

## STRUXURE® Heavy SR Mats

With Steel Flitch-Plate Reinforcement and Matlok® Hardware Systems

STRUXURE heavy mats, when combined with reinforced ¼” steel flitch plates, and MatLok® hardware systems are more rigid, allowing them to be able to support more load than traditional 12” hardwood lumber mats for use under heavy equipment in wet or challenging project site conditions.

**Mat Structural Properties, 48” wide**

	Weight (lbs)	Compression Perp Grain (psi)	MOE (psi)	Allowable Stress (psi)
12”x4’x20’ Oak Dry Wood (12%), Limited Availability	4,800	950	1,600,000	1,400
12”x4’x20’ Mixed Hardwood Mat Dry Wood (12%), Various Types of Wood	4,400	500	1,400,000	1,200
7”x46”x20’ STRUXURE® Heavy Mat (5) pcs RSC, (4) ¼” Flitch Plates, (8) Matlok® Sets	2,590	4,500	10,000,000	3,000
9”x50”x20’ STRUXURE® Heavy Mat (7) pcs RSC, (4) ¼” Flitch Plates, (8) Matlok® Sets	4,150	4,500	10,000,000	3,000

The comparison is given here for a STRUXURE® steel reinforced recycled structural composite mat versus a standard 12” oak and 12” mixed hardwood mat. The 12” mixed hardwood mat is comprised assuming a worst-case scenario between oak, poplar, maple, or other available northern timber hardwood species. When compared side by side, the additional weight from the flitch plate in a Spartan composite mat is offset by dramatically by higher stiffness capacity and flexural resistance, increasing their load carrying capacity and performance in soft and uneven soils.

The reinforced mat is a composite structure combining the rigidity and tensile strength of A36 steel plates and high performance MatLok® hardware with the toughness, environmental stability, compressive strength and lateral buckling stability from the thermoplastic STRUXURE® beams. This unique combination results in mats that perform better and deflect less than thicker 12” timber mats, and weigh up to 25% less! In field use, these reinforced mats can be expected to perform as follows (calculated using the soil bearing capacity method):

### Minimum Allowable Soiling Bearing Capacity, 7” Thick Steel Reinforced Mat with MatLok® Hardware

Load (lb)	Width Tire or Tread on Mat (in)						
	6”	12”	18”	24”	30”	36”	45”
100,000	2100 PSF	2000 PSF	1750 PSF	1600 PSF	1400 PSF	1200 PSF	1100 PSF
140,000	3700 PSF	3400 PSF	3000 PSF	2650 PSF	2500 PSF	2350 PSF	2200 PSF
200,000	6100 PSF	5600 PSF	4900 PSF	4500 PSF	4200 PSF	3950 PSF	3700 PSF

### Minimum Allowable Soiling Bearing Capacity, 9” Thick Steel Reinforced Mat with MatLok® Hardware

Load (lb)	Width Tire or Tread on Mat (in)						
	6”	12”	18”	24”	30”	36”	48”
100,000	1900 PSF	1750 PSF	1550 PSF	1375 PSF	1200 PSF	1100 PSF	1000 PSF
140,000	3450 PSF	3100 PSF	2750 PSF	2350 SF	2200 SF	2000 SF	1800 SF
200,000	5500 PSF	5100 PSF	4600 PSF	4100 SF	3800 SF	3650 SF	3300 SF

**Steel reinforced STRUXURE® composite mats are stronger and lighter than hardwood mats and do not lose structural integrity when wet.** At 12" thick when dry, a standard heavy construction wooden mat is around 40% heavier than a 7" STRUXURE mat with the flitch plate, and 25% heavier than a 9" mat with the steel reinforcing flitch plates. When comparing load carrying capacity, the picture becomes even more impressive for STRUXURE® reinforced mats:

#### Minimum Allowable Soiling Bearing Capacity, 12" Oak Mat

Load (lb)	Width Tire or Tread on Mat (in)						
	6"	12"	18"	24"	30"	36"	48"
100,000	2250 PSF	2100 PSF	1950 PSF	1850 PSF	1750 PSF	1650 PSF	1500 PSF
140,000	4200 PSF	3800 PSF	3500 PSF	3300 PSF	3000 PSF	2800 PSF	2500 PSF
200,000	7700 PSF	7100 PSF	6500 PSF	5800 PSF	5300 PSF	4900 PSF	4400 PSF

As shown, a 12" thick oak mat (E=1,600,000 psi, 1400 psi allowable bending) performs very similarly to a 7" mat with steel reinforcing plates at a significantly lighter weight per foot! This scenario is with a best case scenario, as it assumes a dry, construction grade oak.

Note that the wood charts above assume the lumber at 12% moisture content, or dry conditions. If the lumber used in a mat is green, or used for a prolonged period in a saturated environment, the boards will either contain or absorb excess water. It is important to remember that as wood absorbs moisture up and until its saturation point, it will LOSE strength (MOR) as well as stiffness (MOE) by as much as 65% from maximum values. This is direct contrast to structural thermoplastic such as STRUXURE® products that will never change structural properties due to the environment. Finally, wood products can be treated with and contain toxic preservative materials such as creosote, chromated copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA) and ammoniacal copper arsenate (ACA) that can leach out of the lumber and into the environment in direct contrast to STRUXURE® thermoplastics which remain inert and unchanged by the environment they occupy.

When a saturated condition and a mixed-hardwood, non-select lumber are taken into consideration, we could realistically reduce the strength of a typical 12" mixed hardwood mat (E=1,400,000 psi, 1200 psi allowable bending).

#### Minimum Allowable Soiling Bearing Capacity, 12" Mixed-Hardwood Mat

Load (lb)	Width Tire or Tread on Mat (in)						
	6"	12"	18"	24"	30"	36"	48"
100,000	2600 PSF	2500 PSF	2300 PSF	2150 PSF	2000 PSF	1800 PSF	1700 PSF
140,000	4800 PSF	4500 PSF	4100 PSF	3900 PSF	3500 PSF	3100 PSF	2800 PSF
200,000	9100 PSF	8500 PSF	7300 PSF	6600 PSF	6000 PSF	5500 PSF	4700 PSF

### Advantages of STRUXURE® Recycled Structural Composite Mats

- Engineered product made from recycled plastic waste, steel plates and high performance Matlok® hardware
- Do not lose structural integrity or rot when wet
- Lighter mats result in more square footage of ground cover per shipment and lower freight costs per mat
- Estimated 5x or greater the life of mixed hardwood lumber mats
- Resistant to salt and most chemicals
- Does not absorb, retain or release chemicals or liquids
- Can be recycled again at the end of their useful life
- Local prompt shipment inventory available for purchase or rental

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