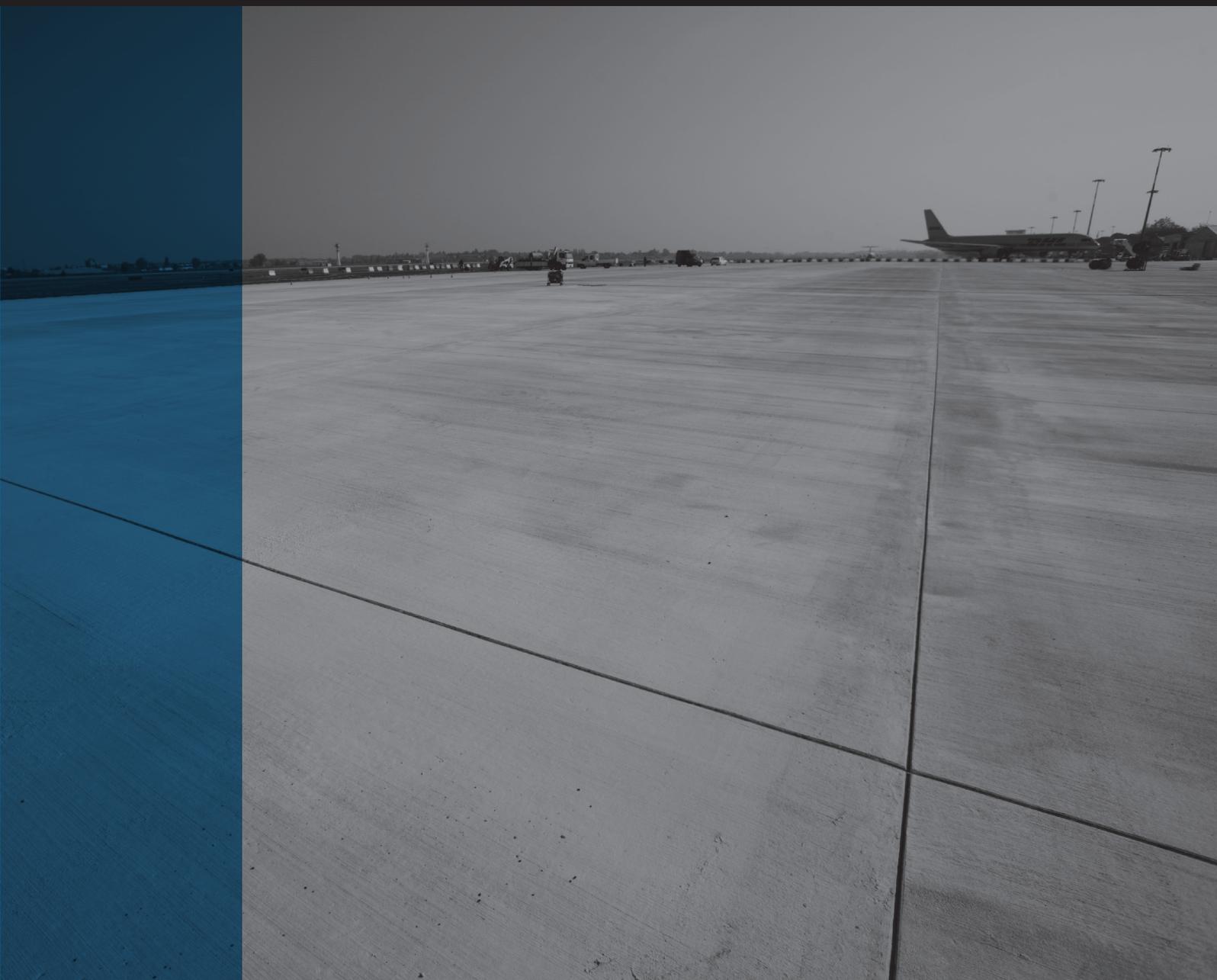


# APPLICATION OF ELASTIC SEALANTS



# E

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**E.6.1 CHEMICAL ANCHORS**

Procedure

**E.1.1 TRANSPARENT SEALS FOR GLASS**

**E.1.1.1 Application of multi-purpose, acetic silicone sealant for glass**

Supply and application of multi-purpose, acetic silicone sealant (such as **Mapesil Z** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



**E.1.2 SEALING DOOR AND WINDOW FITTINGS**

**E.1.2.1 Application of polyurethane sealant with a low modulus of elasticity for wooden, metal and PVC window and door fittings**

Supply and application of polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM and Gev EMICODE EC1R (such as **Mapeflex PU40** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

On critical surfaces or for heavy service conditions, apply a primer suitable for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre .....(€/m)



### E.1.3 ANTI-MOULD SEALS FOR SANITARY FITTINGS

#### E.1.3.1 Application of anti-mould, acetic silicone sealant for sanitary fittings

Supply and application of anti-mould, acetic silicone sealant (such as **Mapesil Z Plus** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



## E.1 ELASTIC SEALS FOR EDGE JOINTS

### E.1.4 ANTI-MOULD SEALS COORDINATED WITH MAPEI COLOURED GROUTS

#### E.1.4.1 Application of anti-mould, silicone sealant with a low modulus of elasticity in colours coordinated with cementitious flooring joint grouts

