

TB-1201 — STRUX® 90/40 Dosage Rates for Light Use Loading Applications

Technical Bulletin

/ concrete / mix design

STRUX®90/40 Synthetic Macro Fibers are used to replace welded-wire fabric in many slab-on-grade applications, including parking areas, flatwork and flooring. GCP Applied Technologies (GCP) SDS™ Software is often used to identify the correct STRUX® 90/40 fiber dosage rate based on sub base soil conditions, slab thickness, concrete strength and loading conditions. GCP SDS software is a user-friendly, flexible software tool for designing concrete slab-on grade using the latest in synthetic macro fiber technology, STRUX®90/40, while determining which design is the most cost-effective for long-term performance under a given slab loading condition. Engineers can view and compare various scenarios of slab thickness vs. fiber dosage rate options, and with local costs, select the most applicable design. However there are several applications that can be designed where one dosage rate would work.

These include residential, light commercial, institutional, retail, office and light vehicle (maximum weight of 10,000 lbs (4,500 kg)) slab on grade. If the design parameters meet the criteria in the following table, the dosage rate of STRUX® 90/40 fibers shown may be used. For parameters outside those shown in this table, please contact your GCP representative as higher STRUX®90/40 dosage rates may be required.

GCP recommends that ACI 302, Guide for Concrete Floor and Slab Construction and ACI 360, Design of Slabs on Grade be consulted when designing and placing concrete slab on grade.

This information is provided as a guide. Final design decisions of the concrete slab are the responsibility of the engineer of record.

UNIT OF MEASURE	SLAB THICKNESS (MINIMUM)	SPECIFIED CONCRETE COMPRESSIVE STRENGTH	MODULUS OF SUBGRADE REACTION(2) (K-VALUE) (MINIMUM)	MAXIMUM LOADING	STRUX® 90/40 FIBER DOSAGE RATE
Metric	100 mm	21 to <27.5 Mpa ⁽¹⁾	28 Mpa/m	24 kN/m ²	2.2 kg/m ³
Inch/Pounds	4 in.	3,000 to <4,000 psi ⁽¹⁾	100 lbs/in. ³	500 lbs/ft ²	3.5 lbs/yd ³
Metric	100 mm	27.5 to 40 Mpa	28 Mpa/m	24 kN/m ²	2.5 kg/m ³
Inch/Pounds	4 in.	4,000 to <5,500 psi	100 lbs/in. ³	500 lbs/ft ²	4.0 lbs/yd ³

(1) ACI 302.1R-04, Concrete Floor and Slab Construction, Table 6.1 allows 3,000 psi (21 Mpa) for Floor Classes 1, 2 and 3 (foot traffic), but requires a minimum 3,500 psi (24 Mpa) for Floor Class 4 (foot and light vehicular traffic).

(2) See ACI 360, Design of Slabs on Grade, Section 3.3 – Modulus of Subgrade Reaction, for more information.

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