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为火电站、核电站、石油化工、油田开采、炼油、造船、制糖、造纸、给排水、污水处理等工业用泵提供机械密封的设计、制造和维修服务。

上海博格曼有限公司
BURGMANN SHANGHAI LTD.

广州勤固流体科技有限公司
gz-keepgoing.com
资料整理：广州勤固流体科技有限公司
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TÜV CERT认证机构之TÜV Industry Service Gmbh根据TÜV CERT程序兹证明：

上海博格曼有限公司已在机械密封及其附属系统的设计、制造和销售领域，建立并应用了如下管理体系。

审核报告号为79244,证明该质量体系满足了DIN EN ISO9001:2000标准的要求。

审核报告号为 065632,证明该职业健康安全管理体系制度符合了OHSAS18001:1999标准的要求。

审核报告号为 065632,证明该环境管理体系满足ISO14001：2004标准的要求。

The TÜV CERT Certification Body of TÜV Industry ServiceGmbh, certifies in accordance with TÜV CERT procedures that: Burgmann Shanghai Ltd. has established and applies a quality management system of Design, Manufacturing and Sales of Mechanical Seals and Supporting Systems.

An audit was performed, Report No.79244, Proof has been furnished that the requirements according to DIN EN ISO9001:2000 are fulfilled.

An audit was performed, Report No.065632, Proof has been furnished that the requirements of profession health safety according to OHSAS18001:1999 are fulfilled.

An audit was performed, Report No.065632, Proof has been furnished that the requirements according to ISO14001:2004 are fulfilled.

目 录

广州勤固流体科技有限公司
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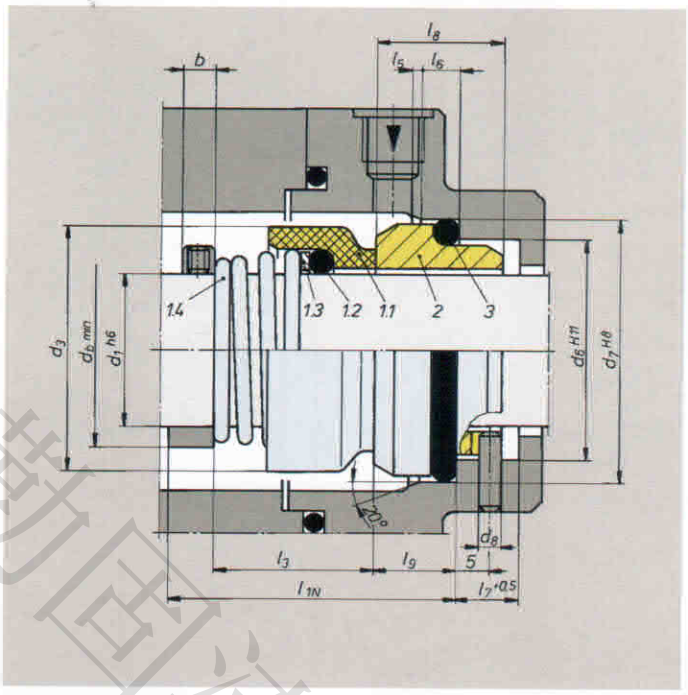
M2N



- **Single seal**
- **Unbalanced**
- **Conical spring**
- **Dependent on direction of rotation**
- **To DIN 24960***

The M2 mechanical seal range features a spring loaded solid carbon graphite seal face. They are cost effective for basic applications such as circulating pumps for water and heating systems.

- 单端面密封
- 非平衡型
- 锥形弹簧
- 旋转方向固定
- 符合 DIN 24960标准

M2系列的机械密封，其旋转环为石墨，主要适用于介质为水的循环泵和加热系统。

Operating limits 运行参数

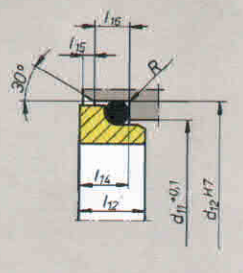
d_1 = 6...38 mm *0.25" ...1.5"*
p_1 = 10 bar *145 PSI*
t = −20...180 °C *−4°F...355°F*
v_g = 15 m/s *50 ft/s*
Axial movement轴向窜动量: ± 1.0mm

Seal designations 密封环代号

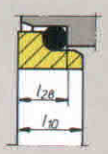
Rotating unit 旋转环部件	Stationary seats 静止环		
	G 4	G 6	G 9
M2	M2	M2 N4	M2N
B	Q_1;S; (Q_2;V)	Q_1;S; (Q_2;V)	Q_1;Q_2 S;V

Stationary seats 静止环

G4



G6 toDIN 24960



Unquoted dimensions as for Item2.

d_1	d_3	d_6	d_7	d_8	d_{11}	d_{12}	d_b	l_{1N}	l_3	l_5	l_6	l_7	l_8	l_9	l_{10}	l_{12}	l_{14}	l_{15}	l_{16}	l_{21}	l_{28}	b	R
6	15	–	–	–	11.8	16.0	8	–	–	–	–	–	–	–	–	6.5	5.6	1.2	3.8	10.9	–	–	1.2
8	18	–	–	–	15.5	19.2	11	–	–	–	–	–	–	–	–	8.0	7.0	1.2	3.8	15.5	–	–	1.2
10*	20	17	21	3	15.5	19.2	13	40	17.5	1.5	4	8.5	17.5	10.0	7.5	7.5	6.6	1.2	3.8	15.9	6.6	8	1.2
12*	22	19	23	3	17.5	21.6	16	40	17.5	1.5	4	8.5	17.5	10.0	7.5	6.5	7.0*	1.2	3.8	16.0	6.6	8	1.2
14*	25	21	25	3	20.5	24.6	18	40	17.5	1.5	4	8.5	17.5	10.0	7.5	6.5	7.0*	1.2	3.8	16.0	6.6	8	1.2
15	27	–	–	–	20.5	24.6	19	–	–	–	–	–	–	–	–	7.5	6.6	1.2	3.8	17.4	–	–	1.2
16*	27	23	27	3	22.0	28.0	21	40	19.5	1.5	4	8.5	17.5	10.0	7.5	8.5	7.5	1.5	5.0	19.0	6.6	8	1.5
18*	30	27	33	3	24.0	30.0	23	45	20.5	2.0	5	9.0	19.5	11.5	8.5	9.0	8.0	1.5	5.0	20.5	7.5	8	1.5
20*	32	29	35	3	29.5	35.0	26	45	22.0	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	22.0	7.5	8	1.5
22*	35	31	37	3	29.5	35.0	28	45	23.5	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	23.5	7.5	8	1.5
24*	38	33	39	3	32.0	38.0	30	50	25.0	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	25.0	7.5	8	1.5
25*	40	34	40	3	32.0	38.0	31	50	26.5	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	26.5	7.5	8	1.5
26	41	–	–	–	34.0	40.0	32	–	–	–	–	–	–	–	–	9.0	8.0	1.5	5.0	26.5	–	–	1.5
28*	43	37	43	3	36.0	42.0	35	50	26.5	2.0	5	9.0	19.5	11.5	8.5	10.0	9.0	1.5	5.0	26.5	7.5	8	1.5
30	47	–	–	–	39.2	45.0	37	–	–	–	–	–	–	–	–	11.5	10.5	1.5	5.0	25.0	–	–	1.5
32	48	–	–	–	42.2	48.0	39	–	–	–	–	–	–	–	–	13.0	10.5	1.5	5.0	28.5	–	–	1.5
35	53	–	–	–	46.2	52.0	43		–	–	–	–	–	–	–	13.5	11.0	1.5	5.0	28.5	–	–	1.5
38	56	–	–	–	49.2	55.0	47	–	–	–	–	–	–	–		13.0	10.3	1.5	5.0	32.0	–	–	1.5

*)Installation length from G4-seats

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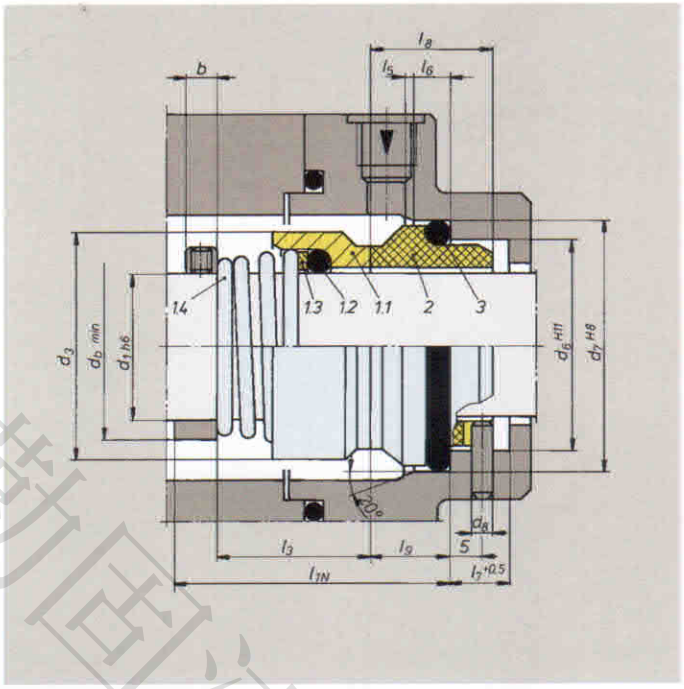
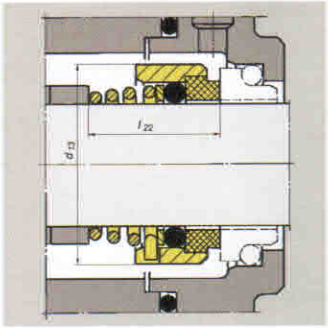
M3N





M32

Item no's and descriptions as for type M3N, but with the **seal face(carbon)** shrink-fitted into the seal face carrier (Item no.1.1).

密封面由石墨镶装。

- **Single seal**
- **Unbalanced**
- **Conical spring**
- **Dependent on direction of rotation**
- **To DIN 24960***

- 单端面密封
- 非平衡型
- 锥形弹簧
- 旋转方向固定
- 符合 DIN 24960标准

The M3 mechanical seals are immensely popular. Extremely rugged and reliable, they cover a wide spectrum of applications - in water pumps, sewage pumps, submerged pumps, chemical pumps, etc.

M3系列的机械密封，应用广泛，可靠性好。适用于清水泵、污水泵、潜水泵、化工泵等。

Operating limits 运行参数

d_1 = 6...80 mm *0.25" ...3.125"*
(M 37 G from d_1 = 16mm/
M37 up to d_1 = 55mm)
p_1 = 10 bar *145 PSI*
Axial movement轴向窜动量: ± 1.0mm

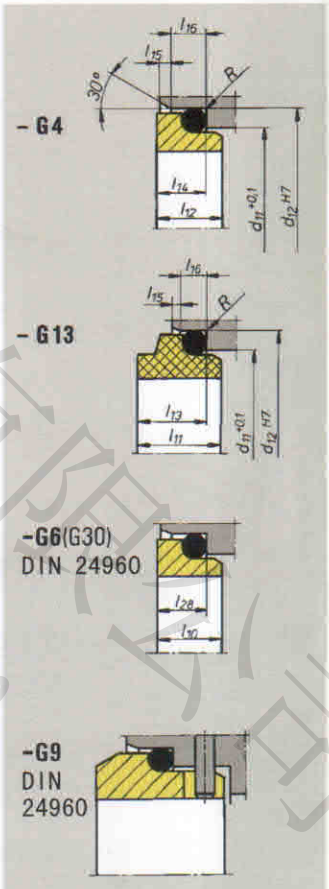
t = −20...180 °C *−4 °F....355 °F*
(M37 up to 120 °C)
v_g = *10(15)m/s 33(50) ft/s*

Combination of materials and seal types 材料组合与密封型号

Rotating unit 旋转环部件	Stationary seats 静止环									
	G4			G13	G6[3]			G9		
	S	V	Q_1 (Q_2)	A;B	S	V	Q_1 (Q_2)	A;B	V	Q_1 (Q_2)
M3(S)	–	–	–	M3	–	–	–	M3N	–	–
M32(A;B)	M32	M32	M32	–	M32N4	M32N4	M32N4	–	M32N	M32N
M37(U_1)	–	–	M37	M37	–	–	M37N4	M37N	–	M37N
M37G (Q_{12};Q_{22}; U_{22})	–	–	M37G	M37G	–	–	M37GN4	M37GN	–	M37GN

[3]Stationary seat G 6 is also available in materials A and B (as style G 30) (longer fitting length than G6).
All material designations according to DIN 24960.
See inside the back cover of this manual.

Stationary seats 静止环



Unquoted dimensions as for Item2.

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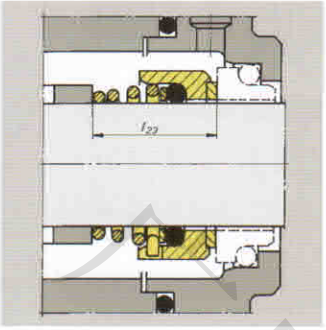

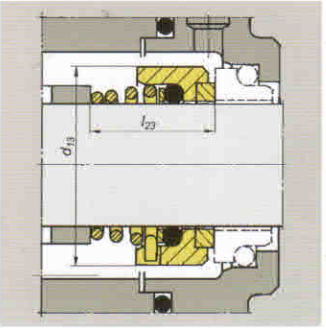

M37

(d_1 max. 55mm)
Item no's and descriptions as for type M3N, but with the **seal face brazed** (tungsten carbide) to the seal face carrier (Item no.1.1).

密封面由碳化钨用铜焊接。

M37G

Item no's and descriptions as for type M3N, but with the **seal face shrink-fitted** (silicon carbide) into the seal face housing (Item number 1.1).

密封面由碳化硅镶装。

d_1	d_3	d_6	d_7	d_8	d_{11} [1]	d_{12} [1]	d_{13}	d_b	l_{1N}	l_3	l_5	l_6	l_7	l_8	l_9	l_{10}	l_{11}	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}	l_{21}	l_{22}	l_{23}	l_{28}	b [2]	R
6	14	–	–	–	11.5	16.0	16	8	–	–	–	–	–	–	–	–	9.0	6.5	7.1	5.6	1.2	3.8	10.5	11.9	–	–	–	1.2
8	18	–	–	–	15.5	19.2	18	11	–	–	–	–	–	–	–	–	9.0	8.0	7.1	7.0	1.2	3.8	15.5	16.9	–	–	–	1.2
10*	19	17	21	3	15.5	19.2	20	13	40	15.5	1.5	4	8.5	17.5	10.0	7.5	9.0	7.5	7.1	6.6	1.2	3.8	15.5	16.9	–	6.6	(8)	1.2
12*	21	19	23	3	17.5	21.6	22	16	40	16.0	1.5	4	8.5	17.5	10.0	7.5	10.0	6.5	7.6	5.6	1.2	3.8	15.5	17.4	–	6.6	(8)	1.2
14*	23	21	25	3	20.5	24.6	24	18	40	16.5	1.5	4	8.5	17.5	10.0	7.5	10.0	6.5	7.6	5.6	1.2	3.8	15.5	17.4	16.5	6.6	(8)	1.2
15	24	–	–	–	20.5	24.6	25	19	–	–	–	–	–	–	–	–	11.0	7.5	8.6	6.6	1.2	3.8	15.5	17.4	–	–	–	1.2
16*	26	23	27	3	22.0	28.0	26	21	40	18.0	1.5	4	8.5	17.5	10.0	7.5	11.5	8.5	9.0	7.5	1.5	5.0	17.5	19.5	16.5	6.6	(8)	1.5
18*	29	27	33	3	24.0	30.0	31	23	45	19.5	2.0	5	9.0	19.5	11.5	8.5	12.5	9.0	10.0	8.0	1.5	5.0	18.5	20.5	18.0	7.5	(8)	1.5
20*	31	29	35	3	29.5	35.0	34	26	45	22.0	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	20.0	22.0	19.0	7.5	(8)	1.5
22*	33	31	37	3	29.5	35.0	36	28	45	21.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	21.5	23.5	20.5	7.5	(8)	1.5
24*	35	33	39	3	32.0	38.0	38	30	50	23.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	23.0	25.0	22.0	7.5	(8)	1.5
25*	36	34	40	3	32.0	38.0	39	31	50	26.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	24.5	26.5	23.5	7.5	(8)	1.5
26	37	–	–	–	34.0	40.0	40	32	–	–	–	–	9.0	–	–	–	13.0	9.0	10.0	8.0	1.5	5.0	24.5	26.5	23.5	–	–	1.5
28*	40	37	43	3	36.0	42.0	42	35	50	26.5	2.0	5	9.0	19.5	11.5	8.5	14.0	10.0	11.0	9.0	1.5	5.0	24.5	26.5	24.5	7.5	(8)	1.5
30*	43	39	45	3	39.2	45.0	44	37	50	26.5	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	24.5	25.0	24.5	7.5	(8)	1.5
32*	46	42	48	3	42.2	48.0	46	39	55	28.5	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	28.0	28.5	28.0	7.5	(8)	1.5
33*	47	42	48	3	–	–	47	40	55	28.5	2.0	5	9.0	19.5	11.5	8.5	–	12.0	–	–	–	–	–	–	–	7.5	(8)	1.5
35*	49	44	50	3	46.2	52.0	49	43	55	28.5	2.0	5	9.0	19.5	11.5	8.5	14.5	12.0	11.5	11.0	1.5	5.0	28.0	28.5	28.0	7.5	(8)	1.5
38*	53	49	56	4	49.2	55.0	54	45	55	33.5	2.0	6	9.0	22.0	14.0	10.0	14.5	11.3	11.5	10.3	1.5	5.0	31.0	32.2	31.0	9.0	7.5	1.5
40*	56	51	58	4	52.2	58.0	56	49	55	36.0	2.0	6	9.0	22.0	14.0	10.0	14.5	11.8	11.5	10.8	1.5	5.0	34.0	34.7	34.0	9.0	(8)	1.5
42	59	–	–	–	53.3	62.0	58	52	–	–	–	–	9.0	–	–	–	17.0	13.2	14.3	12.0	2.0	6.0	35.0	37.3	35.0	–	–	2.5
43*	59	54	61	4	–	–	59	52	60	38.5	2.0	6	9.0	22.0	14.0	10.0	–	13.2	–	–	2.0	–	–	–	–	9.0	7.5	2.5
45*	61	56	63	4	55.3	64.0	61	55	60	39.5	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	36.5	39.2	36.5	9.0	(8)	2.5
48*	64	59	66	4	59.7	68.4	64	58	60	46.0	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	42.0	44.7	42.0	9.0	(8)	2.5
50*	66	62	70	4	60.8	69.3	66	61	60	45.0	2.5	6	9.0	23.0	15.0	10.5	17.0	12.8	14.3	11.6	2.0	6.0	43.0	45.7	43.0	9.5	(8)	2.5
53*	69	65	73	4	–	–	69	64	70	47.0	2.5	6	9.0	23.0	15.0	12.0	–	13.5	–	–	–	–	–	–	–	11.0	8.0	2.5
55*	71	67	75	4	66.5	75.4	71	66	70	49.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	47.0	49.0	47.0	11.0	(8)	2.5
58*	76	70	78	4	69.5	78.4	78	69	70	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	50.0	52.0	50.0	11.0	(8)	2.5
60*	78	72	80	4	71.5	80.4	79	71	70	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	51.0	53.0	51.0	11.0	(8)	2.5
63*	83	75	83	4	–	–	83	74	70	55.0	2.5	6	9.0	23.0	15.0	12.0	–	14.2	–	–	–	–	–	–	–	11.0	(8)	2.5
65*	84	77	85	4	76.5	85.4	85	77	80	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.2	15.3	13.0	2.0	6.0	52.0	54.3	52.0	11.0	(8)	2.5
68*	88	81	90	4	82.7	91.5	88	80	80	55.0	2.5	7	9.0	26.0	18.0	12.5	19.0	14.9	16.0	13.7	2.0	6.0	53.0	55.3	52.7	11.3	(8)	2.5
70*	90	83	92	4	83.0	92.0	90	83	80	57.0	2.5	7	9.0	26.0	18.0	12.5	18.0	14.2	15.3	13.0	2.0	6.0	54.0	56.3	54.0	11.3	(10)	2.5
75*	98	88	97	4	90.2	99.0	98	88	80	62.0	2.5	7	9.0	26.0	18.0	12.5	18.0	15.2	15.3	14.0	2.0	6.0	55.0	56.3	54.0	11.3	(10)	2.5
80*	100	95	105	4	95.2	104.0	103	93	90	61.8	3.0	7	9.0	26.2	18.2	13.0	19.0	16.2	16.3	15.0	2.0	6.0	58.0	59.3	58.0	12.0	10.0	2.5

[1] Fitting dimensions d_{11} and d_{12} only apply type M37G with $D_1 > 16$ mm
[2] Dimensions in brackets lie either above or below L_{1N}
*) According to DIN 24960
For the spring-loaded unit the following dimensions apply:
M3-series:121; M32-series:122; M37..-series: 123; M3..N-series:13.

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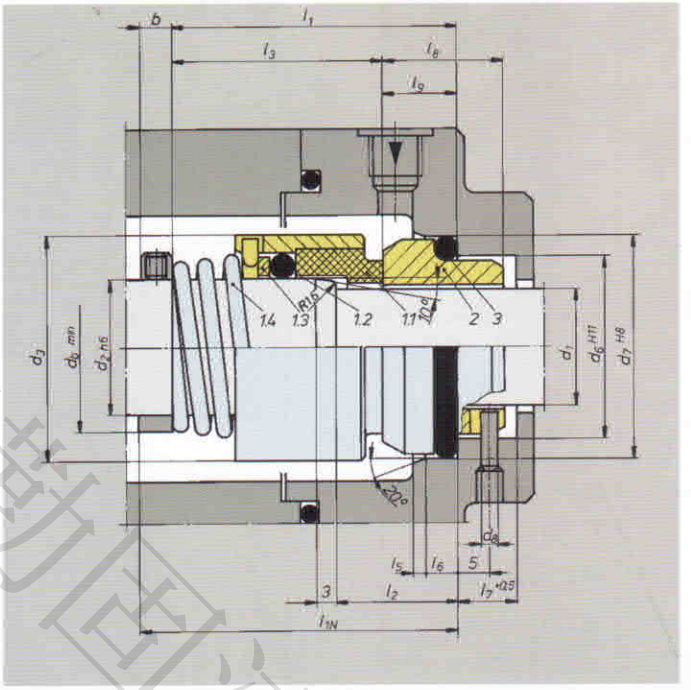
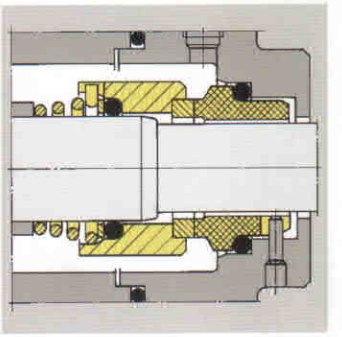
H12N





H17 GN

Dimensions, item no's and descriptions as for H12N, but with the seal face (carbide) shrink-fitted into the seal face housing (Item no.1.1)

H17GN是H12的派生系列，动环由碳化钨镶装，静止环为G9型石墨。

- **Single seal**
- **Balanced**
- **Conical spring**
- **Dependent on direction of rotation**
- **To DIN 24960***

- 单端面密封
- 平衡型
- 锥形弹簧
- 旋转方向固定
- 符合 DIN 24960标准

Mechanical seals of the H12N series are a cost effective version of a balanced seal. They feature the same rugged and reliable construction as the unbalanced spring seals in the Burgmann range. These seals are primarily used in the chemical sector and in water pumps.

H12系列机械密封是应用广泛的平衡型结构。特点与M3系列相同，结构可靠。适用于化工和水泵行业。

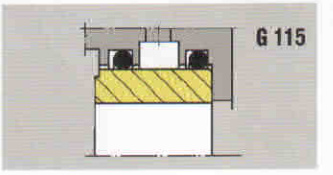
Operating limits 运行参数

d_1 = 10...80 mm *0.4"...3.125"*
p_1 = 25 bar *360 PSI*
H12N:
t −80...220 °C
−175 °F...430 °F
H17GN:
t = −20...180 °C
−4 °F...356 °F
v_g = 15m/s *50ft/s*
Axial movement轴向窜动量: ± 1.0mm

Combination of materials and seal types 材料组合与密封型号

Rotating unit 旋转环部件	G9 stationary seats 静止环				
	S	V	Q_1 (Q_2)	A	B
H12N (A)	●	●	●	—	—
H17GN(Q_{12})	—	—	●	●	●

Stationary seats alternative 可改变静止环结构



The H12N is delivered with a type G 9 stationary seat. Type G115 with shrink-fitted carbide face material (Q_1) for cooling is available by special requset for hot-water applications. In this case, the dimensions of the H12N rotating unit are modified. Please ask about seal designation H127 G 115.

静止环由G9换成G115，由Sic镶入环座上，能有效冷却，可用于热水系统中，派生型号为H127G115。

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d_1	d_2	d_3	d_6	d_7	d_8	d_b	l_{1N}	l_1	l_2	l_3	l_5	l_6	l_7	l_8	l_9	b[2]
10	14	24	17	21	3	18	50	35.5	18	25.5	1.5	4	8.5	17.5	10.0	8.0
12	16	26	19	23	3	21	50	36.5	18	26.5	1.5	4	8.5	17.5	10.0	8.0
14	18	31	21	25	3	23	55	39.5	18	29.5	1.5	4	8.5	17.5	10.0	8.0
16	20	34	23	27	3	26	55	41.0	18	31.0	1.5	4	8.5	17.5	10.0	8.0
18	22	36	27	33	3	28	55	44.0	20	32.5	2.0	5	9.0	19.5	11.5	8.0
20	24	38	29	35	3	30	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	8.0
22	26	40	31	37	3	31	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	8.0
24	28	42	33	39	3	35	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	8.0
25	30	44	34	40	3	37	60	45.0	20	33.5	2.0	5	9.0	19.5	11.5	8.0
28	33	47	37	43	3	40	65	47.0	20	35.5	2.0	5	9.0	19.5	11.5	8.0
30	35	49	39	45	3	43	65	47.0	20	35.5	2.0	5	9.0	19.5	11.5	8.0
32	38	54	42	48	3	45	65	51.0	20	39.5	2.0	5	9.0	19.5	11.5	7.5
33	38	54	42	48	3	45	65	51.0	20	39.5	2.0	5	9.0	19.5	11.5	7.5
35	40	56	44	50	3	49	65	55.0	20	43.5	2.0	5	9.0	19.5	11.5	8.0
38	43	59	49	56	4	52	75	60.0	23	46.0	2.0	6	9.0	22.0	14.0	7.5
40	45	61	51	58	4	55	75	62.0	23	48.0	2.0	6	9.0	22.0	14.0	8.0
43	48	64	54	61	4	58	75	65.0	23	51.0	2.0	6	9.0	22.0	14.0	8.0
45	50	66	56	63	4	61	75	69.0	23	55.0	2.0	6	9.0	22.0	14.0	(8)
48	53	69	59	66	4	64	85	69.0	23	55.0	2.0	6	9.0	22.0	14.0	8.0
50	55	71	62	70	4	66	85	73.0	25	58.0	2.5	6	9.0	23.0	15.0	8.0
53	58	78	65	73	4	69	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	8.0
55	60	79	67	75	4	71	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	8.0
58	63	83	70	78	4	74	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	8.0
60	65	85	72	80	4	77	95	75.0	25	60.0	2.5	6	9.0	23.0	15.0	8.0
63	68	88	75	83	4	80	95	75.0	25	60.0	2.5	6	9.0	23.0	15.0	8.0
65	70	90	77	85	4	83	95	76.0	25	61.0	2.5	6	9.0	23.0	15.0	10.0
68[1]																
70	75	98	83	92	4	88	95	81.0	28	63.0	2.5	7	9.0	26.0	18.0	10.0
75	80	103	88	97	4	93	105	86.0	28	68.0	2.5	7	9.0	26.0	18.0	10.0
80	85	109	95	105	4	98	105	86.0	28	68.0	3.0	7	9.0	26.2	18.2	10.0

[1] No provision for balanced type to DIN

[2] Figure in brackets means installation length is longer than l_{1N} specified by DIN 24960.

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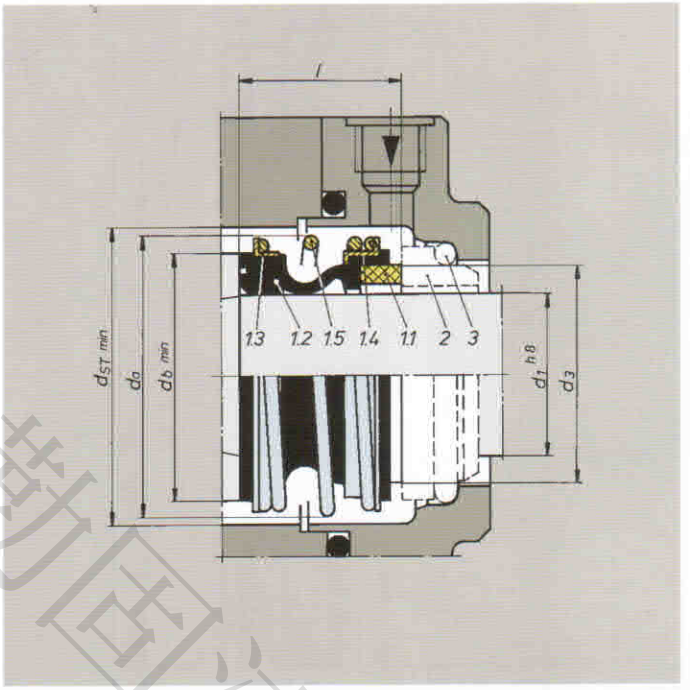
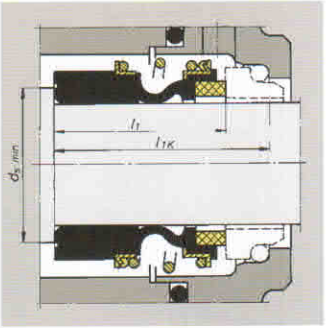
MG1





MG12

Dimensions, items and designatios same as for MG1, but with an extended bellows tail to achieve the **fitting length** l_{1k} according to DIN 24960 in combination with seat G 6 or G 60.($d_{4\,min}$ acc. To DIN 24960 is exceeded).

较MG1大的安装长度见表中l_{1K}

- **Single seal**
- **Unbalanced**
- **Independent of direction of rotation**
- **Elastomer bellows**

Mechanical seals of the MG series are amongst the most commonly used. The bellows is not subjected to any torsional stress and its ingenious design incorporates several functions, as seal face carrier, secondary sealing element and drive collar. The seal face is driven through the spring and "L"-rings. There are no bonded joints and all the face materials are interchangeable without having to modify any dimensions. Highly recommended for duties with media containing solids eg. in waste water and sewage applications.

- 单端面密封
- 非平衡型
- 任意旋向
- 橡胶波纹管

MG系列是最常用的密封。橡胶波纹管不能承受扭应力。它设计精巧，具有多种功能。如：推动动环，既是次级密封件，又作为动环的驱动件。动环通过L环和弹簧传动，不用粘结。动环可更换成各种材料。可在含有颗粒的废水，污水中应用。

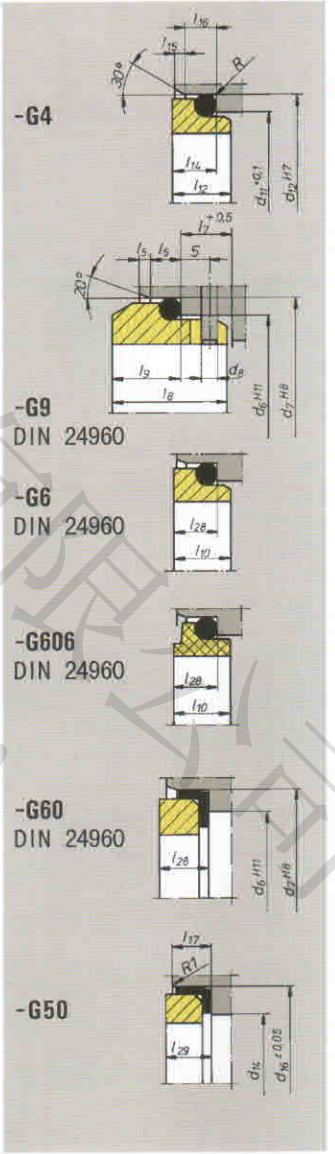
Operating limits 运行参数

d_1 = 10...100 mm *0.4...4"*
p_1 = 12(16) bar *170(230) PSI*
t = −20...120(140) °C
−4 °F...250(284) °F
v_g = 10m/s *33ft/s*

Materials 材料

Seal faces 旋转环	Seats 静止环 G4,G6			G9			G50	G60	G606
	Q_1	S	V	Q_1	S	V	V	Q_1	B
A	●	●	●	●	●	●	●	●	—
Q_1	●	—	—	●	—	—	—	●	—
U_3	—	—	—	—	—	—	—	—	●

Stationary seats 静止环



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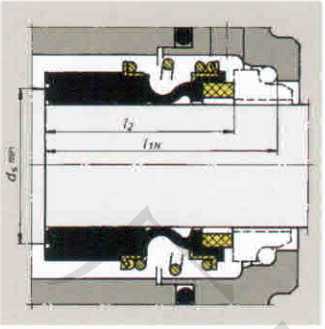

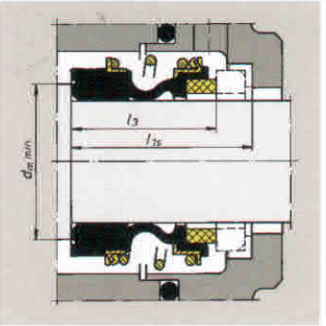

MG13

Dimensions, items and designations same as for MG1, but with an extended bellos tail to achieve the **fitting length l_{1N}** according DIN 24960 in combination with seat G 6 or G 60. (d_{4min} acc to DIN 24960 is exceeded).

较MG1更大的安装长度见表中l_{1N}

MG1S20

Dimensions, items and designations same as for MG1, but with an extended bellows tail to achieve the **special fitting length l_{1s}** in combination with seat G50.

特殊设计的安装长度见表中l_{1S}

RMG (not illustrated)

Identical to MG1,but with a special bellows surface on the shaft. For use in **hot-water pumps at up to 120°C and 25 bar and/or 140°C/16 bar.** Only in combination with seat G 606. d_1=12...38mm

热水泵专用，120°C、25bar或140°C、16bar,d_1=12~38mm，静止环为G606。

MG1 multiple seal

The MG1 can also be used as a double seal in tandem or back-to-back arrangement. Installation proposals can be supplied on request.

MG1也可用于串联式或背对背式的双端面密封。

d_1	d_3	d_6	d_7	d_8	d_{11}	d_{12}	d_{14}	d_{16}	d_a	d_b *)	d_m *)	d_s *)	d_{ST}	l	l_1	l_{1k}	l_{1N}	l_2	l_3	l_5	l_6	l_7	l_8	l_9	l_{10}	l_{12}	l_{14}	l_{15}	l_{16}	l_{17}	l_{28}	l_{29}	R
10	15.7	17	21	3	15.5	19.2	11.0	24.60	22.5	20.5	18	18	24	14.5	25.9	32.5	40	33.4	25	1.5	4	8.5	17.5	10.0	7.5	7.5	6.6	1.2	3.8	7.5	6.6	9.0	1.2
12	17.7	19	23	3	17.5	21.6	13.5	27.80	25.0	22.5	20	20	26	15.0	25.9	32.5	40	33.4	25	1.5	4	8.5	17.5	10.0	7.5	6.5	5.6	1.2	3.8	7.5	6.6	9.0	1.2
14	19.7	21	25	3	20.5	24.6	17.0	30.95	28.5	26.5	22	22	30	17.0	28.4	35.0	40	33.4	25	1.5	4	8.5	17.5	10.0	7.5	6.5	5.6	1.2	3.8	9.0	6.6	10.5	1.2
15	20.8	–	–	–	20.5	24.6	17.0	30.95	28.5	26.5	22	22	30	17.0	28.4	–	–	33.4	25	–	–	–	–	–	–	7.5	6.6	1.2	3.8	9.0	–	10.5	1.2
16	21.0	23	27	3	22.0	28.0	17.0	30.95	28.5	26.5	22	22	30	17.0	28.4	35.0	40	33.4	25	1.5	4	8.5	17.5	10.0	7.5	8.5	7.5	1.5	5.0	9.0	6.6	10.5	1.5
18	23.7	27	33	3	24.0	30.0	20.0	34.15	32.0	29.0	29	26	33	19.5	30.0	37.5	45	37.5	25	2.0	5	9.0	19.5	11.5	8.5	9.0	8.0	1.5	5.0	9.0	7.5	10.5	1.5
19	26.7	–	–	–	–	–	20.0	34.15	37.0	33.0	33	28	38	21.5	30.0	–	–	37.5	25	–	–	–	–	–	–	–	–	–	–	9.0	–	10.5	–
20	26.7	29	35	3	29.5	35.0	21.5	35.70	37.0	33.0	33	28	38	21.5	30.0	37.5	45	37.5	25	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	9.0	7.5	10.5	1.5
22	27.7	31	37	3	29.5	35.0	23.0	37.30	37.0	33.0	33	28	38	21.5	30.0	37.5	45	37.5	25	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	9.0	7.5	10.5	1.5
24	31.2	33	39	3	32.0	38.0	26.5	40.50	42.5	38.0	38	32	44	22.5	32.5	40.0	50	42.5	25	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	9.0	7.5	10.5	1.5
25	31.2	34	40	3	32.0	38.0	26.5	40.50	42.5	38.0	38	32	44	23.0	32.5	40.0	50	42.5	25	2.0	5	9.0	19.5	11.5	8.5	8.5	7.5	1.5	5.0	9.0	7.5	10.5	1.5
28	35.0	37	43	3	36.0	42.0	29.5	47.65	49.0	44.0	37	37	50	26.5	35.0	42.5	50	42.5	33	2.0	5	9.0	19.5	11.5	8.5	10.0	9.0	1.5	5.0	10.5	7.5	12.0	1.5
30	37.0	39	45	3	39.2	45.0	32.5	50.80	49.0	44.0	37	37	50	26.5	35.0	42.5	50	42.5	33	2.0	5	9.0	19.5	11.5	8.5	11.5	10.5	1.5	5.0	10.5	7.5	12.0	1.5
32	40.2	42	48	3	42.2	48.0	32.5	50.80	53.5	46.0	41	41	55	27.5	35.0	42.5	55	47.5	33	2.0	5	9.0	19.5	11.5	8.5	11.5	10.5	1.5	5.0	10.5	7.5	12.0	1.5
33	40.2	42	48	3	44.2	50.0	36.5	54.00	53.5	46.0	41	41	55	27.5	35.0	42.5	55	47.5	33	2.0	5	9.0	19.5	11.5	8.5	12.0	11.0	1.5	5.0	10.5	7.5	12.0	1.5
35	43.2	44	50	3	46.2	52.0	36.5	54.00	57.0	50.0	44	44	59	28.5	35.0	42.5	55	47.5	33	2.0	5	9.0	19.5	11.5	8.5	12.0	11.0	1.5	5.0	10.5	7.5	12.0	1.5
38	46.2	49	56	4	49.2	55.0	39.5	57.15	59.0	53.0	53	47	61	30.0	36.0	45.0	55	46.0	33	2.0	6	9.0	22.0	14.0	10.0	11.3	10.3	1.5	5.0	10.5	9.0	12.0	1.5
40	48.8	51	58	4	52.2	58.0	42.5	60.35	62.0	55.0	55	49	64	30.0	36.0	45.0	55	46.0	33	2.0	6	9.0	22.0	14.0	10.0	11.8	10.8	1.5	5.0	10.5	9.0	12.0	1.5
42	51.8	–	–	–	–	–	46.0	63.50	65.5	58.0	53	53	67	30.0	36.0	–	–	51.0	41	–	–	–	–	–	–	13.2	12.0	2.0	6.0	10.5	–	12.0	2.5
43	51.8	54	61	4	53.3	62.0	46.0	63.50	65.5	58.0	53	53	67	30.0	36.0	45.0	60	51.0	41	2.0	6	9.0	22.0	14.0	10.0	13.2	12.0	2.0	6.0	10.5	9.0	12.0	2.5
45	53.8	56	63	4	55.3	64.0	46.0	63.50	68.0	60.0	55	55	70	30.0	36.0	45.0	60	51.0	41	2.0	6	9.0	22.0	14.0	10.0	12.8	11.6	2.0	6.0	10.5	9.0	12.0	2.5
48	56.8	59	66	4	59.7	68.4	49.0	66.70	70.5	63.0	58	58	74	30.5	36.0	45.0	60	51.0	41	2.0	6	9.0	22.0	14.0	10.0	12.8	11.6	2.0	6.0	10.5	9.0	12.0	2.5
50	58.8	62	70	4	60.8	69.3	52.0	69.85	74.0	65.0	60	60	77	30.5	38.0	47.5	60	50.5	41	2.5	6	9.0	23.0	15.0	10.5	12.8	11.6	2.0	6.0	12.0	9.5	13.5	2.5
53	62.2	65	73	4	63.8	72.3	55.5	73.05	78.5	70.0	63	63	81	33.0	36.5	47.5	70	59.0	41	2.5	6	9.0	23.0	15.0	12.0	13.5	12.3	2.0	6.0	12.0	11.0	13.5	2.5
55	64.2	67	75	4	66.5	75.4	58.5	76.20	81.0	72.0	65	65	83	35.0	36.5	47.5	70	59.0	41	2.5	6	9.0	23.0	15.0	12.0	14.5	13.3	2.0	6.0	12.0	11.0	13.5	2.5
58	67.2	70	78	4	69.5	78.4	61.5	79.40	85.5	75.0	68	68	88	37.0	41.5	52.5	70	59.0	41	2.5	6	9.0	23.0	15.0	12.0	14.5	13.3	2.0	6.0	12.0	11.0	13.5	2.5
60	70.0	72	80	4	71.5	80.4	61.5	79.40	88.5	79.0	70	70	91	38.0	41.5	52.5	70	59.0	41	2.5	6	9.0	23.0	15.0	12.0	14.5	13.3	2.0	6.0	12.0	11.0	13.5	2.5
65	75.0	77	85	4	76.5	85.4	68.0	92.10	93.5	84.0	77	77	96	40.0	41.5	52.5	80	69.0	49	2.5	6	9.0	23.0	15.0	12.0	14.2	13.0	2.0	6.0	14.5	11.0	16.0	2.5
68	78.0	81	90	4	82.7	91.5	71.0	95.25	96.5	88.0	80	80	100	40.0	41.2	52.5	80	68.7	49	2.5	7	9.0	26.0	18.0	12.5	14.9	13.7	2.0	6.0	14.5	11.3	16.0	2.5
70	80.0	83	92	4	83.0	92.0	71.0	95.25	99.5	90.0	82	82	103	40.0	48.7	60.0	80	68.7	49	2.5	7	9.0	26.0	18.0	12.5	14.2	13.0	2.0	6.0	14.5	11.3	16.0	2.5
75	85.5	88	97	4	90.2	99.0	77.5	101.60	107.0	95.0	87	87	110	40.0	48.7	60.0	80	68.7	52	2.5	7	9.0	26.0	18.0	12.5	15.2	14.0	2.0	6.0	14.5	11.3	16.0	2.5
80	90.5	95	105	4	95.2	104.0	84.0	114.30	112.0	100.0	92	92	116	40.0	48.0	60.0	90	78.0	56	3.0	7	9.0	26.2	18.2	13.0	16.2	15.0	2.0	6.0	18.5	12.0	20.0	2.5
85	96.0	100	110	4	100.2	109.0	87.0	117.50	120.0	107.0	97	97	124	41.0	46.0	60.0	90	76.0	56	3.0	7	9.0	26.2	18.2	15.0	16.0	14.8	2.0	6.0	18.5	14.0	20.0	2.5
90	102.0	105	115	4	105.2	114.0	93.5	123.85	127.0	114.0	104	104	131	45.0	51.0	65.0	90	76.0	59	3.0	7	9.0	26.2	18.2	15.0	16.0	14.8	2.0	6.0	18.5	14.0	20.0	2.5
95	107.0	110	120	4	111.6	120.3	96.5	127.00	132.0	119.0	109	109	136	46.0	51.0	65.0	90	76.0	59	3.0	7	9.0	25.2	17.2	15.0	17.0	15.8	2.0	6.0	18.5	14.0	20.0	2.5
100	112.0	115	125	4	114.5	123.3	103.0	133.35	137.0	124.0	114	114	140	47.0	51.0	65.0	90	76.0	62	3.0	7	9.0	25.2	17.2	15.0	17.0	15.8	2.0	6.0	18.5	14.0	20.0	2.5

Dimensions in mm.

Fitting length tolerances: d_1 10...12 mm ± 0.5; d_1 14...18 mm ± 1.0; d_1 20...26 mm ± 1.5; d_1 = 28...100 mm ± 2.0

*) Minimum diameter of the mating collalr

Dimensional adaptations for specific conditions, e.g shaft in inches or special seat dimensions are available on request.

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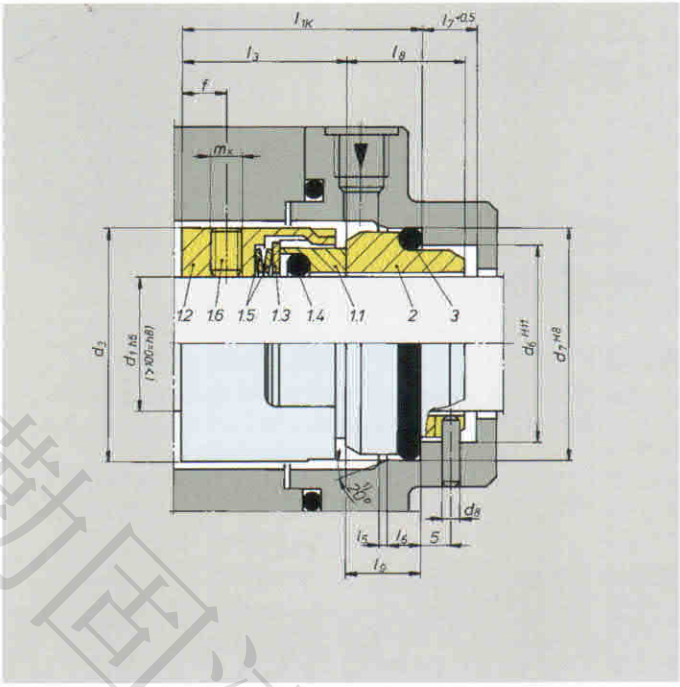
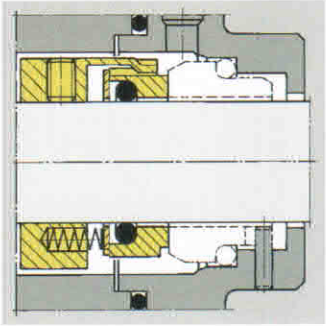
M7N





M74多弹簧结构

Dimensions, item and descriptions as for M7N, but with **multiple springs** (Item no. 1.5). Preferably for $d_1 > 100$mm.

- **Single seal**
- **Unbalanced**
- **Independent of direction of rotation**
- **To DIN 24960***

The M7 mechanical seal range is designed for universal application and ideal suited for standardisation. The loosely inserted seal faces are easily exchanged, permitting all combinations of materials and stock rationalisation.

