



SPX 10237 / 10238

Epoxy Fast Filler System

Introduction

SPX 10237 / 10238 is an epoxy filler system designed for rapid cure at ambient temperature, to allow sanding without clogging at just over an hour after application. As well as rapid cure and good sandability, the system has been developed to offer ease of dispense and mixing, good sag resistance during application, good cured properties. The system offers a simple 1:1 mix ratio, high levels of adhesion, low shrinkage and good thermal and mechanical properties.

Mixing & handling

SPX 10237 resin should be mixed with SPX 10238 hardener in the following ratio. Any deviation from the prescribed ratio will affect the cure properties of the system.

| SPX 10237 Resin | SPX 10238 Hardener |
|------------------------|---------------------------|
| 100 | : 100 (by weight) |
| 100 | : 100 (by volume) |

The components should be mixed together preferably at 15-25°C - at lower temperatures the product thickens and is more difficult to mix. If mixing by hand, the components must be mixed thoroughly paying particular attention to the sides and bottom of the mixing vessel. Since this system gels in about five minutes mix no more than can be applied in two minutes and spend no more than one minute mixing the components.

Working times will be reduced as mix quantities of resin/hardener or ambient temperature are increased. Therefore the operator must satisfy himself as to the suitability of the working time for a given volume of mixed material at a particular temperature.

*Please see NOTICE

Physical properties

| Property | Resin | Hardener |
|--|-----------------------------------|-------------------------|
| Appearance | black/dark grey viscous liquid | white viscous liquid |
| Density | 1.56 | 1.56 |
| Viscosity (@ 25°C) poise | 290 | 780 |
| Mixed resin/hardener viscosity (@ 25°C) poise | n/a | 540 |

Application

Before applying the product to the surface ensure that the surface is clean dry and free of dust. The mixed system can be applied by trowel, pallet knife or other suitable dispenser. The system can be applied in thicknesses up to 1 cm without fear of exotherm. The system is designed for application at temperatures between 10 and 30°C. Thicknesses of 10mm can be achieved on vertical surfaces without sagging at 20°C. Increase in ambient temperature results in a lower maximum application thickness. Being easy to sand, the surface of the adhesive need not be finely-faired during application.

If applying other products over the SPX 10237 / 10238 filler system, the overcoating product can be added as soon as the filler is stiff enough. This depends on thickness of filler and ambient temperature. If applied during this period the need to sand the surface of the adhesive paste is eliminated.

Processing properties

The following properties have been determined at different ambient temperatures.

| Property | 15°C | 20°C | 25°C | 30°C |
|---|-------------|-------------|-------------|-------------|
| Gel time, 150g in water 25°C (min:sec) | | 5 ±1 min | | |
| Pot life, 100g in air (min:sec) | | 6:00 | | |
| Working time (minutes) | | 3-4 | | |

Curing

The system is designed to cure at ambient temperatures. Gel time and sanding time at 20°C is extremely fast and is not particularly dependent on filler thickness. The following table indicates times achieved in the laboratory:

| Property / thickness | 1mm | 3mm | 5mm | 10mm |
|-----------------------|---------|---------|---------|---------|
| Spreadable | 6m 0s | 5m 30s | 5m 0s | 2m 30s |
| Tack off time | 6m 50s | 6m 30s | 6m 0s | 3m 05s |
| Earliest sanding time | 1hr 50m | 1hr 40m | 1hr 30m | 1hr 20m |

Exact times for other temperatures/durations have not been determined and users should satisfy themselves that adequate properties for the system are obtained for the particular combination of mixed volume, ambient temperature, and elapsed time.

Cured properties

The following thermal and mechanical properties have been so far determined.

| Property | Unit | 1 hour | 24 hours | 7 days | 5 hours |
|----------------------------|------|---------|----------|--------|---------|
| | | @ 20°C* | @ 20°C | @ 20°C | @ 70°C |
| Tg1 - by DMTA | °C | - | - | - | - |
| Tg peak tan δ - by DMTA | °C | - | - | - | - |
| Tg2 - by DSC | °C | - | 36.0 | 38.0 | 39.2 |
| Linear shrinkage | % | - | - | - | - |
| Cleavage strength | N | - | 3741 | 3982 | - |
| Lapshear on glass laminate | N/mm | - | 5.04 | 4.49 | - |
| Lapshear on steel | N/mm | - | 15.17 | 16.00 | - |

The effect of mixing off-ratio is demonstrated by the following thermal results:

| Tg2 at mix ratio | Unit | 1 hour | 24 hours | 7 days | 10 days |
|------------------|------|---------|----------|--------|---------|
| | | @ 20°C* | @ 20°C | @ 20°C | @ 20°C |
| 100 : 80 | °C | - | - | 33.5 | 35.3 |
| 100 : 90 | °C | - | - | 31.9 | 35.2 |
| 100 : 100 | °C | - | 36.0 | 38.0 | 39.2 |
| 100 : 110 | °C | - | - | 31.5 | 38.9 |
| 100 : 120 | °C | - | - | 36.2 | 38.8 |

Health & safety

The following points must be considered:

1. Skin contact must be avoided by wearing protective gloves. SP recommend the use of disposable Nitrile for most applications. The use of barrier creams is not recommended, but to preserve skin condition a moisturising cream should be used after washing.
2. Overalls or other protective clothing should be worn when mixing, laminating or sanding. Contaminated work clothes should be thoroughly cleaned before re-use.
3. Eye protection should be worn if there is a risk of resin, hardener, or solvent or dust entering the eyes. If this occurs flush the eye with water for 15 minutes, holding the eyelid open, and seek medical attention.
4. Ensure adequate ventilation in works areas. Respiratory protection should be worn if there is sufficient ventilation. Solvent vapours should not be inhaled as they can cause dizziness, headaches, loss of consciousness and can have long term health effects.
5. If the skin becomes contaminated then the area must be immediately cleansed. The use of resin removing cleansers is recommended and to finish, washing with soap and warm water. The use of solvents on the skin to remove resins etc. must be avoided.

Washing should be part of routine practice:

- before eating or drinking
 - before using the lavatory
 - before smoking
 - after finishing work
6. The inhalation of sanding dust should be avoided, and if it settles on the skin then it should be washed off. After more extensive sanding operations a shower/bath and hair wash is advised.

SP Systems produces a separate full Materials Safety Data Sheet for all hazardous products. Please ensure that you have the correct MSDS to hand for the materials you are using before commencing work. There is also a Health and Safety guide for the use of epoxy resin systems available from SP Systems, in the catalogue, or on the company website: <http://www.spsystems.com>.

Transport & storage

The resin and hardener should be kept in securely closed containers during transport and storage. Any accidental spillage should be soaked up with sand, sawdust, cotton waste or any other absorbent material. The area should then be washed clean (see appropriate Safety Data Sheet).

Adequate long term storage conditions will result in a shelf life of 12 months for both the resin and hardener. Storage should be in a warm dry place out of direct sunlight and protected from frost. The temperature should be between 10°C and 25°C. Containers should be firmly closed. Hardeners, in particular, will suffer serious degradation if left exposed to air.

Notice

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