Supply and application of solvent-free, acetic silicone sealant with a low modulus of elasticity and high mould-resistant BioBlock® technology, certified ISO 11600 F25LM, BS 5889 B, ASTM C 920, TT S 00230 C, TT S 001543 A and DIN 18540 (such as **Mapesil AC** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



**E.1.5 SEALING ARCHITECTURAL FEATURES ON FACADES**

**E.1.5.1 Application of polyurethane sealant with a low modulus of elasticity for architectural features on façades**

Supply and application of polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM and Gev EMICODE EC1R (such as **Mapeflex PU40** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



## E.1 ELASTIC SEALS FOR EDGE JOINTS

### E.1.6 SEALING SHEET-METAL WORK

#### E.1.6.1 Application of neutral silicone sealant for sheet-metal work on buildings

Supply and application of neutral silicone sealant specific for bonding and sealing copper, steel, zinc-plated or pre-painted sheet-metal work on buildings, certified ISO 11600 F25LM (such as **Mapesil BM** produced by MAPEI S.p.A.).

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Extrude a bead at least 10 mm wide of neutral silicone sealant specific for sheet-metal work, certified ISO 11600 F25LM, along the lower edge of the sheet-metal (such as **Mapesil BM** produced by MAPEI S.p.A.). Cut the tip of the nozzle according to the diameter of bead required. On critical surfaces or for heavy service conditions, apply a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant. Overlap the upper sheet on the bead of sealant while still fresh, rivet the sheets in place to compress the sealant and apply a layer of elastic, waterproof adhesive.

Seal the overlap between the sheets and the heads of the rivets with a layer of sealant several millimetres thick to guarantee that the joint is perfectly water-tight.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove excess sealant immediately after application.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



E.1.7 SEALING INDUSTRIAL PLANT INSTALLATIONS

E.1.7.1 Application of multi-purpose, acetic silicone sealant for industrial plant installations

Supply and application of multi-purpose, acetic silicone sealant (such as **Mapesil Z** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a triangular fillet seal.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



## E.1 ELASTIC SEALS FOR EDGE JOINTS

### E.1.8 SEALING SWIMMING POOLS

#### E.1.8.1 Application of solvent-free, anti-mould, acetic silicone sealant with a low modulus of elasticity for swimming pools

Supply and application of solvent-free, acetic silicone sealant with a low modulus of elasticity and high mould-resistant BioBlock® technology, certified ISO 11600 F25LM, BS 5889 B, ASTM C 920, TT S 00230 C, TT S 001543 A and DIN 18540 (such as **Mapesil AC** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant to be extruded, to form a 10x10 mm triangular fillet seal.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before applying the sealant. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Protect the external edges of the joint with masking tape.

Apply the sealant to form a fillet between the elements butted together.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre

.....(€/m)



**E.2.1 SEALING SHRINKAGE JOINTS IN INDUSTRIAL FLOORS**

**E.2.1.1 Application of polyurethane sealant with a high modulus of elasticity for industrial floors**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 20% of their width, using polyurethane sealant with a high modulus of elasticity, certified ISO 11600 F20HM and Gev EMICODE EC1R (such as **Mapeflex PU45** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

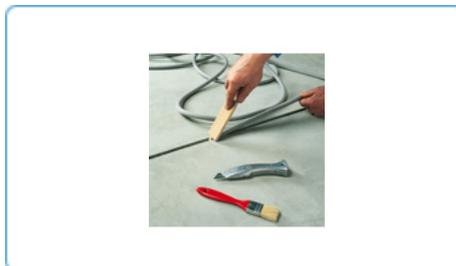
On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



### E.3.1 SEALING JOINTS SUBJECT TO HIGH MOVEMENTS

#### E.3.1.1 Application of polyurethane sealant with a low modulus of elasticity for joints subject to high movements

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 25% of their width, using polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM and Gev EMICODE EC1R (such as **Mapeflex PU40** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water and remove any excess sealant.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be painted over if required to protect façades using elastomeric paint suitable for external use (such as **Elastocolor Paint** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3 ELASTIC SEALS FOR STRUCTURAL JOINTS**

**E.3.2 SEALING JOINTS SUBJECT TO LIMITED MOVEMENTS**

**E.3.2.1 Application of acrylic sealant specific for joints with limited movements**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 12.5% of their width, using acrylic sealant for joints, certified ISO 11600 F12.5P up (such as **Mapeflex AC4** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces, or for particularly intense service conditions, apply a coat of the same sealant diluted with water on the edges of the joint and wait until it dries before applying the sealant.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

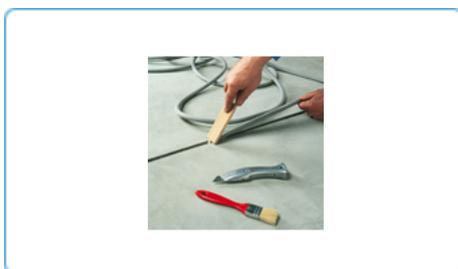
Remove excess sealant immediately after application.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be painted over if required using elastomeric paint suitable for external use (such as **Elastocolor Paint** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.3 SEALING INTERNAL JOINTS SUBJECT TO HIGH PEDESTRIAN AND VEHICLE USE**

**E.3.3.1 Application of two-component, castable polyurethane sealant for internal joints subject to high traffic use**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Brush-apply a coat of epoxy primer suitable for absorbent and compact substrates to improve adhesion (such as **Primer EP** produced by MAPEI S.p.A.).

