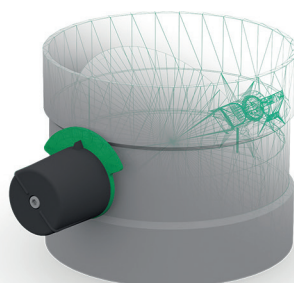
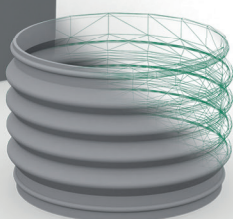
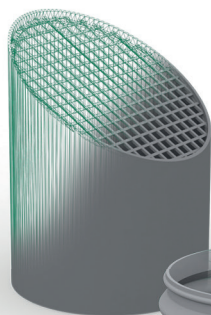
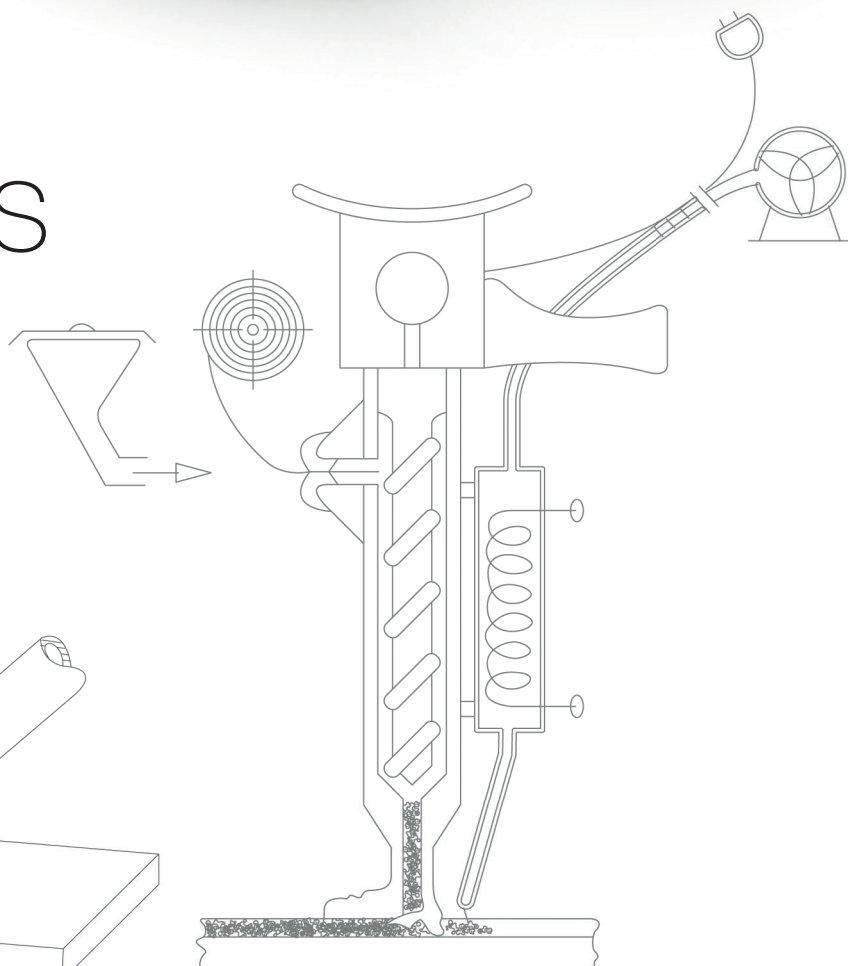
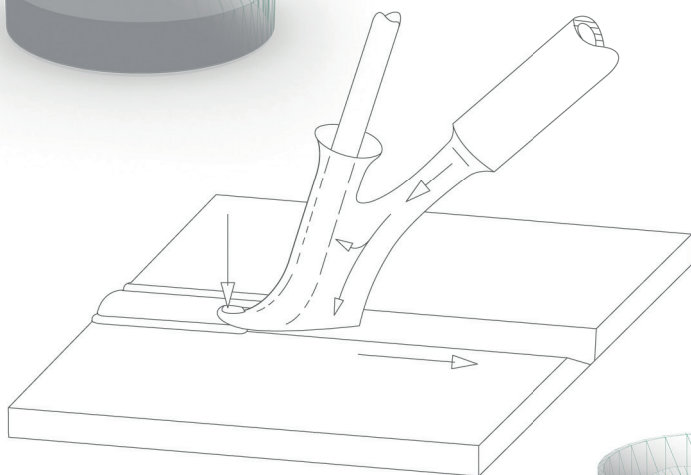
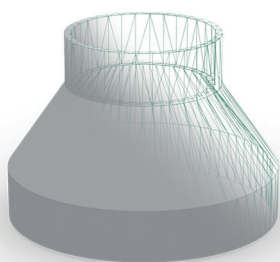
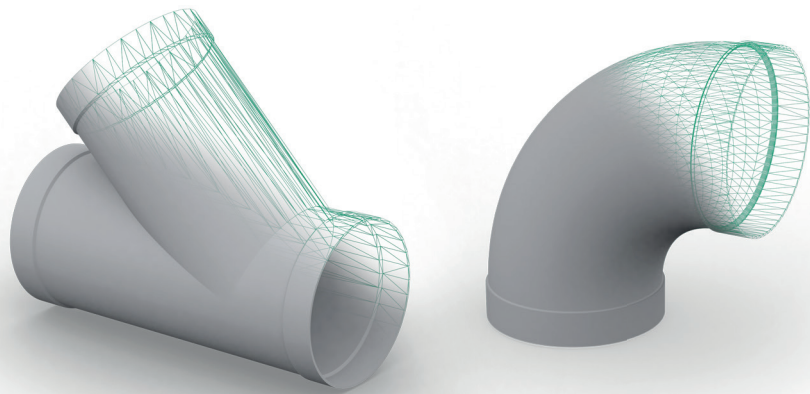


