

Technical Bulletin: Air Sealing Study

Residential New Construction Program



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To analyze how residential builders and rating organizations understand the RNC Program and the best air sealing methods, the North Carolina Building Performance Association (NCBPA) conducted an air sealing study. The study consisted of residential builders and contractors completing a survey about their knowledge of the RNC Program, how they participate in the program, and current air sealing knowledge and practices.

In addition to the survey, a rating organization sealed and tested multiple homes with various methods of top plate gasketing. This Technical Bulletin will focus on the air sealing aspects of the study.

Survey

Over the course of two years, residential builders and contractors answered 16 questions in total with 5 questions on air sealing. The air sealing materials used in the survey and a summary of the results are as follows.

- DOW GREAT STUFF
- DOW Froth Pak
- EPDM
- Knauf Insulation Eco Seal Plus
- Owens-Corning Sill Seal
- Owens-Corning EnergyComplete
- Owens-Corning ProPink Comfort Seal
- TYTAN Professional Gasket Foam

1. The most preferred product type was foam sealants with an average of 61% of the respondents selecting the product type. Below is an image of the question regarding product preferences from the study.

7. When performing sealing of residential buildings, which product type do you prefer?		
<i>Response Options</i>	<i>Dec '18 Results</i>	<i>Dec '20 Results</i>
Foam sealant	54%	71%
Rubber membrane sealant	15%	
Spray sealant	8%	7%

An example of a survey question

2. The three most popular sealing products and methods were the following:
 - a. DOW GREAT STUFF
 - b. Owens-Corning Sill Seal
 - c. Traditional caulking/foam sealantThis indicates traditional air sealing is preferred over more modern products and methods.
3. The main considerations for selecting products were cost effectiveness and product quality followed by energy conservation as the principle secondary consideration.

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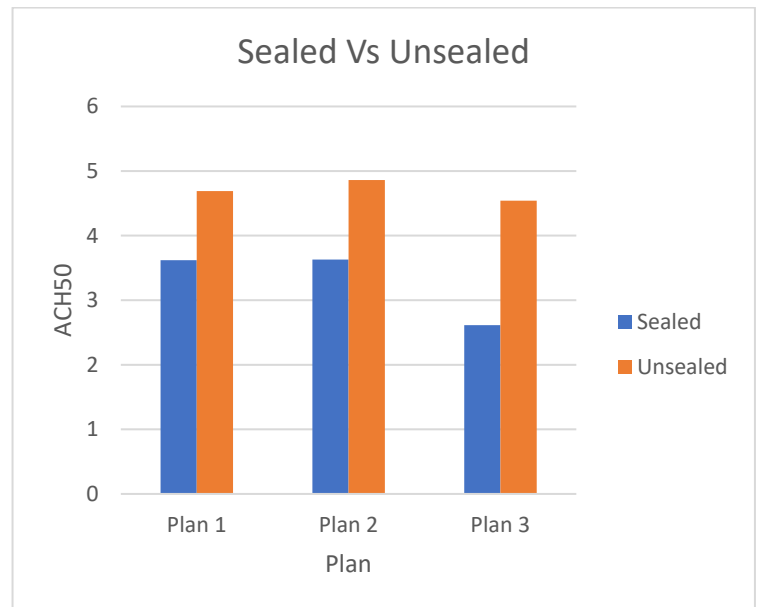
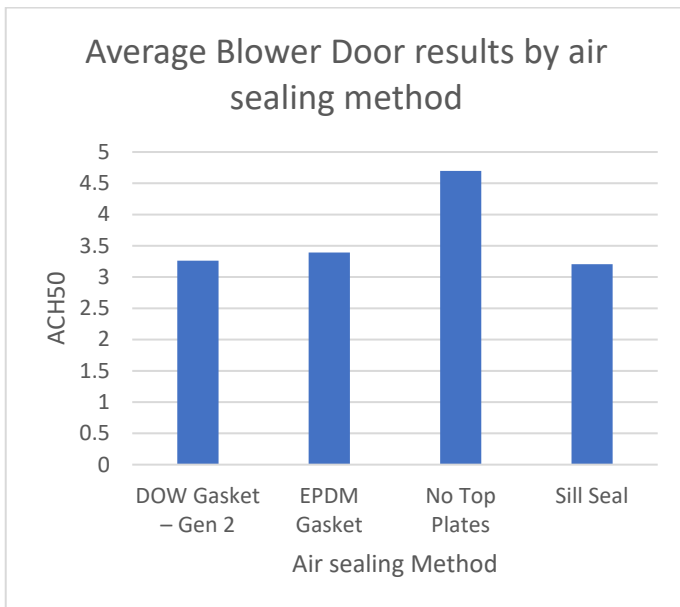


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Field Study

The field study included sealing and testing a total of twelve homes with three different plans and four distinct methods of air sealing. The field study included an initial test and a retest if the blower door was over 4 ACH50. The results below only include values from the initial tests.

1. The average initial blower door for sealed and unsealed homes was 3.28 and 4.70 ACH50 with a difference of 1.42 ACH50. This suggests air sealing of any type is best for blower door performance.
2. All air sealing methods resulted in an average blower door of 3.21 to 3.39 ACH50 with sill seal having the lowest results.
3. The type of homes had little effect on the result from unsealed top plates with a blower door variance of 0.32 ACH50. However, the variance between homes with sealed top plates was 1.02 ACH50. This suggests the quality of the top plate installation is dependent on the complexity of the home.



Please reach out to the Duke Energy RNC Program Team at DERNC@icfprogram.com with any questions or if you would like additional information on the study.