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Product Information

PP-DWU / PP-DWST / PP-C

08/95

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8/95 d

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This product information replaces all former editions.

## 1. General information

SIMONA® PP-semi-finished products are produced from a high-molecular, isotactic homopolymer. The individual linear molecular chains contain up to 20,000 monomer units. The special feature of the polypropylene is a CH<sub>3</sub>-group (methyl arm group) in the monomer element. This group can, in the course of polymerisation, be arranged spatially different. In this connection one distinguishes between

- isotactic polypropylene  
regular one-sided arrangement of the CH<sub>3</sub>-groups
- syndiotactic polypropylene  
regular, but double-sided arrangement of the CH<sub>3</sub>-groups
- atactic polypropylene  
the CH<sub>3</sub>-groups follow no rule regarding their spatial arrangement with regard to the main chain

For the technical application the isotactic PP has priority, as with increasing isotacticity there is an increase in melting point, tensile stability, rigidity, and hardness. In addition the creation of crystalline areas is supported by the regular building-up of the chains. The part of the crystalline areas amounts to 50 — 60 %. For this reason SIMONA® PP-DWU/DWST semi-finished products consist of isotactic polypropylene. SIMONA® PP-C is a block copolymer with a high crystallinity consisting of chain sections of isotactic polypropylene and polyethylene. Syndiotactic and atactic polypropylenes did not obtain any technical meaning yet.

### 1.1 Polymerisation grades of polypropylene

PP-materials are distinguished between

homopolymeride and  
copolymeride.

With respect to the first mentioned, only monomers of polypropylene are connected during polymerisation, whereas also other substances, e. g. olefines - preferably polyethylene - are added to the copolymer in order to provide the material with the required higher tenacity consequently. Hardness, stiffness and yield stress are reduced.

SIMONA® PP-C is a so-called block copolymer (PP-B), where PE parts are linked to the PP chain, thereby obtaining more flexible chain links. This results in favourable characteristics of the material even at lower temperatures.

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

However, particular attention has to be paid to the elevated „softness“ of PP-C, especially when designing tanks in an all-plastics structure. Please also observe point 3.9 „Comparison of physical properties of PP-DWU and PP-C“.

## **1.2 Characteristic properties**

- low density (as compared with other materials)
- high chemical resistance, also against solvents
- high corrosion resistance
- high surface hardness
- long life span
- suitable for contact with foodstuff
- very low water absorption
- very good electrical insulation properties
- good processing properties
- universal application

Special products/fabrications may vary in some points depending on application or processing.

## **1.3 Examples of application**

The application is recommended wherever a high chemical resistance up to an upper temperature limit of +100 °C is required.

### **Apparatus, devices, machines**

drainage channels  
extraction systems  
drip pans  
battery cells  
etching baths  
chemical pipes  
fans  
bottling plants

### **Construction industry**

concrete moulds  
shuttering for special concrete  
radiator covers  
artificial marble moulds  
washbasins

### **Storage techniques**

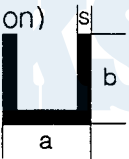
assortment boxes  
transport pallettes  
packing elements  
tool boxes  
intermediate bottoms

**Uses where physiological safety is required**

moulds, e. g. for icecream, chocolate, cheese  
cages for small animals  
kitchen utensils  
protheses and ortheses  
sterilising equipment  
heating equipment (thermosets)  
water deionisation equipment

## 2. Delivery programme

### 2.1 Sizes and dimensions

|   | <b>SIMONA®<br/>PP-DWU</b>  | <b>SIMONA®<br/>PP-DWST</b>    | <b>SIMONA®<br/>PP-C</b>                             |
|---|--|-------------------------------|---|
| Standard colours<br>other colours possible  | beige-grey<br>no   | natural<br>yes                | beige-grey<br>yes                                   |
|   | sheet thickness in mm  |                               |   |
| <b>Extruded sheets</b><br>Size 2000 x 1000 mm<br>3000 x 1500 mm<br>4000 x 2000 mm   | 0,5 - 40<br>2 - 30<br>6 - 20   | 0,5 - 40<br>2 - 25<br>—       | 0,9 - 12 <sup>1)</sup><br>2 - 12 <sup>1)</sup><br>— |
| <b>Pressed sheets</b><br>Size 2000 x 1000 mm<br>4120 x 2010 mm  | 10 - 200<br>15 - 80  | 10 - 120<br>15 - 70           | 15 - 80 <sup>1)</sup><br>15 - 80 <sup>1)</sup>      |
| <b>Laminated sheets</b><br>Size 2000 x 1000 mm<br>3000 x 1500 mm<br>Merchandise on rolls  | 3 <sup>2)</sup> - 5<br>3 <sup>2)</sup> - 5<br>3                              | —<br>—<br>—                   | 3 <sup>3)</sup> - 5<br>3 <sup>3)</sup> - 5<br>—     |
|   | diameter in mm   |                               |   |
| <b>Welding wires</b><br>Round wires<br>Triangular 90°<br>Three-barrel   | 3 - 5<br>5 - 7<br>5  | 3 - 4<br>—<br>5 <sup>1)</sup> | 3 - 5<br>3 - 5 <sup>1)</sup><br>5 <sup>1)</sup>     |
| <b>Solid rods</b>   | 8 - 500  | 8 - 500                       | —   |
| <b>Pipes</b>  | 10 - 1000  | —                             | 32 - 315 <sup>4)</sup>                              |
| <b>Square pipes</b>   | 35 x 35 x 3 mm<br>50 x 50 x 4 mm   | —<br>—                        | —<br>—  |
| <b>U-profile</b><br>(outside dimension)<br>Length: 5 m<br> | a x b x s mm<br>46 x 48 x 3,5<br>48 x 67 x 4<br>49 x 112 x 4<br>69 x 132 x 4 | —<br>—                        | —<br>—  |