- 单端面密封
- 非平衡型
- 任意旋向
- 符合DIN 24960标准

M7N系列应用广泛，互换性强，密封环非紧嵌入，替换方便。推环由传动搭子卡住，防止弹簧脱落。静环可以限位，弹簧行程受限制，避免碳环过度磨损。

Operating limits 运行参数

d_1 = 14...200 mm *0.55"...8"*
p_1 = 16(25) bar *230(360) PSI*
t = −50...220 °C
−58 °F...430 °F
v_g = 20m/s *66ft/s*

Axial movement: 轴向窜动量：

d_1 up to 25 mm:	±1.0mm
d_1 28 to 63 mm:	±1.5mm
d_1 65 mm and above:	±2.0mm

Combination of materials 材料组合

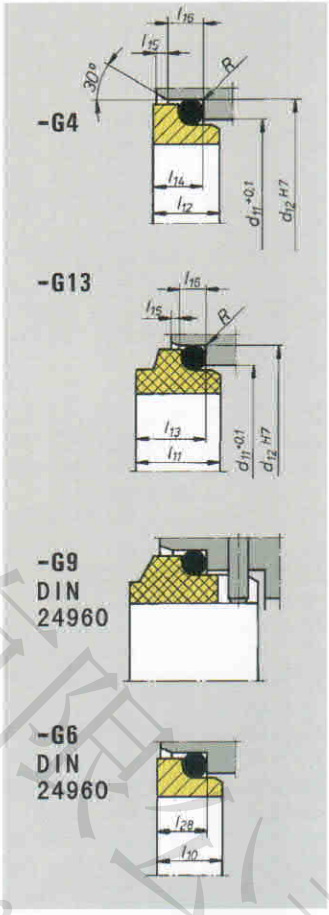
Seal faces 旋转环	Stationary seats 静止环 G 4	G 13	G 9		G 6
	Q_1 (Q_2)	A;B	A;B	Q_1 (Q_2)	
S	—	●	●	—	—
V	—	●	●	—	—
Q_1	●	●	●	●	●
Q_2	●	●	●	●	●

Only M 78 N:

	G 9		
	S	V	Q_1
B	●	●	●
A	●	●	●
Q_1	—	—	●

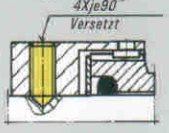
(Designations to DIN 24960, see inside the back cover of this manual)

Stationary seats 静止环



Torque transmission 扭矩传递 $d_1 > 100$mm

4 set screws with cone points (standard arrangement).



由四只螺钉拧入凹坑。

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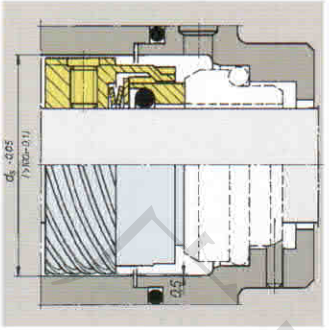

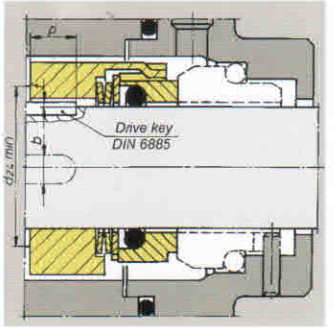

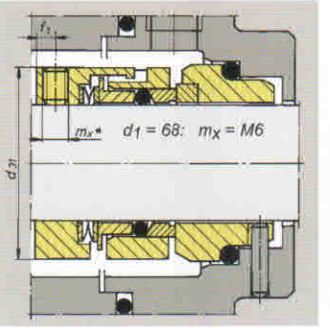

M7F 带螺纹泵
D_1 max. 100 mm

M74F 多弹簧带螺纹泵
d_1 = 14...200 mm

M7 S2键驱动
d_1 max. 100 mm

M74 S2 多弹簧键驱动
d_1 = 28...200 mm

M78N旋转环用镶嵌结构
d_1 = 18...100 mm

t max. 180°C

d_1	d_3	d_6	d_7	d_8	d_{11}	d_{12}	d_{24}	d_{31}	d_s	l_{1K}	l_3	l_5	l_6	l_7	l_8	l_9	l_{10}	l_{11}	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}	l_{28}	b	f	f_1	m_x	$p_{max.}$	t
14*	25	21.0	25.0	3	20.5	24.6	16	–	34	35.0	25.0	1.5	4	8.5	17.5	10.0	7.5	10.0	6.5	7.6	5.6	1.2	3.8	6.6	4	6	–	M5	10	1.5
16*	27	23.0	27.0	3	22.0	28.0	18	–	36	35.0	25.0	1.5	4	8.5	17.5	10.0	7.5	11.5	8.5	9.0	7.5	1.2	3.8	6.6	4	6	–	M5	10	1.5
18*	33	27.0	33.0	3	24.0	30.0	20	32	38	37.5	26.0	2.0	5	9.0	19.5	11.5	8.5	12.5	9.0	10.0	8.0	1.5	5.0	7.5	5	7	3.5	M5	12	1.1
20*	35	29.0	35.0	3	29.5	35.0	22	34	40	37.5	26.0	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	7.5	5	7	3.5	M5	12	1.1
22*	37	31.0	37.0	3	29.5	35.0	24	36	42	37.5	26.0	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	7.5	6	7	3.5	M5	12	1.5
24*	39	33.0	39.0	3	32.0	38.0	26	38	44	40.0	28.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	7.5	6	8	3.5	M5	12	1.5
25*	40	34.0	40.0	3	32.0	38.0	27	39	45	40.0	28.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	7.5	6	8	3.5	M5	12	1.5
28*	43	37.0	43.0	3	36.0	42.0	30	42	47	42.5	31.0	2.0	5	9.0	19.5	11.5	8.5	14.0	10.0	11.0	9.0	1.5	5.0	7.5	6	8	4.0	M6	16	1.5
30*	45	39.0	45.0	3	39.2	45.0	32	44	49	42.5	31.0	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	7.5	6	8	4.0	M6	16	1.5
32*	47	42.0	48.0	3	42.2	48.0	34	46	51	42.5	31.0	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	7.5	6	8	4.0	M6	16	1.5
33*	48	42.0	48.0	3	42.2	50.0	35	47	51	42.5	31.0	2.0	5	9.0	19.5	11.5	8.5	14.5	12.0	11.5	10.5	1.5	5.0	7.5	6	8	4.0	M6	16	1.5
35*	50	44.0	50.0	3	46.2	52.0	37	49	54	42.5	31.0	2.0	5	9.0	19.5	11.5	8.5	14.5	12.0	11.5	11.0	1.5	5.0	7.5	6	8	4.0	M6	16	1.5
38*	55	49.0	56.0	4	49.2	55.0	40	54	59	45.0	31.0	2.0	6	9.0	22.0	14.0	10.0	14.5	11.3	11.5	10.3	1.5	5.0	9.0	6	8	4.0	M6	16	1.5
40*	57	51.0	58.0	4	52.2	58.0	42	56	61	45.0	31.0	2.0	6	9.0	22.0	14.0	10.0	14.5	11.8	11.5	10.8	1.5	5.0	9.0	6	8	4.0	M6	16	1.5
43*	60	54.0	61.0	4	53.3	62.0	45	59	65	45.0	31.0	2.0	6	9.0	22.0	14.0	10.0	17.0	13.2	14.3	12.0	2.0	6.0	9.0	6	8	4.0	M6	16	1.5
45*	62	56.0	63.0	4	55.3	64.0	47	61	66	45.0	31.0	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	9.0	6	8	4.0	M6	16	1.5
48*	65	59.0	66.0	4	59.7	68.4	50	64	69	45.0	31.0	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	9.0	6	8	4.0	M6	16	1.5
50*	67	62.0	70.0	4	60.8	69.3	52	66	71	47.5	32.5	2.5	6	9.0	23.0	15.0	10.5	17.0	12.8	14.3	11.6	2.0	6.0	9.5	6	8	4.5	M6	16	1.5
53*	70	65.0	73.0	4	63.8	72.3	55	69	75	47.5	32.5	2.5	6	9.0	23.0	15.0	12.0	17.0	13.5	14.3	12.3	2.0	6.0	11.0	6	8	4.5	M6	16	1.5
55*	72	67.0	75.0	4	66.5	75.4	57	71	76	47.5	32.5	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	11.0	6	8	4.5	M6	16	1.5
58*	79	70.0	78.0	4	69.5	78.4	60	78	83	52.5	37.5	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	11.0	8	9	5.5	M8	16	1.9
60*	81	72.0	80.0	4	71.5	80.4	62	80	85	52.5	37.5	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	11.0	8	9	5.5	M8	16	1.9
63*	84	75.0	83.0	4	74.5	83.4	65	83	88	52.5	37.5	2.5	6	9.0	23.0	15.0	12.0	18.0	14.2	15.3	13.3	2.0	6.0	11.0	8	9	5.5	M8	16	1.9
65*	86	77.0	85.0	4	76.5	85.4	67	85	95	52.5	37.5	2.5	6	9.0	23.0	15.0	12.0	18.0	14.2	15.3	13.0	2.0	6.0	11.0	8	9	5.5	M8	16	1.9
68*	89	81.0	90.0	4	82.7	91.5	70	88	93	52.5	34.5	2.5	7	9.0	26.0	18.0	12.5	19.0	14.9	16.0	13.7	2.0	6.0	11.3	8	9	4.0	M8	16	1.9
70*	91	83.0	92.0	4	83.0	92.0	72	90	95	60.0	42.0	2.5	7	9.0	26.0	18.0	12.5	18.0	14.2	15.3	13.0	2.0	6.0	11.3	8	9	5.5	M8	16	1.9
75*	99	88.0	97.0	4	90.2	99.0	77	99	105	60.0	42.0	2.5	7	9.0	26.0	18.0	12.5	18.0	15.2	15.3	14.8	2.0	6.0	11.3	8	10	5.5	M8	16	1.9
80*	104	95.0	105.0	4	95.2	104.0	82	104	109	60.0	41.8	3.0	7	9.0	26.2	18.2	13.0	19.0	16.2	16.3	14.8	2.0	6.0	12.0	8	10	5.5	M8	16	1.9
85*	109	100.0	110.0	4	100.2	109.0	87	109	114	60.0	41.8	3.0	7	9.0	26.2	18.2	15.0	19.0	16.0	16.3	14.8	2.0	6.0	14.0	8	10	5.5	M8	16	1.9
90*	114	105.0	115.0	4	105.2	114.0	92	114	119	65.0	46.8	3.0	7	9.0	26.2	18.2	15.0	19.0	16.0	16.3	14.8	2.0	6.0	14.0	10	10	8.0	M8	27	2.3
95*	119	110.0	120.0	4	111.6	120.3	97	119	124	65.0	47.8	3.0	7	9.0	25.2	17.2	15.0	20.0	17.0	17.3	15.8	2.0	6.0	14.0	10	10	8.0	M8	27	2.3
100*	124	115.0	125.0	4	114.5	123.3	102	124	129	65.0	47.8	3.0	7	9.0	25.2	17.2	15.0	20.0	17.0	17.3	15.8	2.0	6.0	14.0	10	10	8.0	M8	27	2.3
105	138	122.2	134.3	5	–	–	108	–	143	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
110	143	128.2	140.3	5	–	–	113	–	148	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
115	148	136.2	148.3	5	–	–	118	–	153	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
120	153	138.2	150.3	5	–	–	123	–	158	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
125	158	142.2	154.3	5	–	–	128	–	163	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
130	163	146.2	158.3	5	–	–	133	–	168	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
135	168	152.2	164.3	5	–	–	138	–	173	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
140	173	156.2	168.3	5	–	–	143	–	178	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
145	178	161.2	173.3	5	–	–	148	–	183	67.0	47.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
150	183	168.2	180.3	5	–	–	153	–	188	69.0	47.0	2.0	10	–	32.0	22.0	–	–	–	–	–	–	–	–	10	10	–	M8	20	2.3
155	191	173.2	185.3	5	–	–	158	–	196	80.0	56.0	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
160	196	178.2	190.3	5	–	–	163	–	201	80.0	56.0	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
165	201	183.2	195.3	5	–	–	168	–	206	80.0	56.0	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
170	206	188.2	200.3	5	–	–	173	–	211	80.0	56.0	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
175	211	193.2	205.3	5	–	–	178	–	216	80.0	56.0	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
180	216	207.5	219.3	5	–	–	183	–	221	84.0	56.0	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
185	221	212.5	224.3	5	–	–	188	–	226	84.0	56.0	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
190	226	217.5	229.3	5	–	–	193	–	231	84.0	56.0	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
195	231	222.5	234.3	5	–	–	198	–	236	84.0	56.0	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1
200	236	227.5	239.3	5	–	–	203	–	241	84.0	56.0	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	12	12	–	M8	24	2.1

d_1 > 200 on request

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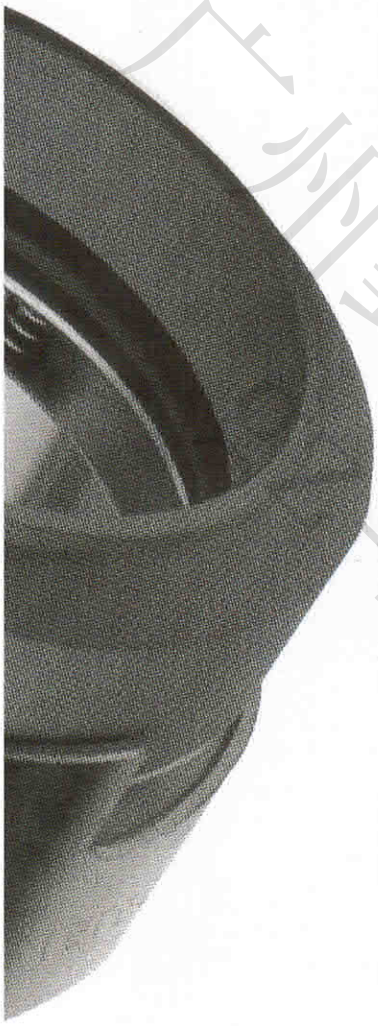
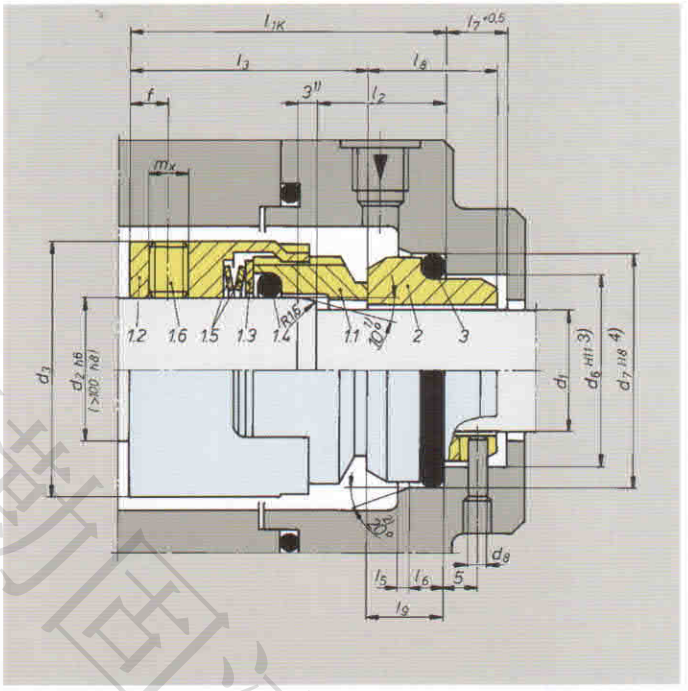
H7N





- **Single seal**
- **Balanced**
- **Independent of direction of rotation**
- **To DIN 24960***

The H7N mechanical seal range is designed for universal application and the interchangeable parts concept is ideal for stock rationalisation. The seal faces are loosley inserted and can be easily exchanged, the thrust ring is retained by the drive lugs preventing the springs falling out.

- 单端面密封
- 平衡型
- 任意旋向
- 符合DIN 24960标准

H7N系列密封应用广泛，互换性好。静环采用浮动式，安装方便，推环由传动搭子卡住，防止弹簧落出。其他特殊的技术处理包括静环可限位及限制弹簧行程，避免碳环过度磨损。

Operating limits 运行参数

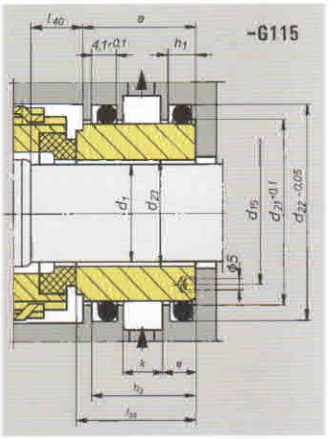
d_1 = 14...200 mm *0.55"...8"*
p_1 = 25(40) bar*) *360(580) PSI*
t = −50...220 °C *−58 °F...430 °F*
v_g = 20 m/s *66 ft/s*

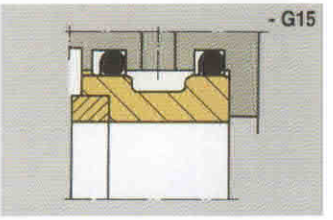
Combination of materials 材料组合

Seal faces 旋转环	Stationary seats 静止环			
	−G9			−G15
	A,B	Q_2	Q_1	Q_{12}
A*)	—	●	●	●
Q_1	●	●	●	—
Q_2	●	●	●	—
V	●	—	—	—
S	●	—	—	—

*) only in the shrink-fitted version for H75N, H76N, H75G16

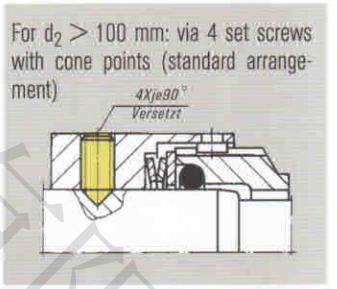
Stationary seats alternatives 可改变静止环结构





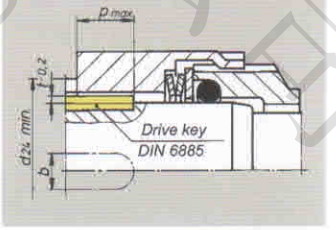
Torque transmission 扭矩传递

For d_2 > 100 mm: via 4 set screws with cone points (standard arrangement)



当d_2>100mm时用四只螺钉拧入凹坑。

Torque transmission by key is possible for all types in the H7 range (no item no. 16). Seal code e.g. H7S2/d_1



H7系列的各类密封均可采用以键传递扭矩的方式，如H7S2/d_1。

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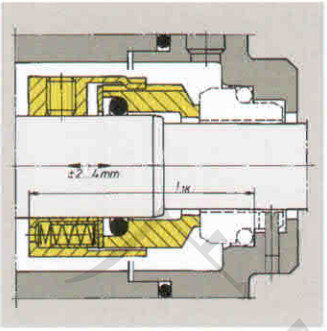

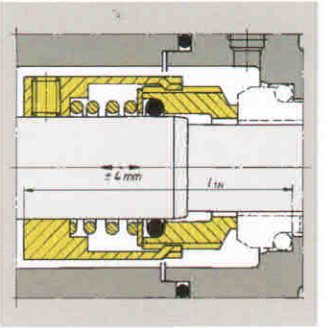

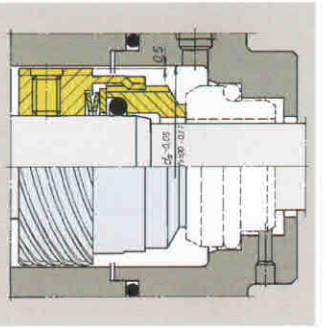

H75 多弹簧结构

d_1 = 28...200 mm

As H7N, but with **multiple springs in sleeves** (Item no. 1.5) axial movements ± 2 to 4 mm, dependent on diameter.

H76 单弹簧结构

d_1 = 14...100 mm

Dimensions, item no's and descriptions as for H7N, but with special **single spring** (Item no 1.5) for compensating large axial movements (± 4 mm).

H7F 带螺纹泵

d_1 max. 100; Axial movement ± 0.5 mm.

H75F

d_1 = 28...200 mm

Axial movement 轴向窜动量

d_1 28... 55 = ± 2 mm,

d_1 58...100 = ± 3 mm,

d_1 105...200 = ± 4 mm.

d_1	d_2	d_3	d_6	d_7	d_8	d_{24}	d_{21}	d_{22}	d_5	l_{1K}	l_{1N}	l_2	l_3	l_5	l_6	l_7	l_8	l_9	l_{39}	l_{40}	a	b	e	f	h_1	h_2	k	m_x	$p_{max.}$	t
14*	18	33	21.0	25.0	3	20	–	–	38	42.5	–	18	32.5	1.5	4	8.5	17.5	10.0	–	–	–	5	–	6.0	–	–	–	M5	9	1.1
16*	20	35	23.0	27.0	3	22	–	–	40	42.5	–	18	32.5	1.5	4	8.5	17.5	10.0	–	–	–	5	–	6.0	–	–	–	M5	9	1.1
18*	22	37	27.0	33.0	3	24	–	–	42	45.0	55	20	33.5	2.0	5	9.0	19.5	11.5	–	–	–	6	–	7.0	–	–	–	M5	9	1.5
20*	24	39	29.0	35.0	3	26	–	–	44	45.0	60	20	33.5	2.0	5	9.0	19.5	11.5	–	–	–	6	–	5.5	–	–	–	M5	9	1.5
22*	26	41	31.0	37.0	3	28	–	–	45	45.0	60	20	33.5	2.0	5	9.0	19.5	11.5	–	–	–	6	–	8.0	–	–	–	M5	9	1.5
24*	28	43	33.0	39.0	3	30	–	–	47	47.5	60	20	36.0	2.0	5	9.0	19.5	11.5	–	–	–	6	–	5.5	–	–	–	M6	9	1.5
25*	30	45	34.0	40.0	3	32	–	–	49	47.5	60	20	36.0	2.0	5	9.0	19.5	11.5	–	–	–	6	–	5.5	–	–	–	M6	9	1.5
28*	33	48	37.0	43.0	3	35	44.65	50.57	51	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.0	8.5	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
30*	35	50	39.0	45.0	3	37	47.83	53.75	54	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
32*	38	55	42.0	48.0	3	40	47.83	53.75	59	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
33*	38	55	42.0	48.0	3	40	47.83	53.75	59	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
35*	40	57	44.0	50.0	3	42	51.00	56.92	61	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
38*	43	60	49.0	56.0	4	45	54.18	60.10	65	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
40*	45	62	51.0	58.0	4	47	60.53	66.45	66	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
43*	48	65	54.0	61.0	4	50	63.70	69.62	69	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
45*	50	67	56.0	63.0	4	52	63.70	69.62	71	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
48*	53	70	59.0	66.0	4	55	66.88	72.80	75	52.5	85	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
50*	55	72	62.0	70.0	4	57	70.05	75.97	76	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	26.5	12.5	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
53*	58	79	65.0	73.0	4	60	76.40	82.32	83	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	26.5	12.5	24.0	8	8.0	9.0	6.6	22.6	9	M8	12	1.9
55*	60	81	67.0	75.0	4	62	76.40	82.32	85	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	12	1.9
58*	63	84	70.0	78.0	4	65	79.58	85.50	88	62.5	85	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
60*	65	86	72.0	80.0	4	67	82.75	88.67	95	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
63*	68	89	75.0	83.0	4	70	85.93	91.85	93	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
65*	70	91	77.0	85.0	4	72	85.93	91.85	95	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
70*	75	99	83.0	92.0	4	77	89.10	95.02	105	70.0	95	28	52.0	2.5	7	9.0	26.0	18.0	30.5	14.5	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
75*	80	104	88.0	97.0	4	82	98.63	104.55	109	70.0	105	28	52.0	2.5	7	9.0	26.0	18.0	30.5	14.5	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
80*	85	109	95.0	105.0	4	87	101.80	107.72	114	70.0	105	28	51.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
85*	90	114	100.0	110.0	4	92	108.15	114.07	119	75.0	105	28	56.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	23	2.3
90*	95	119	105.0	115.0	4	97	114.50	120.42	124	75.0	105	28	56.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	23	2.3
95*	100	124	110.0	120.0	4	102	117.68	123.60	129	75.0	105	28	57.8	3.0	7	9.0	25.2	17.2	29.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	23	2.3
100*	105	129	115.0	125.0	4	107	124.03	129.95	134	75.0	105	28	57.8	3.0	7	9.0	25.2	17.2	29.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	23	2.3
105	115	148	122.2	134.3	5	118	128.98	134.90	153	73.0	–	32	53.0	2.0	10	–	30.0	20.0	29.2	15.2	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
110	120	153	128.2	140.3	5	123	135.30	141.20	158	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
115	125	158	136.2	148.3	5	128	140.30	146.20	163	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
120	130	163	138.2	150.3	5	133	145.30	151.20	168	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
125	135	168	142.2	154.3	5	138	150.30	156.20	173	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
130	140	173	146.2	158.3	5	143	155.30	161.20	178	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
135	145	178	152.2	164.3	5	148	160.30	166.20	183	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
140	150	183	156.2	168.3	5	153	165.30	171.20	188	73.0	–	32	53.0	2.0	10	–	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
145	155	191	161.2	173.3	5	158	172.30	178.20	196	83.0	–	34	63.0	2.0	10	–	30.0	20.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
150	160	196	168.2	180.3	5	163	177.30	183.20	201	85.0	–	36	63.0	2.0	10	–	32.0	22.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
155	165	201	173.2	185.3	5	168	182.30	188.20	206	87.0	–	38	63.0	2.0	12	–	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
160	170	206	178.2	190.3	5	173	187.30	193.20	211	87.0	–	38	63.0	2.0	12	–	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
165	175	211	183.2	195.3	5	178	192.30	198.20	216	87.0	–	38	63.0	2.0	12	–	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
170	180	216	188.2	200.3	5	183	197.30	203.20	221	87.0		38	63.0	2.0	12	–	34.0	24.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
175	185	221	193.2	205.3	5	188	202.30	208.20	226	87.0	–	38	63.0	2.0	12	–	34.0	24.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
180	190	226	207.5	219.3	5	193	207.30	213.20	231	91.0	–	42	63.0	2.0	12	–	38.0	28.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
185	195	231	212.5	224.3	5	198	212.30	218.20	236	91.0	–	42	63.0	2.0	12	–	38.0	28.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
190	200	236	217.5	229.3	5	203	217.30	223.20	241	91.0	–	42	63.0	2.0	12	–	38.0	28.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
195	205	245	222.5	234.2	5	208	225.30	231.20	250	94.0	–	43	66.0	2.0	12	–	38.0	28.0	37.0	17.5	34.5	12	10.0	14.0	7.1	32.1	16	M10	22	2.1
200	210	250	227.5	239.3	5	213	230.30	236.20	255	94.0	–	43	66.0	2.0	12	–	38.0	28.0	37.0	17.5	34.5	12	10.0	14.0	7.1	32.1	16	M10	22	2.1

资料整理：广州勤固流体科技有限公司
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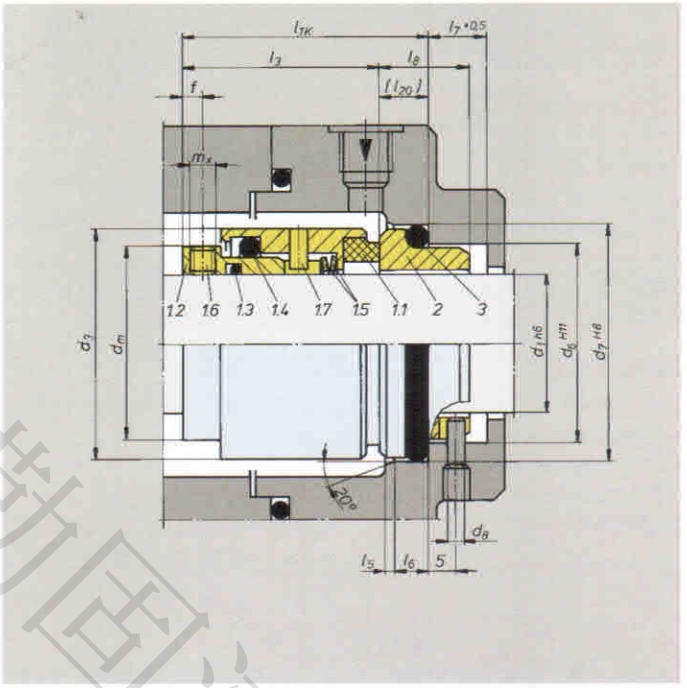
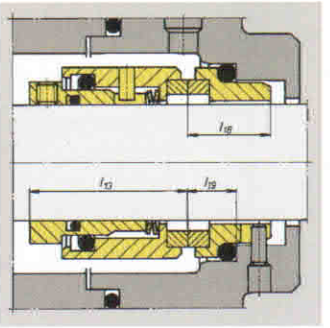
HJ92N





HJ977GN

Item no's and descriptions as for HJ 92 N. but with the seal face (Item No. 1.1) and the stationary seat (Item No.2) made of carbide and shrink-fittde. The stationary seat is type G 46.
Unquoted dimensions as for HJ 92 N.

由HJ92N改型，动静环采用镶装碳化物。静环选用G46，其尺寸与HJ92N相同。

- **Single seal**
- **Balanced**
- **Independent of direction of rotation**
- **Spring product protected**
- **To DIN 24960**

Mechanical seals of the HJ series are designed for media containing solids or with high viscosity e.g.sugar,paper ,sewage and waste water industry. The spring are product protected. There is no sticking or clogging making the design rugged and reliable.

- 单端面密封
- 平衡型
- 任意旋向
- 弹簧与介质隔离
- 符合 DIN 24960标准

HJ系列的机械密封适用于含固体颗粒和高粘度介质，如制糖、造纸、污水等工业。弹簧在上述介质中被保护，不会产生粘住和阻尼和情况，这使得该设计稳定、安全可靠。

Operating limits 运行参数

d_1 =18...100 mm *0.625 "...4"*
p_1*) =0.2...25 bar *3...360 PSI*
HJ92N:
t =–50...220 °C
–58 °F...430 °F
V_g =20m/s *66ft/s*
HJ977GN:
t =–20...180 °C
–4 °F...356 °F
v_g =10m/s *33 ft/s*

*)An integral stationary seat lock is not needed within the permissible low pressure range. For prolonged operation under vacuum it is necessary to arrange for quenching on the atmospheric side. Axial movement ±0.5 mm.

在低压力时静环不必锁紧，在真空工况下运行大气端需加阻封。轴向窜动量:± 0.5mm。

Combination of materials and seal types 材料组合与密封型号

Rotating unit 旋转环	Stationary seats 静止环	
	G16	G46
	V;Q_1	Q_{12}
HJ92(A;B_1) HJ97G(Q_{12})	HJ92N HJ97GN5[1]	HJ927GN[2] HJ977GN

[1]Installation length l_{12} is shorter than l_{1k}
[2]Installation length l_{11} is longer than l_{1k}
All material designations to DIN 24 960.
See inside the back cover of this manual.

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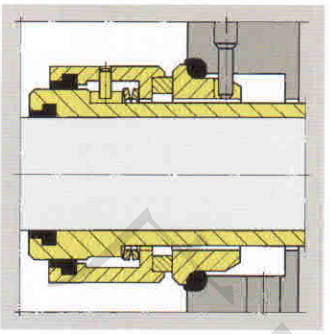

Special design
SHJ 97 G

For use in sterile processes. With smooth. Electropolished surfaces, specially designed O-ring grooves special elastomeric seal-rings and O-ring bearing.no gaps, plus many other features. Please enquire for details.

特殊设计的SHJ97G

d_1	d_3	d_6	d_7	d_8	d_m	l_{1k}	l_3	l_5	l_6	l_7	l_8	l_{20}	l_{11}	l_{12}	l_{13}	l_{18}	l_{19}	f	m_x
18	32	27	33	3	26.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
20	34	29	35	3	28.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
22	36	31	37	3	30.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
24	38	33	39	3	32.5	40.0	33.0	2.0	5	9	15.0	7.0	42.0	38.0	31.0	17.0	9.0	3.5	M5
25	39	34	40	3	33.5	40.0	33.0	2.0	5	9	15.0	7.0	42.0	38.0	31.0	17.0	9.0	3.5	M5
28	42	37	43	3	36.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
30	44	39	45	3	38.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
32	47	42	48	3	41.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
33	47	42	48	3	41.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
35	49	44	50	3	43.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
38	54	49	56	4	47.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
40	56	51	58	4	49.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
43	59	54	61	4	52.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
45	61	56	63	4	54.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
48	64	59	66	4	57.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
50	66	62	70	4	59.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
53	69	65	73	4	62.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
55	71	67	75	4	64.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
58	78	70	78	4	68.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
60	80	72	80	4	70.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
63	83	75	83	4	73.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
65	85	77	85	4	75.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
68	88	81	90	4	78.5	52.5	41.5	2.5	7	9	18.5	11.0	55.0	50.0	39.0	21.0	13.5	4.5	M6
70	90	83	92	4	80.5	60.0	48.5	2.5	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.0	M6
75	99	88	97	4	89.0	60.0	48.5	2.5	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
80	104	95	105	4	94.0	60.0	48.5	3.0	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
85	109	100	110	4	99.0	60.0	48.5	3.0	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
90	114	105	115	4	104.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8
95	119	110	120	4	109.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8
100	124	115	125	4	114.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8

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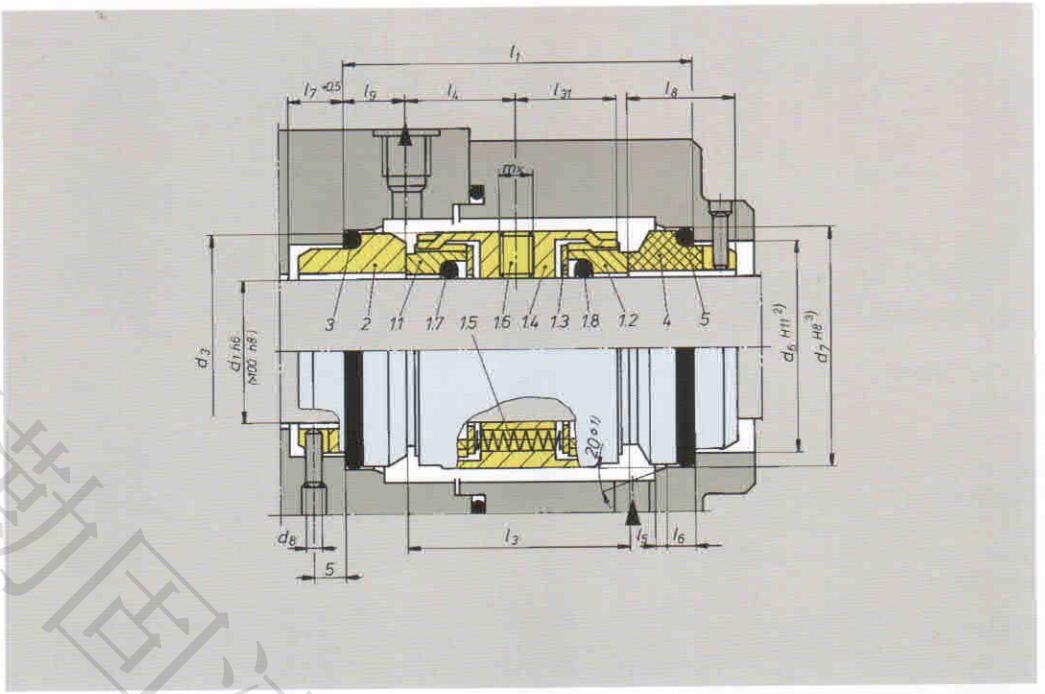
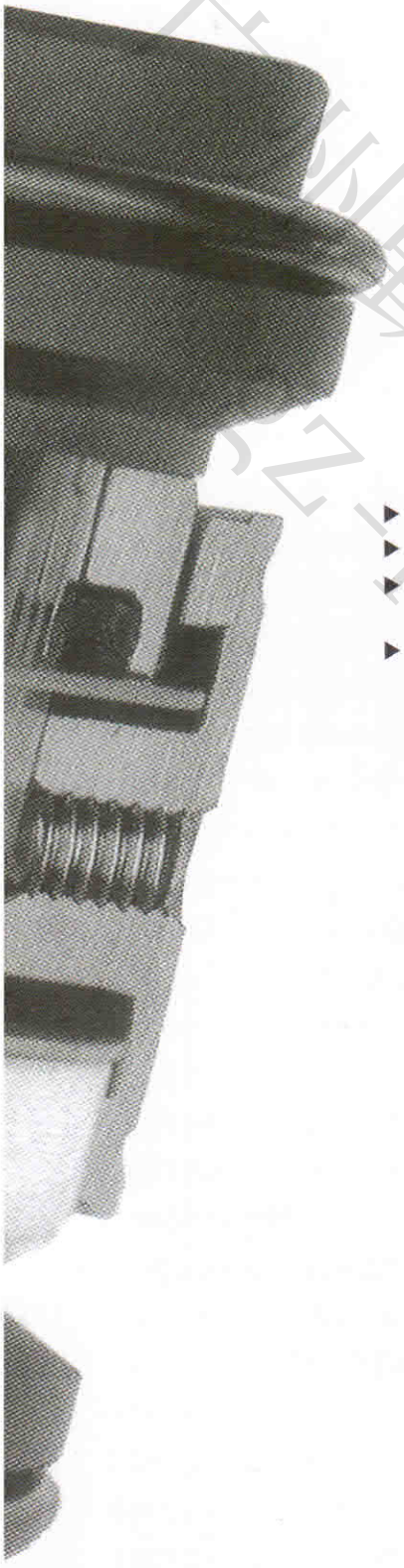
M74-D





- **Double seal**
- **Unbalanced**
- **Independent of direction of rotation**
- **Multiple springs**

Double seals in the M74-D series have the same design-features as the "M7" family of single seals (easy-to-replace seal faces, etc.). Apart from the installation length of the drive collar, all fitting dimensions (d_1 < 100 mm) conform with DIN 24960.

- 双端面密封
- 非平衡型
- 任意旋向
- 多弹簧结构

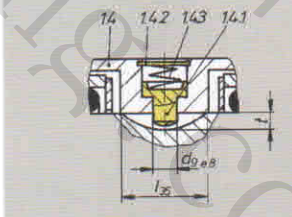
具有与"M7"系列同样设计性能，除驱动座的安装长度外，其它安装尺寸(d_1<100 mm)符合DIN 24960标准。

Operating limits 运行参数

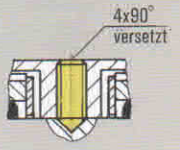
d_1 = 18...200 mm *0.625"...8"*
p_1 = 16 (25) bar *230(360) PSI*
t = -50...220 °C *(-20...180 °C*)*
v_g = 20 m/s (10 m/s*) *66(33)ft/s*
*)Limit for shrink-fitted carbide seal faces with d_1≧105 mm
Axial movement轴向窜动量:
d_1≦100 mm ± 0.5 mm
d_1 >100 mm ± 2.0 mm

Torque transmission 扭矩传递

Spring loaded drive pin:M74-D 22

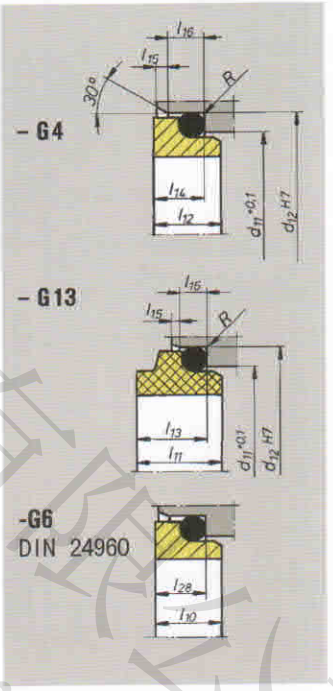


For d1 > 100mm:4 set screws with cone points(standard arrangment)



弹簧推入的驱动销
当d_1>100 mm用四只螺钉拧入凹坑。

Stationary seats 静止环



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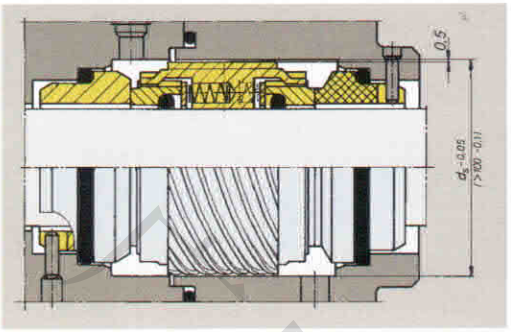

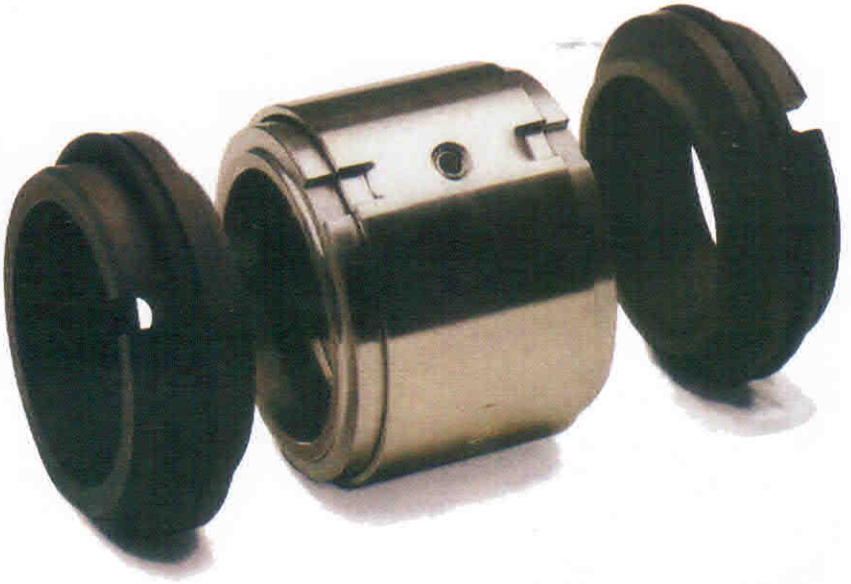

M74 F-D 带螺纹泵

Dimensions, item no's and descriptions as for type M 74-D, but with **pumping screw** (Item no. 1.4). Dependent on direction of rotation!

d_1	d_3	d_6	d_7	d_8	d_9	d_{11}	d_{12}	d_5	l_1	l_3	l_4	l_5	l_6	l_7	l_8	l_9	l_{10}	l_{11}	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}	l_{28}	l_{31}	l_{35}	m_x	t
18	33	27.0	33.0	3	4	24.0	30.0	–	61.0	38	19.0	2.0	5	9	19.5	11.5	8.5	12.5	9.0	10.0	8.0	1.5	5	7.5	17.0	15	M5	3.5
20	35	29.0	35.0	3	4	29.5	35.0	–	61.0	38	19.0	2.0	5	9	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5	7.5	17.0	15	M5	3.5
22	37	31.0	37.0	3	4	29.5	35.0	42	61.0	38	19.0	2.0	5	9	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5	7.5	17.0	15	M5	3.5
24	39	33.0	39.0	3	4	32.0	38.0	44	61.0	38	19.0	2.0	5	9	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5	7.5	17.0	15	M5	3.5
25	40	34.0	40.0	3	4	32.0	38.0	45	61.0	38	19.0	2.0	5	9	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5	7.5	17.0	15	M5	3.5
28	43	37.0	43.0	3	4	36.0	42.0	47	62.0	39	19.5	2.0	5	9	19.5	11.5	8.5	14.0	10.0	11.0	9.0	1.5	5	7.5	17.5	15	M6	3.5
30	45	39.0	45.0	3	4	39.2	45.0	49	62.0	39	19.5	2.0	5	9	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5	7.5	17.5	15	M6	3.5
32	47	42.0	48.0	3	4	42.2	48.0	51	62.0	39	19.5	2.0	5	9	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5	7.5	17.5	15	M6	3.5
33	48	42.0	48.0	3	4	44.2	50.0	51	62.0	39	19.5	2.0	5	9	19.5	11.5	8.5	14.5	12.0	11.5	10.5	1.5	5	7.5	17.5	15	M6	3.5
35	50	44.0	50.0	3	4	46.2	52.0	54	62.0	39	19.5	2.0	5	9	19.5	11.5	8.5	14.5	12.0	11.5	11.0	1.5	5	7.5	17.5	15	M6	3.5
38	55	49.0	56.0	4	4	49.2	55.0	59	69.0	41	20.5	2.0	6	9	22.0	14.0	10.0	14.5	11.3	11.5	10.3	1.5	5	9.0	18.5	15	M6	3.5
40	57	51.0	58.0	4	4	52.2	58.0	61	70.0	42	21.0	2.0	6	9	22.0	14.0	10.0	14.5	11.8	11.5	10.8	1.5	5	9.0	19.0	15	M6	3.5
43	60	54.0	61.0	4	4	53.3	62.0	65	70.0	42	21.0	2.0	6	9	22.0	14.0	10.0	17.0	13.2	14.3	12.0	2.0	6	9.0	19.0	15	M6	3.5
45	62	56.0	63.0	4	4	55.3	64.0	66	70.0	42	21.0	2.0	6	9	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6	9.0	19.0	15	M6	3.5
48	65	59.0	66.0	4	4	59.7	68.4	69	70.0	42	21.0	2.0	6	9	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6	9.0	19.0	15	M6	3.5
50	67	62.0	70.0	4	4	60.8	69.3	71	73.0	43	21.5	2.5	6	9	23.0	15.0	10.5	17.0	12.8	14.3	11.6	2.0	6	9.5	19.5	15	M6	3.5
53	70	65.0	73.0	4	4	63.8	72.3	75	73.0	43	21.5	2.5	6	9	23.0	15.0	12.0	17.0	13.5	14.3	12.3	2.0	6	11.0	19.5	15	M6	3.5
55	72	67.0	75.0	4	4	66.5	75.4	76	73.0	43	21.5	2.5	6	9	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6	11.0	19.5	15	M8	3.5
58	79	70.0	78.0	4	5	69.5	78.4	83	86.0	56	28.0	2.5	6	9	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6	11.0	23.5	19	M8	3.5
60	81	72.0	80.0	4	5	71.5	80.4	85	86.0	56	28.0	2.5	6	9	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6	11.0	23.5	19	M8	3.5
63	84	75.0	83.0	4	5	74.5	83.4	88	85.0	55	27.5	2.5	6	9	23.0	15.0	12.0	18.0	14.2	15.3	13.3	2.0	6	11.0	24.5	19	M8	3.5
65	86	77.0	85.0	4	5	76.5	85.4	95	85.0	55	27.5	2.5	6	9	23.0	15.0	12.0	18.0	14.2	15.3	13.0	2.0	6	11.0	24.5	19	M8	3.5
68	89	81.0	90.0	4	5	82.7	91.5	93	91.0	55	27.5	2.5	7	9	26.0	18.0	12.5	19.0	14.9	16.0	13.7	2.0	6	11.3	24.5	19	M8	3.5
70	91	83.0	92.0	4	5	83.0	92.0	95	92.0	56	28.0	2.5	7	9	26.0	18.0	12.5	18.0	14.2	15.3	13.0	2.0	6	11.3	23.5	19	M8	3.5
75	99	88.0	97.0	4	5	90.2	99.0	105	92.0	56	28.0	2.5	7	9	26.0	18.0	12.5	18.0	15.2	15.3	14.0	2.0	6	11.3	25.5	19	M8	3.5
80	104	95.0	105.0	4	5	95.2	104.0	109	92.5	56	28.0	3.0	7	9	26.2	18.2	13.0	19.0	16.2	16.3	15.0	2.0	6	12.0	25.5	19	M8	3.5
85	109	100.0	110.0	4	5	100.2	109.0	114	92.5	56	28.0	3.0	7	9	26.2	18.2	15.0	19.0	16.0	16.3	14.8	2.0	6	14.0	25.0	19	M8	3.5
90	114	105.0	115.0	4	5	105.2	114.0	119	92.5	56	28.0	3.0	7	9	26.2	18.2	15.0	19.0	16.0	16.3	14.8	2.0	6	14.0	25.5	19	M8	3.5
95	119	110.0	120.0	4	5	111.6	120.3	124	90.5	56	28.0	3.0	7	9	25.2	17.2	15.0	20.0	17.0	17.3	15.8	2.0	6	14.0	25.0	19	M8	3.5
100	124	115.0	125.0	4	5	114.5	123.3	129	90.5	56	28.0	3.0	7	9	25.2	17.2	15.0	20.0	17.0	17.3	15.8	2.0	6	14.0	25.0	19	M8	3.5
105	138	122.2	134.3	5	7	–	–	143	108.0	68	34.0	2.0	10	9	30.0	20.0	–	–	–	–	–	–	–	–	30.5	22	M8	3.5
110	143	128.2	140.3	5	7	–	–	148	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
115	148	136.2	148.3	5	7	–	–	153	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
120	153	138.2	150.3	5	7	–	–	158	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
125	158	142.2	154.3	5	7	–	–	163	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
130	163	146.2	158.3	5	7	–	–	168	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
135	168	152.2	164.3	5	7	–	–	173	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
140	173	156.2	168.3	5	7	–	–	178	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
145	178	161.2	173.3	5	7	–	–	183	110.0	70	35.0	2.0	10	–	30.0	20.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
150	183	168.2	180.3	5	7	–	–	188	114.0	70	35.0	2.0	10	–	32.0	22.0	–	–	–	–	–	–	–	–	31.5	22	M8	3.5
155	191	173.2	185.3	5	7	–	–	196	127.0	79	39.5	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
160	196	178.2	190.3	5	7	–	–	201	127.0	79	39.5	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
165	201	183.2	195.3	5	7	–	–	206	127.0	79	39.5	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
170	206	188.2	200.3	5	7	–	–	211	127.0	79	39.5	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
175	211	193.2	205.3	5	7	–	–	216	127.0	79	39.5	2.0	12	–	34.0	24.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
180	216	207.5	219.3	5	7	–	–	221	135.0	79	39.5	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
185	221	212.5	224.3	5	7	–	–	226	135.0	79	39.5	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
190	226	217.5	229.3	5	7	–	–	231	135.0	79	39.5	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
195	231	222.5	234.3	5	7	–	–	236	135.0	79	39.5	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5
200	236	227.5	239.3	5	7	–	–	241	135.0	79	39.5	2.0	12	–	38.0	28.0	–	–	–	–	–	–	–	–	35.5	22	M8	3.5

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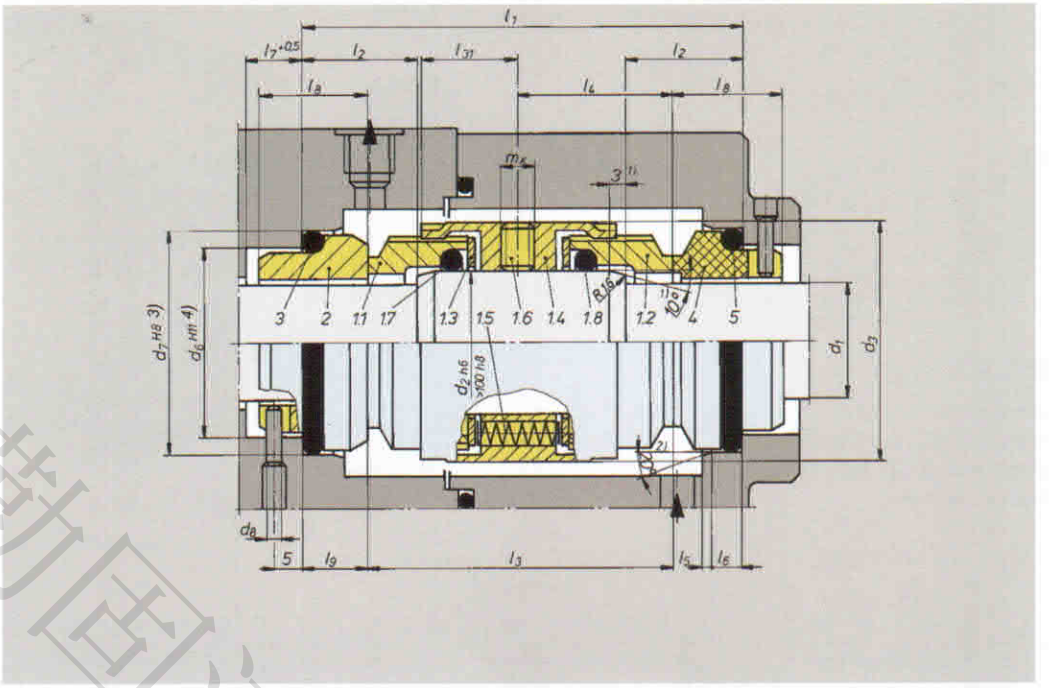
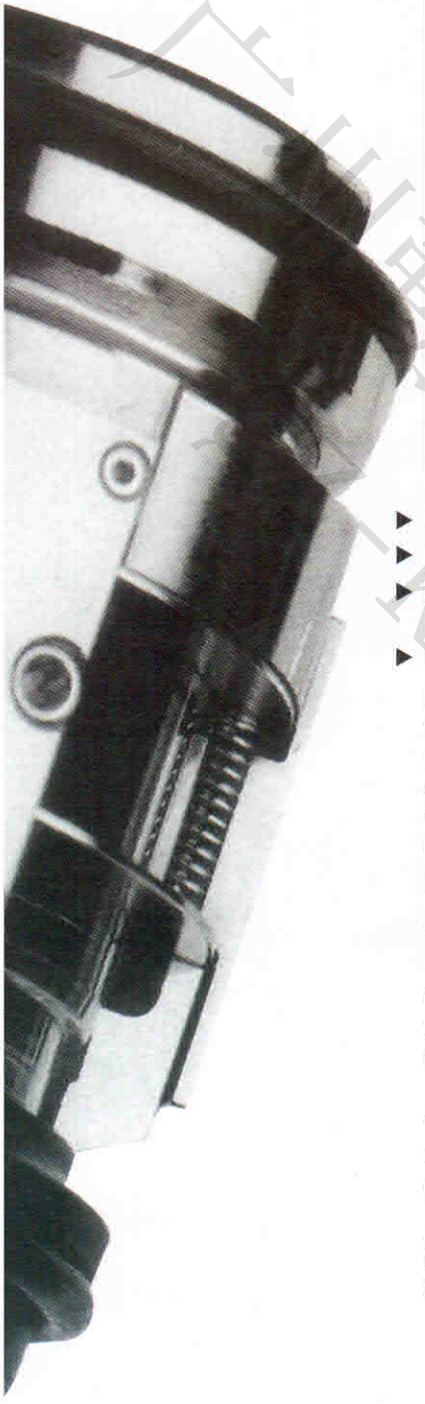
H74-D





- **Double seal**
- **Balanced**
- **Independent of direction of rotation**
- **Multiple spring**

Double seals of the M74-D series have the same design-features as the "H7" family of single seals(easy-to-replace seal faces, etc.). Apart from the installation length of the drive collar, all fitting dimensions (d_1 < 100 mm) conform with DIN 24960.