Sealing joints, with movements when in service of up to 5% of their width, using 2-component, castable epoxy-polyurethane sealant with a high modulus of elasticity for internal floors (such as **Mapeflex PU21** produced by MAPEI S.p.A.), poured directly from its container into the joints after mixing the 2 pre-dosed components together with a low-speed mixer.

Remove excess sealant immediately after application.

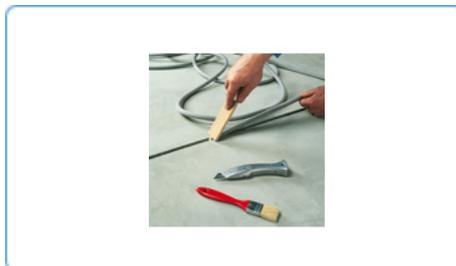
Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be dressed with a 3.5 mm thick, solvent-free, epoxy protection system (such as **Mapefloor System 32** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.4 SEALING EXTERNAL JOINTS SUBJECT TO HIGH PEDESTRIAN AND VEHICLE USE**

**E.3.4.1 Application of polyurethane sealant with a high modulus of elasticity for external joints subject to high traffic use**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 20% of their width, using polyurethane sealant with a high modulus of elasticity, certified ISO 11600 F20HM and Gev EMICODE EC1R (such as **Mapeflex PU45** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

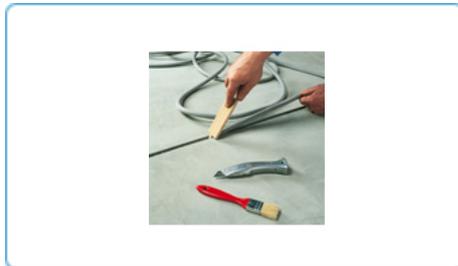
Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.5 SEALING JOINTS IN FLOORING FOR PEDESTRIAN USE**

**E.3.5.1 Application of castable polyurethane sealant with a low modulus of elasticity for joints in flooring for pedestrian use**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 25% of their width, using castable polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM (such as **Mapeflex PU50 SL** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) or for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

Remove excess sealant immediately after application.

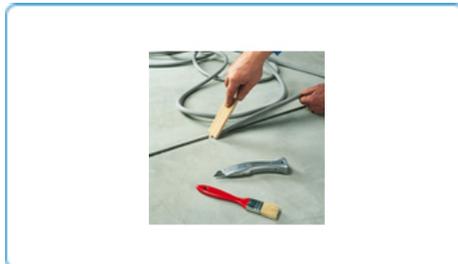
Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be dressed with colourable epoxy resin in watery emulsion for pedestrian flooring (such as **Mapecoat I 620 W** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.6 SEALING JOINTS SUBJECT TO CHEMICAL AGGRESSION FROM HYDROCARBONS**

**E.3.6.1 Application of castable or thixotropic modified polyurethane sealant for joints subject to chemical aggression**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 25% of their width, using 2-component, castable polyurethane sealant with a low modulus of elasticity, modified to resist hydrocarbons, certified ISO 11600 F25LM (such as **Mapeflex PB27** produced by MAPEI S.p.A.), poured directly from its container into the joints.

Treat the surface of absorbent substrates with a suitable primer (such as **Primer PU60** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

On vertical surfaces apply 2-component thixotropic polyurethane sealant modified to resist hydrocarbons (such as **Mapeflex PB25** produced by MAPEI S.p.A.) in the joints with a trowel.

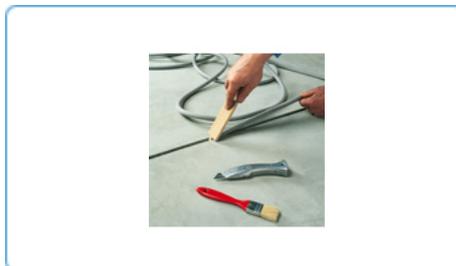
Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 10x10 mm section filled with thixotropic sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with thixotropic sealant .....(€/m)



**E.3.7 SEALING JOINTS IN MARBLE AND NATURAL STONE FINISHES**

**E.3.7.1 Application of neutral silicone sealant for marble and natural stone**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints, with movements when in service of up to 25% of their width, using neutral silicone sealant specific for marble and natural stone, completely free therefore of any substance which could migrate or bleed and stain adjacent surfaces, certified ISO 11600 F25LM, ISO 11600 G25LM, ASTM C920, ASTM C1248, DIN 18540, DIN 18545-2, BS 5889, TT-S 001543A and TT-S 00230C (such as **Mapesil LM** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

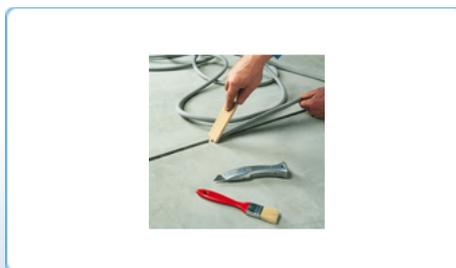
Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



### E.3.8 SEALING JOINTS SUBJECT TO HIGH CHEMICAL AND MECHANICAL STRESS

#### E.3.8.1 Application of castable or thixotropic epoxy-polyurethane sealant for joints subject to high chemical and mechanical stress

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints subject to high chemical and mechanical stress, with movements when in service of up to 10% of their width, using 2-component, castable epoxy-polyurethane sealant with a high modulus of elasticity and high resistance to chemical and mechanical stress, certified ISO 11600 F 7.5P (such as **Mapeflex PU20** produced by MAPEI S.p.A.), poured directly from its container into the joints.

