Laboratory for Fire Safety

Summary of a fire resistance test:

Seal-It® 322 Hybrid-FR connecting stone to stone, stone to steel and stone to timber

On behalf of Connect Products, two tests were performed for determination of the fire resistance of several linear joint seals with Seal-It® 322 Hybrid-FR in walls of aerated concrete. The tests are performed in accordance with the European standard EN 1366-4:2021 using the standard heating curve.

This summary provides an outline of the product performance and the conclusions of the test. For a complete description of the examined linear joint seals, please refer to the report mentioned in the footnote.

Based on the tests performed in accordance with EN 1366-4:2021 and the extended application in accordance with EN 15882-4:2012, the system was classified in accordance with EN 13501-2:2023.

Taking into account the possible classification times mentioned in the standard, a linear joint seal made out of Seal-It® 322 Hybrid-FR, is classified according to the following combinations of performance parameters and classes.

This summary consists out of 11 pages. The classification report that forms the basis for this summary are available for inspection at the client and are registered as YB 2214-1E-RA-002, dated December 12, 2023.	**Reference**	**Page**	**Initials**
	RO/RO//YC 2214-2E-RA-001 19 February 2024	1/11	

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1 Seal-It® 322 Hybrid-FR connecting stone to stone

Fire resistance classification	
Vertical applied at both faces	
Wall thickness ≥ 50 mm **EI 60 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	**Seal depth (mm)** **13** **13**
Wall thickness ≥ 70 mm **EI 90 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	**seal depth (mm)** **13** **13**
Wall thickness ≥ 100 mm **EI 180 – V – X – F – W 5 to 40**	**Seal depth (mm)** **8 to 19 (interpolation)**

Fire resistance classification
Vertical applied over the full depth
Wall thickness ≥ 50 mm **EI 60 – V – X – F – W 0 to 5** **E 120 – V – X – F – W 0 to 5**
Wall thickness ≥ 60 mm **EI 90 – V – X – F – W 0 to 5** **E 120 – V – X – F – W 0 to 5**
Wall thickness ≥ 70 mm **EI 120 – V – X – F – W 0 to 5**

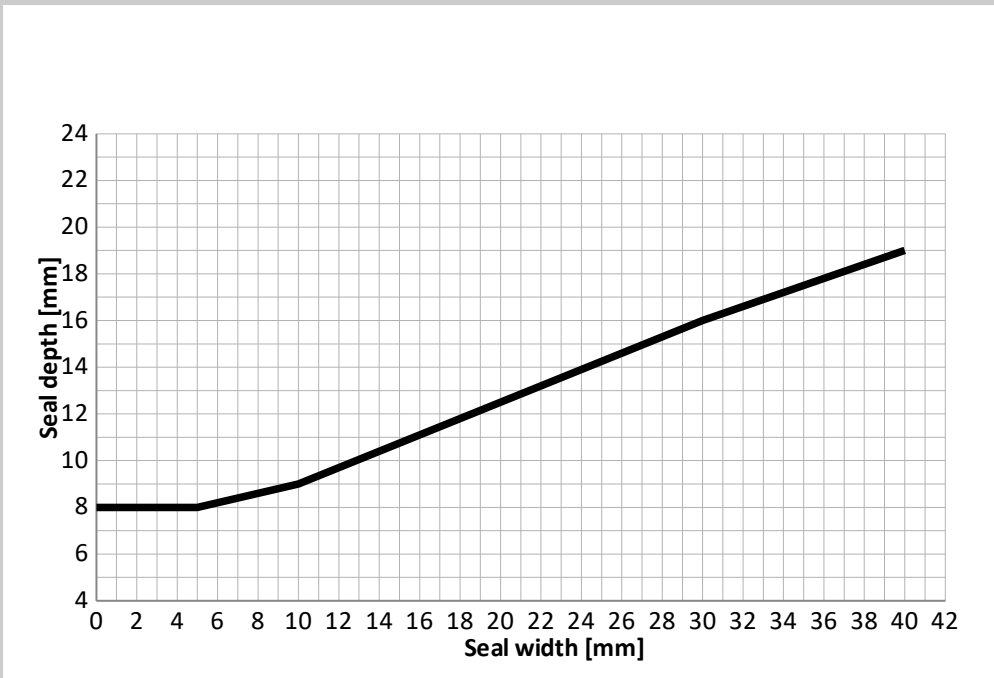
E = Criterion integrity, I = Criterion insulation, V = Vertical application in a vertical wall, X = No movement applied, F = Splice applied in the field, W = Permitted width range in millimetres (depth see conditions)