Operating limits 运行参数

d_1 = 14...200 mm *0.55"...8"*
p_1 = 25 (40) bar 360*(580) PSI*
t = −50...220 °C *−58 °F...430 °F*
(−20...180 °C) *−4 °F...355 °F*
v_g = 20 m/s(10 m/s*) *66(33) ft/s*

*)Limit for shrink-fitted carbide seal faces with $d_1 \leq 105$ mm

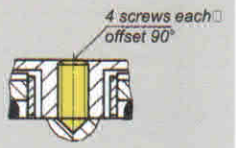
Axial movement 轴向窜动量:
$d_1 \leq 100$ mm ± 0.5 mm
$d_1 > 100$ mm ± 2.0 mm

- 双端面密封
- 平衡型
- 任意旋向
- 多弹簧结构

具有与"H7"系列同样的设计性能，除驱动座的安装长度外，其它安装尺寸(d_1<100 mm)符合DIN 24960标准。

Torque transmission 扭矩传递

$d_2 \geqq 105$ mm: via 4 set screws with cone points (standard arrangement)



当d2≥105mm时用四只螺钉拧入凹坑。

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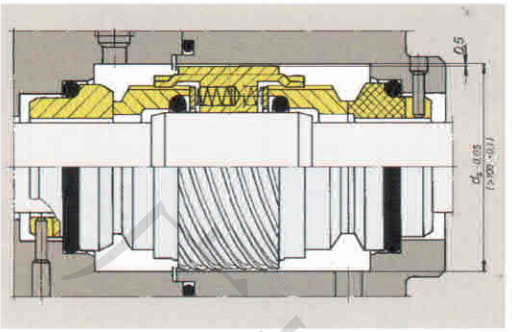

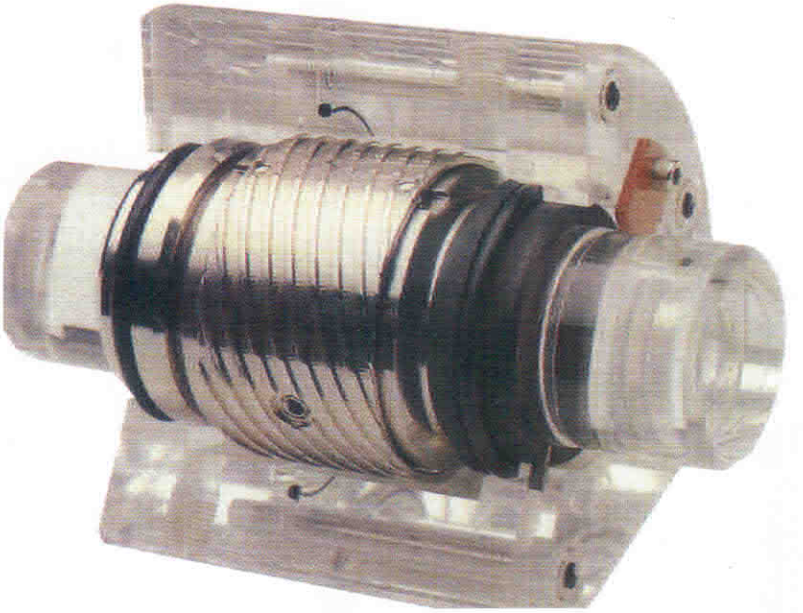

H74 F-D 带螺纹泵

Dimensions, item no's and descriptions as for H74 -D, but with a **pumping screw** (Item no. 1.4). Dependent on direction of rotation!

d_1	d_2	d_3	d_6	d_7	d_8	d_9	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8	l_9	l_{31}	m_x
14	18	33	21.0	25.0	3	–	73.0	18	53.0	26.5	1.5	4	8.5	17.5	10.0	17.0	M5
16	20	35	23.0	27.0	3	–	73.0	18	53.0	26.5	1.5	4	8.5	17.5	10.0	17.0	M5
18	22	37	27.0	33.0	3	42	76.0	20	53.0	26.5	2.0	5	9.0	19.5	11.5	17.0	M5
20	24	39	29.0	35.0	3	44	76.0	20	53.0	26.5	2.0	5	9.0	19.5	11.5	17.0	M5
22	26	41	31.0	37.0	3	45	76.0	20	53.0	26.5	2.0	5	9.0	19.5	11.5	17.0	M5
24	28	43	33.0	39.0	3	47	77.0	20	54.0	27.0	2.0	5	9.0	19.5	11.5	17.5	M5
25	30	45	34.0	40.0	3	49	77.0	20	54.0	27.0	2.0	5	9.0	19.5	11.5	17.5	M5
28	33	48	37.0	43.0	3	51	77.0	20	54.0	27.0	2.0	5	9.0	19.5	11.5	17.5	M6
30	35	50	39.0	45.0	3	54	77.0	20	54.0	27.0	2.0	5	9.0	19.5	11.5	17.5	M6
32	38	55	42.0	48.0	3	59	79.0	20	56.0	28.0	2.0	5	9.0	19.5	11.5	18.5	M6
33	38	55	42.0	48.0	3	59	79.0	20	56.0	28.0	2.0	5	9.0	19.5	11.5	18.5	M6
35	40	57	44.0	50.0	3	61	80.0	20	57.0	28.5	2.0	5	9.0	19.5	11.5	19.0	M6
38	43	60	49.0	56.0	4	65	85.0	23	57.0	28.5	2.0	6	9.0	22.0	14.0	19.0	M6
40	45	62	51.0	58.0	4	66	85.0	23	57.0	28.5	2.0	6	9.0	22.0	14.0	19.0	M6
43	48	65	54.0	61.0	4	69	85.0	23	57.0	28.5	2.0	6	9.0	22.0	14.0	19.0	M6
45	50	67	56.0	63.0	4	71	84.0	23	56.0	28.0	2.0	6	9.0	22.0	14.0	19.5	M6
48	53	70	59.0	66.0	4	75	84.0	23	56.0	28.0	2.0	6	9.0	22.0	14.0	19.5	M6
50	55	72	62.0	70.0	4	76	93.0	25	63.0	31.5	2.5	6	9.0	23.0	15.0	19.5	M6
53	58	79	65.0	73.0	4	83	97.0	25	67.0	33.5	2.5	6	9.0	23.0	15.0	23.5	M8
55	60	81	67.0	75.0	4	85	97.0	25	67.0	33.5	2.5	6	9.0	23.0	15.0	23.5	M8
58	63	84	70.0	78.0	4	88	104.0	25	74.0	37.0	2.5	6	9.0	23.0	15.0	24.5	M8
60	65	86	72.0	80.0	4	95	104.0	25	74.0	37.0	2.5	6	9.0	23.0	15.0	24.5	M8
63	68	89	75.0	83.0	4	93	109.0	25	79.0	39.5	2.5	6	9.0	23.0	15.0	24.5	M8
65	70	91	77.0	85.0	4	95	98.0	25	68.0	34.0	2.5	6	9.0	23.0	15.0	23.5	M8
70	75	99	83.0	92.0	4	105	112.5	28	76.4	38.2	2.5	7	9.0	26.0	18.0	25.5	M8
75	80	104	88.0	97.0	4	109	112.5	28	76.4	38.2	2.5	7	9.0	26.0	18.0	25.5	M8
80	85	109	95.0	105.0	4	114	112.5	28	76.0	38.0	3.0	7	9.0	26.2	18.2	25.0	M8
85	90	114	100.0	110.0	4	119	112.5	28	76.0	38.0	3.0	7	9.0	26.2	18.2	25.5	M8
90	95	119	105.0	115.0	4	124	112.5	28	76.0	38.0	3.0	7	9.0	26.2	18.2	25.0	M8
95	100	124	110.0	120.0	4	129	110.5	28	76.0	38.0	3.0	7	9.0	25.2	17.2	25.0	M8
100	105	129	115.0	125.0	4	134	110.5	28	76.0	38.0	3.0	7	9.0	25.2	17.2	25.5	M8
105	115	148	122.2	134.3	5	153	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
110	120	153	128.2	140.3	5	158	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
115	125	158	136.2	148.3	5	163	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
120	130	163	138.2	150.3	5	168	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
125	135	168	142.2	154.3	5	173	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
130	140	173	146.2	158.3	5	178	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
135	145	178	152.2	164.3	5	183	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
140	150	183	156.2	168.3	5	188	122.0	32	82.0	41.0	2.0	10	–	30.0	20.0	31.5	M8
145	155	191	161.2	173.3	5	196	133.0	34	93.0	46.5	2.0	10	–	30.0	20.0	35.5	M8
150	160	196	168.2	180.3	5	201	137.0	36	93.0	46.5	2.0	10	–	32.0	22.0	35.5	M8
155	165	201	173.2	185.3	5	206	141.0	38	93.0	46.5	2.0	12	–	34.0	24.0	35.5	M8
160	170	206	178.2	190.3	5	211	141.0	38	93.0	46.5	2.0	12	–	34.0	24.0	35.5	M8
165	175	211	183.2	195.3	5	216	141.0	38	93.0	46.5	2.0	12	–	34.0	24.0	35.5	M8
170	180	216	188.2	200.3	5	221	141.0	38	93.0	46.5	2.0	12	–	34.0	24.0	35.5	M8
175	185	221	193.2	205.3	5	226	141.0	38	93.0	46.5	2.0	12	–	34.0	24.0	35.5	M8
180	190	226	207.5	219.3	5	231	149.0	42	93.0	46.5	2.0	12	–	38.0	28.0	35.5	M8
185	195	231	212.5	224.3	5	236	149.0	42	93.0	46.5	2.0	12	–	38.0	28.0	35.5	M8
190	200	236	217.5	229.3	5	241	149.0	42	93.0	46.5	2.0	12	–	38.0	28.0	35.5	M8
195	205	245	222.5	234.3	5	250	151.0	43	95.0	47.5	2.0	12	–	38.0	28.0	–	M10
200	210	250	227.5	239.3	5	255	151.0	43	95.0	47.5	2.0	12	–	38.0	28.0	–	M10

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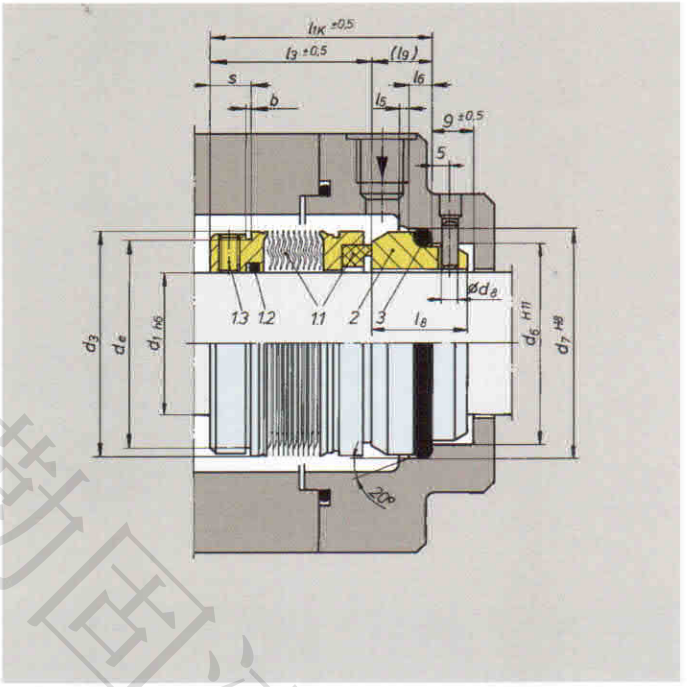
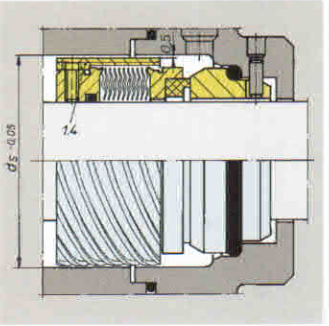
MFL85N





MFL 85 F 带螺纹泵

Dimensions, item no's and descriptions as for MFL 85 N, but with **pumping screw** (item no. 1.4). Dependent on direction of rotation!

- **Single seal**
- **Balanced**
- **Independent of direction of rotation**
- **Metal bellows**
- **To DIN 24960**

Mechanical seals in the MFL series have a universal field of application. They are designed for extreme ranges of temperature and for high-viscosity media. There is no dynamic O-ring and therefore a bellows seal will never hang-up.

- 单端面密封
- 平衡型
- 任意旋向
- 金属波纹管
- 符合 DIN 24960标准

MFL系列应用广泛、适用于高温高粘度介质。动环O形圈不起补偿作用，因此波纹管移动没有阻尼。 MFL65静止型波纹管密封详情见后。

Operating limits 运行参数

d_1 = 16...100 mm *0.64"...4"*

p_1 = with external pressurization[1]
当波纹管受外压时
25 bar *360 PSI*

with internal pressurization[2]
当波纹管受内压时
< 120 °C 10 bar *145 PSI*
< 220 °C 5 bar *72 PSI*

MFL 85 N:
t = –20...+300 °C for T_6–bellows
(–4 °F...572 °F)
–50...260 °C for M_5–bellows
(–58...500 °F)
MFLWT 80:
t = –20...400 °C
(–4 °F...752 °F)
v_g = 15m/s 50ft/s
MFLCT 80:
t = –100...100 °C
(–148 °F...212 °F)
v_g = 15m/s 50ft/s

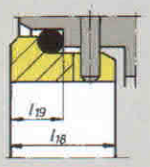
[1] Higher pressures possible with special designs – please refer to Burgmann.

[2] Positively retained stationary seat necessary.

1)压力超过此范围时请与公司联系。
2)请正确选用静止环。

Stationary seats 静止环

– G16



Installation length is shorter than l_{1K} specified by DIN 24960(MFL 85N) Unquoted dimensions as for G9.

安装长度比l_{1K}短，其他尺寸与G9相同。

Vibration damper for type MFL 85 N

Torque transmission for type MFL WT 80

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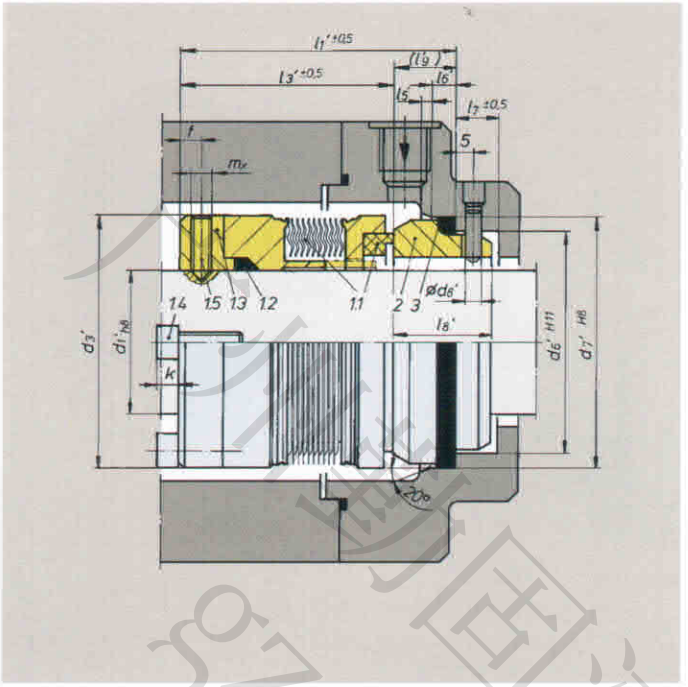
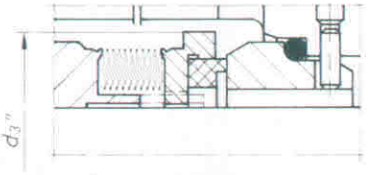


MFLWT 80/ MFL CT 80

Dimensions are not to EN 12756. Seal face positively driven to protect bellows from torsional stress. Secondary seals made from Burgmann Statotherm®.
安装尺寸不符合EN12756标准



Execution in Hastelloy®C MFLWT/CT 80
Hastelloy®C材料时尺寸

	MFL 85N/MFL 85F																MFL WT 80/MFL CT 80														
d_1	d_3	d_6	d_7	d_8	d_9	d_5	l_{1k}	l_3	l_5	l_6	l_8	l_9	l_{18}	l_{19}	b	s	d_3'	d_3'' 2)	d_6'	d_7'	d_8'	l_1'	l_3'	l_5'	l_6'	l_7'	l_8'	l_9'	f	k	m_x
16	30.0	23	27	3	25.0	38	42.5*	32.5	1.5	4	17.5	10.0	–	–	1.6	9.0	38	–	29.0	35.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
18	32.0	27	33	3	28.0	39	37.5	30.5	2.0	5	14.0	7.0	15.0	7.0	1.6	10.0	40	–	31.0	37.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
20	33.5	29	35	3	29.5	41	37.5	30.5	2.0	5	14.0	7.0	15.0	7.0	1.6	10.0	42	–	34.0	40.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
22	36.5	31	37	3	32.0	44	37.5	30.5	2.0	5	14.0	7.0	15.0	7.0	1.6	10.0	44	–	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
24	39.0	33	39	3	34.5	47	40.0	28.5	2.0	5	19.5	11.5	15.0	7.0	1.6	8.2	46	49.8	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
25	39.6	34	40	3	35.5	48	40.0	28.5	2.0	5	19.5	11.5	15.0	7.0	1.6	8.5	47	51.7	39.0	45.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
28	42.8	37	43	3	38.5	51	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.0	50	54.5	42.0	48.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
30	45.0	39	45	3	40.5	53	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	8.5	52	56.6	44.0	50.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
32	46.0	42	48	3	42.0	55	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.2	54	59.5	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
33	48.0	42	48	3	43.0	56	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.2	55	59.5	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
35	49.2	44	50	3	45.5	58	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.5	57	62.5	51.0	58.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
38	52.3	49	56	4	48.0	61	45.0	31.0	2.0	6	22.0	14.0	16.0	7.0	1.6	9.2	60	65.7	54.0	61.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
40	55.5	51	58	4	50.0	64	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2	66	65.7	56.0	63.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
43	57.5	54	61	4	53.0	67	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2	69	68.6	59.0	66.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
45	58.7	56	63	4	55.0	69	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.5	71	71.5	62.0	70.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
48	61.9	59	66	4	58.0	72	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2	74	75.1	65.0	73.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
50	65.0	62	70	4	60.5	74	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.5	76	76.1	67.0	75.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
53	68.2	65	73	4	64.0	77	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.5	79	80.8	70.0	78.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
55	70.0	67	75	4	65.5	80	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.0	81	80.8	72.0	80.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
58	71.7	70	78	4	67.0	83	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0	85	84.0	75.0	83.0	4	68.0	53.0	2.5	6	9	23.0	15.0	5	6	M6
60	74.6	72	80	4	69.5	85	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0	87	92.3	77.0	85.0	4	68.0	53.0	2.5	6	9	23.0	15.0	6	6	M8
63	79.0	75	83	4	72.5	88	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0	90	95.5	81.0	90.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
65	84.1	77	85	4	78.0	95	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0	92	95.5	83.0	92.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
68	87.3	81	90	4	82.0	96	52.5	34.5	2.5	7	26.0	18.0	18.5	11.0	1.6	10.0	95	101.3	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
70	87.3	83	92	4	81.0	96	60.0	42.0	2.5	7	26.0	18.0	19.0	11.5	3.0	17.0	97	101.3	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
75	95.0	88	97	4	87.0	104	60.0	42.0	2.5	7	26.0	18.0	19.0	11.5	3.0	16.0	102	105.0	95.0	105.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
80	98.4	95	105	4	91.0	109	60.0	41.8	3.0	7	26.2	18.2	19.0	11.5	3.0	16.0	107	110.6	100.0	110.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
85	104.7	100	110	4	96.0	114	60.0	41.8	3.0	7	26.2	18.2	19.0	11.5	3.0	16.0	112	117.0	105.0	115.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
90	111.0	105	115	4	103.0	119	65.0	46.8	3.0	7	26.2	18.2	20.5	13.0	3.0	21.0	117	120.2	110.0	120.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
95	114.0	110	120	4	106.0	124	65.0	47.8	3.0	7	25.2	17.2	20.5	13.0	3.0	21.0	122	125.2	115.0	125.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
100	117.4	115	125	4	111.0	129	65.0	47.8	3.0	7	25.2	17.2	20.5	13.0	3.0	20.0	127	130.2	122.2	134.3	5	74.0	54.0	3.0	9	11	30.0	20.0	6	6	M8

1)Installation Length is longer than l_{1k} specified by En12756

2)d3" Execnted in Hastelloy®

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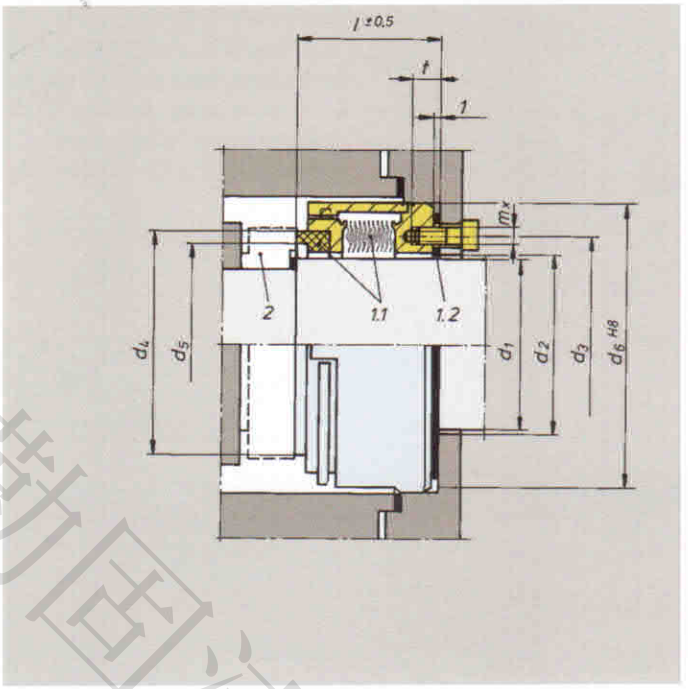
MFL65



- **Single seal**
- **Balanced**
- **Independent of direction of rotation**
- **Metal bellows**

The MFL65 mechanical seal was specially developed for high temperature ranges and sliding velocities. Its torque transmission exerts no strain whatsoever on the bellows and requires no elastomer secondary seals.

- 单端面密封
- 平衡型
- 任意旋向
- 金属波纹管

MFL65系列运用于高温高速度工况。扭矩的传递不影响波纹管。没有其它弹性元件构成次级密封。

Stationary seats 非补偿环

The stationary seat design is chosen according to the specific requirements and conditions of operation.

非补偿环按照运行特殊需要选择。

Operating limits 运行参数

d_1 = 16...100 mm *0.64" ...4"*
(> 100 mm on request)

p_1 = with external pressurization[1]:
当波纹管受外压时
25bar *360 PSI*
with internal pressurization[2]:
当波纹管受内压 时
< 60 °C 10 bar *145 PSI*
< 125 °C 7 bar *100 PSI*
< 220 °C 5 bar *72 PSI*

t = −20...400 °C *−30 °F....755 °F*

v_g = 50m/s *165 ft/s*

[1]Higher pressures possible with special designs - please refer to Burgmann.
[2]Positively retained stationary seat.

1)高压超过范围请与公司联系。
2)正确选用非补偿环。

Nom.⌀	d_1	d_2	d_3	d_4	d_5	d_6	l	nxm_x	t
19	**16-19**	20.5	29	30.3	25.3	45.0	33.5	4xM4	6
24	**20-24**	25.5	35	38.8	33.8	49.0	33.5	4XM4	6
30	**25-30**	31.5	40	43.6	38.6	55.0	34.5	6XM4	6
35	**31-35**	36.0	45	45.8	40.8	59.0	33.0	6XM4	6
40	**36-40**	41.0	50	51.5	46.5	65.0	30.5	6XM4	6
45	**41-45**	46.0	55	55.2	50.2	69.0	35.5	6XM4	6
51	**46-51**	52.0	63	64.7	59.7	76.5	40.5	6XM5	7
60	**52-60**	61.0	70	70.6	65.6	84.0	32.0	6XM5	7
70	**61-70**	71.0	80	82.8	76.8	95.0	38.0	6XM5	7
82	**71-82**	83.5	95	98.0	92.0	112.0	41.0	6XM6	7
88	**83-88**	89.5	100	107.7	101.7	120.0	47.0	6XM6	7
100	**89-100**	101.0	112	112.7	106.7	130.0	47.0	6XM6	7

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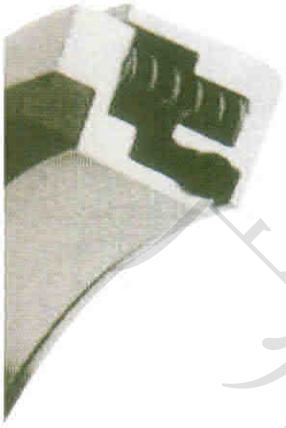
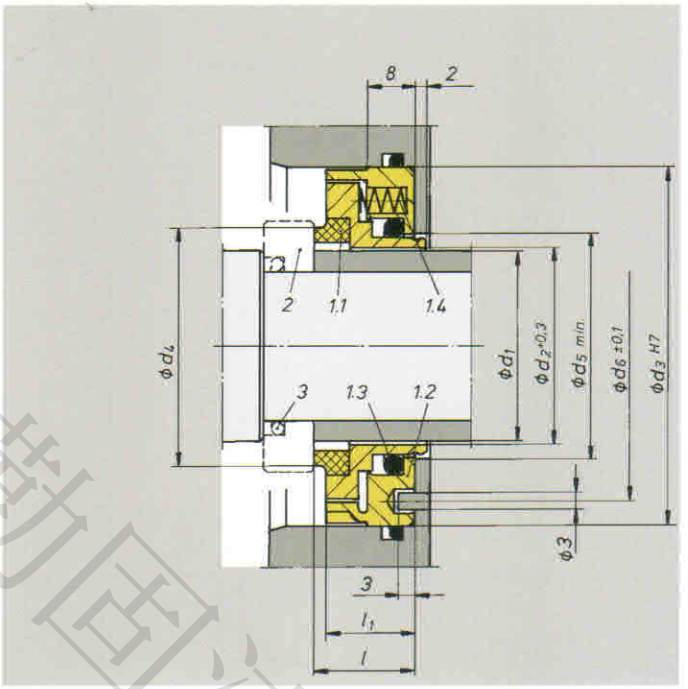
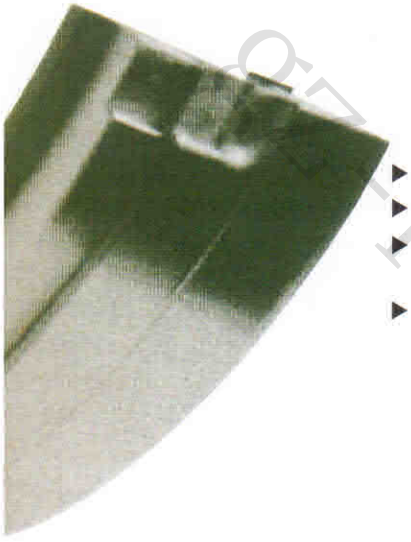
H10







- **Single seal**
- **Balanced**
- **Independent of direction of rotation**
- **Multiple springs**

Mechanical seals of the H10 range have a short installation length(axial).The H 10 is a compact ready-to-fit seal which can be installed in the same axial length as a lip-seal and can be used to seal differential pressures of up to 25 bar.

- 单端面密封
- 平衡型
- 任意旋向
- 多弹簧结构

H10 系列机械密封，轴向尺寸很短，它能替代骨架油封，在许多设备上使用。介质压力可达 25bar.

Stationary seats 非补偿环

The stationary seat design is chosen according to the specific requirements and conditions of operation.

非补偿环按照运行需要选择。

Operating limits 运行参数

d_1 = 15...100 mm *0.6" ...4"*
p_1 = 25bar *360 PSI*
t = −20...180 °C *−4 °F....355 °F*
v_g = 35m/s *115 ft/s*

d_1	d_2	d_3	d_4	d_5	d_6	$l_{+0.5}$	l_1	d_1	d_2	d_3	d_4	d_5	d_6	$l_{+0.5}$	l_1
15	16	42	22.6	21	34	17	15.0	**50**	51	80	58.2	56	72	17	15.0
18	19	45	25.6	24	37	17	15.0	**52**	53	82	60.2	58	74	17	15.0
20	21	48	27.6	26	40	17	15.0	**55**	56	85	63.2	61	77	17	15.0
22	23	50	29.6	28	42	17	15.0	**58**	59	90	66.7	64	82	17	15.0
25	26	52	32.8	31	44	17	15.0	**60**	61	90	68.7	66	82	17	15.0
28	29	55	35.8	34	47	17	15.0	**65**	66	95	73.7	71	87	19	16.5
30	31	58	37.8	36	50	17	15.0	**68**	69	100	76.7	74	92	19	16.5
32	33	60	39.8	38	52	17	15.0	**70**	71	100	78.7	76	92	19	16.5
35	36	62	42.8	41	54	17	15.0	**75**	76	108	83.7	81	100	19	16.5
38	39	65	45.9	44	57	17	15.0	**80**	81	112	88.7	86	104	19	16.5
40	41	68	47.9	46	60	17	15.0	**85**	86	118	93.7	91	110	19	16.5
42	43	72	49.9	48	64	17	15.0	**90**	91	122	99.5	96	114	19	16.5
45	46	75	52.9	51	67	17	15.0	**95**	96	128	104.5	101	120	19	16.5
48	49	80	55.9	54	72	17	15.0	**100**	101	132	109.5	106	124	19	16.5

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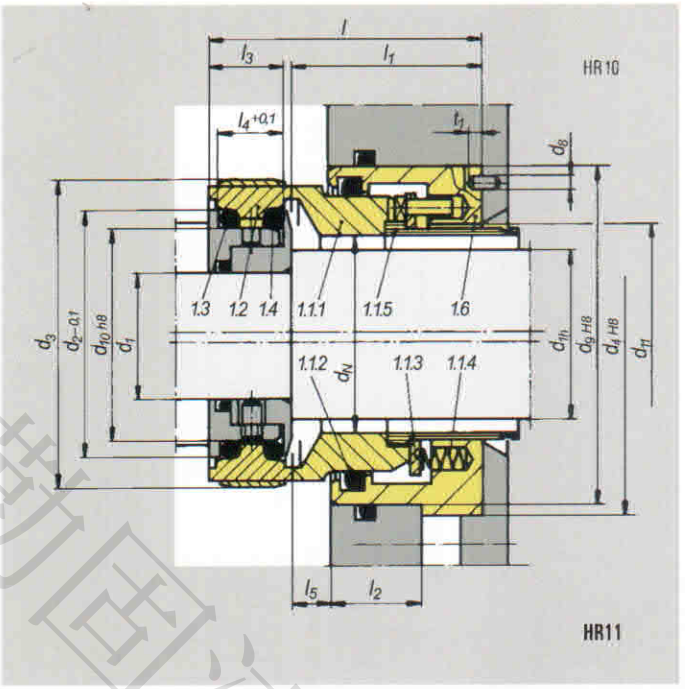
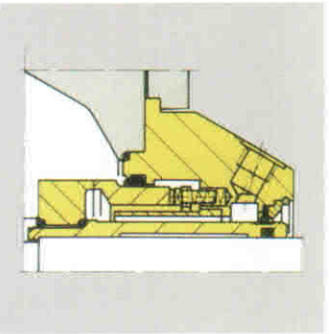
HR





SHR

Special model for use in **sterile processes.** Electropolished surfaces, and specially designed O-ring grooves for special elastomeric seal rings and O-rings leaving no gaps plus many other features, please enquire for details.

这种特殊的型式专门用于无菌流程。

- ▶ **Single seal**
- ▶ **Independent of direction of rotation**
- ▶ **Balanced**

- ▶ 单端面密封
- ▶ 任意旋向
- ▶ 平衡型

Mechanical seals of the HR series are special-purpose seals for use in media containing solids without external flushing or product circulation. Key features are a rotating seat positioned immediately next to the pump impeller, a open seal chamber facing the impeller, and a spring protection sleeve which has proven to be effective in actual service. HR mechanical seals find application mainly in the scrubbing sections of power station flue gas desulphurization systems, and they are also used successfully in the paper industry..

HR系列是特殊用途密封，它适用在含有颗粒、但没有外部冲洗和循环的工况中。主要特点是旋转的非补偿环直接安装在叶轮旁，密封腔敞开，面对叶轮、弹簧受保护。主要应用在发电厂、燃料气体脱硫系统的净化装置中，也应用于造纸行业。

Operating limits 运行参数

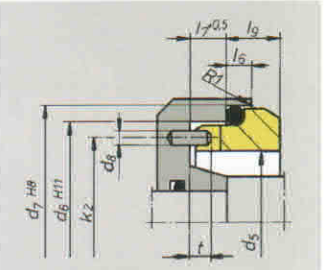
d_N = 36...200(400) mm
1.4" ...8" (16")
p_1 = 16bar *230 PSI*
t = −20...160 °C *−4 °F....320 °F*
v_g = 10m/s *33 ft/s*

HR1..

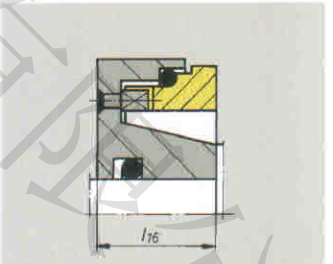
Direction of installation:
– from the impeller side HR10
– from the bearing side HR11

装置定位
HR10在叶轮一侧。
HR11在轴承一侧。

Rotating seat alternatives
可改变的动环结构



d_N 36 ... 90 mm: **–G2**
95 ... 200 mm: **–G9**



d_N 35 ... 100 mm: **–G71**
(only for HRZ1)

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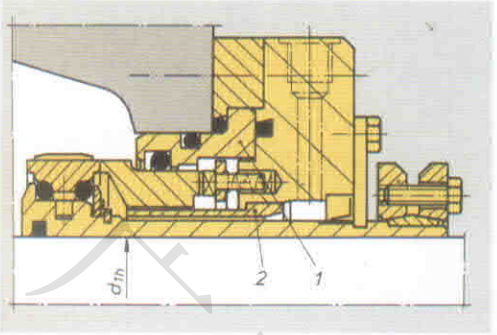
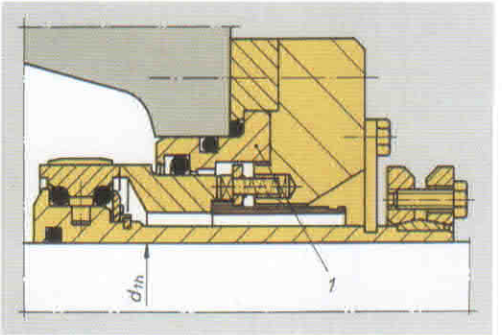


HR 2...

Cartridge-type single seal with guide sleeve(Item no.2) for use with quench Insert(Item no.1)either metallic or SiC.

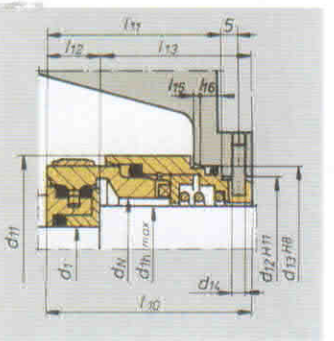
卡盘式单级密封,由导向轴套作阻尼，嵌入金属或Sic环。



HR 3...

Cartridge-type single seal. Insert (Item no.1) either metallic or SiC.

卡盘式单级密封，嵌入金属或Sic环。



HRZ1

Single seal with **cylindrical spring** (Item no 1.1.4).Stationary seat type G76. Installation in cover installation dimensions according to **DIN 24960**

带园柱形弹簧的单端面密封，静止环使用G76型，安装尺寸符合DIN24960标准。

d_1	d_{1h}	d_N	d_2	d_3	d_4	d_5	d_6	d_7	d_8	d_9	d_{10}	d_{11} $^{+0.2}_{min}$	l	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_9	k_2	t	t_1
20	28	36	47.1	64	75	46	56.0	63.0	4	70	38	40	75	53	20	19.5	17	10.5	6	9	8.0	51.0	4.5	3
25	33	41	52.1	69	80	51	62.0	70.0	4	75	43	45	75	53	20	19.5	17	10.5	6	9	9.5	56.5	4.5	3
28	38	46	57.1	74	85	56	67.0	75.0	4	80	48	50	75	53	20	19.5	17	10.5	6	9	9.5	61.5	4.5	3
33	43	51	62.1	79	90	61	72.0	80.0	4	85	53	55	75	53	20	19.5	17	10.5	6	9	10.5	66.5	4.5	3
38	48	56	67.1	84	95	66	77.0	85.0	4	90	58	60	75	53	20	19.5	17	10.5	6	9	10.5	71.5	4.5	3
43	53	61	72.1	89	100	69	81.0	90.0	4	95	63	65	75	53	20	19.5	17	10.5	7	9	11.0	75.0	4.5	3
48	58	66	77.1	94	105	76	88.0	97.0	4	100	68	70	75	53	20	19.5	17	10.5	7	9	11.5	82.0	4.5	3
53	63	71	82.1	100	110	81	95.0	105.0	4	105	73	75	75	53	20	19.5	17	10.5	7	9	11.5	88.0	4.5	3
55	65	75	87.1	105	115	86	100.0	110.0	4	110	78	79	75	53	20	19.5	17	10.5	7	9	11.5	93.0	4.5	3
60	70	80	92.1	110	120	91	105.0	115.0	4	115	83	84	75	53	20	19.5	17	10.5	7	9	13.0	98.0	4.5	3
65	75	85	97.1	115	125	96	110.0	120.0	4	120	88	89	75	53	20	19.5	17	10.5	7	9	13.0	103.0	4.5	3
70	80	90	102.1	120	130	101	115.0	125.0	4	125	93	94	75	53	20	19.5	17	10.5	7	9	13.0	108.0	4.5	3
75	85	95	107.1	125	135	107	122.2	134.3	5	130	98	99	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3
80	90	100	112.1	130	140	107	122.2	134.3	5	135	103	104	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3
90	100	110	126.1	146	163	117	136.2	148.3	5	155	117	116	98	73	30	22.0	19	16	10	12	20.0	126.5	7.0	4
100	110	120	136.1	156	173	132	146.2	158.3	5	165	127	126	98	73	30	22.0	19	16	10	12	20.0	139.0	7.0	4
110	120	130	145.1	166	183	142	156.2	168.3	5	175	136	136	98	73	30	22.0	19	16	10	12	20.0	149.0	7.0	4
120	130	140	154.1	176	193	152	168.2	180.3	5	185	145	146	98	73	30	22.0	19	16	10	12	22.0	160.0	7.0	4
130	140	150	163.9	187	203	162	178.2	190.3	5	195	155	156	98	73	30	22.0	19	16	12	12	24.0	170.0	7.0	4
140	150	160	174.9	188	213	172	188.2	200.3	5	205	166	166	98	73	30	22.0	19	16	12	12	24.0	180.0	7.0	4
160	170	180	193.9	219	238	187	212.5	224.3	5	230	185	186	98	73	30	22.0	19	16	12	12	28.0	199.5	7.0	4
180	190	200	213.9	239	265	207	232.8	244.3	5	255	205	206	98	73	30	22.0	19	16	12	12	30.0	219.5	7.0	4

Dimensions for shaft diameters up to 300 mm on request

HRZ1

d_N	d_{1h}	d_1	d_{11}	d_{12}	d_{13}	d_{14}	l_{10}	l_{11}	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}
35	33	20	56	42	48	3	57.7	49.2	15.0	42.7	2.0	5	20
43	39	27	67	54	61	4	57.7	49.2	15.0	42.7	2.0	6	20
54	50	35	78	65	73	4	59.8	52.1	15.5	44.3	2.5	6	20
66	60	47	91	77	85	4	66.0	58.0	16.5	49.5	2.5	6	22
77	72	55	103	88	97	4	74.5	66.0	17.5	57.0	2.5	7	22
100	90	70	125	110	120	4	82.0	73.0	21.0	61.0	3.0	7	22

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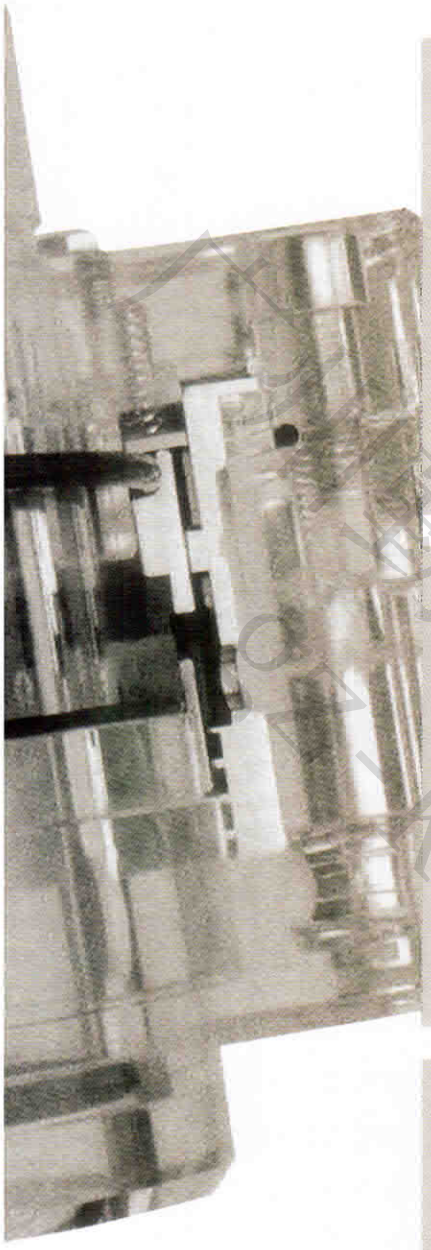
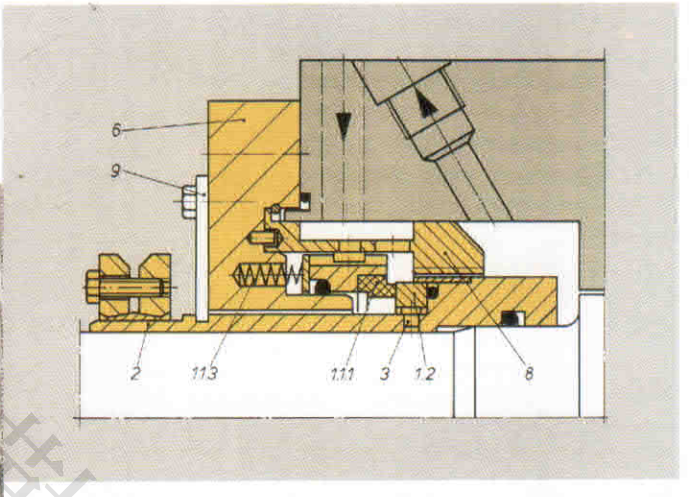
SHF



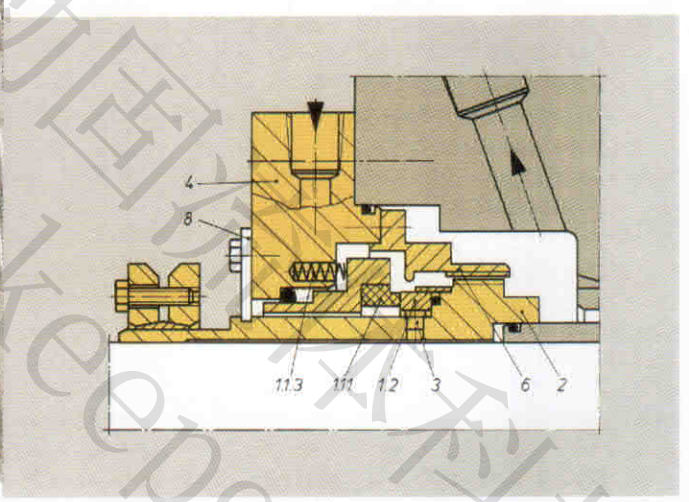


SHF 75

Application: Boiler feed water booster pumps

锅炉前置泵密封

d_1 =40...200 mm *1.575 "...7.874"*
p_1 =40 bar *580 PSI*
t =300 °C *572 °F*
v_g =40 m/s *130ft/s*

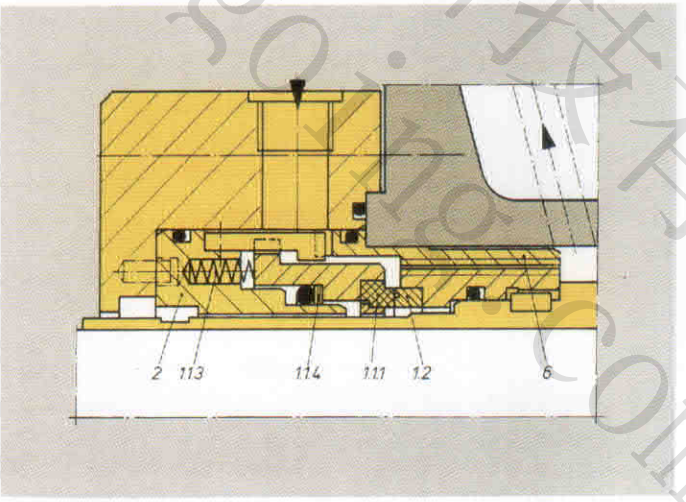


SHF 10

With pressure-balanced seal face
Application: Boiler feed water pumps

锅炉给水泵密封

d_1 =40...200 mm *1.575 "...7.874"*
p_1 =50 bar *725 PSI*
t =300 °C *572 °F*
v_g =75 m/s *245 ft/s*



HFV

With pressure-stabilized seal face.
Application:Boiler circulating pumps

锅炉循环泵密封

d_1 =40...200 mm *1.575"...7.874"*
p_1 =140 bar *2030 PSI*
t =300 °C *572 °F*
v_g =50 m/s *164 ft/s*

- **Single seals**
- **Balanced**
- **Pumping screw**
- **Dependent on direction of rotation**
- **Cartridge design**

Mechanical seals of the SHF range were developed for use in thermal power stations. All seals are operated with an external cooling circuit and are fitted with a pumping screw for circulation of the coolant. The drawings show the latest generation of typical seal designs for power stations. The seal housing is produced to fit the individual pump. Dimension tables are available on request. Silicon carbide usually runs against carbon graphite as face materials.

