

ADFORS COMPOSITE REINFORCEMENT SYSTEM

GlasGrid® CG/CGL



Milled surface



Crack mitigation



Tensile strength



Unique protective coating



Installation Procedures

Your Partner for Innovative Textiles



The installation manual sets general recommendations for a successful installation of GlasGrid CG50L, CG100L, CG50, CG100 and CG200. Specific project conditions should be reviewed with a technical representative of Saint-Gobain ADFORS who can provide expert assistance during installation.

■ Installation Follow-up

- Transport and Storage
- General Site Review
- Weather Considerations
- Tack Coat
- Installation
- Overlap and Custom Fitting
- Test for Proper Adhesion
- Boundary Conditions
- Paving
- Health & Important Issues
- Final Note

■ Transport and Storage

- Maintain storage of product in manufacturer's original packaging until ready for installation.
- GlasGrid CGL/CG must be stored in dry, dust, dirt free environment and kept such at the job site.
- Prevent material from coming into contact with debris, asphalt, vegetation or other deleterious materials.
- Store and transport at temperatures between minus 30°C and 80°C and with a maximum relative humidity of 85%.
- Pallets with product should be stored and transported on dry and flat surface.
- Storage of pallets with product as well as unsecured product rollers one another are not recommended. Product performance could be affected at contractor responsibility.

■ General Site Review

- Prior to the installation of GlasGrid interlayer system, evaluate and complete repairs to the existing pavement.
- Existing pavement should show no signs of poor drainage, pumping of fines, excessive deflections or structural instability. Sub-grade repairs shall be made to all areas where structurally instability is present.
- Potholes and cracks larger than 6 mm should be filled and compacted with appropriate material. Seal cracks between 3 mm and 6 mm with appropriate crack filler.
- The surface receiving the interlayer must be dry, dust-free mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of interlayer reinforcing. **(Pic. 1)**
- Moisture and dirt will interfere with adhesion of the grid to the pavement surface. Therefore placement should not be undertaken, if rain is likely to fall prior to covering the grid with an asphalt mat overlay. Grid that is placed and will not adhere due to moisture or dirt shall be removed and replaced at the contractor's expense.
- GlasGrid CGL/CG can be installed on an old asphalt surface or evenly planned milled surface. **(Pic. 2)**
- Milled surface max. limit "though to crest" variance is ≤ 10 mm or apply levelling course prior to the installation GlasGrid CGL/ CG.
- Consultation with an ADFORS technical specialist is recommended for any undescribed application.



Pic. 1: Ultra High Pressure technology to clean the surface



Pic. 2: Typical GlasGrid CGL/ CG application on milled surface

Weather Considerations

- Local weather guidelines must be maintained for paving (e.g. temperature, precipitation).
- Extra care should be taken when paving at either end of the temperature range. As an example, the use of a particular type of tack coat material may benefit the process in hot weather conditions over another type.
- Should the surface containing GlasGrid become wet; it should be left undisturbed until fully dried out. Traffic on of the GlasGrid while it is wet may break the bond.

Tack Coat

- Prior to GlasGrid CGL/CG installation process apply tack coat. Calibrated distribution truck capable of applying tack at a consistent rate over the pavement surface shall be used. **(Pic. 3)**
- Local environmental conditions may necessitate variation in tack coat type and rate. The actual type of tack and rate is one of the main key points to secure installation and shall be determined by the Project Engineer with Saint-Gobain ADFORS specialist consultation.
- The application rate is dependent on several factors including existing surface conditions, ambient surface temperatures and the materials GlasGrid CGL and CG asphalt residual retention rate.
- The general recommended final tack coat spray rate should accommodate range of potential project/environmental local conditions, type of GlaGrid and type of emulsion. Recommended is polymer modified tack coat with minimum 60% bitumen content (as an example C60BP1-S).
- Recommended rate for CGL/CG is stated in Tab. 1.
- Tack must be completely cured prior to paving. **(Pic. 5, 9)**



Pic. 3: Tack coat application before GlasGrid® CGL installation

GlasGrid CGL/CG Total Residual Tack Coat Rate Recommendation (100% solids)		
GlasGrid	Well milled surface, current surface and new asphalt courses	Very poorly milled surface
CGL*1	0,6–1,0 kg/m ²	1,0–1,2 kg/m ²
CG*2	1,2–1,8 kg/m ²	1,8–2,5 kg/m ²
Application rate formula	$R = A * \frac{100}{S}$ <p>R... total emulsion application rate for project A... project application rate defined by 100% bitumen required S... solid concentration of the used emulsion</p>	<p>Example: Project application rate is 0,3 kg/m² [100% bitumen]. For project is used emulsion with 60% solid content. [C60BP1-S]</p> $R = 0,3 * \frac{100}{60} = 0,5 \text{ kg/m}^2$
<p>*1 CGL Nonwoven asphalt residual retention rate is approx. 0,35 Kg/m²; *2 CG Nonwoven asphalt residual retention rate is approx. 0,85 kg/m². Values *1 and *2 are based on laboratory conditions.</p>		

