

SIMONA

prod.info

SIMONA® PP

September 2012



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1 Introduction

SIMONA® PP Semi-Finished Parts are manufactured from high-molecular-weight, isotactic homopolymer. The individual molecular chains of the polypropylene contain up to 20,000 monomer units. The special feature of polypropylene is its CH₃ group (methyl side group) in the monomeric unit. During polymerisation the latter can be arranged in different ways. A distinction is made between

- isotactic polypropylene:
regular unilateral arrangement of the CH₃ groups
- syndiotactic polypropylene:
regular but bilateral arrangement of the CH₃ groups
- atactic polypropylene:
the CH₃ groups do not follow any rule in terms of position relative to the main chain.

For technical applications, isotactic PP is the material of choice because increasing isotacticity coincides with a higher melting point, tensile strength, rigidity and hardness. In addition, due to the regular structure of the chains, the generation of crystalline areas is promoted. Their proportion is 50 % – 60 %. SIMONA® PP-DWU AlphaPlus® and SIMONA® PP-DWST Semi-Finished Parts are therefore made of isotactic polypropylene. SIMONA® PP-C is a block copolymer with constituents made of isotactic polypropylene and polyethylene with a high level of crystallinity. Syndiotactic and atactic products have so far been of no significance in technical applications. SIMONA® PPs is a low-flammability PP.

1.1 Properties of SIMONA® PP Semi-Finished Parts

1.1.1 Polymerisation types of polypropylene

Among PP materials a distinction is made between homopolymers and copolymers.

In the case of the former, only propylene monomers are interlinked in polymerisation, whilst in the case of copolymers other substances such as olefins, mainly polyethylene, are also incorporated in order to give the material the required impact strength. Hardness, rigidity and yield stress decrease.

In the case of SIMONA® PP-C, the materials are so-called block copolymers (PP-B). In this context, PE constituents are incorporated in the PP chain. It is thus possible to obtain flexible chain links that are responsible for the favourable behaviour of the material even at low temperatures.

The mechanical properties of PP-C are between those of PP-H and PE, with a significant increase in notched impact strength.

In tank calculations for solid thermoplastic design the increased “softness” of PP-C must be taken into account. Please also refer to section 3.12 “Comparison of physical properties”.

1.1.2 General information

SIMONA® PP Semi-Finished Parts have a number of outstanding properties:

- Low density (compared to other materials)
- High chemical resistance, even to solvents
- High corrosion resistance
- Extreme surface hardness
- Long service life
- Physiological safety
- Very low water absorption
- Excellent electrical insulation properties
- Good fabrication and processing capability
- Universal application

1.1.3 Special modifications

Other PP materials from the SIMONA® range:

For laboratory and apparatus construction

- SIMONA® PP-C (block copolymer)
Increased impact strength even at low temperatures
- SIMONA® PPs
Classified as a B1 low-flammability construction material according to DIN 4102 Part 1
- SIMONA® PP-DW-CU
Chemical resistance to metallic copper and hot copper salt solutions
- SIMONA® PP-TV 10/-TV 20/-TV 30/-TV 40
Filled with 10, 20, 30 or 40 % talcum; greater rigidity even at high temperatures
- SIMONA® PP-DWU-SK AlphaPlus®
Polyester-backed to serve as an adhesion system for composite construction
- SIMONA® PP-EL
Surface resistivity < 10⁶ ohms; electrically conductive (see prod.info "Electrically Conductive Plastics")

Antistatic

This property varies considerably depending on relative humidity.

- SIMONA® PP-AS
Surface resistivity approx. 10⁹ – 10¹² ohms
- SIMONA® PP-C AS
Surface resistivity approx. 10¹⁴ ohms

Surface-treated

- SIMONA® PP embossed
With embossed surface on one side

For tank construction requiring mandatory test certificates

- SIMONA® PP-DWU AlphaPlus®
Alpha-nucleated, made of DIBt-approved moulding compound

1.1.4 Alpha nucleation

SIMONA® PP-DWU AlphaPlus® is currently the only alpha-nucleated compound registered with the DIBt (Deutsches Institut für Bautechnik Berlin). As part of the official approval process, the company is required to furnish extensive documentation relating to the quality of the raw material and the actual semi-finished parts manufactured therefrom. The approval procedures include far-reaching QA tests, which are conducted as part of the relevant inspection plans. What is more, the provisions stipulate external monitoring by an independent, certified testing laboratory. SIMONA® PP-DWU AlphaPlus® also offers the following benefits:

- Fine and stable crystalline structure
- Superior notched impact strength and enhanced rigidity
- Excellent welding properties
- Longer service life
- Improved chemical resistance and superior stress crack resistance

1.2 Applications for SIMONA® PP Semi-Finished Parts

Use is to be recommended wherever high chemical resistance is required up to an upper temperature limit of +100 °C.

