

# Technical data sheet clic்ூ்⊚p 8 – 64 mm

### 1. Manufacturer

Egli, Fischer & Co. Ltd. Gotthardstrasse 6 P.O. Box 8022 Zurich Switzerland

## 2. Product description

One-piece, self locking plastic pipe clamp for the exterior and indoor area

## 3. Application areas

- Plumbing trade
- Chemical industry
- Electrical installations (tubular cable protection)
- Coaxial cable fixing
- Sanitary installation
- Swimming pools

### 4. Features

- Locking system without additional screws
- Very high dynamic load
- Very high stress corrosion crack stability
- Very low moisture absorption
- Chloride- and weather resistant
- Clamping range 8 64 mm (0.31" to 2.52")
- Mounting with metrical or wood screws
- Approved by: KIWA®, UL® and IAPMO R&T/UPC®

### 5. Technical data

Material quality Polyamide PA 12 Density at +20 °C 1,01 g/cm<sup>3</sup> Elongation at yield 12 % E-Modulus in tension 1100 MPa Water absorption at 23 °C 1,50 % Moisture absorbtion (23 °C / 50 % r.F.) 0.50 % Shore hardness D 70 Disruptive strength 32 kV/mm

Weather proof  $-40\ ^{\circ}\text{C}$  up to +110  $^{\circ}\text{C}$  Mounting temperature down to -25  $^{\circ}\text{C}$  Maximum service temperature short term +150  $^{\circ}\text{C}$ 

Maximum service temperature long term +90 to +110 °C

Flammability +90 to +110 °C

HB according to UL 94

Calorific / energy value

Impact value (Charpy, +23 °C) 7 Impact value (Charpy, -30 °C) 6

**Halogen** halogen free as per IEC 754-2

Petrol, diesel, oil resistant
Corrosion resistant
Chloride salt resistant

UV resistant ISO 4892-2

Standard colours dark grey (RAL 7001), black (RAL 9011), white (RAL 9010),

34 kJ / gram

red (RAL 3020)

Special colours on request



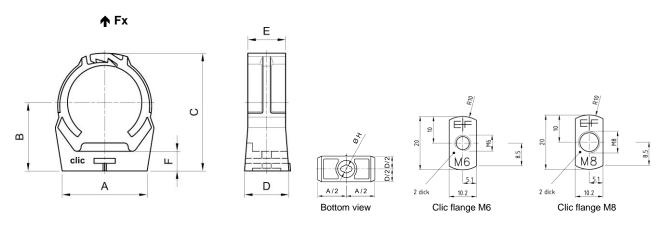
## 6. Product data

## 6.1 Product choice

Type	Ste	eel	Copper	Cast	PE	PVC	Cable-	Coaxial	Certification		Breaking	
<b>,</b> ,				iron			ducts	cable			load	
							metric					[N]
							measures					
	mm	inch	mm	mm	mm	mm	M	inch	Kiwa	UPC	UL	Fx**
8							8			✓	✓	450
10			10				10		✓	✓	✓	470
12	13,5	1/4"	12				12		✓	✓	✓	500
15			15			16	16	1/2"	✓	✓	✓	650
17	17,2	3/8"	18						✓	✓	✓	700
20	21,3	1/2"				20	20	5/8"	✓	✓	✓	750
22			22						✓	✓	✓	800
25	26,9	3/4"				25	25		✓	✓	✓	900
28			28					7/8"	✓	✓	✓	950
32	33,7	1"	35		32	32	32		✓	✓	✓	1100
36								1 1/4"	✓	✓	✓	1200
40	42,4	1 1/4"	42		40		40		✓	✓	<b>√</b>	1350
47	48,3	1 ½"		48	50	50	50	1 %	✓	✓	✓	1400
51			54						✓	✓	✓	1500
59	60,3	2"	64			63				✓	✓	1600

<sup>\*\*</sup> with screw DIN 96 at +20 °C, safety factor must be considered!