- 单端面密封
- 平衡型
- 附螺纹泵
- 靠旋向带动
- 卡盘式设计

SHF系列密封应用于火力发电厂。所有型式均配备冷却循环系统，并由螺纹泵传动。尺寸根据要求提供，碳化硅的动环通常由石墨配对。

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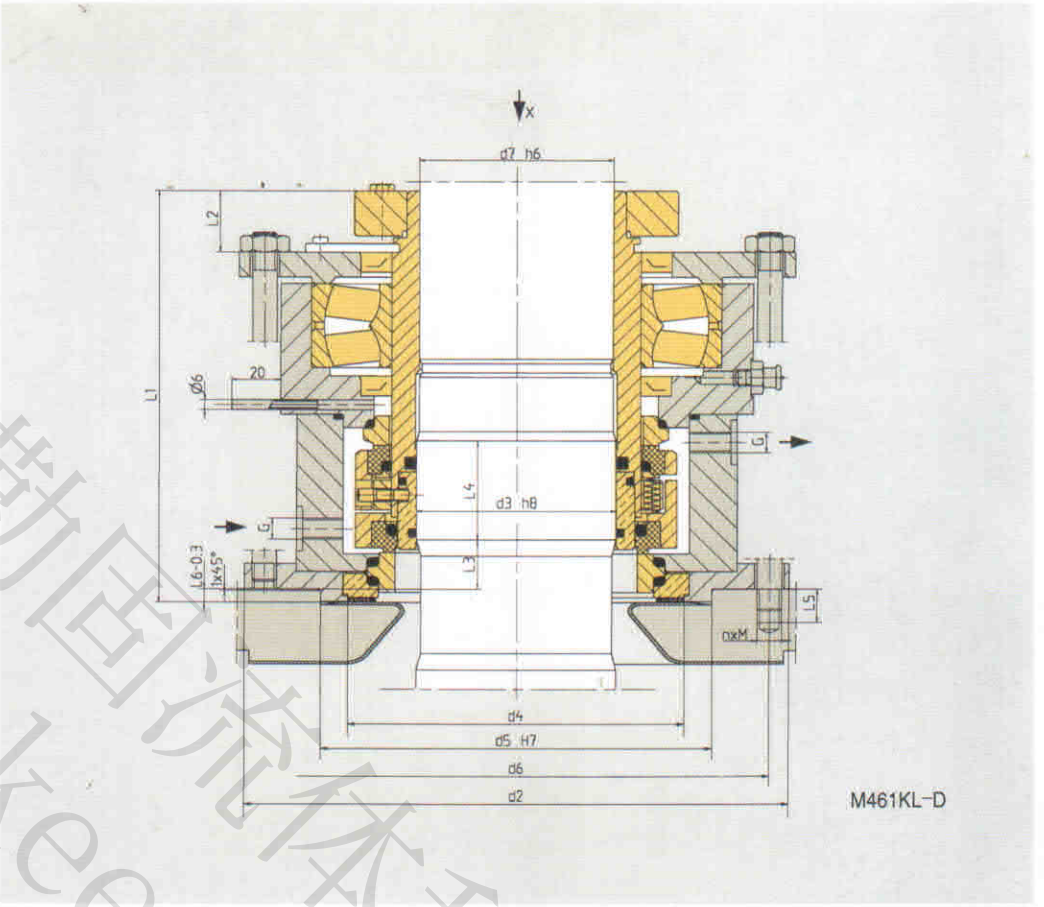
M461



- ▶ **For glass-lined vessels**
- ▶ **Unbalanced**
- ▶ **Independent of direction of rotation**
- ▶ **Cartridge unit**
- ▶ **Connections to DIN**

Vessel seals of the M461 range are factory assembled and tested cartridge units ready for fitting in special applications on glass-lined vessels to **DIN 28136**. The fitting dimensions of the mounting flange are in accordance with **DIN 28137 Part 2**. The sleeve dimensions comply with shaft details given in **DIN 28159**. All parts exposed to the product are of non-metallic construction.

- ▶ 适用于带珐琅衬垫的釜
- ▶ 非平衡型
- ▶ 任意旋向
- ▶ 卡盘式组件
- ▶ 联接尺寸均按DIN标准

M461系列釜用密封由现场组装，经过测试的卡盘组件能够将密封安装于珐琅反应釜上。安装尺寸按照DIN28136标准。法兰安装尺寸按照DIN28137的第二部分。轴套尺寸按照DIN28159标准。所有与介质接触的零件均为非金属材料。

Operating limits DIN 28138 Part 2
DIN28138第二部分运行参数

d_3 = 40...160 mm *1.6 "...6.3"*
p_1 = vacuum ...16 bar *vac...230 PSI*
M461K(L)...6 bar *87 PSI*
t = −25...150(200) °C
= *−13 °F....302(392) °F*
v_g = 2m/s *6.6 ft/s*

d_3	d_2	d_4	d_5	d_6	d_7	nxM	L_1	L_2	L_3	L_4	L_5	L_6	G
40	175	78	93	122	38	8x8	190.5	28	25	50	12	7	3/8"
50	173	94.5	116	155	48	8x8	202	28	25	50	15	7	3/8"
60	192	105	125	176	58	8x10	210	28	25	60	20	7	3/8"
80	219	134	157	203	78	8x10	247.5	34	30	60	20	8	1/2"
100	247	155	185	228	98	8x10	247.5	34	30	60	20	8	1/2"
100													
125													
140													
160													
160													
160													

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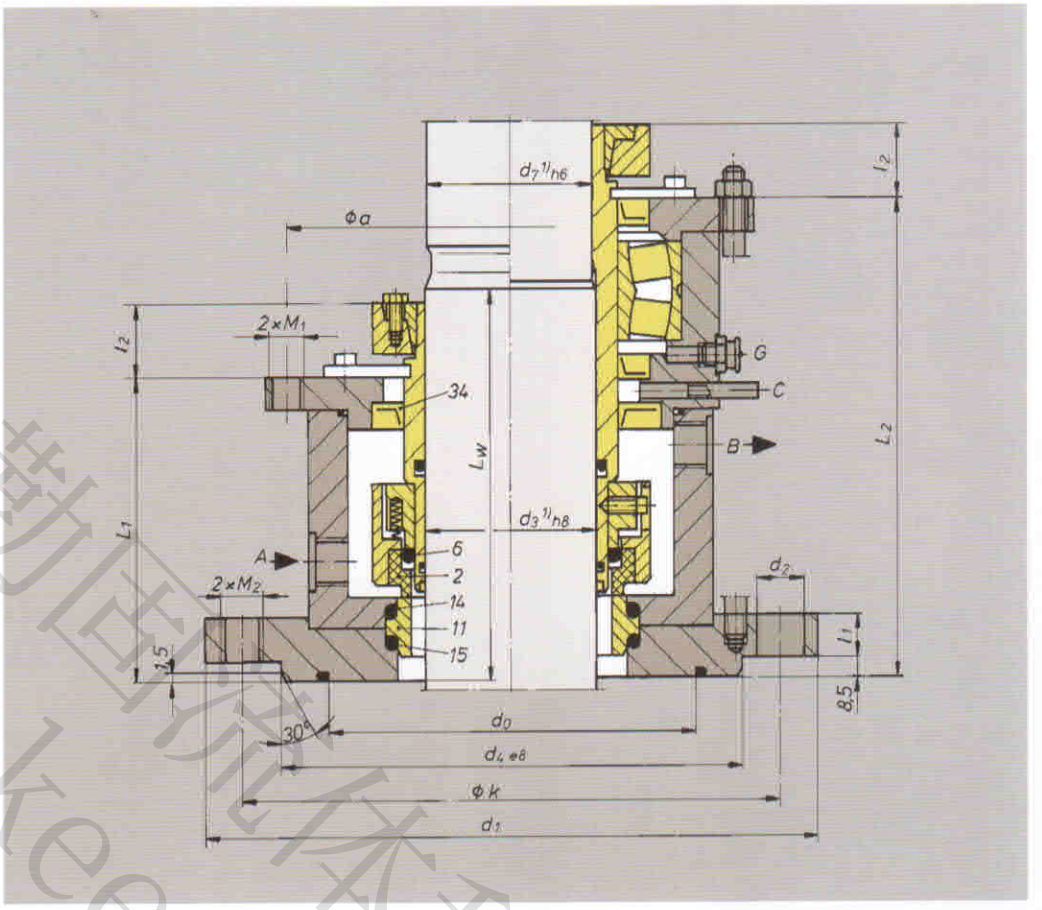
M481



- **Unbalanced**
- **Independent of direction of rotation**
- **Cartridge unit**
- **Connections according to DIN**

Agitator seals of the M481 range are factory assembled and tested units. For use on carbon steel and stainless steel vessels in conformance with **DIN 28136**. The fitting dimensions of the mounting flanges are in accordance with **DIN 28141**. The sleeve dimensions comply with shaft details given in **DIN 28154**.

- 非平衡型
- 任意旋向
- 卡盘式组件
- 联接尺寸按照DIN标准

M481系列釜用密封由现场组装，经过测试的卡盘组件能够将密封安装于适当位置。按照DIN28136标准用在碳钢和不锈钢反应釜上。法兰装配尺寸按DIN28141标准，轴套尺寸按DIN28154标准。

Operating limits DIN 28138 Part 1
DIN28138第一部分运行参数

d_3 = 40...220 mm *1.6"...8.7"*
p_1 = vacuum ...6 bar *vac...87 PSI*
M481(L)–D...16 bar *232 PSI*
t = –10...200 (350) °C
–14° F...392 (662) °F
M481K(L)...150 (250) °C
302 (482) °F
v_g = 2 m/s *6.6 ft/s*

M481K
Single seal 单端面密封

M481KL
Single seal with integrated floating bearing

单端面密封，附有骨架的油封和轴承

Operation of single seals only with pressureless quench

M451 range
The same as the **M481 but** with shafts other than to DIN 28154. Customer specification e.g. with different drives are possible

该系列是专门为用户特殊设计的，型式与M481相似，但轴径尺寸不符合DIN28154标准。

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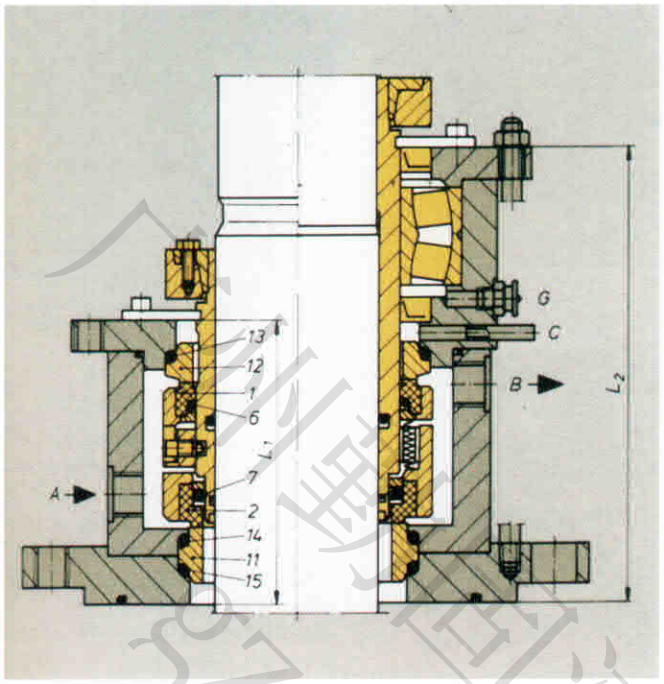

M 481K–D

Double seal

双端面密封

M 481KL–D

Double seal with integrated floating bearing

双端面密封,附有油封和轴承

d_3 [1]	d_7 [1]	d_1	nxd_2	d_4	d_0	ØK	L_1	L_2	L_w [2]	l_1	l_2	a	M_1	M_2	A B
40	38	175	4x18	110	90	145	110.5	159.5	143	15	28	122	M12	M16	G 3/8
50	48	240	8x18	176	135	210	114.5	174.5	148	17	28	157	M12	M16	G 3/8
60	58	240	8x18	176	135	210	119.0	181.5	158	17	28	168	M12	M16	G 3/8
80	78	275	8x22	204	155	240	133.0	217.5	168	20	34	203	M16	M20	G 1/2
100	98	305	8x22	234	190	270	137.5	218.5	178	20	34	228	M16	M20	G 1/2
125	120	330	8x22	260	215	295	138.5	233.5	203	20	40	268	M20	M20	G 1/2
140	135	395	12x22	313	250	350	152.5	250.5	208	20	40	285	M20	M20	G 1/2
160	150	395	12x22	313	265	350	161.0	253.0	213	25	40	297	M20	M20	G 1/2
180	170	445	12x22	364	310	400	166.0	263.5	233	25	45	332	M24	M20	G 1/2
200	190	445	12x22	364	310	400	171.0	271.0	243	25	45	352	M24	M20	G 1/2
220	210	505	16x22	422	340	460			263	25			M24	M20	G 1/2

[1] Shaft diameters d_3 and d_7 to DIN 28154

[2] Shaft step to DIN 28154

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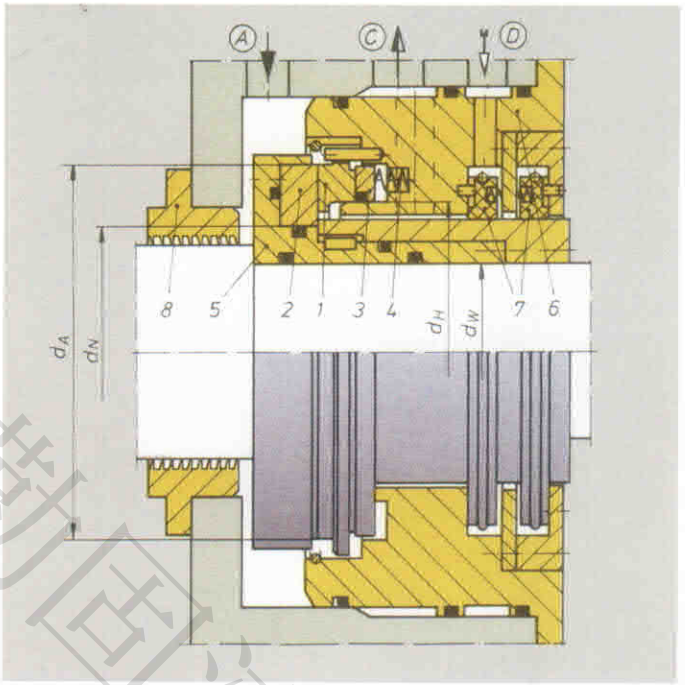
DGS



- **Cartridge unit**
- **Contact-free**
- **Gas-lubricated**

- 集装式组件
- 非接触
- 气体润滑

Gas-lubricated mechanical seals of the DGS series were developed specially for sealing turbocompressors. They are distinguished by broad sliding faces and the V-grooves of the rotating seat. The DGS offers a range of technical and economical advantages: low investment and operating costs, a low level of power consumption, high safety in operation and a long service life, low leakage rates, no oil contamination of the product and, last but not least, an increase of the compressor's efficiency.

气体润滑的机械密封DGS系列是为了密封透平压缩机而特地开发的。它们与普通密封的区别在于采用宽磨擦面以及在旋转环上加工V形凹槽，DGS具有技术和经济上的优势投资和操作费用低，功率消耗水平低，操作安全性能高和使用寿命长，泄漏率低，对产品无油污染，最后最重要的是压缩机的效率提高。

Operating limits 运行参数

d_N = 46...300 mm
Other nominal diameters on request

p_1 = ...100*(250) bar a
* > 100 bar design free from elastomers. On request.

t = −54...+275°C
(note resistance of secondary seals)

v_g = ...200m/s (referred to d_A)

CSR
Radial clearance seal

The CSR consists of a split carbon graphite throttle ring held together by a circular tension spring. The "pockets" provided on the inside diameter produce a radial lifting force in operation, which adjusts automatically a concentric gap of a few µm.
With the shaft at standstill, the seal and the shaft remain in contact to ensure a good static sealing.

- independent of the direction of rotation
- contactfree running
- solid particles in the medium < 10 µm
- reduction of the leakage (up to 90% less than for a labyrinth seal)

CSR 径向间隙密封

CSR是一个用环形拉紧弹簧保持在一起的剖分式碳石墨节流环组成的，在操作中由这些“小块”在内径提供一个径向提升力，自动调节中心的间隙仅数微米。当停车时，密封和轴保持接触，确保有一个良好的静密封。

- 任意旋向
- 非接触运行
- 介质中固体颗粒小于10µm
- 减少泄漏（泄漏比迷宫密封减少 90%）

Operating limits 运行参数

d_1 = 10...240 mm

p_1 = 1 mpa per stage (no pressure differential required)

t = 500°C

v_g = 10...100 m/s (non-cooled) or 180 m/s (cooled)

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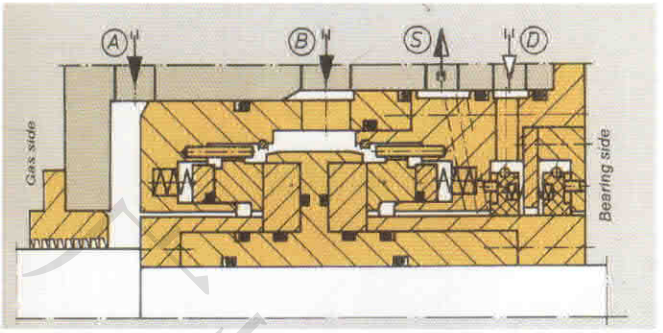
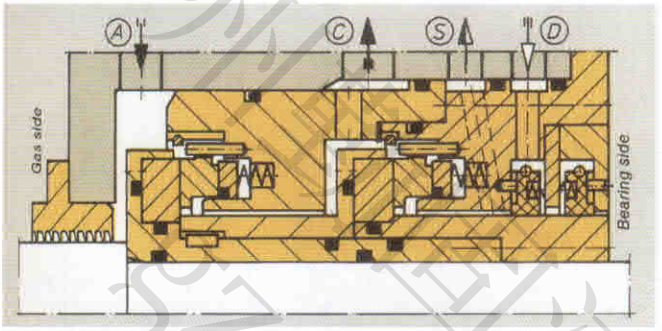


DGS Double seal

Application: where product leakages to the atmosphere are inadmissible. Buffer gas leakages into the product must be admissible (buffer pressure $P_3 > P_1$)

双端面密封

应用于不允许泄漏到大气中的介质，泄漏到介质中的缓冲气体，必须与介质相兼容。(缓冲气体压力$P_3>P_1$)

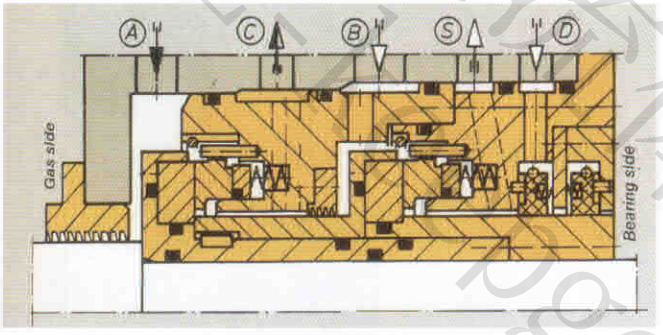


DGS Tandem seal

Seal on the atmophere side acting as a safety seal.
Application:where small leakages of process gas are admissible, e.g. gas pipeline compressors.

串联式密封

在大气端的密封起安全密封作用。应用于所处理的气体允许有少量泄漏于大气中。



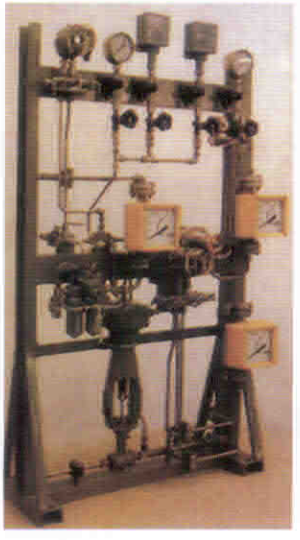
DGS Tandem seal with intermediate labyrinth

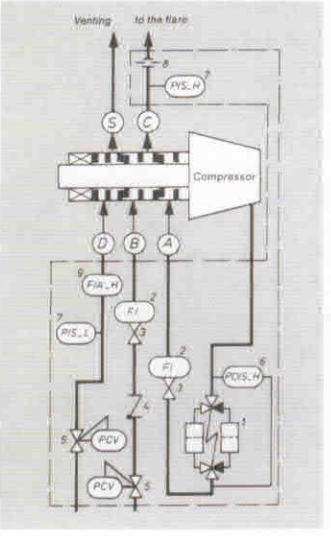
Application:where product leakages to the atmosphere as well as buffer gas leakages to the product are inadmissible (e.g. H_2, ethylene or propylene compressors.

带迷宫密封环的串联式密封

应用:不允许产品介质泄漏到大气中及缓冲液泄漏到产品介质中。(例如：氢气、乙烯、丙烯的压缩机)

d_N	d_W	d_A	d_H
46	21...30	85	65.7
51	31...35	90	70.7
56	36...40	100	76.7
63	41...45	103	78.9
68	46...50	108	83.9
73	51...55	113	88.9
78	56...60	118	93.8
83	61...65	123	98.8
88	66...70	128	103.7
93	71...75	133	108.7
98	76...80	138	113.7
103	81...85	143	118.7
108	86...90	148	123.6
113	91...95	153	128.6
118	96...100	158	133.6
123	101...105	163	138.6
130	106...110	175	150.5
135	111...115	180	155.5
140	116...120	185	160.5
145	121...125	190	165.5
150	126...130	195	170.5
155	131...135	200	175.5
160	136...140	210	181.4
165	141...145	215	186.4
170	146...150	220	191.4
175	151...155	225	206.4
180	156...160	230	206.4
185	161...165	235	206.4
190	166...170	240	211.4
195	171...175	245	216.4
200	176...180	250	221.3
205	181...185	255	226.3
210	186...190	260	231.3
215	191...195	265	236.3
220	196...200	270	241.3
225	201...205	275	246.3
230	206...210	280	251.3
235	211...215	285	256.3
240	216...220	290	261.3
245	221...225	295	266.3
250	226...230	300	271.3
255	231...235	305	276.3
260	236...240	310	281.3
265	241...245	315	286.3
270	246...250	320	291.3
275	251...255	325	296.3
280	256...260	330	301.3
285	261...265	335	306.3
290	266...270	340	311.3
295	271...275	345	316.3
300	276...280	350	321.3





GSS supply systems

GSS (Gas Supply Systems) are designed for the DGS to meet specific applications. They supply these sealing systems with a controlled buffer or flushing gas and monitor their perfect and safe operation.

GSS供给系统

GSS(气体供给系统)是为DGS设计的，以满足特定的使用要求。

资料整理：广州勤固流体科技有限公司
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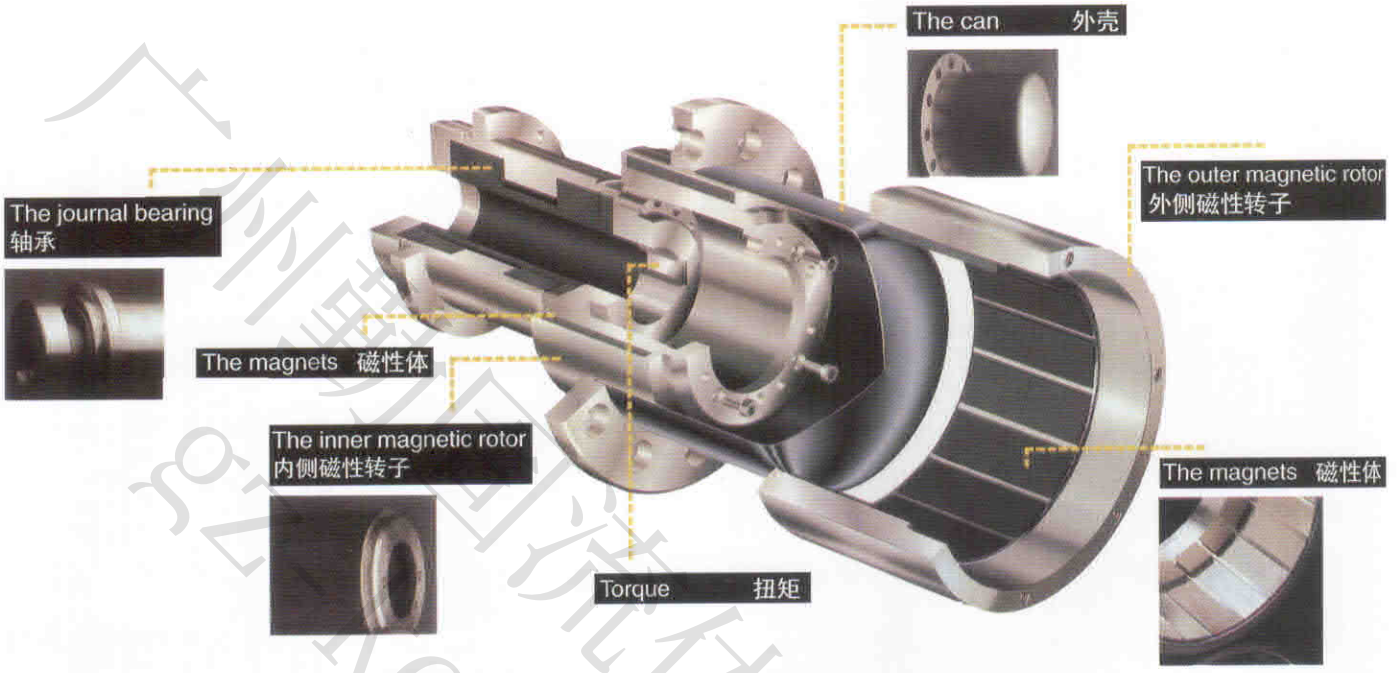
MAK-Technology



With the steadily growing awareness of environmental issues it is a great concern to reduce leakage rates. This calls for selective further developments, with high demands on sealing technology. The Burgmann MAK magnetic coupling, **the hermetically sealed permanent drive** for pumps, agitators and compressors, is the consequent complement to sophisticated mechanical seals.

More and more magnetic couplings are used wherever the fluids are harmful to the environment or health (e. g. poisonous, toxic, foul smelling and carcinogenic) dangerous (e. g. aggressive, explosive, combustible and volatile) or precious.

Use Burgmann MAK for **centrifugal pumps** (VDMA 24279, DIN EN 22858, ISO 2858 with closed impeller) **rotary displacement pumps, liquid ring pumps compressors and fermenters or agitators…**

…and there's nothing contradictory about chemistry and environmental protection.

BURGMANN MAK: Your decision for a clean future.

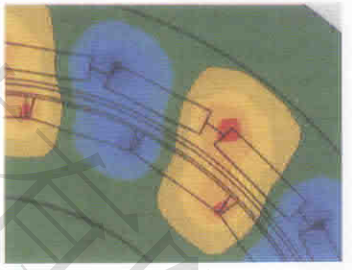
随着环境保护意识的逐渐加强，减少泄漏量变得致关重要。这就要求进一步发展高品质的密封技术。博格曼的MAK磁性联轴器是用于泵、搅拌釜、压缩机这类持续传动需要绝对密封的产品。它们必然跟尖端的密封配套。

越来越多的磁性联轴器被应用于有损人体健康或生态环境（例如：毒性物质、毒素、难闻物质以及至癌物质）、危险物质（例如：腐蚀性物质、爆炸性物质、易燃物质和挥发性物质）或贵重物质。

博格曼MAK应用于离心泵（VDMA 24279, DIN EN 22858,ISO 2858带封闭叶轮）转子泵、水环泵、压缩机、发酵器和搅拌釜…

…并且在有关化学和环境保护方面没有任何抵触。

博格曼MAK：纯净未来的选择。



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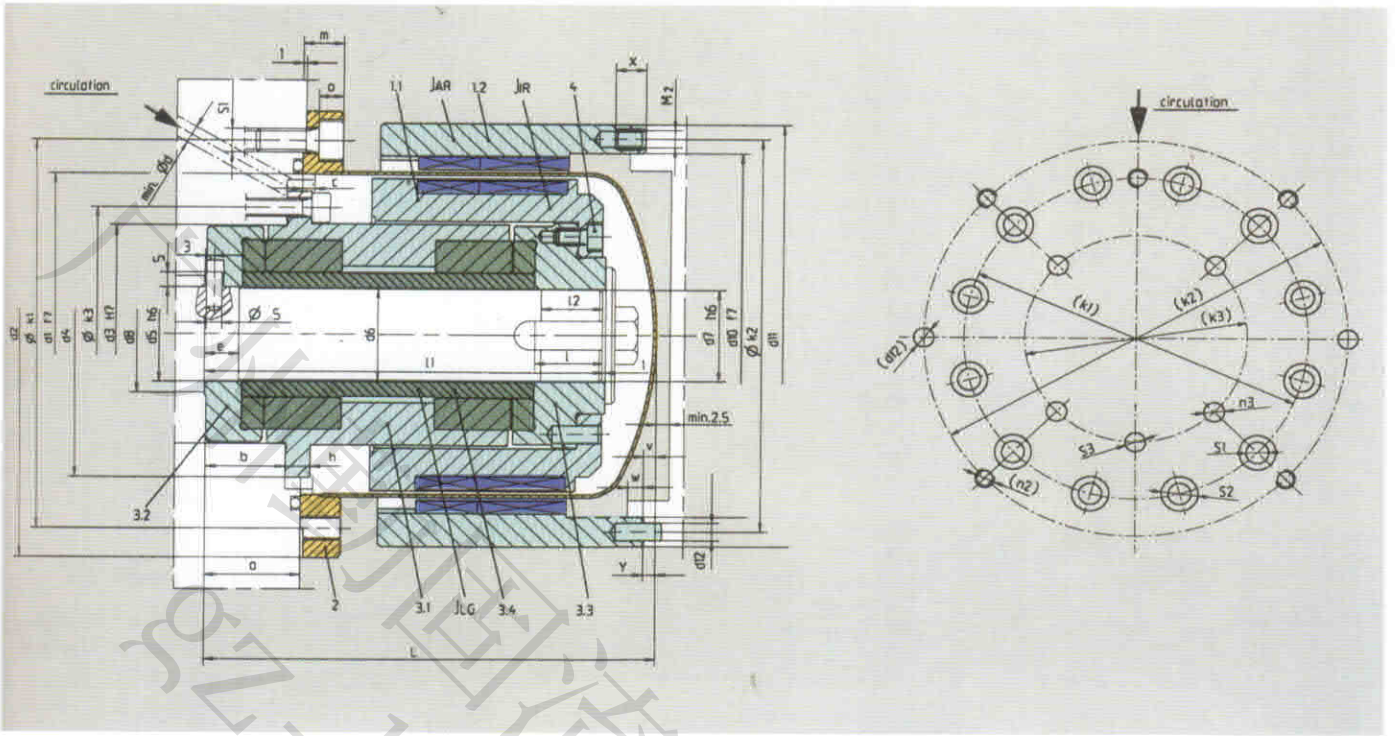

Magnetic coupling MAK DN-LK/DNL
磁性联轴器

Operating limits 运行参数

(for values beyond those quoted. please enquire) (超出以下范围，请查询)

p =16(25)bar
t =...250°C
n =3600min^{-1}
pH–value:0...14
Viscosity:粘度：
from around 0.3 mPas(Q)
from around 0.15 mPas(B)
Static break-away torques at room temperature: up to 315 Nm.
室温下中断力矩：大于315Nm

			Can 壳体											Outer magnetic rotor 外侧磁性转子									
DN	LK	L	d_1	d_2	d	a	c	m	k_1	n_1	s_1	s_2	o	d_{10}	d_{11}	v	w	k_2	n_2	M_2	x	d_{12}	y
75	2- 6	119	75	118	4	17	4	13	100	8	9	14.5	8	90	110	0	5	100	4	M6	10	6	6
110	2- 6	146	110	153	6	31	4	13	133	12	9	14.5	8	125	145	4	5	135	4	M6	10	6	6
135	2- 8	156	135	178	6	17	4	14	158	16	9	14.5	8	150	170	4	5	160	4	M6	10	6	6
165	2-10	187	163.5	218	8	17	5	16	192	12	11	17	10	178	198	5	8	188	4	M6	10	6	6

		Bearing unit 轴承组件																	Moment of inertia [kgm^2]* 惯性力矩		
DN	DNL	d_3	d_4	d_5	d_6	d_8	b	e	l_1	l_2	h	k_3	n_3	s_3	d_7	l	t	u	J_{LG}	J_{AR}	J_{IR}
75	22	44	64	16,5	15,8	30	21	8	103,0	29	7	55	5	5,5	16	16	18	5	0,0001	0,0057	0,0012
110	43	75	98	32,5	31,5	40	26	11	128,5	20	8	87	5	6,6	32	22	35	10	0,00087	0,0168	0,0053
135	43	75	98	32,5	31,5	40	26	11	138,5	20	8	87	5	6,6	32	22	35	10	0,00135	0,0354	0,0168
165	55	92	114	40,5	39,5	50	27	12	169,5	30	10	103	5	6,6	40	32	46	12	0,00399	0,0706	0,0443

Dimensions in mm. Subject to change
*simplified

Maximum admissible loads of bearings [N] 轴承最大负载

DN	75		110		135		165	
DNL	22		43		43		55	
Materials 材料	Q_2,B	Q_1	Q_2,B	Q_1	Q_2,B	Q_1	Q_2,B	Q_1
Axial 轴向	1200	2000	1600	5300	1600	5300	1600	5300
Radial 径向	800	1650	1300	2700	1300	2700	1300	2700

n=3000mm^{-1};viscosity:0.35 mPas

资料整理：广州勤固流体科技有限公司
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TS

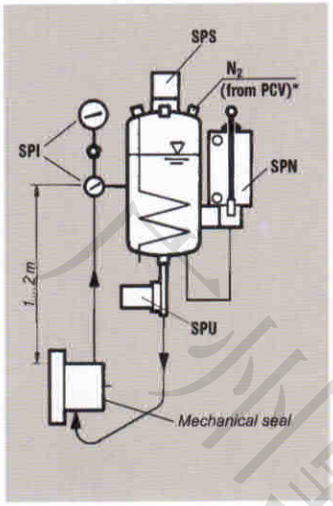
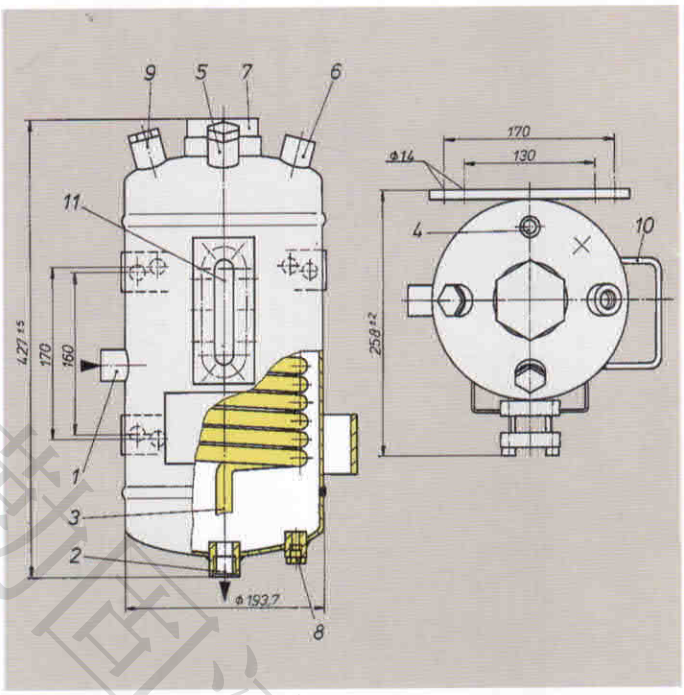
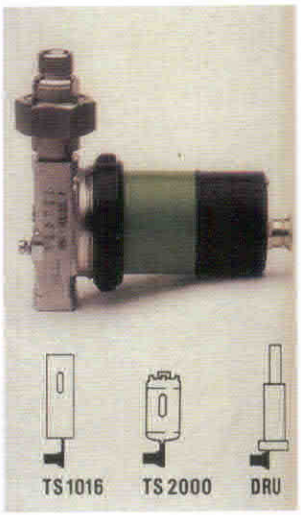


Diagram of the TS system(please note assembly and operating instructions)

图示为TS系统





SPU

Circulating pump 循环泵

for circulating the buffer fluid (to increase the cooling capacity). Suitable for water and other liquids of similarly low viscosity.

用于缓冲液的循环。

SPU 2000

Max.permissible viscosity:	5mm²/s
Permissible operating pressure:	40bar
Permissible operating temperature:	80℃
Explosion protection:	(Ex)s G4
Voltage connection:	220V/50Hz
Power consumption:	23W
Weight:	approx.2.0kg

最大容许粘度：	5mm²/S
允许的工作压力：	40bar
允许的工作温度：	80℃
联接电压：	220V/50Hz
功率消耗：	23W

TS 2000

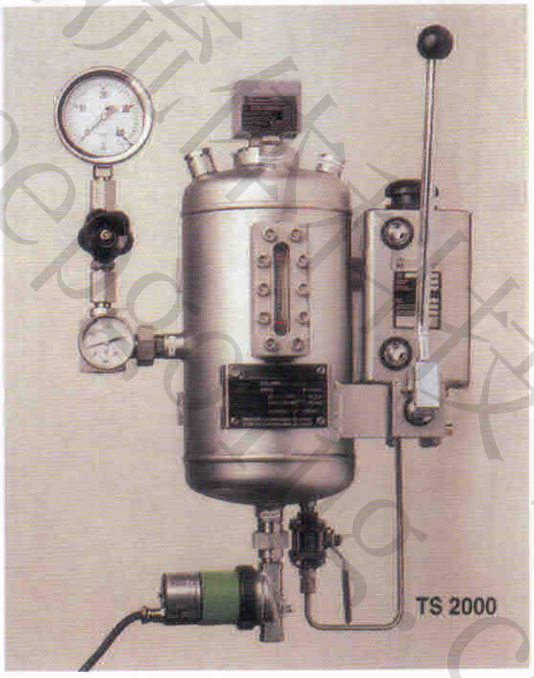
Thermosyphon vessel

with cooling coil (TS 2001 without cooling coil) for storing and cooling buffer fluid. Pressurization by means of gas,e.g.N_2.

热虹吸罐

热虹吸罐具有冷却盘管（TS2001无冷却盘管）可用于贮液和冷却，采用N_2加压。

1 Buffer fluid IN($G^1/_2$)
2 Buffer fluid OUT ($G^1/_2$)
3 Cooling water IN ($G^1/_2$B)
4 Cooling water OUT ($G^1/_2$B)
5 Filling connection with plug ($G^1/_2$)
6 Pressure gas connection (G172)
7 Connection for level switch or level indicator (G 2)
8 Connection for refill unit ($G^1/_8$)
9 Universal connection ($G^1/_2$ for safety valve, flare,etc.)
10 Bracket for refill unit
11 Sight-glass



		TS 2000 Vessel	TS 2000 Pipe	TS 2001	TS 2063 / A002 Vessel	TS 2063 / A002 Pipe	TS 2063 / A001
容量	Capacity(litres)	9	0.5	9	9	0.5	9
允许的工作压力	Permissible operating pressure (bar)[1]	30(20)[3]	30(20)[3]	30(20)[3]	63(52)[3]	63(52)[3]	63(52)[3]
允许的工作温度	Permissible operating temp.℃[1]	−60... +200 (−29...+150)[3]	−60... +200 (−29...+150)[3]	−60... +200 (−29...+150)[3]	−60... +200 (−29...+150)[3]	−60... +200 (−29...+150)[3]	−60... +200 (−29...+150)[3]
运行参数	Operating volume MAX−MIN (litres)	1,8	–	1,8	1,8	–	1,8
冷却功率/自循环	Cooling capacity/natural circ.(kW)[2]	1,5		–	1,5		–
冷却功率	Cooling capacity/forced circul.(kW)[2]	4		–	4		–
冷却流量	Required cooling water rate(m³/h)	0,4		–	0,4		–
净重	Approx.net weight(kg)	15,5		12.5	28,5		26

1) Design data – permissible working values depend on the actual conditions of service
2) Guide lines with buffer fluid water/60°C) – cooling water/20°C
3) Limits according to ASME Section VIII

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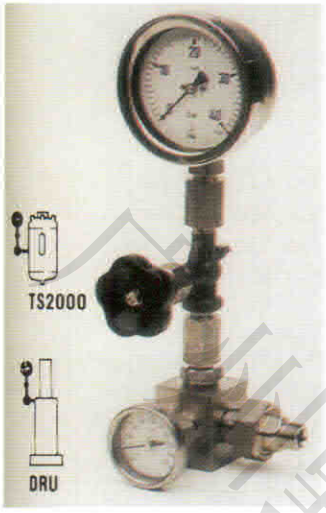
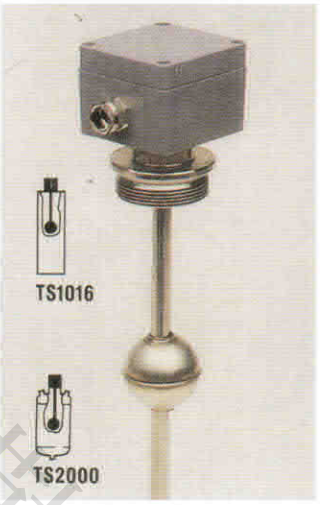
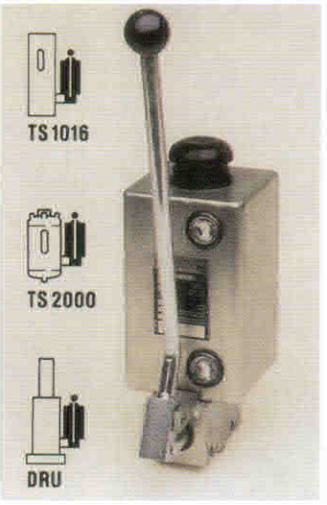
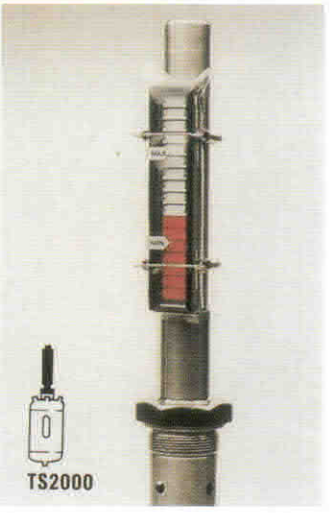








SPI

Measuring unit 测量组件

for visual monitoring of the operating temperature and the operating pressure. The measuring unit consists of a pressure gauge(NG100) with a gauge shut-off valve in accordance with DIN 16 270, a bi-metallic thermometer gauge with protective sleeve, and a connector.

为了运行温度和工作压力的可视监控器。测量组件由压力显示器，双金属片构成的温度计和联接部件组成。

Materials: Parts in contact with the buffer fluid are made of 1.4571.

Weight: approx. 2.9 kg

SPI2000	SPI2000/A003	SPI2000/A012	SPI2000/A013	SPI2000/A049	SPI2063	SPI2100/A002	Type
							Pressure meas. range
●	●	●	●	●			0- 40 bar
					●	●	0- 100 bar
							Temperature meas.range
		●					0-120
●	●		●	●	●	●	0-200
							Proximity switch according to NAMUR
	●	●		●	●	●	min.pressure
	●					●	max.pressure
	●						min.temperature
	●	●	●				max.temperature

Please enquire about other measurement ranges and gauges and about thermometers with contacts.

如容积较大或介质、粘度不同请向本公司查询。

SPS

Level switch 液位开关

for buffer fluid level monitoring with alarm and/or control of automatic refill units.

Materials: Parts in contact with the buffer fluid are made of 1.4571.

