

SIMONA



SIMONA[®] Industrial Piping Systems

Superior Reliability in Extreme Conditions

SIMONA® piping systems made of high-performance plastics – the ultimate in chemical resistance

Polyvinylidene fluoride (PVDF) belongs to the group of highly crystalline high-performance thermoplastics. PVDF retains its high level of stiffness even within the upper temperature range. The material is highly resistant to the majority of organic and inorganic media, as well as being physiologically safe and offering the benefits of low flammability.

PVDF-EL includes electrically conductive particles and displays a low level of surface resistance.



The partially fluorinated high-performance plastic ethylene-chlorotrifluoroethylene (E-CTFE) displays an extremely high degree of chemical resistance, which includes the alkaline range. In addition to its low flammability, it is physiologically safe and particularly weather-resistant.

Properties

PVDF

- Excellent chemical resistance
- Physiologically safe (in accordance with BfR and FDA)
- Broad temperature range
- Low flammability (in accordance with DIN 4102 B1 and FM 4910)
- Good hydraulic properties due to smooth pipe interior
- Exceptional ageing resistance

PVDF-EL

- In addition, electrically conductive

E-CTFE

- Extremely high chemical resistance
- Physiologically safe (in accordance with BfR and FDA)
- Extremely broad temperature range
- Low flammability (in accordance with DIN 4102 B1)

Material specifications	Standards/guidelines	PVDF	E-CTFE
Density, g/cm ³	ISO 1183	1.780	1.680
Yield stress, MPa	DIN EN ISO 527	55	31
Elongation at yield, %	DIN EN ISO 527	8	4
Elongation at break, %	DIN EN ISO 527	30	125
Tensile modulus of elasticity, MPa	DIN EN ISO 527	1950	1650
Impact strength, kJ/m ²	DIN EN ISO 179	no break	no break
Notched impact strength, kJ/m ²	DIN EN ISO 179	12	> 100
Ball indentation hardness, MPa	DIN EN ISO 2039-1	120	56
Shore hardness, D	ISO 868	78	74
Mean coefficient of linear thermal expansion, K ⁻¹	DIN 53752	1.3 · 10 ⁻⁴	0.5 · 10 ⁻⁴
Thermal conductivity, W/m · K	DIN 52612	0.14	0.15
Dielectric strength, kV/mm	VDE 0303-21	25	-
Surface resist., Ohm	DIN IEC 167	10 ¹³	10 ¹⁵
Combustibility	DIN 4102	B1	B1
Physiologically safe	as per BgVV	no	no
Chemical resistance	according to DIN 8075 Supplement	fulfilled	fulfilled
Temperature range, °C		-30 to +140	-40 to +150



PVDF Pressure pipes

Material

PVDF

Colour

Natural

Dimensions

Standard length: 5 m

Note

Other lengths on request

Standards

ISO 10931

Kynar®
inside

pressure pipe	SDR 41	SDR 33	SDR 21	SDR 17.6	SDR 17	SDR 11	SDR 7.4
d mm	e mm	e mm	e mm	e mm	e mm	e mm	e mm
16			1.9				
20			1.9				
25			1.9				
32			2.4				
40			2.4				
50			3.0				
63		2.0	3.0				
75		2.3	3.6				
90		2.8	4.3				
110		3.4	5.3				
125		3.9	6.0				
140		4.3	6.7				
160		4.9	7.7				
180		5.5					
200		6.2					
225		6.9					
250		7.7					
280		8.6					
315		9.7					



**PVDF Liner pipes,
Pre-treated/untreated**

Material

PVDF

Colour

Natural

Dimensions

Standard length: 5 m

Non-standard lengths on request

Note

with or without pre-treated
surface for direct lamination

Standards

ISO 10931

Kynar®
inside

Liner pipe, pre-treated

Liner pipe, untreated

d mm	e mm			e mm			
32	2.4						
40	2.4						
50	3.0						
63	3.0						
75	3.0			3.0			
90	3.0			3.0			
110	3.0			3.0			
125	3.0			3.0			
140	3.0			3.0			
160	3.0			3.0			
180	3.0			3.0			
200	3.0			3.0			
225	3.0			3.0			
250	3.0			3.0			
280	3.5			3.5			
315	4.0			4.0			
355	5.0			5.0			
400	5.0			5.0			