## 6.2 Technical information



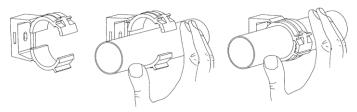
Туре	Clamping [mr		A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	H*		Breaking load [N]
	min.	max.							wood [mm]	metric	Fx**
8	7,8	9,5	17,1	17,5	26,4	17,1	14,5	7,5	3,5	M6	450
10	9,5	11,8	17,1	17,5	26,2	17,1	14,5	7,5	3,5	M6	470
12	11,8	14,3	20,2	19,5	28,3	17,2	14,5	7,5	3,5	M6	500
15	14,3	16,8	20,6	18,8	32,0	17,1	14,5	7,5	3,5	M6	650
17	16,8	19,5	22,5	23,7	35,4	19,5	16,0	7,8	4,5	M6	700
20	19,5	21,8	24,8	24,9	39,4	20,0	16,3	7,8	4,5	M6	750
22	21,8	24,8	27,8	26,0	42,0	20,0	16,5	7,8	4,5	M6	800
25	24,8	27,8	30,4	28,0	45,1	20,0	17,0	8,8	4,5	M6	900
28	27,8	31,2	33,4	31,7	48,9	20,2	17,0	8,8	4,5	M6	950
32	31,2	35,5	38,0	34,5	54,4	21,0	17,5	9,0	4,5	M6 / M8	1100
36	35,5	39,5	41,8	36,5	59,4	21,0	18,0	9,1	4,5	M6 / M8	1200
40	39,5	43,5	46,2	38,2	64,2	21,0	18,6	9,4	4,5	M6 / M8	1350
47	46,5	50,5	53,5	43,0	72,8	22,0	19,5	9,8	4,5	M6 / M8	1400
51	50,5	55,5	58,6	46,8	78,7	23,0	20,0	10,2	4,5	M6 / M8	1500
59	58,5	64,0	66,3	52,0	88,2	23,2	21,0	10,7	4,5	M6 / M8	1600

<sup>\*</sup> H = screw diameter; wood screw (wood) / metal screw (metric)

<sup>\*\*</sup> with screw DIN 96 at +20 °C, safety factor must be considered!

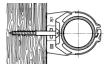
## 6.3 Mounting types

## Easy to install

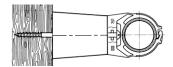


Simply mount CLIC, push pipe in by hand, grips and locks by applying slight pressure. To open: unlock the CLIC latch with screwdriver.

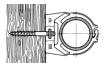
#### Wood subsoil



With wood screw

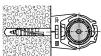


with wood screw and CLIC spacer

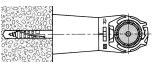


with wood anchor bolt with metric thread end and CLIC spacer

#### Concrete subsoil



with wood screw and DELTA nylon plug



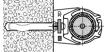
with wood screw, CLIC spacer and DELTA nylon plug



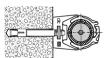
with threaded stud, CLIC flange and TILCA hammer set anchor



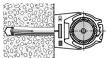
with TILCA impact anchor S and CLIC flange



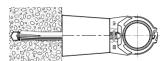
with TILCA SPIKE anchor nail DA and CLIC flange



with TILCA anchor bolt and CLIC flange

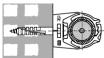


with TILCA fire resisting anchor and CLIC flange

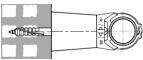


with TILCA fire resisting anchor, CLIC flange and spacer

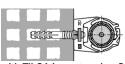
#### **Brick subsoil**



with wood screw and DELTA nylon plug

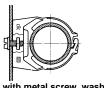


with wood screw, spacer and DELTA nylon plug



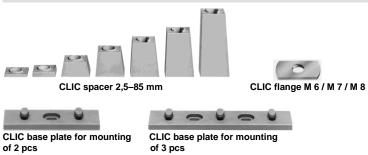
with TILCA impact anchor S and CLIC flange

### Metal plate subsoil



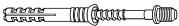
with metal screw, washer and CLIC flange

