Contents
Technical appendix

Finding your way around the Lutz chemical resistance table

1. General

This chemical resistance table contains reasonably concise information about the chemical resistance characteristics of the different types of pump tubes and flow meters to various media. The materials coming into contact with the liquids which are employed in the pump tubes have been tested with regard to their chemical resistances and assessed for use at room temperature.

The chemical resistance table is intended as a guide to the suitability of each pump tube; it also specifies any materials which are wholly unsuitable for certain concrete applications. Please do not hesitate to consult us directly if you are unable to find the most suitable material for your pump tube.

In cases where the resistance characteristics cannot be verified, or where any other reservations exist regarding the use of a particular combination of materials, we strongly recommend trying out the equipment under operating conditions. We can provide samples of various materials on request. It should be remembered that discolouring on the surface, minor increases in the weight and/or volume and changes to the mechanical properties (strain characteristics, strength properties, etc.) do not necessarily affect functioning to a sufficient extent to preclude the use of a material.

Since corrosion is influenced by a variety of factors, the information contained in the table cannot necessarily be applied to all operating conditions. Corrosion may be accelerated by temperature increases, by medium concentrations or by the entry of water into media which are otherwise pure. Discrepancies regarding the long-term resistance of plastics and elastomers are also possible, depending on the amount of impurities in the medium as well as on the compounding and degree of vulcanisation of the sealing materials.

The table specifications are based on the assumption that no other mechanical forces are effective.

2. How to use the table

The corrosive media are arranged in the table in alphabetical order. Formulas of chemical compounds are included for the purposes of simplification. Where known and meaningful, the table also lists the concentration, density, temperature classes, danger classes and explosion groups of the media.

The table is an extremely reliable guide to the behaviour of corrosive media at room temperature, since a large part of the information it contains was only available for a temperature of 20 °C. In view of the continuing advances in the field of plastics, extensive suitability tests may reveal that some of the materials employed in our pumps can be substituted or that others which are not mentioned can in fact be used. New materials are therefore likely to be added to the table at some stage in the future. At the same time we are constantly endeavouring to eliminate any gaps in our information.

All the information in the chemical resistance table is based on empirical values supplied by industry and on the results of tests performed in our own laboratories.

The resistance data specified for the individual products do not provide any entitlement to make warranty claims, since it is merely intended to serve as a recommendation for practical applications.

You can make your product choice more reliable by taking account of your own experience with regard to the resistance of particular materials to aggressive media.

Special attention should be paid to the guidelines concerning flammable liquids.

Explanation column pump set:

In this column you find the appropriate recommendations regarding our **Lutz pump sets.** The numbering has thereby the following meaning:

„Pump set no.“ without addition means general suitability of the set for the selected medium.

„Pump set no. 1“ means concitional suitability of the set for the selected medium. With this set danger of discoloration and/or embrittlement in dependence of the short working period may occur on the PVC-hose.

Meaning of symbols and notes:

❍	=	Little or no corrosion, resistant
①	=	Conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)
②	=	Special seal EPDM
③	=	Special seal Viton-FEP
④	=	Special friction bearing Rulon
⑤	=	Measuring chamber for Nitric Acid
⑥	=	On demand
pure	=	technical pure
sat.	=	saturated

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Acetaldehyde – **B**itter Salt

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
1	Acetaldehyde	CH_3CHO	40			-	②	②	❍	❍	–	②	❍	②	❍	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
2	Acetaldehyde	CH_3CHO	pure	0.79	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
3	Acetamide	CH_3CONH_2	pure	0.98		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
4	Acetic Acid	CH_3COOH	10			3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	❍	❍	❍	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
5	Acetic Acid	CH_3COOH	25			3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	❍	❍	❍	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
6	Acetic Acid	CH_3COOH	50			3.1	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	❍	❍	①	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
7	Acetic Acid	CH_3COOH	80			-	–	–	❍	❍	②	–	❍	–	–	⑥	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	❍	❍	③	③	–	③	–	–	–	❍	–
8	Acetic Acid	CH_3COOH	100	1.05	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
9	Acetic Anhydride	$(CH_3CO)_2O$	pure	1.09	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
10	Acetic Ester	$CH_3COOC_2H_5$	100	1.03		-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	–	–	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
11	Acetic Methyl Ester	CH_3COOCH_3	100	0.93	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
12	Acetone	CH_3COCH_3	10		Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
13	Acetone	CH_3COCH_3	pure	0.79	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
14	Acetonitrile	CH_3CN		0.78	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
15	Acrylonitrile	CH_2CHCN	pure	0.81	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
16	Adipic Acid	$HOOC(CH_2)_4COOH$	sat.	1.36		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
17	Allyl Alcohol	$H_2C{=}CHCH_2OH$	96	0.85	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	–	–	–	③	–	–	–	❍	–
18	Alum	$KAl(SO_4)_2x_{12}H_2O$	50			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
19	Aluminium Chloride	$AlCl_3$	10			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
20	Aluminium Chloride	$AlCl_3$	sat.			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
21	Aluminium Nitrate	$Al(NO_3)_3$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
22	Aluminium Sulfate	$Al_2(SO_4)_3$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
23	Aluminium Sulfate	$Al_2(SO_4)_3$	sat.	1.61		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
24	Ammonia	NH_3	sat.	0.61		3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	②	–	②	②	❍	–	–	❍	❍	②	②	–	②	⑥	⑥	⑥	⑥	⑥
25	Ammonium Acetate	CH_3COONH_4				3	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	③	③	❍	❍	❍	❍	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
26	Ammonium Carbonate	$(NH_4)_2CO_3$				3	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	③	③	❍	❍	❍	❍	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
27	Ammonium Chloride	NH_4Cl	sat.	1.07		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
28	Ammonium Fluoride	NH_4F	14			5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
29	Ammonium Fluorosilicate	$(NH_4)_2SiF_6$	pure			-	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	③	③	❍	❍	❍	–	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
30	Ammonium Nitrate	NH_4NO_3	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
31	Ammonium Nitrate	NH_4NO_3	50	1.23		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
32	Ammonium Nitrate	NH_4NO_3	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
33	Ammonium Di-Hy.Phosphate	$NH_4H_2PO_4$				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
34	Ammonium Sulfate	$(NH_4)_2SO_4$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
35	Ammonium Sulfate	$(NH_4)_2SO_4$	50	1.28		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
36	Ammonium Sulfate	$(NH_4)_2SO_4$	sat.	1.3		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
37	Ammonium Sulfide	$(NH_4)_2SO_3$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
38	Amyl Acetate	$CH_3CO_2C_5H_{11}$	pure	0.88	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	❍	❍	–	–	–	③	–	–	❍	❍	–
39	Amyl Alcohol	$C_5H_{11}OH$	pure	0.82	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	–	②	–	–	❍	❍	❍
40	Amyl Chloride	$CH_3(CH_2)_4Cl$	pure	0.87	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	❍	❍	–
41	Aniline	C_6H_7N	pure	1.01		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	❍	❍	–
42	Anone	$C_6H_{10}O$	pure	0.95	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	❍	❍	❍
43	Antifreeze	$HOCH_2CH_2OH$	pure	1.11		5, 1.1, 2.1,3.1	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	①	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
44	Arsenic Acid	H_3AsO_4	10			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
45	Arsenic Acid	H_3AsO_4	80			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
46	Barium Chloride	$BaCl_2$	10			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
47	Barium Chloride	$BaCl_2$	25	1.27		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
48	Barium Hydroxide	$Ba(OH)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
49	Benzaldehyde	C_6H_5CHO	0.1			5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
50	Benzaldehyde	C_6H_5CHO	pure	1.05		-	–	–	–	–	–	–	–	②	❍	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
51	Benzene	C_6H_6	pure	0.88	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
52	Benzoic Acid	C_6H_5COOH	10	1.27		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
53	Benzyl Alcohol	C_7H_8O	pure	1.04	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
54	Benzyl Chloride	$C_6H_5CH_2Cl$	1.11		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–	–	–	❍	–		
55	Bitter Salt	$MgSO_4$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
56	Bitter Salt	$MgSO_4$	sat.	1.28		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Bleaching Solution – **C**opper Acetate

