FIRE TESTING LABORATORY

SURFACE BURNING CHARACTERISTICS • ASTM E-84-04 • GREEN GLUE

FILE NO: FH-1534	DATE: 1/26/05	PROJECT NO: H-337

MATERIAL TESTED:

Samples submitted for evaluation by certified GREEN GLUE installers and were described as:

Green Glue - Visco Elastic Sound Dampening Compound

The material was trowel applied to 1/4" thick reinforced cement board with a 1/8" V-notched trowel. The resulting ridges were flattened out to simulate being compressed between two layers of building materials and forming a composite building unit.

The test samples were conditioned at 70ºF and 50% RH prior to testing.

The test was conducted in accordance with test method ASTM-E84.

METHOD OF SUPPORT:

Three test specimens were placed end to end on the furnace ledge to achieve the required 24 ft. length for each test. The applied material was exposed to the fire.

MATERIAL TESTED:	Test No.	Support	Calculated Flame Spread	Calculated Smoke Developed
GREEN GLUE **Visco-Elastic Sound Dampening Compound**	1	Trowel applied to 1/4" cement board	29.07	75.63
GREEN GLUE **Visco-Elastic Sound Dampening Compound**	2	Trowel applied to 1/4" cement board	33.28	56.16

MATERIAL TESTED:	Test No.	Support	Flame Spread Index*	Smoke Developed Index*
GREEN GLUE **Visco-Elastic Sound Dampening Compound**	3	Trowel applied to 1/4" cement board	30	65

* Flame Spread/Smoke Developed Index is the result (or average of the results of multiple tests), rounded to the nearest multiple of 5. Smoke Developed in excess of 200 is the average rounded to the nearest 50.

Report by:
R.A. Cosrolnick - Senior Test Engineer

Reviewed by:
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Laboratory Responsibility: NGC Testing Services makes no judgment of product suitability for its intended end use. Product acceptance of field installations is usually the prerogative of the authority having jurisdiction.

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FIRE SCIENCE & ENGINEERING

HAI Project No. 5328
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Green Glue In Type I and II Construction and In Fire-Resistance Rated Wall Assemblies.

This letter constitutes my analysis on the use of "Green Glue" in Type I and Type II construction and in fire-resistance rated assemblies used in all Types of construction.

The Green Glue Company provides a product called "Green Glue." Green Glue (GG) is a viscoelastic damping compound that is used to provide soundproofing to wall and ceiling/floor assemblies. Several questions have arisen regarding the use of GG in specific construction situations and this letter provides an analysis regarding the use of GG in those situations.

Green Glue is designed to be a constrained layer damping material and as such it must be placed as a thin layer between two components. When applied between the materials, it forms a partial layer that is very thin (<1/32 in. thick).

Use In Type I or II Construction

In Section 603 of the 2003 edition of the International Building Code (IBC), provisions are made to allow the use of some combustible materials in Type I and Type II noncombustible construction. §603.1, Item 2 allows the use of thermal and acoustical insulation based on the material s flame-spread index as determined in the ASTM E84 test method.

GG has been tested in the ASTM E84 test and has exhibited a flame-spread index of 30 and a smoke-developed index of 65. This data is reported in a test report by NGC Testing Services, File FH-1534, Project No. H-337, dated 1126/05.

Based on the ASTM E84 test results and §603.1, Item 2, GG can be used in Type I and Type II construction when:

1. It is placed between two layers of noncombustible materials without an intervening airspace
2. It is installed between a finished floor and solid decking without an intervening airspace.

As an example, if the GG is placed between two layers of gypsum wallboard, it can be used in Type I or Type II construction.

Use In Fire-resistance Rated Assemblies In All Types of Construction

GG can be used in certain fire-resistance rated assemblies without changing the fire resistance rating of the assemblies. In these cases, a base fire-resistance rated assembly (wall or floor) is constructed per its design or listing. The GG is then applied to one or both exposed surfaces of the fire-resistance rated assembly and a layer or sheet of appropriate material is added to the assembly. The following are several examples of this:

1. One-Hour, fire-resistance rated wall is constructed using one layer of 5/8 in. thick, Type X gypsum wallboard attached to each side of steel or wood studs. In this case, the application of the GG and another layer of material such as gypsum wallboard (any type, thickness) to one or both sides of the rated wall assembly will not derate the fire-resistance of the rated assembly.

2. Two-Hour, fire-resistance rated wall is constructed using two layers of 5/8 in. thick, Type X gypsum wallboard attached to each side of steel or wood studs. In this case, the application of the GG and another layer of material such as gypsum wallboard (any type, thickness) to one or both sides of the rated wall assembly will not derate the fire-resistance of the rated assembly.

The rationale for these applications is that the addition of layers to a fire-resistance rated assembly will typically not reduce the fire resistance of the assembly unless the additional layer(s) is highly insulative. The layers of material in this application are not highly insulative.

Another potential application of the GG is as component in a fire-resistance rated assembly.

The following are several examples of this:

1. A 2-hour, fire-resistance rated wall is constructed using two layers of 5/8 in. thick, Type X gypsum wallboard attached to each side of steel or wood studs. In this case, the application of the GG would occur between the two layers of gypsum wallboard on one or both sides of the wall. If the design of the wall assembly is based on the outer layer of gypsum wallboard being attached per the Direct Attached Systemî (i.e., screw/nail attachment) method, then the fire-resistance rating of the assembly will be maintained. If the design of the wall assembly uses the Laminated Systemî (i.e., use of joint compound as an adhesive) method for the attachment of the outer layer of gypsum wallboard, then the GG cannot be used in this system, except as per Item 2 above
2. A I-hour fire-resistance rated floor assembly is constructed using two layers of 5/8 in. thick, Type X gypsum wallboard attached to the underside of the floor joists. In this case, the application of the GG would occur between the two layers of gypsum wallboard on the underside of the floor assembly. If the design of the floor assembly is based on the outer layer of gypsum wallboard being attached per the Direct Attached Systemî (i.e., screw/nail attachment) method, then the fire-resistance rating of the assembly will be maintained. If the design of the floor assembly uses the Laminated Systemî (i.e., use of joint compound as an adhesive) method for the attachment of the outer layer of gypsum wallboard, then the GG cannot be used in this system, except as per Item 2 above.

In these cases, the GG is placed as a very thin partial layer between components of a fire resistance rated assembly. Due to GGís thinness its contribution to a change in performance would be little, if any.

Additional limitations for the use of GG in fire-resistance rated assemblies are:

1. When an additional layer is being applied to a wall or floor assembly, it is recommended that the joints of the additional layer of material be installed such that they are staggered from the joints of the gypsum wallboard by one stud cavity.
2. When using GG as a component of the fire-resistance rated assembly between layers of materials such as gypsum wallboard, the outer layer must be attached per the specification for fire-resistance design.

Summary

In summary, Green Glue can be used in Type I or Type II construction per IBC 603.1, Item 2. Green Glue can also be used in fire resistance rated assemblies (walls and floors) with the limitations as described above and will not derate the fire resistance of those assemblies.

Jesse J. Beitel - Senior Scientist/Principal