## 6.4 Accessories









DELTA nylon plug

TILCA hammer set anchor









wood anchor



wood screw

Double-thread stud





TILCA fire resisting anchor

TILCA SPIKE anchor nail

TILCA anchor bolt

# 7. Chemical resistance

Fats         ●●●●         Starch           Fluorine gas         ●         Stearic acid           Formaldehyde         ●●         Stearin           Formic acid         concentrated         ●         Styrene           Frigen         liquid F12         ●●         Sulphur dioxide           Frigen         liquid F22         ●         Sulphuric acid         10%           Fuel         ●●         Sulphuric acid         concentrated           Glycol         ■●         Table salt           Glycol         ■●         Tallow           Heating oil         ■●         Tartaric acid           Heptane         ■●         Tetralin           Hydraulic oil         ■●         Toluene           Hydrochloric acid         1%         ■●         Transformer oil           Hydrochloric acid         10%         ■         Trichlorethane           Hydrosulphice         ■●         Trichlorethylene           Hydrosulphide         ■●         Turpentine           Iodine tincture         O         Urea           Isopoctane         ●●         Uric acid           Isopoctane         ●●         Uric acid           Kerosene         ●	Material	Concentration	Resistance at +23 °C	Material	Concentration	Resistance at +23 °C
Acetone	Acetic acid		••	Milk		•••
Acetylene			+			•••
Aluminium salts         aqueous         Nitric acid           Ammonia         aqueous         Nitrobenzene           Ammonia         Aqueous         Nitrobenzene           Amiline         Olis         Olis           Aniline         Over olici acid         Aniline           Aniline         Over olici acid         Oleum           Benzene         Over olici acid         Oxygen           Benzine         Oxygen         Benzine           Benzyl alcohol         Ozone         Paraffin oil           Bromine         Petroline         Petroline           Butane         Petroline         Petroline           Butane         Petroline         Petroline           Butane         Petroline         Petroline           Carbon tetrachloride         Petroline         Petroloum ether           Carbon tetrachloride         Petroloum ether         Petroloum ether           Carbon tetrachloride         Petroloum ether <td></td> <td></td> <td></td> <td></td> <td></td> <td>•••</td>						•••
Ammonia         aqueous          Nitrobenzene           Amylacetate          Olis            Aniline          Oleic acid            Antifreeze          Oxalic acid            Benzine          Oxygen            Benzine          Oxygen            Benzyl alcohol          Paraffin oil            Bromine          Paraffin oil            Butanol          Petroleum            Carbon tetrachloride          Petroleum            Caustic potash         10%          Petroleum           Caustic potash         10%          Potash           Chiorine          Propane            Chiorine          Propane            Chiorine          Propane            Chiorine          Salacylic acid            Citric acid          Salacylic acid            Citric acid	· · · · · · · · · · · · · · · · · · ·	adueous	+	· ·		0
Amylacetate         ●●●         Oleis acid           Anilline         ●●●         Oleic acid           Anillreze         ●●●         Oleum           Benzine         ●●●         Oxalia acid           Benzine         ●●●         Oxagen           Benzyl alcohol         ●         Ozone           Bromine         ●         Parffin oil           Butane         ●●         Parfolorethylene           Butanel         ●●         Parfolorethylene           Butanol         ●●         Petroleum           Caustic potash         10%         ●           Caustic potash         50%         ●         Phenol           Caustic potash         50%         ●         Potash           Chlorhenzene         ●         Propane           Chlorhenzene         ●         Propane           Chlorine         O         Pyridine           Chlorine         O						••
Antiline		aqueous	+			•••
Antifreeze			+			•••
Benzene						0
Benzine			+			•••
Benzyl alcohol						•••
Bromine				1		•
Butane			_			•••
Butanol			_			•••
