General and Technical Information

Safe Working Load Reduction Factors for Lightweight Concrete

Safe working loads for the products shown in this publication were derived from analysis and testing using reinforced normal weight concrete (150 pcf). The safe working load of an insert is dependent on the compressive strength and density of the concrete in which it is embedded. Therefore, when Dayton Superior tilt-up inserts are used in "lightweight" concrete tilt-up panels, the safe working load must be recalculated to compensate for the reduction in concrete density. Multiply the published safe working load by the reduction factor shown in the table to obtain the corrected safe working load.

Concrete Type	SWL Reduction Factor
Normal Weight	1.0
Sand-lightweight Concrete	0.85
All-lightweight concrete	0.75
For all-lightweight concrete with a weight of 110 pcf or less	verify by testing

Interested readers are referred to section 11.2 of the American Concrete Institute's "Building Code Requirements for Reinforced Concrete (ACI 318)" for additional information.

Safety Notes and Product Application:

All safe working loads shown in this publication were established with the following factors considered:

1. All products are in new or "as new" condition. The safe working load is considered the greatest load that will be applied to a product.
2. Inserts are correctly embedded in sound concrete and are firmly bolted or wired in place so that the vertical axis of the inserts is perpendicular to the lifting surface.
3. Concrete compressive strength (f'c) at time of initial lift is at least the strength listed in the insert selection chart for the insert being used.
4. Bolted hardware has full bearing on the concrete surface, and attachment bolts bear fully on the hardware.
5. Caution must be taken so that the hardware is not subjected to a side loading that will cause an additional, unintended loading.
6. Erection and attachment bolts are the proper length and are well tightened to prevent hardware slippage and bolt bending.
7. Coil bolts have minimum coil penetration through the insert coil, but are not bearing on concrete at the bottom of the void.
8. Inserts are properly located in relation to edges, corners and openings, and are at distances that permit the development of a full shear cone. Minimum edge distances are noted throughout this publication.
9. The applied load on an insert is calculated to include the effect of both axial and transverse loads.
10. Electroplated inserts have been properly baked to relieve brittleness. Failure to do so may result in premature failure.
11. No field welding to the lifting inserts or lifting hardware has taken place. Welding may cause brittleness and result in premature failure. Since Dayton Superior cannot control field conditions or field workmanship, Dayton Superior does not guarantee any product altered in any way after leaving the factory.