On vertical surfaces apply 2-component thixotropic epoxy-polyurethane sealant with a high modulus of elasticity and high resistance to chemical and mechanical stress, certified ISO 11600 F 7.5 P (such as **Mapeflex PU30** produced by MAPEI S.p.A.) in the joints with a trowel.

On critical surfaces or for heavy service conditions, apply a suitable primer (such as **Primer EP** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

Remove excess sealant immediately after application.

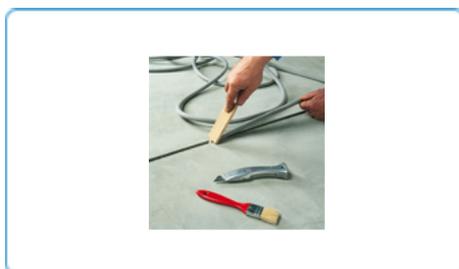
Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be painted with a solvent-free, trowelable epoxy mortar system for industrial floors up to 15 mm thick (such as **Mapefloor System 91** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 10x10 mm section filled with thixotropic sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with thixotropic sealant .....(€/m)



**E.3.9 SEALING JOINTS SUBJECT TO PROLONGED OR PERMANENT IMMERSION**

**E.3.9.1 Application of two-component, castable or thixotropic polyurethane sealant with a low modulus of elasticity for joints subject to immersion**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints subject to prolonged or permanent immersion, with movements when in service of up to 25% of their width, using 2-component, castable polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM (such as **Mapeflex PB27** produced by MAPEI S.p.A.), poured directly from its container into the joints. Treat the surface of absorbent substrates with a suitable primer (such as **Primer PU60** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

On vertical surfaces apply 2-component thixotropic polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F25LM (such as **Mapeflex PB25** produced by MAPEI S.p.A.), in the joints with a trowel.

Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 10x10 mm section filled with thixotropic sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with thixotropic sealant .....(€/m)



**E.3.10 SEALING JOINTS IN CERAMIC FINISHES**

**E.3.10.1 Application of solvent-free, anti-mould, acetic silicone sealant with a low modulus of elasticity for joints in ceramic finishes**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing fillet joints, with movements when in service of up to 25% of their width, using solvent-free, acetic silicone sealant with a low modulus of elasticity and high mould-resistant BioBlock® technology, certified ISO 11600 F25LM, BS 5889 B, ASTM C 920, TT S 00230 C, TT S 001543 A and DIN 18540 (such as **Mapesil AC** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

Treat absorbent substrates or surfaces subject to rusting with a suitable primer (such as **Primer FD** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

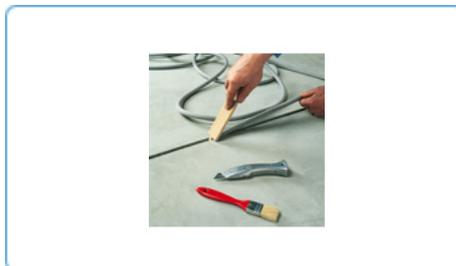
Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.11 SEALING JOINTS IN CERAMIC AND RESILIENT FLOOR COATINGS, INCLUDING THOSE SUBJECT TO INTENSE TRAFFIC**

**E.3.11.1 Application of polyurethane sealant with a high modulus of elasticity for joints in flooring subject to high traffic use**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints in ceramic or resilient flooring subject to high traffic use, with movements when in service of up to 20% of their width, using polyurethane sealant with a high modulus of elasticity, certified ISO 11600 F20HM and Gev EMICODE EC1 R (such as **Mapeflex PU45** produced by MAPEI S.p.A.), poured directly from its container into the joints.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) and for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

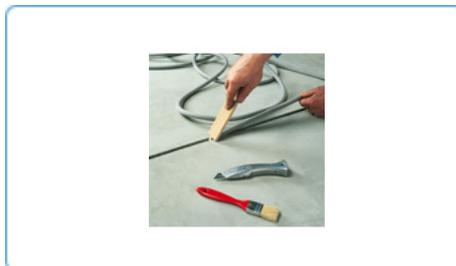
Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.3.12 SEALING JOINTS IN CERAMIC OR RESILIENT FLOOR FINISHES SUBJECT TO INTENSE TRAFFIC AND LOW CHEMICAL STRESS**

**E.3.12.1 Application of two-component, castable or thixotropic epoxy-polyurethane sealant for joints in flooring subject to intense and low chemical stress**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing joints in ceramic or resilient flooring subject to intense traffic and low chemical stress, with movements when in service of up to 10% of their width, using 2-component, castable epoxy-polyurethane sealant with a high modulus of elasticity and high resistance to chemical and mechanical stress, certified ISO 11600 F 7.5P (such as **Mapeflex PU20** produced by MAPEI S.p.A.), poured directly from its container into the joints.

On critical surfaces or for heavy service conditions, apply a suitable primer (such as **Primer EP** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

On vertical surfaces apply 2-component thixotropic epoxy-polyurethane sealant with a high modulus of elasticity and high resistance to chemical and mechanical stress, certified ISO 11600 F 7.5P (such as **Mapeflex PU30** produced by MAPEI S.p.A.) in the joints with a trowel.