Weight: approx.1.7 kg

SPS2000	SPS2000/A002	SPS2000/A101	SPS2000/A102	SPS2100/A101	SPS2100/A002	Type
●		●		●		Float switch with reed contact
	●		●		●	Float switch with 2 reed contacts
						Contact function
●	●	●	●	●	●	Min.level
	●		●		●	Max.level
						Contact function
●	●					Switch contact
		●	●	●	●	Contact breaker (closed contact principle)
						Hazardous duty*
●	●				●	Zone 1
				●		Zone 0**Ex is 2 G5
		●	●			Zone 0**EEx ia II c Part 3-Part 6
						Hazardous duty approval
●	●				●	Not necessary
				●		PTB Nr.III B/E-25208F
		●	●			PTB Nr.Ex-83/2008
						Permissible contact load* **
●	●					Max.250 v/40 VA
				●	●	Max.250 v/12 VA
						Permiss.operat.pressure
●	●	●	●			30 bar(test pressure 40 bar)
				●	●	100 bar(test pressure 130 bar)
						Permissible operating temp.
		●	●			150℃
●	●					180℃
				●	●	200℃
						Min.density of buffer fluid
●	●	●	●			0.7 g/cm³
				●	●	0.4 g/cm³

SPN

Hand refill pump 手动泵

Storage vessel 储存器

Capacity: 2 l
Permissible operating pressure: 0bar
Permissible operating temperature: 60℃

容量：2L
容许的工作压力： 0bar
容许的工作温度： 60℃

SPL

Level indicator 指针显示器

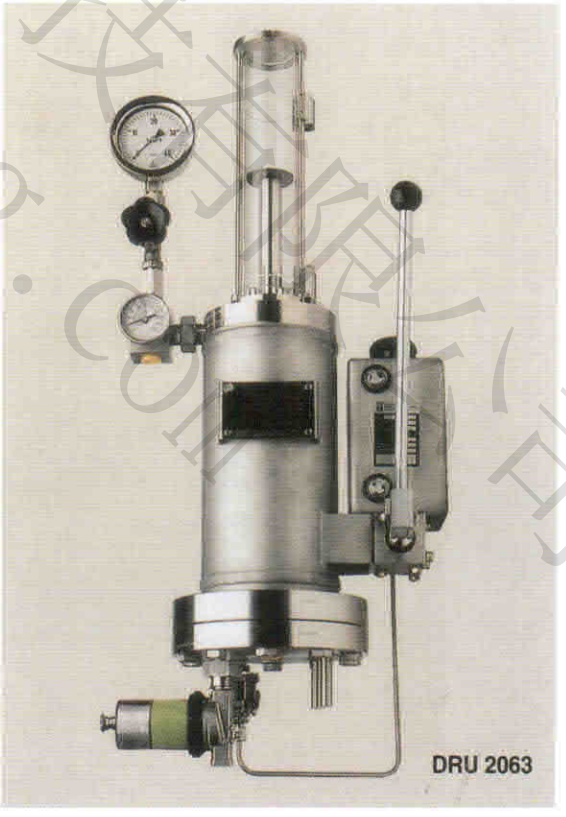
SPL 2000

Max. operating pressure: 63bar
Max. operating temperature : 200℃
Minimum density of fluid: 0.7 g/cm³

允许的工作压力： 63bar
允许的工作温度： 200℃
流体的最小密度： 0.7g/cm³

Materials: Parts in contact with the buffer fluid are made of 1.4571 or tita nium(float).
Available on request with the SPK 2000

可根据需要与SPK2000部件相连。



资料整理：广州勤固流体科技有限公司
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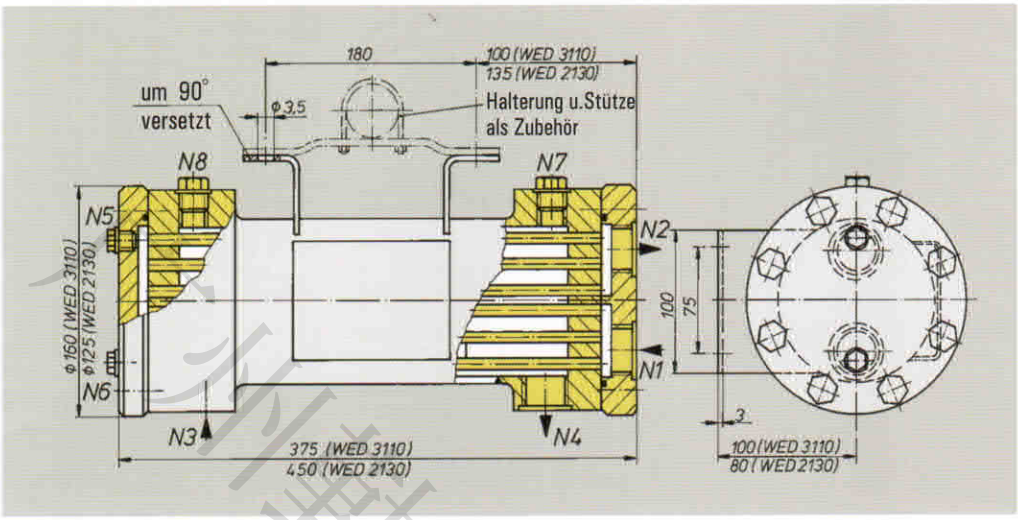
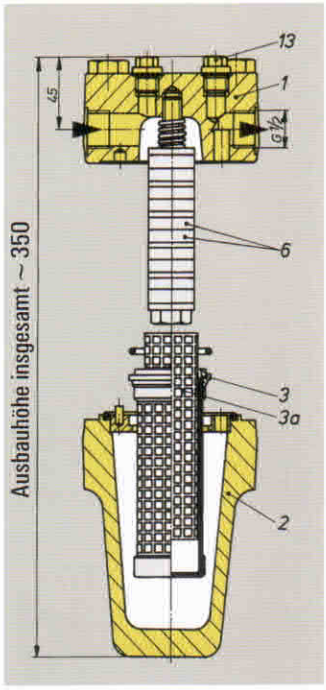
WED MAF ZY





▶ Heat exchangers

of the WED-range are used to cool buffer fluids in seal supply circuits. Designed as a tubular heat exchanger, the WED is outstanding for its high cooling capacity yet compact dimensions. Design, production and material selection conform with the German Pressure Vessel Regulations and with the AD Code.

Connections

N2	Cooling water OUT
N1	Cooling water IN
N4	Buffer medium OUT
N3	Buffer medium IN
N7/N8	Buffer circuit vent
N5	Cooling circuit vent
N6	Cooling water drain

热交换器

WED系列热交换器用于密封循环液的冷却。换热器设计成管状，具有显著的换热效果和紧凑的尺寸。它的设计、生产、材料选择符合德国压力容器规定和AD标准。

Technical data		WED 2130 / A 100		WED 3110 / A 100	
		Tube	Shell	Tube	Shell
设计压力	Design pressure (bar)[1]	25	130	25	110
进口温度	Inlet temperature(℃)[2]	30	65	30	65
流量	Flow rate (m^3/h)[2]*)	1	ca. 0.5	6	ca. 3
容积	Capacity (l)	0.23	1.4	0.75	1.8
冷却功率	Cooling capacity (kW)*)	6		36	
净重	Net weight (kg)	14		24	
设计温度	Design temperature (℃)[1]	150			

*) Related to water on both sides

[1]) These values are based on the calculation of strength

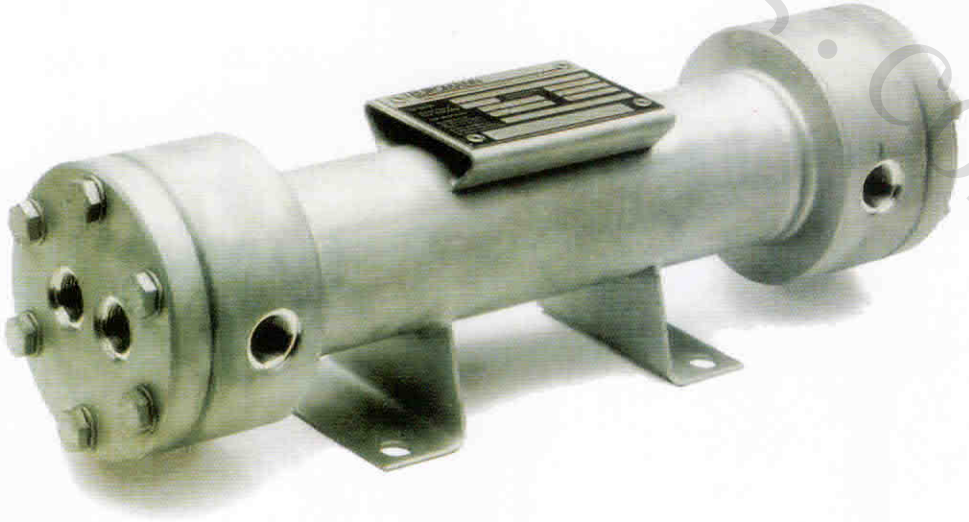
[2]) These values are based on the calculation of heat

▶ Magnetic filters

of the MAF range are throughflow filters for installation in pipe lines. The combination of magnetic rod and filter element guarantees a high level of efficiency. Magnetic filters are used in seal supply systems and any other systems in which a liquid has to be cleaned to magnetic and non-magnetic foreign bodies up to a certain size.

磁性过滤器

MAF系列磁性过滤器是管线的流量过滤器，由磁杆和过滤网组成，可保证有好的过滤效果，可用于密封供液系统及其它系统。能够把系统中磁性或非磁性杂质颗粒，去除到一定的范围。



资料整理：广州勤固流体科技有限公司
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MAF 2000
Magnetic filter 磁性过滤器

MAF 2001
Magnetic filter with internal mesh to protect the filter element from reverse (Item 3a)

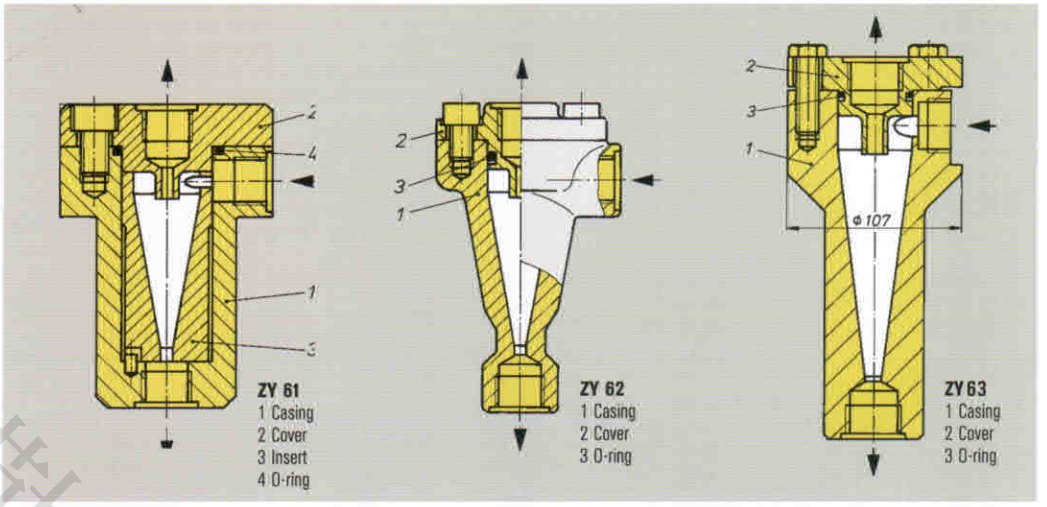
内侧具有滤网保护的磁性过滤器

Operating limits

Permissible pressure: 63bar
Permissible temperature: 150℃
(please enquire about higher values)
Filter mesh: 50 μ m
Weight: approx.7.8 kg

运行参数

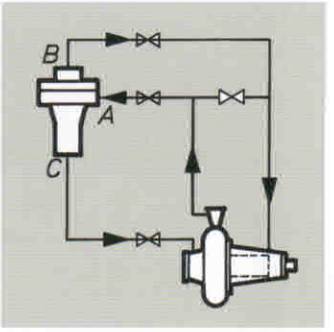
允许压力：63bar
允许温度：150℃
过滤网：50μm
重量：7.8kg



▶ Cyclone separators

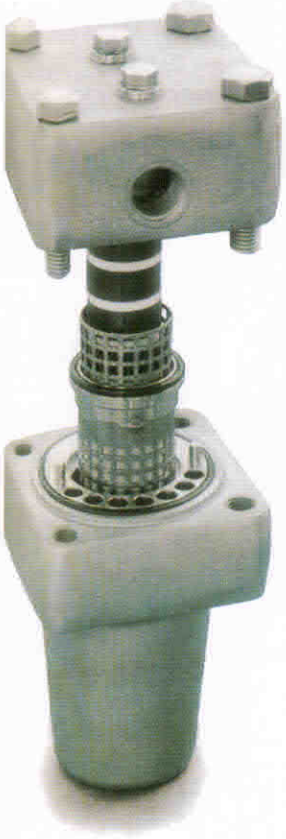
of the ZY range are used to clean mainly aqueous liquids containing dirt and solids in suspension (e.g.in circulation of sewage, sludge, crude etc.). The best possible filtration efficiency is achieved when the specific weight of the solids is much higher than that of the carrier liquid, and when the differential pressure is as large as possible within the pressure range. The viscosity of the medium is also a factor that needs to be taken into account.

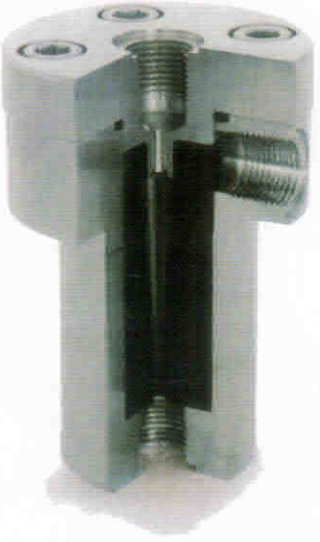
ZY系列的旋风分离器用于流体中含有杂质和不洁悬浮物、（如污水循环、残渣、原油等）的场合。该产品能有效地将杂质从载流体中分离出来。



		ZY 61	ZY 62	ZY 203
最大工作压力	Operating press.max.(bar)	64	64	200
最大工作温度	Operating temp.max.(℃)	125(60*)	125	150
压差	Pressure differential(bar)		min.1,5	
联接螺纹	Connections	G/NPT 1/2	G/NPT 1/2	G/NPT 3/4,1
重量	Weight approx.(kg)	3.5	2.0	8.0
外形尺寸	Outer diameter (mm)	92	74	107
高度	Height (mm)	135	138	235
材料	Materials:casing/cover	1.4571	1.4408	1.4571
	O-Ring	Viton®	Viton®	Viton®

*) with elastomer insert





ZY 61
Cyclone separator with replaceable insert made of elastomer or ceramic

具有可更换的橡胶或陶瓷滤芯的旋风分离器

ZY 62
Cyclone separator with cast casing and cover

具有铸造的壳体和压盖的旋风分离器

ZY 203
Cyclone separator for high flow rates and high pressures

用于流速和高压力的旋风分离器

资料整理：广州勤固流体科技有限公司
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机械密封材料代号一览表

1、密封面材料

	DIN24960代号	BURGMANN代号	材 料 名 称	上海博格曼代号
石墨类	A	Buko 03	浸锑碳石墨	M106D 或 M120D
	B	Buko 1	合成树脂浸渍碳石墨	M106K 或 M158K
	B3	Buko 02	合成树脂浸渍碳石墨	
	B5	Buko 34	合成树脂粘结碳	
	B6	Buko 41	浸渍碳石墨、用于食品加工	
	C	Buko 22	浸锑电化石墨	
金属类	▲E	Bume 20	铬钢	4Cr16Mo
	▲S	Bume 5	铬钼铸钢	1Cr27Mo2
碳化物	▲U1	Buka 1整体	钴基碳化钨	YG6 或 YG8
	▲U12	Buka 1镶装	钴基碳化钨	YG6 或 YG8
	▲U2	Buka 16整体	镍基碳化钨	YWN8
	▲U22	Buka 16镶装	镍基碳化钨	YWN8
	U3	Buka 15整体	镍铬钼基碳化钨	W7
	U32	Buka 15镶装	镍铬钼基碳化钨	W7
	▲Q1	Buka 22整体	常压烧结碳化硅	Sic(常压)
	▲Q12	Buka 22镶装	常压烧结碳化硅	Sic(常压)
	▲Q2	Buka 20整体	Sic-Si反应粘合碳化硅	Sic(反应)
	▲Q22	Buka 20镶装	Sic-Si反应粘合碳化硅	Sic(反应)
	Q3	Buka 30整体	Sic-C-Si浸硅碳	
	Q32	Buka 30镶装	Sic-C-Si浸硅碳	
	Q4	Buka 24整体	C-Sic表面渗硅碳	
金属氧化物(陶瓷)	▲V	Buke 5	氧化铝99.7%	Al_2O_3-99
	V2	Buke 3	氧化铝97.5%	Al_2O_3-97
塑料	▲Y1	Buku 2	填充玻璃纤维的PTFE	
	Y2	Buku 3	填充石墨的PTFE	

2、辅助密封件材料

	DIN24960代号	BURGMANN代号	材 料 名 称
橡胶类弹性体	B	B	丁基橡胶（HR）
	▲E	E	乙丙橡胶（EPDM）
	K	K	全氟橡胶（Kalrez®）
	N	N	氯丁橡胶（CR）
	▲P	P	丁腈橡胶（NBR）/NBR40
	S	S	硅橡胶（MVQ）
	▲V	V	氟橡胶（FPM）/F26（Viton®）
包覆弹性体	▲M1	TT V	双层 PTFE 包覆的氟橡胶
	▲M2	TTE	双层 PTFE 包覆的乙丙橡胶
	M3	TTS	双层 PTFE 包覆的硅橡胶
	M4	TTN	双层 PTFE 包覆的氯丁橡胶
	M5	FEP	氯化乙丙烯（FEP）包覆的氟橡胶
	M7	TTV/T	双层 PTFE 包覆的氟橡胶/整体
其他材料	U1	K/T	PTFE 全氟橡胶/ PTFE
非弹性体	Y1	Burasil®	非石棉密封垫
	G	Statotherm®	柔性石墨
	T	T	PTFE
	T2	T2	填充玻璃纤维的PTFE
	T3	T3	填充石墨的PTFE
	T12	T12	填充碳石墨的PTFE

注：▲为首选材料

资料整理：广州勤固流体科技有限公司
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3、弹性及其他结构材料

	DIN24960代号	BURGMANN代号	中国GB1220	可代用材料
弹簧材料	▲ G ▲ M	1.4571 Hast.C4	0Cr18Ni12Mo2Ti Hast.C4(2.4610)	或1Cr18Ni12Mo2Ti
结构材料	▲ E	1.4122	3Cr17Mo	Cr17Ni2
	F	1.4301	0Cr18Ni9	1Cr18Ni9Ti
	F1	1.4313	X4CrNi13-4(X3CrNiMo13-4)	2Cr13或3Cr13
	▲ G	1.4571	0Cr18Ni12Mo2Ti	或1Cr18Ni12Mo2Ti
	▲ G1	1.4462	X2CrNiMoN22-5-3	
	G2	1.4439	X2CrNiMoN17-13-5	
	▲ M	Hast.C4	Hast.C4(2.4610)	
	M1	Hast.B2	Hast.B2(2.4617)	
	M3	Carp 20	20# 合金Cb3(2.4660)	
	M4	Monel k500	蒙乃尔合金k500(2.4375)	
	M5	Hast.C276	Hast.C276(2.4819)	
	T1	1.4505	X4NiCrMoCuNb20-18-2	
	T2	Titan	纯钛 TA_2	
	T3	Ine.625	Ine.625(2.4856)	
	T4	Carp.42	4J42	
	T5	Ine.800	Ine.800(1.4876)	
	T6	AM350	沉淀硬化不锈钢AM350	
	M6	Incon.718		

注：▲为首选材料

型号意义

1、单端面通用型机械密封：M2,M3,M7,MG1,MFL,H7,H12,H17,HJ92等及其相应的派生系列。

M32N / 40 R - G6 - B V V G G

- G G：其他零件材料 0Cr18Ni12Mo2Ti
- G：弹簧材料 0Cr18Ni12Mo2Ti
- V：辅助密封件材料 氟橡胶
- V：静止环材料 氧化铝陶瓷
- B：旋转环材料 浸渍树脂石墨
- G6：静止环型式 G6型
- R：弹簧旋向 R右旋（L左旋、空格为任意）
- 40：轴径 d1=40mm
- M32N：单端面通用型机械密封 型式M32N

2、双端面通用型机械密封：M74-D,H74-D等及其相应派生系列。

M74F-D/90 A - G91 - Q_2U_2VGG
G92 - Q_2BVGG

- G91：介质端静止环型式
- Q_2U_2VGG：介质端材料代号（表示方法同单端面机械密封）
- G92：大气端静止环型式
- Q_2BVGG：大气端材料代号（表示方法同单端面机械密封）
- A：螺纹泵旋向 A右旋（B左旋，空格为任意）
- 90：轴径 d1=90mm
- M74F-D：双端面通用型机械密封 型式M74F-D

注：1、密封选型指南系按照德国机械密封标准DIN24960和BURGMANN公司通用方式编写。
2、如果介质端与大气端静止环型式相同为G92，材料代号也相同为Q2BVGG，那么可简略写为M74F-D/90A-G92- Q_2BVGG。
3、如果选用2套单端面机械密封组成双端面密封，则分别按单端面密封选型编写方式书写，但需要分别注明介质端、大气端。

资料整理：广州勤固流体科技有限公司
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密封选型指南

根据介质选密封和材质

在以下介质表介绍的是以卧式离心泵密封“典型”例子为基础。其他形式泵的安装情况、工作方式、设计、制造和操作规范、地方法规等都可以导致机械密封的不同选型。对于复杂工作状态下的密封，用户可以与我们专家工程师协商。

第1-16栏的解释

第1栏：介质名称

密封介质名称尽可能地应用(IUPAC-国际理论化学和应用化学联合会）规则。介质有几种一般使用名称和常用名称，根据IUPAC规则与其他相关联的名称一起列入表中并以字母的顺序列表。

第2栏：介质注释

G = 混合物/组合物（成分）
N = 天然制品
® = 商标
S = 聚合物
TA=TA-Luft 有关介质
V = 掺合物

第3栏：浓度

-=介质是纯的形式或气体及需要双封的其他介质。一机械密封的选择不参考浓度。
<10=重量浓度低于10%。
~10= 在第1栏介质名称的常用名称为大约10%的水溶液。
F10 = 固体重量含量的大于10%。
L = 确定成分含量的溶液。
<L = 不饱和溶液。
>L = 过饱和溶液。
Sch= 熔融液。
Sus=成分确定的悬浮液。

第4栏：温度

<100= 低于100℃。
>F= 大于凝固温度以上10℃
>K= 大于结晶温度以上10℃
<Kp= 对于水溶液：在一个大气压下达到低于沸点大约10℃。
对于气体:低于液化气体沸点20℃；同时，密封压力比蒸气压力最少高3bar.
对于其他介质：在1bar压力下达到低于沸点大约20℃(但不高于400℃)。
>Pp=大于固化点以上10℃。
TG=达到与介质相接触的机械密封材料的使用温度极限。

第5栏：轴封的结构

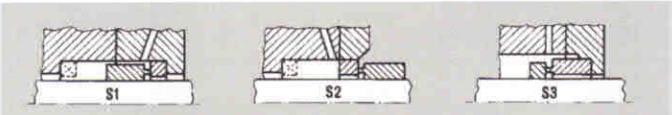
结构参照 DIN ISO 5199（1987.2）附录E解释被部分修正。
S = 单封
这些密封用于非平衡型、平衡型、可用或不用循环或端面冲洗，可用或不用节流衬套。
S1= 内装
S2= 外装
S3= 旋转环相反的内装（静环补偿式）
D = 双封
可以是平衡型、非平衡型或者是一个平衡型、另一个是非平衡型。
D1= 背靠背安装结构
D2= 串联安装，当许可时可与Q3互换。
D3= 面对面安装结构，同样可以安装静环补偿式。
Q = 单封和双封的急冷结构。
Q1=不带节流衬套和辅助密封的急冷结构。
Q2=有节流衬套的急冷结构。
Q3=带有辅助密封或填料的急冷结构。
D2是可互换的。

第6栏：辅助冲洗方式

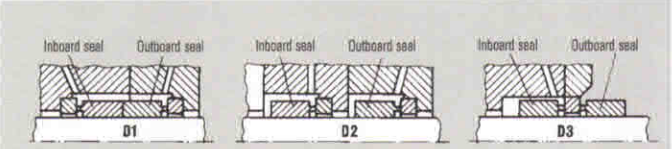
辅助冲洗方式编码参照 DIN ISO5199（1987.2）附录E基本结构型式

第7栏：附加措施

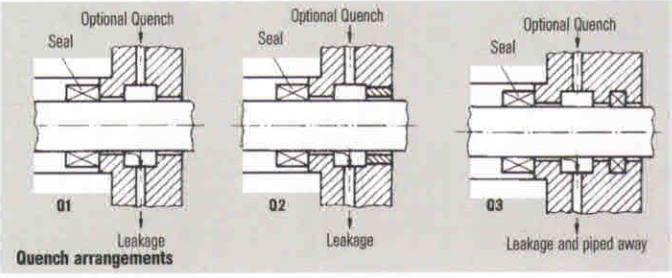
D= 蒸气急冷
（**H**）,**H**= 必要情况下对密封腔、密封盖密封缓冲液加热。
KD= 锥形填料箱。
SS= 加必要的防溅罩、并建议泄漏液用管路排走。
SW= 缓冲液需定期更换、缓冲液流量是恒定的[结构型式09]。



Single mechanical seal arrangement



Double mechanical seal arrangements



Quench arrangements

QW= 急冷介质需定期更换，更换的急冷介质流量应恒定（结构型式09），建议大约0.25l/min。
ThE= 热缓冲液。

第8栏：机械密封型号

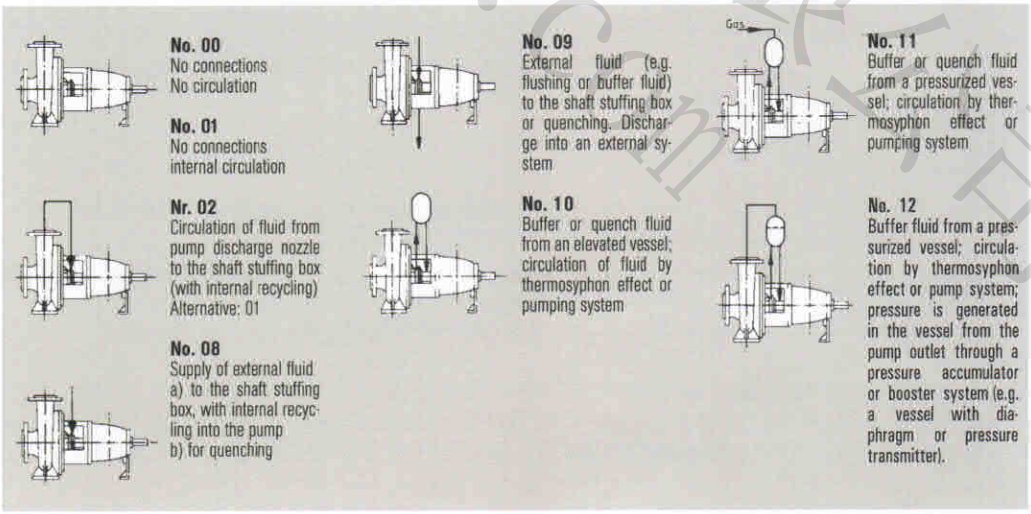
在双封或串联机械密封情况下推广应用内侧机械密封，外侧机械密封的选择靠缓冲/急冷的介质确定。
1＝O型圈机械密封，为非平衡型或平衡型，旋转弹簧与产品接触。如：M3N、M7N、H7N。
2＝O型圈机械密封，为非平衡型或者平衡型，旋转弹簧不与产品接触。如:HJ…
3＝O型圈机械密封，为非平衡型或平衡型，静止弹簧不与产品接触。如:HR…
4＝同3，但与产品接触的是非金属部件。如:HR31/d_H-G9
5= 橡胶波纹管机械密封。
如：MG……
6= 金属波纹管机械密封。
如：MFL。
X= 特殊设计。如：MR-D

第9栏：结构件的材质

封内侧机械密封（介质端）材料号和他们目录的解释，是查阅材料的钥匙（手册后封页内）

第10栏：危害警告及推荐双封和急冷原因

当编辑密封选型和推荐材质时，通常假定有毛病的机器被安置在一个保护设施内，人们偶尔或连续进入接触各种密封点泄漏的液体或气体介质。因此，选择密封类型很大程度上受健康考虑和环境保护等因素影响。



资料整理：广州勤固流体科技有限公司
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“有害健康”和“易燃/易爆”
如机器被安装在露天或人们很少去的地方，警铃或警告标牌就失去意义，如果没有注明对以下1到5原因之一，推荐用双封或带急冷的单封的，那么可以用单封。使用单封的判定必须是靠机器使用者和订合同者。因为他们是唯一了解所有工况条件、流程中有关规则和所冒风险的分析情况。

T=有毒的
介质以气体、蒸气或粉尘的状态存于空气中，剧烈的或经常的接触可能引起异常或死亡。
T+=非常有毒的

Xn=有害的
介质可能通过口服或经皮肤被吸收，对人的健康造成急性或者慢性损害，甚至死亡。

Xi=刺激性的
无腐蚀性，但其燃烧物会蔓延直接刺激接触的皮肤，粘液的表层或眼睛。
C=腐蚀性的
介质能够吸附在活性物质上并且破坏它们。
致癌物：如果物质和制剂被吸入或摄入，或者它们穿透皮那么可以诱发癌症或增加发病率。

标签介质与致癌或诱变效应：
R40：一种致癌或诱变效应的限制证明
R45：可能引起癌
R46：可能引起遗传性的危害
R49：通过吸入可能导致癌
有毒物的繁殖：
物质和制剂，如果它们被吸入或摄入，或者它们穿透皮肤，可能会产生或增加发病率，非遗传的不利影响在后裔和/或者减值男性或者女性的生殖功能或能力。
有毒的标签介质对生殖的影响：
R60：可能影响生育
R62：可能冒受损生育率的风险
R63：可能冒伤害未出生的孩子的
技术基础和环境保护风险
1= 蒸气压力
在一般工作温度时，介质压力应大于蒸气压力1bar，如果工作温度低于沸点（第15栏）或密封压力明显高于蒸气压力，可以考虑使用单端面密封。
2= 腐蚀
介质腐蚀所有标准金属，靠介质端的机械密封件必须用非金属。
3= 隔离空气
如果介质与大气接触或混合，将产生爆炸或反应，对环境、介质自身、机器和机械密封产生破坏性影响。
4= 润滑性能
一般情况下，介质润滑性低、以致于产生干摩擦运转的危险。
5= 结冰
介质通常在0℃以下凝固，在没有辅助设计情况下，单端面机械密封的性能可能由于大气中水气结冰而产生破坏。
6= 泄漏
被急冷液吸收并带走，或者必要时用双封防泄漏。

F+= 极易燃介质

O= 能自燃介质

E= 易爆介质

N=对环境有危害的
U=数据不足
介质构成不明确，或者对于介质仅有的数据不足以估计密封的工作性能，请把你的经验数据通知我们。

第11栏：TLV

被标出ml/m^3=ppm（万分之几）值引自公开的XXV公报，公报是1989.7.10由立法委员会对有害材料的试验：“临界极限值和生物的材料允差1989”。

附加符号：
mg:TLV$_s$引用mg/m^{3}代替ppm
#，如#0.5为钡…0.5mg/m^{3}以Ba计算。
*“根据现有知识水平，物质的作用对身体造成不同程度的有害致癌，在表中没有给出物质的浓度。因为他们仍然不能作为安全浓度被采用。这些物质中的某些被人皮肤吸收后有很大危害，如果这样的物质因技术原因不能避免使用，必须采用特殊安全监视措施。”

考虑TLV选择密封如下：
●TLV<5ppm或*：通常建议选用双封。但要注意参看第10栏中介绍的2和3条。
●TLV≥5，≤25ppm：建议用双封或带急冷的单封，如果第10栏包含“有害健康”的介质选用串联或双封。除此之外可用单封，提供其他措施防备所有对人体的损害。

第12栏：一般状况

在20℃和1.013bar条件下的介质：
ga= 气体
fe= 固体
fl= 液体
kr= 结晶体
pa= 粘性液体
本栏对密封的状况解释如下：
ga 在大多数情况下需要用双封。在工作温度下，如果被密封介质的压力明显高于蒸气压，带或不带急冷的单封在某些情况下均可使用。
fl需要单封，但其他影响因素如工作温度，在输送温度下的蒸气压、有害健康、爆炸危险或者腐蚀条件下应用串联或双封。
fe、kr 的介质必须被融化（如：硫磺、DMT），熔化（如：盐）悬浮（如：在水里石灰石或石膏），否则它们不能被输送或汲取。

第13栏：融点

（=溶化点F）或在℃对凝固点（凝固温度）、融点（液化温度）如果有不平衡值、不同值或修正值、应该用最大值。对一些介质的混合物、凝固范围或固化点被采用。当溶化点在室温以上和/或工作温度接近溶化点时，必须检查（由于考虑其他操作条件如间歇式、满负荷备用泵）不论机器还是密封腔（至少）需加热。

附加符号：
K...：在...温度下结晶。
S...：在...温度[℃]升华
如果有一个附加的%符号，标定的温度应用于...%水溶液。

第14栏：沸点

在常压（1.013bar）下介质的沸点℃不同时应标出，如果工作温度接近或者高于沸点，那么必须检查密封选择和推广的材料。

附加符号：
A...：恒沸物沸腾在...℃
Z...：分解在...℃
(...)参考压力mbar
如果有一个附加的%符号，标定的温度应用于...%水溶液。

第15栏：密度

对通常情况下，液体或固体介质的密度标注的是20℃时 - g/cm^3，参考温度不同时应标出。对于气体无论是比空气重（+）还是比空气轻（-）只用一个标记，这也可通过它们泄漏的特征反应出来。如下沉、漂升或自身与空气混溶。

附加符号：
(...)：参考温度在℃
A...：标定的密度是应用恒沸物在...%重量
...%：...%水溶液的密度。

第16栏：溶解度（水中）

对固体（第12栏中的kr或fe）在20℃情况下的稳定水溶液的重量百分比。在某些有价值的文献中不同温度下的溶解度已有据可查。
如：11（25）意思：在25℃时，饱和溶液溶解物质的重量是11%，温度升高通常溶解度也随着增大。
- 在符号%后表示：溶解度随温度升高而减少。
++ 在符号%后表示：在80℃时溶解度超过2倍。
sll =溶解度很高（超溶解度）
= 能在低于1份的水中溶解。
ll =溶解度高
= 在1-10份水中可溶解。
l =溶解
= 在10-30份的水中可溶解。
wl =溶解度低
= 在30-100份的水中可溶解。
sl = 溶解度很低
= 在100-1000份的水中溶解。
ssl =溶解度极低
= 在1000-10000份水中溶解。
unl = 实际上不溶解
= 在10000份水以上才溶解。
在水中溶解度低的物质或实际上不溶解的物质在其他溶剂（大多数烃类）能被溶解，除了被密封的是悬浮液以外，在这些情况下，溶剂（载液）必须标出，因为选择密封和材料时要考虑。对在第12栏中用ga标出的介质，假设以纯介质、气体或液化汽的形式被输送。工作流体的特性影响着水环真空泵及压缩机密封的选择。

资料整理：广州勤固流体科技有限公司
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Code of Materials and legend seeinside of back cover.	Media					Recommended mechanical seal									Additional information on the medium						
		Chemical Formula	Remark	Concentration %	Temp °C	Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
	1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
A																					
乙醛	Acetaldehyde(Ethanal)	CH_3CHOH	TA	–	100	D	53A		1	Q_1(S)	B	M_2	G	G	Xn,F+,R40,1,3	50	fl	–124	21	0.78	
醋酸（乙酸）酯→醋酸酯	Acetates→*Acetic acid esters*																				
醋酸:	Acetic acid:	CH_3COOH	TA	–	<Kp	S,Q	62	QW	1	Q_1(V)	B	M_2	M	M	C	10	fl				
醋酸精	Acetic essence	CH_3COOH	TA	~25	<Kp	S	11		1	Q_1(V)	B	M_2	G	G	C	10	fl				
			TA	<90	25	S,Q	62	QW	1	Q_1(V)	B	E	G	G	C	10	fl				
冰醋酸	Glacial acetic acid	CH_3COOH	TA	>96	<80	S,Q	62	QW	1	Q_1(V)	B	M_2	G	G	C	10	fl	17	~118	1.05	
醋	Vinegar	CH_3COOH	TA	~10	<60	S	11		1	Q_1(S)	B	E	G	G	Xi	10	fl				
醋酸酐	Acetic anhydride	$C_4H_6O_3$	TA	–	<100	S,Q	62	QW	1	Q_1(V)	B	M_2	G	G	Xn,C	5	fl	–73	139	1.08	
醋酸酯:	Acetic acid esters:																				
醋酸苯甲基酯	Acetic acid benzyl ester	$C_9H_{10}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G	Xi		fl	–51	213	1.057	
醋酸丁基酯:	Acetic acid butyl esters:																				
醋酸丁酯	Butyl acetate	$C_6H_{12}O_2$		–	<80	S,Q	62		1	Q_1(S)	B	M_2	G	G		200	fl	–77	126	0.882	
仲丁基醋酸酯	sec.Butyl acetate	$C_6H_{12}O_2$	TA	–	<40	S,Q	62		1	Q_1(S)	B	M_2	G	G	F	200	fl	–99	112	0.865	
叔丁基醋酸酯	tert.Butyl acetate	$C_6H_{12}O_2$	TA	–	<40	S,Q	62		1	Q_1(S)	B	M_2	G	G	F	200	fl		98	0.859	
异丁基醋酸酯	Isobutyl acetate	$C_6H_{12}O_2$	TA	–	<40	S,Q	62		1	Q_1(S)	B	M_2	G	G	F	200	fl	–99	118	0.87	
醋酸肉桂酯	Acetic acid cinnamyl ester	$C_{11}H_{12}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl		262	1.057	
醋酸环己酯	Acetic acid cyclohexyl ester	$C_8H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl	–83	173	0.969	
醋酸乙酯	Acetic acid ethyl ester	$CH_3COOC_2H_5$	TA	–	<60	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xi,F	400	fl	–83	77	0.90	
醋酸己酯	Acetic acid hexyl ester	$CH_3COOC_6H_{13}$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G		50	fl	–81	171	0.878	
醋酸异丙烯酯	Acetic acid isopropenyl ester	$C_5H_8O_2$	TA	–	<60	S	11		1	Q_1(S)	B	M_2	G	G	F		fl	–93	97	0.92	
醋酸甲酯	Acetic acid methyl ester	$C_3H_6O_2$	TA	–	<40	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xi,F	200	fl	–98	58	0.926	
醋酸戊酯 (戊基-,醋酸戊酯):	Acetic acid pentyl esters (Pentyl–,Amyl acetate):																				
1-醋酸戊酯	1–Pentyl acetate	$C_7H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl	–71	150	0.8756	
2-醋酸戊酯	2–Pentyl acetate	$C_7H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl	–79	134	0.864	
3-醋酸戊酯	3–Pentyl acetate	$C_7H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl		~135	0.8712	
2-甲基-2-丁基醋酸酯	2–Methylbutyl acetate	$C_7H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl		138	0.8740	
3-甲基-丁基醋酸酯	3–Methylbutyl acetate	$C_7H_{14}O_2$		–	<80	S	11		1	Q_1(S)	B	M_2	G	G			fl	–78	142	0.8670	
醋酸丙酯:	Acetic acid propyl esters:																				
醋酸异丙酯	Isopropyl acetate	$C_5H_{10}O_2$	TA	–	<80	S,Q	62		1	Q_1(S)	B	M_2	G	G	F,Xi	200	fl	–73	90	0.872	
醋酸丙酯	Propyl acetate	$C_5H_{10}O_2$	TA	–	<80	S,Q	62		1	Q_1(S)	B	M_2	G	G	F,Xi	200	fl	–95	102	0.887	
醋酸乙烯酯	Acetic acid vinyl ester	$C_4H_6O_2$	TA	–	<60	S,Q	62		1	Q_1(S)	B	M_2	G	G	F	10	fl	–93	73	0.932	
乙酰醋酸酯→乙酰醋酸乙酯	Acetoacetate→*Ethyl acetoacetate*																				
丙酮	Acetone	$(CH_3)_2CO$	TA	–	30	S,Q	62		1	Q_1(S)	B	E	G	G	Xi,F,4	1000	fl	–95	56	0.791	
			TA	–	TG	D	53A		1	Q_1(S)	A	M_2	G	G	Xi,F,1,4						
丙酮合氰化氢(ACH)	Acetone cyanohydrin(ACH)	C_4H_7NO	TA	–	TG	D	53A		1	Q_1(S)	B	M_2	G	G	T+,N		fl	–20	95(Z)	0.932	
乙酰丙酮	Acetyl acetone	$CH_3COCH_2COCH_3$		–	<Kp	S	11		1	Q_1(S)	B	M_2	G	G	Xn		fl	–21	140	0.975	
氯乙酰	Acetyl chloride	CH_3COCl	TA	–	TG	D	53A		1	Q_1(V)	B	M_1	G	G	C,F,2,3		fl	–112	51	1.104	
乙炔	Acetylene	C_2H_2	TA	–	TG	D	53A		1	Q_1(S)	B	M_1	G	G	F+,1		ga	–84	–81	(–)	
氯乙炔→二-, →三氯乙烯 →四氯乙烷	Acetylene chlorides→*Di–,* →*Trichloroethylene,* →*Tetrachloroethane*																				
ACH→丙酮合氰化氢	ACH→*Acetone cyanohydrin*																				
酸性焦油	Acidic tar			–	>F<200	D	53A	(H)	1	Q_1(V)	B	M_1	G	G	U		fl				
丙烯酸	Acrylic acid	$C_3H_4O_2$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	C,N		fl	13	141	1.051	
丙烯酸酯:	Acrylic esters:																				
丙烯酸乙酯(乙基丙烯酸酯)	Acrylic acid ethyl ester(Ethyl acrylate)	$CH_2CHCO_2C_2H_5$	TA	–	<KP	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,Xi,F	5	fl	–71	99	0.924	
丙烯酸甲酯(甲基丙烯酸酯)	Acrylic acid methyl ester(Methyl acrylate)	$CH_2CHCO_2CH_3$		–	<KP	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,Xi,F	5	fl	–76.5	80	0.956	
丙烯腈	Acrylonitrile	C_3H_3N	TA	–	TG	D	53A		1	Q_1(V)	B	M_1	G	G	T,F,N,R45	*	fl	–82	77	0.806	
己二酸	Adipic acid	$C_6H_{10}O_4$		<L	<Kp,>K	S	11		1	Q_1(V)	B	V	G	G	Xi		kr	153	330.5	1.360	1.7++
				>L	<Kp	S	11		1	Q_1	B	V	G	G							

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Media						Recommended mechanical seal									Additional information on the medium						
Code of Materials and legend seeinside of back cover.		Chemical Formula	Remark	Concentration %	Temp ℃	Arrange-ment	Auxi. piping	Addit. measures	Seal type	Materials to EN 12756 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Hazard reference	TLV-value	Normal condition	Melting temperature ℃	Boiling point ℃	Density g/cm³	Solu-bility
	1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
酒精→乙醇	Alcohol→*Ethanol*																				
醇酸树脂和油漆	Alkyd resins and lacquers		S	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	3,4,U		fl				
烷基铝化合物	Alkylaluminum compounds		S	–	<Kp	D	53A		1	Q_1(S)	A	M_1	G	G	C,F,3		fl			0.8…1.8	
烯丙醇(2-丙烯-1-醇)	Allyl alcohol(2–Propene–1–ol)	C_3H_6O	TA	–	<80	D	53A		1	Q_1(S)	B	E	G	G	T,N	2	fl	–129	97	0.852	
明矾(硫酸钾铝水溶液)	Alum(Potassium aluminum sulphate,48.4% aqueous solution)	$KAl(SO_4)_2*12H_2O$		<L	<Kp,>K	S	11		1	Q_1(V)	B	V	G	G	C		kr	–16	101	1.76	5.5++
				>L	<Kp	S	11		1	Q_1	Q_1	V	G	G							
氯酸氮	Aluminum chlorate	$N(ClO_3)_3$		<L	<Kp,>K	D	53A		1	Q_1(V)	B	M_1	G	G	3,0		kr				ll
氯化铝	Aluminum chloride	$AlCl_3$		<L	<30,>K	S,Q	62	QW	1	Q_1(V)	B	V	M	M	C,3		kr		183(S)	2.44	31.6
				–	>30	D	53A	SW	1	Q_1(V)	B	M_1	G	G	C,2,3						
氟化铝	Aluminum fluoride	AlF_3		<L	<30,>K	S	11		1	Q_1(V)	B	E	G	G	Xi		kr	1260(S)		2.88	0.4
				>L	<Kp	S	02		3	Q_1	Q_1	M_1	M	G							
氢氧化铝双醋酸(碱性醋酸铝)	Aluminum hydroxide diacetate(aluminum acetate basic)			<L	<40	S	11		1	Q_1(V)	B	E	G	G	Xi		fl				
硝酸铝	Aluminum nitrate	$Al(NO_3)_3$		<L	<Kp,>K	S	11		1	Q_1(V)	B	E	G	G	Xi,0		kr	73	135(Z)		41.9
硫酸铝	Aluminum sulfate	$Al_2(SO_4)_3$		<L	<Kp,>K	S,Q	62		1	Q_1(V)	B	E	G	G	Xn,3,6		kr	770(Z)		2.71	26.9
氨基硫酸(氨基磺-,胺苯磺胺,硫化酰氨酸)	Amidosulfuric acid (Amido sulfonic–,Sulfamidic, Sulfamic acid)			<L	<Kp,>K	S	11		1	Q_1(V)	B	M_1	G	G	Xi		kr		205(Z)	2.1	17.6
胺	Amines(not specified)		S	–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	U		fl				
氨基乙醇:	Aminoethanols:																				
1-氨基乙醇	1–Aminoethanol	$(CH_2)_2NH_2OH$		<L	<Kp,>K	S	11		1	Q_1(V)	B	M_2	G	G			kr	95…99	110		sll
2-氨基乙醇(乙醇胺)	2–Aminoethanol (Ethanolamine)	$(CH_2)_2NH_2OH$	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	Xn,C	3	fl	10	171	1.022	
氨基磺酸	Aminosulfonic acid			–	<Kp,>K	D	53A		1	Q_1(V)	B	M_1	G	G	Xi		kr	205(Z)		2.1	
氨	Ammonia	NH_3		–	<40	D	53A		1	Q_1(S)	B	E	G	G	T,C,1,N	50	ga	–78	–33	(–)	
		NH_3			TG	D	53A		1	Q_1(S)	B	M_2	G	G	T,C,1,N						
氨水溶液:	Ammonia aqu. solutions:																				
氢氧化氨	Caustic ammonia	NH_4OH		~29	<Kp	D	53A		1	Q_1(S)	B	M_2	G	G	C,N		fl			0.9	
氯化铵醇	Spirits of salmiac	NH_4OH		~10	<40	S,Q	62		1	Q_1(S)	B	E	G	G	C,N		fl			0.957	
醋酸铵	Ammonium acetate	$H_3CCOONH_4$		<L	<60,>K	S	11		1	Q_1(S)	B	E	G	G			fe	113		1.171	sll
		$H_3CCOONH_4$		<L	<Kp	S	11		1	Q_1(S)	B	M_2	G	G				(Z90℃)			
铵矾	Ammonium alum	$NH_4Al(SO_4)_2*12H_2O$		<L	<60,>K	S	11		1	Q_1(V)	B	V	G	G			kr	109		1.64	li
溴化铵	Ammonium bromide	NH_4Br		<L	<Kp,>K	S,Q	11		1	Q_1(V)	B	M_1	G	G	Xi,6		kr	452(S)		2.55	42.0
氨基甲酸铵→尿素	Ammonium carbamate→*Urea*																				
碳酸铵	Ammonium carbonate	$(NH_4)_2CO_3$		<L	<60,>K	S	11		1	Q_1(V)	B	E	G	G	Xn		kr				21.5
				<L	<30,>K	S	11		1	Q_1(V)	B	E	G	G	Xn,Xi		kr		338(S)	1.531	27
氯化铵	Ammonium chloride (Salmiac)	NH_4Cl		<L	<60	S	11		5	Q_1	Q_1	E	M	M							
				<L	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	2						
				>L	<Kp	S	01		4	Q_1	Q_1	M_2	M	G							
氟化铵:	Ammonium fluorides:																				
氟化氢铵	Ammonium hydrogen fluoride	$(NH_4)HF_2$		<L	>Kp	D	54		1	Q_1	B	M_2	G	G	T,C,2		kr	126	238(Z)	1.5	37.5
中性氟化铵	Neutral ammonium fluoride	NH_4F		<L	<Kp	D	54		1	Q_1	B	M_2	G	G	T,2		kr	160		1.0	45.0
碳酸氢铵	Ammonium hydrogen carbonate	$(NH_4)HCO_3$		<L	<Kp,>K	S	11		1	Q_1(V)	B	E	G	G	Xn		kr	106(Z60℃)		1.58	17.6++
氟化氢铵→氟化铵	Ammonium hydrogen fluoride →*Ammonium fluorides*																				
氢氧化铵→氨水溶液	Ammonium hydroxide →*Ammonia aqu.solutions*																				
硝酸铵	Ammonium nitrate	NH_4NO_3		<L	<Kp,>K	S,Q	62	D	1	Q_1(V)	B	E	G	G	3,0		kr	170		1.73	65.4
草酸铵	Ammonium oxalate monohydrate	$(COONH_4)_2 \cdot H_2O$		<10	<Kp	D	53A		1	Q_1	Q_1	M_2	G	G	Xn,3		kr	70(Z)		1.5	wl
过硫酸铵(过氧硫酸铵)	Ammonium persulfate(Ammonium peroxodisulfate)	$(NH_4)_2S_2O_8$		<L	<Kp,>K	S,Q	62		1	Q_1	Q_1	M_2	G	G	Xn,Xi,3,0		kr	120(Z)		1.98	38.0
磷酸铵,2	Ammonium phosfate,secondary	$(NH_4)_2HPO_4$		<L	<60,>K	S	11		1	Q_1(V)	B	E	G	G			kr	155(Z)		1.619	40.8
硫酸铵	Ammonium sulfate	$(NH_4)_2SO_4$		<L	<Kp,>K	S	11		1	Q_1(V)	B	E	G	G			kr	235…280(Z)		1.77	43.0
硫氰酸铵(硫氰酸铵)	Ammonium thiocyanate(Ammonium rhodanide)	NH_4SCN	TA	<L	<Kp,>K	S	11		1	Q_1(V)	B	M_1	G	G	Xn		kr	149	170(Z)	1.3	61.0

