

Green Glue (GG) –vs.– Resilient Channel (RC)

Green Glue Company is pleased to present 3rd party, same-lab data for Green Glue (a viscoelastic damping material) and Resilient Channel, the oldest and most commonly used sound isolation product in the world. Resilient channel is less expensive than Green Glue, so for Green Glue to be a viable competitor, considerable advantages would have to be shown.

Competitor and synergist

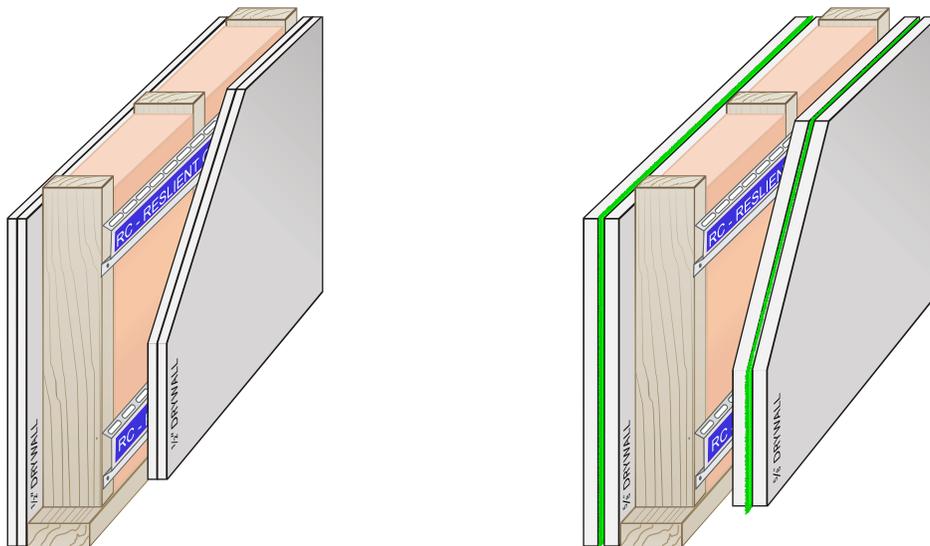
We will demonstrate herein that Green Glue is not only a superior product for many applications, but also a powerful synergist with resilient channel in other applications. Green Glue eliminates the loss of STC due to short circuits in resilient channel walls. Green Glue Company tested the effects of a short circuited wall built from resilient channel and Green Glue. Even with 16 short circuits on a 64 square foot test specimen, the STC remained 3 points higher than an identical wall without Green Glue and ideally installed.

The data was collected at Orfield Laboratories, an independent NVLAP accredited lab in Minneapolis, MN, in May and August of 2005.

Part 1 - Test Description

To evaluate the value of Green Glue in conjunction with resilient channel, we ran the following tests.

Wall configurations, from source room to receive room:



Resilient Channel Assembly
Double 1/2" drywall
25 gauge resilient channel, perpendicular to the studs and 24" on center
2x4 single wood studs, 16" on center
R13 fiberglass insulation
Double 1/2" drywall
OL 05 1011 – proper installation

Resilient Channel with Green Glue	
Double 1/2" drywall with 58 fluid ounces of Green Glue per 4' x 8' sheet in between the layers	
25 gauge resilient channel, perpendicular to the studs and 24" on center	
2x4 single wood studs, 16" on center	
R13 fiberglass insulation	
Double 1/2" drywall with 58 fluid ounces of Green Glue per 4' x 8' sheet in between the layers	
OL 05 0825 – Proper installation	OL 05 0828 – 4 short circuits
OL 05 0826 – 1 short circuit	OL 05 0829 – 8 short circuits
OL 05 0827 – 2 short circuits	OL 05 0830 – 16 short circuits

Green Glue in conjunction with resilient channel

There are many applications where certain STC figures must be met by law. Failure to meet the required performance can result in extremely costly rebuilds and/or litigation. In some locations STC's of 45 must be met in the field, in other locations STC's of 50 must be met. It is possible that in the future, even stricter regulations shall be put in place.