<sup>1)</sup> no stock item

<sup>2)</sup> SK: polyester backed  
<sup>3)</sup> PK: polypropylene backed  
Other dimensions on request

<sup>4)</sup> Liner pipes

## **2.2 Moulding materials of special modifications**

Further PP-materials of the SIMONA programme:

### **For the production of laboratories and apparatus**

SIMONA® PP-C (block copolymer; the expression in accordance with DIN 16 774 is PP-B)

increased impact resistance also at lower temperatures

SIMONA® PPs (see product information „SIMONA® PPs“)

classified as flame retardant material, class B1, according to DIN 4102 part 1

SIMONA® PP-DWST-CU (natural)

chemical resistance against metallic copper and hot cuprous salt solutions

SIMONA® PP-TV 10/ -TV 20/ -TV 30/ -TV 40

filled with 10, 20, 30 or 40 % talcum; increased rigidity at higher temperatures

SIMONA® PP-DWU-SK (see product information „sandwich construction“)

with cloth lamination as coupling system for sandwich construction

**Electrically conductive** (see product information „Electrically conductive plastics“)

SIMONA® PP-EL

surface resistance  $\leq 10^5$  Ohm

SIMONA® PP-FL-EL

flame retardant, surface resistance  $\leq 10^5$  Ohm

### **Antistatic**

The property distincts differently depending on the relative atmospheric humidity.

SIMONA® PP-AS

surface resistance about  $10^9 - 10^{11}$  Ohm

SIMONA® PPs-AS

flame retardant, surface resistance about  $10^{10} - 10^{11}$  Ohm

**Decorative**

SIMONA® PP grained  
surface grained on one side

SIMONA® PP-C-Simocart  
surface fine-grained on one side

**For outdoor use**

SIMONA® PP-DWU-UV  
with additional UV absorbers

**For tank construction requiring a test mark**

SIMONA® PP-DWU/DWU-B — SIMONA® PP-DWU-SK/DWU-B-SK  
SIMONA® PP-C / C-PK  
produced out of moulding material authorized by the Institut für Bautechnik (IfBt),  
Berlin, for the construction of tanks according to the building and testing  
conditions.