Carbon tetrachloride         ●●●         Petroleum ether           Caustic potash         10%         ●●●         Phenol           Caustic potash         50%         ●●●         Potash           Chlorbenzene         ●         Propane           Chlorine         ○         Pyridine           Chloroform         ●         Salicylic acid           Chroroform         ●         Salicylic acid           Cresol         ○         Soap suds           Decalin         ●         Soap suds           Decalin         ●         Soada         10%           Eatible fat         ●         Sodium chroride         saturate           Ethanol         ●         Sodium hydroxide         50%           Ethanol         ●         Sodium hydroxide         50%           Ethylacetate         ●         Sodium silicate         Ethylacetate         Ethylacetate         Sodium silicate           Ethylacetate         ●         Stearin						•••
Caustic potash         10%         ●●●         Phenol           Caustic potash         50%         ●●●         Potash           Chlorenzene         ●         Propane           Chlorine         O         Pyridine           Chloroform         ●         Salicylic acid           Citric acid         ●         Sea water           Copper sulphate         ●         Solicon oils           Cresol         O         Soap suds           Decalin         ●         Soda         10%           Eatible fat         ●         Soda         50%           Engine oil         ●         Sodium chloride         saturatec           Ethanol         Sodium chloride         Saturatec           Ethylene oil         Sodium sulphate         concentrated           Ethylacetate         Sodium sulphate         concentrate           Ethylacetate         Sodium sulphate         concentrate           Ethylacetate         Starch         Starch           Fluorine gas         Fluorine gas         Stearic acid           Formaldehyde         Stearic acid         Stearic acid           Frigen         liquid F12         Sulphur dioxide         Frigen           F						•••
Caustic potash         50%         ●●●         Potash           Chlorbenzene         ●         Propane           Chloroform         ●         Salicylic acid           Citric acid         ●●         Sea water           Copper sulphate         ●●         Silicon oils           Cresol         ●         Soap suds           Decalin         ●●●         Soda         10%           Eatible fat         ●●●         Soda         50%           Engine oil         ●●●         Sodium chloride         50%           Ethanol         ●●●         Sodium hydroxide         10%           Ether         ●●●         Sodium hydroxide         50%           Ethylacetate         Ethylacetate         Sodium sulphate         concentrate           Ethylacetate         ●●●         Stearic acid         stearic acid           Formaldehyde         ●●         Stearic acid         Formaldehyde           Formaldehyde         ●●         Stearic acid         Formaldehyde           Frigen         liquid F12         ●●         Sulphuric acid         concentrated           Figen         liquid F22         ●         Sulphuric acid         concentrated           Glycerine		100/				•
Chlorine         ●         Propane           Chlorine         ○         Pyridine           Chloroform         ●         Salicylic acid           Ctric acid         ●         Sea water           Copper sulphate         ●         Silicon oils           Cresol         ○         Soap suds           Decalin         ●         Soda         10%           Eatible fat         ●         Soda         50%           Engine oil         ●         Sodium hydroxide         10%           Ethanol         ●         Sodium hydroxide         10%           Ethanol         ●         Sodium hydroxide         10%           Ethyl acetate         ●         Sodium hydroxide         10%           Ethyl acetate         ●         Sodium silicate           Ethylacetate         ●         Sodium silicate           Ethylacetate         ●         Sodium silicate           Ethylacetate         ●         Sodium silicate           Ethylacetate         ●         Starrin           Fillerine oxide         Starrin         Starrin           Fluorine gas         ●         Starrin           Formic acid         concentrated         Styrene	•					•••