Remove excess sealant immediately after application.

Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with castable sealant .....(€/m)
- per linear metre of joint with a 10x10 mm section filled with thixotropic sealant .....(€/m)
- per linear metre of joint with a 20x10 mm section filled with thixotropic sealant .....(€/m)



**E.4.1 SEALING INTERNAL ACCIDENTAL CRACKS**

**E.4.1.1 Application of acrylic sealant for internal accidental cracks**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing internal joints and/or accidental cracks, with movements when in service of up to 12.5% of their width, using acrylic sealant for joints, certified ISO 11600 F12.5P up (such as **Mapeflex AC4** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces, or for particularly intense service conditions, apply a coat of the same sealant diluted with water on the edges of the joint and wait until it dries before applying the sealant.

Remove excess sealant immediately after application.

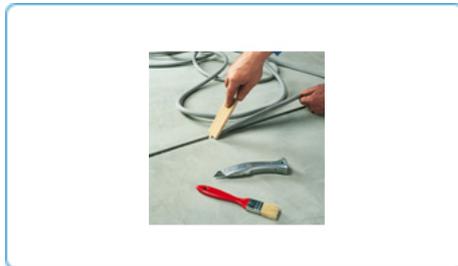
Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be painted over if required using elastomeric paint suitable for external use (such as **Elastocolor Paint** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- per linear metre of joint with a 10x10 mm section .....(€/m)
- per linear metre of joint with a 20x10 mm section .....(€/m)



**E.4 FLEXIBLE SEALS FOR ACCIDENTAL CRACKS**

**E.4.2 SEALING EXTERNAL ACCIDENTAL CRACKS**

**E.4.2.1 Application of polyurethane sealant with a high modulus of elasticity for external accidental cracks**

Supply and insertion in the joint of non-stick, compressible, closed-cell, foam polyethylene cord with a diameter at least 20% larger than the width of the joint (such as **Mapefoam** produced by MAPEI S.p.A.), to prevent the sealant sticking to the bottom of the joint and to calibrate the depth of the sealant.

We suggest cleaning the joint with compressed air to remove all traces of dust and loose parts before inserting the cord. If necessary, de-grease the surfaces of the joint with a neutral detergent.

Calculate the section of the sealant for the joint as follows: the same depth and width for joints up to 10 mm wide; depth 10 mm for joints from 10 to 20 mm wide; depth equal to half the width for joints wider than 20 mm.

Protect the external edges of the joint with masking tape.

Sealing external accidental cracks, with movements when in service of up to 20% of their width, using polyurethane sealant with a low modulus of elasticity, certified ISO 11600 F20HM and Gev EMICODE EC1R (such as **Mapeflex PU45** produced by MAPEI S.p.A.), extruded directly from its cartridge using a special extrusion gun after cutting the tip of the nozzle according to the diameter of the bead of sealant required.

On critical surfaces or for heavy service conditions, treat the surface with a suitable primer for absorbent surfaces (such as **Primer AS** produced by MAPEI S.p.A.) and for metals (such as **Primer M** produced by MAPEI S.p.A.) and leave it to dry before applying the sealant.

Remove excess sealant immediately after application.

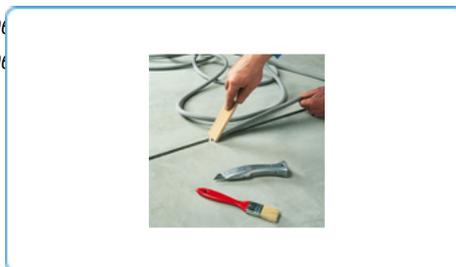
Smooth over the surface of the sealant immediately after application with a flat trowel dipped in soapy water.

Remove the masking tape.

When the sealant has completely polymerised, the surface may be painted over if required using elastomeric paint suitable for external use (such as **Elastocolor Paint** produced by MAPEI S.p.A.).

All other operations included and calculated in the price for work completed according to specification.

- p  
- p



.....(€/m)  
.....(€/m)



**E.5.1 ELASTIC WATERPROOFING FOR JOINTS ON TERRACES AND BALCONIES AND IN BATHROOMS, SHOWER BOOTHS, KITCHENS, SWIMMING POOLS, ETC.**

**E.5.1.1 Elastic waterproofing of joints subject to water and humidity**

Supply and application of alkali-resistant rubber tape with felt backing and edges (such as **Mapeband** produced by MAPEI S.p.A.).

Before applying the tape, clean all surfaces to remove traces of oil, grease, varnish, dust and loose or detached parts. Paintwork and finishes must be removed by sandblasting or hand grinding. This operation is indispensable if the surfaces have been treated with polyester, epoxy or polyurethane resin or with glassy materials.

Surfaces on which the alkali-resistant rubber tape with felt backing and edges (such as **Mapeband** produced by MAPEI S.p.A.) is to be applied must be clean, compact and dry.

Place masking tape along the ends of the joint to mark the boundary of the layer of adhesive applied.

Apply a first coat of rapid-drying elastic liquid membrane (such as **Mapelastic AquaDefense** produced by MAPEI S.p.A.) on the longitudinal sides of the joint.

