	mg/s*m	DIN 28090 (2)
Gas tightness	0,01	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	20	N/mm <sup>2</sup>	DIN 52913
Tensile strength transverse	> 10	N/mm²	DIN 52910
Compressibility	10-20	%	ASTM F 36J
Recovery	> 40	%	ASTF F 36J
Min. temperature	- 100	°C	
Max. operating temperature	180	°C	
Max. temperature (temporary)	250	°C	
Max. pressure	50	bar	



### DSL 3670



#### SPECIAL QUALITY WITH VERY GOOD RESISTANCE TO STEAM, ACIDS AND ALKALINE SOLUTIONS (DIN 28091 FA-MA Z-0)

#### **TECHNICAL CHARACTERISTICS**

The material basis of DSL 3670 consists of inorganic fibers and synthetic aramide fibres as well as mineral reinforcement materials, bonded by EPDM rubber.

This combination of raw materials gives the following material characteristics:

- Very good resistance to steam
- Good resistance to polar materials
- Adjustable since these materials harden more slowly than other materials
- Low setting distance
- Higher resistance to changing loads
- Can substitute It-S

DSL 3670 is produced according to the calender process and it is given a thin anti-adhesive surface when it is produced. The chemical properties are not affected by this process.

#### **APPLICATIONS**

Due to the characteristics of these materials, the seals made of DSL 3670 are particularly well suited for pipes that transport steam or hot water. Because of the good resistance the use of this material is also recommended together with concentrated acids and alkaline solutions.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Concentrated acids, strong alkaline solutions, inor ganic and organic acids
- Alcohols, glycols, aqueous solutions, water and steam up to 250°C.

#### Well-suited

•

- For use against polar materials such as short-warp ketones and esters
- Partially resistant to
- Long-warp Ketones and esters
- Chlorinated solvents

Not resistant to

Hydrocarbons such as oil or solvents

#### RELEASES

BAM

#### **STANDARD VERSION**

#### Blue-blue

Anti-adhesive coating OBB2 Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm other formats on enquiry Thickness 0,8 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,8	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	6,5	%	DIN 28090 (2)
Cold resilience value (KRW)	3,1	%	DIN 28090 (2)
Narm setting value (WSW)	6,3	%	DIN 28090 (2)
Narm resilience value (WRW)	2,0	%	DIN 28090 (2)
Spec. leakage rate	0,1	mg/s*m	DIN 28090 (2)
Gas tightness	2,0	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	36	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	30	N/mm²	DIN 52913
ensile strength transverse	7	N/mm <sup>2</sup>	DIN 52910
/lax. surface pressure (gas/liquides)	25 / 15	N/mm²	DIN 28090
Aax. surface pressure (23°C, 200°C, 250°C)	> 90 / 60 / 60	N/mm²	DIN 28090
<i>I</i> in. temperature	- 100	°C	
Aax. operating temperature	250	°C	
Max. temperature (temporary)	450	C°	
Max. pressure	150	bar	



### **CENTELLEN® NP WS 3860**



### SPECIAL GRADE WITH VERY GOOD RESISTANCE TO COOLING AGENTS

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN<sup>®</sup>-NP WS 3860 ist produced according to the calender process. It consists of aramide fibres as well as inorganic reinforcement materials and contains a mixture of NBR and CR rubbers as a bonding agent. The sheets are given a thin anti-adhesive surface when they are produced. The chemical properties are not affected by this process.

CENTELLEN<sup>®</sup>-NP WS 3860 is a special, gastight grade that has been developed for applications against refrigerants.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Refrigerants such as freones, methylene, chloride, ammonia, etc.
- Hydrocarbons such as oils, glycols, cooling brine
- Weak alkaline solutions and organic acids

#### Partially resistant to

Ketones and esters

#### Not resistant to

Concentraded acids or alkaline solutions

#### **RELEASES / APPROVALS**

#### **STANDARD VERSION**

Red-clear Anti-adhesive coating OBRF Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 0ther formats on enquiry Thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE

Constant maximum temperature and maximum pressure should not occur simultaneously !!

TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	7,1	%	DIN 28090 (2)
Cold resilience value (KRW)	2,4	%	DIN 28090 (2)
Warm setting value (WSW)	56,7	%	DIN 28090 (2)
Warm resilience value (WRW)	2,1	%	DIN 28090 (2)
Spec. leakage rate	0,05	mg/s*m	DIN 28090 (2)
Gas tightness	0,4	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	26	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	-	N/mm²	DIN 52913
Tensile strength transverse	9	N/mm <sup>2</sup>	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90 / 55 / 45	N/mm <sup>2</sup>	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	200	°C	
Max. temperature (temporary)	250	°C	
Max. pressure	100	bar	



### **CELL® 3805**



### LOW LEVEL GASKET (LOW TEMPERATURE, LOW PRESSURE & LOW PRICE !)

#### **TECHNICAL DATA**

HECKER<sup>®</sup> CELL<sup>®</sup> 3805 is produced on calenders. It is made of mineral and cellulose fibres and mineral filler. The components are bonded by NBR-rubber. The sheets are equipped with a non-adhesive surface.

#### **CHEMICAL RESISTANCE**

Resistant against:

- Hydrocarbons such as oil or solvents
- Alcohol, glycol, aqueous solutions

Not resistant against:

Strong alkali and acids

Flowing by ASTM F146: In ASTM 3-oil Increase of thickness: <5% Increase of mass: < 10% In Fuel B: Increase of thickness: < 10% Increase of mass: < 15% In water/glycol: Increase of thickness: < 5% Increase of mass: < 5%