### 3. Technical information

#### 3.1 Materials values

|  | Test method<br>DIN | Unit              | SIMONA*<br>PP-DWST   | SIMONA*<br>PP-DWU  | SIMONA*<br>PP-C  |
|--|--------------------|-------------------|--|--|--|
| Density, (method C)  | 53479              | g/cm <sup>3</sup> | 0,90   | 0,91   | 0,92   |
| Yield stress,<br>(Test specimen 3)   | 53455              | N/mm <sup>2</sup> | 30   | 32   | 26   |
| Elongation at yield stress   | 53455              | %                 | 8  | 8  | 35   |
| Elongation at tear   | 53455              | %                 | 70   | 70   | 250  |
| Tensile-E-module   | 53457              | N/mm <sup>2</sup> | 1400   | 1400   | 1000   |
| Impact strength  | 53453              | kJ/m <sup>2</sup> | without break  | without break  | without break  |
| Notched impact strength  | 53453              | kJ/m <sup>2</sup> | 7  | 7  | 35   |
| Ball indentation hardn. H 132/30   | 53456              | N/mm <sup>2</sup> | 70   | 70   | 50   |
| Shore hardness D   | 53505              | N/mm <sup>2</sup> | 70   | 72   | 67   |
| Crystalline melting range<br>(calorimetric)                                    | 52328              | K (°C)            | 433-438 (160-165)  |  |  |
| Average thermal coefficient<br>of elongation                                   | 53752              | K <sup>-1</sup>   | 1,6 · 10 <sup>-4</sup>   |  |  |
| Thermal conductivity*  | 52612              | W/mK              | 0,22   |  |  |
| Behaviour in fire  | 4102               |                   | B2   |  |  |
| Dielectric strength**<br>(method K 20/P 50)                                    | 53481              | kV/mm             | 58   | 52   | 52   |
| Volume resistivity<br>(annular electrode)                                      | 53482              | Ohm · cm          | >10 <sup>16</sup>  | >10 <sup>16</sup>  | >10 <sup>16</sup>  |
| Surface resistance<br>(electrode A)  | 53482              | Ohm               | 10 <sup>14</sup>   | 10 <sup>14</sup>   | 10 <sup>13</sup>   |
| Creep resistance<br>(method KC)  | 53480              | V                 | >600   | >600   | >600   |
| Dielectric constant<br>at 300-1000 Hz<br>at 3 · 10 <sup>5</sup> Hz             | 53483              | —                 | 2,1<br>2,2   | 2,3<br>2,2   | 2,3<br>2,2   |
| Dielectric loss factor<br>at 300 Hz<br>at 1000 Hz<br>at 3 · 10 <sup>5</sup> Hz | 53483              | —                 | 3 · 10 <sup>-4</sup><br>3 · 10 <sup>-4</sup><br>3 · 10 <sup>-4</sup> | < 3 · 10 <sup>-4</sup><br>5 · 10 <sup>-4</sup><br>< 3 · 10 <sup>-4</sup> | < 3 · 10 <sup>-4</sup><br>5 · 10 <sup>-4</sup><br>< 3 · 10 <sup>-4</sup> |
| Physiological admissibility  | BGA                |                   | yes  | yes  | yes  |

\* measured on test specimen in 10 mm thick

\*\* measured on test specimen in 1 mm thick

The data specified here are guide values and may vary depending on the processing method and how the test pieces are made. Unless specified otherwise, these are the average values of measurements made on extruded panels, 4 mm thick. These figures cannot be automatically transferred to finished components. The processor or user is responsible for checking the aptitude of our material for a specific application.

Name of moulding (DIN 16774, 12/84)

|         |           |    |     |                    |          |
|---------|-----------|----|-----|--------------------|----------|
| PP-DWST | natural:  | FM | DIN | 16774 - PP-H, EN,  | 95 T 006 |
| PP-DWST | coloured: | FM | DIN | 16774 - PP-H, EC,  | 95 T 006 |
| PP-DWST | pressed:  | FM | DIN | 16774 - PP-H, QN,  | 95 T 006 |
| PP-DWU  | coloured: | FM | DIN | 16774 - PP-H, ECH, | 95 T 006 |
| PP-DWU  | pressed:  | FM | DIN | 16774 - PP-H, QCH, | 95 T 006 |
| PP-C    | coloured: | FM | DIN | 16774- PP-B, EHC,  | 85 T 006 |

### **3.2 Behaviour in fire**

SIMONA® PP-DWU/DWST and PP-C are normally-flammable materials (according to DIN 4102 B2).

- self-ignition temperature about 350 °C
- oxygen index about 18 %  
(minimum oxygen concentration necessary for burning)

You will find safety data sheets in chapter 6.

### **3.3 Behaviour in outdoor use**

SIMONA® PP-DWU/DWST and PP-C are not generally created for outdoor use. However, for PP-DWU we have had good experiences over a couple of years of outdoor use — without any mechanical stress.

Like all high-polymer materials, polypropylene is being damaged by the collaboration of atmospheric oxygen and UV-rays. Natural materials are in higher danger than pigmented ones. During the time of use discolourings can occur which are mostly accompanied by a change of the mechanical properties.

With additional UV absorbers one can increase the lifespan in outdoor use (SIMONA® PP-DWU-UV).

### **3.4 Storage**

In order to prevent a, mostly partial, discolouring and a modification of the mechanical properties, SIMONA® PP-DWU/DWST and PP-C semi-finished products should be stored in a room which is protected against UV-light — i. e. not outdoors.

### **3.5 Physiological safety**

According to BGA-recommendations VII (187 information of the Bundesgesundheitsamt, sheet 34, 1991) and to FDA (Food and Drug Administration, USA) SIMONA® PP-DWU/DWST and PP-C semi-finished products are physiologically safe and applicable for the direct contact with foodstuffs.

The natural coloured materials furthermore comply with the requirements of the „European Pharmacopoeia“, 2nd edition 1980 for polypropylene in respect to the manufacture of containers for preparation for parenteral use and their closures.

As this recommendation only refers to the semi-finished product, the physiological admissibility of the finished product should — if required — be tested prior to processing.