PVDF Fittings

Diameter in mm	SDR 33	SDR 21	PN 16
PVDF fittings for IR/butt welding			
Elbows 90°, injected		20 – 63	
Elbows 45°, injected	90 – 225	20 – 225	
Bends 90°, injected, short spigots		20 – 63	
Bends 90°, injected	90 – 225	75 – 225	
Tees, injected	90 – 225	20 – 225	
Tees with reduced branch, injected	160/90 – 225/110	160/90 – 225/110	
Stub flanges for loose flanges ISO/DIN, injected	90 – 225	20 – 225	
Stub flanges for loose flanges ANSI, injected		25 – 90	
Reducers, concentric, injected	90/63 – 225/200	25/20 – 225/200	
Unions, injected		20 – 63	
Adaptors with threaded female end Rp and NPT, injected		20 – 63	
Adaptors with threaded male end R and NPT, injected		20 – 63	
PVDF fittings for socket welding			
Elbows 90°, 45°, injected			16 – 63
Tees, injected			16 – 63
Stub flanges for socket welding for loose flanges ISO/DIN, injected			20 – 110
Stub flanges for socket welding for loose flanges ANSI, injected			20 – 63
Sockets, injected			16 – 63
Reducers, concentric, injected			25/20 – 63/50
End caps, injected			16 – 63
Unions, injected			16 – 63
Adaptors with threaded female end Rp and Npt, injected			20 – 63
Fittings for flange assemblies PVDF piping systems			
Flat gaskets (FPM)			
for stub flanges for socket welding			20 – 110
Profile gaskets (FPM)			
for stub flanges	90 – 315	25 – 225	
for stub flanges for socket welding			16 – 110
Valves for PVDF piping systems			
2-way ball valve	16 – 90		
Diaphragm valves	20 – 110		
Butterfly valves	50 – 315		
Ball check valve	20 – 63		



E-CTFE Pressure pipes

Material

E-CTFE

Colour

Natural

Dimensions

Standard length: 5 m

Note

Other lengths on request
surface for direct lamination

Application

Industry

Standards

based on ISO 10931

Pressure pipe	SDR 41	SDR 33	SDR 21	SDR 17	SDR 11		
d mm	e mm	e mm	e mm	e mm	e mm		
16			1.9				
20			1.9				
25			1.9				
32			2.4				
40			2.4				
50			3.0				
63			3.0				
75			3.6				
90			4.3				
110			5.3				
125			6.0				
140			6.7				
160			7.7				

SIMONA® specialist piping systems – delivering tailor-made solutions

SIMONA has many years of experience in the field of customised piping systems. Short development lead times and dedicated technical support make for more efficient processes. Benefit from the proven track record and exceptional know-how of our research and development unit.



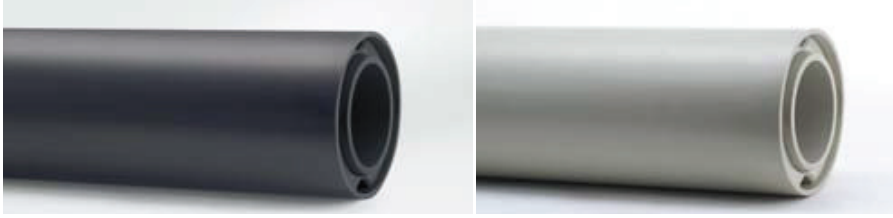


Drawing on our in-depth knowledge and technical resources within the field of plastics engineering, we are able to supply an extensive range of specialist products tailored to your specific requirements.

We operate in-house plastics laboratories with state-of-the-art production systems and highly qualified staff – for exceptional manufacturing quality and the very best in innovation.

