

**SIMONA**

# tech.info

## SIMOFUSE® Pipe Joining

Date: September 2010



Product Information  
Installation Instructions  
SIMOFUSE® Pipe Joining

# Welcome to SIMONA

**Behind each product associated with our company stands a dedicated team that has developed and manufactured it. SIMONA draws its inspiration from the unparalleled vision, dedication and passion of its employees – and a history spanning more than 150 years.**

**Today, we are recognised as one of the world's leading producers of semi-finished thermoplastics.**

## **Products tailored to your needs**

SIMONA is able to offer you the most extensive range of semi-finished thermoplastics worldwide. Our comprehensive portfolio of products encompasses pipes, fittings, valves, sheets, rods, profiles, welding rods and finished parts for a diverse range of applications. The materials offered within this area span everything from PE and PP to PVC, PVDF, E-CTFE and PETG. On request, we can also develop customised products tailored to your specific requirements.

## **Best-in-class quality**

Our products and services are designed to deliver the very best quality imaginable. When implementing your projects, we always place the greatest possible emphasis on professionalism during every stage of the process. We are supported in our efforts by a first-class Quality Management system – for total peace of mind.

## **Global sales network**

Boasting a global network of subsidiaries and distribution partners, SIMONA is renowned as a fast, flexible and reliable partner. We look forward to assisting you.

## **Exceptional service**

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. In addition, we will supply you with the full range of documentation accompanying our products and offer specialist training where required.

---

## **SIMOFUSE® Pipe Joining**

Overview	4
Preparation and installation	5
Welding technique	6

---

<b>Leak-tightness testing</b>	8
-------------------------------	---

---

<b>Transport and storage</b>	9
------------------------------	---

---

<b>Product range</b>	10
----------------------	----

---

<b>Assembly</b>	11
-----------------	----

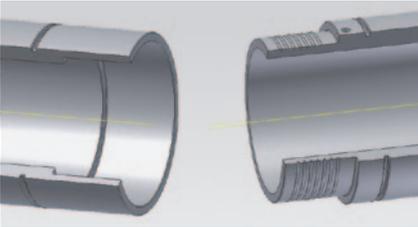
---

<b>Addresses</b>	12
------------------	----

---

# Overview

**This tech.info provides details of how to use SIMONA® SIMOFUSE® pipe connectors made of PE-HD with integral, covered electrofusion filaments for a permanently tight, high tensile-strength connection of PE-HD sewer pipes.**



*Pipe module SIMONA® SIMOFUSE®*

- The standard overall length is 0.70 m to 6.00 m (12.00 m on request) with an insertion depth of 70 mm to 140 mm (cf. table on page 10).
- The pipe joint complies with the leak-tightness provisions set out in DIN EN 1610 for non-pressure systems (0.5 bar test pressure).
- SIMOFUSE® joining solutions are available for the following types of pipe:
  - PE 80/PE 100 pipes as per DIN 8074/75
  - SIMONA PE 80/PE 100 CoEx sewer pipes
  - SIMONA PE 80/PE 100 SPC waste-water pipes
  - SIMONA PE 100 RC pipes

The pipes can be supplied in SDR 11/17/17.6/26 (others on request).

## Key characteristics

- Push-in connection (integral electrofusion joints) without elastomer seals
- Integral, covered electrofusion filaments
- No machining of welding surface required prior to joining
- No socket protrusions
- No recesses on the pipe support
- Fast and simple joining method
- Highly efficient solution
- Joining with PE and cement shafts possible with SIMOFUSE® Shaft Connection
- Joining with 40 V standard automatic welders
- Suitable for use in pipe trenches with limited space
- Best possible use of hydraulic cross section of existing pipe
- Bar code scanning of welding data

## Fields of application

- Short-pipe relining
- Long-pipe relining
- New installation using open-trench method
- Drinking-water protection areas
- Landfill drainage
- Drainage of engineering structures

# Preparation and installation

**Each pipe is supplied with a special cover in the area of the electrofusion filaments to ensure that they are protected against dirt and moisture. This protective cover may only be removed on site immediately prior to the welding procedure. The integrated contacts are positioned at the spigot end of the pipes along the pipe markings/label.**

Clean padding should be placed underneath the pipe at the construction site to protect the base against dirt and moisture. The respective pipe joints must be true in alignment (axial alignment). Once the spigot end has been positioned in the existing socket, the tensioning device is placed in the two inbuilt grooves. It is important that the two clamping collars are inserted flush into the appropriate grooves. Please check that the clamping collars are in the correct position. The pipe to be pulled must always be joined with the clamping collar that is connected to the retractable hydraulic system. Controlled insertion is performed by means of the hydraulic device. After the two pipes have been brought together (flush fit) with the help of the clamps, the 4 mm contacts supplied with the product for the purpose of electrofusion welding can be screwed onto the appropriate terminal connections.



*Fig. 1*

A 40 V standard automatic welding machine for electrofusion sockets can then be connected.

# Welding technique

**The general method of electrofusion welding is outlined in DVS 2207-1 (Guideline issued by the German Association of Welding). As regards the installation of SIMOFUSE® pipe modules, the guidelines on welding machines, welding preparations and welding procedures are to be observed accordingly. The aforementioned Guideline is integral to the use and handling of these products, and it is assumed that the provisions outlined in the Guideline are known.**

Welding must only be performed in clean and dry conditions. In the event of unfavourable weather conditions (snow, rain, strong winds, etc.), the area to be welded must be protected. The pipes are to be aligned in an axial position to the shaft connection in order to ensure that no stresses are exerted on the joint during welding. During welding and subsequent cooling, the newly welded pipe connection must not be exposed to mechanical loads. The pipes are factory-prepared for welding, i. e. no additional machining of the welding area/surface is required. Once the protective cover has been removed, the spigot end and the socket area should be cleaned with a suitable detergent. Only use detergents that may be specifically applied to PE plastics!