PROCESS GUIDELINES



HOKA



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PVC-U GREY

MATERIAL DATA SHEET



Short Profile

Polyvinylchloride, abbreviated Hard-PVC, is an unplasticised amorphous thermoplastic material. PVC is characterized by high chemical resistance and it is self extinguishing after withdrawal of an external flame. Additional characteristics of the material are its high strength, rigidity and dimensional stability. In the Ventilation area, PVC-U grey is primarily chosen for interior use.

Characteristic Profile

- Density (specific weight): $\approx 1,35 \text{ g/cm}^3$
- High chemical resistance:
esp. against organic acids and alkalis
- Flammability: Tested according to European fire standard B1
- Operating temperature: 0° to $+50^\circ\text{C}$
- High strength and rigidity
- High corrosion resistance
- Good electrical insulation

Recommended Joining Techniques

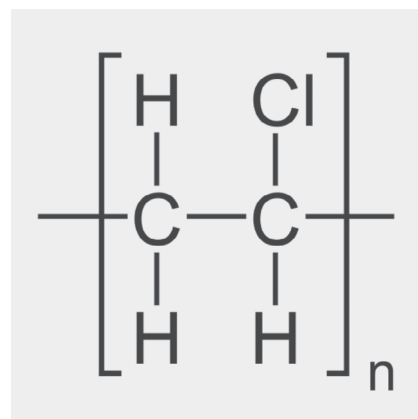
- Plastics welding

Recommended Application Areas

- Can be used indoors



**Appropriate joining techniques
can be found on pages 10 – 14.**



Chemical structure PVC

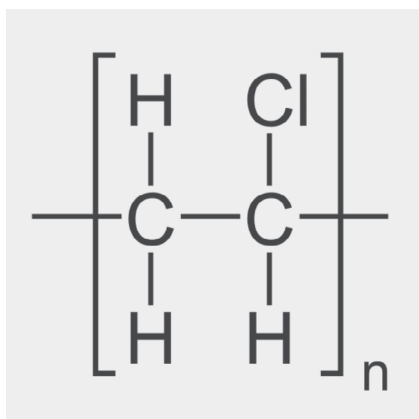
WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	350 - 370
Hot gas volume flow l/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	2,5 - 3,5 / 4,0 - 4,5

Please note further information regarding
DVS 2207-3 in Appendix 1

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.



