SIMONA

prod.**info**

SIMONA® Twin-Wall Sheets

March 2011

Anwendungstechnische Beratung

Applied technical advice
Communication d’informations techniques d’utilisation

Unsere anwendungstechnische Beratung erfolgt nach bestem Wissen und basiert auf Ihren Angaben sowie dem uns bekannten Stand der Technik. Die Beratung stellt keine Zusicherung von bestimmten Eigenschaften dar und begründet kein selbstständiges vertragliches Rechtsverhältnis.

Wir haften nur für Vorsatz oder grobe Fahrlässigkeit. Unsere Angaben entbinden Sie nicht von der Pflicht der eigenen Prüfung.

Änderungen aufgrund neuer Erkenntnisse und Bewertungen bleiben vorbehalten.

Our applied technical advice is given according to our best knowledge to assist in the use of our products. It is based upon your data and our knowledge of the general status of technology. The advice offers no guarantee of particular characteristics or qualities and establishes no independent contractual legal relationships.

We are only liable for intent or gross negligence. Our data does not release you from the obligation of your own controls and to ensure suitability for the particular application.

We reserve the right to update information without notice as part of our continuous research and development programme.

Les informations techniques, que nous vous communiquons, concernant l’utilisation de nos produits, résultent de notre large expérience. Elles sont établies selon vos données techniques et d’après le niveau actuel de la Technologie. Ces informations ne peuvent en aucun cas avoir un caractère de garantie au regard des caractéristiques ou qualités particulières, elles n’engendrent pas de relations contractuelles et juridiques.

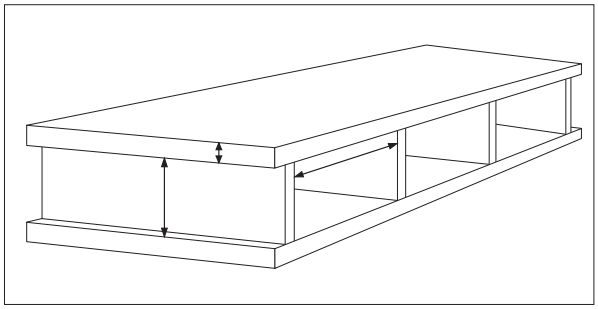
Notre responsabilité ne peut être mise en cause qu’en cas de reconnaissance d’intention ou de négligence grave. Le fait de communiquer nos informations ne vous délivre pas de votre devoir quant à la réalisation de tests faits par vos soins.

Les informations contenues dans nos catalogues et brochures sont mises à jour au fur et à mesure de l’avancement de notre programme de Recherche et Développement.

Contents

1 General

SIMONA® Twin-Wall Sheets are a highly innovative, versatile product. Twin-Wall Sheets are manufactured from PE 100, PP-DWU AlphaPlus® (PP-H) or PPs sheets with legally protected, state-of-the-art machine technology and combine high rigidity, low specific weight and good thermal insulation with the benefits of efficient fabrication and machining. Twin-Wall Sheets can be processed by the same methods as those used for solid thermoplastics.



1.1 Properties of SIMONA® Twin-Wall Sheets

Our portfolio now includes an optimised second generation of SIMONA® Twin-Wall Sheets with the following new features:

- Higher physical strength due to variable web spacing (54 mm and 108 mm)
- Construction of larger tanks (5 m³ and more) possible without steel reinforcement
- Custom specification of outer skin thicknesses (from 5 mm to 10 mm)
- Number of webs can be varied according to requirements (10 or 19)

Design-specific advantages

- Rectangular tanks possible without steel reinforcement
- Lighter weight than solid material due to cavities
- Excellent sound insulation (DIN ISO 140-3 certificates are available on request)
- High rigidity and strength
- High break resistance
- Many different fields of application
- Support with structural analysis possible

Plastic-specific advantages

- High thermal insulation
- Good electrical insulation
- Good slip properties
- High wear resistance
- High chemical resistance
- Low water absorption
- Resistance to microorganisms
- Excellent fabrication capability

On account of their inherent material properties, Twin-Wall Sheets can be used for a wide range of applications:

- PE 100 is impact resistant down to –50 °C, weather resistant and offers a high level of chemical resistance.
- PP-DWU AlphaPlus® is impressive owing to its service temperature range of 0 °C to +100 °C, its high chemical resistance and good weldability.
- PPs features B1 low flammability in accordance with DIN 4102 and is chiefly used in ventilation system construction.