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Code of Materials and legend seeinside of back cover.	Media: Chemical Formula	Remark	Concentration %	Temp °C	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
戊基醋酸酯→醋酸戊基酯	Amyl acetate→*Acetic acid pentyl esters*																			
戊基醇→戊醇	Amyl alcohols→*Pentanols*																			
苯胺染料	Aniline dyes	S	–	<80	S	11		1	Q_1(S)	B	M_2	G	G	U		fl				
盐酸苯胺(苯胺盐)	Aniline hydrochloride (aniline salt)	$C_6H_5NH_3Cl$	TA	<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T,Xi,R40,2,3,N		kr	198	245	1.22	II
苯胺，苯胺油	Aniline,aniline oil	C_6H_7N	TA	–	TG	D	53A		1	Q_1(S)	B	M_2	G	G	T,Xi,R40,3,N	2	fl	–6	184	1.023	
蒽	Anthracene	$C_{14}H_{10}$	TA	Sch	>F<Kp	S,Q	62	H,D	6	A	Q_1	G	M_6	T_4	Xn,6		kr	217	342	1.25	0
蒽油	Anthracene oil		TA, G	Sch	>F<Kp	S,Q	62	H,D	6	A	Q_1	G	M_6	T_4	T,R45,6		kr				0
脱氯剂→硫代硫酸钠	Antichlor→*Sodium thiosulfate*																			
果汁、酱油、苹果汁、果酒	Apple juice,sauce,cider, wine	N	–	<Kp	S	11		1	Q_1(S)	B	P	G	G							
冷冻剂	Arcton→*Refrigerants*																			
氩	Argon	Ar	–	>–20	D	53A		1	Q_1(S)	B	M_1	G	G	1		ga	–189	–186		
芳(香)烃→BTX	Aromatic hydrocarbons→*BTX*																			
粕酒	Arrack		–	<60	S	11		1	Q_1(S)	B	E	G	G			fl				
神酸	Arsenic acid	H_3AsO_4	TA	–	<Kp	D	53A	SW	1	Q_1	Q_1	M_1	G	G	T,R45,2,N	*	fl	35.5	120	2.5	
沥青(溶化)	Asphalts(molten)		N	–	<120	S	02	H	1	Q_1(S)	B	V	G	G			fe	70…150	>370	1.0…1.2	
				–	<200	S	01	H	1	Q_1(S)	B	M_1	G	G							
				–	>200	S,Q	62	H,D	6	A	Q_1	G	M_6	T_4	6						
ASTM试验油第1至4	ASTM test oils No.1 to 4			–	<100	S	11		1	Q_1(S)	B	V	G	G	U		fl				
航空汽油	Aviation petrol, av.gasoline		TA, G	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	T,Xn,R45		fl	bis<–58	40…160	0.7…0.75	
B	B																			
氯化钡	Barium chloride	$BaCl_2$		<L	<60	S,Q	62		1	Q_1(V)	B	V	G	G	T,Xn,6	#0.5	kr	960	1560	3.86	26.0
铬酸钡悬浮液	Barium chromate suspension	$BaCrO_4$		<10	<60	S,Q	62	QW	5	Q_1	Q_1	V	G	G	Xn,6	#0.5	kr			4.5	<0.001
氢氧化钡	Barium hydroxide	$Ba(OH)_2$		<L	<60	S,Q	62	QW	1	Q_1(V)	B	E	G	G	C,6	#0.5	kr			4.5	3.9
				<10	<60	S,Q	62	QW	5	Q_1	Q_1	E	G	G	C,6						
硝酸钡	Barium nitrate	$Ba(NO_3)_2$		<L	<80	S,Q	62	QW	1	Q_1(V)	B	V	G	G	Xn,6,0	#0.5	kr				
				<20	<80	S,Q	62	QW	5	Q_1	Q_1	V	G	G	Xn,6,0			593	600(Z)	3.24	8.0++
电池酸→硫酸	Battery acid→*Sulfuric acid*																			
啤酒	Beer	N	–	<80	S	01		1	Q_1	Q_1	V	G	G			fl				
啤酒酵母，-麦芽汁，-混合汁	Beer yeast,–wort,–mash	N	–	<80	S	01		1	Q_1	Q_1	V	G	G			fl				
甜菜糖→蔗糖	Beet sugar→*Saccharose*																			
Benfield solution 30%K2CO3+3% DEA+H2O+CO2	Benfield solution (30%K2CO3+3% DEA+H2O+CO2)		G		<110	S	32		X	Q_{32}	Q_3	E	G	G	Xi			~60(K)		1.2…1.3	
苯	Benzene	C_6H_6	TA	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	T,Xn,Xi,R45,R46,F,6	*	fl		80	0.879	
苯甲酸	Benzoic acid	$C_7H_6O_2$		<L	<100	S	11		1	Q_1(S)	B	V	G	G	Xn		kr	122	249	1.266	0.3++
				<10	<100	S	11		2	Q_1	Q_1	V	G	G							
				–	>F<200	S	02	(H)	3	Q_1	Q_1	M_1	M	G						
三氯甲苯	Benzotrichloride	$C_7H_5Cl_3$	TA	–	<200	D	53A		1	Q_1	Q_1	M_1	G	G	T,Xn,Xi,R45,2		fl	–4.8	221	1.38	
三氟甲苯	Benzotrifluoride	$C_7H_5F_3$	TA	–	<60	S,Q	62		1	Q_1(V)	B	V	G	G	6,F,N		fl	–29	104	1.189	
苯甲醇	Benzyl alcohol	C_7H_8O		–	<100	S	11		1	Q_1(S)	B	M_2	G	G	Xn		fl	–15	205	1.045	
				–	<30	S	11		1	Q_1(S)	B	V	G	G							
苄基丁基酞酸酯(BBP)→酞酸酯	Benzyl butyl phthalate (BBP)→*Phthalic acid esters*																			
联(二)苯	Biphenyl	$C_{12}H_{10}$	TA	–	>75<Kp	D	53A		6	A	Q_1	G	M_6	T_4	Xi,3,N	0.2	kr	69	255	1.04	0
沥青(柏油)	Bitumen(asphalt)		G	–	>F<200	S	01	H	1	Q_1(S)	B	M_1	G	G			fe		>370	0.95…1.1	
				–	<200	S	Q_1	H	6	A	Q_1	G	M_6	T_4							
黑色液→碱性蒸液	Black liquor→*Digester liquor,basic*																			
高炉煤气	Blast furnace gas			–	<200	D	53A		1	Q_1(V)	B	M_1	G	G	1		ga				
漂白土悬浮液	Bleaching earth suspension		G	<10		S	11		5	Q_1	Q_1	V	G	G			fe				
漂白碱液	Bleaching lye																			
→次氯酸钠	→*Sodium hypochlorite*																			
→次氯酸钙	→*Calcium hypochlorite*																			

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Code of Materials and legend seeinside of back cover.	Media	Chemical Formula	Remark	Concentration %	Temp °C	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
血液	Blood		N	–	<60	S	11		1	Q_1(S)	B	P	G	G			fl				
锅炉给水→水	Boiler feed water→*Water*																				
骨脂	Bone fats		N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl			1.72	2.5++
月石(硼砂,四硼酸钠)	Borax (Disodium tetraborate)	$Na_2B_4O_7*10H_2O$		<L	<60	S	11		1	Q_1(V)	B	P	G	G	Xn,R62		kr	75	1575(Z)	1.52	4.9++
硼酸	Boric acid	$B(OH)_3$		<L	<60	S,Q	62		1	Q_1(V)	B	V	G	G	T,6		kr	169(Z)			
三氯化硼	Boron trichloride (Trichloroborane)	BCl_3		–	TG	D	53A		1	Q_1(V)	B	M_1	G	G	T+,C,1		ga	–107	12.5	1.43(0℃)	
三氟化硼	Boron trifluoride (Trifluoroborane)	BF_3		–	TG	D	53A		1	Q_1	Q_1	M_1	G	G	T+,C,1	1	ga	–127	–100	(+)	
半咸性水→水	Brackish water→*Water*																				
生面包团	Bread dough		N			D	53A		1	Q_1(S)	B	V	G	G							
盐水→氯化钠	Brine→*Sodium chloride*																				
溴酸	Bromic acid	$HBrO_3$		–	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	T,C,2,6		fl				
溴	Bromine	Br_2		–	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	T+,C,2,3,N	0.1	fl	–7	58	3.12	0.78
溴水(溴的水溶液)	Bromine,aqueous(aqueous solution of bromine)	Br_2		<L	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	T+,C,3,6,N		fl				
BTX(苯-甲苯-二甲苯混合物)	BTX(benzene–toluene–xylene mixture)		TA	–	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,Xn,Xi,R45, R46,R63,6,F	*	fl				
船用油和燃料	Bunker oil and fuel		TA/N	–	120	S	11		1	Q_1(S)	B	V	G	G	T,R45		fl				
1,3-丁二烯	1,3–Butadiene		TA	–	TG	D	53A		1	Q_1(S)	B	V	G	G	T,R45,R46,1, 3,6,F+	*	ga	–109	–4.5	(+)	
丁醛→丁醛	Butanal→*Butyraldehyde*																				
丁烷:	Butane:																				
异丁烷(2-甲基丙烷)	Isobutane(2–methyl propane)	C_4H_{10}	TA	–	<Kp	S,Q	62		1	Q_1(S)	A	V	G	G	4,F+	1000	ga	–159	–12	(–)	
N-丁烷	n–Butane	C_4H_{10}	TA	–	<Kp	S,Q	62		1	Q_1(S)	A	V	G	G	4,F+	1000	ga	–135	–1	(–)	
丁烷二醇(丁二醇):	Butanediols(Butylene glycols):																				
1,2-丁二醇	1,2–Butanediol	$C_4H_{10}O_2$		–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G			fl	–114	192	1.019	
1,3-丁二醇	1,3–Butanediol	$C_4H_{10}O_2$		–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G			fl	<–50	207	1.005	
1,4-丁二醇	1,4–Butanediol	$C_4H_{10}O_2$		–	<200	S	11		1	Q_1(S)	B	M_1	G	G	Xn		fl	20	230	1.020	
2,3-丁二醇	2,3–Butanediol	$C_4H_{10}O_2$		–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G			fl	19	182	1.033	
丁酸→丁酸	Butanic acid→*Butyric acid*																				
丁醇	Butanol:																				
1-丁醇	1–Butanol	$C_4H_{10}O$		–	<60	S	11		1	Q_1(S)	B	E	G	G	Xn,Xi	100	fl	–90	118	0.813	
2-丁醇	2–Butanol	$C_4H_{10}O$	TA	–	<80	S	11		1	Q_1(S)	B	E	G	G	Xi	100	fl	–115	100	0.811	
异丁醇	Isobutanol	$C_4H_{10}O$		–	<60	S	11		1	Q_1(S)	B	E	G	G	Xi	100	fl	–108	108	0.806	
叔丁醇	tert.Butyl alcohol	$C_4H_{10}O$	TA	–	<60,<K	S	11		1	Q_1	B	E	G	G	Xn,F	100	kr	26	82	0.776	
丁酮(甲基乙基酮)	Butanone(Ethyl methyl ketone)	C_4H_8O		–	<Kp	S	11		1	Q_1	B	M_2	G	G	7	200	fl	–86	80	0.805	
丁烯(丁烯):	Butene(Butylene):																				
1-丁烯	1–Butene	C_4H_8	TA	–	<Kp	S,Q	62		6	A	Q_1	U_1	T_1	G_1	4,5,F+		ga	–185	–7	(–)	
顺_2_丁烯	cis–2–Butene	C_4H_8	TA	–	<Kp	S,Q	62		6	A	Q_1	U_1	T_1	G_1	4,5,F+		ga	–139	3	(–)	
异丁烯	Isobutene	C_4H_8	TA	–	<Kp	S,Q	62		6	A	Q_1	U_1	T_1	G_1	4,5,F+		ga	–140	–7	(–)	
反-2-丁烯	Trans–2–*Butene*	C_4H_8	TA	–	<Kp	S,Q	62		6	A	Q_1	U_1	T_1	G_1	4,5,F+		ga	–105	1	(–)	
黄油	Butter			–	<80	S	11		1	Q_1(S)			G	G			pa				
奶油	Buttermilk			–	<80	S	11		1	Q_1(S)			G	G			fl				
醋酸丁酯→醋酸酯	Butyl acetate→*Acetic acid esters*																				
丁基乙醇→丁醇	Butyl alcohol→*Butanol*																				
丁胺:	Butylamines:																				
1-丁胺(1-胺基丁烷)	1–Butylamine(1–Aminobutane)	$C_4H_{11}N$	TA	–	<Kp	S,Q	62		1	Q_1	B	M_1	G	G	Xn,C,F,3,6	5	fl	–50	78	0.733	
异丁胺(2-甲基-丙胺)	Isobutylamine(2–Methyl–1–propylamine)	$C_4H_{11}N$	TA	–	<Kp	S,Q	62		1	Q_1	B	M_1	G	G	C,F,3,6	5	fl	–85	66	0.736	
仲丁胺(2-丁胺)	sec.Butylamine(2–Aminobutane)	$C_4H_{11}N$	TA	–	<Kp	S,Q	62		1	Q_1	B	M_1	G	G	Xn,C,F,3,6,N	5	fl	–104	63	0.724	
丁烯→丁烯	Butylene→*Butene*																				
丁醛:	Butyraldehydes:																				
丁醛(丁醛)	Butyraldehyde(Butanal)	C_4H_8O		–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	3,6,F		fl	–99	75	0.802	
异丁醛(2-甲基丙醛)	Isobutyraldehyde(2– Methylpropanal)	C_4H_8O		–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	3,6,F		fl	–66	64	0.794	
丁酸盐→丁酸酯	Butyrates→*Butyric acid esters*																				
丁酸:	Butyric acid:																				
异丁酸	Isobutyric acid	$C_4H_8O_2$		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	C		fl	–47	155	0.950	
n-丁酸	n–Butyric acid	$C_4H_8O_2$		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	C		fl	–6	163	0.959	

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	1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
丁酸酯(丁酸盐)	Butyric acid esters(Butyrates)		S	–	<100	S	11		1	Q_1(S)	B	M_2	G	G	U		fl	<0	<100		
C	C																				
电缆密封用混合物	Cable sealing compounds		S	–	<220	S	02	H	6	A	Q_1	U_1	M_6	G_1			fe			1.50	28.9–
醋酸钙	Calcium acetate	$Ca(OCOCH_3)_2$	S	–	>220	S	02	H	6	A	Q_1	G	M_6	T_4			fe	160(Z)			
亚硫酸氢钙→亚硫酸氢钙	Calcium bisulfite(lye) →*Calcium hydrogen sulfite*			<L	<100	S	11		1	Q_1(V)	B	E	G	G							
碳酸钙→石灰粉悬浮液	Calcium carbonate →*Lime powder suspension*																				
氯酸钙	Calcium chlorate	$Ca(ClO_3)_2$		<L	<100	S,Q	62		1	Q_1(V)	B	V	G	G	6,0		kr	340(Z)		2.711	
氯化钙	Calcium chloride	$CaCl_2$		<L	<25	S	11		1	Q_1(V)	B	V	G	G	Xi,3,6		kr	782	>1600	1.68	42.5
				<L	<100	S,Q	62		1	Q_1(V)	B	M_1	M	M							
亚硫酸氢钙(蒸煮碱)	Calcium hydrogen sulfite('Digester lye')	$Ca(HSO_3)_2$	V	L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	3,6		fl				
			V	L	<Kp	S,Q	01	kD	3	Q_1	Q_1	M_1	G	G	3,6		fl				
氢氧化钙→石灰乳	Calcium hydroxide→*Hydrated lime*																				
次氯酸钙	Calcium hypochlorite	$Ca(OCl)_2$		<L	<30	S,Q	62		1	Q_1(V)	Q_1(V)	M_2	M	M	Xn,C,2,6,0,N		kr	100(Z)		2.35	
				–	<Kp	S,Q	62		4	Q_1	Q_1	M_2	M	M	Xn,C,2,6,0,N						
硝酸钙	Calcium nitrate	$Ca(NO_3)_2$		<L	<Kp	S,Q	62		1	Q_1(S)	B	V	G	G	Xi,6,0		kr	45		1.82	56
磷酸钙(浆)	Calcium phosphates (sludges)	$Ca(PO_4)_2$	G	F25	<100	S	62		5	Q_1	Q_1	V	G	G	Xi,6,0						
硫酸钙(悬浮液)	Calcium sulfate (suspension)	$CaSO_4$		F25	<Kp	S	01	kD	3	Q_1	Q_1	M_1	G	G			kr	1670		3.14	
六偏磷酸钠	Calgon(Polyphosphates),Calfort		®	<L	<Kp	S	11		1	Q_1(V)	B	V	G	G			kr				
硅磷酸钠	Calgonit R(Sodium phosphate silicates)		®	<L	<Kp	S	11		1	Q_1(V)	B	E	G	G			kr				
硝酸脲	Calgonit S(Urea nitrate)	$CH_5N_3O_4$	®	<L	<Kp	S	11		1	Q_1(V)	B	E	G	G			kr	152(Z)		1.69	
甘蔗糖(溶液)	Cane sugar(solution)			<L	<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4		fl				
ε_己内酰胺	Caprolactam, ε–	$C_6H_{11}NO$	TA	<L	<Kp	S,Q	62		1	Q_1(A)	B	M_1	G	G	Xn,Xi,6	5mg	kr	69	268	1.013(80)	sll
			TA		200	S	01	H	6	A	Q_1	U_1	M_6	G_1							
氨基甲酸酯	Carbamates(Urethanes)		TA, S	F<5	<180	D	53A	(H)	1	Q_1	B	M_2	G	G	T,Xi,3,6		fl				
			N	–	<200	D	53A		1	Q_1(S)	A	M_1	G	G							
尿素→尿素	Carbamides→*Urea*																				
石碳酸→苯酚	Carbolic acid→*Phenol*																				
二氧化碳(水溶液)	Carbon dioxide(aqueous solution)	CO_2		<L	<Kp	S	11		1	Q_1(S)	B	P	G	G			fl				
二氧化碳(气体)	Carbon dioxide(gas)	CO_2		–	<60	D	53A		1	Q_1(S)	B	P	G	G	1	5000	ga		–78(S)	(+)	
二氧化碳(液化压力PD>3bar)	Carbon dioxide (liquefied,min.3 bar above PD)	CO_2		–	<Kp	S,Q	11		X	Q_1	A	P	G	G	4,6	5000	fl			0.766	
二硫化碳	Carbon disulfide	CS_2	TA	–	<Kp	D	62		1	Q_1	Q_1	M_1	G	G	T,Xi,R62, R63,F,3	10	fl	–111	46	1.261	
一氧化碳	Carbon monoxide	CO		–	<60	D	53A		1	Q_1(S)	B	P	G	G	T,1,4,F+	30	ga	–205	–191	(–)	
四氯化碳	Carbon tetrachloride (Tetrachloromethane)	CCl_4	TA	–	<60	S,Q	62		1	Q_1(V)	B	V	G	G	T,R40,N	10	fl	–23	76	1.5924	
蓖麻油	Castor oil			–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	–10…–18		0.96	
苛性氨→氨(水溶液)	Caustic ammonia→*Ammonia aqu. solutions*																				
苛性钾溶液(氢氧化钾水溶液)	Caustic potash solution (Potassium hydroxide in aqueous solution)	KOH		<10	<25	S	11		1	Q_1	Q_1	E	G	G	C,Xn		fl				53.2
				<20	<60	S	11		5	Q_1	Q_1	E	G	G	C,Xn		fl				
		KOH		–	<Kp	D	53A		1	Q_1	Q_1	M_2	G	G	C,Xn,2,4		fl				
苛性苏打溶液(氢氧化钠水溶液)	Caustic soda solution (Sodium hydroxide in aqueous solution)	NaOH		<10	<80>K	S	11		5	Q_1	Q_1	E	G	G	C			10%~10	10%~105	10% 1.109	
				<20	<100>K	S	11		5	Q_1	Q_1	E	G	G	C			20%~25	20%~110	20% 1.219	
				<50	<100>K	S,Q	62	QW	5	Q_1	Q_1	E	G	G	C,3			30%~0	30%~120	30% 1.327	
				<50	<100>K	S,Q	62	QW	1	Q_1	Q_1	E	G	G	C,3			40%~15	40%~130	40% 1.430	
				<50	<100>K	D	53A	SW	1	Q_1	Q_1	E	G	G	C,3			50%~12	50%~150	50% 1.524	
				<50	<180	D	53A	SW	1	Q_1	Q_1	M_2	G	G	C,2			60%~50	60%~160	60% 1.109	

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
溶纤剂(乙基二醇)	Cellosolve(Ethylene glyol monoethyl ether)	$C_4H_{10}O_2$	TA, ®	–	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,Xn,R60	20	fl	–100	135	0.9311	
纤维素→纸浆	Cellulose→*Pulp*																				
水泥浆	Cement sludge			<60	<40	S,Q	62	kD	3	Q_1	Q_1	V	G	G	3,6						
干酪(奶油)	Cheese(cream)		N	–	<60	D	53A		1	Q_1	Q_1	V	G	G	4		pa				
化学纸浆→纤维素	Chemical pulp→*Cellulose*																				
中国木油→木油	Chinese wood oil→*Wood oil*																				
氯醋酸	Chloroacetic acid	$C_2H_3ClO_2$	TA	<L	<100	D	53A	SW	1	Q_1(V)	B	M_2	G	G	T,C,2,N		kr	61	188	1.40	11
氯化二苯	Chlorinated biphenyls		TA, S	–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	T	0.2	fl				
氯	Chlorine	Cl_2		–	<60	D	54		1	Q_1	Q_1	M_1	G	G	T,Xi,1,2,3,6, N	0.5	ga	–101	–34	(+)	
氯碱液(漂白)→次氯酸钠 次氯酸钙	Chlorine bleaching lye →*Sodium hypochlorite* *calcium hypochlorite*																				
二氧化氯	Chlorine dioxide	ClO_2		–	<60	D	53A	SW	1	Q_1	Q_1	M_1	G	G	T+,C,1,2,6,0, N	0.1	ga	–59	11	(+)	
氯碱→次氯酸钠	Chlorine lye→*Sodium hypochlorite*																				
氯水	Chlorine water	Cl_2+H_2O		L	<Kp	D	54		1	Q_1(V)	B	M_1	G	G	C,2,6		fl				
氯丙酮(1-氯-2-丙酮)	Chloroacetone(1–chlorine–2–propanone)	C_3H_5ClO	TA	–	<60	S,Q	62		1	Q_1(V)	B	M_1	G	G	T,3,N		fl	–44	119	1.123	
氯苯	Chlorobenzene	C_6H_5Cl	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,N	50	fl	–46	132	1.106	
含氯氟烃(CFC)→冷却剂	Chlorofluorocarbons(CFC) →*Refrigerants*																				
氯仿(三氯甲烷)	Chloroform	$CHCl_3$	TA	–	<Kp	D	62		1	Q_1(S)	B	M_1	G	G	Xn,Xi,R40	10	fl	–63	61	1.48	
氯代甲烷→甲基氯	Chloromethane→*Methyl chloride*																				
三氯硝基甲烷→三氯硝基甲烷	Chloropicrine→*Trichloronitromethane*																				
氯磺酸	Chlorosulfuric acid(Chlorosulfonic acid)	$HOSO_2Cl$		–	<Kp	D	54		1	Q_1	Q_1	M_1	G	G	C,Xi		fl	–80	152(Z)	1.75	
三氯乙烷	Chlorothene→*Trichloroethane*																				
铬矾(钾铬矾)	Chrome alum(Potassium chrome alum)	$KCr(SO_4)_2{\cdot}12H_2O$		<L	<Kp	S,Q	62		1	Q_1(V)	B	M_1	G	G	6		kr	89		1.83	11(25)
铬酸(氢化物)→三氧化铬	Chromic acid(Chromic anyhydride) →*Chromium trioxide*																				
三氧化铬	Chromium trioxide	CrO_3		<L	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	T+,C,R45,R46, R62,2,6,0,N	mg 0.1	kr	197	>230(Z)	2.7	62.8
柠檬酸	Citric acid	$C_6H_8O_7$		<L	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xi		kr	153	200(Z)	1.66	73.3
柠檬汁	Citrus juices		N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
糖汁	Claire→Sugar juices																				
氯化联(二)苯	Clophen→*Chlorinated biphenyls*																				
煤泥，矿泥	Coal sludge				<60	S	32		1	U_1	U_1	P	G	G			pa				
煤焦油(选择性的清除泄漏)	Coal tar(remove leakage selectively)		TA, G	–	<180	S,Q	11	(H)	1	Q_1(S)	B	M_1	G	G	T,R45,1,6	*	fl		1.1…1.2		
可可奶油	Cocoa butter(cacao butter)		N	Sch	<100	S	11		1	Q_1(S)	B	V	G	G			pa	33…35		0.975	
椰子脂	Coconut fat		N	–	>30<TG	S	11		1	Q_1(S)	B	V	G	G			pa	20…23		0.88…0.9	
椰子油	Coconut oil		N	–	<160	S	11		1	Q_1(S)	B	V	G	G			fl				
鳕鱼肝油	Cod–liver oil		N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl			0.92…0.93	
咖啡(精练)	Coffee(extract)		N	L	<60	S	11		1	Q_1	Q_1	V	G	G			fe				
coin	Coin		®	–	<30	S	11		1	Q_1(S)	B	V	G	G			fl				
炼焦炉气	Coke oven gas			–	<160	D	53A		1	Q_1(V)	B	V	G	G	1,U	*	ga				
冷锌油漆	Cold zinc paint		G	<L	<60	D	53A		1	Q_1(S)	B	E	G	G	3,4		fe				
菜籽油	Colza oil(Rapeseed oil)		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	–10…-2	350	0.91	
冷凝奶	Condensed milk		N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
冷却盐水→氯化钙	Cooling brine→*Calcium chloride*																				
醋酸铜	Copper(Ⅱ) acetate	$C_4H_6CuO_4$		<L	<40	S	11		1	Q_1(V)	B	E	G	G	Xn		kr	115	~240(Z)	1.882	Ⅱ
氯化铜：	Copper chlorides:																				
氯化亚铜	Copper chloride	CuCl		<L	<Kp	D	53A		1	Q_1(V)	B	E	G	G	Xn,N,2,3		kr	430	1490	4.14	1.5
氯化铜	Copper(Ⅱ) chloride	$CuCl_2$		<L	<Kp	D	53A		1	Q_1(V)	B	E	G	G	Xn,N,2,3		kr	>300(Z)		3.386	42.2
氰化铜悬浮液	Copper(Ⅰ) cyanide suspension		TA	<10	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T+,N	5	kr	473		2.92	unl
硝酸铜	Copper(Ⅱ) nitrate	$Cu(NO_3)_2$		<L	<60	S	11		5	Q_1	Q_1	E	G	G	Xn,0		kr		>150(S)		57.0
				<L	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	Xn,0						

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1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
谷类浆	Corn mash	N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
玉米油	Corn oil	N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	–18…–10		0.91…0.93	
棉籽油	Cottonseed oil	N	–	<120	S	11		1	Q_1(S)	B	V	G	G			fl	–2		0.92	
奶油	Cream	N	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
木材防腐剂(杂酚油)	Creosot	TA	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	T,R45		fl	<–20	200…220	1.08…1.09	
甲酚：	Cresols:																			
对_甲酚	p–Cresol	TA	Sch	<Kp	D	53A		1	Q_1(V)	A	M_1	G	G	T,C	5	fe	36	202	1.018	
间_甲酚	m–Cresol	TA	Sch	<Kp	D	53A		1	Q_1(V)	A	M_1	G	G	T,C	5	kr	31	191	1.05	2.6
邻_甲酚	o–Cresol	TA		<Kp	D	53A		1	Q_1(V)	A	M_1	G	G	T,C	5	fl	11	203	1.03	
原油，不含固体颗粒	Crude oil,free from solid particles	TA, N	–	<100	S	11		1	Q_1(S)	B	V	G	G	T,R45		fl				
原油，提纯	Crude oil,refined	TA, N	–	<80	S	11		1	Q_1(S)	B	V	G	G	T,R45		fl				
原油，含沙	Crude oil,with sand	TA, N	–	<100	S	11		1	Q_1	Q_1	V	G	G	T,R45		fl				
原油＋盐水	Crude oil＋salt water	TA, N	–	<25	S	11		1	Q_1(V)	B	V	G	G	T,R45		fl				
粗肥皂	Crude soap		–	>F<100	S	11		1	Q_1(S)	B	V	G	G			fl				
人造水晶石(悬浮液)	Cryolith(suspension)	$Na_3(AlF_6)$	<30	<Kp	S	02	kD	3	Q_1	Q_1	E	G	G	T,Xn,N		kr	~1000		2.95	unl
异丙基苯	Cumene(Isopropylbenzene)	C_9H_{12}	TA	–	<Kp	D	53A	1	Q_1(V)	B	M_1	G	G	Xn,N	50	fl	–96	152…153	0.864	
硝酸铜(蓝矾)	Cupric sulphate(Blue vitriol)	$CuSO_4*5H_2O$		<L	<Kp	S	11	5	Q_1	Q_1	E	G	G	Xn		kr	560(Z)		3.603	16.9
凝乳	Curd	N	–	<60	S	11		1	Q_1(S)	B	V	G	G			pa				
切削液→金属润滑剂	Cutting fluid→*Metal working lubricants*																			
氰化钾→氰化钾	Cyanide of potassium→*Potassium cyanide*																			
环己烷	Cyclohexane	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	F,Xn,Xi,N	300	fl	7	80	0.788	
环己醇	Cyclohexanol	$C_6H_{12}O$	–	>F<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn,Xi,6	50	fe	25	161	0.962	
环己酮	Cyclohexanone	$C_6H_{10}O$	–	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn	*	fl	–26	155	0.964	
环戊二烯烃	Cyclopentadiene	C_5H_6	TA	–	<Kp	S,Q	62	1	Q_1(S)	B	M_1	G	G	1,6	75	fl	–97	40	0.802	
对繖花烃(对异丙基甲基苯)	Cymene, p–;(1–Isopropyl–4–methylbenzene)	$C_{10}H_{14}$		–	<60	S	11	1	Q_1(V)	B	V	G	G	Xi		fl	–68	177	0.86	
D	D																			
十氢化萘→萘烷	Decahydronaphthalene→*Decalin*																			
萘烷（＋氢化萘）	Decalin (Decahydronaphthalene):	$C_{10}H_{18}$																		
顺萘烷	cis–Decalin																			
反萘烷	trans–Decalin	$C_{10}H_{18}$	TA	–	<Kp	S,Q	62	1	Q_1(S)	B	M_1	G	G	C,N		fl	–43	196	0.896	
工业酒精→乙醇	Denatured alcohol→*Ethanol*	$C_{10}H_{18}$	TA	–	<Kp	S,Q	62	1	Q_1(S)	B	M_1	G	G	C,N		fl	–30	187	0.870	
脱盐水→水	Desalinated water→*Water*																			
聚氨基甲酸脂类黏合剂R	Desmodur R	®	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	Xn,U		fl				
聚氨基甲酸脂类黏合剂T	Desmodur T	TA, ®	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	T+,Xi,R40		fl	21	251	1.22	
Desmophen	Desmophen	®	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	U		fl				
洗涤剂	Detergents	S			S	11		1	Q_1(S)	B	V	G	G							
糊精	Dextrin（Starch gum）	G	<L	<Kp	D	53A		1	Q_1(S)	B	V	G	G			fe				sll
葡萄糖，右旋糖→葡萄糖	Dextrose→*Glucose*																			
二丙酮醇（4-羟基-4-甲基-2-戊酮）	Diacetone alcohol（4–Hydroxy–4–methyl–2–pentanone）	$C_6H_{12}O_2$		–	<Kp	S,Q	62	1	Q_1(S)	B	M_1	G	G	Xi,,6	50	fl	–47	168	0.93	
酞酸已二烯酯→酞酸酯	Diallyl phthalate→*Phthalic acid esters*																			
磷酸氢二铵→磷酸联二铵	Diammonium hydrogen phosphate →*Ammonium phosphate, secondary*																			
二溴代甲烷（溴化甲烷）	Dibromoethane (Ethylene bromide)	$C_2H_4Br_2$		–	<100	D	53A	1	Q_1(V)	B	M_2	G	G	T,Xi,R45,N	*	fl	10	132	2.2	
二丁基醚	Dibutyl ether	$C_8H_{18}O$		–	<Kp	S,Q	62	1	Q_1(V)	B	M_1	G	G	R,6		fl	-98	142	0.769	
二丁基酞酸酯（DBP）→酞酸酯	Dibutyl phthalate(DBP)→*Phthalic acid esters*																			

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
二氯苯：	Dichlorobenzenes:																				
1,2-二氯苯（邻-二氯苯）	1,2–Dichlorobenzene (ortho–dichlorobenzene)	$C_6H_4Cl_2$	TA	–	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn,Xi,N	50	fl	–17	180	1.306	
1,3-二氯苯（间-二氯苯）	1,3–Dichlorobenzene (meta–dichlorobenzene)	$C_6H_4Cl_2$	TA	–	<Kp	S,Q	11		1	Q_1(S)	B	M_1	G	G	Xn,N		fl	–25	173	1.288	
1,4-二氯苯（对-二氯苯）	1,4–Dichlorobenzene (para–dichlorobenzene)	$C_6H_4Cl_2$	TA	–	>F<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn,Xi,R40,N	50	fe	53	174	1.46	
二氯乙烷：	Dichloroethanes:																				
1,1-二氯乙烷	1,1–Dichloroethane	$C_6H_4Cl_2$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xn,Xi,F	100	fl	–97	57	1.175	
1,2-二氯乙烷	1,2–Dichloroethane	$C_6H_4Cl_2$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_1	G	G	T,Xn,Xi,R45,F	*	fl	–36	83	1.26	
二氯乙烯：	Dichloroethenes:																				
1,1-二氯乙烯	1,1–Dichloroethene	$C_6H_4Cl_2$	TA	–	<Kp	D	53A		1	Q_1(S)	B	V	G	G	Xn,R40,3,F+	2	fl	–122	32	1.213	
1,2-二氯乙烯（顺）	1,2–Dichloroethene (cis–)	$C_6H_4Cl_2$	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,F,N	200	fl	–81	60	1.284	
1,2-二氯乙烯（反）	1,2–Dichloroethene (trans–)	$C_6H_4Cl_2$	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,F,N	200	fl	–50	47*	1.257	
二氯甲烷→二氯甲烷	Dichloromethan→*Methylene chloride*																				
二癸基酞酸酯→酞酸酯	Didecyl phthalate→*Phthalic acid esters*																				
柴油	Diesel fuel		TA, G	–	<80	S	11		1	Q_1(S)	B	V	G	G			fl		170…390	0.83…0.88	
二乙醇胺（DEA,2,2'-二乙醇胺）	Diethanolamine(DEA,2,2'–Iminodiethanol)	$C_4H_{11}NO_2$		–	>F<180	S	11		1	Q_1(V)	B	M_2	G	G	Xn,Xi		kr	28	268	1.093	
二乙基乙醚（‘乙醚’,乙基醚）	Diethyl ether ('Ether',Ethyl ether)	$C_4H_{10}O$	TA	–	<Kp	S,Q	11		1	Q_1(S)	B	M_2	G	G	Xn,F+		fl	–116	34	0.715	
二乙基酞酸酯(DEP)→酞酸酯	Diethyl phthalate(DEP)→*Phthalic acid esters*																				
二乙基胺	Diethylamine	$(H_5C_2)_2NH$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	Xn,C,F		fl	–50	55	0.711	
二甘醇→1,2-亚乙基二醇	Diethylene glycol→*Ethylene glycols*																				
二乙烯三胺	Diethylenetriamine	$C_4H_{13}N_3$	TA	–	<180	S	11		1	Q_1(V)	B	M_2	G	G	Xn,C	10	fl	–39	207	0.959	
蒸煮液，酸性（亚硫酸盐化学浆）	Digester liquor,acidic (Sulfite chemical pulp)		V		<140	S	02	kD	3	Q_1	Q_1	V	M	G			fl				
			V		>140	D	53A		1	Q_1(V)	B	M_2	G	G	1,4						
蒸煮液，碱性（亚硫酸盐化学浆）	Digester liquor,basic (Sulfate chemical pulp)		V		<120	S	02	kD	3	Q_1	Q_1	E	M	G			fl				
			V		>120	D	53A		1	Q_1(V)	B	M_2	G	G	1,4						
二甘醇酸（2,2'-氧化双乙酸）	Diglycolic acid(2,2'–Oxydiacetic acid)	$C_4H_6O_5$		<L	<60	S	11		1	Q_1(V)	B	E	G	G	Xn,Xi		fe	148			1
酞酸二异丁酯（DIBP)→酞酸酯	Diisobutyl phthalate(DIBP) →*Phthalic acid esters*																				
二异癸基酞酸酯（DIDP）→酞酸酯	Diisodecyl phthalate(DIDP) →*Phthalic acid esters*																				
酞酸二异壬酯（DINP)→酞酸酯	Diisononyl phthalate(DINP) →*Phthalic acid esters*																				
酞酸二异辛酯（DIOP）→酞酸酯	Diisooctyl phthalate(DIOP) →*Phthalic acid esters*																				
稀释剂（溶解漆和真漆）	Diluents(solvents for paints and lacquers)		S	–	<40	S	11		1	Q_1(S)	A	M_1	G	G	U		fl				
二甲基甲酰胺（DMF）	Dimethyl formamide(DMF)	$C_3H_7N_0$	TA	–	<Kp	S,Q	62		1	Q_1(S)	B	M_2	G	G	T,Xn,Xi	10	fl	–61	153	0.9445	
二-(甲基二醇)-酞酸酯→酞酸酯	Di–(methyl glycol)–phthalate →*Phthalic acid esters*																				
酞酸二甲酯（DMP）→酞酸酯	Dimethyl phthalate(DMP)→*Phthalic acid esters*																				
硫酸二甲酯	Dimethyl sulfate	$C_2H_6O_4S$	TA	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	T+,C,R45	*	fl	–32	191	1.33	
二甲亚枫（DMSO）	Dimethyl sulfoxide(DMSO)	C_2H_6OS		–	<60	S	11		1	Q_1(S)	B	V	G	G			fl	19	189	1.104	
对酞酸二甲酯（DMT）	Dimethyl terephthalate(DMT)	$C_{10}H_{10}O_4$		<L	<60	S	11		1	Q_1(S)	B	M_1	G	G			kr	141	282	1.35	
				Sch	>F<Kp	S	01	(H)	6	A	Q_1	G	M_6	T_4							
酞酸二壬基酯→酞酸酯	Dinonyl phthalate→Phthalic acid esters																				
酞酸二辛酯（DOP）→酞酸酯	Dioctyl phthalate(DOP)→*Phthalic acid esters*																				
二戊烯	Dipentene	$C_{10}H_{16}$	TA	–	<60	S	11		1	Q_1(S)	B	V	G	G	Xi,N		fl	–95	178	0.841	

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
酞酸二戊基酯→酞酸酯	Dipentyl phthalate→*Phthalic acid esters*																				
联苯，联苯醚→传热油	Diphenyl,diphenyl oxide→*Heat transfer oils*																				
狄菲尔换热剂→传热油	Diphyl→*Heat transfer oils*		®																		
蒸馏水→水	Distilled water→*Water*																				
癸氟化二硫→氟化硫	Disulfurdecafluoride→*Sulfur fluorides*																				
二氯化二硫→氯化硫	Disulfur dichloride→*Sulfur chlorides*																				
二氟化二硫→氟化硫	Disulfur difluoride→*Sulfur fluorides*																				
一丁二烯苯（m_）	Divinylbenzene(m–), (Vinyl styrene)	$C_{10}H_{10}$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xi,N		fl	–67	199	0.9289	
十二（烷）基苯	Dodecyl benzene	$C_{18}H_{30}$	–		<60	S	11		1	Q_1(S)	B	V	G	G			fl	–7	331	0.863	
导热姆换热剂→传热油	Dowtherm→*Heat transfer oils*		®																		
饮用水→水	Drinking water, industrial water→*Water*																				
染料溶液（加漂白添加剂）	Dye liquor with bleaching additives		G	–	<160	S	11		1	Q_1	B	M_1	G	G			fl				
染料溶液（不加漂白添加剂）	Dye liquor without bleaching additives		G	–	<140	S	11		1	Q_1(S)	B	V	G	G			fl				
E	E																				
食用油	Edible oil		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
蛋糊	Egg liqueur		N	–	<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4		fl				
蛋黄	Egg yolk		N	–	<Kp	S,Q	62		1	Q_1(S)	B	V	G	G	3,4		fl			1.08	
电泳漆	Electrophoretic varnishes		G	Sus		D			X	Q_1	Q_1	V	T_6	F							
搪瓷涂料	Enamel slip			Sus	<40	D	53A		5	Q_1	Q_1	P	G	G	4						
釉底料	Engobes (special clays)			Sus	<40	D	53A		5	Q_1	Q_1	P	G	G	4						
氯甲代氧丙环（ECH）	Epichlorohydrine(ECH)	C_3H_5ClO	TA	–	<Kp	D	53A		1	Q_1(S)	B	M_2	G	G	T,C,R45	*	fl	–48	117	1.18	
环氧树脂及清漆	Epoxy resins and lacquers		TA	Sus	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xi,3,4,N		fl				
精油→挥发油	Essential oils→*Volatile oils*																				
Essotherm→热传油	Essotherm→*Heat transfer oils*		®																		
酯（不确定），也涉及→酞酸酯	Esters(not specified); also refer to →*Acetic acid esters*		S	–	<Kp,TG	S,Q	53A		1	Q_1(S)	B	M_2	G	G	(F),U		fl				
乙醛→乙醛	Ethanal→*Acetaldehyde*																				
乙烷	Ethane	C_2H_6	TA	–	<60	D	53A		1	Q_1(S)	B	V	G	G	F+,1		ga	–183	–88	(+)	
乙二胺→乙二胺	Ethanediamine→*Ethylenediamine*																				
乙二醇→甘醇	Ethanediol→*Ethylene glycol*																				
乙醇	Ethanol	C_2H_5OH	TA	–	<Kp	S	11		1	Q_1(S)	B	E	G	G	F	1000	fl	–114	78	0.794	
乙醇胺→氨基乙醇	Ethanolamines→*Amino ethanols*																				
乙烯→乙烯	Ethene→*Ethylene*																				
乙烯基…→乙烯基…	Ethenyl…→*Vinyl…*																				
乙醚→二乙醚	Ether→*Diethyl ether*																				
硫酸乙醚	Ether sulfates		S	–	<60	S	11		1	Q_1(S)	B	V	G	G	U		fl				
醋酸乙醚→醋酸乙基酯	Ethyl acetate→*Acetic acid ethyl ester*																				
乙酰醋酸乙酯	Ethyl acetoacetate	$CH_3COCH_2CO_2C_2H_5$		–	100	S	11		1	Q_1(V)	B	M_2	G	G	Xi		fl	–45	180	1.025	
丙烯酸乙酯→丙烯酸乙基酯	Ethyl acrylate→*Acrylic esters*																				
乙醇→乙醇	Ethyl alcohol→*Ethanol*																				
乙基胺	Ethylamine(Aminoethane)	C_2H_7N	TA	–	<60	D	53A		1	Q_1(S)	B	E	G	G	F+,Xi,1	10	ga	–80	17	(+)	
乙基苯	Ethylbenzene	C_8H_{10}		–	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn,F	100	fl	–94	136	0.867	
乙基氯（氯乙烷）	Ethylchloride (chloroethane)	C_2H_5Cl	TA	–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,R40,F+,1	1000	ga	–138	12	(+)	
乙烯（乙烯）	Ethylene(Ethene)	C_2H_4	TA	–	<–20	D	53A	ThE	6	A	Q_1	G	M_6	M	F+,1		ga	–169	–104	(–)	
溴化乙烯→二溴乙烷	Ethylene bromide→*Dibromoethane*																				
氯化乙烯→二氯乙烷	Ethylene chloride→*Dichloroethenes*																				
2-氯乙醇（2-氯乙醇）	Ethylene chlorohydrin (2-Chloroethanol)	C_2H_5ClO	TA	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	T+	1	fl	–70	129	1.21	
乙二胺	Ethylenediamine	$C_2H_8N_2$	TA	–	<60	S,Q	62		1	Q_1(S)	B	E	G	G	Xn,C	10	fl	9	116	0.9	