The following conditions apply:

- the classifications are valid for a vertical orientation in a vertical wall;
- the linear joint seals shall be applied at both sides to any type of wall of aerated concrete (class G4/600 or heavier), concrete, block work, limestone or masonry with a minimal thickness of 50 mm, 60 mm, 70 mm or 100 mm;

- the surfaces of the material on which the sealant is applied are thoroughly cleaned and treated with Seal-It® 520 Primer;
- the use of suitable PE / PU backing material is mandatory. A backing of mineral wool may be used, provided it is installed with compression in the thickness of the slab in practice;
- when applied at both sides the required depth of the Seal-It® 322 Hybrid-FR may also be increased with respect to the seal depth given in the table above. For the wall thickness ≥ 100 mm the required depth of the Seal-It® 322 Hybrid-FR depends on the width of the linear joint seal. For the Seal-It® 322 Hybrid-FR applied at both sides in a wall thickness ≥ 100 mm the minimal depth of the sealant in relation to the width of the linear joint seal is shown in Graph 1. The required depth of the sealant may also be increased with respect to the Graph (the black line is the minimum and recommended seal depth);
- or the linear joint seal is fully filled with Seal-It® 322 Hybrid-FR;
- the classifications are valid for both directions.

Graph 1: Minimum seal depth in relation to the seal width



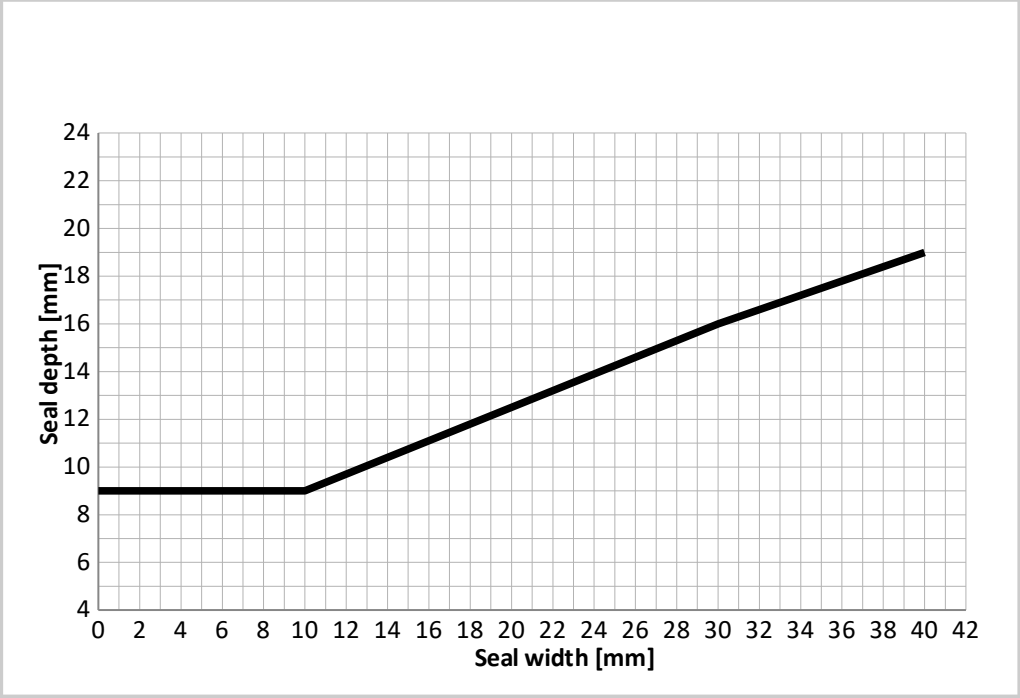
Fire resistance classification	
Horizontal applied at both faces	
Wall thickness ≥ 100 mm EI 180 – T – X – F – W 10 to 40	**Seal depth (mm) 9 to 19 (interpolation)**

E = Criterion integrity, I = Criterion insulation, T = Horizontal application in a vertical wall, X = No movement applied, F = Splice applied in the field, W = Permitted width range in millimetres (depth see conditions)

The following conditions apply:

- the classifications are valid for a horizontal orientation in a vertical wall;
- the linear joint seals shall be applied at both sides to any type of wall of aerated concrete (class G4/600 or heavier), concrete, block work, limestone or masonry with a minimal thickness of 100 mm;
- the surfaces of the material on which the sealant is applied are thoroughly cleaned and treated with Seal-It® 520 Primer;
- the use of suitable PE / PU backing material is mandatory. A backing of mineral wool may be used, provided it is installed with compression in the thickness of the slab in practice;
- the required depth of the Seal-It® 322 Hybrid-FR depends on the width of the linear joint seal. For the Seal-It® 322 Hybrid-FR applied at both sides the seal depth is shown in Graph 2. The required depth of the sealant may also be increased with respect to the Graph (the black line is the minimum and recommended seal depth);
- the classifications are valid for both directions.