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
57	Bleaching Solution	NaOCl	10			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
58	Bleaching Solution	NaOCl	12.5			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
59	Bleaching Solution	NaOCl	20			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
60	Borax	$Na_2B_4O_7$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	–	❍	–
61	Borax	$Na_2B_4O_7$	sat.	1.03		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	❍	–
62	Boric Acid	H_3BO_3	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
63	Boric Acid	H_3BO_3	sat.	1.01		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
64	Bromic Acid	$HBrO_3$	10			-	–	–	⑥	⑥	–	–	⑥	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	❍	❍	–	–	–	–	–	–	–
65	Bromine	Br_2	pure	3.19		-	–	–	–	–	–	–	–	–	–	–	–	–	❍	–	–	–	–	–	–	–	–	–	–	❍	–	❍	–	–	–	–	–	–	–
66	Butane	C_4H_{10}	50	0.58	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍	❍
67	Butane Diol	$HO(CH_2)_4OH$	pure	1.01		5	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍
68	Butanol	C_4H_9OH	100	0.81	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	②	–	–	❍	❍	❍
69	Butyl Acetate	$CH_3CO_2(CH_2)_3CH_3$	100	0.88	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	❍	❍	❍
70	Butyl Alcohol	C_4H_9OH	100	0.81	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	②	–	–	❍	❍	❍
71	Butyl Chloride	$CH_3(CH_2)_3Cl$	pure	0.89	Ex	-	–	–	–	–	–	–	–	–	–	–	–	–	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	–	–	–	–	–
72	Butyl Glycol	$HO(CH_2)_4OH$	0.9		-	–	–	–	–	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍	❍
73	Butyl Phenol	$C_{10}H_{14}O$	pure			-	–	–	❍	❍	–	–	❍	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	③	③	–	③	–	–	–	❍	–
74	Butyl Phthalate	$C_6H_4(COOC_4H_9)_2$	pure	1.05		-	–	–	–	–	–	–	❍	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	③	❍	③	–	–	–	❍	❍
75	Butylene Glycol	$C_4H_{10}O_2$	pure	1.01		5	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍
76	Butyric Acid	$CH_3(CH_2)_2CO_2H$	20	0.88		1.1, 2.1, 3.1, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	①	–	–	❍	❍	❍	❍	–	❍	–	–	❍	–
77	Butyric Acid	$CH_3(CH_2)_2CO_2H$	pure	0.96		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	❍	–
78	Calcium Di-Hy. Sulphite	$Ca(HSO_3)_2$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
79	Calcium Di-Hy. Sulphite	$Ca(HSO_3)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
80	Calcium Chlorate	$Ca(ClO_3)_2$	10			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
81	Calcium Chloride	$CaCl_2$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
82	Calcium Chloride	$CaCl_2$	sat.	1.4		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
83	Calcium Hypochlorite	$Ca(ClO)_2$	10			5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
84	Calcium Nitrate	$Ca(NO_3)_2$	50	1.48		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
85	Camphor	$C_{10}H_{16}O$			-	–	–	❍	❍	–	–	❍	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	③	③	❍	③	–	–	–	❍	❍	
86	Caprylic Acid	$CH_3(CH_2)_6COOH$				5	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	❍	–	❍	❍	–	–	–	❍	❍	–	❍	–	❍	–	–	–	❍	–
87	Carbolic Acid	C_6H_5OH	50			-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	❍	❍	–	❍	–	❍	❍	❍
88	Carbolic Acid	C_6H_5OH	90	1.07		-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
89	Carbon Tetrachloride	CCl_4	pure	1.59		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	–	❍	–	–	–	–	❍	–	❍	–	–	–	❍	–		
90	Carbonic Acid	H_2CO_3				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
91	Castor Oil	Mixture		0.96		5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍
92	Caustic Potash	KOH	20	1.19		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
93	Caustic Potash	KOH	30	1.29		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
94	Caustic Potash	KOH	60	1.63		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
95	Chloric Acid	$HClO_3$	10			1, 2, 4, 5	–	❍	–	❍	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
96	Chlorine Solution	NaOCl	10			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
97	Chlorine Solution	NaOCl	12.5			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
98	Chlorine Water	Cl_2/H_2O	sat.			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	–	❍	–	–	–	⑥	–	–	–	–	❍	❍	–	❍	–	–	–	–	–	–	–
99	Chloroacetic Acid	$ClCH_2COOH$	85	1.36		-	–	②	–	❍	②	②	❍	–	–	–	–	–	❍	–	–	–	③	–	❍	–	–	–	–	❍	❍	②	②	–	–	–	–	–	–	–
100	Chloroacetic Acid	$ClCH_2COOH$	98	1.36		-	–	②	–	❍	②	②	❍	–	–	–	–	–	❍	–	–	–	③	–	❍	–	–	–	–	❍	❍	②	②	–	–	–	–	–	–	–
101	Chlorobenzene	C_6H_5Cl	pure	1.11	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	❍	–	–	–	❍	–
102	Chloroethane	CH_3CH_2Cl	pure	0.92		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	–	–	–	–	❍	–
103	Chloroform	$CHCl_3$	100	1.48		-	–	–	–	–	–	–	❍	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	③	–	③	–	–	–	❍	–
104	Chlorosulphonic Acid	HSO_3Cl	pure	1.77		-	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	–	–	–	–	–	–	–	–	–
105	Chlorothene	Cl_3CCH_3	pure	1.34		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	–	❍	–	–	–	❍	–
106	Chlorotoluene	C_7H_7Cl		1.11		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	–	–	–	–	❍	–
107	Chromic Acid	H_2CrO_4	30			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	–	❍	–	⑥	–	⑥	–	❍	–	–	❍	❍	–	❍	–	–	–	–	–	–	–
108	Chromic Acid	H_2CrO_4	50			5	–	❍	–	❍	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	⑥	–	⑥	–	❍	–	–	❍	❍	–	❍	–	–	–	–	–	–	–
109	Citric Acid	$C_6H_8O_7$	50	1.22		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	❍	–
110	Clophene	Mixture	pure			-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
111	Clove Oil	Mixture				-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	③	–	–	–	❍	–
112	Copper Acetate	$Cu(C_2H_3O_2)_2$	50			1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	❍	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Copper Nitrate – **F**ormaldehyde