Tab. 1: GlasGrid CGL/CG Total Residual Tack Coat Rate Recommendation

Installation

- GlasGrid CGL/CG and tack coat must be installed and applied by trained personnel. Fabric tractor installation is recommended. Alternatively manually installing GlasGrid is possible using the correct equipment. **(Pic. 4, 5)**
- Commence placement of GlasGrid only if previously described conditions are fulfilled.
- The surface receiving the reinforcement shall be between 5 °C and 60 °C and support GlasGrid installation. Fresh laid asphalt surface must harden with respect to the local paving guidelines. Is recommended to permit new paved asphalt surface to cool at least once to 43 °C.
- Reinforcement grid shall be installed non-woven side of fabric facing down to facilitate tack coat absorption.
- GlasGrid CGL/CG shall be applied immediately following application of tack coat to achieve appropriate saturation of bitumen into fabric.

- Cutting of the grid can be done on tight radii to prevent ripples.
- Place and secure the leading edge of material onto pavement in the direction of the work. Once the leading section is secure proceed dispensing the balance of the roll until the roll is completed using a tractor, truck or hand device moving slowly away.
- Full contact between the lower surface and grid must be ensured.
- Press fabric into tack coat for proper adhesion and surface leveling (brooms or clean rubber tired rollers can be used).
- Using sufficient pressure eliminate ripples.
- Adjust timing so liquid tack penetrates the fabric.
- Protect the asphalt reinforcing grid until placement of the finished asphalt topping. If installed interlayer is damaged due to not sufficient protection and traffic on site it needs to be removed and replaced at the contractor's expense.
- Place the asphaltic overlay course within 24 hours the interlayer reinforcing grid is placed.

Overlap and Custom Fitting

- GlasGrid CGL/CG must be applied without ripples. Sufficient tension during application will eliminate this problem.
- Overlap at end of end roll joints 100–150 mm. Ensure that the overlaps are shingled in the direction of paving. **(Pic. 6)**
- Overlap longitudinal joints at minimum 50 mm. **(Pic. 7)**
- GlasGrid CGL/CG can be custom cut to fit around structures by using a sharp utility knife or other similar tool. Reinforcement laid out and rolled over ironworks (i.e., manhole covers, drainage grates, etc.) shall be removed in such an areas by cutting the reinforcement grid.
- GlasGrid CGL/CG does not bend or stretch around curves. Shortened lengths should be placed in these areas.
- Overlapping areas shall be arranged that areas do not coincide with paving lanes, cracks, joints or seams in the base. Overlapping area should be kept in minimum distance $\geq 0,5$ m.
- Ensure that in between overlapping GlasGrid CGL/CG layers tack coat is also applied.

Test for Proper Adhesion

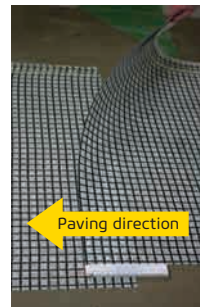
- Cut 1 m² of GlasGrid CGL/CG.
- Place CGL/CG on area that is representative of the project condition.
- Once tack coat is fully cured insert hook of calibrated spring balance under center of GlasGrid CGL/CG. **(Pic. 8)**
- Pull upward until GlasGrid CGL/CG starts to pull away from the surface.
- If result is 9 kg or more it is OK to pave. If less than 9 kg do not continue installation GlasGrid CGL/CG without corrective action to address this issue.
- Consult the manufacturer if grid does not meet this pull rating and do place asphalt topping until an acceptable adhesion is achieved.
- If bond is not achieved then determination of the cause is required. This is typically due contamination on the smooth surface, in the form of either water or debris.
- After GlasGrid application, provide a minimum of one test per 300 m² of surface area and record result in kg.