1.2 Applications for SIMONA® Twin-Wall Sheets

As outlined above, SIMONA® Twin-Wall Sheets are used in a very wide variety of applications within the field of apparatus and tank building as well as installation engineering, agriculture and environmental engineering. The exceptional versatility of SIMONA® Twin-Wall Sheets is a tribute to the favourable characteristics associated with the product itself – with regard to insulation properties (sound and heat) – as well as the many different options available for customising the design of the sheets during production. Here are just a few examples of applications already implemented with the help of SIMONA® Twin-Wall Sheets:

- Rectangular tanks
- Covers for electroplating baths, structurally strong and thermally insulating
- Boat construction
- Floating pontoons for pipelines and supply lines at sea
- Storm-water retention basins
- Cooling water tanks
- Refrigerating containers
- Ice boxes
- Sound booths
- Spray booths
- Weather booths
- Safety tanks
- Water supply tanks
- Slide and anti-wear sheets in conjunction with thermal insulation
- Walk-over swimming pool floors
- Lightweight shaft bottoms or concrete-lined for floats
- Protective ducts for pipelines and supply lines
- Stone impact protection in road construction
- Sound barriers with and without infill panels
- Safety floor sheets
- Ventilation ducts
- Linings for transport stalls
- Linings for silos
- Medicinal baths for horses
- Partitions
- Biofilters
- Wastewater engineering
- Sewage sludge treatment
- Flood protection structures

2 Product range

2.1 Formats and dimensions of SIMONA® Twin-Wall Sheets

PE-HKP, black

Height mm	**Web height** mm	**3000 x 1000** kg ea.	**Web spacing** mm	**Number of webs** pcs	**Mat. thickness** mm
54	41	43.2	108	10	6
54	41	51.0	54	19	6
58	41	62.4	54	19	8

PP-HKP, grey

54	41	41,4	108	10	6
54	41	49,0	54	19	6
58	41	59,8	54	19	8

PPs-HKP, grau

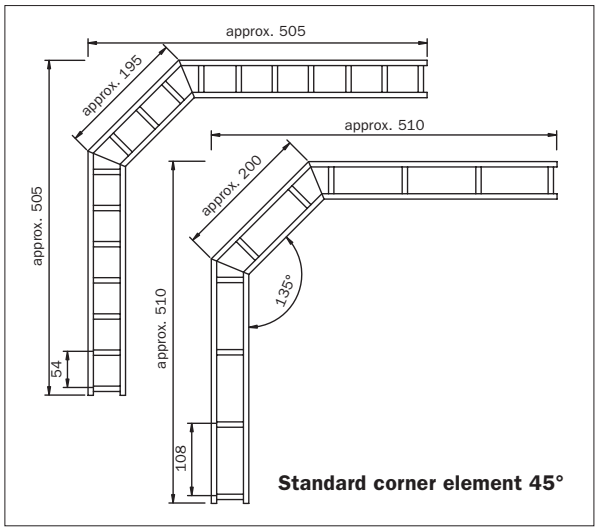
54	41	43.2	108	10	6

PP-C-UV-HKP, blue (top), grey (bottom)

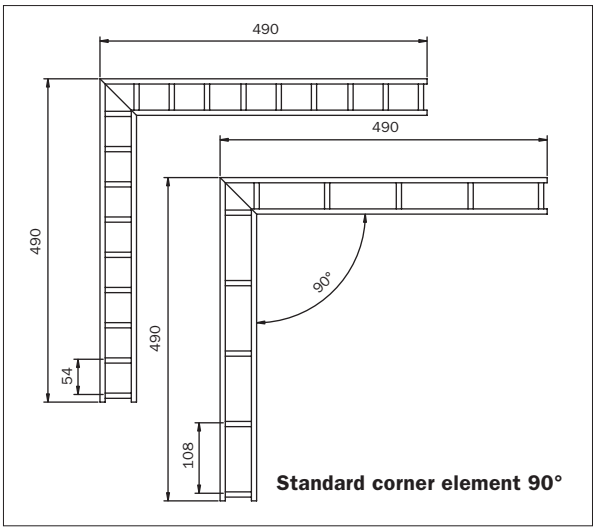
Available on request

PP-C-UV is a copolymer, UV-stabilised polypropylene.