Apparatus, equipment, machines

- Drainage channels
- Extraction systems
- Drip pans
- Battery cells
- Pickling baths
- Chemical piping
- Fans
- Filling systems

Construction industry

- Concrete moulds
- Formwork for special-purpose concrete
- Radiator guards
- Items made of artificial marble
- Washbasins

Storage systems

- Sorting boxes
- Transport pallets
- Packaging elements
- Toolboxes
- Shelves








Uses where physiological safety is required

- Moulds, e. g. for ice cream, chocolate, cheese
- Cages for small animals
- Kitchen utensils
- Prostheses and orthotic devices
- Sterilisation equipment
- Tableware for keeping food hot (thermosets)
- Water desalination systems

2 Product range

2.1 Semi-finished parts PP

Dimensions in mm, unless otherwise stated








		SIMONA® PP-DWU AlphaPlus®	SIMONA® PP-DWST	SIMONA® PPs	SIMONA® PP-C
Extruded sheets (size/thickness)					
	2,000 x 1,000	0.8 – 50	0.8 – 50	1.5 – 30	
	2,440 x 1,220			2 – 20	3 – 15
	3,000 x 1,500	1.5 – 40	1.5 – 30	2 – 20	3 – 15
	4,000 x 2,000	2 – 50	3 – 50	3 – 20	
	Colours	grey	natural	grey, white	natural, black, grey, white
Pressed sheets (size/thickness)					
	2,000 x 1,000	10 – 200	10 – 200	10 – 150	10 – 150
	4,120 x 2,010	10 – 150	10 – 150	10 – 100	10 – 150
	6,200 x 2,010	15 – 80	15 – 80	15 – 80	15 – 80
	Colours	grey	natural	grey	natural, grey
Twin-wall sheets (size/thickness)					
	3,000 x 1,000	54, 58		54	
	Colours	grey		grey	
Welding rods					
	Types	○▽▽▽○∞	○▽▽	○▽▽	○▽▽▽
	Thicknesses	3 – 7	3 – 5	3 – 5	3 – 7
	Colours	grey	natural	grey, white	natural, grey
Solid rods (length/diameter)					
	1,000	8 – 800	8 – 800		
	2,000	8 – 500	8 – 500		
	4 ft ~ 1,220		6 – 14"		
	6 ft ~ 1,830		2 1/4 – 5 1/2"		
	8 ft ~ 2,440		1/4 – 2"		
	Colours	grey	natural		
Profiles (length: 5000)					
	U-profile (W x H x s)	48 x 46 x 3.5			
		49 x 67 x 4.0			
		49 x 72 x 4.0			
		49 x 112 x 4.0			
		49 x 132 x 4.0			
		69 x 92 x 4.0			
		69 x 134 x 4.0			
		90 x 92 x 4.0			
		92 x 155 x 5.0			
	Colours	grey			
	Square pipes (W x H x s)	35 x 35 x 3.0			
		35 x 35 x 4.0			
		50 x 50 x 4.0			
		50 x 50 x 6.0			
	Colours	grey			

The sizes specified are standard sizes. Other sizes, thicknesses and colours available on request.

○▽▽▽▽○∞ : round, triangular TA 90, triangular TA 80, three-core, oval, two-core

2.2 Pipes, fittings and valves PP

Diameters in mm, unless otherwise stated

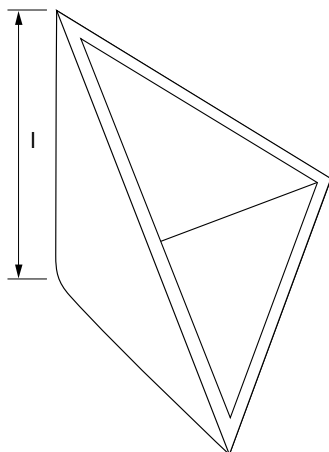
		SIMONA® PP-H AlphaPlus®^①	SIMONA® PPs
Pipes			
	Pressure pipes	10 – 1,000	20 – 400
	Ventilation pipes	200 – 800	32 – 800 ^②
Fittings with short spigots for butt welding			
	Bends 90°, injection-moulded	20 – 400	20 – 400
	Stub flanges, injection-moulded/machined	20 – 1,000	20 – 400
	Tees, injection-moulded	20 – 500	20 – 400
	Tees with reduced branch, injection-moulded	90/32 – 250/160	
	Reducers, concentric, injection-moulded/machined	25/20 – 800/710	25/20 – 400/355
	End caps, machined	250 – 800	
	Thread sockets, thread plugs	25 – 95	
Fittings with elongated spigots for IR/butt welding			
	Elbows 90°, 45°, injection-moulded	20 – 315	
	Bends 90°, injection-moulded	20 – 315	
	Bends 90°, 60°, 45°, 30°, seamless	90 – 315	
	Bends 90°, 60°, 45°, 30°, welded	90 – 800	
	Stub flanges, injection-moulded	20 – 315	
	Tees, injection-moulded/welded	20 – 1,000	
	Tees with reduced branch, welded	63/50 – 630/400	
	Branches 45°, injection-moulded	63 – 110	
	Reducers, eccentric, injection-moulded	25/20 – 250/225	
	End caps, injection-moulded	20 – 400	
	Unions, adaptors	20 – 63	
Fittings for socket welding			
	Elbows, tees, stub flanges, sockets, reducers, end caps, unions, adaptors	20 – 110	
Electrofusion fittings/Special fittings			
	Electrofusion sockets	20 – 315	
	Double-containment piping systems, shafts, inspection tees, etc.	on request	
Flanges			
	PP/steel loose flanges, blind flanges, full-face flanges, profiled loose flanges, special flange assemblies, gaskets, accessories	20 – 630	
Valves			
	2-way ball valves	20 – 75	
	Diaphragm valves, sediment strainers	20 – 75	
	Butterfly valves	50 – 315	
	Ball check valves	20 – 63	

The dimensions specified are based on technical production capabilities.