Chemical structure PVC

WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	350 - 370
Hot gas volume flow NI/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	2,5 - 3,5 / 4,0 - 4,5

Please note further information regarding
DVS 2207-3 in Appendix 1

Short Profile

Polyvinyl chloride, abbreviated Hard-PVC, is an unplasticised amorphous thermoplastic material. PVC is characterized by high chemical resistance and it is self extinguishing after withdrawal of an external flame. Additional characteristics of the material are its high strength, rigidity and dimensional stability. In die Ventilation area, PVC white is chosen for interior as well as exterior use. Further more PVC white is UV-resistant.

Characteristic Profile

- Density (specific weight): $\approx 1,35 \text{ g/cm}^3$
- High chemical resistance:
esp. against organic acids and alkalis
- Flammability: Tested according to European fire standard B1
- Operating temperature: 0° to $+50^\circ \text{ C}$
- High strength and rigidity
- High corrosion resistance
- Good electrical insulation
- UV-resistant

Recommended Joining Techniques

- Plastics welding

Recommended Application Areas

- Can be used indoors and outdoors



**Appropriate joining techniques
can be found on pages 10 – 14.**

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.

Short Profile

Polypropylene is a flame resistant material. It is characterized by its high chemical resistance and low density. A feature of the material is its stability at high temperatures in connection with flame resistance as well as good surface hardness and electrical insulating properties. In the Ventilation area, the material is suitable for interior use.

Characteristic Profile

- Density (specific weight): $\approx 0,94 \text{ g/cm}^3$
- High chemical resistance:
esp. against solvents and alcohols
- Flammability: Tested according to European fire standard B1
- Operating temperature: 0° to $+90^\circ \text{ C}$
- High corrosion resistance
- Hydrolysis resistant (hot water or water vapor)
- Good electrical insulation

Recommended Joining Techniques

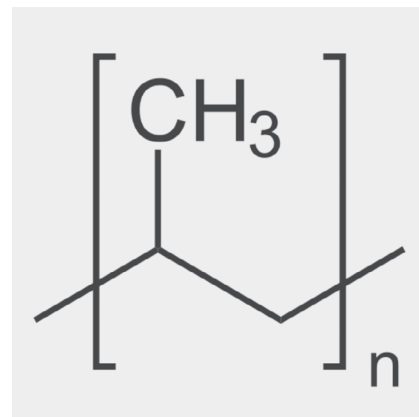
- Plastics welding

Recommended Application Areas

- Can be used indoors



**Appropriate joining techniques
can be found on pages 10 – 14.**



Chemical structure PP-H

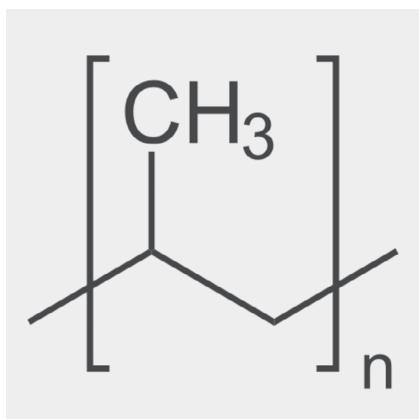
WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	300 - 340
Hot gas volume flow l/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	2,5 - 3,5 / 4,0 - 4,5

Please note further information regarding
DVS 2207-3 in Appendix 1

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.



Chemical structure PP-H

WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	300 - 340
Hot gas volume flow NI/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	2,5 - 3,5 / 4,0 - 4,5

Please note further information regarding
DVS 2207-3 in Appendix 1

Short Profile

Polypropylene is characterized by a high chemical resistance, good resistance to stress cracking, and its good thermostability. In addition, the material has a high rigidity, hardness and strength.

Characteristic Profile

- Density (specific weight): $\approx 0,93 \text{ g/cm}^3$
- High chemical resistance:
esp. against solvents and alcohols
- Flammability: normal flammability
- Operating temperature: 0° to $+90^\circ \text{ C}$
- High corrosion resistance
- Hydrolysis resistant (hot water or water vapor)
- Good electrical insulation

Recommended Joining Techniques

- Plastics welding

Recommended Application Areas

- Can be used indoors



**Appropriate joining techniques
can be found on pages 10 – 14.**

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.

Short Profile

Polyethylene is characterized by its high level of toughness and rigidity even at low temperatures. PE-HD has a very good chemical resistance. Above all the material is UV resistant and can be used also at sub zero temperatures.