2.2 Formats and dimensions of corner elements made of SIMONA® Twin-Wall Sheets



Standard corner element 45°



Standard corner element 90°

Corner elements in angles 45° and 90° are made of the materials PE-HWU-B, PP-DWU AlphaPlus® and PPs and are available on request.

3 Technical information

3.1 Material specifications of basic sheets

SIMONA® Twin-Wall Sheets are of welded design and are made from SIMONA® standard products. Therefore, in this case the material specifications relating to basic sheets apply.

	SIMONA® PE-HKP (PE 100)	SIMONA® PP-HKP (PP-DWU AlphaPlus®)	SIMONA® PPs-HKP (PPs)
Density, g/cm³, ISO 1183	0.960	0.915	0.950
Yield stress, MPa, DIN EN ISO 527	23	33	32
Elongation at yield, %, DIN EN ISO 527	9	8	8
Elongation at break, %, DIN EN ISO 527	600	80	100
Tensile modulus of elasticity, MPa, DIN EN ISO 527	1100	1700	1600
Impact strength, kJ/m², DIN EN ISO 179	no break	no break	no break
Notched impact strength, kJ/m², DIN EN ISO 179	30	9	6
Ball indentation hardness, MPa, DIN EN ISO 2039-1	40	70	70
Shore hardness D, ISO 868	65	72	72
Mean coefficient of linear thermal expansion, K^{-1}, DIN 53752	1.8×10^{-4}	1.6×10^{-4}	1.6×10^{-4}
Thermal conductivity, W/m · K, DIN 52612	0.38	0.22	0.22
Fire behaviour, DIN 4102	normal flammability	normal flammability	low flammability 2 to 20 mm
Dielectric strength, kV/mm, DIN IEC 60167	47	52	22
Spec. surface resistance, ohms, IEC 60093	10^{14}	10^{14}	10^{14}
Temperature range, °C	–50 to +80	0 to +100	0 to +100
Chemical resistance	excellent in contact with many acids, alkalis and solvents		
Physiologically safe	yes	yes	no

All specifications are deemed to be approximate values and may vary depending on the processing methods used and the specimen or test piece. In general, data specified applies to average values measured on extruded sheets with a thickness of 4 mm.

3.2 Fire behaviour

According to DIN 4102, the original semi-finished products used for Twin-Wall Sheets, SIMONA® PE 100 and PP-DWU AlphaPlus®, are normal-flammability construction materials (B2)

- Autoignition temperature approx. 350 °C
- Oxygen index approx. 18 %

According to DIN 4102, SIMONA® PPs, another original semi-finished product used, is a low-flammability construction material (B1)

- Autoignition temperature approx. 380 °C
- Oxygen index approx. 28 %

3.3 Performance in outdoor use

Owing to the fact that SIMONA® PE 100, a semi-finished product used for PE Twin-Wall Sheets, is specially stabilised for outdoor use, PE Twin-Wall Sheets are rated in the same way.

Twin-Wall Sheets made of SIMONA® PP-DWU Alpha-Plus® are not generally designed for outdoor use. However, experience with this original semi-finished product in outdoor use – without any mechanical or chemical stress – has been positive over a number of years.

3.4 Physiological behaviour

According to Recommendation III by the German "Federal Institute for Risk Assessment" (BfR, previously BgVV) there are no reservations about using the SIMONA® Twin-Wall Sheets (made of PE-HWU-B or PP-DWU AlphaPlus®) for manufacturing commodities as defined by Section 2, paragraph 6, no. 1 of the German Food, Commodities and Feedstuffs Act (LFGB, as amended by an Announcement on 26 April 2006 in the German Federal Gazette I, p. 945).

All the monomers and additives used are listed in European Directive 2002/72/EC and addenda.

Furthermore, SIMONA® PP Twin-Wall Sheets are manufactured from raw materials that meet the requirements of the Food and Drug Administration (FDA) in the United States (Code of Federal Regulations, title 21, chapter 1, part 177.1520) for contact with foods.

3.5 Chemical resistance

Owing to the non-polar nature of the material used (SIMONA® PE 100 and PP-DWU AlphaPlus®), SIMONA® Twin-Wall Sheets manufactured from these materials have a high level of chemical resistance to the following substances, even at elevated temperatures:

- Salts (aqueous solutions)
- Acids
- Alkalis
- Alcohols
- Various solvents
- Fats
- Oils
- Waxes

In continuous contact with these media a small amount of swelling may occur. However, this does not generally affect the service capability of these materials.