Graph 2: Minimum seal depth in relation to the seal width



2 Seal-It® 322 Hybrid-FR connecting stone to steel

Fire resistance classification	
Vertical applied at both faces	
Wall thickness ≥ 100 mm	**Seal depth (mm)**
EI 45 – V – X – F – W 5 to 10	**9**
EI 60 – V – X – F – W 5 to 20	**13**
E 120 – V – X – F – W 5 to 20	**9 to 13 (interpolation)**
Horizontal applied at both faces	
Wall thickness ≥ 100 mm	**Seal depth (mm)**
EI 60 – T – X – F – W 5 to 20	**9 to 13 (interpolation)**
E 120 – T – X – F – W 5 to 20	**9 to 13 (interpolation)**

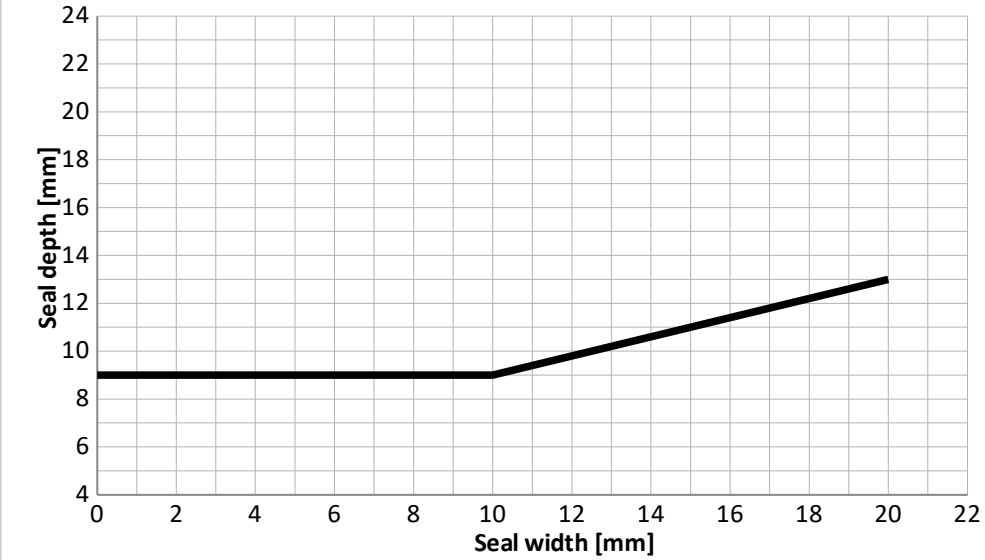
Fire resistance classification
Vertical applied over the full depth
Wall thickness ≥ 100 mm **EI 90 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**
Horizontal applied over the full depth
Wall thickness ≥ 100 mm **EI 60 – T – X – F – W 0 to 5** **E 120 – T – X – F – W 0 to 5**

E = Criterion integrity, I = Criterion insulation, V = Vertical application in a vertical wall, T = Horizontal application in a vertical wall,
X = No movement applied, F = Splice applied in the field, W = Permitted width range in millimetres (depth see conditions)

The following conditions apply:

- the classifications are valid for a vertical orientation in a vertical wall;
- the linear joint seals shall be applied at both sides to any type of wall of aerated concrete (class G4/600 or heavier), concrete, block work, limestone or masonry with a minimal thickness of 100 mm;
- at the other side, the linear joint seal shall be applied to steel supporting construction with a minimum thickness of 100 mm (minimum steel thickness 10 mm);
- the surfaces of the material on which the sealant is applied are thoroughly cleaned and treated with Seal-It® 520 Primer for aerated concrete and Seal-It® 510 Cleaner + Seal-It® 525 Clean & Bond for steel;
- the use of suitable PE / PU backing material is mandatory. A backing of mineral wool may be used, provided it is installed with compression in the thickness of the slab in practice;
- when applied at both sides the required depth of the Seal-It® 322 Hybrid-FR may also be increased with respect to the seal depth given in the table above. For the classifications E 120 – V – X – F – W 5 to 20 and EI 60/E 120 – T – X – F – W 5 to 20 the required depth of the Seal-It® 322 Hybrid-FR depends on the width of the linear joint seal. For the Seal-It® 322 Hybrid-FR applied at both sides the minimal depth of the sealant in relation to the width of the linear joint seal is shown in Graph 3. The required depth of the sealant may also be increased with respect to the Graph (the black line is the minimum and recommended seal depth);
- or the linear joint seal is fully filled with Seal-It® 322 Hybrid-FR;
- the classifications are valid for both directions.