Apply the felt ends of the alkali-resistant rubber tape with felt backing and edges (such as **Mapeband** produced by MAPEI S.p.A.) on the layer of fresh waterproofing product, making sure it is well impregnated.

Apply a second layer of waterproofing product on the first layer using the “fresh on fresh” technique to grip the ends of the alkali-resistant rubber tape with felt backing and edges (such as **Mapelastic AquaDefense** produced by MAPEI S.p.A.) and bond them to the substrate. Use the same product for the two layers.

It is very important that the product used covers at least a few millimetres of the rubber part of the tape.

The central rubber part of the tape must straddle the joint. If the joint is subject to movements, the central rubber strip of the tape must also be folded accordingly into the joint to avoid it being subjected to tensile stresses. Use special pre-shaped pieces to blend in drains and the corners between walls and floors. Continuity between the special pieces and the rubber tape is guaranteed by bonding with a suitable adhesive for PVC (such as **Adesilex T Super** produced by MAPEI S.p.A.) or polychloroprene adhesive in solvent (such as **Adesilex LP** produced by MAPEI S.p.A.), after cleaning the central rubber strip with acetone.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre of joint

.....(€/m)



## E.5.2 ELASTIC WATERPROOFING FOR JOINTS IN TUNNELS, ROAD-WORKS AND HYDRAULIC WORKS, SUCH AS CANALS, BASINS, SEWAGE HEADERS, ETC., INCLUDING THOSE SUBJECT TO LARGE MOVEMENTS WHEN IN SERVICE

### E.5.2.1 Elastic waterproofing for joints in infrastructures subject to large movements

Supply and application of alkali-resistant rubber tape with felt backing and edges (such as **Mapeband** produced by MAPEI S.p.A.).

Before applying the tape, clean all surfaces to remove traces of oil, grease, varnish, dust and loose or detached parts. Paintwork and finishes must be removed by sandblasting or hand grinding. This operation is indispensable if the surfaces have been treated with polyester, epoxy or polyurethane resin or with glassy materials.

Surfaces on which the alkali-resistant rubber tape with felt backing and edges (such as **Mapeband** produced by MAPEI S.p.A.) is to be applied must be clean, compact and dry.

Place masking tape along the ends of the joint to mark the boundary of the layer of adhesive applied.

Apply a first even layer 1-2 mm thick of two-component thixotropic epoxy adhesive (such as **Adesilex PG4** produced by MAPEI S.p.A.) with a smooth trowel on the clean, dry substrate. Try to avoid the adhesive running into the joint or crack.

Apply TPE tape specific for elastic sealing and waterproofing of expansion joints and cracks subject to movement when in service (such as **Mapeband TPE** produced by MAPEI S.p.A.). Press down slightly along the polyester fabric edges of the tape, and make sure that no creases are formed and that no air bubbles are entrapped.

Apply a second layer of the same product as used in the previous point using the “fresh on fresh” technique, and try to completely cover the fabric strip.

Smooth the product with a flat trowel.

Remove the masking tape slowly and carefully.

Protect the TPE tape from damage (e.g. perforation) during the application phase. In the event of large movements, the TPE tape must be applied inside the joint to form an upturned “Ω” shape. Joints between two strips of the TPE tape must be carried out after trimming the ends of the tape and the overlapping strip according to the shape to be blended in (edge joints, corner joints, “T” joints, etc.). Joints between adjacent strips of TPE tape must be carried out by overlapping the two ends of the tape according to requirements and bonding the central part of the tape by welding with a hot air blower, such as a Leister, or by chemical welding with a specific polychloroprene adhesive in solvent (such as **Adesilex LP** produced by MAPEI S.p.A.). In both cases, immediately after bonding, press down on the central part of the TPE tape with a carpet laying roller.

All other operations included and calculated in the price for work completed according to specification.

– per linear metre of joint

..... (€/m)



### E.6.1 CHEMICAL ANCHORS Procedure

#### Anchor design

The size of the hole in the substrate, the anchor depth, the diameter of the anchoring element and the distance from the edge must be calculated by a qualified design engineer. The tables below illustrate a practical summary of the results of practical experiments.

#### **Design suggestions for anchoring threaded bars (5.8 class steel)**

threaded bar	<b>M8</b>	<b>M10</b>	<b>M12</b>	<b>M16</b>	<b>M20</b>
distance from edge (mm)	92	126	152	188	224
pitch between anchors (mm)	184	252	304	376	448
diameter of anchor hole (mm)	10	12	14	18	22
depth of anchor hole (mm)	110	120	140	161	181
diameter of threaded bar (mm)	8	10	12	16	20
depth of threaded bar (mm)	80	90	110	125	140
tightening torque (Nm)	10	20	40	60	80
maximum recommended load (kN) temperature 24°C/40°C	8.6	13.5	19.7	28.0	36.4
maximum recommended load (kN) temperature 50°C/80°C	7.2	10.1	14.8	22.4	29.6
maximum recommended load (kN) temperature 72°C/120°C	5.0	7.0	10.2	15.5	20.8
maximum recommended shear load (kN) without bending moment	5.1	8.6	12.0	22.3	30.6