There is limited chemical resistance (swelling) to

- Aromatic compounds
- Halogenated hydrocarbons.

There is no chemical resistance to strong oxidants such as:

- Nitric acid
- Chromic acid
- Halogens

Consequently, there is a higher risk of stress cracks, especially in the region of welds.

You will find detailed information on our SIMCHEM 6.0 CD-ROM – the revised database on chemical resistance.

3.6 Water absorption

SIMONA® Twin-Wall Sheets absorb negligible quantities of water, so they do not swell when immersed in water.

3.7 Service temperature range

The service temperature ranges of SIMONA® Twin-Wall Sheets are as follows*:

SIMONA® Twin-Wall Sheets

	PE	PP/PPs
Continuous service temperature	–50 °C to +70 °C	0 °C to +80 °C
Without any significant mechanical stress in air as the ambient medium	up to +80 °C	up to +100 °C
Crystalline melting temperature	approx. 130 °C	approx. 160 °C

*The above figures do not apply to applications in tanks – such cases are subject to special design rules that have to be agreed on an individual basis.

3.8 Resistance to microorganisms

SIMONA® Twin-Wall Sheets do not constitute a source of nutrition for

- Microorganisms
- Bacteria
- Fungi
- Spores
- Gnawing insects
- Rodents

3.9 Health aspects

As far as their chemical composition is concerned, SIMONA® Twin-Wall Sheets are essentially only made of carbon and hydrogen. When they burn – provided there is a supply of atmospheric oxygen – virtually the only substances that develop are carbon dioxide, carbon monoxide and water, accompanied by very small quantities of soot and low-molecular volumes of the relevant plastics. The ratio of carbon dioxide to carbon monoxide largely depends on the circumstances of burning – temperature, ventilation and an unobstructed supply of atmospheric oxygen. Consequently, burning fumes develop that resemble those of wood or stearin.

In the debate about the potential toxicity of fumes from burning plastics the fact that all burning fumes have a toxic effect is generally overlooked. Therefore, any claim that plastics exposed to fire develop particularly toxic gases is incorrect.

The most suitable extinguishant to combat burning Twin-Wall Sheets is water.

4 Processing information

4.1 Machining

SIMONA® Twin-Wall Sheets can be processed by many different methods. These include drilling, milling, turning and sawing; in this case, a distinction must be made between circular sawing and band-sawing. For further information, please refer to our sets of documentation “work.info Welding” and “work.info Machining”.

4.2 Welding

4.2.1 General

The term plastic welding refers to the permanent joining of thermoplastics by applying heat and pressure, with or without the use of a filler. All welding processes take place when the materials in the boundary areas of the surfaces being joined are in a ductile state. That is where the filamentary molecules of the parts being joined and pressed together link up and entwine themselves to form a homogeneous material bond. Only plastics of the same kind, e.g. PP and PP, and within these types only ones with the same or a similar (adjacent) molecular weight and the same density, can be welded to one another; colour does not have to be taken into account.

Pipe parts and sheets with an MFR (MFR = melt mass flow rate) of 0.3 to 1.7 and 0.2 to 0.7 can be welded to one another. This means that when the materials are warmed the fusion properties are very similar. This statement is contained in DVS 2207 Part 1 and has also been confirmed by DVGW (German Gas and Water Association). For PP-H (Type 1), PP-B (Type 2) and PP-R (Type 3) the weldability is within melt index group 006/012 (MFR 190/5: 0.4 to 1.0 g/10 min.). This statement can be found in DVS 2207 Part 11.

4.2.2 Welding preparation

Directly before welding the surfaces to be connected, the adjacent areas and any damaged surfaces (especially if there are weather or chemical influences) must be machined down to intact zones. Dirt, grease, hand sweat and oxide layers must be removed by machining in order to obtain a high welding factor. Cleaning with solvents is inadequate.