Chlorine         ○         Pyridine           Chloroform         ●         Salicylic acid           Citric acid         ●         Sea water           Copper sulphate         ●         Silicon oils           Cresol         ○         Soap suds           Decalin         ●         Soda         10%           Eatible fat         ●         Sodium Sodium chloride         Saturatec           Engine oil         ●         Sodium hydroxide         10%           Ethanol         Sodium hydroxide         10%           Ether         ●         Sodium hydroxide         50%           Ethyla cetate         ●         Sodium sulphate         concentrated           Ethyla cetate         ●         Sodium sulphate         concentrated           Filuorine gas         ●         Stearic acid         Formaldehyde           Formaldehyde         ●         Stearic acid         Formaldehyde         Stearic acid         Formaldehyde         Stearic acid         Formaldehyde         Styrene         Frigen         Ilquid F12         ●         Sulphur dioxide         Styrene         Frigen         Ilquid F12         ●         Sulphur dioxide         Forgine         Inquid F12         Inquid F12         Inquid F12 <td>•</td> <td>30%</td> <td>+</td> <td></td> <td></td> <td>•••</td>	•	30%	+			•••
Chloroform         ●         Salicylic acid           Citric acid         ●         Sea water           Copper sulphate         ●         Silicon oils           Cresol         ○         Soap suds           Decalin         ●         Soda         10%           Eatible fat         ●         Soda         50%           Engine oil         ●         Sodium chloride         saturate           Ethanol         ●         Sodium hydroxide         10%           Ether         ●         Sodium hydroxide         50%           Ethyl acetate         ●         Sodium sulphate         concentrate           Ethyl acetate         ●         Sodium sulphate         concentrate           Ethyl acetate         ●         Sodium sulphate         concentrate           Fats         ●         Stacrin         sodium sulphate         concentrate           Fiverine exide         ●         Stearic acid         stearin           Formic acid         concentrated         ●         Styrene         stearin           Frigen         liquid F12         ●         Sulphuric acid         10%         sulphuric acid         concentrate         Sulphuric acid         concentrate         Glyceri		+	+	'		•••
Citric acid         ●●●         Sea water           Copper sulphate         ●●●         Silicon oils           Cresol         ●●●         Soda         10%           Decalin         ●●●         Soda         50%           Eatible fat         ●●●         Sodium Sodium chloride         saturated           Ethanol         ●●●         Sodium hydroxide         10%           Ether         ●●●         Sodium hydroxide         50%           Ethyl acetate         ●●●         Sodium sulphate         concentrated           Ethyl acetate         ●●●         Sodium sulphate         concentrated           Ethylace oxide         ●●●         Stearic         Sodium sulphate         concentrated         Stearin         Sodium sulphate         concentrated         Sodium sulphate         concentrated         Sodium sulphate         concentrated         Stearin         Sodium sulphate         concentrated         Stearin         solium sulphate         concentrated         Stearin         stearin         solium sulphate         concentrated         Stearin         sulphuric acid         10%		+		1 1		•••
Copper sulphate         ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●		+	-			
Cresol         ○         Soap suds           Decalin         ●●●         Soda         10%           Eatible fat         ●●●         Sodia         50%           Engine oil         ●●●         Sodium chloride         saturated           Ethanol         ●●●         Sodium hydroxide         10%           Ether         ●●●         Sodium hydroxide         50%           Ethyl acetate         ●●●         Sodium silicate         50%           Ethyl acetate         ●●●         Sodium silicate         concentre           Ethylene oxide         ●●●         Starch         starch           Fluorine gas         ●●         Stearic acid         Formaldehyde         ●●         Stearic acid           Formaldehyde         ●●         Stearin         ●         Formaldehyde         ●●         Stearin         ●         Formaldehyde         ●●         Stearin         ●         Formaldehyde         ●         Stearin         ●         ●         Stearin         ●         ●         Stearin         ●         ●         ■         ■         ●         ■         ■         ●         ■         ■         ●         ■         ■         ■         ■         ●         ■ <td></td> <td>+</td> <td></td> <td></td> <td></td> <td>•••</td>		+				•••
Decalin   Dec	- ' '					