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
113	Copper Nitrate	$Cu(NO_3)_2$	25	1.25		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
114	Copper Sulfate	$CuSO_4$	18	1.21		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
115	Copper Sulfate	$CuSO_4$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
116	Copper(I)Chloride	CuCl	10			-	–	–	–	–	❍	–	–	–	–	–	–	–	❍	–	–	–	❍	–	❍	–	❍	–	–	❍	❍	❍	–	–	–	–	–	–
117	Copper(II)Chloride	$CuCl_2$	20	1.21		-	–	–	–	–	❍	–	–	–	–	–	–	–	–	–	–	–	❍	–	❍	–	❍	–	–	❍	❍	❍	–	–	–	–	–	–
118	Corn Oil	Mixture	pure			5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍
119	Cresol	C_7H_8O		1.05		-	–	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	❍	–	–	–	–	❍	❍	–	❍	–	❍	❍
120	Crotonaldehyde	C_4H_6O	pure	0.85	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	❍	❍	❍	❍	❍	❍
121	Cyano Hydrogen Acid	HCN	pure	0.69	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	–	–	–	❍	–
122	Cyclohexane	C_6H_{12}	pure	0.78	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	–	❍	–	❍	❍
123	Cyclohexanol	$C_6H_{11}OH$	pure	0.94		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	❍	–	❍	❍	❍	–	❍	–	–	❍	–
124	Decalin	$C_{10}H_{18}$	pure	0.88		5	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	–	❍	–	❍	❍	❍	❍
125	Dextrin	$(C_6H_{10}O_5)xH_2O$	18			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
126	Dibutyl Ether	$C_4H_9OC_4H_9$	pure	0.77	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
127	Dibutyl Phthalate	$C_6H_4(CO_2C_4H_9)_2$	pure	1.05		-	–	–	–	–	–	–	❍	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	③	❍	③	–	–	–	❍	❍
128	Dichloro Acetic Acid	$Cl_2CHCOOH$	pure	1.56		-	–	②	–	❍	②	②	❍	–	–	–	–	–	❍	–	–	–	③	–	❍	❍	❍	–	–	–	❍	②	②	–	–	–	–	–	–
129	Dichloro Difluormethane	CF_2Cl_2	pure	1.32		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
130	Dichloro Ethane	$ClCH_2CH_2Cl$	pure	1.26	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
131	Dichloro Ethylene 1.1	Cl_2CCH_2	pure	1.22	Ex	-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	❍	–	–	–	❍	–
132	Dichloro Methane	CH_2Cl_2	100	1.33		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
133	Diesel Fuel	Mixture	100			5, 6	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	❍	❍
134	Diethanolamine	$HN(CH_2CH_2OH)_2$		1.1		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
135	Diethyl Ether	$(CH_3CH_2)_2O$	100	0.71	Ex	-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
136	Diethylamine	$(CH_3CH_2)_2NH$	10	0.7	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
137	Diglycolic Acid	$C_4H_6O_5$	30			1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
138	Diglycolic Acid	$C_4H_6O_5$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
139	Dimethyl Benzene	$C_6H_4(CH_3)_2$	pure	0.86	Ex	-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	–	❍	–	–	❍	❍	–	❍	–	❍	❍
140	Dimethyl Formamide	$HCON(CH_3)_2$	pure	0.95		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
141	Dimethylamine	C_2H_7N	pure	0.73		-	–	–	–	❍	–	–	❍	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	③	③	–	③	–	–	–	❍	–
142	Dioxane	$C_4H_8O_2$	pure	1.03	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
143	Ethanol	$CH_3CH_2(OH)$	pure	0.79	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	②	–	–	❍	❍	❍
144	Ether	$(C_2H_5)_2O$	pure	0.71	Ex	-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	❍
145	Ethereal Oils	Mixture				-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	③	–	–	–	❍	❍
146	Ethyl Acetate	$CH_3COOCH_2CH_3$	pure	0.9	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
147	Ethyl Acrylate	$CH_2=CHCO_2CH_2CH_3$	pure		Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
148	Ethyl Alcohol	$CH_3CH_2(OH)$	pure	0.79	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	②	–	–	❍	❍	❍
149	Ethyl Benzene	$CH_3CH_2C_6H_5$	pure	0.87	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
150	Ethyl Chloride	C_2H_5Cl	pure	0.92		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	❍	–	❍	❍	❍	–	❍	–	–	–	–	❍	–
151	Ethyl Glycol	$HOCH_2CH_2OH$	pure	0.93	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	❍	–	–	–	❍	❍
152	Ethylene Di- Bromide	$Br(CH_2)_2Br$	pure	2.18		-	–	–	–	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	❍	–	❍	❍	–	–	–	–	❍	–	–	–	❍	–	–	–	❍	–
153	Ethylene Chlorohydrin	$ClCH_2CH_2OH$	pure	1.2	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
154	Ethylene Diamine	$(CH_2)_2(NH_2)_2$	pure	0.98	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	–	❍	–	–	–	❍	❍	–	–	–	②	–	–	❍	❍	❍
155	Ethylene Dichloride	$Cl(CH_2)_2Cl$	pure	1.26	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
156	Ethylene Glycol	$(CH_2OH)_2$	pure	1.11		1.1, 2.1, 3.1, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	①	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
157	Ethylene Oxide	$(CH_2)_2O$	pure	0.89		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
158	Fatty Acids	$CnH_{2n+1}COOH$	100	0.9		5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
159	Ferric(III)Chloride	$FeCl_3$	50	1.55		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–
160	Ferric(III)Sulfate	$Fe_2(SO_4)_3$	50	1.61		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–
161	Ferrous(II)Chloride	$FeCl_2$	10	1.09		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–
162	Ferrous(II)Chloride	$FeCl_2$	50			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–
163	Ferrous(II)Nitrate	$Fe(NO_3)_2$	pure			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
164	Ferrous(II)Sulfate	$FeSO_4$	20	1.21		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	❍	–
165	Fish-Liver Oil	Mixture		0.98		5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
166	Formaldehyde	HCHO	10			1.1, 2.1, 3.1, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	①	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
167	Formaldehyde	HCHO	35			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
168	Formaldehyde	HCHO	40			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Formamide – **L**ime Milk