Characteristic Profile

- Density (specific weight): $\approx 0,95 \text{ g/cm}^3$
- High chemical resistance
- Flammability: normal flammability
- Operating temperature: -50° to $+80^\circ \text{ C}$
- Hydrolysis resistant (hot water or water vapor)
- Good electrical insulation
- UV-resistant

Recommended Joining Techniques

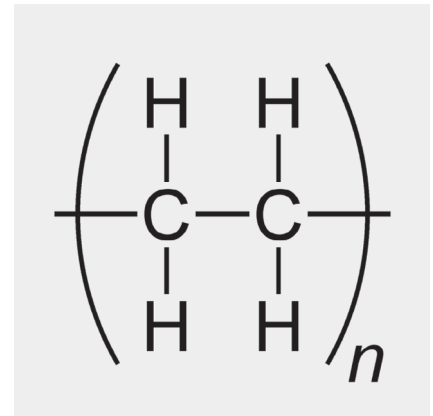
- Plastics welding

Recommended Application Areas

- Can be used indoors and outdoors



Appropriate joining techniques can be found on pages 10 – 14.



Chemical structure PE-HD

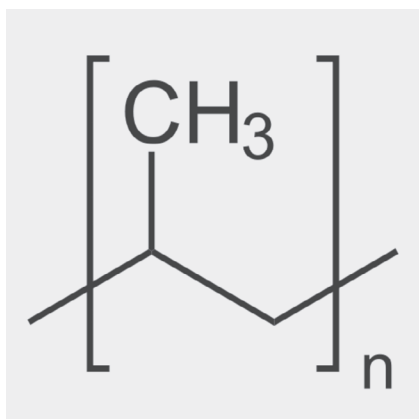
WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	300 - 340
Hot gas volume flow NI/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	1,5 - 2,0 / 2,5 - 3,5

Please note further information regarding
DVS 2207-3 in Appendix 1

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.



Chemical structure PP-H

WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	300 - 340
Hot gas volume flow NI/min	45 - 55
Welding speed mm/min	250 - 350
Welding force at a bar diameter in kg 4mm/5mm	2,5 - 3,5 / 4,0 - 4,5

Please note further information regarding
DVS 2207-3 in Appendix 1

Short Profile

Polypropylene EL Flame Resistant is characterized by the associative properties of PPs and its electrical conductivity. To achieve these overall characteristics, PPs is treated with special conductive particles.

Characteristic Profile

- Density (specific weight): $\approx 1,2 \text{ g/cm}^3$
- High chemical resistance:
esp. against solvents and alcohols
- Flammability: flame resistant
- Operating temperature: 0° to $+90^\circ \text{ C}$
- High corrosion resistance
- Hydrolysis resistant (hot water or water vapor)
- Electrical conductivity $\leq 10^5 \Omega$

Recommended Joining Techniques

- Plastics welding

Recommended Application Areas

- Can be used indoors and outdoors



**Appropriate joining techniques
can be found on pages 10 – 14.**

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.

Short Profile

The material PVDF is part of the Fluoropolymers and is characterized by its very high chemical resistance even at higher temperatures. The material has a high rigidity and is insensitive to UV-rays. It has outstanding age-resistance in the air atmosphere. We process raw materials in accordance to FM 4910. Therefore, our products can also be used in clean rooms.

Characteristic Profile

- Density (specific weight): $\approx 1,78 \text{ g/cm}^3$
- High chemical resistance: esp. against halogens and other oxidizing agents
- Flammability: flame resistant in accordance to DIN 4102 B1
- Operating temperature: -30° to $+145^\circ \text{ C}$
- Corrosion resistance
- Good electrical insulation
- UV-resistant

Recommended Joining Techniques

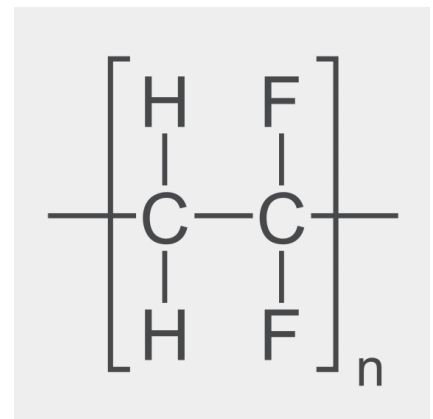
- Plastics welding

Recommended Application Areas

- Can be used indoors and outdoors



Appropriate joining techniques can be found on pages 10 – 14.