Eatible fat         ●●●         Soda         50%           Engine oil         ●●●         Sodium chloride         saturated           Ethanol         ●●●         Sodium hydroxide         10%           Ether         ●●●         Sodium silicate         50%           Ethyl acetate         ●●●         Sodium sulphate         concentrate           Ethylene oxide         ●●●         Starch         Starch           Fluorine gas         ●●         Stearic acid         Fornaldehyde         ●●         Stearin           Formaldehyde         ●●         Stearin         ●         Styrene         ●         Fornaldehyde         ●●         Styrene         ●         ●         Styrene         ●         Fornaldehyde         ●●         Styrene         ●         ●         Styrene         ●         ●         Styrene         ●         ●         Styrene         ●         ●         Sulphur dioxide         ●         Frigen         Ingular dioxide         ●         ●         Ingular dioxide <td></td> <td>+</td> <td></td> <td></td> <td>400/</td> <td>•••</td>		+			400/	•••
Engine oil         ●●●●         Sodium chloride         saturated           Ethanol         ●●●●         Sodium hydroxide         10%           Ether         ●●●●         Sodium hydroxide         50%           Ethyl acetate         ●●●●         Sodium sulphate         concentre           Ethylene oxide         ●●●●         Sodium sulphate         concentre           Fats         ●●●●         Starch         Stearic acid           Fluorine gas         ●●●         Stearic acid         Formaldehyde           Formaldehyde         ●●●         Stearin         Formaldehyde           Formaldehyde         ●●●         Stearin         Formaldehyde           Formaldehyde         ●●●         Stearin         Formaldehyde           Formaldehyde         ●●         Stearin         Formaldehyde           Formaldehyde         ●●         Stearin         Formaldehyde           Frigen         liquid F12         ●●         Sulphur dioxide         Formaldehyde           Frigen         liquid F12         ●●         Sulphur dioxide         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde         Formaldehyde			+			•••
Ethanol         ●●●         Sodium hydroxide         50%           Ether         ●●●         Sodium hydroxide         50%           Ethyl acetate         ●●●         Sodium silicate         Ethyl acetate         Sodium silicate         Ethyl acetate         Sodium silicate         Ethyl acetate         Sodium sulphate         Concentrate         Sodium sulphate         Concentrate         Sodium sulphate         Concentrate         Starch         Starch         Figen         Starch         Figen         Stearin         Stearin         Figen         Figen         Stearin         Stearin         Figen         Figen         Stearin         Figen         Sulphur dioxide         Figen         Figen         Sulphur dioxide         Figen         Sulphur dioxide         Figen         Figen         Figen         Sulphur dioxide         Figen         Figen         Figen         Figen         Sulphur dioxide         Figen         Fig			+			•••
Ether						•••
Ethyl acetate  Ethylene oxide  Ethylene oxide  Ethylene oxide  Fats  Fluorine gas  Formaldehyde  Frigen  Iliquid F12  Frigen  Iliquid F22  Iliquid F2  Iliquid F22  Iliquid F22  Iliquid F22  Iliquid F22  Iliquid F2  Iliquid F22  Iliquid F22  Iliquid F22  Iliquid F22  Iliquid F2			+	<u> </u>		•••
Ethylene oxide  Fats  Starch  Starch  Stearic acid  Formaldehyde  Formal caid  Frigen			+		50%	•••
Fats         ●●●●         Starch           Fluorine gas         ●         Stearic acid           Formaldehyde         ●●         Stearin           Formic acid         concentrated         ●         Styrene           Frigen         liquid F12         ●●         Sulphuric acid         10%           Frigen         liquid F22         ●         Sulphuric acid         10%           Fuel         ●●         Sulphuric acid         concentrated           Glycol         Table salt         Glycol           Heating oil         Tallow         Tallow           Heating oil         Tataric acid         Tetralin           Hydraulic oil         Toluene         Toluene           Hydrochloric acid         1%         Transformer oil           Hydrochloric acid         10%         Trichlorethane           Hydrogen perioxide         20%         Trichlorethylene           Hydrosulphide         Turpentine         Urea           Isonoctane         Uric acid         Uric acid           Isopropanol         Water         Vaseline           Kaliumpermanganat         O         Vaseline           Kerosene         Incentral         Vinegar <t< td=""><td>•</td><td></td><td>+</td><td></td><td></td><td>•••</td></t<>	•		+			•••
Stearic acid	•		+	•	concentrated	•••
Formaldehyde Formic acid Formic acid Frigen Iliquid F12 Iliquid F22 Iliquid F2						•••
Formic acid concentrated   Frigen	*		-			•••
Frigen liquid F12						•••
Frigen liquid F22			_			•••