#### **STANDARD VERSION**

Clear / red Anti-adhesive coating OBRF Standard delivery formats: 1000 x 1500mm 1500 x 1500mm 1500 x 3000mm Others on enquiry Thickness standard: 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,7	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	7-15	%	DIN 28090 (2)
Cold resilience value (KRW)	ca. 3	%	DIN 28090 (2)
Warm setting value (WSW)	> 30	%	DIN 28090 (2)
Warm resilience value (WRW)	1-2	%	DIN 28090 (2)
Spec. leakage rate	< 0,04	mg/s*m	DIN 28090 (2)
Gas tightness	0,4	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	20	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	-	N/mm²	DIN 52913
Compressibility	10-20	%	ASTM F 36J
Recovery	> 40	%	ASTM F 36J
Tensile strength transverse	9	N/mm²	DIN 52910
Max. surface pressure (gaz/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C, 200°C, 250°C)	> 90 / 50 / -	N/mm <sup>2</sup>	DIN 28090
Min. temperature	- 40	°C	
Max. operating temperature	120	°C	
Max. temperature (temporary)	150	C°	
Max. pressure	50	bar	



### PACKING<sup>®</sup> WS 3815



#### CONSTRUCTION

WS 3815 is an inexpensive, in Germany produced, alternative to import-grades already on the market. If you have recently thought until now, that it is not possible to buy "inexpensive" grades "Made in Germany", then we would like to prove you the opposite here. We invite you to order samples and ask about our prices as we are sure that you will be surprised.

WS 3815 is produced on calenders and consists of Aramid fibres, recycled-material from our CENTELLEN-grades and mineral reinforcement-materials that are bound by a rubbermixture. The plates receive an antiadhesive surface-coating with a low coating thickness during the production. The chemical qualities are not changed by this process.

It is preferentially suited for use in the heating-area. The material is resistant against oils and hydrocarbons as well as against aqueous medias and refrigerants. Due to its gas permeability it can be employeed to seal gases.

#### **CHEMICAL RESISTANCE**

Resistant against: Hydrocarbons like oils or solvents, alcohols, glykols, aqueous solutions, water up to 105°C

Not suitable against: Cetones and esters, chlorinated solvents, strong lyes and acids

#### **STANDARD VERSION**

Visual appearance:	red/red
Antiadhesive-coating:	OBR2
Delivery-format:	1000 x 1500 mm,
	1500 x 1500 mm,
	1500 x 3000 mm
Standard-thickness:	0,5 up to 5,0 mm

TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	10-20	%	DIN 28090 (2)
Cold resilience value (KRW)	ca. 5	%	DIN 28090 (2)
Warm setting value (WSW)	< 30	%	DIN 28090 (2)
Warm resilience value (WRW)	1-2	%	DIN 28090 (2)
Spec. leakage rate	< 0,1	mg/s*m	DIN 28090 (2)
Gas tightness	0,18	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	> 20	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	-	N/mm²	DIN 52913
Compressibility	10-20	%	ASTM F 36J
Recovery	> 40	%	ASTM F 36J
Tensile strength transverse	> 5	N/mm <sup>2</sup>	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C, 150°C)	> 90 / 60	N/mm²	DIN 28090
Min. temperature	- 40	°C	
Max. operating temperature	150	°C	
Max. temperature (temporary)	180	°C	
Max, pressure	50	bar	

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



### **CENTELLEN® R WS 3825**



#### SEALING SHEET WITH EXTREMLY HIGH GAS TIGHTNESS

#### STRUCTURE

CENTELLEN<sup>®</sup> R WS 3825 is produced according to the calender process. It consists of aramide and inorganic fibres and recycled material from our high aramide grades as well as mineral reinforcement materials that are bonded with a rubber mixture. The sheets are given an anti-adhesive surface during production. The chemical properties are not affected by this process.

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN®-R WS 3825 is our special quality that displays best gas tightness and good compressive strength at temperatures up to 200°C. This grade was specially developed to meet the requirements of the heating and sewage industries and for the apparatus and machine-building industry.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Hydrocarbons such as oil or solvents
- Alcohols, glycols, aqueous solutions, water and steam up to150°C
- Gas (with the exception of extremely acidic gases)
  Not resistant to
- Ketones and esters, chlorinated solvents
- Strong alkaline solutions and acids.

#### Swelling based on DIN 3754

- In ASTM 3-oil < 10 Vol%
- In Fuel B < 13 Vol%
- In Water < 3 Vol%</li>

### RELEASES



#### **STANDARD VERSION**

Yellow-yellow Anti-adhesive coating OBY2 Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm other formats on inquiry

Thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,85	g/cm <sup>3</sup>	DIN 28090 (2)
Cold heading value (KSW)	8,0	%	DIN 28090 (2)
Cold resilience value (KRW)	5,0	%	DIN 28090 (2)
Warm setting value (WSW)	27,0	%	DIN 28090 (2)
Warm resilience value (WRW)	4,0	%	DIN 28090 (2)
Spec. leakage rate	0,01	mg/s*m	DIN 28090 (2)
Gas tightness	< 0,3	cm³/min	DIN 3745
	< 0,8	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	> 25	N/mm²	DIN 52913
Compressive strength (16h, 300°C)	-	N/mm²	DIN 52913
Tensile strength transverse	> 6	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C, 175°C)	70 / 40	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	200	°C	
Max. temperature (temporary)	300	°C	
Max. pressure	60	bar	



### **CENTELLEN® R2 WS 3826**



#### SEALING SHEET WITH OUTSTANDINGLY HIGH GAS TIGHTNESS

#### STRUCTURE

CENTELLEN<sup>®</sup> R2 3826 is produced according to the calender process. It consists of aramide and inorganic fibres as well as mineral reinforcement materials that are bonded with a NBR rubber.

This universal high-pressure sealing plate is resistant to hot water, steam, oils, hydrocarbons and many other chemicals.

The material offers high plant safety for a wide range of applications.

#### **TECHNICAL PROPERTIES**

CENTELLEN<sup>®</sup>-R2 3826 is our special quality with excellent gas tightness at good pressure resistance and at temperatures up to 200°C. This quality was specifically developed to meet the requirements of the waste water and heating sector as well as for apparatus and mechanical engineering.

#### CHEMICAL RESISTANCE

#### Resistant to

- Hydrocarbons such as oils or solvents
- alcohols, glycols, aqueous solutions, water and steam up to 150°C
- diluted acids and bases

Not suitable against

- ketones, esters and chlorinated solvents
- strong acids or alkalis

Swelling according to ASTM F 146 Oil IR 903 (5h/150°C) < 5 vol% Fuel B (5h/23°C) < 10 vol%

#### **STANDARD VERSION**

red-red

#### STANDARD VERSION

1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm 1500 x 4500 mm

Thickness 0,5 up to 3 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE:

Constant maximum temperature and maximum pressure should not occur simultaneously!

