



System data sheet

Insulation system ORSTECH Protect for fire resistant ducts Fire resistance EI 15 S, EI 30 S, EI 45 S

■ SYSTEM DESCRIPTION

Insulation system ORSTECH Protect for fire protection of air ducts. It is possible to reach fire resistance of 15, 30 and 45 minutes by a single layer of insulation for rectangular and circular ducts both in horizontal and vertical orientation.

■ DUCTWORK

The steel duct is constructed in sections of galvanised steel sheet minimum 0.8 mm thick (standard duct sheeting for rectangular ducts specified in DIN 24190, for circular ducts in DIN 24145). Segments connected by flanges. Use a ceramic tape gasket and intumescent silicone between the flanges to seal the joints. Flanges of the rectangular duct have to be fastened together with steel clamps with nuts M8 in quantity of 3 pieces per 1 meter of the flange length (flange with the length 500 mm has to have 2 clamps).

■ DROP RODS AND HANGERS

Rectangular horizontal duct suspended with steel hangers consisting of two threaded drop rods M10, a channel section bearer 38/40 mm and hexagonal nuts and washers (certificated fire rated system MÜPRO MPC or equivalent). The drop rods can be positioned inside or outside the insulation. If drop rods are outside there is no need to insulate them separately. The bearers are positioned inside the insulation material.

Circular horizontal duct suspended by steel hangers consisting of two threaded drop rods, minimum M10 and a two-part circular band (certificated fire rated system MÜPRO or equivalent). The ends of each band section are bent outwards. Fasten the band sections together and attach them to the drop rods with hexagonal nuts and washers. Place these hangers inside the insulation. The rods do not need to be protected by insulation.

■ INSULATION

Rectangular ducts are insulated with slabs Orstech 65 H with the thickness of 40 mm, circular ducts insulated with lamella mats Orstech LSP PYRO with the thickness of 50 mm. Density of both products is just 65 kg/m³ thus makes cutting, bending or filling faster and more efficient than ever. Both products have reinforced aluminium foil facing. Insulation slabs (lamella mats) need to be cut to fit the duct as tightly as possible. Install the insulation so that one slab (lamella mat) is adjacent and tightly fitted against the other. No gaps must be present between butt joints of insulation. Insulation can be easily cut with a standard lagger knife. There is no need for adhesive on joints. All the joints shall be sealed by aluminium tape. For rectangular ducts in the position of flange the slabs are snick first 15 mm of the thickness to avoid lifting of the slabs. Butt joints should be positioned out of flanges.



■ STUD-WELDED PINS

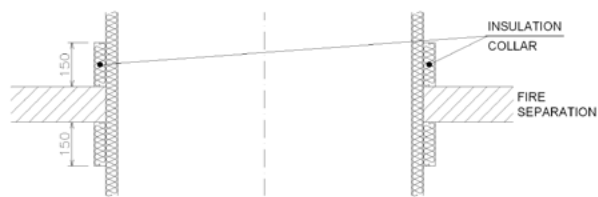
The insulation is fixed to the duct using stud-welded steel pins, 2.7 mm nominal diameter, and spring steel washers 30 mm diameter. The length of pin should be equal to the insulation thickness. Approximate pin's quantity for rectangular duct is 16 pcs./m² (which correspond to 40 pcs. per meter of the duct 1000 x 500 mm), 14 pcs./m² for circular ducts. Recommended distance from duct edges and joints is 80 mm, 50 mm from flanges.

■ FIRE-STOPPING (WALL/FLOOR PENETRATION)

Insulation system ORSTECH Protect is unique in its simplification for the fire-stopping. Neither a stiffener (steel tube) is needed in the duct, where the duct passes through the penetration, nor any kind of glue and/or intumescent paint. Using the same insulation used for the rest of the duct, fully pack the space between the duct and partition. Ensure tight compression in order to completely fill the opening. Install the insulation so that it is adjacent and tightly fitted against the penetration. The insulation must be cut leaving excess length, so that it exerts as much pressure as possible between the penetration and the last fitted piece of insulation.

The fire-stopping is from the second insulation layer with the width of 150 mm from both side of fire separation. The length of pin is equal to the double insulation thickness (spacing of the pins is ca. 150 mm).

The perimeter of the circular fire-stopping is tightened by one or two black wires with a diameter 1.6 mm on both sided of the penetration. Lamella mats are fixed by the wires first, then the insulation is secured to the duct by welded pins.



*Cross-section through a duct at the fire-stopping
(wall/floor penetration)*

■ FIRE CLASSIFICATION

Fire protective system ORSTECH Protect has been tested by the fire testing laboratory PAVUS, a.s., an authorised body AO 216. Classification protocols on the request. Fire protection system ORSTECH Protect has been tested in accordance with EN 1366-1. Maximum size for the rectangular duct is 1250 x 1000 mm and for the circular duct up to diameter 1000 mm.