#### **Design suggestions for anchoring deformed bar (BSt class steel)**

deformed bar	<b>Ø8</b>	<b>Ø10</b>	<b>Ø12</b>	<b>Ø16</b>	<b>Ø20</b>
distance from edge (mm)	85	115	139	185	231
pitch between anchors (mm)	170	230	278	370	462
diameter of anchor hole (mm)	12	14	16	20	24
depth of anchor hole (mm)	110	120	140	165	190
depth of deformed bar (mm)	80	90	110	125	140
maximum recommended load (kN) temperature 24°C/40°C	8.1	11.2	16.5	24.9	33.3
maximum recommended load (kN) temperature 50°C/80°C	5.7	8.4	12.3	18.7	25.1
maximum recommended load (kN) temperature 72°C/120°C	4.2	5.8	8.5	12.9	17.3
maximum recommended shear load (kN) without bending moment	6.7	10.5	14.8	24.2	32.6

#### **Preparation of the substrate**

##### *Solid material*

Make holes in the substrate with a drill or a hammer drill, according to the type of material to be drilled. Remove all traces of dust and loose material from inside the holes with compressed air.

Clean the surface inside the holes with a long-bristled bottlebrush.

Remove all traces of dust and loose material again from inside the holes with compressed air.

##### *Perforated material*

Make holes in the substrate with a drill according to the type of substrate.

Clean the surface inside the holes with a long-bristled bottlebrush.

Place a mesh bush in the hole, with a diameter and length suitable for the size of the hole.

#### **Preparation and insertion of the metal bars**

Starting from the bottom of the hole, extrude the product into the hole until there is sufficient product.

Insert the metal bar in the hole using a rotary movement to expel all the air and excess resin from the hole before anchoring it into the substrate.

There are various types of chemical anchors available for anchoring metallic elements in building substrates. The type of anchor to be used depends on the type of substrate and the load to be applied.

**Chemical anchors for light loads**

**Mapefix PE SF** 2-component chemical anchor comprising a mixture of styrene-free polyester resins in a single cartridge, for anchoring metal bars in holes drilled at any angle in various solid or perforated building materials (see section [E.6.1.1](#)). The 2 components are mixed together when they are extruded through a static mixing nozzle screwed to the cartridge.

**Mapefix PE SF** is particularly suitable for absorbing light static loads on solid and perforated building materials, electrical, hydraulic and thermal plant equipment, sanitary fittings, aerials, signs, window and door fittings and anchors with small circular crests.

**Chemical anchors for heavy loads**

**Mapefix VE SF** 2-component chemical anchor comprising a mixture of styrene-free hybrid vinyl ester resins in a single cartridge, for anchoring metal bars in holes drilled at any angle in various solid or perforated building materials (see section [E.6.1.2](#)). The 2 components are mixed together when they are extruded through a static mixing nozzle screwed to the cartridge.

**Mapefix VE SF** is particularly suitable for absorbing heavy static loads on solid and perforated building materials, dry or damp substrates, immersed or exposed anchors in marine or industrial environments, rails for overhead cranes or trams, industrial motors, plant equipment, sanitary fittings, aerials, signs, pylons, guard rails and added steel reinforcement.

**Chemical anchors for structural loads**

**Mapefix EP** 2-component chemical anchor comprising pure epoxy resin in a single cartridge, for anchoring metal bars in holes drilled at any angle in various solid or perforated building materials (see section [E.6.1.3](#)). The 2 components are mixed together when they are extruded through a static mixing nozzle screwed to the cartridge.

**Mapefix EP** is particularly suitable for absorbing structural static loads on solid and perforated building materials, dry or damp substrates, immersed or exposed anchors in marine or industrial environments, increasing the section of beams and pillars, overhanging structures, added steel reinforcement, large circular crests and in smooth or rough holes.

Also:

for anchoring urban features and fittings (such as drain shafts, man-holes, road signs, poles for electricity and telephone lines and fencing), we recommend using:

- **Mapegrout SV** one-component, rapid-setting and hardening, shrinkage-compensating castable mortar for rebuilding deteriorated concrete structures and for anchoring drain shafts, man-holes, urban features and fittings, road signs, electricity and telephones poles, fencing, etc. in place (see section [F.11.2.1](#));
- **Mapegrout SV T** one-component, rapid-setting and hardening, shrinkage-compensating thixotropic mortar for rebuilding deteriorated concrete structures and for anchoring drain shafts, man-holes, urban features and fittings, road signs, electricity and telephone poles and fencing in place (see section [F.11.2.2](#)).
- To anchor metal brackets, pipe-work, electrical junction boxes and sheaths, backing frames for window and door fittings etc. in place on concrete or masonry substrates, we recommend using:
  - **Lampocem** ready-to-use, rapid-setting and hardening, anti-shrinkage hydraulic binder made from high-strength cement and special additives (see section [F.11.1.1](#)).
  - To anchor steel reinforcement, metallic structures and machinery in place, we recommend using:
    - **Mapefill R** rapid-setting, expansive, free-flowing, non-segregating fluid cementitious mortar made from high-strength cement, selected aggregates and special additives with the capacity of flowing into the most intricate spaces (see section [F.10.1.1](#));
    - **Mapefill** normal-setting, expansive, free-flowing, non-segregating fluid cementitious mortar made from high-strength cement, selected aggregates and special additives, including an expansive agent, with the capacity of flowing into the most intricate spaces (see section [F.10.1.2](#));
    - **Planigrout 300** three-component fluid epoxy mortar made from epoxy resin, selected aggregates in a granulometric curve and special additives (see section [F.10.1.3](#)).