The most practical and lowest cost method of attaining STC's this high is resilient channel. Assuming that:

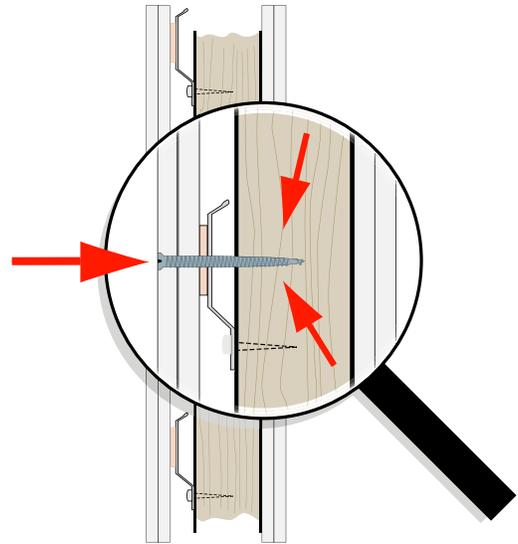
- (1) Flanking noise (noise through ductwork, doors, through over walls through a ceiling cavity – basically noise not passing through the partition itself, but coming from some other source) isn't a problem
- (2) The channel is installed properly (if screws penetrate into a stud through the drywall, this creates what is called a "short-circuit", and performance can suffer immensely)
- (3) The channel is of proper design

Resilient channel can indeed yield very high STC's. In the field, however, RC has a long history of a very high failure rate, much of which is attributed to improper installation (short circuits). A short-circuited resilient channel wall reverts to performance closer to that of a wall in which no channel was installed.

A fastener penetrates into a stud through the drywall, mechanically coupling the two sides of the wall.

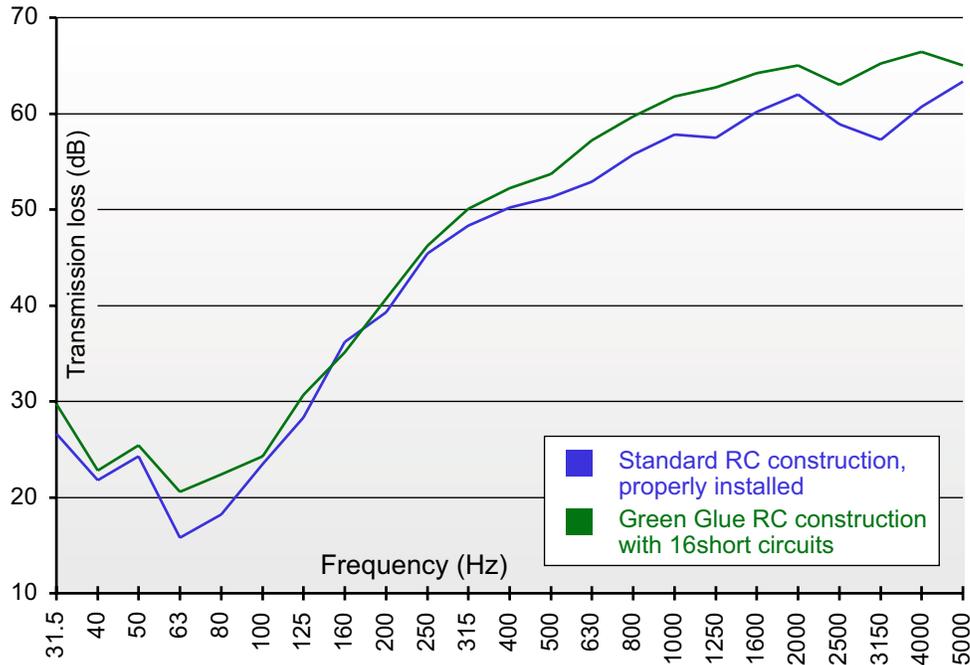
In addition to this type of short circuit, RC walls can be short circuited in many other ways, often after the installation is finished. Bookshelves or things hung on walls can force the channel against the stud. Channel can also sag over time, and so forth.

If this short-circuiting problem could be eliminated, channel could perform much more consistently.



This photo illustrates, in order, the location of the short-circuits that were applied to the wall while in the Orfield Labs test opening. 16 short circuits, or 8 short circuits per 4' x 8' board, were tested. This is almost certain to exceed the short-circuiting problems that are likely to occur in the real world.

Chart 2 - Short Circuit Test Results



As this chart illustrates, Green Glue exhibits a significant ability to counter the negative effects of short circuits.

Full performances for each test are given on the next page.

