

AHC-TC01: STANDARD FOR INDUSTRIAL MATTING

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1. Background

1.1 Industrial matting, also known as cribbing, temporary work platforms or surfaces, bridging, or the like, is widely used throughout the pipeline, energy exploration, utility, and other heavy construction industries primarily as a means of supporting heavy equipment on unstable ground, in environmentally sensitive areas. Industrial matting is also commonly used to form expanses over narrow waterways, ditches, gullies, or similar terrain. Mats provide a load distribution mechanism that effectively reduces the formation of ruts; thereby minimizing associated negative impacts on the local environment. Currently, the pipeline, energy exploration, utility and the construction industries utilize solid sawn wood and wood panel members, amongst other materials in a variety of forms to aid in oil and gas exploration, pipeline and utility line construction, dredging, dragline, logging, support for heavy stationary equipment such as cranes, the construction of buildings, roads and bridges and other related activities. Due to the vast amount of wood (of various species, sizes, and grades) and other materials used for industrial matting, the load capacities and strength characteristics of such matting varies significantly from mat to mat. The primary purpose for use of industrial matting is to facilitate vehicular and heavy equipment use and travel in areas that are generally otherwise unfit for such use and travel. Ground conditions under the industrial matting vary greatly and may include, but not be limited to, sand, clay, peat, wetlands, or waterlogged soil.

2. Risk Management

2.1 Matting applications present scenarios of risk associated with the structural characteristics of the mats which affect the personal health and safety of associated workers, the damage of equipment and property; and the potential for chemical and biological characteristics of the mats that may affect the local ecology and impact the environment.

3. Structural Characteristics

- 3.1 Industrial construction practices require and make use of rigid matting as a means of support over soft, unstable, sensitive, or otherwise unsuitable ground conditions. Rigid and stiff matting provides a means of distributing concentrated and heavy loads over large areas such as to minimize soil and ecological disturbance and to provide rigid and stable work platforms. The matting should be of sufficient and known mechanical properties, stiffness and strength to safely and reliably support intended loadings (often heavy equipment). In general, industrial matting is relatively long and thin, that is, it often has a length to thickness ratio greater than 10. Additionally, mats are often composed of multiple pieces of smaller constituent materials that are fastened together via bolts, adhesives, nails, screws, or other. As such, bending strength and stiffness of each constituent member and of each assembled mat are of critical importance to maintaining a safe work environment.
- 3.2 Materials. Industrial matting may be constructed from various structural materials including, but not limited to, wood, metal, concrete, polymers, or similar materials (“Constituent Material”), under the condition that such materials used in the construction of the industrial matting achieve adequate and reportable performance characteristics as described below.
- 3.3 Construction Loads. Any material from which industrial mats are constructed should be of sufficient character and properties to withstand its intended loading plus a reasonable and predictable factor of safety. Basic strength and stiffness design properties for the industrial mat and/or its Constituent Material(s) shall be reported to the end user of the industrial matting at the time the matting is placed in the stream of commerce. Industrial matting and its varying components shall be capable of supporting without failure their maximum intended loads or rated capacities. Industrial matting shall not be placed in the stream of commerce without the inclusion of documented verifiable strength and stiffness ratings for the industrial matting supplied.
- 3.4 Use. Industrial mats shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
- 3.5 Wood. Where wood or wood-based members, timbers, billets, lumber, or other wood products are used as Constituent Materials in a given industrial mat the basic mechanical design values of the said wood or wood-based members should be determined in a reasonable manner such as by a competent lumber grader or other such professional with the same or similar qualifications. The basic mechanical design values of each of the wood or wood-based members shall be openly and permanently displayed on each of the wood or wood-based members with a grading stamp or other similarly conspicuous marking. Such display of mechanical design values will enable the end-user to determine safe loading levels as per known and

widely accepted allowable stress design (ASD) engineering principles for the fully assembled industrial mat at the time it is placed into service.

- 3.6 Hardware. Rods, nuts, bolts or other such hardware utilized in the assembly of the Constituent Material into industrial mats shall be of adequate size and in sufficient number at each connection to assure that the assemblage of constituent members behaves as a single mat. All such hardware shall be maintained in sound and good working condition and shall be inspected before each installation to ensure that such hardware is suitable for use in industrial mat assembly.
- 3.7 Safety Factor. As is consistent with development of design values for structural lumber (as per ASTM D245) and structural composite lumber (ASTM D5456), safety factors of 2.1 to 2.3 are required, as appropriate, for development of bending strength and stiffness design values of timber or wood-based mats (softwood lumber 2.1, hardwood lumber 2.3, composite lumber 2.1).
- 3.8 Inspection. All Constituent Materials used in the construction and assembly of industrial mats shall be inspected for visible defects, mechanically tested, or otherwise quality assured by a qualified person or agency prior to assembly. Where appropriate, all Constituent Material shall be proof loaded by machine prior to assembly in order to test the design values of the Constituent Materials to ensure that the finished industrial mat will support specific strength characteristics for use in the field.
- 3.9 Stamping. Following inspection, testing, or other quality program, all Constituent Material from which mats will be assembled shall be stamped for allowable bending strength and stiffness performance.

4. Environment and Biological Characteristics

- 4.1 Industrial matting by the nature of its use is often placed in environmentally sensitive conditions. As the intended use of matting is often temporary so should be the impact of the matting on the local environment. Mats should be constructed of materials that do not introduce or leave behind residual traces (chemical, biological, etc.) that are disruptive to the local ecology.
- 4.2 Invasive Species. All Constituent Materials should be free of biological invasive species. Transportation of mats that are composed of wood or wood-based products should be consistent with current regulations defined by Phytosanitary Measure ISPM No. 15, APHIS, the USDA Forest Quarantines, and any other applicable local regulations.
- 4.3 Storm Water. Mats should not be chemically or otherwise treated in such a way as to negatively impact storm water runoff through the leaching or release of harmful or toxic chemicals.