Customised solutions

- Double-containment piping systems with matching fittings
- Pipes with customised properties such as special sizes, colours or material modifications
- Customised fittings as system components for your applications
- Complex designs such as shaft constructions or distribution systems



PE 100

Double-containment pipes

Material

Inner pipe: PE 100 as per DIN 8074/8075
 Outer pipe: PE 100 as per DIN 8074/8075

Colour

Black

Welding methods

Inner pipe: SDR 11
 Outer pipe: SDR 17 simultaneous welding
 Inner pipe: SDR 17
 External pipe: SDR 17 cascade welding

Note

Other dimensions and lengths on request

Subject to technical and dimensional modifications

Inner pipe			Outer pipe	
	PE 100 SDR 17	PE 100 SDR 11	PE 100 SDR 17	
d mm	e mm	e mm	d mm	e mm
90	5.4	8.2	160	9.5
110	6.6	10.0	200	11.9
125	7.4	11.4	200	11.9
140	8.3	12.7	225	13.4
160	9.5	14.6	250	14.8
180	10.7	16.4	280	16.6
200	11.9	18.2	315	18.7
225	13.4	20.5	315	18.7
250	14.8	22.7	355	21.1
280	16.6	25.4	400	23.7
315	18.7	28.6	450	26.7
355	21.1	32.2	500	29.7
400	23.7	36.3	560	33.2
450	26.7	40.9	630	37.4
500	29.7	45.4	630	37.4

PP-H AlphaPlus®

Double-containment pipes

Material

Inner pipe: PP-H AlphaPlus® as per DIN 8077/8078, low-stressed due to thermal post-treatment
 Outer pipe: PP-H AlphaPlus® or PE 100 as per DIN 8074/8075

Colour

PP: grey
 PE: black

Welding methods

Inner and outer pipe PP: Simultaneous/cascade welding
 Inner pipe PP/outer pipe PE: Cascade welding

Note

Other dimensions and lengths on request

Subject to technical and dimensional modifications

Inner pipe		Outer pipe		
	PP-H AlphaPlus® SDR 17.6		PP-H AlphaPlus® SDR 33	PE 100 SDR 17
d mm	e mm	d mm	e mm	e mm
90	5.1	160	4.9	9.5
110	6.3	200	6.2	11.9
125	7.1	200	6.2	11.9
140	8.0	225	6.9	13.4
160	9.1	250	7.7	14.8
180	10.2	250	7.7	
180	10.2	280		16.6
200	11.4	315	9.7	18.7
225	12.8	315	9.7	18.7
250	14.2	355	10.9	21.1
280	15.9	400	12.3	23.7
315	17.9	400	12.3	
315	17.9	450		26.7
355	20.1	450	13.8	
355	20.1	500		29.7
400	22.7	500	15.3	
400	22.7	560		33.2
450	25.5	560	17.2	
450	25.5	630		37.4
500	28.4	630	19.3	37.4
560	31.7	710	21.8	42.1
630	35.7	800	24.5	47.4

Fittings for double-containment pipes

Material

PE 100
PP-H AlphaPlus®

Colour

PP: grey
PE: black

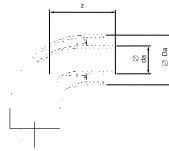
Welding methods

Inner and outer pipe PP or PE:
Simultaneous/cascade welding

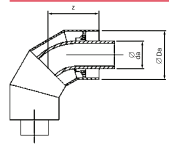
Inner pipe PP/outer pipe PE:
Cascade welding

Note

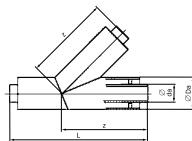
Fittings for double-containment pipes are supplied as customised solutions. Component dimensions and lengths are produced in accordance with specific requirements.