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
169	Formamide	$HCONH_2$	100			-	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
170	Formic Acid	HCOOH	50			-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
171	Formic Acid	HCOOH	pure	1.22	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
172	Freon 12	Cl_2CF_2	pure	1.32		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
173	Fruit Juices	Mixture				3	❍	❍	❍	–	❍	❍	–	–	–	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	❍	–	–	❍	–
174	Fuel Oil	Mixture				5, 6	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	❍
175	Furfural	$C_5H_4O_2$		1.16		-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
176	Furfuryl Alcohol	$C_5H_6O_2$	pure	1.13		-	–	–	–	–	–	–	–	②	❍	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
177	Gallic Acid	$C_6H_2(OH)_3COOH$	50			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍
178	Glauber's Salt	Na_2SO_4	50	1.46		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
179	Gluconic Acid	$C_6H_{12}O_7$				5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	–	❍	❍
180	Glucose	$C_6H_{12}O_6$	pure	1.13		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
181	Glycerine	$C_3H_8O_3$	pure	1.26		5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
182	Glycol	$HOCH_2CH_2OH$	pure	1.11		5, 1.1, 2.1,3.1	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	①	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
183	Glycolic Acid	$HOCH_2COOH$	37			5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	⑥	⑥	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
184	Glycolic Acid	$HOCH_2COOH$	70			5	–	❍	–	❍	⑥	❍	❍	–	–	–	❍	❍	⑥	⑥	❍	⑥	⑥	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
185	Heptane	C_7H_{16}	pure	0.68	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
186	Hexamethylene Tetramine	$(CH_2)_6N_4$	10			-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	⑥	⑥	❍	–	–	–	❍	❍	–	–	❍	③	–	–	–	❍	❍
187	Hexane	C_6H_{14}	pure	0.66	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
188	Hexanol	$CH_3(CH_2)_4CH_2OH$		0.83	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
189	Hydrazine	H_2NNH_2	pure			5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	⑥	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
190	Hydroiodic Acid	HJ	pure			-	–	–	–	❍	⑥	–	❍	–	–	–	–	–	❍	–	–	–	⑥	–	⑥	–	–	–	–	❍	❍	③	③	–	–	–	–	–	–	–
191	Hydrobromic Acid	HBr	10	1.07		-	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	❍	–	–	–	–	–	–	–
192	Hydrobromic Acid	HBr	48	1.44		-	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	❍	–	–	–	–	–	–	–
193	Hydrochloric Acid	HCl	10			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
194	Hydrochloric Acid	HCl	30			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
195	Hydrochloric Acid	HCl	sat.	1.2		5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
196	Hydrocyanic Acid	HCN	pure	0.69	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
197	Hydrofluoric Acid	HF	40	1.06		-	–	⑥	–	⑥	–	⑥	⑥	–	–	–	–	–	–	⑥	⑥	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
198	Hydrofluoric Acid	HF	60			-	–	–	–	⑥	–	–	⑥	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
199	Hydrofluoric Acid	HF	70	1.23		-	–	–	–	⑥	–	–	⑥	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
200	Hydrofluosilicic Acid	H_2SiF_6	32			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
201	Hydrogen Peroxide	H_2O_2	3	1.01		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
202	Hydrogen Peroxide	H_2O_2	10	1.04		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
203	Hydrogen Peroxide	H_2O_2	20	1.07		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
204	Hydrogen Peroxide	H_2O_2	30	1.11		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
205	Hydrogen Peroxide	H_2O_2	90	1.42		5	–	–	–	–	⑥	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	⑥	⑥	–	–	❍	–	–	–	❍	❍	–	❍	❍	❍	–	❍	–	❍	❍
206	Hydrosilicofluoric Acid	H_2SiF_6	32	1.17		1, 2, 4, 5	–	❍	–	❍	⑥	❍	❍	–	–	–	–	–	❍	❍	❍	–	⑥	–	⑥	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
207	Ink	Mixture		1		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	⑥	⑥	–	⑥	❍	❍	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
208	Iodine Tincture	Mixture				5	–	❍	–	❍	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
209	Iodoform	CHI_3				1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
210	Isobutyl Alcohol	$C_3H_7CH_2OH$	100	0.81	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍
211	Isooctane	C_8H_{18}	pure	0.69	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍
212	Isooctanol	$C_8H_{17}OH$	pure	0.83		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	–	–	❍	–	–	❍	–
213	Isopropanol	$(CH_3)_2CHOH$	pure	0.78	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍
214	Isopropyl Acetate	$CH_3COOCH(CH_3)_2$		0.89	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	②	–	–	❍	❍	–	❍	❍	❍	❍
215	Isopropyl Ether	$(CH_3)_2CHOCH(CH_3)_2$	pure	0.73	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	③	–	–	❍	❍	–	❍	❍	❍	❍
216	Kerosene	Mixture	pure	0.83	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
217	Lactic Acid	$CH_3CHOHCOOH$	10			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
218	Lactic Acid	$CH_3CHOHCOOH$	90			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
219	Lanolin	Mixture	pure			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
220	Lead Acetate	$Pb(CH_3CO_2)_2$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
221	Lead Acetate	$Pb(CH_3CO_2)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
222	Lead Nitrate	$Pb(NO_3)_2$	20	1.33		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
223	Lead Tetraethyl	$(C_2H_5)_4Pb$	pure	1.66		1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
224	Lime Milk	$Ca(OH)_2$	15			-	❍	❍	–	–	❍	❍	–	–	–	❍	–	❍	❍	❍	❍	–	❍	–	–	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Linseed Oil – **P**erchloric Acid