#### CENTELLEN® R2 3826



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Dichte / Density	1,7	g/cm³	DIN 28090 (2)
Kaltstauchwert (KSW)/Cold heading value	10,0	%	DIN 28090 (2)
Kaltrückfederungswert (KRW) / Cold resilience value	5,0	%	DIN 28090 (2)
Warmsetzweg (WSW) / Warm setting value	22	%	DIN 28090 (2)
Warmrückfederungswert (WRW)/Warm resilience value	1-2	%	DIN 28090 (2)
Spez. Leckagerate / spec. leakage rate	0,05	mg/s*m	DIN 28090 (2)
Gasdichte / gas thightness	0,40	cm³/min	DIN 3535/6
Druckstandsfestigkeit / Compressive strength (16h, 175°C)	> 27	N/mm²	DIN 52913
Zugfestigkeit quer / tensile strength transverse	> 5	N/mm <sup>2</sup>	DIN 52910
Min. Fl.pressung (Gase / Flüssigkeit)	20 / 10	N/mm²	DIN 28090
Max. Fl.pressung (23°C bzw. 175°C)	70 bzw. 40	N/mm <sup>2</sup>	DIN 28090
Min. Temperatur / min. temperature	- 50	°C	
Max. Betriebstemperatur / max operating temperature	200	°C	
Max. Temperatur (Kurzzeit) / max temperature (temporary)	300	°C	
Max. Druck / max pressure	60	bar	



### **CENTELLEN® 200 WS 3855**



#### SEALING SHEET FOR APPLICATIONS THAT ARE THERMALLY AND MECHANICALLY NOT CRITICAL

#### STRUCTURE

CENTELLEN<sup>®</sup> 200 WS 3855 is produced according to the calender process. It consists of aramide and other fibres, as well as inorganic reinforcement materials and contains special rubber as a bonding agent. The sheets are given a thin antiadhesive surface during production. The chemical properties are not affected by this process.

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN®-R WS 3855 is our inexpensive grade for joints that are subject to little thermal and mechanical stress.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Hydrocarbons such as oil or solvents
- Alkohols, glykols, aqueous solutions
- Water and steam up to 150°C
- Weak alkaline solutions and acids

#### Not resistant to

- Ketones and esters, chlorinated solvents
- Strong acids or alkaline solutions

#### **STANDARD VERSION**

Red-red Anti-adhesive coating OBR2 Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm Other dimensions on enquiry

Thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)VALUEUNITNORMDensity1,9g/cm³DIN 280Cold heading value (KSW)8,9%DIN 280	90 (2)
Density         1,9         g/cm³         DIN 280           Cold heading value (KSW)         8,9         %         DIN 280	190(2)
Cold heading value (KSW) 8,9 % DIN 280	JOO (2)
	)90 (2)
Cold resilience value (KRW) 4,4 % DIN 280	090 (2)
Warm setting value (WSW)         34,2         %         DIN 280	)90 (2)
Warm resilience value (WRW)2,0%DIN 280	090 (2)
Spec. leakage rate 2,3 mg/s*m DIN 280	)90 (2)
Gas tightness 0,4 cm³/min DIN 353	35/6
Compressive strength (16h, 175°C) 25 N/mm <sup>2</sup> DIN 529	913
Compressive strength (16h, 300°C) - N/mm <sup>2</sup> DIN 529	913
Tensile strength transverse15N/mm²DIN 529	910
Max. surface pressure (gas/liquides) 20 / 10 N/mm <sup>2</sup> DIN 280	090
Max. surface pressure (23°C/ 200°C/ 250°C) > 90 / 60 / 55 N/mm <sup>2</sup> DIN 280	090
Min. temperature - 100 °C	
Max. operating temperature 180 °C	
Max. temperature (temporary) 250 °C	
Max. pressure 40 bar	



### **CENTELLEN® OE WS 3850**



#### **SPECIAL QUALITY FOR USE WITH OILS**

#### STRUCTURE

CENTELLEN® OE WS 3850 is produced according to the calender process. It consists of aramide and other fibres, inorganic reinforcement materials and contains NBR rubber as a bonding agent. The sheets are given a thin anti-adhesive surface during production. The chemical properties are not affected by this process.

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN®-OE WS 3850 is oil resistant and can replace It-Ö.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Hydrocarbons such as oil or solvents
- Alkohols, glycols, acqueous solutions
- Water and steam up to 200°C
- Weak alkaline solutions and organic acids

#### Partially resistant to

- Ketones and esters
- Chlorinated solvents

#### Not resistant to

Strong alkaline solutions and inorganic acids

#### RELEASES

BAM

#### STANDARD VERSION

Green-clear

Anti-adhesive coating OBGF Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 0ther formats on enquiry

Thickness 0,3 up to 6 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



	MALLIE		NORM
<u>TECHNICAL DATA (2 mm)</u>	VALUE		NURM
Density	1,85	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	12,7	%	DIN 28090 (2)
Cold resilience value (KRW)	6,5	%	DIN 28090 (2)
Warm setting value (WSW)	20,1	%	DIN 28090 (2)
Warm resilience value (WRW)	2,1	%	DIN 28090 (2)
Spec. leakage rate	0,08	mg/s*m	DIN 28090 (2)
Gas tightness	0,2	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	27	N/mm <sup>2</sup>	DIN 52913
Compressive strength (16h, 300°C)	22	N/mm²	DIN 52913
Tensile strength transverse	8	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C/ 200°C/ 250°C)	> 90 / 55 / 45	N/mm²	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	200	°C	
Max. temperature (temporary)	300	°C	
Max. pressure	100	bar	



### **CENTELLEN® CS WS 3880**



#### SEALING SHEET WITH SPECIFIC SWELLING PROPERTIES

#### STRUCTURE

CENTELLEN<sup>®</sup> CS WS 3880 is produced according to the calander process. It consists of aramide and other fibres as well as inorganic reinforcing materials and contains special rubber as a bondig agent. The sheets are given a thin antiadhesive surface during production. The chemical properties are not affected by this process.