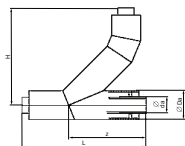
Bend 90°
injected



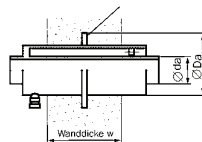
Bend 90°
segment-welded



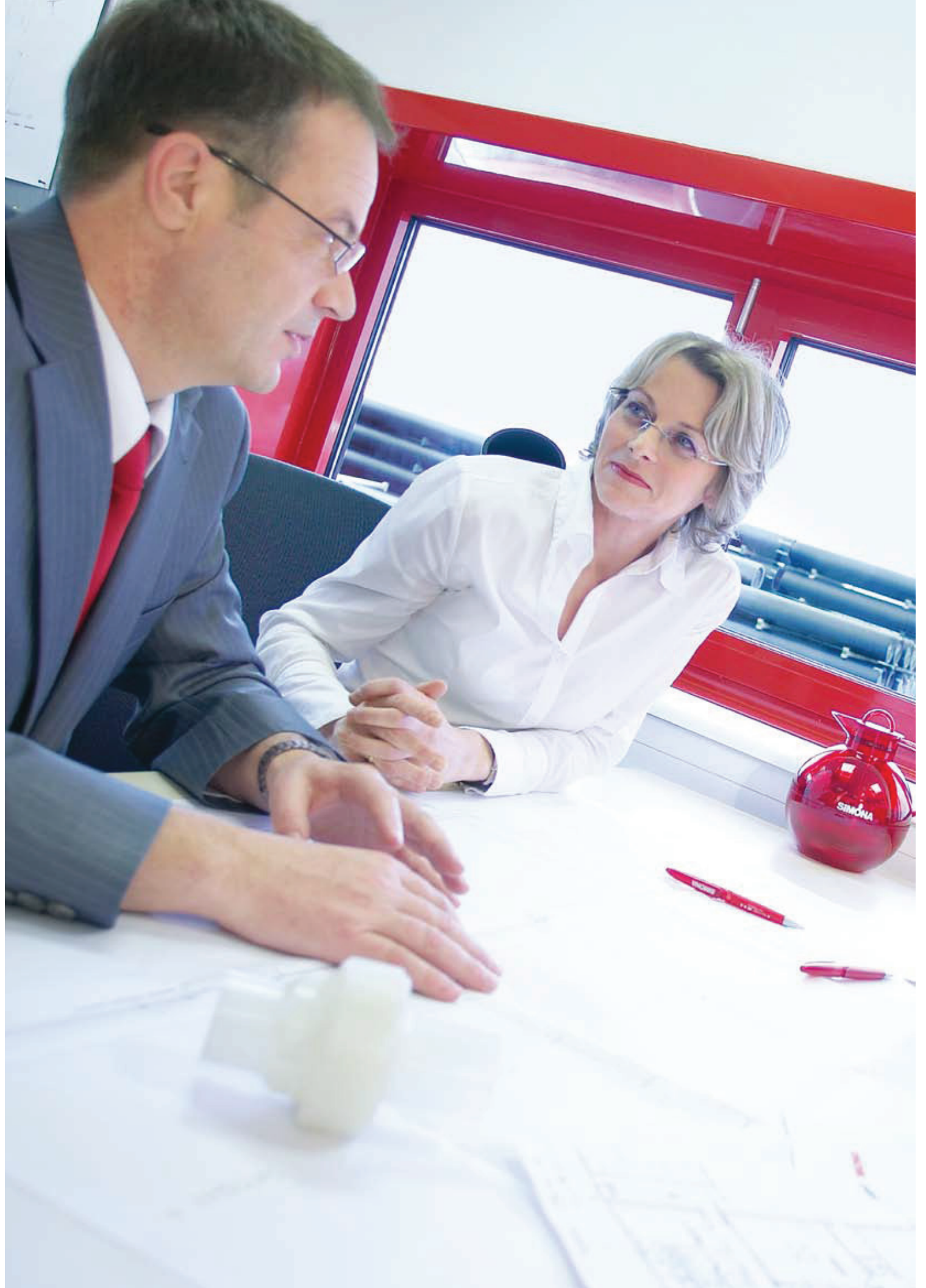
Branch 45°



Branch with bend



Shaft connection
Typ 2



Services

As a customer, you always take centre stage: from project development to materials procurement and on-site planning, we are committed to providing the very best consulting services.

Our long-standing experience is your gain.

Consulting and information service



We have channelled considerable resources into technical consulting and would be delighted to share our know-how with you. We offer global consulting services, headed by highly qualified staff at our Technical Sales Support unit and within our field sales organisation – from project planning and product selection to on-site assistance tailored to your applications.

Project planning

We advise project planners and contractors on the selection of suitable materials and products as well as on the most efficient methods of installation. It would be a great pleasure for us to assist you in addressing all technical issues related to your specific project, e.g. pipe-laying installation, structural calculations or joining technology.