**E.6.1.1 Installing chemical anchors for light static loads**

Supply and installation of a 2-component chemical anchor comprising a mixture of styrene-free polyester resins in a single cartridge (such as **Mapefix PE SF** produced by MAPEI S.p.A.), for anchoring metal bars in holes drilled at any angle in various solid or perforated building materials. The two components are mixed together during extrusion when they pass through a static mixer screwed to the end of the cartridge.

The product must be suitable for absorbing light static loads on solid and perforated substrates such as non-cracked concrete, conventional, lightweight or spun concrete, masonry, brickwork, stone and mixed masonry.

Use of the anchor must not generate strains or stresses typical of mechanical expansion fittings and must be suitable, therefore, for anchoring close to edges or where there is a limited pitch or space for only small circular crests.

The product must be certified according to ETA European Standards option 7 (anchors in concrete in compressed zones) and must have the following performance characteristics:

appearance:	thixotropic paste
colour:	grey
density (kg/l):	1.74
application temperature range:	> -5°C < +35°C
start setting time (at 5°C):	25'
complete hardening time	
on dry substrates (at 5°C):	2 h
compressive strength (N/mm <sup>2</sup> ):	75
flexural strength (N/mm <sup>2</sup> ):	30
dynamic modulus of elasticity (N/mm <sup>2</sup> ):	4000
maximum recommended tensile load (kN*):	18.8
maximum recommended shear load (kN*):	34.9

(\* ) M20 threaded bar, 5.8 class steel, C20/25 class concrete, depth of anchor hole 218 mm, depth of threaded bar 170 mm

All other operations included and calculated in the price for work completed according to specification (excluding costs for drilling holes and for metal bars).

– per anchor

.....(€/anchor)



**E.6.1.2 Installing chemical anchors for heavy static loads**

Supply and installation of a 2-component chemical anchor comprising a mixture of styrene-free hybrid vinyl ester resins in a single cartridge (such as **Mapifix VE SF** produced by MAPEI S.p.A.), for anchoring metal bars in holes drilled at any angle in various solid or perforated building materials. The two components are mixed together during extrusion when they pass through a static mixer screwed to the end of the cartridge.

The product must be suitable for absorbing heavy static loads on solid and perforated substrates such as non-cracked concrete, conventional, lightweight or spun concrete, masonry, brickwork, stone and mixed masonry.

Use of the anchor must not generate strains or stresses typical of mechanical expansion fittings and must be suitable, therefore, for anchoring close to edges or where there is a limited pitch.

The product must be certified according to ETA European Standards option 7 (anchors in concrete in compressed zones), ETA rebar (anchors for bars in construction joints), certified fire-resistant and must have the following performance characteristics:

appearance:	thixotropic paste
colour:	grey
density (kg/l):	1.65
application temperature range:	> -10°C < +35°C
start setting time (at -10°C):	90'
complete hardening time on dry substrates (at -10°C):	24 h
compressive strength (N/mm <sup>2</sup> ):	80
flexural strength (N/mm <sup>2</sup> ):	17
dynamic modulus of elasticity (N/mm <sup>2</sup> ):	4000
maximum recommended tensile load (kN*):	44.4
maximum recommended shear load (kN*):	34.9

(\* ) M20 threaded bar, 5.8 class steel, C20/25 class concrete, depth of anchor hole 218 mm, depth of threaded bar 170 mm

All other operations included and calculated in the price for work completed according to specification (excluding costs for drilling holes and for metal bars).

– per anchor

.....(€/anchor)



**E.6.1.3 Installing chemical anchors for structural static loads**

Supply and installation of a 2-component chemical anchor comprising a mixture of pure epoxy resin in a single cartridge (such as **Mapefix EP** produced by MAPEI S.p.A.), for anchoring metal bars in holes drilled at any angle in any solid or perforated building material. The two components are mixed together during extrusion when they pass through a static mixer screwed to the end of the cartridge.

The product must be suitable for absorbing structural static or dynamic loads on solid and perforated substrates such as non-cracked dry or damp concrete, smooth or rough holes in conventional, lightweight or spun concrete, masonry, brickwork, stone, mixed masonry and wood.

Use of the anchor must not generate strains or stresses typical of mechanical expansion fittings and must be suitable, therefore, for anchoring close to edges or where there is a limited pitch.

The product must be certified according to ETA European Standards option 1 (anchors in concrete in tension zones), option 7 (anchors in concrete in compressed zones), certified fire-resistant and must have the following performance characteristics:

appearance:	thixotropic paste
colour:	grey
density (kg/l):	1.41
application temperature range:	> +5°C < +40°C
start setting time (at +5°C):	2 h
complete hardening time on dry substrates (at 5°C):	48 h
compressive strength (N/mm <sup>2</sup> ):	137
flexural strength (N/mm <sup>2</sup> ):	47
dynamic modulus of elasticity (N/mm <sup>2</sup> ):	3240
maximum recommended tensile load (kN*):	38.1
maximum recommended shear load (kN*):	35.1

(\*) M20 threaded bar, 5.8 class steel, C20/25 class concrete, depth of anchor hole 218 mm, depth of threaded bar 170 mm

All other operations included and calculated in the price for work completed according to specification (excluding costs for drilling holes and for metal bars).

– per anchor

.....(€/anchor)