① For operational reasons, certain dimensions are produced in PP-R.

② Complete system available for ventilation pipes, e.g. bends, tees, flange adaptors, butterfly valves, air exit ducts and sleeves made of PPs, PP-EL-s and PE-EL.

2.3 SIMONA® Tank Corners



SIMONA® Tank Corners are a versatile solution for structural applications as well as repair purposes.

SIMONA® PE-HD Tank Corners, black

Wall thickness mm	Edge Length l mm	Weight kg/pce	PU pce
5	150	0.15	4
8	150	0.23	4
10	150	0.28	4

PU = packaging unit

SIMONA® PE-H Tank Corners, grey

Wall thickness mm	Edge Length l mm	Weight kg/pce	PU pce
5	150	0.15	4
8	150	0.22	4
10	150	0.27	4

PU = packaging unit

2.4 SIMONA® Scrapers



SIMONA® Scrapers are an indispensable tool within the area of high-quality hot-gas welding.

Examples of weld structure in accordance with DVS, angle of 60° (single V)

Sheet thickness mm	Welding rod Quantity x diameter in mm
2	1 x 4
3	3 x 3
4	1 x 3, 2 x 4
5	6 x 3

3 Technical information

3.1 Material specifications

		SIMONA® PP-DWU AlphaPlus®	SIMONA® PP-DWST	SIMONA® PPs	SIMONA® PP-C
Technical data					
Density, g/cm ³ , DIN EN ISO 1183		0.915	0.905	0.950	0.910
Yield stress, MPa, DIN EN ISO 527		33	32	32	26
Elongation at yield, %, DIN EN ISO 527		8	8	8	7
Tensile modulus of elasticity, MPa, DIN EN ISO 527		1,700	1,400	1,600	1,200
Impact strength, kJ/m ² , DIN EN ISO 179		no break	no break	no break	no break
Notched impact strength, kJ/m ² , DIN EN ISO 179		9	7	6	45
Ball indentation hardness, MPa, DIN EN ISO 2039-1		70	70	70	50
Shore hardness D, DIN EN ISO 868		72	70	72	67
Mean coefficient of linear thermal expansion, K ⁻¹ , DIN 53752		1.6 x 10 ⁻⁴	1.6 x 10 ⁻⁴	1.6 x 10 ⁻⁴	1.6 x 10 ⁻⁴
Thermal conductivity, W/m · K, DIN 52612		0.22	0.22	0.22	0.22
Fire behaviour, DIN 4102		normal flammability	normal flammability	low flammability 2 to 20 mm ^①	normal flammability
Dielectric strength, kV/mm, DIN IEC 60243-1		52	58	22	52
Specific surface resistance, Ohm, IEC 60093		10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴
Volume resistivity (annular electrode), Ohm · cm, DIN 53482		> 10 ¹⁶	> 10 ¹⁶	> 10 ¹⁶	> 10 ¹⁶
Tracking resistance (KC method), V, DIN 53480		> 600	> 600	> 600	> 600
Permittivity, DIN 53483	at 300 – 1,000 Hz	2.3	2.1	2.3	2.3
	at 3 · 10 ⁵ Hz	2.2	2.2	2.2	2.2
Dielectric loss factor, DIN 53483	at 300 Hz	< 3 x 10 ⁻⁴	3 x 10 ⁻⁴	< 3 x 10 ⁻⁴	< 3 x 10 ⁻⁴
	at 1,000 Hz	5 x 10 ⁻⁴	3 x 10 ⁻⁴	5 x 10 ⁻⁴	5 x 10 ⁻⁴
	at 3 · 10 ⁵ Hz	< 3 x 10 ⁻⁴	3 x 10 ⁻⁴	< 3 x 10 ⁻⁴	< 3 x 10 ⁻⁴
Crystalline melting range (calorimetric), K (°C), DIN 52328		433 – 438 (160 – 165)	433 – 438 (160 – 165)	433 – 438 (160 – 165)	433 – 438 (160 – 165)
Temperature range, °C		0 to +100	0 to +100	0 to +100	-20 to +80
Chemical resistance		excellent in contact with many acids, alkalis and solvents			
Physiologically safe	BfR	✓	✓		✓
	EU	✓	✓		
	FDA	✓	✓		✓

① Test certificate available

The figures are approximate and may vary depending on fabrication processes and how test specimens are made. In general, data specified applies to average values measured on extruded sheets with a thickness of 4 mm. In the case of sheets manufactured by means of pressing, testing is generally performed on sheets with a thickness of 20 mm. Deviations from the values specified are possible if the sheets in this thickness are not available. Please note that this information is not necessarily applicable to products that have undergone downstream processing. The suitability of a material for a specific area of application must be checked by the processor or end user. All technical specifications presented herein are designed merely to provide assistance in terms of project planning. They do not constitute a guarantee of specific properties or qualities.

3.2 Fire behaviour

SIMONA® PP-DWU AlphaPlus®, PP-DWST and PP-C are normal-flammability construction materials in accordance with DIN 4102 B2. PPs is categorised as a low-flammability material in accordance with DIN 4102 B1.

- Auto-ignition temperature approx. 350 °C
- Oxygen index approx. 18 % (minimum oxygen concentration required for combustion)

Please refer to Section 7 for the EC Safety Data Sheet.