Fuel Sulphuric acid concentrate Glycerine Table salt Glycol Tallow Tartaric acid Tartaric acid Tartaric acid Tetralin Tetralin Toluene Transformer oil Trichlorethane Trichlorethane Trichlorethylene Turpentine Urea Urea Uric acid Isopropanol Trichlorethylene Turine Urine Scarce Vinegar Transformer oil Trichlorethylene Turpentine Uric acid Uric acid Uric acid Uric acid Uric acid Uric acid Urine Xaliumpermanganat Orichlorethylene Vinegar Scarce Vinegar Agnesium chloride 10% Turpentine Urine Trichlorethylene Urine Xaliumpermanganat Orichlorethylene Vinegar Agnesium chloride 10% Trichlorethylene Urine Trichlorethylene Uric acid Uric acid Uric acid Uric acid Urine Xaliumpermanganat Orichlorethylene Vinegar Agnesium chloride 10% Trichlorethylene Uric acid Uric acid Urine Agnesium chloride 10% Trichlorethylene Uric acid Uric acid Uric acid Uric acid Uric acid Agnesium chloride 10% Trichlorethylene Uric acid Uric acid Uric acid Uric acid Uric acid Agnesium chloride 10% Trichlorethylene Uric acid Agnesium chloride Inom Agnesium chloride Agnesium chloride Inom Agnesium chloride Agnesium					100/	••
Glycerine Glycol Heating oil Heptane Hydraulic oil Hydrochloric acid Hydrochloric acid Hydrogen perioxide Hydrosulphide Iso-octane Iso-octane Kerosene Lactic acid Magnesium chloride Methane  Fallow Tallow Tallow Tetralin Toluene Troluene Transformer oil Trichlorethane Trichlorethane Trichlorethylene Turpentine Urea Urea Uric acid Urine Vaseline Water Magnesium chloride Methane  Fallow Toluene Toluene Transformer oil Trichlorethylene Turpentine Uric acid Uric acid Uric acid Urine Vaseline Water  Wax  Mercury  Methane  Jinc chloride aqueous		liquid F22	+			••
Glycol       ●●●       Tallow         Heating oil       ●●●       Tartaric acid         Heptane       ●●●       Tetralin         Hydraulic oil       ●●●       Toluene         Hydrochloric acid       1%       ●●       Transformer oil         Hydrochloric acid       10%       ●       Trichlorethane         Hydrogen perioxide       20%       ●●       Trichlorethylene         Hydrosulphide       ●●       Turpentine         Iodine tincture       O       Urea         Iso-octane       ●●       Uric acid         Isopropanol       ●●       Urine         Kaliumpermanganat       O       Vaseline         Kerosene       ●●       Water         Lactic acid       ●●       Wax         Magnesium chloride       10%       ●●       Xylene         Methane       ●●       Zinc chloride       aqueous			+		concentrated	•
Heating oil       ●●●       Tartaric acid         Heptane       ●●●       Tetralin         Hydraulic oil       ●●●       Toluene         Hydrochloric acid       1%       ●●       Transformer oil         Hydrochloric acid       10%       ●       Trichlorethane         Hydrogen perioxide       20%       ●●       Turpentine         Hydrosulphide       ●●       Urea         Iso-octane       Uric acid         Iso-octane       Uric acid         Isopropanol       Urine         Kaliumpermanganat       ○       Vaseline         Kerosene       Vinegar         Lactic acid       ●       Water         Magnesium chloride       10%       ●       Wax         Mercury       ●       Zinc chloride       aqueous						•••
Heptane Hydraulic oil Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrogen perioxide Hydrosulphide Iodine tincture Iso-octane Isopropanol Kaliumpermanganat Kerosene Lactic acid Magnesium chloride Methane  Tetralin Toluene Troluere  Transformer oil Trichlorethane Turpentine Urica Urea Urea Uricacid Uricacid Urine Vaseline Vaseline Water  Water  Magnesium chloride Methane  ■ ● ● Wax  Xylene  Zinc chloride aqueous						•••
Hydraulic oil         ●●●         Toluene           Hydrochloric acid         1%         ●●         Transformer oil           Hydrochloric acid         10%         ●         Trichlorethane           Hydrogen perioxide         20%         ●●         Trichlorethylene           Hydrosulphide         ●●         Turpentine           Iodine tincture         □         Urea           Iso-octane         ●●         Uric acid           Isopropanol         ●●         Urine           Kaliumpermanganat         □         Vaseline           Kerosene         ●●         Water           Lactic acid         ●●         Wax           Magnesium chloride         10%         ●●         Xylene           Methane         ●●         Zinc chloride         aqueous						•••