4.2.3 Heated-tool butt welding

Warming is performed by a coated (PTFE) hot plate. Owing to the direct contact, the transmission of heat is far more intense than with hot-gas welding or extrusion welding; the distribution of heat over the cross-section of the material is more efficient so there is no zone in the material which is subjected to a higher thermal load than what is required for welding. That means the stress to which the joints are subjected is very low. In hot-plate welding the welding process takes place when the heated surfaces of contact are brought together at a specific pressure and allowed to cool down under pressure. Modern equipment is provided with a data collection feature that makes it possible to store welding parameters and print out welding records. The quality of seams depends on the following criteria:

The cleanliness of the parts to be joined by welding and of the hot plate itself is of paramount importance in hot plate welding. Teflon films or coatings facilitate the cleaning of heating surfaces and prevent plastics from clinging to the hot plate when warming up.

Semi-finished products with a large wall thickness usually call for relatively low temperatures – within tolerances – and a suitably longer exposure time. A hot plate height of at least 70 mm and a clamping distance of 60 mm are to be recommended for

Twin-Wall Sheets 54 mm to 60 mm thick because a relatively uniform temperature distribution can thus be guaranteed.

To be able to enter the necessary height and thickness of the sheet being welded on the automatic welder, the figures must first be calculated on the basis of the aggregate areas to be welded, consisting of webs and outer skins. There are two welding directions:

- **Direction of the webs**
  (Figure 1)
  Calculation formula:
  Thickness D = d
  Length L = 2 x l + n x h

- **At right angles to the direction of the webs**
  (Figure 2)
  Calculation formula:
  Thickness D = d
  Length L = 2 x l

D = sheet thickness to be entered,
d = outer skin thickness,
L = length to be entered,
l = one sheet length,
n = number of webs,
h = web height

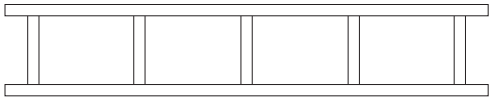


Figure 1

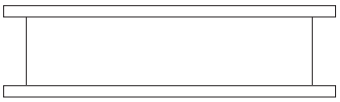


Figure 2

Examples of calculations:

Area equivalents	**6 mm/10 webs 54 mm thick**	**6 mm/19 webs 54 mm thick**	**8 mm/19 webs 58 mm thick**
Twin-wall sheet, 1,000 mm wide Welding **in the direction of** the webs	Outer skin sheets: d = 6 mm l = 1,000 mm Webs: n = 10 h = 41 mm **Total:** **D = 6 mm** **L = 2,410 mm** (A = 14,460 mm²)	Outer skin sheets: d = 6 mm l = 1,000 mm Webs: n = 19 h = 41 mm **Total:** **D = 6 mm** **L = 2,779 mm** (A = 16,674 mm²)	Outer skin sheets: d = 8 mm l = 1,000 mm Webs: n = 19 h = 41 mm **Total:** **D = 8 mm** **L = 2,779 mm** (A = 22,232 mm²)
Twin-wall sheet, 1,000 mm long Welding **at right angles to the direction** of the webs	**D = 6 mm** **L = 1,000 mm x 2** (A = 12,000 mm²)	**D = 6 mm** **L = 1,000 mm x 2** (A = 12,000 mm²)	**D = 8 mm** **L = 1,000 mm x 2** (A = 16,000 mm²)

We recommend the process parameter values in the following table.

Process parameters for PE-HKP

Sheet	**Temperature**	**Adaptation p ≈ 0.15 N/mm²**	**Warming p ≈ 0.01 N/mm²**	**Change-over**	**Joining p ≈ 0.15 N/mm²**	
		Bead height	Time	Max. time	Time to full pressure build-up	Cooling time at joining pressure
	°C	mm	s	s	s	min
PE-HKP 6 mm/10 webs	215	1.0	60	<3	5.5	8.5
PE-HKP 6 mm/19 webs	215	1.0	60	<3	5.5	8.5
PE-HKP 8 mm/19 webs	215	1.5	80	<3	6.5	11

Process parameters for PP-HKP

Sheet	**Temperature**	**Adaptation p ≈ 0.01 N/mm²**	**Warming p ≈ 0.01 N/mm²**	**Change-over**	**Joining p ≈ 0.01 N/mm² ± 0.01**	
		Bead height	Time	Max. time	Time to full pressure build-up	Cooling time at joining pressure
	°C	mm	s	s	s	min
PP-HKP 6 mm/10 webs	215	0.5	160	<3	5–6	6–12
PP-HKP 6 mm/19 webs	215	0.5	160	<3	5–6	6–12
PP-HKP 8 mm/19 webs	215	1.0	190	<3	6–8	12–20

For further and more detailed information on the subject of welding, please refer to our Technical Documentation “work.info Welding”.