3.3 Performance in outdoor use

SIMONA® PP-DWU AlphaPlus®, PP-DWST, PP-C and PPs are not generally designed for outdoor use. As regards PP-DWU AlphaPlus®, however, experience relating to outdoor use over several years – without any mechanical stress – has been favourable.

Like all high-polymer materials, polypropylene is damaged by interaction between atmospheric oxygen and ultraviolet radiation. Uncoloured materials are at greater risk than pigmented ones. Discolouration can occur in the course of use, which is usually accompanied by a change in mechanical properties.

The overall service life for outdoor applications can be extended with additional UV absorbers (SIMONA® PP-UV and SIMONA® PP-C-UV).

3.4 Physiological safety

According to Recommendation III by the German “Federal Institute for Risk Assessment” (BfR, previously BgVV) there are no reservations about using the SIMONA® PP Semi-Finished Parts for manufacturing commodities as defined by Section 2, paragraph 6, no. 1 of the German Food, Commodities and Feedstuffs Act (LFGB, in the version published 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.

3.5 Chemical resistance

Owing to the non-polar nature of SIMONA® PP-DWU AlphaPlus®, PP-DWST, PP-C and PPs, these thermoplastics display 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 operational 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 weld seams.

For detailed information, please refer to our SIMCHEM database on chemical resistance (www.simchem.de).

3.6 Water absorption

SIMONA® PP-DWU AlphaPlus®, PP-DWST, PP-C and PPs absorb negligible quantities of water. Therefore, they do not swell when immersed in water.

3.7 Temperature range

The service temperature ranges of SIMONA® PP Semi-Finished Parts are as follows*:

Temperature ranges

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

Due to their molecular structure, SIMONA® PP-DWU AlphaPlus® and PP-DWST have a high level of rigidity even in the upper temperature range.

For the copolymer SIMONA® PP-C the service temperatures are between –20 °C and +80 °C. The material can be exposed to brief thermal stress up to 90 °C without sustaining any significant damage.

3.8 Resistance to microorganisms

SIMONA® PP-DWU AlphaPlus®, PP-DWST, PP-C and PPs do not constitute a source of nutrition for:

- Microorganisms
- Bacteria
- Fungi
- Spores
- Gnawing insects

3.9 Health aspects

As far as its chemical composition is concerned, PP essentially only contains carbon and hydrogen. During combustion – provided there is a supply of atmospheric oxygen – carbon dioxide, carbon monoxide and water are virtually the only substances to be produced, accompanied by very small quantities of soot and low-molecular-weight volumes of the respective plastics. The ratio of carbon dioxide to carbon monoxide depends largely on the circumstances of combustion – temperature, ventilation and an unobstructed supply of atmospheric oxygen. Consequently, the combustion fumes that develop resemble those of stearin (candle wax).

The general debate about the toxicity of fumes from burning plastics often fails to mention that all combustion fumes have a toxic effect. Therefore, any claim that plastics exposed to fire develop particularly toxic gases is incorrect.

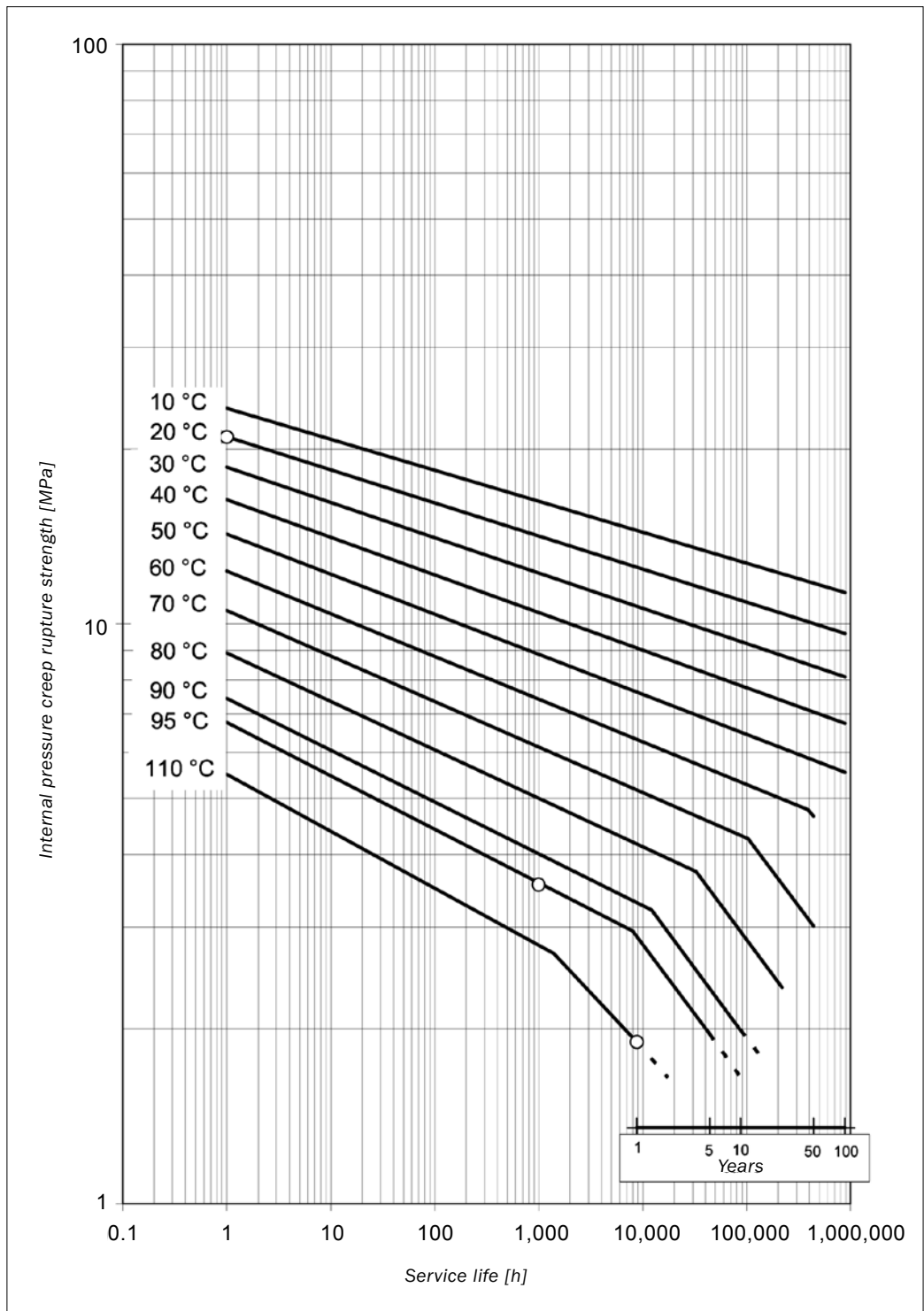
The most suitable extinguishment to combat burning PP is water.