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
二氯化乙烯→二氯乙烷	Ethylene dichloride→*Dichloroethenes*																				
乙二醇:	Ethylene glycols:																				
二甘醇	Diethylene glycol	$C_4H_{10}O_3$		–	<100	S	11		1	Q_1(S)	B	E	G	G	Xn		fl	–6	245	1.12	
乙二醇（1,2-乙基二醇，乙二醇）	Ethylene glycol(1,2–Ethanediol, 'Glycol')	$C_2H_6O_2$		–	<100	S,Q	62		1	Q_1(S)	B	E	G	G	Xn	10	fl	–16	198	1.113	
四甘醇	Tetraethylene glycol	$C_8H_{18}O_5$		–	<100	S	11		1	Q_1(S)	B	E	G	G			fl	–6	328	1.128	
三甘醇	Triethylene glycol	$C_6H_{14}O_4$		–	<100	S	11		1	Q_1(S)	B	E	G	G			fl	–4	291	1.1274	
环氧乙烷	Ethylene oxide	C_2H_4O	TA	–	<60	D	53A		1	Q_1(S)	B	M_2	G	G	T,Xi,R45, R46,F+,6	*	ga	–111	10	(–)	
乙醚→二乙醚	Ethyl ether→*Diethyl ether*																				
甲酸乙酯→甲酸乙酯	Ethyl formiate→*Formic acid ethyl esters*																				
乙基己醇（异辛醇）	2–Ethylhexanol (Isooctanol)	$C_8H_{18}O$		–	<100	S	11		1	Q_1(S)	B	V	G	G	Xi		fl	<–76	182	0.834	
F	F																				
粪（便）	Faeces(feces)		N	–	<60	S	11		1	Q_1	Q_1	V	G	G			fl				
脂肪及脂油	Fats and fatty oils		N	–	<200	S	11		1	Q_1(S)	B	M_1	G	G			fl				
脂肪酸	Fatty acids		G	–	>F,<Kp	S	11		1	Q_1(V)	B	M_1	G	G			fl				
脂肪簇醇的硫酸酯	Fatty alcohol sulfates		G	<L	<Kp,>K	S	11		1	Q_1(V)	B	V	G	G			fe				
脂肪簇醇	Fatty alcohols		G	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
磷酸铁无机酸溶液	Ferric phosphate solution in mineral acids			L	<100	D	53A	SW	1	Q_1(V)	B	M_1	G	G	2,U		kr			2.87	
氰铁酸盐	Ferricyanides		G	<L	<Kp,>K	S	11		1	Q_1(V)	B	E	G	G			kr				
抛光剂、修饰剂	Finishing agents,dressing agents		S	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	U		fl				
冷杉油	Fir needle oils		G	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl			0.87…0.88	
鱼胶	Fish glue		N	–	<60	S,Q	11		1	Q_1(S)	B	V	G	G	3		fl				
鱼肝油	Fish liver oils		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
鱼肉	Fish meal		N	Sus	<60	S	02		1	Q_1	Q_1	V	G	G			fe				
鱼废料	Fish offals		N	Sus	<60	S	02		1	Q_1	Q_1	V	G	G			fe				
鱼油	Fish oils		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
鱼泥浆	Fish slurry		N	Sus	<60	S	02		1	Q_1	Q_1	V	G	G			fe				
定影剂	Fixative		G	<L	<60	S,Q	11		1	Q_1(S)	B	M_1	G	G	3		fe				
定影液（酸性）	Fixing bath,acidic			–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
烟道气脱硫设备（FGD）：所有酸的悬浮液	Flue gas desulphurization plants(FGD): all acid suspensions		V	<25	<80	S	02	kD	3	Q_1	Q_1	V	M	M			fl				
氟醋酸	Fluoroacetic acid	$C_2H_3FO_2$	TA	<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T+,2,N		kr	35	165	1.369	l
氟硼酸	Fluoroboric acid	HBF_4		–	<60	D	54		1	Q_1	Q_1	M_1	G	G	C,2		fl	–78	130(Z)	1.4	sll
氟硅酸	Fluorosilicic acid	$H_2(SiF_6)$		–	<60	D	54		1	Q_1	B	M_1	G	G	C,2		fl		(Z)	1.3	sll
		$H_2(SiF_6)$			<30	<25	S	11	5	Q_1	Q_1	V	M	M							
甲醛	Formaldehyde(Methanal)	HCHO	TA	–	<100	D	53A		1	Q_1(V)	B	M_2	G	G	T,C,R40, R43,1,3		ga	–117	–19	(+)	
甲醛水（福尔马林）	Formalin	HCHO	TA, ®	~40	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	T,C,R40, R43,1,3		fl			1.122 40%	
甲酰胺	Formamide	CH_3NO	TA	–	<60	S	11		1	Q_1(S)	B	E	G	G	T,R61		fl	3	210	1.13	
甲酸	Formic acid	HCOOH	TA	100	TG	D	53A	SW	1	Q_1(V)	B	M_2	G	G	C,2	5	fl	8(100%)	101(100%)	1.22(100%)	
		HCOOH	TA	–	<80	S	11	SS	1	Q_1(V)	B	M_2	M	M	C						
		HCOOH	TA	<30	<60	S	11	SS	1	Q_1(V)	B	M_2	G	G	C						
		HCOOH	TA	>30	<30	S	11	SS	1	Q_1(V)	B	M_2	G	G	C						
		HCOOH	TA	>80	<40	S	11	SS	1	Q_1(V)	B	M_2	G	G	C						
		HCOOH	TA	>90	<50	S	11	SS	1	Q_1(V)	B	M_2	G	G	C						
甲酸乙基酯（甲酸乙酯）	Formic acid ethyl ester (Ethyl formiate)	$C_5H_{10}O_2$	TA	–	<Kp	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,F	100	fl	–80	54	0.917	
甲酸甲基酯（甲酸甲酯）	Formic acid methyl ester (Methyl formiate)	$C_2H_4O_2$	TA	–	<Kp	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,F+	100	fl	–100	32	0.97	
n-甲酰吗啉（4-对氧氮己环醛）	Formylmorpholine, n–(4–Morpholinecarbox aldehyde,NFM)	$C_5H_9NO_2$		–	<80	S	11		1	Q_1(S)	B	M_1	G	G			fl	23	240	1.15	
氟利昂→致冷剂	Freon→*Refrigerants*		®	–	<60	S	02	kD	2	Q_{12}	Q_{12}	V	G	G							
新淤泥（污水厂）	Fresh sludge (sewage works)																fl				
氟里根→致冷剂	Frigen→*Refrigerants*		®																		
水果汁	Fruit juices		N	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
水果泥	Fruit mash→*Mashes*																				
水果浆	Fruit pulp→*Mashes*																				

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1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
燃料油：	Fuel oils:																			
燃料油（底）	Fuel oil(bottoms)	TA	–	<120	S	11		1	Q_1	Q_1	V	G	G	Xn,R40,N		fl				
燃料油EL	Fuel oil EL	TA	–	<120	S	11		1	Q_1(S)	B	V	G	G	Xn,R40,N		fl	Pp<–6	155…390	<0.86(15)	
燃料油L	Fuel oil L	TA	–	<120	S	11		1	Q_1(S)	B	V	G	G	Xn,R40,N		fl			<1.10(15)	
燃料油M	Fuel oil M	TA	–	<120	S	11		1	Q_1(S)	B	V	G	G	Xn,R40,N		fl			<1.20(15)	
燃料油S	Fuel oil S	TA	–	<120	S	11		1	Q_1(S)	B	V	G	G	Xn,R40,N			–10…+40	290(S)	1.625	0.7++
富马酸	Fumaric acid		<L	<100	S	11		1	Q_1(V)	B	V	G	G	Xi		kr				
糠醛	Furfurol(Furfural,Furaldehyde)	TA	–	<100	D	53A		1	Q_1(S)	B	M_2	G	G	T,Xn,Xi,R40	5	fl	–36	162	1.159	
糠醇	Furfuryl alcohol		–	<100	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn	10	fl	–31	170	1.13	
G	G																			
焙酸；镓酸	Gallic acid		<L	<100	S	11		1	Q_1(S)	B	V	G	G	Xi		kr	253(Z)		1.69	1,2++
电镀液	Galvanic baths		–	<60	S	11		1	Q_1(V)	B	V	G	G			fl				
汽→汽油	Gas→*Petrol*																			
汽油	Gas oil	TA	–	<140	S	11		1	Q_1(S)	B	V	G	G	T,R45		fl		200…360		
气体洗涤水	Gas scrubber water		–	<220	S,Q	62		1	Q_1(S)	A	M_1	G	G			fl				
汽油→汽油	Gasoline→*Petrol*		–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
汽油-甲醇混合物	Gasoline-methanol mixture →*Petrol–methanol mixture*																			
明胶	Gelatin		–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
Gilothem→传热油	Gilotherm→*Heat transfer oils*	®																		
姜料面包团	Gingerbread dough		–	<60	D	53A		1	Q_1(S)	B	V	G	G	4		pa				
冰醋酸→醋酸	Glacial acetic acid→*Acetic acid*																			
芒硝→硫酸钠	Glauber's salt→*Sodium sulphate*																			
瓷釉泥	Glazing slip		<50	<60	D	53A		5	Q_1	Q_1	V	G	G	4		pa				
葡萄糖（右旋糖）	Glucose D–(Dextrose,Grape sugar)	$C_6H_{12}O_6$	<L	<100	S	11		1	Q_1(S)	B	V	G	G			kr	146		1.56	sll
粘结剂	Glue		–	<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4		fl				
谷氨酸（2–氨基谷氨酸）	Glutamic acid (2–Aminoglutaric acid)	$C_5H_9NO_4$	<L	<100	S	11		1	Q_1(V)	B	M_1	G	G			kr	205(Z)			wl
戊二酸	Glutaric acid (Pentene diacid)	$C_5H_8O_4$	<L	<Kp	S	11		1	Q_1(V)	B	M_1	G	G	Xi		kr	97	303	1.43	
甘油（1,2,3-丙三醇）	Glycerol(1,2,3–Propane triol,Glycerine)	$C_3H_8O_3$	–	<120	S	11		1	Q_1(S)	B	V	G	G			fl	19	290(Z)	1.261	
乙二醇	Glycol→*Ethylene glycol*																			
乙二醇醚	Glycol ethers	G	–	<100	S	11		1	Q_1(S)	B	E	G	G			fl				
羟基乙酸	Glycolic acid (Hydroxyacetic acid)	$HOCH_2COOH$	TA <L	<60	S	11		1	Q_1(V)	B	E	G	G	C		kr	80	100(Z)	1.26	ll
乙二醇（二醇），普通	Glycols(diols),general	G	–	<100	S	11		1	Q_1(S)	B	E	G	G			fl				
右旋糖→葡萄糖	Grape sugar→*D–Glucose*																			
石膏水	Gypsum sludge	$CaSO_4*2H_2O$	<50	<60	D	53A		5	Q_1	Q_1	V	G	G	4		pa				
石膏悬浮液	Gypsum suspensions(from FGD,all of them)	$CaSO_4*2H_2O$	<25	<80	S	02	kD	3	Q_1	Q_1	V	M	G			fl				
H	H																			
洗发液	Hair lotions	G	–	<40	S	11		1	Q_1(S)	B	V	G	G			fl				
发油	Hair oils	G	–	<40	S	11		1	Q_1(S)	B	V	G	G			fl				
洗发香波	Hair shampoos	G	–	<60	D	53A		1	Q_1(V)	B	V	G	G			fl				
卤碳	Halocarbon	®	–	<200	S	11		1	Q_1(S)	B	M_1	G	G			fl				
传热油：	Heat transfer oils:	G																		
操作温度下蒸汽压力<2bar	Vapour pressure at operating temperature <2 bar		–	<400	S,Q	62		6	A	Q_1	G	M_6	T_4	3		fl				
操作温度下蒸汽压力<1bar	Vapour pressure at operating temperature <1 bar		–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
			–	<220	S,Q	62		1	Q_1(S)	A	M_1	G	G	3		fl				
操作温度下蒸汽压力>2bar	Vapour pressure at operating temperature >2 bar		–	<400	D	53A		6	A	Q_1	G	M_6	T_4	3		fl				

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
氦	Helium	He		–	<80	D	53A		1	Q_1(S)	B	M_1	G	G	1		ga	–272	–268	(–)	
庚烷	Heptane	C_7H_{16}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,Xi,3,4,T,N	500	fl	–90	98	0.681	
六氯化苯	Hexachlorobenzene(HCB, Perchlorobenzene)	C_6Cl_6	TA	Sch	<Kp	D	53A		6	Q_{22}	Q_1	G	M_5	M	T,R45,N		kr	231	323···326	2.044	
六氯化丁二烯	Hexachlorobutadiene (Perchlorobutadiene)	C_4Cl_6	TA		<80	D	53A		1	Q_1(V)	B	V	G	G	T,R40		fl	–20	215	1.68	
六氯化乙烷	Hexachloroethane (Perchloroethane)	C_2Cl_6	TA	<L	<80	D	53A		1	Q_1(S)	B	V	G	G	Xn,R40	1	kr		187(S)	2.09	
己烷	Hexane,–n	C_6H_{14}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,Xi,R62,F,N	50	fl	–95	68	0.66	
己酮	Hexan–2–one	$C_6H_{12}O$	TA	–	Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,R62	5	fl	–57	127	0.83	
蜂蜜	Honey		N	–	<100	D	53A		1	Q_1(S)	B	V	G	G	3,4		pa				
啤酒花浆	Hop mash→*Mashes*																				
热水→水	Hot water→*Water*																				
	Hydrated lime(Suspension of calcium hydroxide)	$Ca(OH)_2$		<10	<80	S	11	kQ	5	Q_1	Q_1	V	G	G	Xi		kr			2.23	
液压流体HFA、HFB、HFC、HFD	Hydraulic fluids HFA,HFB,HFC,HFD			–	<70	S	11		1	Q_1(S)	B	V	G	G	U		fl				
液压油H、HL、HLD	Hydraulic oils H,HL,HLP			–	<80	S	11		1	Q_1(S)	B	V	G	G	U		fl				
联氨	Hydrazine	N_2H_4		–	<Kp	D	53A		1	Q_1(S)	B	E	G	G	T,C,R45,N	*	fl	2	113	1.011	
氢碘酸	Hydroiodic acid	HI		–	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	C,2		fl		127(A)	1.7 (A57%)	
氢溴酸，溴化氢	Hydrobromic acid solution	HBr		–	<Kp	D	53A	SW	1	Q_1	Q_1	M_1	G	G	C,Xi,2,6		fl		126	1.5	
				0.04	<20	S,Q	62		1	Q_1(V)	B	V	G	G	Xi,2	#7	fl		5% ~ 101	10.5% 1.05	
				<2	<65	S,Q	62		1	Q_1(V)	B	V	M	M	Xi,2	#7	fl		10% ~ 103	20.4% 1.10	
				<10	<25	S,Q	62		1	Q_1(V)	B	V	M	M	Xi,2	#7	fl		20% ~ 110	24.3% 1.12	
盐酸	Hydrochloric acid	HCl		<35	<20	S,Q	62		1	Q_1(V)	B	V	M	M	C,2	#7	fl		25% ~ 107	28.2% 1.14	
				–	<80	D	62		1	Q_1(V)	B	V	G	G	C,2	#7	fl		30% ~ 95	32.1% 1.16	
																			35% ~ 80	36.2% 1.18	
																			40% ~ 20	40.4% 1.20	
氢氰酸	Hydrocyanic acid	HCN	TA	–	<Kp	D	53A		1	Q_1(V)	B	E	G	G	T+,F+,N	10	fl	–14	26	0.687	
				<40	<20	S,Q	62		1	Q_1	B	M_1	M	M	T+,C	3	fl		112(A)	1.13 A38	
氢氟酸	Hydrofluoric acid	HF		<20	<30	S,Q	62		1	Q_1	B	M_1	M	M	T+,C	3	fl		20%103		
				–	<10	S,Q	62		1	Q_1	B	M_1	M	M	T+,C	3	fl		60%80		
				–	<Kp	D	54		1	Q_1	Q_1	M_1	G	G	T+,C,2	3	fl		100%20		
氢氟硅酸→氟硅酸	Hydrofluosilicic acid→ *Fluorosilicic acid*																				
氢	Hydrogen	H_2		–	<60	D	53A		1	Q_1(S)	B	E	G	G	F+,1		ga	–259	–252	(–)	
氯化氢	Hydrogen chloride anhydrous	HCl		–	<60	D	54		1	Q_1(V)	B	M_1	G	G	T,C,1,2,3	5	ga	–114	–85	(+)	
氟化氢（气体）	Hydrogen fluoride(gas)	HF		–	<60	D	54		1	Q_1	B	M_2	G	G	T+,C,1,2	3	ga	–83	19	(+)	
碘化氢	Hydrogen iodide anhydrous	HI		–	>–20	D	53A		1	Q_1	Q_1	M_1	G	G	C,1		ga	–51	–35	(+)	
过氧化氢(双氧水)	Hydrogen peroxide	H_2O_2		<90	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	Xn,C,0,1	1	fl	0	150	1.4467	
		H_2O_2		<60	<60	S	11		1	Q_1	Q_1	V	G	G							
磷化氢（磷酸盐、磷化氢）	Hydrogen phosphide (Phosphine)	PH_3		–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	T+,1,F+,N	0,1	ga	–133	–87	(+)	
硫化氢	Hydrogen sulfide	H_2S		–	<100	D	62		1	Q_1(V)	B	M_2	G	G	T+,1,F+,N	10	ga	–85	–60	(+)	
羟甲基丙腈→丙酮氰醇	Hydroxymethyl propionitril →*Acetone cyanohydrin*																				
次氯酸	Hypochlorous acid	HOCl		–	<40	D	53A		1	Q_1(V)	B	V	G	G			fl				
I	I																				
冰淇淋	Ice cream		N	–		S	01		1	Q_1(S)	B	V	G	G			pa				
杀虫剂、杀虫药（水溶液）	Insecticides(Aqueous solution)		S	<L	<Kp	S,Q	62	QW	1	Q_1(S)	B	V	G	G	6,U						
绝缘漆	Insulating lacquers		S	Sch	<200	D	53A		1	Q_1(S)	A	M_1	G	G	3,4		fe				
碘	Iodine	I_2		Sch	<Kp	D	53A		1	Q_1	Q_1	M_1	G	G	Xn,4,6,N	0,1	fe	114	184	4,93	0,03
碘仿（三碘甲烷）	Iodoform(Triiodomethane)	CHI_3		Sch	<200	D	53A		1	Q_1	Q_1	M_1	G	G	Xn,4,6		fe	119	~218	4,008	unl
氯化铁（FeCl2或FeCl3）	Iron chlorides(FeCl2 or FeCl3)			<15	<25	S	11		1	Q_1	Q_1	E	M	M	Xn		kr				
				<L	<Kp	D	11		1	Q_1(V)	Q_1(B)	E	G	G	Xn		kr				
硫酸铁：	Iron sulfates:																				
二价硫酸铁（硫酸亚铁、铁矾）	Iron (II) sulfate (Ferrous sulfate, Iron vitriol)	$FeSO_4$		<L	<80	S	11		5	Q_1	Q_1	V	G	G	Xn		kr		>400(Z)		21,0
三价硫酸铁（正硫酸铁）	Iron (III) sulfate (Ferric sulfate)	$Fe_2(SO_4)_3$		<L	<80	S	11		5	Q_1	Q_1	V	G	G	Xn		kr		480(Z)	3.1	I

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Code of Materials and legend seeinside of back cover.	Media	Chemical Formula	Remark	Concentration %	Temp °C	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
异…看→…	Iso…also see→…																				
异莰醇-[2]，异冰片（2-挂莰醇）	Isoborneol (2-Exo-bornanol)	$C_{10}H_{18}O$		<L	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	Xi		fe	212(Z)			unl
醋酸异丁酯→醋酸酯	Isobutyl acetate→ *Acetic acid esters*																				
异氰酸盐	Isocyanates		S	Sch	<200	D	53A		1	Q_1(V)	B	M_2	G	G	U						
异辛烷（2,2,4-三甲基戊烷）	Isooctane(2,2,4-trimethylpentane)	C_8H_{18}	TA	–	<40	S	11		1	Q_1(S)	B	V	G	G	Xn,Xi,F,N		fl	–110	117	0,692	
异辛醇（2-乙基-1-异醇）→乙基己醇	Isooctanol(2-Ethyl-1-hexanol) →*2-Ethyl hexanol)*																				
异戊烷→戊烷	Isopentane→*Pentanes*																				
异佛尔酮（3,5,5-三甲基-2-酮）	Isophorone (3,5,5-Trimethylcyclohex-2-enone)	$C_9H_{14}O$	TA	–	<40	S,Q	62		1	Q_1(S)	B	E	G	G	Xn,Xi,R40	5	fl	–8	215	0,92	
异丙醇→2-丙醇	Isopropanol→*2-Propanol*																				
异丙基→丙基	Isopropyl…→*Propyl…*																				
异丙醇→2-丙醇	Isopropyl alcohol→*2-Propanol*																				
异丙基甲基苯→甲基	Isopropyl methylbenzene→*Cymene*																				
异丙基苯→异丙苯	Isopropylbenzene→*Cumene*																				
J	J																				
果浆	Jams,marmalades			–	<100	S	11		1	Q_1(V)	B	V	G	G			pa				
喷气式发动机燃料IP4,IP5	Jet fuel IP4,IP5		G	–	<40	S	11		1	Q_1(S)	B	V	G	G	F		fl		100...280	0,75...0,84	
K	K																				
贝壳树脂→胶水	Kaurit→*Glues*																				
煤油	Kerosene			–	<100	S	11		1	Q_1(S)	B	V	G	G	Xn		fl		175...325	~0,8	
番茄酱	Ketchup		N	–	<80	S,Q	62		1	Q_1(V)	B	E	G	G	3		fl				
氪	Krypton	Kr		–	<160	D	53A		1	Q_1(S)	B	M_1	G	G	1		ga	–157	-154	(+)	
L	L																				
漆用溶剂	Lacquer solvents		S	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	U		fl				
漆	Lacquers		S	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	3,4		fl				
乳酸	Lactic acid	$C_3H_6O_3$		<L	<80	S	11		1	Q_1(S)	B	V	G	G	Xi		kr	53		1,206	sll
乳糖	Lactose (milk sugar)	$C_{12}H_{22}O_{11}$		<L	<Kp	S	11		1	Q_1(V)	B	V	G	G			kr	223		1,525	5,5-
				<20	<Kp	S	11		5	Q_1	Q_1	V	G	G							
猪油	Lard		N	Sch	<100	S	11		1	S	B	V	G	G			pa	36...42			
胶乳(需说明)	Latex(specification necessary)		N	–	<100	S,Q	53A		X	U_2	Q_1(V)	M	G	G	3,4		fl				
薰衣草油	Lavender oil		TA, N	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xi,T		fl		204	0,88...0,90	
醋酸铅(Ⅱ)(铅糖)	Lead(Ⅱ)acetate (lead sugar)	$(CH_3COO)_2Pb$	TA	<L	<100	S	11		1	Q_1(S)	B	E	G	G	T,Xn,R62,N		kr	75	~200(Z)	2,5	56(25)
铅糖→醋酸铅(Ⅱ)	Lead sugar→Lead(Ⅱ)acetate																				
卵磷脂	Lecithine		N	–	<100	S	11		1	Q_1(S)	B	M_1	G	G			pa	~200(Z)			
柠檬糖浆	Lemonade syrup			–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
柠檬水	Lemonades			–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
木素磺酸	Lignsulfonic acid			<L	<100	D	11		1	Q_1(S)	B	M_1	G	G	4		fe				
褐煤焦油	Lignite tar		N,	–	<140	S	11	(H)	1	Q_1(S)	B	V	G	G	T,R45		pa		250...350	0,85...1,0	
			TA	–	<200	S	11	(H)	1	Q_1(S)	A	M_1	G	G							
石灰乳（氢氧化钙悬浮液）	Lime water ($Ca(OH)_2+H_2O$)	$Ca(OH)_2$		<10	<80	S,Q	62	QW	2	Q_{12}	Q_{12}	V	G	G	Xi,6						
				<50	<80	S	02	kD	3	Q_1	Q_1	V	G	G	Xi,6						
石灰粉悬浮液(碳酸钙)	Lime powder suspension (Calcium carbonate)	$CaCO_3$		<10	<80	S	11	kD	5	Q_4	Q_4	V	G	G			kr	825(Z)		2,95	0,001
				<10	<80	S,Q	62	QW	2	Q_{12}	Q_{12}	V	G	G	6						
				<50	<80	S	02	kD	3	Q_1	Q_1	V	G	G							
亚麻子油	Linseed oil		N	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl			0,92...0,94	

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
棉绒纤维	Linters		N	Sus	<Kp	D	53A		1	Q_1(V)	B	V	G	G			fe				
液化气体(符合DIN51622)	Liquefied gases acc.to DIN 51622		G	–	<Kp	S	11		1	Q_{12}	A	V	G	G	F		ga				
甜酒,甜葡萄酒	Liqueurs,liqueur wines			–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
液体...→...,液体	Liquid...→…,*liquid*																				
(蒸馏)酒→乙醇	Liquor→*Ethanol*																				
甘草	Liquorice		N	–	>F<140	D	53A		1	Q_1(S)	B	V	G	G	4		pa				
溴化锂	Lithium bromide	LiBr		<L	<Kp	S	11		1	Q_1	B	V	G	G	Xn		kr	547	1265	3,465	61,5
氯化锂	Lithium cloride	LiCl		<L	<40	S	11		1	Q_1(V)	B	V	G	G	Xn		kr	613	1360	2,068	45,0
				<L	<20	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,2						
肝香肠团	Liver sausage mass			–	<Kp	S	11		1	Q_1(S)	B	V	G	G			pa				
润滑油	Lubrication oils		S	–	<60	S	11		1	Q_1(S)	B	V	G	G	U		fl				
Lysoform=7.7-%→甲醛	Lysoform = 7.7%→*Formaldehyde*																				
来苏儿	Lysol		®	–	<60	S	11		1	Q_1(V)	B	V	G	G			fl				
M	M																				
M_...,偏_...→...	m–…,meta–...→…																				
二硫化镁→亚硫酸氢镁	Magnesium bisulfite →*Magnesium hydrogen sulfite*																				
氯化镁	Magnesium chloride	$MgCl_2$		<30	<20	S	11		1	Q_1(V)	B	V	G	G			kr	708	1412	2,31... 2,33	35,2
		$MgCl_2$		<L	<80	S	11		1	Q_1(V)	B	V	M	M							
亚硫酸氢镁	Magnesium hydrogen sulfite			<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G			kr				
氢氧化镁	Magnesium hydroxide	$Mg(OH)_2$		<10	<25	S	11		1	U_1	U_1	E	G	G			kr			2,36	sl
				<20	<40	S	11		1	Q_1	Q_1	E	G	G							
				<40	<80	D	53A		1	Q_1	Q_1	E	G	G							
硝酸镁	Magnesium nitrate	$Mg(NO_3)_2$*$6H_2O$		<L	<25	S	11		1	Q_1(V)	B	M_1	G	G	0		fe	89		1,64	41,5
硫酸镁	Magnesium sulfate	$MgSO_4$		<L	<Kp	S	11		1	Q_1(V)	B	V	G	G			kr	1124		2,66	25,8
马来酸	Maleic acid	$C_4H_4O_4$		<L	<100	S	11		1	Q_1(V)	B	V	G	G	Xn,Xi		kr	140	160(Z)	1,590	79(25)
苹果酸	Malic acid (Hydroxysuccinic acid)	$C_4H_6O_5$		<L	<60>K	S	11		1	Q_1(S)	B	E	G	G	Xi		kr	132		1,6	II
丙二酸	Malonic acid	$C_3H_4O_4$		<L	<60	S	53A		1	Q_1(V)	B	M_2	G	G	Xn		kr	135		1,62	78(25)
氯化锰(Ⅱ)	Manganese(Ⅱ)–chloride	$MnCl$*$4H_2O$		<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,2		kr	58		2,01	42,3
硝酸锰(Ⅱ)	Manganese(Ⅱ)–nitrate	$Mn(NO_3)_2$*$6H_2O$		<L	<Kp	S	11		1	Q_1(V)	B	E	G	G	0		kr	37	129	2,13	56,7
硫酸锰	Manganese sulfates:																				
硫酸锰(Ⅱ)	Manganese(Ⅱ)–sulfate	$MnSO_4$		<L	<60	S	11		1	Q_1(V)	B	M_1	G	G	Xn,N		fe	700	850(Z)	3.25	38,7
硫酸锰(Ⅲ)	Manganese(III)–sulfate	$Mn_2(SO_4)_3$		<L	<60	S	11		1	Q_1(V)	B	M_1	G	G	U		kr	160(Z)		3,24	
硫酸锰(Ⅳ)	Manganese(IV)–sulfate	$Mn(SO_4)_2$		<L	<60	S	11		1	Q_1(V)	B	M_1	G	G	U		kr				
肥料,液体	Manure,liquid		N	–	<60	S	11		1	Q_1	Q_1	P	G	G			fl				
marlotherm→传热油	Marlotherm→*Heat transfer oils*		®																		
浆	Mashes:																				
果浆	Fruit mash			Sus	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
果酱	Fruit pulp			Sus	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
啤酒花浆	Hop mash			Sus	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
芥末浆	Mustard mash			Sus	<Kp	S	11		1	Q_1(V)	B	V	G	G			fl				
土豆浆	Potato mash			Sus	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
盐浆	Salt mash			<L	<Kp	S,Q	62		4	Q_1	Q_1	V	M	G	2,4,6		fl				
重油	Masut			–	<100	S	11		1	Q_1(S)	B	V	G	G	U		fl				
				–	<200	S	11		1	Q_1(S)	A	M_1	G	G	U		fl				
低温残渣	Mayonnaise			–	<40	S	11		1	Q_1(V)	B	V	G	G			pa				
MDEA→N_甲基_2,2'_乙醇胺	MDEA→*N–Methyl–2,2'–imino diethanol*																				
MEA→N_甲基乙醇胺	MEA→*N–Methyl ethanolamine*																				
肉汁,肉汤	Meat juice,meat broth		N	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
MEK→丁酮	MEK→*Butanone*																				
三聚氰胺树脂(密胺)	Melamine resins		S	–	<100	D	53A		1	Q_1(V)	B	M	G	G	U,3,4		fl				
硫醇→硫醇	Mercaptanes→*Thiols*																				

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
氯化汞：																					
氯化汞	Mercuric chloride	$HgCl_2$		<L	<Kp	D	53A		1	Q_1(V)	B	V	G	G	T+,C,2,N		kr	280	302	5,44	6,2++
氯化亚汞（溶于苯中）	Mercurous chloride (Calomel)	Hg_2Cl_2		<L	<100	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,Xi,2,N		kr		385(s)	7,15	unl
汞	Mercury	Hg		–	<60	D	53A		1	Q_1(S)	B	V	G	G	T,4,6,N	0,01	fl	–38	356	13.5939	
硝酸汞（Ⅰ）	Mercury(Ⅰ) nitrate	$Hg_2(NO_3)_2$		<L	<Kp	S,Q	62			Q_1(V)	B	V	G	G	T+,N		kr		70(z)		
异丙叉丙酮	Mesityl oxide	$C_6H_{10}O$		–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	Xn,3	25	fl	–59	130	0,854	
金属加工润滑液：	Metal working lubricants:																				
用于机械加工	for finishing machines			–	<80	D	53A		5	Q_1	Q_1	V	G	G	U		fl				
用于其他机械工具	for other machine tools			–	<80	S	11		5	Q_1	Q_1	V	G	G	U		fl				
甲基丙烯酸甲基酯（甲基异于烯酯）	Methacrylic acid methylester(methyl methacrylate)	$C_5H_8O_2$	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	Xi,F	50	fl	–48	100	0,944	
甲醛→甲醛	Methanal→*Formaldehyde*																				
甲烷	Methane	CH_4		–	<60	D	53A		1	U_2	A	V	G	G	F+,1		ga	–182	–161	(–)	
甲醇（甲基醇）	Methanol(Methyl alcohol)	CH_3OH	TA	–	<60	S,Q	62		1	Q_1(S)	B	E	G	G	F,T	200	fl	–98	64	0,787	
醋酸甲酯→醋酸甲基酯	Methyl acetate→*Acetic acid methyl ester*																				
丙烯酸甲酯（丙烯酸甲基酯）	Methyl acrylate(Acrylic acid methyl ester)	$C_4H_6O_2$	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	Xn,Xi,F	5	fl	–75	80	0,954	
甲醇→甲醇	Methyl alcohol→*Methanol*																				
溴化甲烷	Methyl bromide (Bromomethane)	CH_3Br	TA	–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	T,Xn,Xi,1,2,N	5	ga	–94	4	(+)	
3-甲基-2-丁酮（甲基异丙酮）	3–Methylbutan–2–one (Methyl isopropyl ketone)	$C_5H_{10}O$	TA	–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	F		fl	–92	95	0,80	
丁酸甲酯→丁酸酯	Methyl butyrate→*Butyric acid esters*																				
甲基溶纤剂→亚乙基二醇	Methyl cellosolve→*Ethylene glycol*																				
氯代甲烷	Methyl chloride	CH_3Cl	TA	–	<80	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,R40,F+	50	ga	–97	–25	(+)	
三氯乙烷	Methyl chloroform→*1.1.1–Trichloroethane*																				
甲基环已酮	Methyl cyclohexanone,mixture of isomers	$C_7H_{12}O$		–	<Kp	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn	50	fl	–73...–14	165...170	0,92...0,93	
二氯甲烷	Methylene chloride	CH_2Cl_2	TA	–	<80	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,R40,1,3,4	100	fl	–96	40	1,325	
N_甲基乙醇胺	Methyl ethanolamine N–	C_3H_9NO		–	Kp	S,Q	62		1	Q_1	B	M_2	G	G	Xn,C		fl	–3	158	0,937	
甲基乙基酮→丁酮	Methyl ethyl ketone→*Butanone*																				
甲酸甲酯→甲酸甲基脂	Methyl formiate →*Formic acid methyl ester*																				
N-甲基-2，2-亚氨基二乙醇	Methyl–2,2'–imino–diethanol,N (N–menthyldiethanolamine	$C_5H_{13}NO_2$		–	<180	S,Q	62		1	Q_1	B	M_2	G	G	Xi		fl	–21	243	1,04	
甲基异丁酮（MIBK）→4-甲基-2-戊酮	Methyl isobutyl ketone (MIBK) →*4–Methylpentan–2–one*																				
甲基异丙酮→3-甲基-2-戊酮	Methyl isopropyl ketone →*3–Methylbutan–2–one*																				
甲基丙烯酸甲酯（MMA）→甲基丙烯酸甲基酯	Methyl methacrylate(MMA) →*Methacrylic acid methyl ester*																				
甲基萘	Methylnaphthalenes:																				
1-甲基萘	1–Methylnaphthalene	$C_{11}H_{10}$	TA	–	<160	S	11		1	Q_1(S)	B	M_1	G	G	Xn,N		fl	–30	245	1,020	
2-甲基萘	2–Methylnaphthalene	$C_{11}H_{10}$	TA	Sch	<160	S	11	(H)	1	Q_1(S)	B	M_1	G	G	Xn,N		kr	35	241	1,005	unl
	4–Methylpentan–2–one	$C_6H_{12}O$	TA	–	<100	S	11		1	Q_1	B	M_2	G	G	Xn,Xi,F	100	fl	–80	117	0,80	
甲基吡咯烷酮N_	Methyl pyrrolidone N–																				
1-甲基-2-吡咯烷酮，NMP	(1–Methyl–2–pyrrolidinone,NMP)	C_5H_9NO		–	<100	S	11		1	Q_1	B	M_2	G	G	Xi	20	fl	–24	206	1,028	
牛奶	Milk		N	–	<40	S	11		1	Q_1(S)	B	V	G	G			fl				
乳糖→乳糖	Milk sugar→*Lactose*																				
矿物油	Mineral oils		S	–	<80	S	11		1	Q_1(S)	B	V	G	G			fl				
溶剂油	Miscella			–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
Mobiltherm→传热油	Mobiltherm→*Heat transfer oils*		®																		

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Media						Recommended mechanical seal									Additional information on the medium						
Code of Materials and legend seeinside of back cover.		Chemical Formula	Remark	Concentration %	Temp °C	Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
糖蜜	Molasses			–	<100	S,Q	62		1	Q_{12}	Q_{12}	V	G	G	3,4		fl				
单—...→...	Mono...→···																				
甲乙醇胺 → 2-氨基乙醇	Monoethanolamine→ *2–Aminoethanol*																				
泥浆	Mud			Sus	<40	S,Q	62	kD	3	Q_2	Q_2	V	M	G			fl				
芥末	Mustard			–	<60	S,Q	62		1	Q_1	Q_1	V	G	G			pa				
芥菜酱	Mustard mash→ *Mashes*																				
N	N																				
石脑油	Naphtha		TA, G	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	T,R45,F,N		fl		30...>200		
萘	Naphthalene	$C_{10}H_8$	TA	Sch	<Kp	S,Q	62	(H)	1	Q_1(S)	B	M_1	G	G	Xn,R40,N	10	kr	81	218	1,14	unl
环烷酸	Naphthenic acids		G	–	<60	S	11		1	Q_1(V)	B	V	G	G	Xi		fl	~30	132...243	0,94... 1,03	
萘酚染料	Naphthol dyes		G	<L	<140	S	11		1	Q_1(V)	B	V	G	G	U		kr				
氨基萘:	Naphthylamines:																				
1-萘胺	1–Naphthylamine	$C_{10}H_9N$	TA	Sch	<150	S	11	(H)	1	Q_1(V)	B	M_2	G	G	Xn,N		kr	50	301	1,13	0,17
2-萘胺	2–Naphthylamine	$C_{10}H_9N$	TA	<L	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	T,Xn,R45,N	*	kr	110	306	1,216	wl++
天然气	Natural gas			–	<60	D	53A		1	Q_1(S)	A	V	G	G	1,F		ga				
氖	Neon	Ne		–	<80	D	53A		1	Q_1(S)	B	N	G	G	1		ga	–248	–247	(–)	
新戊烷（2,2_二甲基丙烷）→戊烷	Neopentane(2,2–Dimethylpropane)→ *Pentanes*																				
NFM→n-甲酰吗啉	NFM→ *n–Formylmorpholine*																				
氯化镍（II）	Nickel（II）chloride	NiCl		<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T,R45,2,N		kr	1030		3,55	38,0
硫酸镍（II）	Nickel（II）sulfate	$NiSO_4$		<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,R40,N		kr	>840(Z)		3,68	27,5
硝化酸	Nitrating acid		G	–	<80	D	53A		1	Q_1(V)	B	M_1	G	G	C,2,0		fl				
硝酸	Nitric acid	HNO_3		<40	<20	S,Q	62	QW	1	Q_1(V)	B	M_1	G	G	C	2	fl	10%–6	10%102	10%1,054	
				<30	<90	S,Q	62	QW	1	Q_1	Q_1	M_1	G	G	C	2	fl	20%–18	20%104	20%1,115	
				<50	<80	S,Q	62	QW	1	Q_1	Q_1	M_1	G	G	C	2	fl	30%–36	30%107	30%1,180	
				<60	<70	S,Q	62	QW	1	Q_1	Q_1	M_1	G	G	C	2	fl	40%–28	40%111	40%1,246	
				<70	<60	S,Q	62	QW	1	Q_1	Q_1	M_1	M	M	C	2	fl	50%–19	50%115	50%1,310	
				<80	<50	S,Q	62	QW	1	Q_1	Q_1	M_1	M	M	C,0	2	fl	60%–21	60%118	60%1,367	
				<90	<30	S,Q	62	QW	1	Q_1	Q_1	M_1	M	M	C,0	2	fl	70%–41	70%120	70%1,413	
				>90	<120	D	53A	SW	1	Q_1	Q_1	M_1	M	M	C,0,2	2	fl	80%–38	80%113	80%1,452	
硝酸（发烟）	Nitric acid,fuming																	90%–65	90%96	90%1,483	
																		100% –41	100%83	100%1,513	
硝基苯	Nitrobenzene	$C_6H_5NO_2$	TA	–	<80	D	53A		1	Q_1(V)	B	M_1	G	G	T,R40,R62,N	1	fl	5...6	211	1.19867	
硝基氯仿→三氯硝基甲烷	Nitrochloroform→ *Trichloronitromethane*																			(–)	
氮	Nitrogen	N_2		–	<100	D	53A		1	Q_1(S)	B	E	G	G	1		ga	–210	–196	1,59	
硝化甘油	Nitroglycerine	$CH_5(NO_3)_3$	TA	–	<60	D	53A		1	Q_1(S)	B	E	G	G	T+,E,N	0,05	fl	14			
硝基甲烷	Nitromethane	CH_3NO_2	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xn		fl	–29	101	1,13	
亚硝基硫酸（亚硝基氢硫酸酯）	Nitrosylsulfuric acid	$NOHSO_4$		<L	<80	D	53A		1	Q_1(V)	B	M_1	G	G	C,0		kr	73(Z)			
NMP→N-甲基吡咯烷酮	NMP→ *N–Methyl pyrrolidone*																				
壬酚	4–Nonylphenol	$C_{15}H_{24}O$	TA	Sch	<220	S,Q	01	(H)	6	A	Q_1(S)	M_7	T_6	G_1	C,N		pa	2	295...304	0,95	
O	O																				
正...，原...→	o–···,ortho...→···																				
辛烷	Octane	C_8H_{18}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,Xi,F,N	500	fl	–57	126	0,703	unl
4-苯酚	4–Octylphenol	$C_{14}H_{22}O$	TA	Sch	<220	S,Q	01	(H)	6	A	Q_1	U_1	M_6	G_1	C,N		fe	~80	277	0,95	
油漆	Oil lacquer paints		G	–	<40	D	53A		1	Q_1(S)	B	M_1	G	G	U,3,4		fl				
原油（不标明）	Oils(not specified)		S	–	<100	S	11		1	Q_1(S)	B	V	G	G	U		fl				
油酸	Oleic acid			–	<Z	S,Q	62		1	Q_1(S)	B	M_1	G	G	3		fl	16	360	0,8935	
发烟硫酸→硫酸（发烟）	Oleum→ *Sulfuric acid, fuming*																				

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Code of Materials and legend seeinside of back cover.	Media	Chemical Formula	Remark	Concentration %	Temp °C	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
橄榄油	Olive oil		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	~6		0,91...0,92	
乙二酸	Oxalic acid(Ethanedioic acid)	$C_2H_2O_4$	TA	<L	<Kp	S,Q	62		1	Q_1(V)	B	V	M	M	Xn		kr		>100(S)	1,901(25)	9,0++
			TA	<L	<25	S,Q	62		1	Q_1(V)	B	E	G	G	Xn						
2-恶唑烷酮（恶唑烷酮）	2–Oxazolidinone (2–oxazolidone)	$C_3H_5NO_2$	TA	Sch	<200	D	53A	(H)	1	Q_1	Q_1	M_1	G	G	Xn,3,4,R40		kr	85...89	220(64)		
臭氧	Ozone	O_3		–	<40	D	53A		1	Q_1	Q_1	K_5	G	G	T+,C,1,0	0,1	ga	–192	–112	(+)	
P	P																				
对，仲，副→	P–···,para–...→···																				
Palatal	Palatal		®G	–	<60	S,Q	62		1	Q_1(S)	B	V	G	G	U,3		fl				
Palatal®→苯二酸脂	Palatinol® →*Phthalic acid esters:*																				
Palatinol A DEP	Palatinol A DEP																				
Palatinola AH DOP	Palatinola AH DOP																				
Palatinol C DBP	Palatinol C DBP																				
Palatinol M DMP	Palatinol M DMP																				
Palatinol N DINP	Palatinol N DINP																				
Palatinol O DIBP	Palatinol O DIBP																				
Palatinol Z DIDP	Palatinol Z DIDP																				
棕榈酸	Palmitic acid	$C_{16}H_{32}O_2$		Sch	<200	S	01	(H)	6	B	Q_1	M_7	M_6	G_1			kr	63	390	0,8577	
对二氯苯→二氯苯	Paradichlorobenzene →*Dichlorobenzene*																				
石蜡	Paraffin waxes		TA, G	Sch	<160	S	11	(H)	1	Q_1(S)	B	V	G	G	T,R45		pa				
石蜡、石蜡油	Paraffins,paraffin oil		S	–	<160	S	11		1	Q_1(S)	B	V	G	G			fl				
对三联苯→三联苯	Paraterphenyl→*Terphenyls*																				
浆糊（为胶）	Paste(for gluing)		G		<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4		pa				
花生油	Peanut oil		N	–	<150	S	11		1	Q_1(S)	B	V	G	G			fl				
戊烷	Pentanes:																				
异戊烷（2-甲基丁烷）	Isopentane(2–Methylbutane)	C_5H_{12}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,F+,N	1000	fl	–160	27	0,62	
新戊烷（2，2-二甲基丙烷）	Neopentane (2,2–Dimethylpropane)	C_5H_{12}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	F+,N	1000	ga	–16	9		
n_正戊烷	n–Pentane	C_5H_{12}	TA	–	<Kp	S	11		1	Q_1(S)	B	V	G	G	Xn,F+,N	1000	fl	–130	36	0,6262	
戊醇	3–Pentanol	$C_5H_{12}O$	G	–	<60	S,Q	62		1	Q_1(S)	B	E	G	G	Xn,Xi	$100	fl	<–50	116	0,82	
戊基醋酸→醋酸戊基酯	Pentyl acetate→*Acetic acid pentyl esters*																				
过氯化苯→六氯化苯	Perchlorobenzene →*Hexachlorobenzene*																				
过氯乙烷→六氯乙烷	Perchloroethane →*Hexachloroethane*																				
过氯乙烯→四氯乙烯	Perchloroethylene →*Tetrachloroethylene*																				
强双氧水 →含30%过氧化氢	Perhydrol →*Hydrogen peroxide,30% solution*																				
汽油（汽油）、不加铅、正规和凝	Petrol (Gasoline) unleaded, regular and supergrade		TA, G	–	<40	S	11		1	Q_1(S)	B	V	G	G	T,Xn,R45, F+,N		fl		40...200	0,72...0,76	
汽油乙醚→汽油	Petrol ether→*Petrol,Gasoline*																				
矿酯、凡士林油	Petrolatum		G	Sch	<160	S	11		1	Q_1(S)	B	V	G	G			pa	38...60	>300	0,82...0,88	
石油	Petroleum		G	–	<160	S	11		1	Q_1(S)	B	V	G	G			fl	–20	150...280		
汽油-甲醇混合物	Petrol–methanol mixture		TA, G	–	<40	S	11		1	Q_1(S)	B	M_1	G	G	T,Xn,R45, F+,N		fl				
酚（石碳酸）	Phenol(Carbolic acid)	C_6H_5OH	TA	Sch	<Kp	D	53A		1	Q_1(V)	A	M_1	G	G	T,Xn,C	5	fe	41	182	1,06	
酚_甲酚混合物	Phenol–cresol mixtures		TA	Sch	<180	D	53A		1	Q_1(V)	A	M_1	G	G	T,C	5					
酚乙醚（苯基乙醚）	Phenol ether(phenyl ether)		TA, S	–	<100	D	53A		1	Q_1(S)	B	M_1	G	G	Xi,N		fl	27		1,07	
酚醛树脂	Phenolic resins		S		<200	D	53A		1	Q_1(S)	A	M_1	G	G	3,U		fl				
苯基乙烯→苯乙烯	Phenyl ethylene→*Styrene*																				
苯醋酸	Phenylacetic acid	$C_8H_8O_2$			<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	Xi,3		kr	76	266	1,08	1,8++

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
苯二胺（二氨苯）	Phenylenediamines (Diaminobenzenes):																				
间-苯二胺	m–Phenylenediamine	$C_6H_8N_2$	TA	<L	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,Xi,N	*	kr	63	287	1,11	sll
邻-苯二胺	o–Phenylenediamine	$C_6H_8N_2$	TA	<L	<Kp	S,Q	62		1	Q_1(S)	B	M_1	G	G	F,Xi,R40,N	*	kr	103	257(S)	1,14	wl
对-苯二胺	p–Phenylenediamine	$C_6H_8N_2$	TA	<L	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	T,Xi,N	0,1mg	kr	140	267	1,135	4,7
光气（碳酰氯、氯氧化碳）	Phosgene(carbonyl dichloride,Carbon oxychloride)	$COCl_2$	TA	–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	T+,C	0,1	ga	–128	7	(+)	
磷化液：	Phosphatizing baths:			<L	<60	D	53A		1	Q_1	Q_1	M_1	G	G			fl				
铁磷化溶液	'Iron phosphatizing solution'			<L	<60	S	11		5	Q_1	Q_1	V	G	G			fl				
锌磷化溶液	'Zinc phosphatizing solution'			<L	<60	D	53A		1	Q_1	Q_1	M_1	G	G			fl				
磷酸（浓缩、提供%P_2O_5：1%P_2O_5≙1.38%H_3PO_4）：	Phosphoric acids(conc.given in % P2O5; 1% P2O5≙1.38% H3PO4):																				
				<65	<40	S,Q	62		1	Q_1(V)	B	V	G	G	C,6		fl				
纯酸	Pure acid			<65	<80	S,Q	62		1	Q_1(V)	B	V	M	M	C,6		fl				
				<55	<80	S	02		3	Q_1	Q_1	V	M	G			fl				
粗酸，产生热	Raw acid,produced thermally			<55	<120	D	54		1	Q_1(V)	B	M_1	G	G	C,2,6		fl				
				<65	<80	S	02	kD	4	Q_1	Q_1	V	M	G			fl				
原酸，形成水分	Raw acid,produced wet			<65	<160	D	53A		1	Q_1	Q_1	M_1	G	G	C,2,6		fl				
高磷酸	Superphosphoric acid			<85	<160	D	53A		1	Q_1	Q_1	M_1	G	G	C,2,6		fl				
五氧化磷	Phosphorus pentachloride	PCl_5		<L	<60	D	53A	SW	1	Q_1(V)	B	M_1	G	G	T+,Xn,2,3	1mg	kr	100(S)		2,114	sll
酞酸（邻苯二甲酸）	Phthalic acid	$C_8H_6O_4$		<L	<Kp	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xi		kr	191(Z)		1,59	0.57++
邻苯二甲酸酯（酞酸酯）：	Phthalic acid esters (phthalates):																				
邻苯二甲酸苄基丁酯（BBP）	Benzyl butyl phthalate (BBP)	$C_{19}H_{20}O_4$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	T,R62,N		fl	<–35	370	1,12	
二（2-乙基已基）酞酸酯	–(2–ethyl hexyl)-phthalate(DEHP)	$C_{24}H_{38}O_4$	TA	–	<100	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,6,R60	10mg	fl	–45	385	0,99	
邻苯二甲酸二已烯酯	Diallyl phthalate	$C_{14}H_{14}O_4$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	Xn,N		fl	–70	320	1,122	
邻苯二甲酸二丁酯（DBP）	Dibutyl phthalate(DBP)	$C_{16}H_{22}O_4$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	T,R62,N		fl	–35	340	1,047	
邻苯二甲酸二癸酯	Didecylphthalat	$C_{28}H_{46}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl	3...5			
邻苯二甲酸二乙酯（DEP）	Diethyl phthalate(DEP)	$C_{12}H_{14}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl	–40	298	1,118	
邻苯二甲酸二异十二酯（DIBP）	Diisodecyl phthalate (DIBP)	$C_{16}H_{22}O_4$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	Xn,R62,N		fl	–64	305...315	1,049	
邻苯二甲酸二异癸酯（DIDP）	Diisodecyl phthalate (DIDP)	$C_{28}H_{46}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl	–50	250...267(Z)	0,96...0,97	
邻苯二甲酸二异壬酯（DINP）	Diisononyl phthalate(DINP)	$C_{26}H_{42}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl		270(27)	~ 0,97	
邻苯二甲酸二异辛酯（DIOP）	Diisooctyl phthalate (DIOP)	$C_{24}H_{38}O_4$	TA	–	<100	S,Q	62		1	Q_1(S)	B	M_1	G	G	Xn,R62,R63,6	10mg	fl	–43	370	~ 0,985	
邻苯二甲酸二甲基二醇酯	Dimethyl glycol phthalate	$C_{14}H_{18}O_6$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	T,R62		fl	–40	230	1,17	
邻苯二甲酸二甲酯（DMP）	Dimethyl phthalate (DMP)	$C_{10}H_{10}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl	5,5	284	1,191	
邻苯二甲酸二壬酯	Dinonyl phthalate	$C_{26}H_{42}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			fl		413	0,978	
邻苯二甲酸二辛酯（DOP）	Dioctyl phthalate(DOP)	$C_{24}H_{38}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G	6		fl	–49	385	0.98	
邻苯二甲酸二戊酯	Dipentyl phthalate	$C_{18}H_{26}O_4$	TA	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	T,R62,N		fl	–55	340...345	1,026	
邻苯二甲酸二苯酯	Diphenyl phthalate	$C_{20}H_{14}O_4$		–	<100	S	11		1	Q_1(S)	B	M_1	G	G			kr	70...73		1,28	
酞酸酐	Phthalic anhydride	$C_8H_4O_3$	TA	<L	<180	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xn,Xi	1mg	kr	131	285	1,527	I
酯浸盐水（含15…20% NaCl水溶液）	Pickling brine (agu.sol.of 15…20% NaCl)				<25	S	11		1	Q_1(V)	B	V	G	G			fl			1,69	1,14++
苦味酸（2,4,6_三硝基苯酚）	Picric acid(2,4,6–Trinitrophenol)	$C_6H_3N_3O_7$	TA	<L	<40	D	53A		1	Q_1(V)	B	V	G	G	T,E	0,1mg	kr	122...123	180...230	0,90...0,97	
松木油	Pine oil		TA	–	<100	S	11		1	Q_1(S)	B	V	G	G	Xi,N		fl				
聚乙二醇	Polyglycols(Polyalkylene glycols)		S		<100	S	11		1	Q_1(S)	B	V	G	G			fl				
钾碱→碳酸钾	Potash→*Potassium carbonate*																				
钾矾→矾	Potash alum→*Alum*																				
钾碱漂白液→次氯酸钾	Potash bleaching lye→*Potassium hypochlorite*																				
钾碱液→苛性钾溶液	Potash lye→*Caustic potash solution*																				
溴化钾	Potassium bromide	KBr		<L	<25	S,Q	62		1	Q_1(V)	B	P	M	M	6		kr	732	1380	2,75	39,4
				<L	<Kp	D	53A		1	Q_1(V)	B	V	G	G	2,6						
碳酸钾（钾碱），也看→Benfield Solution	Potassium carbonate (potash),also see →*Benfield solution*			<L	<Kp	S,Q	62		1	Q_1(V)	B	E	G	G	Xi,6		kr	52,5	891	2,428	
氯酸钾	Potassium chlorate	$KClO_3$		<L	<60	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,2,0,N		kr	356	400(Z)	2,34	6,5++
				<L	<100	S,Q	62		1	Q_1(V)	B	V	G	G	Xn,2,0,N						

