

HARDWIRE®

3SX Cords and 3SX Tapes



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The 3SX Hardwire® is a high carbon steel cord with a micro-fine brass or AO-brass (Adhesion Optimized) coating. The 3SX cord is used where balanced compressive and tensile strengths are required as well as better handling characteristics than the 3S. The 3SX wire cord is made by twisting three identical wire filaments together at a longer than usual lay length and then over-wrapping the bundle with a single filament. The result is a cord with lower twist angles and straighter filaments that are the basis for the increased compressive strengths.

Characteristics:

- 3SX and 3S tapes have the highest compressive strengths of all Hardwire® tapes and tend to match or exceed the tensile properties.
- Increased mechanical bonding in resins.
- Better interlaminar shear resistance.
- The cords do not bloom in failure modes during compression or tension.
- Laminates exhibit steel like characteristics with high ductility and extreme deflection capability.
- Very high flexural strength as well as ductile failure modes (laminates tend to bend – not break).
- The best tape for bending angles and can be done in standard sheet metal breaks.
- Very boardy feel – excellent for flat surfaces but still conformable enough for curved structures.
- Better handling characteristics and cutability than 3S tapes.

Single Roving (Cord) Properties							
Description	Filament Diameters (in)	Cord Diameter (in)	Break (N)	Break (lbs)	Break (kips)	Strain To Failure	Length Per Lb. (ft)
3SX	All filaments are .0189	0.04	1343	302	0.302	2.30%	333.9

Description				Tape Properties				Typical Composite Properties			
Density	Hardwire Item Number	Cord Type	Standard Cord Coatings	Tape Density (wire/in)	Tape Weight (lbs/ft ²)	Tensile Load (Kips/in)	Tape Thickness (T) (in)	Laminate Density (lbs/ft ³)	Laminate Thickness (in) (t)	Sheet Stress (ksi)	Effective Modulus (msi)
Low	3SX-4-12	3SX	Brass, AO Brass	4	0.14	1.21	0.052	91.2	0.052	23.2	2.43
Medium	3SX-12-12	3SX	Brass, AO Brass	12	0.43	3.62	0.052	149.6	0.052	69.7	6.24
High	3SX-21-12	3SX	Brass, AO Brass	21	0.76	6.34	0.052	215	0.052	122.0	10.54

Legal Disclaimer: When properly incorporated into reinforced plastics and cements, Hardwire® products will normally produce properties similar to those shown in the applicable product data sheets, typical of well-made plastic laminates or cementitious composites. However, Hardwire LLC cannot predict or warrant the actual performance of materials that incorporate Hardwire® products due to the multitude of resin choices, manufacturing processes, potential end uses, and other variables not under Hardwire LLC's control. Results may therefore vary. It is the customer's sole responsibility to validate these values through their own manufacturing and testing processes.