Graph 3: Minimum seal depth in relation to the seal width



Fire resistance classification	
Vertical applied at both faces	
Wall thickness ≥ 50 mm **EI 20 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	**Seal depth (mm)** **13** **13**
Wall thickness ≥ 60 mm **EI 45 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	**Seal depth (mm)** **13** **13**
Vertical applied over the full depth	
Wall thickness ≥ 50 mm **EI 45 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	
Wall thickness ≥ 70 mm **EI 60 – V – X – F – W 5 to 20** **E 120 – V – X – F – W 5 to 20**	

E = Criterion integrity, I = Criterion insulation, V = Vertical application in a vertical wall, X = No movement applied, F = Splice applied in the field, W = Permitted width range in millimetres (depth see conditions)

The following conditions apply:

- the classifications are valid for a vertical orientation in a vertical wall;
- the linear joint seals shall be applied at both sides to any type of wall of aerated concrete (class G4/600 or heavier), concrete, block work, limestone or masonry with a minimal thickness of 50 mm, 60 mm or 70 mm;
- at the other side, the linear joint seal shall be applied to steel supporting construction with a minimum thickness of 50 mm, 60 mm or 70 mm (minimum steel thickness 1.5 mm);
- the surfaces of the material on which the sealant is applied are thoroughly cleaned and treated with Seal-It® 520 Primer for aerated concrete and Seal-It® 510 Cleaner + Seal-It® 525 Clean & Bond for steel;
- the use of suitable PE / PU backing material is mandatory. A backing of mineral wool may be used, provided it is installed with compression in the thickness of the slab in practice;
- when applied at both sides the required depth of the Seal-It® 322 Hybrid-FR may also be increased with respect to the seal depth given in the table above;
- or the linear joint seal is fully filled with Seal-It® 322 Hybrid-FR;
- the classifications are valid for both directions.

3 Seal-It® 322 Hybrid-FR connecting stone to timber

Fire resistance classification	
Vertical applied at both faces	
Wall thickness ≥ 100 mm EI 60 – V – X – F – W 5 to 20	**Seal depth (mm) 9 to 13 (interpolation)**
Horizontal applied at both faces	
Wall thickness ≥ 100 mm EI 90 – T – X – F – W 5 to 20	**Seal depth (mm) 9 to 13 (interpolation)**

Fire resistance classification
Vertical applied over the full depth
Wall thickness ≥ 100 mm EI 120 – V – X – F – W 5 to 20
Horizontal applied over the full depth
Wall thickness ≥ 100 mm EI 120 – T – X – F – W 0 to 5

E = Criterion integrity, I = Criterion insulation, V = Vertical application in a vertical wall, T = Horizontal application in a vertical wall,
X = No movement applied, F = Splice applied in the field, W = Permitted width range in millimetres (depth see conditions)

The following conditions apply:

- the classifications are valid for a vertical orientation in a vertical wall;
- the linear joint seals shall be applied at both sides to any type of wall of aerated concrete (class G4/600 or heavier), concrete, block work, limestone or masonry with a minimal thickness of 100 mm;
- at the other side, the linear joint seal shall be applied to timber supporting construction with a minimum thickness of 100 mm;
- the surfaces of the material on which the sealant is applied are thoroughly cleaned and treated with Seal-It® 520 Primer;

- the use of suitable PE / PU backing material is mandatory. A backing of mineral wool may be used, provided it is installed with compression in the thickness of the slab in practice;
- when applied at both sides the required depth of the Seal-It® 322 Hybrid-FR depends on the width of the linear joint seal. For the Seal-It® 322 Hybrid-FR applied at both sides the seal depth is shown in Graph 4. The required depth of the sealant may also be increased with respect to the Graph (the black line is the minimum and recommended seal depth);
- or the linear joint seal is fully filled with Seal-It® 322 Hybrid-FR;
- the classifications are valid for both directions.

Graph 4: Minimum seal depth in relation to the seal width