SUPPORT

+49 (0) 67 52 14-315
pipingsystems@simona.de



On-site consulting

We are happy to provide active support at all stages of your project. Our qualified engineers will assist you on site throughout your construction project and also advise you on technical matters subsequent to completion.

Training

We also offer a range of training courses and seminars for customer personnel – organised at your premises or at our Technology Centre in Kirm.

Reliability and flexible service

Our central warehouse and global distribution centres supply SIMONA standard products from stock, thus guaranteeing speedy and flexible delivery.

Standard tendering documents

To view standard tendering documents for our products, please refer to our SIMONA® SIMCAT CD-ROM or visit our website at www.simona.de.

Information service

Further information is available in the form of

- Brochures
- Product information leaflets
- CD-ROMs

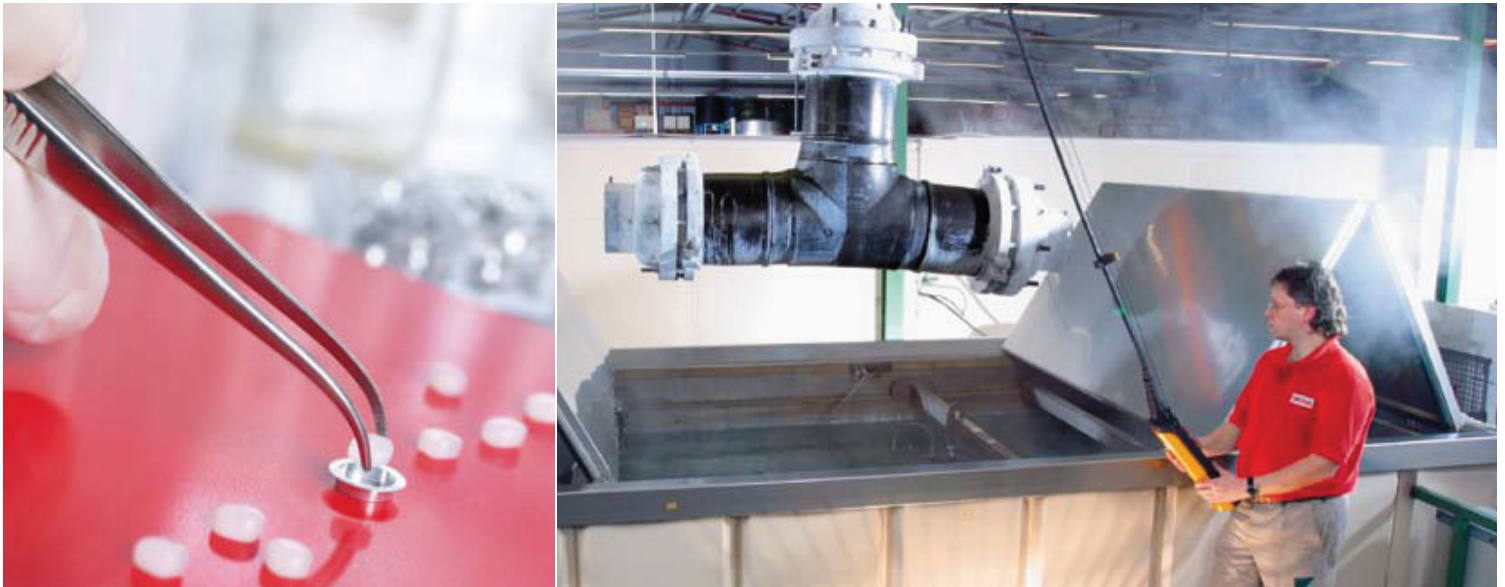
Our full product range for pipes, fittings and valves is listed in our Gross Price List (print version) and on the Internet at www.simona.de



INFO

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marketing@simona.de

Technical services



Our products are subjected to a range of thorough technical assessments as well as endurance testing. As part of this programme, our in-house laboratory conducts regular tests on material properties and long-term performance.

We are happy to pass on our knowledge, as well as performing specialist tests on your behalf.