#### **TECHNICAL CHARACTERISTICS**

CENTELLEN<sup>®</sup>-CS WS 3880 is a special grade to be used against oils for joints with low or uneven surface pressure. Concentrated swelling in oils makes the joint leakage proof even when there is uneven surface pressure.

#### **CHEMICAL RESISTANCE**

#### Resistant to

- Hydrocarbons such as oil or solvents
- Aclohols, glykols, aqueous solution
- Weak alkaline solutions and organic acids

#### Partially resistant to

Ketones and esters

#### Not resistant to

- Strong alkalines and solvents
- Chlorinated solvents

#### Swelling based on DIN 3754

- In ASTM 3-oil: < 30 Vol.%
- In Fuel B: < 42 Vol.%

#### STANDARD VERSION Red-green

Anti-adhesive coating OBRG Standard delivery formats 1000 x 1500 mm 1500 x 1500 mm 1500 x 3000 mm Other formats on enquiry Thickness 0,3 up to 6 mm

#### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
Density	1,75	g/cm³	DIN 28090 (2)
Cold heading value (KSW)	8,1	%	DIN 28090 (2)
Cold resilience value (KRW)	4,4	%	DIN 28090 (2)
Warm setting value (WSW)	51	%	DIN 28090 (2)
Warm resilience value (WRW)	0,5	%	DIN 28090 (2)
Spec. leakage rate	0,25	mg/s*m	DIN 28090 (2)
Gas tightness	0,5	cm³/min	DIN 3535/6
Compressive strength (16h, 175°C)	25	N/mm²	DIN 52913
Compressive strength (16h, 300°C)	-	N/mm²	DIN 52913
Tensile strength transverse	8	N/mm²	DIN 52910
Max. surface pressure (gas/liquides)	20 / 10	N/mm²	DIN 28090
Max. surface pressure (23°C/ 200°C/ 250°C)	> 90 / 50 / 30	N/mm <sup>2</sup>	DIN 28090
Min. temperature	- 100	°C	
Max. operating temperature	150	°C	
Max. temperature (temporary)	250	°C	
Max. pressure	40	bar	



### **GASKET MATERIALS APPLICABLE FOR**

### THE USE IN SANITARY ENGINEERING, HEATING AND AIR TECHNICS

HECKER<sup>®</sup> manufactures different asbestos-free gasket materials. They are suitabel for the use in sanitary engineering, heating and air technics. All these materials are manufactured according to the calender technique and are based on a similiar material concept. They essentially consist of fibre materials (aramide fibres, mineral fibres), caoutchouc (NBR, EPDM etc.) as well as inorganic reinforcing materials.

Grafotherm 3252 is designed for the highest temperature load and compressive stress. It consists of graphite with a sheet metal layer. In the following table you will see materials which can be used in sanitary engineering, heating and air technics. The gasket materials are listed downwards according to the increasing loading capacity.



The material DSL 3670 (water vapour, acids, alkaline solutions) is to be particularly emphasized. As a material which is based on EPDM-caoutchouc, it is almost predesigned for the application in sanitary engineering, heating and air technics.

The following diagram illustrates the materials that are the best suited for each applications parameter. We, however, want to stress that the present fields of application do not show the maximum limits of application limits of each material but on the contrary the field, where the sealing can be optimally applied, when the nature of the material, the application and the price are taken into account.





#### STRUCTURE

Grafotherm consists of pure graphite which has been expanded by means of a special procedure. This material is compressed to foils or sheets without using any binders or fillers.

The graphite jointing sheets are available in various designs. Besides sheets are available in various designs. Besides sheets of pure graphite, sheets with a special resin impregnation of the surfaces, with an intermediate smooth stainless steel or needled steel sheet layer are also available.

#### **TECHNICAL CHARACTERISTICS**

Since Grafotherm consists of pure graphite without any bonding agents, gaskets made of this material can be used up to 500°C without loss of material quality or durability. Grafotherm gaskets do not settle as a result of temperature changes and so it is not necessary to re-tighten gaskets that have been fitted. Gaskets made of Grafotherm do not harden and they display a compression and resilience behaviour that is constant regardless of temperature. Grafotherm is therefore suited for use in situations involving frequent temperature fluctuations. The high compressibility and the low minimum surface pressure of the grafotherm gaskets make them well suited for use in sensitive glass or enamel flanges.

#### PECULIARITIES OF THE IMPREGNATED AND METAL REINFORCED GRAFOTHERM GASKETS

Grafotherm gaskets are very susceptible to surface damages including such as scratches, bending and tearing. For this reason great care must be taken when installing them. We therefore recommend the use of the impregnated or metal-reinforced types, especially in the case of difficult repair or installation circumstances.

Impregnation of the surface improves resistance to scratching so the use of the impregnated types is therefore preferable in any case. The durability and the gas tightness is thereby increased. Impregnation also reduces the problem of adherence to the flange, thereby facilitating the subsequent removal of the gasket.

Reinforcement with a glued-in, smooth sheet metal, with a metal spike or with several glue-free stainless steel foils generally leads to improved handling, especially in the case of gaskets with a large diameter. The sealing characteristics of the gasket are decreased somewhat due to the layer of glue.

Grafotherm gaskets with a layer of needled metal spike or several glue-free stainless steel foils are particularly recommended for high pressures and high surface pressures.