### 3.6 Chemical resistance

The unpolar character of SIMONA® PP-DWU/DWST/PP-C gives this thermoplastic, also at higher temperatures

- a high chemical resistance
  - against
    - salts (aqueous solutions)
    - acids
    - alkalis
    - alcohol
    - many solvents
  - against
    - grease
    - oil
    - wax

In continuous contact with these media the material may slightly swell. However, in general this does not influence the application ability of this material.

- a limited chemical resistance (swelling) against
  - aromates
  - halogenated hydrocarbons
- no chemical resistance against strong oxydation agents as
  - nitric acid
  - chromic acid
  - halogens

whereas, especially in the area of welding seams, the risk of stress cracks is increased.

You will find detailed information in our catalogue „Chemical resistance“.

### 3.7 Water absorption

SIMONA® PP-DWU/DWST and PP-C only absorb small amounts of water. Therefore they do not swell when being stored in water.

### 3.8 Temperature range

Due to their molecular composition SIMONA® PP-DWU/DWST have a high rigidity also at high temperatures.

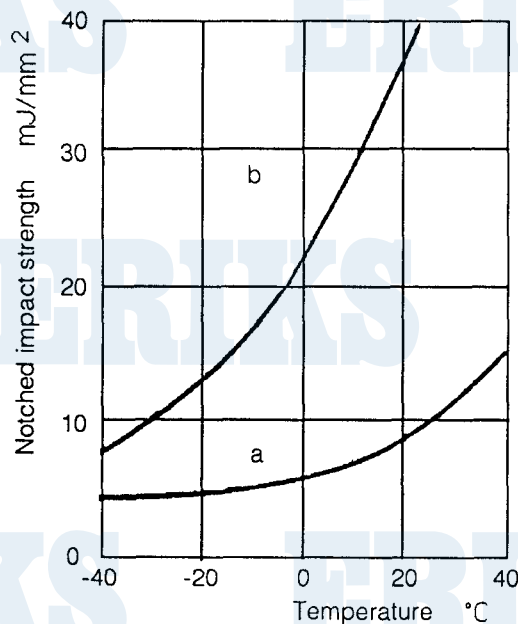
- continuous application temperature 0 °C up to +80 °C
- without considerable mechanical stress and with air as surrounding medium up to +100 °C
- crystallite melting temperature about 160 °C

With respect to the copolymer PP-C, its application temperature ranges between -20 °C and +80 °C. Additionally, the material may also be subjected for a short term up to 90 °C without any significant damage.

### 3.9 Comparison of the physical properties of PP-DWU and PP-C

Important characteristics of the homo- and copolymer of polypropylene in comparison to polyethylene:

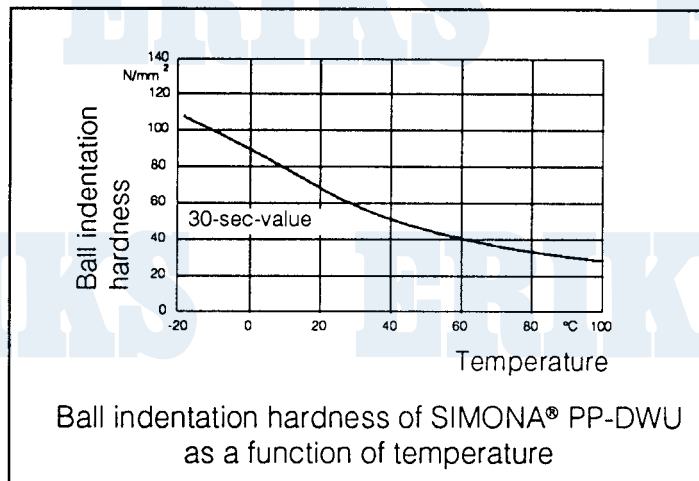
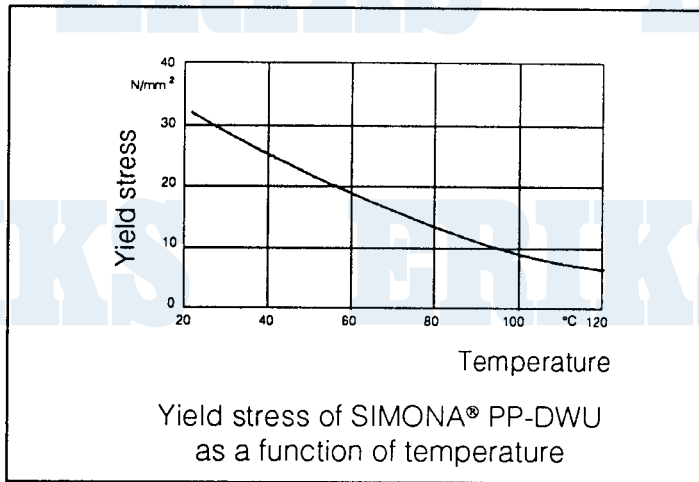
|                         |                   | PP-DWU | PP-C | PE-HWU |
|-------------------------|-------------------|--------|------|--------|
| Density                 | g/cm <sup>3</sup> | 0,91   | 0,91 | 0,95   |
| Yield stress            | N/mm <sup>2</sup> | 33     | 26   | 22     |
| Tensile-E-modulus       | N/mm <sup>2</sup> | 1400   | 1000 | 800    |
| Notched impact strength | kJ/m <sup>2</sup> | 7      | 35   | 12     |
| Temperature range       | °C                |        |      |        |
| max. top                |                   | +100   | +90  | +80    |
| min. bottom             |                   | 0      | -20  | -50    |