Materials testing

- Immersion tests according to DIN 16888 Part 1–2 and ISO 4433 Part 1–4
- Evaluation of reduction factors through immersion tests or creep-depending-on-time tests under internal compression
- Probability analysis regarding stress cracks induced by liquids
- Assessment of permeation for applications in composite construction and lining technology with corresponding material recommendation



Equipment and accessories

We are able to supply you with specialist equipment and accessories required for professional welding and processing, such as welding machines for electrofusion or heated element butt welding as well as tensioning devices and other processing machinery. Specialist equipment can be either purchased or hired.

Structural analysis

We perform structural calculations in the following areas:

- Underground pipe installation
- Ventilation piping systems

ATEX advisory service

- Selection of materials
- Details relating to standards and regulations
- Information on processing of electrically conductive products

Customised pipes and fittings

Alongside our standard product range, we offer a premium-class package of specialist solutions:

- Pipes in various lengths for a range of joining methods
- Special pipe sizes adapted to the standard nominal diameters of other materials
- Pipes with non-standard properties such as electrical conductivity or low flammability
- Customised fittings as system components for your application

SUPPORT

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SIMONA® SIMCHEM

SIMCHEM 6.0 – Chemical resistance data on CD-ROM

SIMCHEM 6.0 is a reliable and comprehensive guide when it comes to determining the chemical resistance of materials used in our products.

It lists more than 3,000 media and proprietary products. Additionally, SIMCHEM provides extensive information about our products and materials, as well as outlining SIMONA's business activities.



SIMCHEM – An extensive database on the chemical resistance of SIMONA® materials, featuring more than 3,000 listed substances.

The sixth edition of SIMCHEM has been fully reviewed and is an important guide for your day-to-day operations. Please be advised that all data presented in this version reflects our scope of knowledge at the point of publication. The latest version of SIMCHEM is based on findings from immersion testing as part of which test specimens were subjected to different temperatures in the medium in question, free from external stresses.

The data derived from testing is complemented by case study reports, recommendations by raw material manufacturers as well as extensive data relating to standards, directives and guidelines.

ORDER SIMCHEM 6.0

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Information on ATEX and REACH

ATEX-compliant products for explosive atmospheres

Materials used in production equipment which is deployed in potentially explosive atmospheres must display properties that protect them against explosion, in compliance with European directives ATEX 94/9/EG and ATEX 137. SIMONA's electrically conductive products provide protection against static charging, thereby reducing the risk of explosion. SIMONA offers professional assistance in applications technology as well as training centred around the processing of SIMONA® EL products.

REACH Regulation

On June 1, 2007, the European chemicals law which had applied up to that date was replaced by the so-called REACH Regulation (EU Regulation 1907/2006/EC). REACH stands for **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals.

One of the rules specified by the REACH Regulation is that all substances (chemicals and preparations) which are manufactured in the EU or are imported to the EU have to be pre-registered and registered with the European Chemicals Agency (ECHA). The REACH Regulation applies to chemicals and preparations. Polymers are explicitly excluded from registration and evaluation (as per Article 2 Para. 9).

The SIMONA® range of products comprises semifinished parts, pipes and fittings which are made solely of polymer materials. Therefore, they are not subject to the REACH Regulation. As a plastics processing company, we cannot have our products registered, nor are we obliged to.

Within the scope of the supply chain described by REACH, plastics processing companies are so-called "downstream users". One of our obligations as downstream users is to verify the fact that our own suppliers handle the raw materials delivered to us in a REACH-compliant manner. We met our obligations within this area during the pre-registration phase from

1.6. - 30.11.2008. If the availability of individual raw materials is limited by REACH in future, we will switch to REACH-compliant alternatives.

In addition, we are obliged to disclose information about the constituents of our products: we confirm that our products do not contain any substances in concentrations of > 0.1% (w/w) which are on the candidate list (Candidate List of Substances of Very High Concern, SVHC) issued by the European Chemicals Agency (ECHA).

As downstream users, we are enjoined to inform our suppliers how the raw materials delivered to us are used (in our case: manufacture of semi-finished plastics, pipes, fittings and finished products by means of extrusion, pressing and injection moulding) so that the use becomes a so-called "identified use". In order to improve the exchange of information along the supply chain, it is advantageous to also receive information about how our customers subject our products to further processing. Please feel free to pass this information on to us by contacting us at reach@simona.de.

You can find more information and help on the topic at: <http://www.reach-helpdesk.de/>

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