Chemical structure PVDF

WELDING PARAMETERS

According to Guideline DVS 2207-3

Hot gas temperature °C	365 - 385
Hot gas volume flow l/min	45 - 55
Welding speed mm/min	200 - 250
Welding force at a bar diameter in kg 4mm/5mm	3,0 - 3,5 / 4,0 - 4,5

Please note further information regarding DVS 2207-3 in Appendix 1

The specified data are standard values. These values can be influenced by processing conditions, modifications, material additives and environmental effects and do not free the user from the responsibility of performing their own tests and trials. The information has been compiled on the basis of current experiences and knowledge. A legally binding assurance of particular properties or applicability for a concrete purpose cannot be derived from our information.

Preparation of the welding surface

When modifying fittings you must ensure that the plastic parts are divided using only one of the saws listed on page 11.

The saw blade when using PVC material should have a tooth-pitch of 2.5 mm, and it is recommended that a lower Pendulum movement will be used. For the materials PPs, PP-H, PE-HD, PP-EL-s and PVDF we recommend a tooth-pitch of 4.0 mm. It is advantageous when sawing to use a negative cutting angle as this will minimize scraping.



When using fittings with the same outer diameter, they must be beveled/chamfered before.
(For example: Pipe to Pipe without double socket; split bend used as an offset etc.)



When beveling, the entire wall thickness should be considered.
When using a grinder use grain size 60 or 80.



Make sure there is no dirt, grease or oxide layer on the part to be welded. The material must be scraped clean.

Prerequisites for a weld seam ...

is the choice of the same materials. Fittings, pipes, and welding wire must be made of the same material. Most of our Ventilation fittings are provided with sockets. Therefore, the appropriate ventilation pipe can be inserted into the socket of the fitting.

Important for the welding process

To achieve the best possible results, the fittings should be processed at room temperature. A prerequisite for the welding is that the ventilation fitting fit evenly in the socket.

The standard practice is to hold the plastic fittings in a fixed position by tacking. With tacking the gap between the parts to be welded will be closed, and the risk of the welding wire coming through the gap is minimized.

It is important to align the space between the socket and fitting that exist due to the specified tolerances so that there is a consistent even space between the socket and the fitting. Thus you will achieve a uniform welding seam.

What you will need

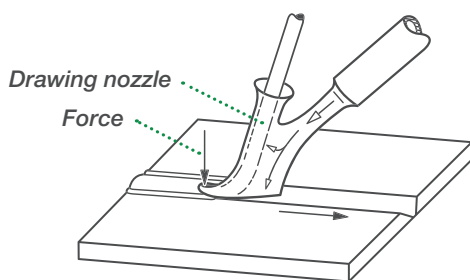
- Ventilation Fittings from HoKa
- If on site modifications of the fittings are necessary:
Handsaw (e.g. Foxtail) or Circular saw,
Jigsaw or Bandsaw
- Recommended Welding wire (5 mm)
- Extrusion welding device or Hot Gas Stream Welding device
depending on wall thickness
- Tacking/Welding nozzle
- Scraper
- Crescent blade knife
- Appropriate Protective Clothing

Our Tip:

The welding process, especially complex welding work, should be performed by a trained welding expert.

Plastics welding
is the most professional
and secure bond

A welded connection results from compatible plastic fittings being bonded by heating and melting techniques.