Dependance on temperature of notched impact strength of

- a) PP-homopolymer (PP-H)
- b) PP-copolymer (PP-B)

The following illustrations indicate the mechanical behaviour as a function of temperature:  
Here, the high mechanical strength is shown even at elevated temperatures.



### 3.10 Resistance against microorganisms and rodents

SIMONA® PP-DWU/DWST/PP-C are no food basis for

- microorganisms
- bacteria (also sulphate reducing ones)
- fungus
- spores
- gnawing insects
- rodents (gnawing may be possible)

### **3.11 Aspects concerning health**

Regarding its chemical composition PP consists mainly only of carbon and hydrogen. When it is burned, hardly anything than carbon dioxide, carbon monoxide and water are produced, furthermore very small amounts of carbon black and low-molecular parts of the corresponding plastics. The ratio of carbon dioxide to carbon monoxide mainly depends on the conditions of burning — temperature, ventilation, unlimited air access, i. e. fire gases which are similar to those of wood or candle wax are developed.

When discussing the question of toxicity one tends to overlook that basically all fire gases are toxic. For this reason the general statement that plastics develop especially toxic gases when being burned is not correct.

The most suitable extinguisher for burning PP is water.

### **3.12 Tank construction requiring a test mark**

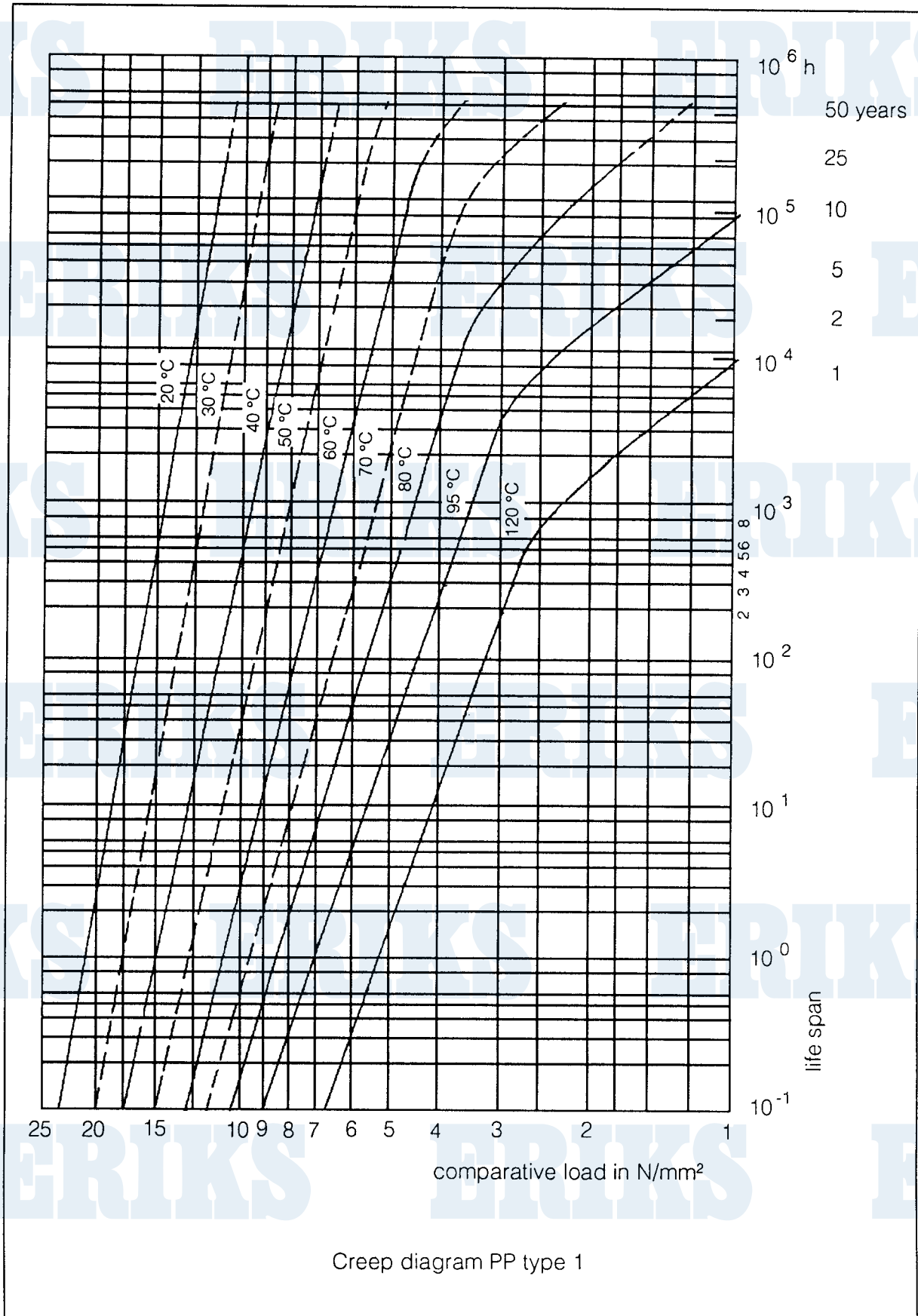
SIMONA® PP-DWU/DWU-B/PP-C are authorized by the Institut für Bautechnik (IfBt), Berlin, for the application in the field of tank construction requiring a test mark.