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
225	Linseed Oil	Mixture	pure			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍
226	Lithium Chloride	LiCl	45	1.3		5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
227	Lithium Sulfate	Li_2SO_4	25	1.23		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
228	Magnesium Carbonate	$MgCO_3$				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
229	Magnesium Chloride	$MgCl_2$	10			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	❍	–	–	–	–	–	–	–
230	Magnesium Chloride	$MgCl_2$	sat.			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	❍	–	–	–	–	–	–	–
231	Magnesium Nitrate	$Mg(NO_3)_2$	25	1.21		3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	❍	❍	❍	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
232	Magnesium Sulfate	$MgSO_4$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
233	Magnesium Sulfate	$MgSO_4$	sat.	1.28		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
234	Maleic Acid	$(CHCOOH)_2$	35			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
235	Maleic Acid	$(CHCOOH)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍
236	Malic Acid	$(HO_2C)CH_2CHOH$	50			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	–
237	Manganese(II)Chloride	$MnCl_2$	20	1.19		5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
238	Mercuric(II) Cyanide	$Hg(CN)_2$	pure			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–
239	Mercuric(I) Nitrate	$Hg_2(NO_3)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	⑥	⑥	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–
240	Methanol	CH_3OH	pure	0.79	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍
241	Methyl Acetate	$CH_3CO_2CH_3$	100	0.93	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
242	Methyl Benzene	$C_6H_5CH_3$	100	0.87	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
243	Methyl Cyanide	CH_3CN		0.78	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
244	Methyl Ethyl Ketone	$CH_3COCH_2CH_3$	100	0.81	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍
245	Methyl Glycol	$CH_3OCH_2CH_2OH$		0.98	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
246	Methyl Isobutyl Ketone	$CH_3CH(CH_3)CH_2COCH_3$		0.8	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
247	Methyl Pentanone	$CH_3CH(CH_3)CH_2COCH_3$		0.8	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
248	Methylene Chloride	CH_2Cl_2	100	1.33		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
249	Milk	Mixture				-	❍	❍	–	–	❍	❍	–	–	–	❍	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
250	Mineral Oils	Mixture				6	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
251	Mineral Oils	Mixture		1.01	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
252	Mineral Water	H_2O				1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
253	Nail Polish Remover	CH_3COCH_3	10		Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍	❍
254	Nail Polish Remover	CH_3COCH_3	pure	0.79	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	②	–	–	❍	❍	❍	❍
255	Naphtha	Mixture				-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍	❍	❍
256	Naphthalene	$C_{10}H_8$		1.15		5	–	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	❍	–	–	–	–	❍	–	❍	❍	❍	–	❍	–	❍	❍	❍
257	Naphthenic Acid	Mixture	100	0.9		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
258	Nickel Chloride	$NiCl_2$	20	1.22		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	❍	–	–	–	–	–	–	–
259	Nickel Nitrate	$Ni(NO_3)_2{}_6H_2O$	35	1.38		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
260	Nickel Sulfate	$NiSO_4$	10	1.21		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
261	Nitric Acid	HNO_3	10	1.05		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑤	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
262	Nitric Acid	HNO_3	30	1.18		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	⑤	–	–	❍	①	–	–	–	❍	–	❍	–	–	–	❍	–	❍	❍	❍
263	Nitric Acid	HNO_3	50	1.31		5	–	–	–	–	–	–	❍	–	–	–	④	⑥	❍	–	–	–	⑤	–	–	❍	①	–	–	–	❍	–	❍	–	–	–	❍	–	❍	❍	❍
264	Nitric Acid	HNO_3	65	1.41		5	–	–	–	–	–	–	❍	–	–	–	④	⑥	❍	–	–	–	⑤	–	–	❍	–	–	–	–	❍	–	❍	–	–	–	❍	–	❍	❍	❍
265	Nitric Acid	HNO_3	–	1.5		5	–	–	–	–	–	–	❍	–	–	–	–	–	–	–	–	–	⑤	–	–	–	–	–	–	–	❍	–	❍	–	–	–	–	–	–	–	–
266	Nitrobenzene	$C_6H_5NO_2$	pure	1.21		-	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	–	❍	–	❍	❍	❍	❍
267	Nitrotoluene	$C_7H_7NO_2$	pure			-	–	–	❍	❍	–	–	❍	–	❍	⑥	❍	–	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	③	③	❍	③	–	–	❍	❍	❍
268	Octane	C_8H_{18}	pure	0.7	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
269	Oleic Acid	$C_{18}H_{34}O_2$	pure	0.9		5	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	–	❍	❍	–	–	–	❍	❍	–	❍	❍	❍	❍	–	❍	–	❍	❍
270	Oleum	H_2SO_4/SO_3				5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	–	❍	–	–	–	–	❍	–	❍	–	–	–	❍	–	–	–	❍	–
271	Oxalic Acid	$(COOH)_2$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
272	Oxalic Acid	$(COOH)_2$	sat.	1.65		1, 2, 4, 5	–	❍	–	❍	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	❍	–	❍	❍	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
273	Paraffin Oil	Mixture	pure			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍		
274	Peanut Oil	Mixture				-	❍	❍	❍	–	–	❍	–	❍	–	❍	–	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	
275	Pentanol-1	$CH_3(CH_2)_3CH_2OH$	pure	0.82	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	②	–	–	❍	❍	❍
276	Pentyl Acetate	$CH_3(CH_2)_3CH_2COOCH_3$	pure	0.88	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
277	Perchloric Acid	$HClO_4$	20			1.1, 2.1, 5	–	❍	–	❍	⑥	❍	❍	–	–	–	–	–	❍	❍	❍	–	⑥	–	⑥	–	①	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
278	Perchloric Acid	$HClO_4$	50			5	–	–	–	–	⑥	❍	❍	–	–	–	–	–	❍	–	❍	–	⑥	–	⑥	–	①	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
279	Perchloric Acid	$HClO_4$	70			5	–	–	–	–	⑥	❍	❍	–	–	–	–	–	❍	–	❍	–	⑥	–	⑥	–	①	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–
280	Perchloric Acid	$HClO_4$	sat.	1.55		-	–	–	–	–	⑥	–	–	–	–	–	–	–	❍	–	–	–	⑥	–	⑥	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Perchloroethylene – **S**ea Water