#### TECHNICAL DATA OF THE GRAFOTHERM MATERIALS FOR 2 mm SHEET THICKNESS AND AN APPARENT DENSITY OF THE GRAFOTHERM OF 1,0 g/cm<sup>3</sup>

MATERIAL	REINFORCEMENT	THICKNESS	IMPREGNATION	DENSITY g/cm <sup>3</sup>	ASH%	CHLORID	E ppm	THICKNES	SSES mm
3000	none	-	none	1,0	<0,15	<20		0,25/0,35/0	,5/0,8/1,0/1,5/2,0
3200	none	-	none	ne 1,0 <2,0 <50		<50		0,25/0,35/0	,5/0,8/1,0/1,5/2,0
3250	none	-	furane resin	1,0	<=2,0	<=50		1,0/1,5/2,0	
3204	metal cover 1.4401	0,05	none	1,0	<=2,0	<=50		1,0/1,5/2,0/3	3,0/4,0
3054	steel foils 1.4401	0,05	furane resin	1,1	<=0,15	<=20		1,0/1,5/2,0/3	3,0/4,0
3112	metal cover 1.4401	0,10	none	1,0	<2,0	<50		1,0/1,5/2,0/3	3,0
3202	metal cover 1.4401	0,10	none	1,0	<2,0	<50		1,5/2,0/3,0	
3252	metal cover 1.4401	0,10	furane resin	1,0	<=2,0	<=50		1,5/2,0/3,0	
3262	metal cover 1.4401	0,1	furane resin	1,0	<=2,0	<=50		1,6/2,0	
MATERIAL	GAS PERMEABILITY	<u>/ cm³/min</u>	COMPRESSIVE STR	ENGTHS N/mm <sup>2</sup>	<u>KSW %</u>	<u>KRW %</u>	<u>wsw %</u>	WRW %	<b>COMRESSIBILITY</b> %
3000	<1,2 (DIN 353	5/4)	>48		40-50	3-4	<3	3-4	40-50
3200	<1,6		>48		40-50	3-4	<3	3-4	40-50
3250	<=0,8		>47		40-50	3,5-4,5	<4	2,5-3,5	40-50
3204	<=0,6		>45		35-45	3,5-4,5	<5	3-4	40-50
3054	<1,0		>48		30-40	4-5	<4	3-4	30-40
3112	<1		>48		-	-	-	-	35-45
3202	<0,8		>48		35-45	5-6	2-4	3-5	30-40
3252	<=1,0		>45		35-45	4-6	<4	2-5	30-40
3262	<=1,0		>45		35-45	4-6	<5	3-6	30-45
MATERIAL	RESILIENCE	MAX. TEM	PERATURE (DIN 269	00) MAX. PRESSURE ([	<u>DIN 2690)</u>				
3000	10-15	500		40					
3200	10-15	500		40					
3250	10-15	500		40					

250

100

100

100

100

KSW: Compressive strain and compressibility under a surface pressure of 35 N/mm<sup>2</sup>

500

500

500

500

500

KRW: Recovery after relief from 35 N/mm<sup>2</sup> to 1 N/mm<sup>2</sup>

WSW: Settling (creeping) of the gasket under a surface pressure of 50 N/mm<sup>2</sup> at 300°C after 16 h

WRW: Recovery after relief from 50 N/mm<sup>2</sup> to 1 N/mm<sup>2</sup>

The percentage changes in thickness of KSW, KRW, WSW and WRW are referred to the initial thickness of the gasket



3054

3112 3202

3262

15-20

15-20

15-25

### GRAFOTHERM

### **GASKET MATERIALS OUT OF EXPANDED GRAPHITE**

<b>RELEASES</b>		
GRAFOTHERM	3000	BAM DVGW
GRAFOTHERM	3054	BAM DVGW G_LLOYD FIRE TA: LUFT
GRAFOTHERM	3064	BAM DVGW
GRAFOTHERM	3200	КТШ
GRAFOTHERM	3202	BAM DVGW
GRAFOTHERM	3204	BAM DVGW
GRAFOTHERM	3250	BAM DVGW
GRAFOTHERM	3252	BAM DVGW G_LLOYD SAFE
GRAFOTHERM	3262	
GRAFOTHERM	3264	BAM DVGW



UNIVERSAL

150

pressure (bar)

**HIGH PRESSURE** 

#### **DIMENSIONS AND SHAPES AVAILABLE**

80 100

\_ OBU /\_

0 20 pressure (bar)

40 60

sheets at a dimension of 1000x1000 mm washers up to diam. 990 mm washers exceeding diam. 990 mm in joined design punched gasket materials as per DIN standards, according to customers drawings or sample



### HECKER<sup>®</sup> EURAFLON<sup>®</sup>

 EURAFLON®
 3710

 EURAFLON®B
 3770

 EURAFLON®A
 3780

 EURAFLON®S
 3790



**EURAFLON<sup>®</sup>** 

EURAFLON<sup>®</sup> A 3780 and EURAFLON<sup>®</sup> S 3790 are PTFE-Gasket-Sheet materials manufactured by a unique process which provides a high fibrillation level to overcome the creep relaxation and cold flow problem associated with normal (skived or moulded) PTFE sheets. EURAFLON<sup>®</sup> A 3780 is produced from virgin PTFE resin filled with Barium Sulphate. EURAFLON<sup>®</sup> S 3790 is produced from virgin PTFE resin filled with Silica.

EURAFLON<sup>®</sup> B 3770 is a structured PTFE-Gasket-Sheet manufactured by a unique process which provides a high level of fibrillation to overcome the creep relaxation and cold flow problems associated with normal (skived or moulded) PTFE sheets. EURAFLON<sup>®</sup> B 3770 is produced from virgin PTFE resin filled with hollow glass micro spheres.

#### Applications:

EURAFLON<sup>®</sup> 3710 is an universally gasket sheet for all applications. It is suitable for all types of flanges, nearly all media, a wide temperature range and even for applications with the toughest demands on purity. It is inharently clean and non-toxic. The compressed gasket of multi-directionally expanded PTFE has exeptional mechanical strength which enables operation with less creep at higher temperatures than other types of PTFE sheets. The excellent malleability of EURAFLON<sup>®</sup> 3710 makes the repairing of small damages and irregularities of the sealing area or flange surface unnecessary. Gasket cuts from EURAFLON<sup>®</sup> 3710 are dimensionally stable and they do not get wider when compressed. This allows narrow flange faces to be sealed safely, without causing turbulences in the flow of the media. The gasket is quick and simple to install. The used gasket can be removed quickly, easily and without residue.

EURAFLON® A 3780 is suitable for general service with a wide variety of fluids, strong caustics, moderate acids (including hydrofluoric), chlorine, gases, water, steam, hydrocarbons, hydrogen and aluminium fluoride.