3.10 Tank construction requiring mandatory test certificates

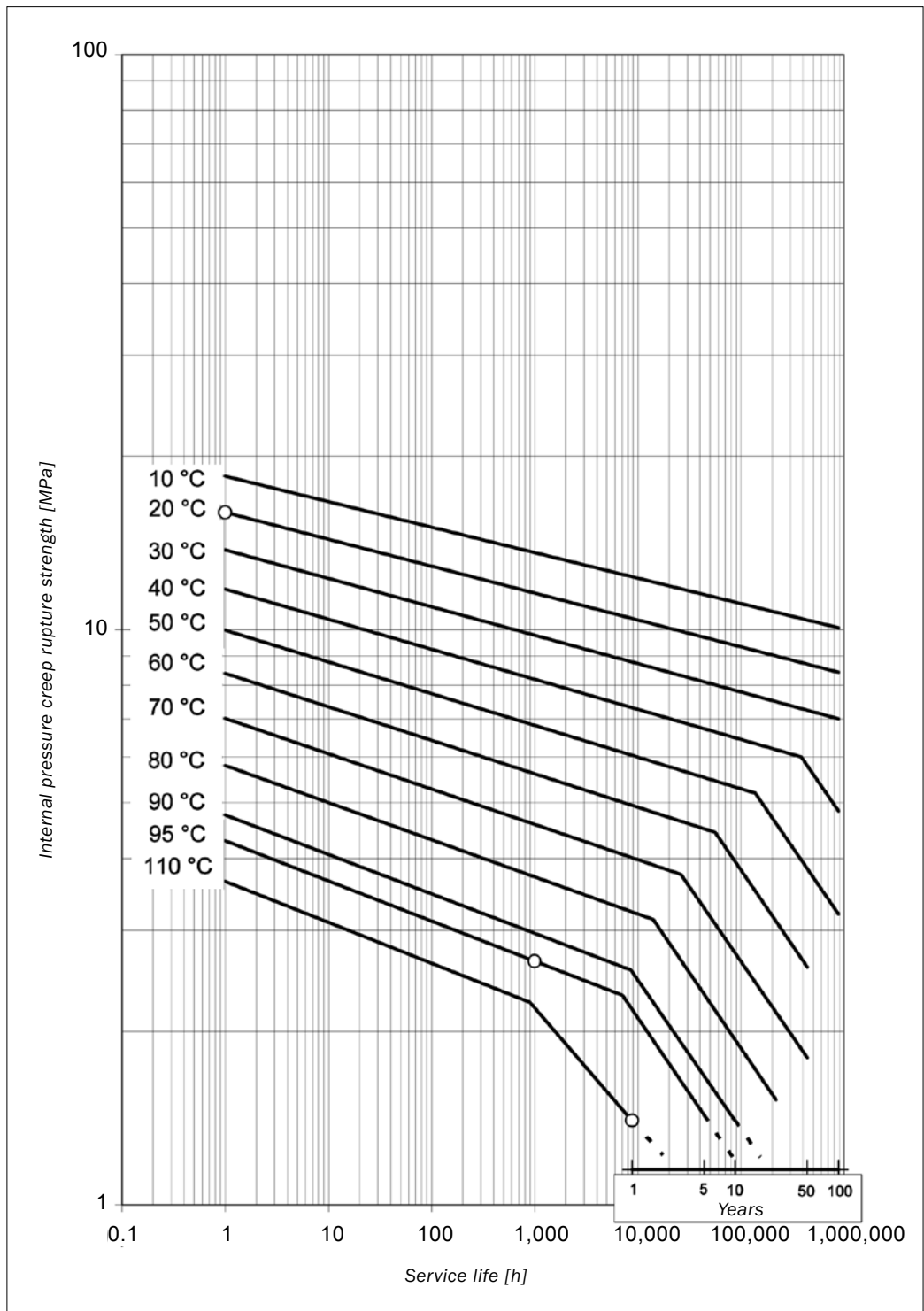
SIMONA® PP-DWU AlphaPlus® and PP-DWU-B have been approved by the German Institute of Building Technology (DIBt) in Berlin for use in tank construction requiring mandatory test certificates.