Hydrochloric acid         1%         ●●         Transformer oil           Hydrochloric acid         10%         ●         Trichlorethane           Hydrogen perioxide         20%         ●●         Trichlorethylene           Hydrosulphide         ●●         Turpentine           Iodine tincture         □         Urea           Iso-octane         ●●         Uric acid           Isopropanol         ●●         Urine           Kaliumpermanganat         □         Vaseline           Kerosene         ●●         Water           Lactic acid         ●●         Wax           Magnesium chloride         10%         ●●         Xylene           Methane         ●●         Zinc chloride         aqueous			+			•••
Hydrochloric acid         10%         ■         Trichlorethane           Hydrogen perioxide         20%         ■         Trichlorethylene           Hydrosulphide         ■         ■         Turpentine           Iodine tincture         □         Urea         □           Iso-octane         ■         Uric acid         □           Isopropanol         ■         Urine         □           Kaliumpermanganat         □         Vaseline         □           Kerosene         ■         Vinegar         □           Lactic acid         ■         Water         Wax           Magnesium chloride         10%         ■         Wax           Mercury         ■         Xylene         Zinc chloride         aqueous	•	+				•••
Hydrogen perioxide         20%         ●●         Trichlorethylene           Hydrosulphide         ●●●         Turpentine           Iodine tincture         ○         Urea           Iso-octane         ●●●         Uric acid           Isopropanol         ●●●         Urine           Kaliumpermanganat         ○         Vaseline           Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Zinc chloride         aqueous						•••
Hydrosulphide         ●●●         Turpentine           Iodine tincture         □         Urea           Iso-octane         ●●●         Uric acid           Isopropanol         ●●●         Urine           Kaliumpermanganat         □         Vaseline           Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Zinc chloride         aqueous			+			••
Iodine tincture         ○         Urea           Iso-octane         ●●●         Uric acid           Isopropanol         ●●●         Urine           Kaliumpermanganat         ○         Vaseline           Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous		20%		<u> </u>		••
Iso-octane         ●●●         Uric acid           Isopropanol         ●●●         Urine           Kaliumpermanganat         ○         Vaseline           Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous				•		•••
Isopropanol         ●●●         Urine           Kaliumpermanganat         ○         Vaseline           Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous		+				•••
Kaliumpermanganat         ○         Vaseline           Kerosene         ●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous			+			•••
Kerosene         ●●●         Vinegar           Lactic acid         ●●         Water           Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ■●●         Zinc chloride         aqueous						•••
Lactic acid         ●●         Water           Magnesium chloride         10%         ●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous		+				•••
Magnesium chloride         10%         ●●●         Wax           Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous		+				•••
Mercury         ●●●         Xylene           Methane         ●●●         Zinc chloride         aqueous			+			•••
Methane		10%	+			•••
			+			•••
Methanol I ●● I I			+	Zinc chloride	aqueous	•••
Methylene chloride   •	Methanol		••			

 $<sup>\</sup>bullet \bullet \bullet \bullet \text{ resistant -} \bullet \bullet \text{ limited resistance -} \bullet \text{ not resistant -} \textbf{O} \text{ soluble, greatly affected}$ 

#### **Chemical resistance**

In general, polyamide 12 is resistant to many organic solvents and alkalis. Grilamid is also unaffected by petroleum fractions, oils and fats.

Concentrated acids cause relatively rapid hydrolytic degradation of all polyamides but PA 12 is resistant to dilute mineral acid and most organic acids.

The hydrolysis and environmental stress-cracking resistance of Grilamid are the most significant advantages of Grilamid in comparison to other engineering plastics.

PA 12 has a distinctly higher hydrolysis resistance than PA6 and PA66. The matrix is less hydrophilic, absorbs less water, even at elevated temperatures and, therefore, is less affected by hydrolysis.

The recommendations and data given are based on our experience to date. No liability can be assumed in connection with their usage and processing.

For technical advice please contact our sales engineers. We will be happy to provide further assistance.