Fire resistance EI 15, 30 a 45 S				
Part	Description	Unit	Rectangular duct	Circular duct
Duct	Flanges bolted together with an M10 steel nut	-	bolt at each corner	max. distance 200 mm
	Flange fastening with steel clamps with bolts M8	-	3 pcs./m'	-
	Use a ceramic tape gasket and fire-stopping mastic between the flanges to seal the joints	-	compulsory	compulsory
Hangers	Diameter of threaded drop rod	mm	M10	M10
	Position of the drop rods inside or outside the insulation material	-	optional	-
	Need to insulate the drop rods	-	no	no
	Minimum length of expanding anchors when fastening the threaded rod hangers to concrete soffits	mm	60	60
Insulation	Insulation material	-	Orstech 65 H	Orstech LSP PYRO
	Thickness	mm	40	50
	Density	kg/m ³	65	65
	Number of layers	-	1	1
	Joints between insulation – covered with aluminium tape	-	compulsory	compulsory
	Second layer of Orstech LSP PYRO thickness 50 mm at the drop rods and hangers	-	no	no
Fixing of the insulation	Orientation quantity of stud-welded pins	pcs./m ²	16	14
	Recommended distance from duct edges and joints	mm	80	80
	Recommended distance from flanges	mm	50	50
	Minimum quantity of pins per meter of the duct 1000 x 500 mm	pcs./m'	40	-
	Vertical duct – side 1000 mm	pcs./m'	12	-
	Vertical duct – side 500 mm	pcs./m'	8	-
	Horizontal duct – top side 1000 mm	pcs./m'	8	-
	– lateral side 500 mm	pcs./m'	8	-
Fire separation	– bottom side 1000 mm	pcs./m'	16	-
	Fire-stopping	-	insulation collar	insulation collar
	Width of the fire stopping	mm	2 x 150	2 x 150
	Maximum distance of stud-welded pins at the fire-stopping	mm	150	150
Fire separation	Steel tube stiffener in the duct	-	no	no



System data sheet

Insulation system ORSTECH Protect for fire resistant ducts Fire resistance EI 60 S

■ SYSTEM DESCRIPTION

Insulation system ORSTECH Protect for fire protection of air ducts. It is possible to reach fire resistance of 60 minutes by a single layer of insulation for rectangular and circular ducts both in horizontal and vertical orientation.

■ DUCTWORK

The steel duct is constructed in sections of galvanised steel sheet minimum 0.8 mm thick (standard duct sheeting for rectangular ducts specified in DIN 24190, for circular ducts in DIN 24145). Segments connected by flanges. Use a ceramic tape gasket and intumescent silicone between the flanges to seal the joints. Flanges of the rectangular duct have to be fastened together with steel clamps with nuts M8 in quantity of 3 pieces per 1 meter of the flange length (flange with the length 500 mm has to have 2 clamps).

■ DROP RODS AND HANGERS

Rectangular horizontal duct suspended with steel hangers consisting of two threaded drop rods M10, a channel section bearer 38/40 mm and hexagonal nuts and washers (certificated fire rated system MÜPRO MPC or equivalent). The drop rods can be positioned inside or outside the insulation. If drop rods are outside there is no need to insulate them separately. The bearers are positioned inside the insulation material.

Circular horizontal duct suspended by steel hangers consisting of two threaded drop rods, minimum M10 and a two-part circular band (certificated fire rated system MÜPRO or equivalent). The ends of each band section are bent outwards. Fasten the band sections together and attach them to the drop rods with hexagonal nuts and washers. Place these hangers inside the insulation. The rods do not need to be protected by insulation.

■ INSULATION

Rectangular vertical ducts can be insulated by slab Orstech 65 H with 40 mm or 60 mm thickness, rectangular horizontal ducts only by 60 mm slab. Circular ducts are insulated by lamella mats Orstech LSP PYRO with 50 mm thickness. Density of both products is just 65 kg/m³ thus makes cutting, bending or filling faster and more efficient than ever. Both products have reinforced aluminium foil facing. Insulation slabs (lamella mats) need to be cut to fit the duct as tightly as possible. Install the insulation so that one slab (lamella mat) is adjacent and tightly fitted against the other. No gaps must be present between butt joints of insulation. Insulation can be easily cut with a standard lagger's knife. There is no need for adhesive on joints. All the joints shall be sealed by aluminium tape. For rectangular ducts in the position of flange the slabs are snick first 15 mm of the thickness to avoid lifting of the slabs. Butt joints should be positioned out of flanges.