EURAFLON® S 3790 is suitable for services with high pressures and temperature, especially in chemical processing and hydrocarbon plants in strong acids (except hydrofluoric), solvents, hydrocarbons, water, steam and chlorine.

EURAFLON<sup>®</sup> B 3770 is suitable for service with a wide variety of aggresisive fluids, including hydrocarbons, acids and caustics, solvents, water, steam, hydrogen-peroxide, refigerants etc.. The high compressibility of B 3770 makes it particularly suitable for use with stress sensitive and/or fragile flanged joints, e.g. glass, ceramics, plastic etc..

Availability: Sheets of 1500 x 1500 mm in 1,5mm, 2,0mm and 3,0mm thickness

	EURAFLON® 3710	EURAFLON® B 3770	EURAFLON® A 3780	EURAFLON® S 3790
colour pH pressure temperature compressibility Recovery Qmin, 0,01[MPA] QSmin, 0,01[MPA] Qcrit[MPA] spec. leakage rate I/( Releases	white 0-14 200 bar -240 - +270°C 45 14 23 < 10 > 240 (sm) 2,6x10 <sup>-7</sup>	blue 0-14 max. 83 bar -210°C - +260°C min. 30 30 < 10 < 10 > 240 3,4x10 <sup>-6</sup>	white 0-14 max. 83 bar -210°C - +260°C 4 - 10 40 < 10 < 10 > 240 5,9x10 <sup>-7</sup>	yellow / brown 0-14 7 - 12 ASTM F36A 34MPa 40 ASTM F36A 34MPa < 10 prEN 13555 He,40bar < 10 prEN, 13555 He,40bar > 240 prEN 13555 1,1x10 <sup>-6</sup> VDI 2440
	BAM LUFT FMPA	TA- LUFT	BAM LTAT DVGW	BAM

### **HECKER® CENTAUR® 3650**



#### STRUCTURE

CENTAUR<sup>®</sup> 3650 is produced according to the calender process. It consists of carbon fibres and high-temperature rubbers. The sheets are given a thin anti-adhesive surface during production. The chemical properties are not affected by this process.

#### **TECHNICAL CHARACTERISTICS**

CENTAUR<sup>®</sup> 3650 is high-temperature and high pressure gasket with very good chemical resistance and for steam-uses. It is also perfectly suitable for the chemical and petrochemical industries.

#### **CHEMICAL RESISTANCE**

Resistant to alkaline solutions

#### RELEASES

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#### **STANDARD VERSION**

Colour: black Standard delivery formats 1500 x 1500 mm Others on enquiry

Thickness 0,5 up to 4 mm

### APPLICATIONS DEPENDING ON PRESSURE AND TEMPERATURE



TECHNICAL DATA (2 mm)	VALUE	UNIT	NORM
density	-	g/cm³	DIN 28090 (2)
cold heading value (KSW)	10	%	DIN 28090 (2)
cold resilience value (KRW)	3	%	DIN 28090 (2)
warm setting value (WSW)	8	%	DIN 28090 (2)
warm resilience value (WRW)	3	%	DIN 28090 (2)
spec. leakage rate	-	mg/s*m	DIN 28090 (2)
gas tightness	0,6	cm³/min	DIN 3535/6
compressive strength (16h, 175°C)	25	N/mm <sup>2</sup>	DIN 52913
compressive strength (16h, 300°C)	-	N/mm <sup>2</sup>	DIN 52913
compressibility	9	%	ASTM F 36J
recovery	55	%	ASTM F 36J
tensile strength transverse	-	N/mm <sup>2</sup>	DIN 52910
max. operating temperature	300	°C	
max. temperature (temporary)	400	°C	
max. pressure	100	bar	



### **COMBINATION AND SPECIAL SEALS**

### EURAFLON® (PTFE) COATED GASKET MATERIALS ED-RE1



Special models such as "coating outside closed" or "coating inside and outside closed" are also available.

#### STANDARD MATERIALS

Coating = WS 7010(PTFE virginal) or WS 7060 (TFM) Insert = FA materials according to DIN 28091, part 2

The use of a PTFE coating limits the maximal application data to 180°C at 10 bar and a surface pressure of 35N/mm<sup>2</sup>.

For slightly diffusing media we recommend the type 4 with diffusion block (edge reinforcement).

#### **GASKETS WITH INNER FLANGE**

Gasket materials are equipped with an inner flange in order to increase the creep resistance and the blow-out safety. We use stainless steel 1.4571 as a standard flange material. Other materials are available upon request. The flange width ranges between 3-9 mm depending on the size of the seal. The gasket inserts are available in fiber (FA), graphite (GR) or PTFE (TF) materials. Available dimensions: according to DIN 2690 and ASME (ANSI) B16.21 specifications and according to customer specification. Maximum outer diameter: 860 mm

Flanged model:

Seamless: Gaskets according to DIN 2690 DN15 – DN 300 and DN 400. Gaskets according to ASME (ANSI) B 16.21 DN ½" – DN 12" Welded: Gaskets according to DIN 2690 all dimensions > DN 250 available.





Flat gasket Inner border

No generally valid information can be given regarding tolerances for gasket materials. The actual dimensional accuracy depends on various factors, e.g. the machining procedure, material thickness, punching tools etc.

As an example, punched seals (in the case of smaller dimensions) can be produced with greater accuracy than larger seals, which are manually cut.

For our machining procedure, please refer to the following table of tolerances.

Tolerances for inside and outside diameter (di and Da):

di (mm)	Tol. (mm)	Da (mm)	Tol. (mm)
10-30	+0,5	10-30	-0,5
> 30-100	+0,8	> 30-100	-0,8
> 100-300	+1,0	> 100-300	-1,0
> 300-700	+1,5	> 300-700	-1,5
> 700-1500	+2,5	> 700-1500	-2,5

Tolerances for thicknesses:

Thickness in mm	0,5	1,0	1,5	2,0	3,0	4,0
Tol. (+/-)	0,1	0,1	0,15	0,2	0,3	0,4

If smaller tolerances are required, please contact us.