Description / Test Number	Rw	OITC
Standard Resilient Channel (RC) Wall Test Number: OL 05 1011	55	37
Properly Installed Green Glue / RC Wall Test Number: OL 05 0825	57	37
GG/RC Wall with 1 Short Circuit Test Number: OL 05 0826	57	37
GG/RC Wall with 2 Short Circuit Test Number: OL 05 0827	56	38
GG/RC Wall with 4 Short Circuit Test Number: OL 05 0828	56	38
GG/RC Wall with 8 Short Circuit Test Number: OL 05 0829	55	37
GG/RC Wall with 16 Short Circuit Test Number: OL 05 0830	55	37
Green Glue with 1/2" drywall and 1x4 wood furring strips on an identical wall. Test Number: OL 05 0822	54	36

Even with non-resilient wood furring strips – perhaps simulating a complete short circuit as all resilient decoupling is long, STC remains higher than for the properly installed resilient channel system. STCs of 54 and higher may be affected by flanking noise in the Orfield Laboratory, please contact us, or browse the test reports for a better understanding of this.

If you can't locate the test reports on our website, please write for a copy. Green Glue may be just what your RC walls need to avoid failure and the expensive aftermath.

Green Glue (GG) as an alternative to Resilient Channel (RC)

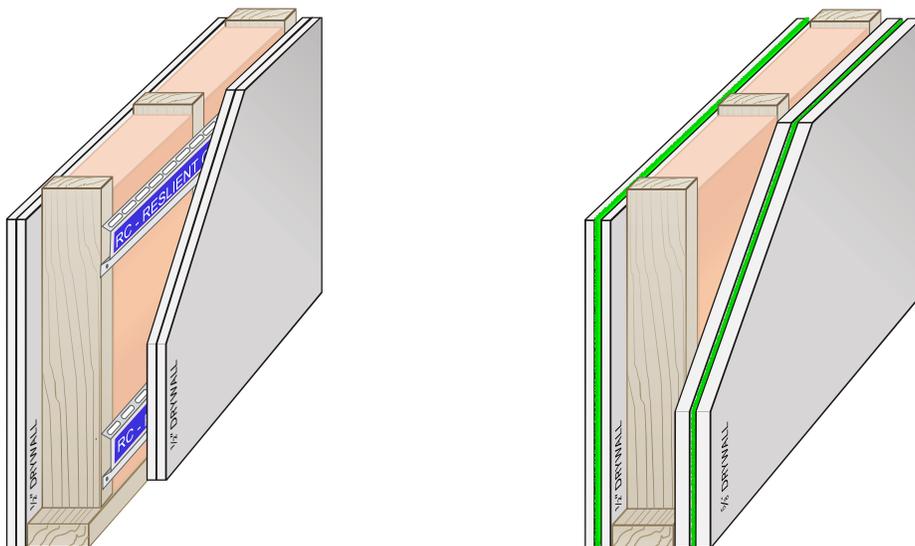
In the next section we will discuss the advantages of Green Glue relative to resilient channel in systems where full-frequency range performance is important. Applications like music, theater, and traffic noise have considerable low-frequency content, but the STC system only considers frequencies down to 125 Hz, and the OITC system only considers frequencies down to 80 Hz.

The chances are extremely good that if you have a sound isolation problem it involves low frequency noise. The STC standard ignores low frequencies, and so the STC system is not a reliable indicator of performance for most applications.

Part 1 - Test Description

To compare Green Glue and RC, we again tested nominally identical walls in the same laboratory. Same insulation, stud type, stud spacing, and so forth.

Wall configurations, from source room to receive room:



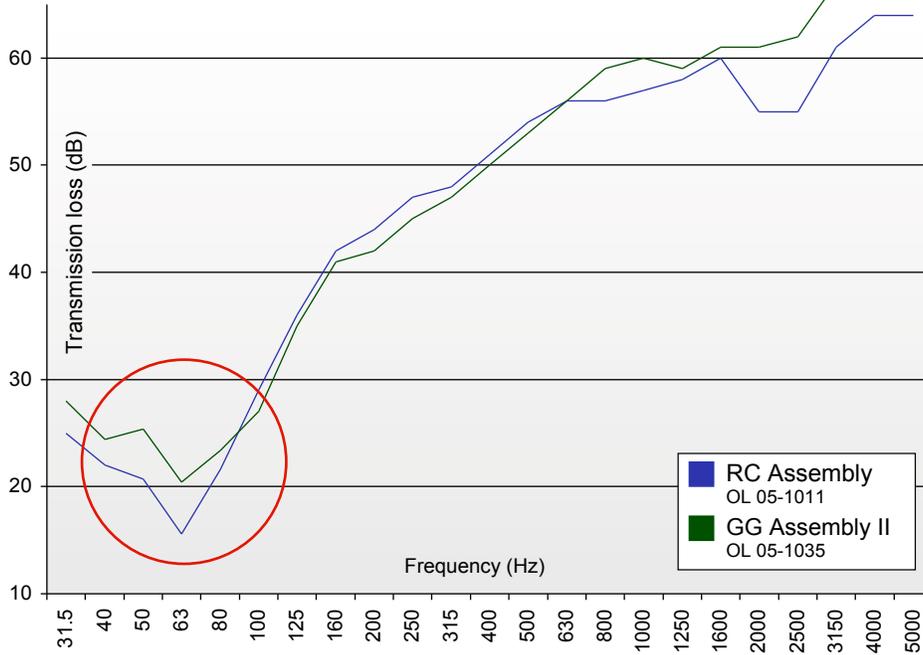
Resilient Channel Assembly
Double 1/2" drywall 25 gauge resilient channel, perpendicular to the studs and 24" on center
2x4 single wood studs, 16" on center
R13 fiberglass insulation
Double 1/2" drywall
OL 05 1011 – proper installation