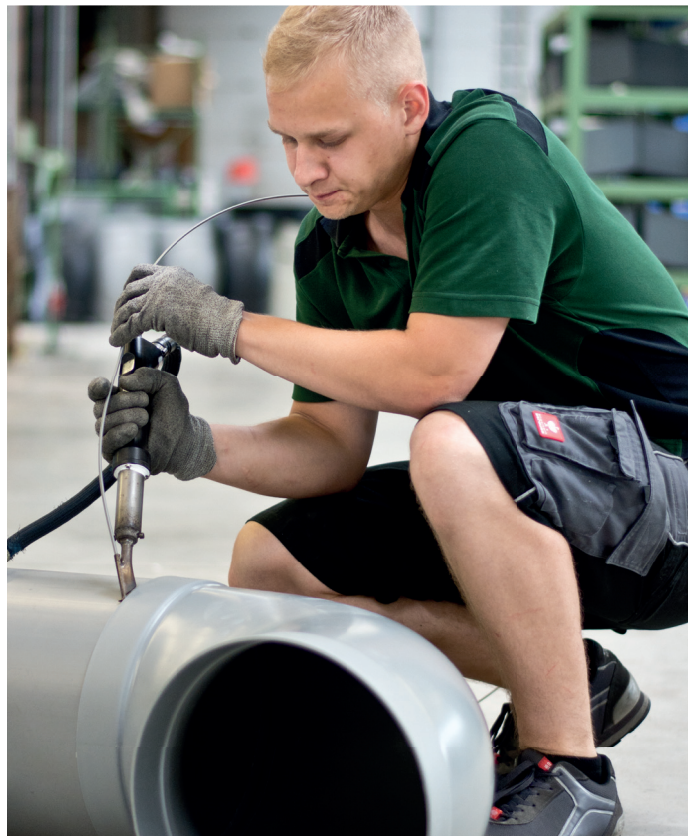


Hot gas welding

For hot gas welding, a welding filler (e.g. a profile or round wire) is added to the joint zone through the nozzle outlet.

The joining surfaces of the base material and the welding filler are plasticised by hot gas, generally air. The beak-shaped attachment at the end of the nozzle applies the necessary joining pressure.

The nozzle guide evenly pre-heats and plasticises the base material and the welding filler.

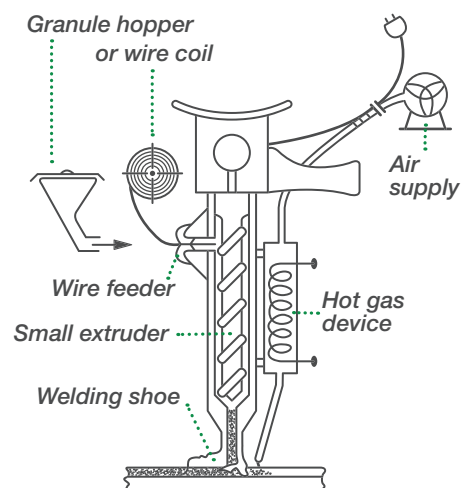


Hot gas extrusion welding

This type of welding is used, among others, for bonding thick-walled fittings and is welded by using a similar welding filler. The extrusion welder is a welder consisting of a small extruder as plasticising unit that may be driven by an electric motor.

It is welded with a filler metal similar in type and molding material, which plasticises homogeneously and completely. The joining surfaces are heated by hot air to the welding temperature and a welding shoe distributes and presses on the extruded mass.

The plasticising depth is 0.5 - 1.0 mm, thus achieving shorter working times and greater mechanical strength properties, a higher weld quality and low internal stress as compared to hot gas welding.



As a rule the weld seams should be completed in accordance to the guidelines of the DVS!

Note:

It is not permitted to perform ANY modifications on our Ventilation Fittings and their components because this can endanger the operational safety.

DIN Standards

The nominal diameter of our Fittings are based on the following standards:

- PVC-U: DIN 4740
- PE-HD: DIN 8074
- PP-H / PP-s / PP-EL-s: DIN 8077
- PVDF: DIN EN ISO 10931

Negative Pressure^{*}

Fittings	≤ Ø 400 mm	up to 2000 Pa
	≤ Ø 1250 mm	up to 1500 Pa
	> Ø 1250 mm	up to 950 Pa
Flexible connector/Cuff	≤ 400 mm	up to 1500 Pa
	≤ 1250 mm	up to 950 Pa

Guideline for airspeed m/s^{*}

Hospital	2 - 6 m/s
Office, Laboratory	5 - 8 m/s
Industry	8 - 12 m/s

Information about Thermal Expansion in Length

In the processing of HoKa Ventilation Fittings the thermal expansion in length must be considered. As soon as a solid body heats up, it expands – direct sunlight or warming by other heat sources should be avoided by all means.

Otherwise when processing indoors or outdoors this may result in axial forces, that should not be passed on to the valves.

Especially by fittings with drive systems or with extra wide diameters the weight of the valves should not be held by the associated pipe components.

* The negative pressure specified here relates only to facilities with temperatures ≤ 40 degrees Celsius, with proper installation and without influence of chemical media.

1

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