4.2.4 Extrusion welding

Extrusion welding is suitable for making the join between the floor and walls of a tank (for preparation, see 4.2.5) and for joining wall segments to one another.

Directly before welding, the surfaces to be connected, the adjacent areas and any damaged surfaces (as with hot-gas welding) must be machined down to intact zones. Here again, detergents that attack or alter the plastic surface must not be used.

When making “butt joints”, i.e. when connecting wall segments, suitable fillings (e.g. a profile milled from PE-HWU-B, a solid sheet 40 mm thick or a square profile) must be introduced to the cavity in the seam area of the Twin-Wall Sheets in order to ensure a build-up of pressure in the seam zone.

The recommended figures for air temperature, compound temperature and air flow are as follows:

Approximate figures

	Compound temperature °C	**Air temperature** °C	**Air flow** l/min
PE-HKP	210 – 230	250 – 300	≥ 300
PP-HKP	210 – 240	250 – 300	≥ 300

4.2.5 Hot-gas string bead welding

For Twin-Wall Sheets which can only be welded from one side it is advisable to use a single V. Cleaning of surfaces to be welded to sheet and wire by machining is essential. Welding with a tacking nozzle serves to keep the parts in position. Fusion is performed with hot air but without any additional rod.

For further preparatory welding – to connect the bottom of a tank to a twin-wall sheet wall by extrusion welding, for example – we recommend a hot-gas weld using round rod 3 mm thick. This ensures that during extrusion welding no cavity sinks occur between the webs and that the join is optimal.

5 Structural analyses

For the structural analysis of tanks made from SIMONA® Twin-Wall Sheets, SIMONA deploys a specially programmed analysis tool that interpolates between stored FEM results for twin-wall sheet tanks.

The Finite Element Method (FEM) of analysis with which the basic structural investigations are conducted for tanks made from Twin-Wall Sheets is a numerical method of approximation which makes it possible to model and calculate structures and components that are described by analytical simulation techniques either inadequately or not at all. The mechanical and thermal problem of the investigations is based on a set of partial differential equations that require an advanced approach to calculation. In general, variational formulations are used in conjunction with discretisation methods for the numerical solution of such complex tasks. The most widespread and most flexible discretisation method is the Finite Element Method used here. The fundamental idea is based on a breakdown of the body being analysed into a finite number of sub-regions, in which the field functions sought are approximated with suitable model functions. FEM constitutes an indispensable tool in the numerical resolution of complex engineering problems in structural mechanics. It makes it possible to investigate different load cases (mechanical, thermal, electrical, etc.) and their combinations using a single model. Tests on a real component are reduced to a necessary minimum.

With the analysis tool used at SIMONA it is possible to compute structural estimates for tanks made from SIMONA® Twin-Wall Sheets with volumes up to approx. 10 m³ and a filling height of 1500 mm, and also output verifiable structural proofs.

As in the case of DVS tanks, enquiries should be sent to the address of our Technical Service Centre (TSC) using the enquiry form at the end of this brochure (page 18).

6 Advice

Our staff in Sales and the Technical Service Centre have many years of experience in the processing and use of semi-finished thermoplastics. We will be only too pleased to advise you.

Many different fabrication capabilities for an unlimited range of potential applications

SIMONA® Twin-Wall Sheets and corner elements can be used for numerous applications. In specific cases please contact our Technical Service Centre:

Phone +49 (0) 67 52 14-587
Fax +49 (0) 67 52 14-302
tsc@simona.de
www.simona-hohlkammerplatten.de

7 Tank analysis form for Twin-Wall Sheets

Telefax +49 (0) 67 52 14-302

SIMONA AG
Technical Service Center
Teichweg 16
55606 Kirn

Phone
+49 (0) 67 52 14-252 or -587
Fax
+49 (0) 67 52 14-302

Customer

Address line 1

Address line 2

Tel. **Fax**

The information in **bold face** is absolutely essential for the analysis. All the other questions are only necessary so that we can make recommendations for wall thickness and geometry and must be coordinated with your intentions as far as possible.