The detergent used for cleaning must have evaporated completely prior to welding. Welding must be performed immediately after preparation and cleaning as outlined above.

The factory-prepared welding codes at the end of the pipe can be scanned with a bar code reader (cf. Fig. 3).



Fig. 2



Fig. 3

Please ensure that the maximum permissible joint width is observed when connecting the spigot end and socket.

**Max. permissible joint width**

<b>Da</b> mm	
250–450	< 0.5 mm
500–900	< 1.0 mm

If joining appears to be impossible despite the additional information provided in this manual, please contact the SIMONA technical department prior to welding (Technical Sales Support, Phone +49 (0) 67 52 14-315).



Fig. 4

**Please note**

The quality of a welded joint is dependent not only on the use of suitable materials and devices but also on the qualifications of the welding engineer. It is essential that all welding is performed by qualified welders. We recommend that you compile a welding report (e.g. based on DVS guidelines) for documentation purposes.

# Leak-tightness testing

**SIMONA® SIMOFUSE® is used for the purpose of producing a permanently tight, high tensile-strength connection of PE pipes in accordance with DIN 8074/75. Owing to the integral, covered electrofusion joints, a homogeneous pipeline can be created without the use of elastomer joining devices/materials.**

We recommend leak-tightness testing in accordance with the provisions set out in DIN EN 1610, applying a testing pressure of 0.5 bar.

## **Fast and simple installation**

Recesses on the pipe support (i. e. supporting surface) – which are essential in the case of conventional electrofusion joining in order to ensure level installation – are not required. Furthermore, there is no need to mark the insertion depths as is the case in standard electrofusion joining. SIMOFUSE® is fast and simple to use, thus helping to reduce the overall time required for pipeline installation.



Fig. 5

# Transport and storage

**In order to ensure that the installed pipeline is of a high standard, all plastic components must be transported and stored in an appropriate manner.**

At the construction site all pipes must be stored on a level, stone-free surface.

When using cranes and hoisting devices, please ensure that there is no risk of damage to the pipes and pipe components. Never use sharp-edged hooks, chains or other devices that may exert pressure on the pipes. Instead, we recommend the use of wide hoisting belts.

The storage height of individual, non-packaged pipes must not exceed one metre. Never stack more than two wooden crates on top of each other. When stacking the individual crates, also ensure that they are placed wood (crossbeam) on wood (crossbeam).

If the pipes/fittings are stored outside for extended periods and are thus exposed to the elements, please ensure that they are protected from direct sunlight, e. g. by using white covers. Also note that focused heat exposure (i. e. on a specific area of the pipe) due to sunlight may cause deformation of the pipe lengths.

The pipe ends (socket and spigot end) must be handled with care during transport and storage; ensure that they are protected against damage.

Please note that the contacts are located at the end of the pipe at the level of the pipe markings/labels.

# Product range

- Material:** PE-HD
- Design:** overall length from 0.70 m to 6.00 m (12.00 m on request)
- Colour:** dependent on type of pipe

## Wall thickness, insertion depth and tensile forces

Da	Wall thickness mm	Insertion depth mm	Tensile force kN at 20 °C, PE 100	Tensile force kN, at 20 °C, PE 80
<b>SDR 11</b>				
225	20.5	80	65.9	52.7
250	22.7	90	81.0	64.8
280	25.4	90	101.6	81.3
315	28.6	90	128.7	102.9
355	32.2	100	163.3	130.6
400	36.3	100	207.6	166.1
450	40.8	100	262.8	210.3
500	45.4	100	342.2	259.4
560	50.8	100	406.3	325.1
630	57.2	110	514.7	411.7
<b>SDR 17/17.6</b>				
400	22.7/23.7	100	140.1	107.6
450	25.5/26.7	100	177.5	136.0
500	28.4/29.7	100	219.4	168.3
560	31.7/33.2	100	274.7	210.5
630	35.7/37.4	110	348.1	266.6
710	40.2/42.1	120	441.7	338.4
800	45.3/47.4	130	560.4	429.6
900	51.0/53.3	130	708.9	544.1
1000	56.7/59.3	140	876.2	672.1
<b>SDR 26</b>				
560	21.4	120	181.1	144.8
630	24.1	120	229.4	183.5
710	27.2	120	291.7	233.4
800	30.6	130	369.8	295.9
900	34.4	140	467.7	374.2
1000	38.2	140	577.1	461.7

*These tables only provide an outline of the available product portfolio; please contact us for details of other sizes etc.*

# Assembly



1. Straight alignment of pipes.



4. The two pipe ends are brought together by means of hydraulic force.



2. Insertion of spigot end into socket on a carefully prepared, clean surface.



5. Attachment of tensioning tool (in this case a strap) to reduce the joint width and exert required pressure for joining.



3. Adjustment of hydraulic clamping device. Clamping collars fit into the appropriate grooves.



6. Connection of 40 V standard automatic welding machine for electrofusion sockets to existing 4 mm contacts.

# SIMONA worldwide

## SIMONA AG

### Teichweg 16

#### D-55606 Kirn

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)7822 436-0  
Fax +49 (0)7822 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 222444  
Fax +44 (0)1785 222080  
mail@simona-uk.com

### SIMONA AG SCHWEIZ

Industriezone  
Bäumlimattstraße 16  
CH-4313 Möhlin  
Phone +41 (0)61 855 9070  
Fax +41 (0)61 855 9075  
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)71 352 80 20  
Fax +48 (0)71 352 81 40  
mail@simona-pl.com  
www.simona-pl.com

### 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