

S&P A-Sheet 120

Aramid fibre sheet for structural reinforcement



A Simpson Strong-Tie® Company

The information in this technical data sheet is valid for the S&P range of products, systems and solutions.
Please note that the information in your country may vary. Visit sp-reinforcement.eu to find your local branch.

DESCRIPTION

S&P A-Sheet 120 is a unidirectional aramid fibre fabric with high strength and toughness.

S&P A-Sheet 120 is applied (stuck on) using the laminating resin S&P Resin 55 HP or with the water permeable system S&P Resicem HP.

WHERE TO USE

- Strengthening or reinforcement of bearing structures made from reinforced concrete, masonry and timber for axial, shear and bending tensile stresses
- Protection of columns and bracing structures against vehicle collisions and other impacts
- Protection from explosion (accidental or terrorism)
- Increasing earthquake resistance (concrete & masonry)
- Increasing imposed loads
- In electrical environments, where non-conductive material is required
- Correction of design and/or building mistakes
- In case of a change in the nature of imposed loads
- Improving serviceability and suitability
- Complying with the latest standards

PERFORMANCE FEATURES

- Flexible application, even on curved surfaces such as pillars, columns, silos, chimneys, walls, arched slabs, etc.
- Low self-weight and small installation thickness
- Simple, flexible and economical strengthening method
- No corrosion
- Very high abrasion and tear resistance
- Very short interruption in normal use of the relevant building or infrastructure
- No noise and no vibration during installation

PRODUCT DATA

Generic description

S&P A-Sheet 120

Appearance

Yellow unidirectional aramid fibre fabric

Size

Length: 100 m rolls

Width: 300 mm

Storage

Store in a dry place and without direct sunlight at a temperature between +5 °C and +35 °C



Condition of the substrate

Minimum adhesive pull strength of substrate: 1.0 N/mm² or as required according to structural calculations.

The temperature of the bearing substrate should be at least +8 °C and at least 3 °C above the dew point.

When using S&P Resin 55 HP (impermeable), the concrete moisture content must be < 4 wt. % (calcium carbide method).

When using S&P Resicem HP (water vapour permeable), the concrete moisture content must be maximum 12 wt. %.

Substrate preparation – concrete

The substrate must be load-bearing, dry, clean and free of dust and loose particles, dirt, oil, grease and other separating substances.

The substrate should be prepared using suitable methods such as grinding, sand blasting or high pressure water jets (> 800 bar). Dust must be removed with a vacuum cleaner.

Concrete repairs and uneven places must be evened out with the re-profiling mortar S&P Resin 230. Whenever possible, work 'wet-on-wet'. If this is not possible, roughen the surface before application of the sheets to guarantee a good adhesion between the S&P Resin 230 and S&P Resin 55 HP.

If laminating with S&P Resicem HP (water vapour permeable), use the cementitious S&P Repecem 15 as re-profiling mortar.

Treatment

Cut sheets with scissors or a knife and ruler.

Never bend the sheets in longitudinal direction! (Sheet may only be folded parallel to the fibre)

The S&P A-Sheet 120 can be applied in a dry or wet lay-up process.

For more details, please refer to the application manual for S&P A-Sheet 120.

Application

Reinforcing work should be carried out by well-trained and experienced specialists.

Smallest radius for reinforcement around corners: > 25 mm

In the fibre direction, the overlapping length must be at least 120 mm.

During application, observe the epoxy adhesive agent's pot life (maximum time the substance may be left open).

The sheets can be covered in a suitable bonding agent / primer (S&P Resin 55 HP and quartz sand) in order to add a coloured paint or plaster coat.

S&P provides design guidelines, as well as a special design software for FRP systems:

- FRP Lamella – flexural and shear reinforcement of slabs and beams
- FRP Colonna – axial reinforcement of columns

For detailed advice, please contact our engineering department.



MECHANICAL PROPERTIES

S&P A-Sheet 120 Aramid fibre sheet for structural reinforcement		
Technical data unidirectional	Unit	A-Sheet 120 290 g/m
Elastic modulus	kN/mm ²	≥ 120
Tensile strength	N/mm ²	≥ 2900
Fibre weight	g/m ²	290
Weight per unit area of sheet	g/m ²	320
Density	g/cm ³	1.45
Elongation at rupture	%	2.5
Design thickness (fibre weight/density), longitudinal	mm	0.20
Theoretical design cross-section Width: 1000 mm, longitudinal	mm ²	200
Reduction factor γ for the design (manual lamination / UD sheet)		1.3 (recommended by S&P)
Tensile force (elongation at break) Width: 1000 mm	kN, longitudinal	440
Tensile force for dimensioning (flexural strength) Width: 1000 mm at $\epsilon = 0.6\%$	kN, longitudinal	105
Tensile force for dimensioning (axial load) Width: 1000 mm at $\epsilon = 0.4\%$	kN, longitudinal	70

CONSUMPTION

Product	S&P Resin 55 HP (impermeable)	S&P Resicem HP (vapour permeable)
S&P A-Sheet 120 290 g/m ²	700–1000 g/m ²	1200–1600 g/m ²
The material consumption depends on the flatness and the roughness of the substrate. The actual consumption could be higher.		

FIRE PROTECTION

If necessary, the S&P A-Sheets can be protected with fire protection plates. Depending on the requirements of the fire resistance, there are various alternative solutions.

Please contact our technical services department.

CLEANING

Tools cleaning

Mixture that has not yet hardened can be washed off with S&P Cleaner. Mixture that has hardened can only be removed by mechanical means.

ACCESSORY PRODUCTS

S&P Cleaner

For cleaning of the tools.

S&P press roller

For the manual laminating of the S&P A-Sheet. Available piecewise in 3 different widths (60, 90, 130 mm).

S&P squeeze (rubber spatula) (* see image on page 2)

For smoothing of the sheets and for distributing the laminating resin. The spatula is 20 cm in width and available piecewise.

S&P Aramid scissors (* see image on page 2)

For the cutting and assembling of aramid sheets.

TESTING

All technical data stated in this product data sheet are based on laboratory tests. Circumstances beyond our control may lead to deviations of actual values.

Please contact us if you require any information regarding tests that have been conducted.
Test reports may be available.

HEALTH & SAFETY

Important safety instructions

For detailed safety information, we recommend that you see the current safety data sheet which is available on www.sp-reinforcement.eu or you can contact us on +41 41 825 00 70.

S&P's range of products are for industrial use. They must be installed by specialised personnel and competent professionals with adequate training. The installation instructions must be followed and can be found in S&P application manuals and several "Guideline" documents / existing technical notes.

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The information and data in this technical data sheet serve to ensure the normal intended use and normal application suitability; the information and data are based on our knowledge and experience. They do not absolve the user from their own responsibility to check the suitability and application method.

The rights to make changes to product specifications are reserved. Furthermore, our general sales and delivery terms apply. The current, most recent product data sheet is valid, and should be requested from us.

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