Geometries in mm

L = W = H =

Maximum filling height in mm FH =

Density of medium in g/cm³

Material

Operating conditions

Maximum service temperature (°C)/time share (%)*

/

Minimum service temperature (°C)/time share (%)*

/

* To determine mean temperature according to Miner operating conditions

Operating conditions

☐ Static load at constant temperature
☐ Static load at changing temperatures and filling heights
☐ Changing load under rugged operating conditions

Risk to persons possible in the event of an accident?

☐ Yes ☐ No

Welding processes

☐ Heated-tool butt welding
☐ Extrusion welding
☐ Hot-gas string bead welding

Chemical stress

Medium	Concentration (%)	Proportion (%)

Remarks

If possible, enclose a sketch or engineering drawing.

Date/signature

SIMONA worldwide

SIMONA AG

Teichweg 16
D-55606 Kirn
Germany
Phone +49 (0) 67 52 14-0
Fax +49 (0) 67 52 14-211
mail@simona.de
www.simona.de

PRODUCTION SITES

Plant I/II
Teichweg 16
D-55606 Kirn
Germany
Phone +49 (0) 67 52 14-0
Fax +49 (0) 67 52 14-211

Plant III
Gewerbestraße 1–2
D-77975 Ringsheim
Germany
Phone +49 (0) 78 22 436-0
Fax +49 (0) 78 22 436-124

SIMONA Plast-Technik s.r.o.
U Autodílen 23
CZ-43603 Litvínov-Chudeřín
Czech Republic

SIMONA AMERICA Inc.
64 N. Conahan Drive
Hazleton, PA 18201
USA

SIMONA ENGINEERING PLASTICS (Guangdong) Co. Ltd.
No. 368 Jinou Road
High & New Technology Industrial Development Zone
Jiangmen, Guangdong
China 529000

SALES OFFICES

SIMONA S.A. Paris
Z.I. 1, rue du Plant Loger
F-95335 Domont Cedex
Phone +33 (0) 1 39 35 49 49
Fax +33 (0) 1 39 91 05 58
domont@simona-fr.com

SIMONA UK LIMITED
Telford Drive
Brookmead Industrial Park
GB-Stafford ST16 3ST
Phone +44 (0) 1785 22 24 44
Fax +44 (0) 1785 22 20 80
mail@simona-uk.com

SIMONA AG SCHWEIZ
Industriezone
Bäumlimattstraße 16
CH-4313 Möhlin
Phone +41 (0) 61 8 55 90 70
Fax +41 (0) 61 8 55 90 75
mail@simona-ch.com

SIMONA S.r.l. ITALIA
Via Padana Superiore 19/B
I-20090 Vimodrone (MI)
Phone +39 02 25 08 51
Fax +39 02 25 08 520
mail@simona-it.com

SIMONA IBERICA SEMIELABORADOS S.L.
Doctor Josep Castells, 26–30
Polígono Industrial Fonollar
E-08830 Sant Boi de Llobregat
Phone +34 93 635 41 03
Fax +34 93 630 88 90
mail@simona-es.com
www.simona-es.com

SIMONA-PLASTICS CZ, s.r.o.
Zděbradská ul. 70
CZ-25101 Říčany-Jažlovice
Phone +420 323 63 78 3-7/-8/-9
Fax +420 323 63 78 48
mail@simona-cz.com
www.simona-cz.com

SIMONA POLSKA Sp. z o.o.
ul. H. Kamieńskiego 201–219
PL-51-126 Wrocław
Phone +48 (0) 71 3 52 80 20
Fax +48 (0) 71 3 52 81 40
biuro@simona.pl
www.simona.pl

SIMONA FAR EAST LIMITED
Room 501, 5/F
CCT Telecom Building
11 Wo Shing Street
Fo Tan
Hongkong
Phone +852 29 47 01 93
Fax +852 29 47 01 98
sales@simona.com.hk

SIMONA ENGINEERING PLASTICS TRADING (Shanghai) Co. Ltd.
Room C, 19/F, Block A
Jia Fa Mansion
129 Da Tian Road, Jing An District
Shanghai
China 200041
Phone +86 21 6267 0881
Fax +86 21 6267 0885
shanghai@simona.com.cn

SIMONA AMERICA Inc.
64 N. Conahan Drive
Hazleton, PA 18201
USA
Phone +1 866 501 2992
Fax +1 800 522 4857
mail@simona-america.com
www.simona-america.com