

TEMPORARY RULES TECHNICAL CHANGES

Adopted language for low emissivity glazing Temporary Rule – One and Two Family Dwellings and Townhouses

Add to the 2012 NCECC, in Chapter 2 the following definition:

Low Emissivity Fenestration Product. A fenestration product containing glass that has a transparent coating that acts as a thermal mirror and is used to:

1. increase a window's insulating value;
2. block or increase heat flow; and
3. reduce fading.

For the 2012 NCECC, Chapter 4, modify Table 402.1.1 as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a

CLIMATE ZONE	FENESTRATION U-FACTOR ^{b,l}	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{b,e,m}	CEILING R-VALUE ^k	WOOD FRAME WALL R-VALUE ^e	MASS WALL R-VALUE ⁱ	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^c WALL R-VALUE
3	0.35	0.65	0.30	30	13	5/10	19	10/13 ^f	0	5/13
4	0.35	0.60	0.30	38 or 30 cont. ^j	15, 13+2.5 ^h	5/10	19	10/13	10	10/13
5	0.35	0.60	NR	38 or 30 cont. ^j	19, 13+5, or 15+3 th	13/17	30 ^g	10/13	10	10/13

l. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

m. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum solar heat gain coefficient of 0.80. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

For the 2012 NCECC, Chapter 4, modify Table 402.1.3 as follows:

**TABLE 402.1.3
EQUIVALENT U-FACTORS^a**

CLIMATE ZONE	FENESTRATION U-FACTOR ^e	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR ^b	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR ^d	CRAWL SPACE WALL U-FACTOR ^c
3	0.35	0.65	0.035	0.082	0.141	0.047	0.059	0.136
4	0.35	0.60	0.030	0.077	0.141	0.047	0.059	0.065
5	0.35	0.60	0.030	0.061	0.082	0.033	0.059	0.065

e. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55. When applying this note, the use shall be documented to allow identification for compliance. When applying this note and using REScheck, to allow continued use of the software, the applicable fenestration product shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, but the fenestration products actual U-value and SHGC shall be noted in the comments section of the software for documentation of application of this note to the applicable products. Compliance for these subject products shall be verified compared to the allowed substituted maximum U-value requirement and maximum SHGC requirement, as applicable.

For the 2012 NCECC, Chapter 4, add an exception to:

402.3.5 Thermally isolated conditioned sunroom U-factor and SHGC. The maximum fenestration U-factor shall be 0.40 and the maximum skylight U-factor shall be 0.75. Sunrooms with cooling systems shall have a maximum fenestration SHGC of 0.40 for all glazing.

New windows and doors separating the sunroom from conditioned space shall meet the building thermal envelope requirements. Sunroom additions shall maintain thermal isolation; and shall be served by a separate heating or cooling system, or be thermostatically controlled as a separate zone of the existing system.

Exception: For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55 and, when cooling is provided, a maximum SHGC of 0.80. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

402.5 Maximum fenestration U -factor and SHGC (Mandatory Requirements). The area-weighted average maximum fenestration U -factor permitted using trade-offs from Section 402.1.4 shall be 0.40. Maximum skylight U -factors shall be 0.65 in zones 4 and 5 and 0.60 in zone 3. The area-weighted average maximum fenestration SHGC permitted using trade-offs from Section 405 in Zones 3 and 4 shall be 0.40.

Exception: For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U -value of 0.55 and a maximum SHGC of 0.80. When applying this note, the use shall be documented to allow identification for compliance.

Add to the 2012 NC Residential Code, in Chapter 2 the following definition:

Low Emissivity Fenestration Product. A fenestration product containing glass **that** has a transparent coating **that** acts as a thermal mirror and is used to:

- 1. increase a window's insulating value;**
- 2. block or increase heat flow; and**
- 3. reduce fading.**

For the 2012 NC Residential Code, Chapter 11, modify Table N1102.1as follows:

**TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a**

CLIMATE ZONE	FENESTRATION U-FACTOR ^{b,l}	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{b,e,m}	CEILING R-VALUE ^k	WOOD FRAME WALL R-VALUE ^e	MASS WALL R-VALUE ⁱ	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^c WALL R-VALUE
3	0.35	0.65	0.30	30	13	5/10	19	10/13 ^f	0	5/13
4	0.35	0.60	0.30	38 or 30 cont. ^j	15, 13+2.5 ^h	5/10	19	10/13	10	10/13
5	0.35	0.60	NR	38 or 30 cont. ^j	19, 13+5, or 15+3 ^{eh}	13/17	30 ^g	10/13	10	10/13

l. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

m. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum solar heat gain coefficient of 0.80. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

For the 2012 NC Residential Code, Chapter 11, modify Table N1102.1.2 as follows:

**TABLE N1102.1.2
EQUIVALENT U-FACTORS^a**

CLIMATE ZONE	FENESTRATION U-FACTOR ^e	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR ^b	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR ^d	CRAWL SPACE WALL U-FACTOR ^c
3	0.35	0.65	0.035	0.082	0.141	0.047	0.059	0.136
4	0.35	0.60	0.030	0.077	0.141	0.047	0.059	0.065
5	0.35	0.60	0.030	0.061	0.082	0.033	0.059	0.065

e. For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55. When applying this note, the use shall be documented to allow identification for compliance. When applying this note and using REScheck, to allow continued use of the software, the applicable fenestration product shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, but the fenestration products actual U-value and SHGC shall be noted in the comments section of the software for documentation of application of this note to the applicable products. Compliance for these subject products shall be verified compared to the allowed substituted maximum U-value requirement and maximum SHGC requirement, as applicable.

For the 2012 NC Residential Code, add an exception to:

N1102.3.5 Thermally isolated conditioned sunroom U-factor and SHGC. The maximum fenestration U-factor shall be 0.40 and the maximum skylight U-factor shall be 0.75. Sunrooms with cooling systems shall have a maximum fenestration SHGC of 0.40 for all glazing. New windows and doors separating the sunroom from conditioned space shall meet the building thermal envelope requirements. Sunroom additions shall maintain thermal isolation; and shall be served by a separate heating or cooling system, or be thermostatically controlled as a separate zone of the existing system.

Exception: For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U-value of 0.55 and, when cooling is provided, a maximum SHGC of 0.80. When applying this note, the use shall be documented to allow identification for compliance with this requirement.

N1102.5 Maximum fenestration U -factor and SHGC. The area-weighted average maximum fenestration U -factor permitted using trade-offs from Section 1102.1.3 shall be 0.40. Maximum skylight U -factors shall be 0.65 in zones 4 and 5 and 0.60 in zone 3.

Exception: For one- and two-family dwellings and townhouses, non-low emissivity glazed fenestration products may be substituted for low emissivity glazed fenestration products without energy penalty where judged by the permit holder to be a safety concern due to reflection of concentrated sunlight. The substitute fenestration products shall have a maximum U -value of 0.55 and a maximum SHGC of 0.80. When applying this note, the use shall be documented to allow identification for compliance.