On the following pages you will find the creep strength data required by DIN 8078 for PP homopolymer and copolymer when calculating tanks and components in accordance with DVS Guideline 2205 Part 1. With the aid of this creep curve it is possible to determine the amount of stress for a specified service life and service temperature.

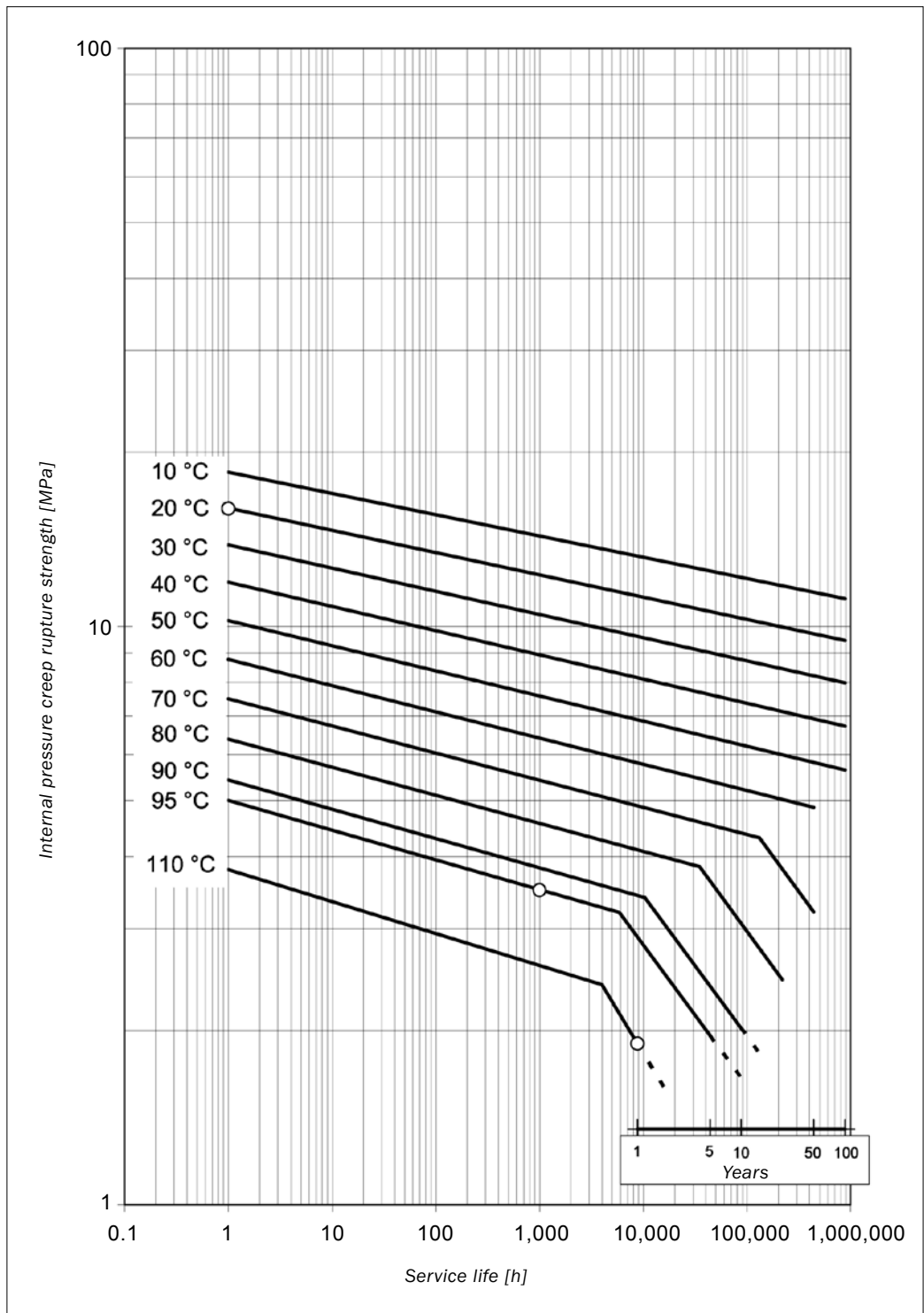
However, the levels of stress that have been calculated in this way do not take into account the actual loads in practice, which are caused by more or less aggressive media and welding methods. These must then be determined separately (see also DVS Guideline 2205 Part 1, Media Lists of the German Institute of Building Technology, Berlin).



Reference characteristics of internal pressure creep rupture strength (minimum curves) for pipes made of PP-H



Reference characteristics of internal pressure creep rupture strength (minimum curves) for pipes made of PP-B



Reference characteristics of internal pressure creep rupture strength (minimum curves) for pipes made of PP-R

3.11 Composite construction and tank lining

We have many years of experience in supplying backed sheets made of homopolymeric polypropylene for use in the field of composite construction and tank lining. The standard product SIMONA® PP-DWU-SK AlphaPlus® is provided with a thermoplastic polyester fabric that can stretch three-dimensionally. Our product range also includes the following liner materials:

- SIMONA® PP-DWU-GK AlphaPlus®
- SIMONA® PP-C-PK
- SIMONA® PP-C-SK
- SIMONA® PP-C-GK

Used as a liner, this material provides benefits in processing and application improvements:

- Removal of the backing for welding seam preparation is not required because the PP fabric is also melted by warming so it cannot have any negative effect on the quality of the seam
- Greater flexibility than with PP-H facilitates joining to curved steel surfaces
- Sheets and backing have the same chemical resistance
- PP backing is insensitive to hydrolysis

You will find more information on SIMONA® liner materials in the work.info “Lining and Composite Construction”.