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Code of Materials and legend seeinside of back cover.	Media: 1	Chemical Formula	Remark 2	Concentration % 3	Temp °C 4	Recommended mechanical seal: Arrange-ment 5	Auxil. piping 6	Addit. measures 7	Seal type 8	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference 10	TLV-value 11	Normal condition 12	Melting temperature °C 13	Boiling point °C 14	Density g/cm³ 15	Solu-bility 16
氯化钾	Potassium chloride	KCl		<L	<60	S,Q	62		1	Q_1(V)	B	E	M	M	6		kr	790	1500(S)	1,984	25,5
				<50	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G							
氰酸钾	Potassium cyanate	KOCN		<L	<60	S	11		1	Q_1(V)	B	E	G	G	Xn		kr	315	>700(Z)	2,056	41,1
氰化钾	Potassium cyanide (cyanide of potassium)	KCN		<L	<80	D	53A		1	Q_1(V)	B	E	G	G	T+,N		kr	634	1625	1,56	40,4
重铬酸钾	Potassium dichromate	$K_2Cr_2O_7$		<L	<40	S,Q	62		1	Q_1(V)	B	E	G	G	T+,Xn,C,R45, R46,R60,6,N		kr		500(Z)	2,7	11,3
				<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T+,C,R45,R46, R60,2,6,N						
碳酸氢钾	Potassium hydrogen carbonate (Potassium bicarbonate)	$KHCO_3$		<L	<60	S,Q	62		1	Q_1(V)	B	E	G	G	6		kr	200(Z)		2,17	25,0
氢氧化钾→苛性钾溶液	Potassium hydroxide→*Caustic potash solution*																				
次氯酸钾	Potassium hypochlorite	KOCl		<L	<60	S	11		1	Q_1(V)	Q_1(V)	M_2	M	M	C,O		fl				
硝酸钾	Potassium nitrate	KNO_3		<L	<60	S,Q	62		1	Q_1(V)	B	P	G	G	6,O		kr	334	400(Z)	2,109	24,0
高锰酸钾	Potassium permanganate	$KMnO_4$		<L	<80	S,Q	62		1	Q_1(V)	B	E	G	G	Xn,3,O,N		kr	>240(Z)		2,703	6,0++
E:93℃; V:60℃	E:93℃;V:60℃	$KMnO_4$		<L	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G	Xn,3,O,N						
过（二）硫酸钾	potassium peroxodisulfate (Potassium persulfate)	$K_2S_2O_8$		<20	<60	S,Q	62		1	Q_1	Q_1	V	G	G	Xn,Xi,3,O		kr	~100(Z)		2,48	4,5++
磷酸钾	Potassium phosphates			<L	<Kp	S,Q	62		1	Q_1(V)	B	V	G	G	3		kr				II
硅酸钾	Potassium silicates			<20	<Kp	D	53A		1	Q_1(S)	B	E	G	G	3,4		kr				
硫酸钾	Potassium sulfate	K_2SO_4		<L	<60	S,Q	62		1	Q_1(V)	B	V	G	G	3		kr	1069	1689	2,67	10,0
土豆泥→浆	Potato mash→*Mashes*																				
土豆渣	Potato scrapings		N	<30	<60	S	02	kD	1	Q_1(S)	B	V	G	G			pa				
土豆淀粉	Potato starch		N	–	<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4						
丙烷（液态）	Propane,liquefied	C_3H_8		–	>–20	S	11		1	Q_1	A	V	G	G	F+	1000	ga	–187	–42	(+)	
丙烷二醇：	Propanediols:																				
1,2_丙烷二醇	1,2–Propanediol (Propylene glycol)	$C_3H_8O_2$		–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	–68	188	1,0381	
1,3_丙烷二醇	1,3–Propanediol (Trimethylene glycol)	$C_3H_8O_2$		–	<100	S	11		1	Q_1(S)	B	V	G	G			fl	–26	214	1,0597	
丙醇：	Propanols:																				
1_丙醇（n_丙基乙醇）	1–Propanol(n–Propyl alcohol)	C_3H_7OH	TA	–	<Kp	S	11		1	Q_1(S)	B	E	G	G	F,Xi		fl	–127	97	0,804	
2_丙醇（异丙基乙醇）	2–Propanol (Isopropyl alcohol)	C_3H_7OH	TA	–	<Kp	S	11		1	Q_1(S)	B	E	G	G	F,Xi		fl	–89	82	0,7855	
丙烯液态	Propene,liquefied	C_3H_6	TA	–	>–20	S	11		1	Q_1	A	V	G	G	F+		ga	–185	–48	(+)	
丙炔（液态）	Propine,liquefied	C_3H_4	TA	–	>–20	S	11		1	Q_1	A	V	G	G	F+	1000	ga	–103	–23	(+)	
丙醛	Propinaldehyde(Propanal,Propylaldehyde)	C_3H_6O	TA	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	F,Xi		fl	–81	49	0,807	
丙酸	Propionic acid	$C_3H_6O_2$		–	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	C	10	fl	–22	141	0,992	
丙醋酸：	Propyl acetates:																				
1-丙醋酸（n-丙基醋酸）	1–Propyl acetate (n–Propyl acetate)	$C_5H_{10}O_2$	TA	–	<80	S,Q	62		1	Q_1(S)	B	M_2	G	G	F,Xi	200	fl	–92	102		
2-丙醋酸（异丙基醋酸）	2–propyl acetate (Isopropyl acetate)	$C_5H_{10}O_2$	TA	–	<80	S,Q	62		1	Q_1(S)	B	M_2	G	G	F,Xi	200	fl	–73	90	0,887	
丙醇→丙醇	Propyl alcohols→*Propanols*																			0,872	
丙烯→丙烯	Propylene→*Propene*																				
丙烯二醇→丙烷二醇	Propylene glycols→*Propanediols*																				
氧化丙烯	Propylene oxide	C_3H_6O	TA	–	<Kp	D	53A		1	Q_1(S)	B	K	G	G	T,R45,R46,Xi,F+		fl	–112	35	0,83	
氢氰酸	Prussic acid→*Hydrocyanic acid*																				
纸浆，纤维素<1.5%（干重）	Pulp,cellulose<1.5% dry weight				<90	S	11		2	B	Q_1	V	G	G							
<3%（干重）	<3%dry weight				<90	S	02	kD	2	Q_{12}	Q_{12}	V	G	G							
>3%（干重）	>3%dry weight				<90	S	02	kD	3	Q_1	Q_1	V	G	G							
Pydraul	Pydraul		®	–	<80	S	11		1	Q_1(S)	B	E	G	G	U		fl				
吡啶	Pyridine	C_5H_5N	TA	–	<40	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,F	5	fl	–42	115	0,982	
焦焙酚（焦焙酸）	Pyrogalloll(Pyrogallic acid)		TA	<L	<100	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xn,3		kr	133...134	309	1,453	30(13)
吡啶烷酮	Pyrrolidone	C_4H_9NO		<L	<100	S			1	Q_1(S)	B	M_3	G	G			kr	25	245	1,116	sll
				Sch	<100	S	11		1	S	B	M_3	G	G							
p-3碱液，清洁	P–3 lye,clean			–	<60	S	11		1	Q_1(V)	B	E	G	G			fl				
p-3碱液，含脂肪，油和杂物	P–3 lye;containing fats,oils and dirt		V	–	<100	S	11		1	Q_1	Q_1	M_1	G	G			fl				
Q	Q																				
淬火油	Quench oil		G	–	<200	S	32		1	Q_1	Q_1	M_1	G	G			fl				

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Code of Materials and legend seeinside of back cover.	Media	Chemical Formula	Remark	Concentration %	Temp °C	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature °C	Boiling point °C	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
R	R																				
菜籽油→菜籽油	Rapeseed oil→*Colza oil*																				
原汁→糖汁	Raw juice→*Sugar juices*																				
冷冻剂油含饱和氟利昂（R）…	'Refrigerant oil' saturated with R···		G	–	<100	S	11		1	Q_1	A	M_4	G	G	U		fl				
冷冻剂，DIN 8962	Refrigerants, DIN 8962																				
R 12B2	R 12B2(Dibromodifluoromethane)	CBr_2F_2	TA	–	<25	S	11		1	Q_1	A	M_1	G	G	Xi	100	fl	–110	23	2.215	
R 14	R 14(Tetrafluoromethane)	CF_4		–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga	–184	–128	(+)	
R 21	R 21(Fluorodichloromethane)	$CHCl_2F$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	N,1,4	10	ga	–135	9	(+)	
R 22	R 22(Chlorodifluoromehane)	$CHClF_2$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	N,1,4	500	ga	–160	–41	(+)	
R 23	R 23(Trifluoromethane)	CHF_3	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga	–155	–82	(+)	
R 32	R 32(Difluoromethane)	CH_2F_2	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	F+,1,4		ga	–136	–52	(+)	
R 116	R 116(Hexafluoroethane)	CF_6	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga	–101	–78	(+)	
R 133a	R 133a(2–Chloro–1,1,1–trifluoroethane)	CH_2ClF_3	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	N,1,4		ga	–105	6	(+)	
R 142b	R 142b(1–Chloro–1,1–difluoroethane)	CH_3ClF_3	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4,F+,N	1000	ga	–131	–10	(+)	
R 143	R 143a(1,1,1–Trifluoroethane)	$C_2H_3F_3$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4,F+		ga	–111	–47	(+)	
R 152a	R 152a(1,1–Difluoroethane)	F_2HCCH_3	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	F+,1,4		ga	–117	–25	(+)	
R 218	R 218(Octafluoropropane)	C_3F_8	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga	–183	–37	(+)	
R 610	R 610(Decafluorobutane)	C_4F_{10}	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga		–2	(+)	
R 1112a	R 1112a			–	<20	S	11		1	Q_1	A	M_4	G	G			fl	–127	20	1.555	
				–	>20	D	53A		1	Q_1(S)	B	M_4	G	G	1,4						
R 1113	R 1113(Chlorotrifluoroethylene)	$CClF_3$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	T,1,4,F+		ga	–158	–28	(+)	
R 1122	R 1122(Chlorodifluoroethylene)	$CHClF_2$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4,F+,N		ga	–138	–18	(+)	
R 1132a	R 1132a(1,1–Difluoroethylene)	$C_2H_2F_2$	TA	–	>–40	D	53A		1	Q_1(S)	B	M_4	G	G	Xn,R40,1,4,F+		ga	–144	–86	(+)	
RC 318	RC 318(Octafluorocyclobutane)	C_4F_8	TA	–	<–40	D	53A		1	Q_1(S)	B	M_4	G	G	1,4		ga	–41	–6	(+)	
漂洗剂（工业用）	Rinsing agent (industrial)			–	<100	S	11		1	Q_1(S)	B	V	G	G							
					<80	S	11		1	Q_1(S)	B	P	G	G							
S	S																				
蔗糖（糖）	Saccharose (sugar)	$C_{12}H_{22}O_{11}$		<L	<Kp	D	53A		1	Q_1(S)	B	V	G	G	3,4		kr	185···186		1.588	66,7
水杨酸	Salicylic acid	$C_7H_6O_3$		<L	<25	S	11		1	Q_1(V)	B	E	G	G	Xn		kr	157···159	211(27)	1,44	sl
				Sch	<180	D	53A	(H)	1	Q_1(V)	B	M_2	G	G	Xn,2,3						
氯化铵→氯化铵	Salmiac →*Ammonium chloride*																				
盐液	Salt mashes →*Mashes*																				
Santotherm→传热油	Santotherm →*Heat transfer oils*		®																		
海水→水	Sea water →*Water*																				
污泥	Sewage sludge		G		<80	S	32		1	Q_1	Q_1	V	G	G			pa				
污水→水	Sewage water →*Water*																				
洗发剂→洗发剂	Shampoo →*Hair shampoos*																				
氯化硅：	Silicon chlorides:																				
六氯化二硅	Disilicon hexachloride (Hexachlorodisilane)	Si_2Cl_6		–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	C,3		fl	–1	147	1.58	
四氯化硅（四氯化硅）	Silicon tetrachloride (Tetrachlorosilane)	$SiCl_4$		–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	Xi,3		fl	–70	57	1.483	
硅酮，硅酮油	Silicones, silicone oils			–	<100	S	11		1	Q_1(S)	B	E	G	G			fl				
硝酸银	Silver nitrate	$AgNO_3$		<L	<Kp	S,Q	62		1	Q_1	Q_1	M_2	G	G	C,N		kr	212	>250(Z)	4.352	68,3
皮膏乳油	Skin creams		G	–	<60	S	11		1	Q_1(S)	B	V	G	G			pa				
特种液压工作油→HFC	Skydrol →*Hydraulic fluids HFC*		®																		
肥皂溶液	Soap solution			–	<Kp	S	11		1	Q_1(S)	B	V	G	G			fl				
苏打→碳酸钠	Soda →*Sodium carbonate*																				
苏打溶液→苛性碳酸钠溶	Soda lye →*Caustic soda solution*																				
醋酸钠	Sodium acetate	$C_2H_3NaO_2$		<L	<Kp	S	11		1	Q_1(V)	B	M_2	G	G			kr	58	324(Z)	1.54	ll

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
氢钠……→氢钠…	Sodium bi...→*Sodium hydrogen...*																				
钠漂白液→次氯酸钠	Sodium bleaching lye →*Sodium hypochlorite*																				
碳酸钠（苏打）	Sodium carbonate (soda)	Na_2CO_3		<L	<80	S,Q	62	1		Q_1(S)	B	E	G	G	Xi,4		kr	854	>400(Z)	2.532	17,9
氯酸钠	Sodium chlorate	$NaClO_3$		<L	<Kp	D	53A	1		Q_1(V)	B	M_1	G	G	Xn,3,0,N		kr	255(Z)		2.49	49,5
氯化钠	Sodium chloride	NaCl		<L <5	<80 <30	S,Q S	11 11	5 1		Q_1 Q_1(V)	Q_1 B	E E	M G	M G			kr	801	1461	2.164	26,5
亚氯酸钠	Sodium chlorite	$NaClO_2$		<L	<25	S	11	5		Q_1	Q_1	V	G	G	T,0		kr	>150(Z)			ll
氰化钠	Sodium cyanide	NaCN		<L	<Kp	D	53A	1		Q_1(V)	B	M_2	G	G	T+,N	5	kr	564	1496	1.546	36,7
重铬酸钠（VI）	Sodium dichromate (VI)	Na_2CrO_7		<L	<Kp	D	53A	1		Q_1(V)	B	M_1	G	G	C,T+Xn,R45, R46,0,N	*	kr	357	>400(Z)	2.52	65,0
二亚硫酸钠	Sodium disulfite	$Na_2S_2O_5$		<L	<100	S	11	5		Q_1	Q_1	V	G	G	Xn,Xi		kr	>150(Z)		1.48	39,0
二硫代亚硫酸钠	Sodium dithionite	$Na_2S_2O_4$		<L	<60	S,Q	62	5		Q_1	Q_1	E	G	G	Xn,3		kr	>100(Z)		2.37	18,3
碳酸氢钠	Sodium hydrogen carbonate (Bicarbonate of sodium, sodium bicarbonate)	$NaHCO_3$		<L	<60	S	11	5		Q_1	Q_1	E	G	G			kr	270(Z)		2.22	8,6
硫酸氢钠	Sodium hydrogen sulfate	$NaHSO_4$		<L	<Kp	S	11	5		Q_1	Q_1	V	G	G	Xi		kr	>315(Z)		2.103	22,2++
硫化氢钠	Sodium hydrogen sulfide	NaHS		<L	<Kp	D	53A	1		Q_1(V)	B	V	G	G	T,3		kr	350		1.79	sll
亚硫酸氢钠=的水溶液 →亚硫酸钠	Sodium hydrogen sulfite = aqueous solution of →*Sodium disulfite*																				
氢硫酸钠→硫酸氢钠	Sodium hydrosulfate →*Sodium hydrogen sulfate*																				
氢氧化钠→苛性钠溶液	Sodium hydroxide →*Caustic soda solution*																				
次氯酸钠（'氯漂白液'）	Sodium hypochlorite ('Chlorine bleaching lye')	NaOCl		<L	<30	S	11	1		Q_1	Q_1	M_2	M	M	C,N		kr				34,6
偏铝酸钠	Sodium metaaluminate	$NaAlO_2$		<L	<60	S	11	5		Q_1	Q_1	E	G	G	C		kr	1650			I
硝酸钠	Sodium nitrate	$NaNO_3$		<L	<80	S	11	1		Q_1(S)	B	E	G	G	0		kr	307	380(Z)	2.261	46,4
亚硝酸钠	Sodium nitrite	$NaNO_2$		<L	<Kp	D	53A	1		Q_1(V)	B	M_2	G	G	T,3,0,N		kr	271	>320(Z)	2.17	45,0
高硼酸钠	Sodium perborate	$NaBO_3*4H_2O$		<10 <10	<25 <Kp	S,Q D	62 53A	5 1		Q_1 Q_1(V)	Q_1 B	E M_2	G G	G G	Xn,3,6,0 Xn,2,3,6,0		kr	>60(Z)		1.731	wl
高氯酸钠	Sodium perchlorate	$NaClO_4$		<L	<Kp	D	53A	1		Q_1(V)	B	M_2	G	G	Xn,2,3,0		kr	482(Z)		2.50	66,5
过氧化钠（过氧化钠）	Sodium peroxide (Sodium superoxide)	Na_2O_2		<L	<Kp	D	53A	1		Q_1	Q_1	M_2	G	G	C,2,3,0		kr	460	657(Z)	2.8	I
磷酸钠	Sodium phosphates			<L	<Kp	S,Q	62	5		Q_1	Q_1	E	G	G	3,6		kr	1018		1.39	wl…sll
硅酸钠（水玻璃）	Sodium silicate (Water glass)			<L	<Kp	D	53A	1		Q_1(S)	B	E	G	G	Xi,3,4		kr				I
硫酸钠（芒硝）	Sodium sulfate (Glauber's salt)	Na_2SO_4		<L	<80	S,Q	62	1		Q_1(V)	B	P	G	G	3		kr	888		2.68	16,2
亚硫酸钠	Sodium sulfite	Na_2SO_3		<L	<Kp	S	11	5		Q_1	Q_1	E	G	G			kr	150		2.633	20,9
硫氰酸钠	Sodium thiocyanate	NaSCN		<L	<Kp	D	53A	1		Q_1(V)	B	E	G	G	Xn	5	kr	287		1.73	57,5
硫代硫酸钠	Sodium thiosulfate	$Na_2S_2O_3*5H_2O$		<L	<80	S,Q	62	1		Q_1(V)	B	E	G	G	3		kr	48		1.73	41,0
软肥皂	Soft soap			–	>F<100	S	11	1		Q_1(S)	B	V	G	G			pa				
软化剂→酞酸酯	Softener →*Phthalic acid esters*																				
含水土→水	Soiled water → *Water*																				
烟灰-水混合物	Soot-water mixture			<10	<Kp	S	11	1		U_1	U_1	V	G	G			fl				
豆油	Soybean oil		N	–	<100	S	11	1		Q_1(S)	B	V	G	G			fl	–16…–10		0.92	
Spinach mash	Spinach mash		N	–	<80	S	11	1		Q_1(S)	B	V	G	G			pa				
氯化铵酒精→氨水溶液	Spirit of salmiac →*Ammonia aqu. Solutions*																				
酒精→乙醇	Spirit of wine → *Ethanol*																				
酒	Spirit →*Ethanol*																				
蒸汽	Steam	H_2O		–	<180	D	53A	1		Q_1(S)	B	E	G	G	1		fl		100	0.94	0,03
硬酯酸（十八酸）	Stearic acid (Octadecanic acid)	$C_{18}H_{36}O_2$		Sch	<130	S	11	1		Q_1(V)	B	M_2	G	G			fe	69	370	3.094	34,5
氯化锶	Strontium chloride	$SrCl_2$		<L	<Kp	D	53A	1		Q_1(V)	B	M_1	G	G	Xn,2		kr	872			

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1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
硝酸锶	Strontium nitrate	$Sr(NO_3)_2$		<L	<Kp	D	53A		1	Q_1(V)	B	M_2	G	G	Xi,2,0		kr	570		2.93	41,0
苯乙烯（苯乙烯，苯基乙烯）	Styrene (Vinylbenzene, Phenylethylene)	C_8H_8		–	<80	S,Q	53A		X	Q_1(S)	B	M_1	G	G	Xn,Xi,3,4	20	fl	–33	146	0.909	
琥珀酸	Succinic acid	$C_4H_6O_4$		<L	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	Xi		kr	186	235	1.56	6,5++
糖汁	Sugar juices (conc. data in Brix):																				
Clairce	Clairce			>70	<95	D	53A		1	Q_{12}	Q_{12}	V	G	G							
原汁	Raw juice			<20	<70	D	11		2	Q_{12}	Q_{12}	V	G	G							
浓汁	Thick juice			>70	<95	D	53A		1	Q_{12}	Q_{12}	V	G	G							
稀汁	Thin juice			<20	<100	D	11		2	Q_{12}	Q_{12}	V	G	G							
磺胺基酸→硫磺酸	Sulfamic acid → *Amidosulfuric acid*																				
亚硫酸盐碱液→亚硫酸氢钙	Sulfite lye → *Calcium hydrogen sulfite*																				
四氢噻吩砜（环丁砜）→四氢噻吩砜	Sulfolan → *Tetrahydro–thiophene–1, 1–dioxide*																				
氯化硫：	Sulfur chlorides:																				
二氯化二硫	Disulfur dichloride	S_2Cl_2		–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T,C,2,N	1	fl	–80	136	1.678	
二氯化硫	Sulfur dichloride	SCl_2		–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	C,2,N		fl	–122	59	1.621	
二氧化硫	Sulfur dioxide	SO_2		–	<80	D	53A		1	Q_1(V)	B	E	G	G	T,1	2	ga	–75	–10	(+)	
氟化硫	Sulfur fluorides:																				
癸氟化二硫	Disulfur decafluoride (Sulfur pentafluoride)	S_2F_{10}		–	<Kp	S,Q	62		1	Q_1(V)	B	M_2	G	G			fl	–92	29	2.08(0)	
二氟化二硫	Disulfur difluoride (thiothionyl fluoride)	S_2F_2		–	<60	D	53A		1	Q_1(V)	B	M_2	G	G	1	0.03	ga	–164	~–11	(+)	
六氟化硫	Sulfur hexafluoride	SF_6		–	<60	D	53A		1	Q_1(V)	B	M_2	G	G	1	1000	ga	–51	–64(S)	(+)	
四氟化硫	Sulfur tetrafluoride	SF_4		–	<60	D	53A		1	Q_1(V)	B	M_2	G	G	T+,C,1		ga	–121	–40	(+)	
四氟化硫→氟化硫	Sulfur tetrafluoride → *Sulfur fluorides*																				
三氧化硫（溶或气化）	Sulfur trioxide (molten or gaseous)	SO_3		–	>F<160	D	54		1	Q_1	Q_1	M_1	G	G	C,1,2,3,4		kr	17…62	45	1.97…2.00	
硫（溶）	Sulfur, molten	S		Sch	<220	S	01	(H)	6	A	Q_1	U_1	W_6	G_1	F		kr	110…119	444	1.96…2.07	
				Sch	<200	S	01	H	1	Q_1	A	M_1	G	G							
硫酸	Sulfuric acid	H_2SO_4		<10	<20	S,Q	62		1	Q_1(V)	B	V	G	G	Xi			5%–2	5% 101	5% 1.032	
				<10	<80	S,Q	62		1	Q_1(V)	B	M_1	M	M	Xi,2			10%–5	10% 102	10% 1.066	
				<20	<70	S,Q	62		1	Q_1(V)	B	M_1	M	M	C,2			20%–14	20% 105	20% 1.139	
				<96	<50	S,Q	62		1	Q_1(V)	B	V	M	M	C,2			40%–68	40% 113	40% 1.303	
				>80	<30	S,Q	62		1	Q_1	Q_1	V	G	G	C			60%–29	60% 140	60% 1.498	
				>90	<40	S,Q	62		1	Q_1	Q_1	V	G	G	C			80%–1	80% 205	80% 1.727	
				>90	<80	S,Q	62		1	Q_1	Q_1	M_1	M	M	C,2			96%–11	96% 310	96% 1.835	
																		98%+2	98% 330	98% 1.836	
硫酸（发烟）（=发烟硫酸=浓度H_2SO_4+游离SO_3）	Sulfuric acid,fuming (=Oleum =conc. H2SO4 + free SO3)	$H_2SO_4+SO_3$		<40	<90	S,Q	62		4	Q_1	Q_1	M_1	M	G	C,Xi				40%~100		
				<60	<60	S,Q	62		1	Q_1	Q_1	M_1	M	M	C,Xi				60%~70		
亚硫酸（SO2的水溶液）	Sulfurous acid (aqueous solution of SO2)	H_2SO_3		<L	<Kp	S,Q	62		1	Q_1(V)	B	M_2	M	M	C,2		fl				18,6
				<L	<20	S,Q	11		1	Q_1(V)	B	E	G	G							
合成树脂漆和胶	Synthetic resin laquers and glues		S	–	<Kp	D	53A		1	Q_1(S)	B	M_1	G	G	3,4		fl				
T	T																				
精制食盐→氯化钠	Table salt → *Sodium chloride*																				
食用醋→醋酸	Table vinegar → *Acetic acid*																				
妥尔油脂肪酸	Tall oil fatty acids			Sch	<200	S,Q	62		1	Q_1	A	M_1	M	M	3		fe				
				Sch	>200	S,Q	62		6	A	Q_1	G	M_5	M	3						
妥尔油沥青	Tall oil pitch			Sch	<150	S,Q	62		1	Q_1	A	M_1	M	G	Xi,3		fe				
妥尔油树脂（酸）	Tall oil resin (acids)			Sch	<200	S,Q	62		1	Q_1	A	M_1	M	M	3		fe				
				Sch	>200	S,Q	62		6	A	Q_1	G	M_5	M	3						

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	1		2	3	4	5	6	7	8						10	11	12	13	14	15	16
妥尔油，原油	Tall oil, crude			Sch	<120	S,Q	62		1	Q_1	A	M_1	G	G			pa			0.95	
脂	Tallow			Sch	<100	S	11		1	Q_1(S)	B	V	G	G			fe	40…70			
皮革厂废水 pH=9-11	Tannery waste water, pH=9–11			–	<40	S	11		1	Q_1(V)	B	V	G	G			fl				
鞣酸→鞣酸	Tannci acids →*Tannines*																				
鞣酸（天然多酚）	Tannines (natural Polyphenols)		G	<L	<100	S	11		1	Q_1(S)	B	V	G	G			fe				II
柏油、焦油→煤焦油	Tar,tar oil → *Coal tar*																				
酒石酸	Tartaric acid			<L	<60	S	11		1	Q_1(S)	B	V	G	G	Xi		kr	~170		1.76…1.79	~8(0)
牛磺酸（2-氨基乙烷磺硫）	Taurine(2–Aminoethanesulfonic acid)	$C_2H_7NO_3S$		<L	<80	S	11		1	Q_1	B	M_1	G	G	Xi		kr	328(Z)			II
工业混合二甲苯→混合二甲苯	Technical Xylene → Xylenes																				
三联苯（二苯基苯）：	Terphenyls (diphenyl benzenes):	$C_{18}H_{14}$																			
间-三联苯	m–Terphenyl(1,3–Diphenyl benzene)	$C_{18}H_{14}$		Sch	<180	S,Q	62	(H)	1	Q_1(S)	B	M_1	G	G	Xi,3		kr	89	365		
邻-三联苯	o–Terphenyl(1,2–Diphenyl benzene)	$C_{18}H_{14}$		Sch	<180	S,Q	62	(H)	1	Q_1(S)	B	M_1	G	G	Xn,3		kr	57…58	332		
对-三联苯	p–Terphenyl(1,4–Diphenyl benzene)	$C_{18}H_{14}$		Sch	<Kp	S,Q	62	(H)	6	A	Q_1	G	M_6	T_4	Xi,3		kr	213	404	1.234	
四溴代乙烷（四溴化乙炔）	Tetrabromoethane (Acetylene tetrabromide)	$C_2H_2Br_4$	TA	–	<160	D	53A		1	Q_1(V)	B	M_1	G	G	T+,Xi	1	fl	0	135	2.9673	
四氯乙烷（四氯化乙炔）	Tetrachloroethane (Acetylene tetrachloride)	$C_2H_2Cl_4$	TA	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	T+,N	1	fl	–42	146	1.5953	
四氯乙烯（过氯乙烯）	Tetrachloroethylene (perchloroethylene)	C_2Cl_4	TA	–	<60	S	11		1	Q_1(S)	B	M_1	G	G	Xn,R40,N	50	fl	–23	121	1.63	
四氯乙烯（污染的）	Tetrachloroethylene, contaminated		TA	–	<60	S	11		1	Q_1(V)	B	M_1	G	G	Xn,R40,N						
四氯甲烷→四氯化碳	Tetrachloromethane →*Carbon tetrachloride*																				
四乙烯二醇→1.2-亚乙基二醇	Tetraethylene glycol →*Ethylene glycols*																				
四氢化呋喃	Tetrahydrofurane (tetramethylene oxide, Oxolane)	C_4H_8O	TA	–	<40	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xi,F,6	200	fl	–108	65	0.8892	
二氧四氢噻吩（四氢噻吩砜）	Tetrahydrothiophene–1,1–dioxide ('Sulfolan')	$C_4H_8O_2S$		Sch	<60	S	11	(H)	1	Q_1(V)	B	M_1	G	G	Xn		kr	27	285	1.26	
浓汁→糖汁	Thick juice →*Sugar juices*																				
浓液（硫化化学纸浆）	Thick liquor (sulfite chemical pulp)		G	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G							
稀汁→糖汁	Thin juice →*Sugar juices*																				
硫醇	Thiols		G	–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	U	0.5	fl				
氟化硫	Thiothionyl fluoride →*Sulfur fluorides*																				
烟道气→高炉气	Throat gas → *Blast furnace gas*																				
氯化钛	Titanium chlorides:																				
氯化钛（四氯化钛）	Titanic(IV) chloride (Titanium tetrachloride)	$TiCl_4$		–	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	C,2,3		fl	–25	136	1.726	
氯化亚钛（三氯化钛）	Titanous(III) chloride (Titanium trichloride)	$TiCl_3$		<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	C,2,3,F		kr	440(Z)		2.64	II
二氧化钛-溶于硫酸	Titanium dioxide – Solution in sulfuric acid	TiO_2		<L	<180	S	02	kD	X	Q_1	Q_1	T	M	G	C,2						
二氧化钛-悬浮在水中	Titanium dioxide – Suspension in water			<40	<Kp	S,Q	53A		X	U_2	Q_1(V)	E	G	G	4		kr	>1800		3.9…4.26	
烟草乳浊液	Tobacco emulsion			–	<60	S	11		1	Q_1	Q_1	V	G	G			fl				
甲苯	Toluene	C_7H_8	TA	–	<60	S	11		1	Q_1(S)	A	K	G	G	Xn,Xi,R63,F	100	fl	–95	111	0.866	
番茄汁→番茄酱	Tomato juice →*Ketchup*																				
牙膏	Tooth pastes		G	–	<40	S	11		1	Q_1	Q_1	V	G	G			pa				
磷酸三丁酯（TBP，磷酸三丁基酯）	Tributyl phosphate (TBP, Phosphoric acid tributyl ester)	$C_{12}H_{27}O_4P$	TA	–	<60	S	11		1	Q_1(V)	B	M_1	G	G	Xn,Xi,R40		fl	–79	293	0.979	
三氯醋酸（TCA）	Trichloroacetic acid (TCA)	$C_2HCl_3O_2$	TA	Sch	<Kp	D	53A	SW,H	1	Q_1(V)	B	M_2	G	G	C,2,3,N		kr	59	198	1.63(60)	
三氯硼烷→三氯化硼	Trichloroborane →*Boron trichloride*																				
1，1，2-三氯化乙烷	1,1,2–Trichloroethane	$C_2H_3Cl_3$	TA	–	<60	S,Q	62		1	Q_1(V)	B	M_1	G	G	Xn,R40	10	fl	–35	113…114	1.4416	
三氯乙烯	Trichloroethylene	C_2HCl_3	TA	–	<25	S	11		1	Q_1(V)	B	V	G	G	T,Xi,R45	50	fl	–86	87	1.4649	
		C_2HCl_3	TA	–	<60	S,Q	62		1	Q_1(S)	B	M_1	G	G	T,Xi,R45,6						
三氯化硝基甲烷	Trichloronitromethane (Chloropicrine)	CCl_3NO_2	TA	–	<60	S,Q	62		1	Q_1(V)	B	M_1	G	G	T+,Xi,6	0.1	fl	–64	112	1.6566	
磷酸三甲苯酯（TCP）	Tricresyl phosphate (TCP)	$C_{21}H_{21}O_4P$	TA	–	<100	S	11		1	Q_1(S)	B	M_2	G	G	T,N		fl	–28	435	1.17…1.18	
三乙醇胺	Triethanolamine	$C_6H_{15}NO_3$		–	<60	S	11		1	Q_1(S)	B	M_2	G	G			fl	21	360	1.1242	

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Code of Materials and legend seeinside of back cover.	Media	Chemical Formula	Remark	Concentration %	Temp ℃	Recommended mechanical seal: Arrange-ment	Auxil. piping	Addit. measures	Seal type	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference	TLV-value	Normal condition	Melting temperature ℃	Boiling point ℃	Density g/cm³	Solu-bility
1			2	3	4	5	6	7	8						10	11	12	13	14	15	16
三乙基胺	Triethylamine	$C_6H_{15}N$	TA	–	<60	S,Q	62		1	Q_1(S)	B	M_2	G	G	Xn,C,F	10	fl	–115	89	0.728	
三乙烯二醇→乙烯（二）醇	Triethylene glycol →*Ethylene glycols*																				
三氟化硼	Trifluoroborane →*Boron trifluoride*																				
三甘醇→1.2-亚乙基二醇	Triglycol →*Ethylene glycols*																				
三钠磷酸脂→钠磷酸脂	Trisodium phosphate →*Sodium phosphates*																				
桐油→木油	Tung oil →*Wood oil*																				
涡轮油	Turbine oils			–	<100	S	11		1	Q_1(S)	B	V	G	G	U		fl				
土耳其红油	Turkey red oil			–	<140	S	11		1	Q_1(S)	B	M_1	G	G			fl			1.03	
松节油	Turpentine ,oil		TA, G	–	<60	S	11		1	Q_1(S)	B	V	G	G	Xn,Xi,R46,N	100	fl		155…180	0.85…0.87	
Tutogene	Tutogene		Ⓡ	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
U	U																				
尿素（脲）	Urea (Carbamide)	CH_4N_2O		<L	<100	D	53A		1	Q_{22}	Q_1 (V)	E	G	G	3,4		kr	132		1.323	40(0)
				<L	<100	D	53A		5	Q_1	Q_1	E	G	G	3,4						
硝酸脲	Urea nitrate	$CH_5N_3O_4$		<10	<60	S	11		1	Q_1	Q_1	M_2	G	G			kr	152(Z)		1.69	I
磷酸脲	Urea phosphate	$CH_7N_2O_5P$		<10	<60	S	11		1	Q_1	Q_1	M_2	G	G	Xi		kr	119			I
尿素树脂（DIN7728:abbr.UF)	Urea resins(DIN 7728: abbr.UF)		G	–	<100	D	53A		1	Q_{22}	Q_1 (V)	M_2	G	G	3,4		pa				
尿	Urine			–	<40	S	11		5	Q_1	Q_1	E	G	G			fl				
V	V																				
清漆、凡士红	Varnishes		G	–	TG	D	53A		1	Q_1(V)	B	M_1	G	G	3,4		fl				
凡士林→矿脂	Vaseline →Petrolatum																				
植物油	Vegetable oils		G	0	<150	S	11		1	Q_1(S)	B	V	G	G			fl				
植物浆	Vegetable mash			–	<100	S	11		1	Q_1(S)	B	V	G	G			pa				
乙烯醋酸脂→醋酸乙烯酯	Vinyl acetate→*Acetic acid vinyl ester*																				
乙烯乙炔（丁烯炔）	Vinyl acetylene (Butenyne)	C_4H_4	TA	–	<60	D	53A		1	Q_1(V)	B	M_2	G	G	1,3		ga	–92	5	(+)	
乙烯苯→苯乙烯	Vinylbenzene →*Styrene*																				
氯乙烯	Vinyl chloride	C_2H_3Cl	TA	–	<40	D	53A		1	Q_1(V)	B	M_1	G	G	T,R45,F+,1	*	ga	–154	–14	(+)	
亚乙烯基二氯→二氯乙烯	Vinylidene chlorides→*Dichloroethylenes*																				
香精油，挥发性油	Volatile oils		S	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G	U		fl				
W	W																				
核桃油	Walnut oil		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl			~0.92	
洗用碱水	Washing lye		S	–	<Kp	S	11		1	Q_1(S)	B	M_1	G	G			fl				
洗用碱水（含油污）	Washing lye, dirty		S	–	<Kp	S	11		1	Q_1	Q_1	M_1	G	G			fl				
废水→水	Wastewater → *Water*																				
鱼泔水	Water from pressed fish		N	Sus	<60	S	02		1	Q_1	Q_1	V	G	G			fe				
水玻璃→硅酸钠	Water glass → *Sodium silicates*																				
水蒸气	Water vapour(Steam)	H_2O		–	<180	D	53A		1	Q_1(S)	B	E	G	G	1						
水:	Water:	H_2O																			
污水 pH>6<10	Wastewater,sewage water, pH>6<10			–	<50	S	11		1	Q_1	Q_1	P	G	G			fl				
pH>3<10	Wastewater,sewage water, pH>3<10			–	<50	S	11		5	Q_1	Q_1	V	G	G			fl				
脱盐水、蒸馏水	Desalinated water,distilled water			–	<50	S	11		1	Q_1(S)	B	E	G	G			fl				
饮用水、工业用水	Drinking water, industrial water			–	<100	S	11		1	Q_1(S)	B	E	G	G			fl				
含掺合剂热水	Hot water with additives																				
锅炉给水	Boiler feed water			由于其成分及应用的变化相当大，普通推荐方法不足以应对。请与博格曼联系。																	
海水和半咸水	Sea and brackish water			–	<50	S	11		5	A	Q_1	V	M	M			fl				

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Code of Materials and legend seeinside of back cover.	Media: 1	Chemical Formula	Remark 2	Concentration % 3	Temp °C 4	Recommended mechanical seal: Arrange-ment 5	Auxil. piping 6	Addit. measures 7	Seal type 8	Materials to EN 12756: 1 Seal face	2 Stat.face	3 Sec.seal	4 Spring	5 Others	Additional information on the medium: Hazard reference 10	TLV-value 11	Normal condition 12	Melting temperature °C 13	Boiling point °C 14	Density g/cm³ 15	Solu-bility 16
蜡	Waxes		S	–	>F<180	S	11		1	Q_1(S)	B	V	G	G			pa				
鲸油	Whale oil		N	–	<100	S	11		1	Q_1(S)	B	V	G	G			fl				
乳清	Whey		N	–	<60	S	11		1	Q_1(S)	B	V	G	G			fl				
威士忌	Whiskey			–	<30	S	11		1	Q_1(V)	B	E	G	G			fl				
石油溶剂油	White spirit		TA	–	<60	S	11		1	Q_1(S)	B	V	G	G	Xn,N		fl	<–15	153···198		
酒	Wine			–	<40	S	11		1	Q_1(S)	B	P	G	G			fl				
酒醋→醋酸	Wine vinegar → Acetic acid																				
木油（桐油）	Wood oil (Tung oil)		N	–	<80	S	11		1	Q_1(S)	B	V	G	G	Xi		fl	<0		0.89···0.93	
木浆、底浆→浆（纤维素）	Wood pulp, ground pulp → *Pulp (cellulose)*																				
木精、甲醇	Wood spirit → *Methanol*																				
木焦油	Wood tar		G	–	<100	S	11		1	Q_1(S)	B	M_1	G	G	U		fl			0.90···1.11	
木材松节油→妥尔油	Wood turpentine oil → *Tall oil*																				
X	X																				
黄原酸盐	Xanthogenates		S	<10	<60	D	53A		1	Q_1	Q_1	M_2	G	G	3,4		kr				
氙	Xenon	Xe		–	<40	D	53A		1	Q_1(S)	B	P	G	G	1		ga	–112	–108	(+)	
混合二甲苯（二甲基苯）：	Xylenes (Dimethylbenzenes):																				
工业二甲苯混合	technical xylene (mixture)	C_8H_{10}		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	Xn,Xi	100	fl	–63	137···140	~0.86	
间-二甲苯	m–Xylene	C_8H_{10}		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	Xn,Xi	100	fl	–48	139	0.866	
邻-二甲苯	o–Xylene	C_8H_{10}		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	Xn,Xi	100	fl	–25	144	0.881	
对-二甲苯	p–Xylene	C_8H_{10}		–	<60	S	11		1	Q_1(S)	B	M_1	G	G	Xn,Xi	100	fl	13	138	0.861	
Y	Y																				
酵母浆	Yeast mash		N	–	<60	S	11		1	Q_1(S)	B	V	G	G			pa				
水果酸乳酪	Yoghurt with fruits etc.		N	–	<60	S	11		5	Q_1	Q_1	V	G	G			pa				
酸乳酪	Yoghurt without fruits etc.		N	–	<60	S	11		1	Q_1	B	V	G	G			pa				
Z	Z																				
硝基清漆	Zapon lacquer		TA	–	<60	D	53A		1	Q_1(V)	B	M_1	G	G	Xn,3,4,F,N		fl				
氯化锌	Zinc chloride	$ZnCl_2$		<L	<25	S	11		5	Q_1	Q_1	V	G	G	C,Xn,4,6,N		kr	318	732	2.91	78.3
				<L	<Kp	D	53A		1	Q_1(V)	B	M_1	G	G	C,Xn,2,4,N						
氰化锌（悬浮液）	Zinc cyanide (suspension)	$Zn(CN)_2$		<20	<Kp	S	02	kD	3	Q_1	Q_1	P	G	G	T+,N		kr	~800(Z)		1.852	unl
硝酸锌	Zinc nitrate	$Zn(NO_3)_2*6H_2O$		<L	<60	S,Q	62		5	Q_1	Q_1	V	G	G	Xn,6,O		kr	36	105···131	2.065	54.0
氧化锌（悬浮液）	zinc oxide (suspension)	ZnO		<50	<Kp	S,Q	53A	kD	3	Q_1	Q_1	V	G	G	3,4,N	5 mg	kr	1975		5.606	unl
锌粉涂料（溶于水）	zinc paints, water soluble			<L	<60	S,Q	62		5	Q_1	Q_1	V	G	G	6		fl				
磷酸锌	Zinc phosphate	$Zn(PO_4)_2$		<10	<100	D	53A		1	Q_1(V)	B	M_1	G	G	3,4,N		kr	>900			
硫酸锌（锌矾）	Zinc sulfate (Zinc vitriol)	$ZnSO_4*7H_2O$		<L	<60	S,Q	62		5	Q	Q_1	V	G	G	Xn,6,N		fe	100		1.97	34.9

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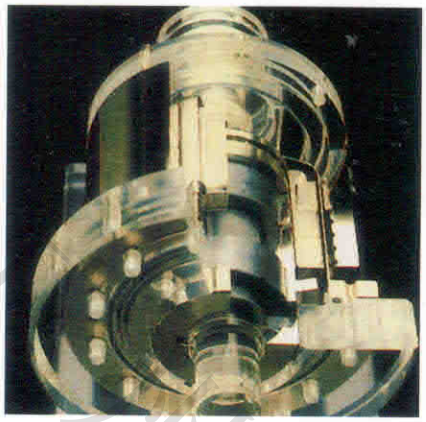

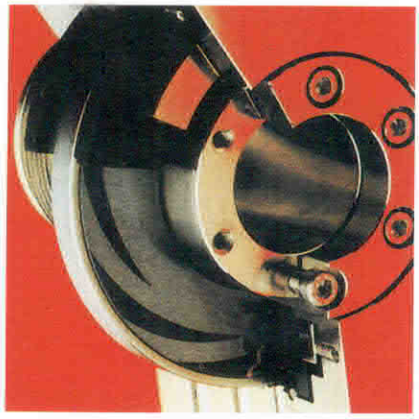

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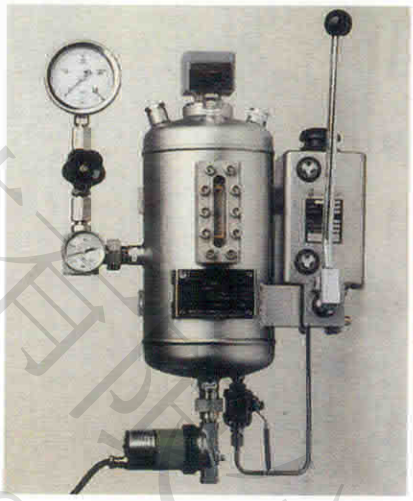

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