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
281	Perchloroethylene	C_2Cl_4	pure			5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	❍	❍	–	–	–	❍	❍
282	Petrol	C_5H_{12}-$C_{12}H_{26}$	pure	0.73	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
283	Petroleum	Mixture	pure	0.83	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
284	Petroleum Ether	Mixture	pure	0.69	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
285	Phenol	C_6H_5OH	50			-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
286	Phenol	C_6H_5OH	90	1.07		-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
287	Phosphoric Acid	H_3PO_4	30	1.18		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	–	❍	–
288	Phosphoric Acid	H_3PO_4	50			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	–	❍	–
289	Phosphoric Acid	H_3PO_4	85			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	–	–	❍	–
290	Phosphoric Acid	H_3PO_4	95	1.66		-	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	❍	–	❍	–	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
291	Phosphorous Oxichloride	$POCl_3$	pure	1.57		5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	–	–	–	❍	–
292	Phosphorous Trichloride	PCl_3	pure	1.57		5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	–	–	–	❍	–
293	Photographic Developer	Mixture				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
294	Phthalic Acid	$C_8H_6O_4$	50			3, 4, 5	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	–	③	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	②	–	–	❍	❍	❍
295	Phthalic Acid	$C_8H_6O_4$	sat.	1.59		3, 4, 5	②	②	❍	❍	②	②	❍	②	❍	②	❍	❍	❍	–	–	–	③	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	②	–	–	❍	❍	❍
296	Picric Acid	$(NO_2)_3C_6H_2OH$	50			5	–	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	–	❍	–	–	–	❍	–	❍	–
297	Pine Oil	Mixture				-	–	–	–	–	–	–	–	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	–	–	❍	③	–	–	–	❍	❍
298	Potassium Bromate	$KBrO_3$	sat.			-	–	–	–	–	❍	–	–	–	–	–	–	–	–	–	–	–	❍	–	–	–	–	–	–	❍	❍	–	–	–	–	–	–	–	–
299	Potassium Bromide	KBr	10	1.37		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	–	–	❍	–
300	Potassium Bromide	KBr	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	❍	–
301	Potassium Carbonate	K_2CO_3	sat.			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
302	Potassium Chlorate	K_2ClO_3	50			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
303	Potassium Chloride	KCl	10			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
304	Potassium Chloride	KCl	sat.	1.17		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
305	Potassium Chromate	K_2CrO_4	40			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
306	Potassium Cyanide	KCN	50			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
307	Potassium Cyanide	KCN	sat.	1.31		1, 2, 3, 4, 5	❍	❍	❍	❍	②	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	③	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
308	Potassium Dichromate	$K_2Cr_2O_7$	40			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
309	Potassium Disulfate	$K_2S_2O_7$		0.92		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
310	Potassium Ferricyanide	$K_3Fe(CN)_6$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
311	Potassium Ferricyanide	$K_3Fe(CN)_6$	20	1.11		1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
312	Potassium Ferricyanide	$K_3Fe(CN)_6$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
313	Potassium Ferrocyanide	$K_4Fe(CN)_6$	10			5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
314	Potassium Ferrocyanide	$K_4Fe(CN)_6$	16	1.11		5	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
315	Potassium Ferrocyanide	$K_4Fe(CN)_6$	sat.			5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
316	Potassium Hydroxide	KOH	20	1.19		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
317	Potassium Hydroxide	KOH	30	1.29		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
318	Potassium Hydroxide	KOH	60	1.63		-	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	③	–	–	❍	–	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
319	Potassium Hypochlorite	KOCl				1, 2, 4, 5	–	❍	–	❍	⑥	❍	❍	–	–	–	–	–	❍	❍	❍	–	⑥	–	–	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
320	Potassium Iodide	KJ	50	1.55		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
321	Potassium Iodide	KJ	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
322	Potassium Nitrate	KNO_3	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
323	Potassium Nitrate	KNO_3	24	1.17		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍
324	Potassium Oxalate	$K_2C_2O_4H_2O$				5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	⑥	⑥	⑥	⑥	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
325	Potassium Permanganate	$KMnO_4$	6	1.04		5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
326	Potassium Permanganate	$KMnO_4$	18			5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	❍	❍	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
327	Potassium Sulfate	K_2SO_4	10	1.08		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
328	Propanol	C_3H_7OH	100	0.8	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	❍	❍	❍
329	Propionic Acid	CH_3CH_2COOH	50		Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
330	Propionic Acid	CH_3CH_2COOH	pure	0.99	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	⑥	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
331	Propylene Glycol	$C_3H_6(OH)_2$	pure	1.04		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
332	Propylene Oxide	C_3H_6O	pure	0.83	Ex	8, 10	–	–	–	–	–	–	–	–	–	②	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	②	–	–	–	❍	–
333	Pyrogallol	$C_6H_3(OH)_3$	10			5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
334	Salad Oil	Mixture				1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
335	Salycilic Acid	$C_6H_4OHCOOH$	50	1.48		5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍
336	Sea Water	H_2O				1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Silicic Acid – **T**in(II)Chloride