Green Glue Assembly II
5/8" Drywall + Green Glue (58 oz. per 4' x 8' sheet) + 5/8" Drywall
2x4 single wood studs, 16" on center
R13 fiberglass insulation
Double 1/2" drywall with 58 fluid ounces of Green Glue per 4' x 8' sheet in between the layers
OL 05 1035

Green Glue in conjunction with resilient channel

There are many applications where certain STC figures must be met by law. Failure to meet the required performance can result in extremely costly rebuilds and/or litigation. In some locations STC's of 45 must be met in the field, in other locations STC's of 50 must be met. It is possible that in the future, even stricter regulations shall be put in place. the cost of each of the assemblies that feature product on both sides.

Chart 3 - Resilient Channel -vs- Green Glue

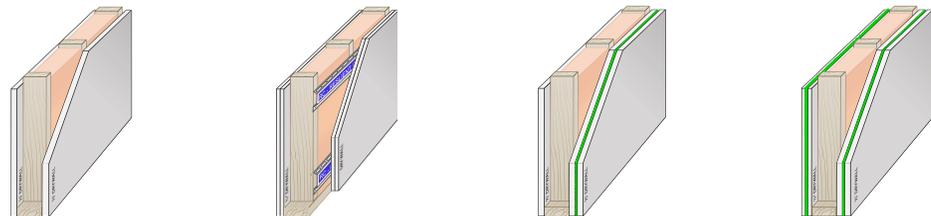


A comparison of resilient channel and Green Glue assemblies with 3 total layers of 5/8" drywall, taken in the same lab.

The RC was verified by the lab to be 25 gauge (which is appropriate), and it was properly installed.

Note that while the RC, like GG, yields a very good STC, its low frequency performance is far worse. Remember that, in theory, doubling the mass of the wall would cause a 6dB low frequency performance increase, all other things equal.

If the channel was not properly installed, this difference is likely to be even larger.



Summary of Performance	Reference I single 5/8" on both sides	Resilient Channel Assembly	GG Assembly I 1 Layer on Source Side	GG Assembly II 2 Layers on Both Sides
Rw	40	55	52	56
OITC	29	37	36	40
Flat Noise Reduction, dBA ^a	38	49	48	50.4
Test Number	OL 05-1003	OL 05 1011	OL 05 0416	OI 05 1035

^a An assessment of wall performance that is not an official standard, but is utilized by Green Glue Company as a superior method to STC or OITC for music and theater applications where low-frequency content is high. It calculates using the ISO 226 equal loudness standard, and using a bandwidth of 31.5-5000Hz. Equal Loudness attempts to correlate to how people actually hear.

^b The A-weighted sound reduction for a noise source having flat response from 31.5 to 5000Hz. For additional information about how these ratings are calculated, and for spreadsheets that will allow you to calculate them, visit www.greengluecompany.com

Summary: Green Glue outperforms older technologies like resilient channel. And while all sound isolation installations can fail due to poor sealing practices, poor quality doors, poorly designed ventilation systems and so forth, Green Glue cannot be short-circuited the way resilient channel usually is. Also, Green Glue grants RC assemblies tremendous resistance to failure by short-circuiting

Copyright 2006 Green Glue Company LLC

No part of this document may be reproduced, in whole

or in part, without the specific written permission of Green Glue Company LLC.