### **ASSEMBLY INSTRUCTIONS FOR**

### **FA GASKET MATERIALS**

Assembly instructions for FA Gasket materials (CENTELLEN® - HD WS 3822 / WS 3820 / DSL 3670 / UDP 3620 / EUROPIL® WS 3640) for flanges with smooth surface and a nominal pressure up to 40 bar.

#### 1. The following should be observed before assembly

#### 1a) The correct thickness of the seal

The seal thickness of CENTELLEN® materials should be reduced with relation to IT.

It-(asbestos) Seal	<u>FA-Seal</u>
< 0,8 mm	< 0,8 mm
1,0 mm	0,8 mm
1,5 mm	1,0 mm
2,0 mm	1,5 mm
3,0 mm	2,0 mm

UDP 3620, DSL 3670 and EUROPIL® WS 3640 are similar to It materials with respect to their behaviour. (DSL is available in thicknesses of 0,8 mm and thicker).

#### 1b) The surface treatment of the seal

The standard form of delivery for the seals is with an anti-adhesive-coating on both surfaces (OBS). Other coatings are also possible (e.g. graphite). Seals that have been treated with an anti-stick coating must not be retreated by the customer.

#### 2. Temperature resistance

The application limitations for the individual sealing materials should be observed !

#### 3. Surface to be sealed

The quality of the surface of the flange or casing to be sealed

For opposite seal surfaces (flange, casing), a surface roughness of RZ  $\,=\,$  12,5 and 50  $\mu m$  is recommended. When the surface roughness RZ  $\,$  is 160  $\mu m$ , the seal thickness should not be less than 1,5 mm.

The grooves of the flange should not be in a spiral form. The grooves should be seperated!

#### 4. Necessary seal pressure

Tightening of the CENTELLEN<sup>®</sup> Seal at an inner pressure of 25 bar and a temperature of 200°C. The information is not a binding guideline for shaft screws -> DIN 13, Part 13,  $\mu$ ges= 0.14 at the use of 80% of the shaft-screw-border. Screw-thread and female-nut are pasted (look at the limit temperature of the paste).

\* AT THE CALCULATION FOR THE BEST DENSITY THE MAXIMUM TWISTING MOMENT IS OVERSTEPPED. BECAUSE OF THIS FACT THE BASIS FOR THE CALCULATION IS THE MAXIMUM TWISTING MOMENT OR THE SCREW. THE RESULT IS A LITTLE LOWER SURFACE PRESSURE FOR THE SEALING. BUT THIS SURFACE PRESSURE IS MUCH HIGHER THAN THE REQUIRED MINIMUM SURFACE PRESSURE.

[FOR THE CALCULATION VALUES OF THE "BSK-SCHRAUBENWÄHLER (BAUER+ SCHAURTE KARCHER GMBH, FURTHER STR. 24-26, 41462 NEUSS) HAVE BEEN USED.]

For our sealing-types DSL 3670, UDP 3620 and EUROPIL® WS 3640 there are higher surface pressures recommended. We would be pleased to provide customers with screwingmaterial and the recommended tightening pressure.

#### 5. Maintaining the Seal pressure / tightening of CENTELLEN® sealings

CENTELLEN<sup>®</sup> should be tightened when cold several hours after assembly. Is a tightening in cold conditions not possible, you should tighten the screws 30 to 60 minutes after the warming. UDP 3620/DSL 3670 and EUROPIL<sup>®</sup> WS 3640 can be tightened at higher temperatures and for a longer period of time.













### **HECKER® GASKET RINGCUTTER**

The HECKER<sup>®</sup> Gasket-Ringcutter is concepted to produce an excellent sealing ring up to a diameter of 1000 mm. Gasket sheets up to a thickness of 12 mm can be cut. The Ringcutter is equipped with a changeable cuttting knife of hardened stainless steel. The HECKER<sup>®</sup> Ringcutter is simple in handling and available in 2 sizes.



Size 1: Junior Rings from 30 – 275 mm (from cornerpoint step by step to 50mm diameter) Ordernr. FZ 100002

Size 2: Senior Rings from 30 – 500 mm (from cornerpoint step by step to 1000mm diameter)

Ordernr. FZ 100003

#### **OPERATING MANUAL**

- 1. Cut initial hole 14 mm, with the integrated hole punching tool.
- 2. Mount the seeling sheet
- 3. Adjust outside diameter on the scale and cut.
- 4. Adjust inside diameter on the scale and cut. Finished !

( More operating details and useful tips can be found on the backside of the cutter )

#### **AVAILABLE REPLACEMENT PARTS**

Workingsheet Plastic Size 1 Beam with Scale and Bearing Size 1 Centerpin with knurled nut Tapped bushing M14 with 8mm hole Cuttingknife Workingsheet Plastic Size 2 Beam with Scale and Bearing Size 2 Acrylicglass slide with red mark Holepuncher 14mm, hardened Cuttingknife clamp



# REALS FROM A ALL SEALS FROM A SINGLE SUPPLIER !

Dicht

HECKER<sup>®</sup> specializes in the production of gaskets and sealing products. Wherever there's a demand for high-quality gaskets and seals - to ensure the functionality and safety of machines and entire industrial facilities - you'll find products from HEK-KER<sup>®</sup>. A tradition that's over a century old.

Naturally, our products are continually tested and certified in accordance with the relevant standards. In our own labs and on our test benches we test tensile and tear strength, resistance to heat and cold, and of course resistance to chemical substances. This applies not only to current series production, but also to technical innovations that allow us to satisfy the constantly increasing demands of the market.

"Need a seal at all ? Give HECKER<sup>®</sup> a call!" - for our customers, nothing could be more natural. Our custormers specify the application, the operating conditions, and the quantities required. Based on this information, our engineers, chemists and technicians work out proposals that can be implemented quickly and economically.

Solutions for all sealing applications from a single supplier - that's the service that HECKER<sup>®</sup> provides ... and also our slogan, which sums up our corporate philosophy.