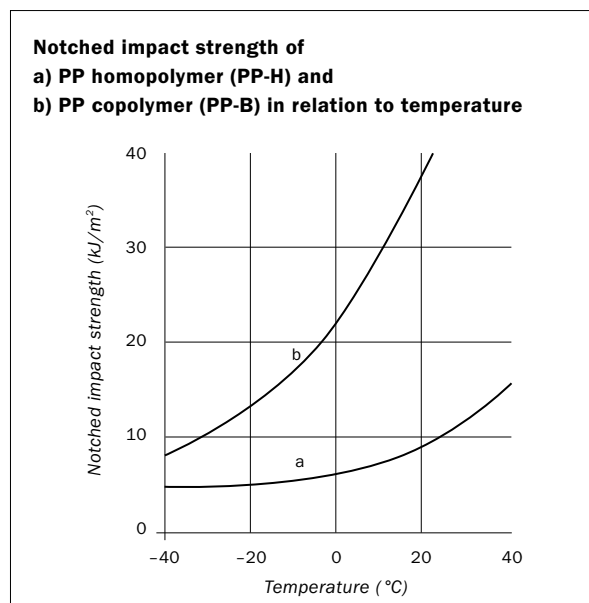
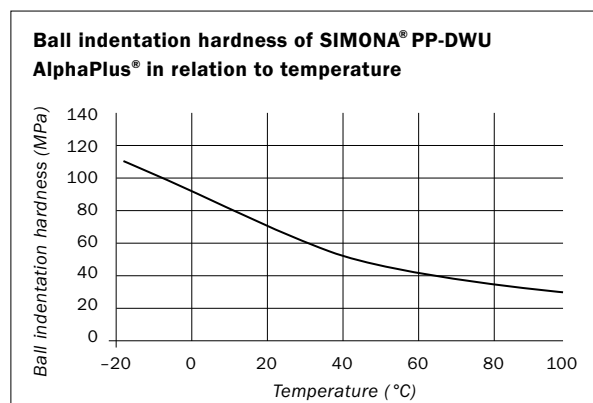
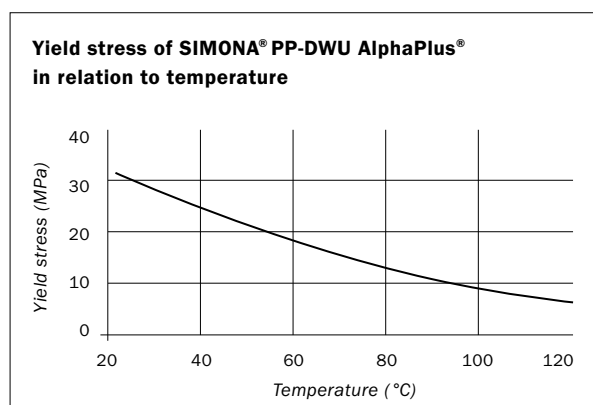
3.12 Comparison of physical properties

This section provides a comparison of the key properties of homopolymers and copolymers of polypropylene.

Comparison of material properties

	SIMONA® PP-DWU AlphaPlus®	SIMONA® PP-DWST	SIMONA® PPs	SIMONA® PP-C
Density, g/cm ³	0.915	0.905	0.950	0.910
Yield stress, MPa	33	32	32	26
Tensile modulus of elasticity, MPa	1,700	1,400	1,600	1,200
Notched impact strength, kJ/m ²	9	7	6	45
Temperature range, °C	from 0 to +100	from 0 to +100	from 0 to +100	from -20 to +80

The following diagrams show mechanical behaviour as a function of temperature, illustrating the high mechanical standard even in the upper temperature range.



4 Processing information

For further information on processing, please refer to our work.infos:

- Welding
- Thermoforming, Vacuum Forming, Deep-drawing, Hot-forming, Bending
- Machining
- Adhesive Bonding
- Lining and Composite Construction

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5 Storage

General information on how to store SIMONA® Semi-Finished Plastic Parts

- SIMONA® Semi-Finished Plastic Parts should always be stored in a building devoid of moisture, sudden temperature fluctuations and direct sunlight.
- Packaging straps should, where possible, be loosened after transport. If the packaging is new, steel straps should preferably not be used.
- Exposure to a heat source from one side should be avoided.
- PVC products, welding rods and electrically conductive plastics should be protected against moisture.
- Non-UV-stabilised materials should be protected against direct sunlight.
- For storage, it is advisable to use plastic film to protect against dust.
- Sheet products should be stored on a sturdy, flat pallet that provides ample support and is at least as large as the size of the sheet. Single sheets should be stored horizontally.
- A liner (made of cardboard for example) placed between the pallet and the semi-finished plastic parts is recommended.
- If a block of pallets is assembled one on top of the other, we recommend placing a pallet upside down in between in order to improve load distribution.
- Special caution is required with blocks if the sheets are thin and/or foamed material is being stored.