Besides the products of the raw-material producers the SIMONA® PP-DWU/DWST/PP-C material, which we have been offering for approximately 20 years, was taken into the list of moulding materials.

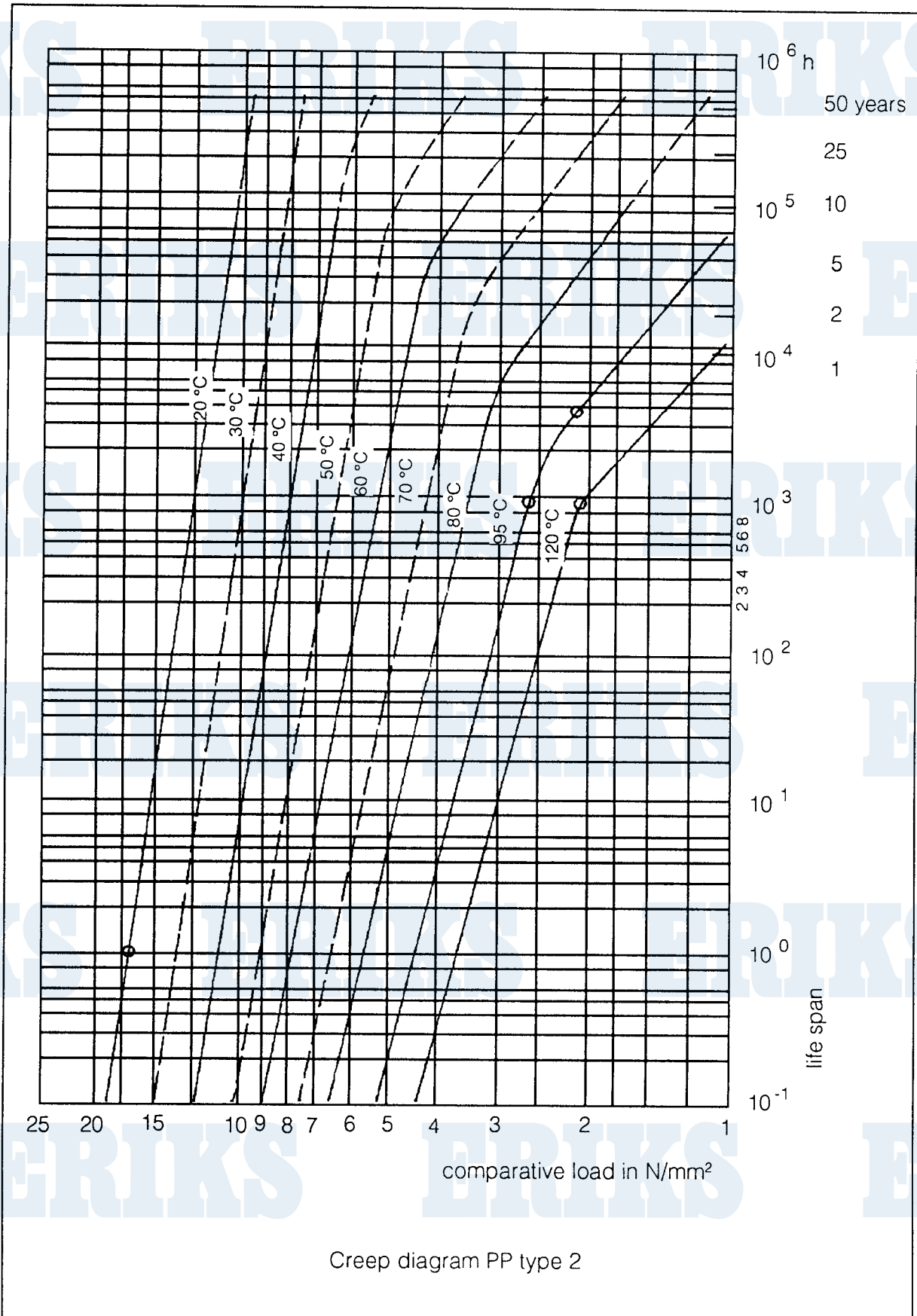
SIMONA® PP-DWU/PP-C are submitted to strict regulations for the choice of material and its processing, only continuously controlled basic materials get into the manufacturing process, which is always surveyed, too. The survey is based on DIN/ISO 9003. Furthermore the thereof produced plastics are controlled by the Suddeutsche Kunststoffzentrum (SKZ), Würzburg, the Technische Überwachungsverein Bayern, München, as well as the Kunststoffrohrverband (KRV), Bonn.