**KET5** <u>Iable:</u> re based gaskets (FA) according N 28091 part 2 N 28091 part 2 DTFE based gaskets (TF) according to DTFE based gaskets (GR) Expanded graphite based gaskets (GR) Expanded graphite based gaskets (GR) Expanded graphite based gaskets (GR) (see individual brochure for dimensions and (see individual brochure for dimensions and thickness) Ready to install seals (punched) Ready to install seals (punched) action of PTFE covering) of metal or PTFE covering)

> Applications: - flanges - screw fittings - closures (hand and manholes) - closures (hand a

itors, agitating s, ventila er covers and doors ording to the

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PU-plastic-connections PU-metal-connections scrapers parts according to customer drawings lip seals HECKER Polyurethan-Erzeugnisse

HECKER PTFE-Erzeugnisse

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Materials: Vulkollan<sup>®</sup> by Bayer Leverkusen different hardnesses polyesterurethane particularly stable against hydrolysis polyurethane different hardnesses, injection moulded or cast

POLYURETHANE PRODUCTS





GmbH

Spezialfabriken HECKER® WERKE und Reibelemente

> Arthur-Hecker-Str. 1 D-71093 Weil im Schönbuch Telefon ++ 49 71 57 560-0 Telefax ++ 49 71 57 560-200 www.heckerwerke.de mail@heckerwerke.de

#### **HECKER®** DICHTUNGSPLATTEN

Lieferprogramm: Dichtungsplatten auf Basis von Fasern (FA) nach DIN 28091 Teil 2

Dichtungsplatten auf Basis von PTFE (TF) nach DIN 28091 Teil 3

Dichtungsplatten auf Basis von expandiertem Grafit (GR) nach DIN 28091 Teil 4 (Abmessungen und Dicken siehe Einzelprospekt)

Einbaufertige Dichtungen (gestanzt), auch mit Innenbördel aus Metall oder mit PTFE-Hülle

- Einsatzgebiete:
- Flansche
  Verschraubungen
- Verschlüsse (Hand- und Mannlöcher)
  Deckel (Behälter, Kompressoren und Getriebe)
  Gehäuse (Armaturen, Pumpen)

#### **HECKER®** GASKETS

Available: Fibre based gaskets (FA) according to DIN 28091 part 2

PTFE based gaskets (TF ) according to DIN 28091 part 3

Expanded graphite based gaskets (GR) according to DIN 28091 part 4 (see individual brochure for dimensions and thickness)

Ready to install seals (punched) (also available with inner flange made of metal or PTFE covering)

- Applications: flanges screw fittings closures (hand and manholes) - lids (containers, compressors, transmissions)
  - casings (fittings, pumps)

**HECKER®** PLAQUES D'ÉTANCHÉITÉ

Gamme de fourniture: Plaques d'étanchéité à base de fibres (FA) selon DIN 28091 partie 2

Plaques d'étanchéité à base de PTFE (TF) selon DIN 28091 partie 3

Plaques d'etanchéité à base de graphite expansé (GR) selon DIN 28091 partie 4 (dimensions et épaisseurs voir les différents prospectus)

Joints prêts au montage (estampés) (également avec bordure intérieure en métal ou avec revêtement PTFE)

Domaines d'utilisation:

- Brides
  Raccords vissés
- Obturateurs (trous et poing et trous d'homme)
   Couvercles
- (récipients, compresseurs et réducteurs) Corps (robinetterie, pompes)

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HECKER

HD 3822 HECKER HD 3822 HECKER HD 3822 HD 3822

#### **HECKER® GUARNIZIONI PIATTE**

Programma consegne: Fogli di guarnizione su base di fibre (FA) come da DIN 28091 Parte 2

Fogli di guarnizione su base di PTFE (TF) come da DIN 28091 Parte 3

Fogli di guarnizione su base di grafite espansa come da DIN 28091 Parte 4 (per dimensioni e spessori vedere i singoli opuscoli)

Guarnizioni pronte per il montaggio (stampate) (anche con flangia interna in metallo o con involucri in PTFE)

<u>Settori di utilizzazione:</u> – flange

- raccordi a vite
- chiusure (a mano e a passo d'uomo)
  coperchi (serbatoi, compressori e ingranaggi) alloggiamenti (strumenti pompe)

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### CK 2 R







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![](_page_34_Picture_3.jpeg)

![](_page_34_Picture_4.jpeg)

### HECKER® PROGRAMM HECKER® PRODUCT LINE GAMME HECKER® PROGRAMMA HECKER®

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![](_page_35_Picture_2.jpeg)

FORSCHUNG & ENTWICKLUNG RESEARCH & DEVELOPMENT RECHERCHES & DÉVELOPPEMENT RICERCA & EVOLUZIONE

PTFE-ERZEUGNISSE

PTFE PRODUCTS

**PRODUITS EN PTFE** 

PRODOTTI IN PTFE

AEGIRA® GLEITRING-DICHTUNGEN

AEGIRA® MECHANICAL SEALS

AEGIRA° GARNITURES MÉCANITUES D'ÈTANCHÉITÉ

AEGIRA® GUARNIZIONI A TENUTA MECCANICHE

STOPFBUCHSPACKUNGEN STUFFING BOX PACKINGS GARNITURES PRESSE-ÉTOUPE GUARNIZIONI PREMISTOPPA

![](_page_35_Picture_13.jpeg)

GSM<sup>®</sup> DICHTUNGEN FÜR HYDRAULIK UND PNEUMATIK

GSM<sup>®</sup> SEALS FOR HYDRAULIC AND PNEUMATIC SYSTEMS

GSM<sup>®</sup> JOINTS POUR SYSTÈMES HYDRAULIQUES ET PNEUMATIQUES

GSM<sup>®</sup> GUARNIZIONI PER SISTEMI HIDRAULICI E PNEUMATICI

![](_page_35_Picture_18.jpeg)

POLYURETHAN-PRODUKTE POLYURETHANE PRODUCTS PRODUTS EN POLYURÉTHAN PRODOTTI IN POLIURETANO

![](_page_35_Picture_20.jpeg)

![](_page_35_Picture_21.jpeg)

DICHTUNGSPLATTEN GASKETS PLAQUES D'ÉTANCHÉITÉ LASTRE DI GUARNIZIONE

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HECKEB 까지독각:<

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