Under such conditions long-term storage of SIMONA® Semi-Finished Plastic Parts will be no problem.

6 Legal note and advice

Legal note

Upon publication of a new edition all previous editions shall become void. The authoritative version of this publication can be found on our website at www.simona.de.

All information furnished in this publication reflects our current scope of knowledge on the date of publication and is designed to provide details of our products and potential fields of application (errors and omissions excepted, including typographical mistakes). This shall not be deemed as constituting the provision of legally binding guarantees or warranties as to specific properties of the products or their suitability for specific areas of application.

We shall assume no liability for the application, utilisation, processing or other use of this information or of our products. Furthermore, we shall assume no liability for any consequences related thereto. The purchaser is obliged to examine the quality and properties of these products; he shall be responsible in full for selecting, applying, utilising and processing said products as well as applying any information relating thereto, which shall also include all consequences associated with such actions. Third-party property rights shall be observed accordingly.

We provide warranty for the faultless quality of our products within the framework of our Standard Terms and Conditions of Sale.

Advice

Our applied technical advice is given according to our best knowledge and is based on the information you have provided and the state of the art known to us at the time such advice is furnished. The advice shall not constitute a guarantee or warranty of specific characteristics or qualities and shall not establish an independent contractual legal relationship.

We are only liable for intent or gross negligence. Any information provided by us shall not release you from your obligation to conduct your own assessments and evaluations.

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

Our sales staff and members of the Technical Service Center look forward to advising you on all issues relating to the processing and application of semi-finished thermoplastics.

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7 EC Safety Data Sheet (page 1)

in accordance with 1907/2006/EC Article 31

Trade names: **SIMONA® PP-DWU AlphaPlus®, PP-DWST, PPs, PP-C**

1. Identification of substance/preparation and company

- Manufacturer details:
SIMONA AG
Teichweg 16
D-55606 Kirn
Phone +49 (0) 67 52 14-0
Fax +49 (0) 67 52 14-211

2. Hazards identification

- none known

3. Composition/information on ingredients

- Chemical characteristics:
 - Polymer of propylene (PP-DWU AlphaPlus®, PP-DWST)
 - Polymer of propylene with flame retardant finish (PPs)
 - Copolymer of propylene (PP-C)
- CAS number: not required

4. First-aid measures

- General information: no medical aid required
- First-aid measures: none
- Routes of exposure: none
- Symptoms/effects: none

5. Fire-fighting measures

- Suitable extinguishing media:
water mist, foam, fire extinguishing powder, carbon dioxide
- Hazard warning notice: not applicable

6. Accidental release measures

- Person-related measures: none
- Environmental protection measures:
not applicable
- Cleaning equipment:
not applicable
- Unsuitable cleaning products:
not applicable

7. Handling and storage

- Handling: no special regulations to be observed
- Storage: storage for an unlimited period

8. Exposure controls/personal protection

- Special design of technical processing systems:
not required
- Exposure limit values: none
- Exposure measurement procedures: none
- Respiratory protection: not required
- Eye protection: not required
- Body protection: not required

7 EC Safety Data Sheet (page 2)

in accordance with 1907/2006/EC Article 31

Trade names: **SIMONA® PP-DWU AlphaPlus®, PP-DWST, PPs, PP-C**

9. Physical and chemical properties

	PP-DWU AlphaPlus®	PP-DWST	PPs	PP-C
Appearance	solid state, semi-finished part	solid state, semi-finished part	solid state, semi-finished part	solid state, semi-finished part
Colour	grey	natural	white, grey	grey, natural, black, white
Odour	not applicable	not applicable	not applicable	not applicable
Crystalline melting range	160 – 165 °C	160 – 165 °C	160 – 165 °C	160 – 164 °C
Flash point	not applicable	not applicable	not applicable	not applicable
Density	0.915 g/cm³	0.905 g/cm³	0.950 g/cm³	0.910 g/cm³

10. Stability and reactivity

- Thermal decomposition: above approx. 300 °C
- Hazardous decomposition products:
Combustion is accompanied not only by soot but also by carbon dioxide, water and low-molecular-weight constituents of the PP; carbon monoxide may be produced if combustion is incomplete; PPs also develops hydrogen halide at excessively high temperatures
- Use of stabilisers: none
- Exothermic reactions: none
- Notices regarding the physical form: none
- Conditions to be avoided: none
- Substances/media to be avoided: none

11. Toxicological information

During extensive use of this product over many years there have been no reports of any harm to health.

12. Ecological information

Non-biodegradable, insoluble in water, no detrimental effects on the environment are to be expected.

- Mobility: not applicable
- Accumulation: not applicable
- Eco-toxicity: not applicable

13. Disposal considerations

Can be recycled or disposed of with household refuse (observe local regulations).

- Waste code for unused product: EWC Code 120 105
- Designation of waste: polyolefin waste

14. Transport information

No hazardous product as defined by transport regulations.

- Notice/symbol transport containers: none
- Special marking for containers: none

15. Regulatory information

- Labelling according to GefStoffV/EC:
no labelling obligation
- Water pollution classification:
Class 0 (self-classification)
- Specific national requirements: none

16. Other information

This information solely describes the safety requirements of the product(s) and is based on our current state of knowledge. It does not give any assurance concerning the product(s) described within the meaning of statutory warranty regulations.

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