On the next page you will find the creep values required by DIN 8078 for PP-homo- and copolymer for the calculation of tanks and components according to DVS 2205, part 1. With the help of the creep curve one can basically determine the level of stress at given life span and operating temperature of a component.

However, the determined stress values do not consider the real stress arising in practice which is caused by more or less aggressive media as well as welding processes. These have to be determined separately (see also DVS 2205 part 1, media list of the Institut für Bautechnik, Berlin).



Creep diagram PP type 1



### **3.13 Composite construction and tank lining**

For years we have been producing backed sheets of homopolymer polypropylene for the fabrication of composite construction of tanks and lining applications. The standard product PP-DWU-SK is provided with a three-dimensionally formable thermoplastic polyester fabric. Block copolymer polypropylene sheet with a polypropylene fabric backing is a new addition to our range.

#### PP-C-PK

Using this material as a liner not only offers ease in fabrication but also an improvement in technical application:

- removal of backing for preparation of weld seam is no longer necessary as the PP fabric is softened by heating and thus cannot negatively affect the weld seam quality.
- increased flexibility compared with PP-H simplifies assembly of non-flat steel surfaces
- same chemical resistance of sheet and backing
- insensitivity to hydrolysis of PP

Further information regarding SIMONA® PP-DWU-SK and SIMONA® PP-C-PK can be found in our product information „Composite construction“.

## **4. Processing**

Our separate product information will give you advice for:

- machining
- welding
- thermoforming
- bonding

## **5. Advice**

Our collaborators in the Sales Department and in the Technical Application Department have long experience in the application and processing of thermoplastic semi-finished products. We will be glad to assist you.

CEE-Safety Data Sheet according to 91/155/EWG

Page 1 of 2

Trade name: **SIMONA® PP-DWU / PP-DWU-B / PP pipe**

11/2000

### 1. Indications to the manufacturer

SIMONA AG  
Teichweg 16  
D-55606 Kirn

Phone (0 67 52) 14-0  
Fax (0 67 52) 14-211

### 2. Composition / Indications to components

Chemical characteristics: polymer of propylene  
CAS-number: not necessary

### 3. Possible dangers

unknown

### 4. First-aid measures

General comment: medical aid is not necessary

### 5. Fire-fighting measures

Suitable fire-fighting appliance: water fog, foam, fire fighting powder, carbon dioxide

### 6. Measures in case of unintended release

not applicable

### 7. Handling and storage

Handling: no special regulations must be observed

Storage: unlimited good storage property

### 8. Limitation of exposition

Personal protective equipment: not necessary

### 9. Physical and chemical characteristics

#### Phenotype:

form: semi-finished product  
colour: pebble grey  
smell: not distinguishable

#### Change of state:

crystallite melting point:  
fire point:  
inflammation temperature:

160 - 165 °C  
not applicable  
appr. 360 °C  
(value indicated in literature)

density:

0.91 g/cm<sup>3</sup>

CEE-Safety Data Sheet according to 91/155/EWG

Page 2 of 2

Trade name: **SIMONA® PP-DWU / PP-DWU-B / PP pipe**

11/2000

#### 10. Stability and reactivity

Thermal decomposition: above appr. 300 °C

Dangerous decomposition products:

Besides carbon black also carbon dioxide and water as well as low molecular parts of PP will develop during the burning process. In case of incomplete burning also carbon monoxide may arise.

#### 11. Toxic indications

During several years of usage no effects being harmful for the health were observed.

#### 12. Ecological indications

No biodegradation, no solubility in water, no effects being harmful to the environment must be expected.

#### 13. Waste-disposal indications

Can be recycled or can be disposed of together with household rubbish (acc. to local regulations).

Waste key for the unused product: EAK-Code 120 105

Waste name: waste of polyolefine

#### 14. Transport indications

No dangerous product in respect to / according to transport regulations

#### 15. Instructions

Marking according to GefStoffV/EG: no obligation for marking

Water danger class: class 0 (self classification)

#### 16. Further indications

The indications are based on our todays knowledge.