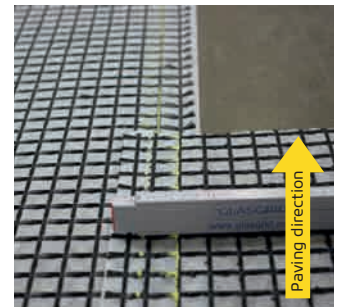
Pic. 4: Fabric Tractor Installation of GlasGrid CGL



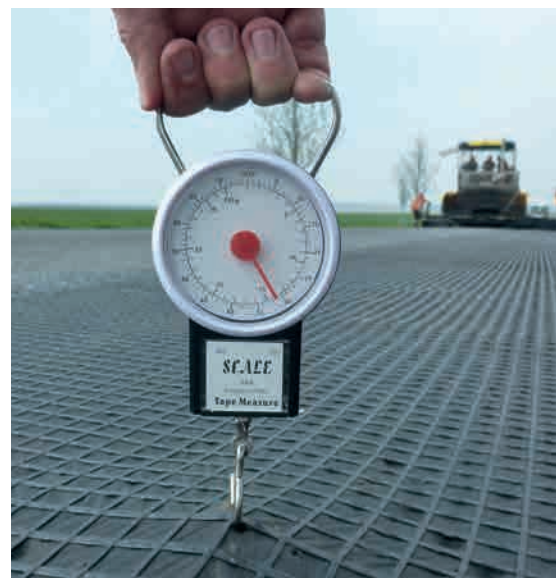
Pic. 5: Manual Installation of GlasGrid



Pic. 6: End of joints



Pic. 7: Longitudinal joints



Pic. 8: Adhesion pull out test

■ Boundary Conditions

- Prior to paving, only construction and emergency vehicles should be allowed to drive on installed GlasGrid CGL/CG and with max. speed up to 20 km/h.
- Vehicles should limit turning and braking on installed GlasGrid CGL/CG.
- To reduce the crack stresses distribution over individual cracks and distresses installation width has to be kept $\geq 1,0$ m (minimum 0,5 m each side from the crack).
- To reduce potential transfer of tack coat to the equipment tires, stone chips for example 1–1,5 kg/ (1–3 or 2–5 mm grain size) can be applied over the grid depending on project requirements.
- Extra care should be taken when paving at either end of the temperature range. For extreme heat, a higher grade of PGAC may be considered to address high temperature conditions.

■ Paving

- Hard braking and/or locking up of the trucks wheels on the grid shall be prohibited to not damage installed grid during the truck move and dispensing mix into the paver.
- Once tack coat is fully cured and GlasGrid CGL/CG secured it is recommended to pave within 24 hours.
- Installed GlasGrid CGL/CG system shall be covered by hot asphalt layer with minimum width after compaction 40 mm generally recommended is minimum width 50 mm overlay after compaction. **(Pic. 9)**
- Paving in high slopes, tight curves and in areas with high shear forces applied to the pavement structure are generally considered as critical.
- Stop paving immediately if GlasGrid CGL/CG moves or ripples.



Pic. 9: Pave Overlay

■ Health & Important Issues

- Because fiberglass is considered as a skin irritant, workers should wear protective clothes, gloves and glasses while handling GlasGrid CGL/CG.

■ Final Note

- The installation of any asphalt reinforcement interlayer shall follow the local regulations for asphalt road construction.
- This guideline outlines recommendations for a quality installation and is based on familiarity with the product, and the consolidation of decades of project site experiences.
- If you have any questions or unique installation parameters, do not hesitate to contact us.
- Warranty claims cannot be based and forced on present information in this guideline. Each project should be consulted with a SG ADFORS technical specialist.
- In as much as Saint-Gobain ADFORS has no control over installation design, installation workmanship, accessory materials, or conditions of application, Saint-Gobain ADFORS does not warrant the performance or results of any installation or use of GlasGrid. This warranty disclaimer includes all implied warranties, statutory or otherwise, including the warranty of merchantability and of fitness for a particular purpose. The purchaser and/or user should perform its own tests to determine the suitability and fitness of the product for the particular purpose desired in any given situation.

TROUBLE WITH YOUR ROAD?

Try the GlasGrid app
to fix it!




SAINT-GOBAIN ADFORS CZ s.r.o.


Sokolovská 106
570 21 Litomyšl, Czech Republic
Tel: +420 461 651 111
Fax: +420 461 651 231
www.glasgrid.com/eu
adfors.cz@saint-gobain.com

SAINT-GOBAIN ADFORS AMERICA

1795 Baseline Rd, Grand Island, NY
14072, USA
Tel: +1 716-775-3900
Fax: +1 716-775-3902
www.glasgrid.com
glasgrid@saint-gobain.com

www.adfors.com

 1021-CPR-040/15
2015

 0799-CPD-123
2012

GlasGrid® is manufactured at an ISO 9001:2008, EN15381:2008 registered facility of Saint-Gobain ADFORS.

GlasGrid® is a registered trademark of SAINT-GOBAIN ADFORS. U.S. Patent 8,038,364 ; 8,349,431 and 8,882,385. Additional patents pending.

© 2016 SAINT-GOBAIN ADFORS

1837/2016.08