■ STUD-WELDED PINS

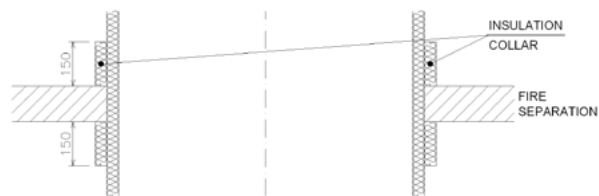
The insulation is fixed to the duct using stud-welded steel pins, 2.7 mm nominal diameter, and spring steel washers 30 mm diameter. The length of pin should be equal to the insulation thickness. Approximate pin's quantity for rectangular duct is 16 pcs./m² (which correspond to 40 pcs. per meter of the duct 1000 x 500 mm), 14 pcs./m² for circular ducts. Recommended distance from duct edges and joints is 80 mm, 50 mm from flanges.

■ FIRE-STOPPING (WALL/FLOOR PENETRATION)

Insulation system ORSTECH Protect is unique in its simplification for the fire-stopping. Neither a stiffener (steel tube) is needed in the duct, where the duct passes through the penetration, nor any kind of glue and/or intumescent paint. Using the same insulation used for the rest of the duct, fully pack the space between the duct and partition. Ensure tight compression in order to completely fill the opening. Install the insulation so that it is adjacent and tightly fitted against the penetration. The insulation must be cut leaving excess length, so that it exerts as much pressure as possible between the penetration and the last fitted piece of insulation.

The fire-stopping is from the second insulation layer with the width of 150 mm from both side of fire separation. The length of pin is equal to the double insulation thickness (spacing of the pins is ca. 150 mm).

The perimeter of the circular fire-stopping is tightened by one or two black wires with a diameter 1.6 mm on both sides of the penetration. Lamella mats are fixed by the wires first, then the insulation is secured to the duct by welded pins.



*Cross-section through a duct at the fire-stopping
(wall/floor penetration)*

■ FIRE CLASSIFICATION

Fire protective system ORSTECH Protect has been tested by the fire testing laboratory PAVUS, a.s., an authorised body AO 216. Classification protocols on the request. Fire protection system ORSTECH Protect has been tested in accordance with EN 1366-1. Maximum size for the rectangular duct is 1250 x 1000 mm and for the circular duct up to diameter 1000 mm.

Fire resistance EI 60 S					
Part	Description	Unit	Rectangular duct		Circular duct
Duct	Duct orientation	-	vertical	horizontal	vertical and horizontal
	Flanges bolted together with an M10 steel nut	-	bolt at each corner	bolt at each corner	max. distance 200 mm
	Flange fastening with steel clamps with bolts M8	-	3 pcs./m'	3 pcs./m'	-
	Use a ceramic tape gasket and fire-stopping mastic between the flanges to seal the joints	-	compulsory	compulsory	compulsory
Hangers	Diameter of threaded drop rod	mm	-	M10	M10
	Position of the drop rods inside or outside the insulation material	-	-	optional	-
	Need to insulate the drop rods	-	-	no	no
	Minimum length of expanding anchors when fastening the threaded rod hangers to concrete soffits	mm	-	60	60
Insulation	Insulation material	-	Orstech 65 H	Orstech 65 H	Orstech LSP PYRO
	Thickness	mm	40	60	50
	Density	kg/m ³	65	65	65
	Number of layers	-	1	1	1
	Joints between insulation – covered with aluminium tape	-	compulsory	compulsory	compulsory
	Second layer of Orstech LSP PYRO thickness 50 mm at the drop rods and hangers	-	no	no	compulsory
Fixing of the insulation	Orientation quantity of stud-welded pins	pcs./m ²	16	16	14
	Recommended distance from duct edges and joints	mm	80	80	80
	Recommended distance from flanges	mm	50	50	50
	Minimum quantity of pins per meter of the duct 1000 x 500 mm	pcs./m'	40	40	-
	Vertical duct – side 1000 mm	pcs./m'	12	-	-
	Vertical duct – side 500 mm	pcs./m'	8	-	-
	Horizontal duct – top side 1000 mm	pcs./m'	-	8	-
	– lateral side 500 mm	pcs./m'	-	8	-
Fire separation	– bottom side 1000 mm	pcs./m'	-	16	-
	Fire-stopping	-	insulation collar	insulation collar	insulation collar
	Width of the fire stopping	mm	2 x 150	2 x 150	2 x 150
	Maximum distance of stud-welded pins at the fire-stopping	mm	150	150	150
	Steel tube stiffener in the duct	-	no	no	no

13. 5. 2013 The information is valid up to date of publishing. The manufacturer reserves right to change the data. This can be caused by further development of the fire protection system.