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
337	Silicic Acid	$Si(OH)_4$	pure			1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍	❍	–	❍	–
338	Silicone Oil	$(R_2SiO)x$	pure			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
339	Silver Nitrate	$AgNO_3$	8	1.07		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
340	Soap Solution	Mixture				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
341	Sodium Acetate	CH_3COONa	10			5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	–	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
342	Sodium Aluminate	$Na_2Al_2O_4$				1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
343	Sodium Benzoate	$C_7H_5NaO_2$	36			5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	⑥	⑥	❍	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
344	Sodium Benzoate	$C_7H_5NaO_2$	sat.			5	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	–	⑥	❍	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
345	Sodium Bicarbonate	$NaHCO_3$	10	1.07		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
346	Sodium Dichromate	$Na_2Cr_2O_7$	10			5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	⑥	⑥	❍	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
347	Sodium Hydrogen Sulphate	$NaHSO_4$	50	1.16		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
348	Sodium Hydrogen Sulphite	$NaHSO_3$				1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
349	Sodium Carbonate	Na_2CO_3	25	1.27		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
350	Sodium Chlorate	$NaClO_3$	25	1.23		1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
351	Sodium Chloride	NaCl	20			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	–	❍	❍	–	–	–	–	–	–
352	Sodium Fluoride	NaF	4	1.04		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
353	Sodium Hydroxide	NaOH	10	1.16		3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	②	–	–	❍	❍	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
354	Sodium Hydroxide	NaOH	30	1.33		3	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	②	–	–	❍	❍	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
355	Sodium Hydroxide	NaOH	50	1.53		3.1	②	②	❍	❍	②	②	❍	–	–	②	❍	❍	❍	–	–	–	②	–	–	❍	①	–	–	❍	❍	②	②	–	②	–	–	–	❍	–
356	Sodium Hypochlorite	NaClO	10			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	–	–	–	–	–	–	–	–
357	Sodium Hypochlorite	NaClO	12.5			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	–	–	–	–	–	–	–	–
358	Sodium Hypochlorite	NaClO	20			5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	❍	❍	–	–	–	⑥	–	❍	–	–	❍	❍	❍	–	–	–	–	–	–	–	–
359	Sodium Nitrate	$NaNO_3$	45	1.37		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
360	Sodium Nitrite	$NaNO_2$	50			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
361	Sodium Perchlorate	$NaClO_4$	25	1.18		-	–	–	❍	❍	–	–	❍	–	–	⑥	❍	–	❍	–	–	–	③	–	❍	❍	–	–	–	❍	❍	③	③	–	③	–	–	–	❍	–
362	Sodium Phosphate	Na_3PO_4	10			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	⑥	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
363	Sodium Silicate	$_2Na_2OxSiO_2$	20	1.24		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
364	Sodium Sulfate	Na_2SO_4	50	1.46		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
365	Sodium Sulfide	NaS	16	1.16		1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	⑥	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
366	Sodium Sulfite	Na_2SO_3	sat.	1.18		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
367	Sodium Thiosulfate	$Na_2S_2O_3$	40			1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
368	Solvent Naphtha	Mixture		0.72	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
369	Spindle Oil	Mixture	pure			5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍
370	Stearic Acid	$CH_3(CH_2)_{16}CO_2H$	100	0.94		1, 2, 3, 4, 5, 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	⑥	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
371	Styrol	C_6H_5-CH=CH_2	pure	0.91	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
372	Succinic Acid	$C_4H_6O_4$	50	1.06		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
373	Sulphite Liquor	$Ca(HSO_3)_2$	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
374	Sulphite Liquor	$Ca(HSO_3)_2$	sat.			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	⑥	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
375	Sulphur Chloride	S_2Cl_2	10	1.69		5	–	–	–	–	–	❍	❍	–	–	–	–	–	❍	–	❍	–	❍	–	⑥	–	–	–	–	❍	❍	–	❍	–	–	–	–	–	–	–
376	Sulphur Ether	$(C_2H_5)_2O$	pure	0.71	Ex	-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	❍	③	–	–	–	❍	❍
377	Sulphuric Acid	H_2SO_4	40	1.3		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
378	Sulphuric Acid	H_2SO_4	80	1.66		5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
379	Sulphuric Acid	H_2SO_4	90	1.73		5	❍	❍	❍	❍	–	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
380	Sulphuric Acid	H_2SO_4	98	1.84		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	–	❍	–	–	–	–	❍	–	❍	❍	–	–	–	❍	–	–
381	Sulphurous Acid	H_2SO_3	50			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	–	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
382	Table Salt	NaCl	25			1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–
383	Tannic Acid	$H_{76}H_{52}O_{46}$	50			1, 2, 3, 4, 5	❍	❍	❍	❍	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	❍	❍	–	❍	❍	–	❍	–	–	–	❍	–
384	Tanning Extracts. vegetable	Mixture				1, 2, 3, 4, 5, 6	❍	❍	❍	❍	⑥	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	⑥	⑥	⑥	⑥	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
385	Tartaric Acid	$C_4H_6O_6$	sat.	1.76		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	–	–	–	❍	❍	❍	–	❍	–	–	–	❍	–
386	Tetrachloroethane	$Cl_2CHCHCl_2$	pure	1.6		-	–	–	–	–	–	–	❍	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	③	–	③	–	–	–	❍	–
387	Tetrachloromethane	CCl_4	pure	1.59		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	–	–	❍	–	❍	–	–	–	❍	–
388	Tetrahydrofuran	C_4H_8O	pure	0.89	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
389	Tetralin	$C_{10}H_{12}$	100	0.97		-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
390	Thionyl Chloride	$SOCl_2$	pure	1.66		-	–	–	–	–	❍	–	–	–	–	❍	❍	❍	❍	–	–	–	❍	–	⑥	❍	–	–	–	–	❍	–	–	❍	–	–	–	–	❍	–
391	Thiophene	C_4H_4S	pure	1.06	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	–	③	–	–	–	❍	–
392	Tin(II)Chloride	$SnCl_2$	20	1.17		1, 2, 4, 5	–	❍	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	❍	–	❍	–	❍	–	❍	–	–	❍	❍	❍	❍	–	–	–	–	–	–	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)