They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.

**CEE-Safety Data Sheet** according to 91/155/EWG

Page 1 of 2

Trade name: **SIMONA® PP-DWST / PP-AS / PP-UV**

11/2000

**1. Indications to the manufacturer**SIMONA AG  
Teichweg 16  
D-55606 KirnPhone (0 67 52) 14-0  
Fax (0 67 52) 14-211**2. Composition / Indications to components**Chemical characteristics: polymer of propylene  
CAS-number: not necessary**3. Possible dangers**

unknown

**4. First-aid measures**

General comment: medical aid is not necessary

**5. Fire-fighting measures**

Suitable fire-fighting appliance: water fog, foam, fire fighting powder, carbon dioxide

**6. Measures in case of unintended release**

not applicable

**7. Handling and storage**Handling: no special regulations must be observed  
Storage: unlimited good storage property**8. Limitation of exposition**

Personal protective equipment: not necessary

**9. Physical and chemical characteristics**Phenotype:form: semi-finished product  
colour: different  
smell: not distinguishableChange of state:crystallite melting point:  
fire point:  
inflammation temperature:160 - 165 °C  
not applicable  
appr. 360 °C  
(value indicated in literature)  
0.90 - 0.91 g/cm<sup>3</sup>

density:

**CEE-Safety Data Sheet** according to 91/155/EWG

Page 2 of 2

Trade name: **SIMONA® PP-DWST / PP-AS / PP-UV**

11/2000

**10. Stability and reactivity**

Thermal decomposition: above appr. 300 °C

Dangerous decomposition products:

Besides carbon black also carbon dioxide and water as well as low molecular parts of PP will develop during the burning process. In case of incomplete burning also carbon monoxide may arise.

**11. Toxic indications**

During several years of usage no effects being harmful for the health were observed.

**12. Ecological indications**

No biodegradation, no solubility in water, no effects being harmful to the environment must be expected.

**13. Waste-disposal indications**

Can be recycled or can be disposed of together with household rubbish (acc. to local regulations).

Waste key for the unused product: EAK-Code 120 105

Waste name: waste of polyolefine

**14. Transport indications**

No dangerous product in respect to / according to transport regulations

**15. Instructions**

Marking according to GefStoffV/EG: no obligation for marking

Water danger class: class 0 (self classification)

**16. Further indications**

The indications are based on our today's knowledge.

They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.

CEE-Safety Data Sheet according to 91/155/EWG

Page 1 of 2

Trade name: SIMONA® PP-C / PP-C-PK

11/2000

**1. Indications to the manufacturer**SIMONA AG  
Teichweg 16  
D-55606 KirnPhone (0 67 52) 14-0  
Fax (0 67 52) 14-211**2. Composition / Indications to components**Chemical characteristics: copolymer of propylene  
CAS-number: not necessary**3. Possible dangers**

unknown

**4. First-aid measures**

General comment: medical aid is not necessary

**5. Fire-fighting measures**

Suitable fire-fighting appliance: water fog, foam, fire fighting powder, carbon dioxide

**6. Measures in case of unintended release**

not applicable

**7. Handling and storage**

Handling: no special regulations must be observed

Storage: unlimited good storage property

**8. Limitation of exposition**

Personal protective equipment: not necessary

**9. Physical and chemical characteristics****Phenotype:**form: semi-finished product  
colour: pebble grey  
smell: not distinguishable**Change of state:**crystallite melting point:  
fire point:  
inflammation temperature:160 - 165 °C  
not applicable  
appr. 360 °C  
(value indicated in literature)  
0.91 g/cm<sup>3</sup>**density:**

CEE-Safety Data Sheet according to 91/155/EWG

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Trade name: **SIMONA® PP-C / PP-C-PK**

11/2000

#### 10. Stability and reactivity

Thermal decomposition: above appr. 300 °C

Dangerous decomposition products:

Besides carbon black also carbon dioxide and water as well as low molecular parts of PP will develop during the burning process. In case of incomplete burning also carbon monoxide may arise.

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#### 11. Toxic indications

During several years of usage no effects being harmful for the health were observed.

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#### 12. Ecological indications

No biodegradation, no solubility in water, no effects being harmful to the environment must be expected.

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#### 13. Waste-disposal indications

Can be recycled or can be disposed of together with household rubbish (acc. to local regulations).

Waste key for the unused product: EAK-Code 120 105

Waste name: waste of polyolefine

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#### 14. Transport indications

No dangerous product in respect to / according to transport regulations

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#### 15. Instructions

Marking according to GefStoffV/EG: no obligation for marking

Water danger class: class 0 (self classification)

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#### 16. Further indications

The indications are based on our today's knowledge.

They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.