Chemical Resistance Table

Lutz Drum and Container pumps, Flow meter

Toluene – **Z**inc Sulfate

No.	Medium	Formula	Concentration in %	Spec. gravity kg/dm³	Ex	Suitable Pump set No.	Lutz - Pump Tubes: PP: PP-MS-SS, RE-PP-MS, MP-PP-MS	PP: PP-MS-HC	PP: PP-SL-SS	PP: B2-PP-SL, PP-SL-HC	B50: Container pump B50 PP	PVDF: PVDF-MS	PVDF: PVDF-SL	Alu: Alu-MS	Alu: Alu-SL	SS: SS-MS	SS: B2-SS-SL (not Ex), SS-SL	SS: RE-SS-MS, MP-SS-MS	HC: HC-SL	Lutz - Flow Meter: TR: TR 50 PP, TR 120 PP	TR: TR 120 PVDF	ST: PPO/SAN/BaFe	SL: PPO/PPS	LM: PPS/LCP/BaFe	UN: PPS/LCP	VA: SS/PPS	Hoses: PVC-Hose	Mineral oil hose	Solvent hose	Universal chemical hose	Special chemical hose	Nozzles: Nozzle PP/FPM	Nozzle PVDF/FPM	Nozzle Brass/ PTFE	Nozzle SS/FPM	Nozzle ALU/NBR	Automatic Nozzle ALU/FPM	Automatic Nozzle ALU/EPDM	Other Accessories: Hose connectors SS	Hose connectors Brass
393	Toluene	C_7H_8	100	0.87	Ex	8, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	❍	–	❍	❍	❍	❍
394	Transformer Oil	Mixture	pure			-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
395	Tributyl Phosphate	$(C_4H_9)_3PO_4$	pure	0.98		-	②	②	❍	❍	–	②	❍	②	❍	②	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	②	②	❍	②	–	–	❍	❍	❍
396	Trichloroacetic Acid	CCl_3COOH	50			-	–	–	–	❍	⑥	–	❍	–	–	–	–	–	❍	–	–	–	③	–	❍	–	–	–	–	❍	❍	③	③	–	–	–	–	–	–	–
397	Trichloroacetic Acid	CCl_3COOH	pure	1.62		-	–	–	–	❍	⑥	–	❍	–	–	–	–	–	❍	–	–	–	③	–	❍	–	–	–	–	❍	❍	③	③	–	–	–	–	–	–	–
398	Trichlorobenzene	$C_6H_3Cl_3$		1.69		-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	–	–	–	❍	–	–	–	❍	–
399	Trichloroethane	$C_2H_3Cl_3$	pure	1.48		5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	–	❍	–	–	–	❍	–
400	Trichloroethylene	C_2HCl_3	50			5	–	–	–	–	–	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	❍	–	–	–	❍	❍	–	❍	–	❍	–	–	–	❍	–
401	Trichloroethylene	C_2HCl_3	pure	1.46		5	–	–	–	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	–	–	❍	❍	❍	–	–	–	❍	❍	–	❍	❍	❍	–	❍	–	❍	❍
402	Trichloromethane	$CHCl_3$	100	1.48		-	–	–	–	–	–	–	❍	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	③	–	③	–	–	–	❍	–
403	Trichlorofluormethane	$CFCl_3$	pure	1.32		-	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	③	–	❍	❍	–	–	–	–	❍	–	–	–	③	–	–	–	❍	–
404	Tricresyl Phosphate	$(CH_3C_6H_4O)_3PO$	pure	1.13		-	–	–	❍	❍	–	–	❍	–	❍	⑥	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	❍	❍	③	③	❍	③	–	–	–	❍	❍
405	Triethylamine	$(CH_3CH_2)_3N$	pure	0.73	Ex	7, 8, 9, 10	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	–	❍	–	❍	❍
406	Turpentine Oil	Mixture		0.86		-	–	–	–	–	–	–	–	❍	❍	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	❍	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	❍
407	Urea	H_2NCONH_2	10			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
408	Urea	H_2NCONH_2	33			1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
409	Urine	Mixture				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
410	Vinegar	CH_3COOH				5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
411	Vinyl Acetate	$CH_2=CHOOCCH_3$	pure	0.93	Ex	8, 10	–	–	–	–	–	–	–	–	–	⑥	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	❍	❍	–	–	③	–	–	–	❍	–
412	Vinylidene Chloride	$CH_2=CCl_2$	pure	1.25	Ex	-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	–	❍	❍	–	–	–	–	❍	–	–	–	❍	–	–	–	❍	–
413	Water	H_2O		1		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
414	Water Glass	Me_2OnSiO_2	20	1.24		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	❍	❍	–	⑥	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
415	Xylene	$C_6H_4(CH_3)_2$	pure	0.86	Ex	-	–	–	–	–	–	–	–	–	–	❍	❍	❍	❍	–	–	–	–	❍	❍	❍	–	–	–	–	❍	–	–	❍	–	❍	–	❍	❍
416	Zinc Chloride	$ZnCl_2$	20	1.19		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
417	Zinc Chloride	$ZnCl_2$	75	2.07		5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	–	–	–	❍	❍	❍	❍	–	❍	–	–	–	❍	–
418	Zinc Salts	Mixture				1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
419	Zinc Sulfate	$ZnSO_4$	10	1.11		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–
420	Zinc Sulfate	$ZnSO_4$	sat.	1.38		1, 2, 3, 4, 5	❍	❍	❍	❍	❍	❍	❍	–	–	❍	❍	❍	❍	❍	❍	–	❍	–	❍	❍	❍	❍	–	❍	❍	❍	❍	❍	–	❍	–	–	–	❍	–

Meaning of symbols: ❍ = Resistant „–" = Non-resistant ① = conditional stable (danger of discoloration and for embrittlement in dependence of the short working period) ② = Special seal EPDM ③ = Special seal Viton®-FEP ④ = Special bearing Rulon ⑤ = Measuring chamber for Nitric Acid ⑥ = On demand

Explanation to the set-recommendation: „Pump set no".1 = PVC-Hose conditional stable (danger of discoloration and for embrittlement in dependence of the short working period)