



Washington State Building Code Council

Improving the built environment by promoting health, safety and welfare

1500 Jefferson Street SE • P.O. Box 41449 • Olympia, Washington 98504
(360) 407-9277 • e-mail sbcc@des.wa.gov • www.sbcc.wa.gov

STATE BUILDING CODE INTERPRETATION NO. 18-08

CODE: 2015 Washington State Energy Code, Commercial
2015 International Mechanical Code

SECTIONS: 2015 WSEC Sections - C403.2.7.1 Kitchen hoods, C403.2.6 Ventilation
2015 IMC Sections – 507.1 Kitchen Hoods, 507.5 Capacity of Hoods

QUESTION 1: For a factory-built commercial kitchen exhaust hood with capacity greater than 2,000 cfm that is listed and labeled in accordance with UL 710, do the maximum allowed net exhaust airflow rates per WSEC Table C403.2.7.1 supersede the minimum net airflow requirements of IMC Section 507.5?

ANSWER: **Per Exception 1 of IMC Section 507.1, factory built commercial exhaust hoods that are listed and labeled in accordance with UL 710 are not required to comply with IMC Section 507.5. Therefore, only the maximum allowed exhaust airflow rates specified in Table C403.2.7.1 would apply to the UL 710 listed and labeled kitchen hoods.**

The final kitchen hood(s) exhaust airflow scheduled in the mechanical drawing permit set is used to determine if total kitchen hood exhaust airflow is greater than 2000 cfm.

WSEC Section C403.2.7.1 states “*Conditioned supply air delivered to any space shall not exceed the greater of the following - 1.) The ventilation rate required to meet the space heating cooling load; 2.) The hood exhaust flow minus the available transfer air from adjacent space where available transfer air is considered that portion of outdoor ventilation air not required to satisfy other exhaust needs, such as restrooms, and not required to maintain pressurization of adjacent spaces.*”

QUESTION 2: Is the general purpose of this provision to reduce the amount of tempered make-up air required to replace the kitchen hood exhaust air by utilizing conditioned transfer air from adjacent spaces and conditioned supply air from the kitchen area, that would otherwise be exhausted and is not required to satisfy other exhaust needs?

ANSWER: **Yes.**

It is recommended to utilize transfer air where available and air for conditioning the kitchen first before adding dedicated make-up air units. See IMC Section 508 for requirements for air supplied to kitchens with exhaust hoods. There is no minimum exhaust airflow threshold this applies to all kitchen exhaust airflows but there also is no minimum percentage of

transfer or heating/cooling supply air that needs to be maintained. If there is no transfer or heating/cooling supply air available then a dedicated make-up air unit is required per IMC Section 508.

QUESTION 3: Per WSEC Section C403.2.7.1, Paragraph 1, is Item 1 referring to the design conditioned supply air cfm required to satisfy the peak heating or cooling loads within the space that the kitchen exhaust hood is located (i.e. kitchen area, food production facility, etc)?

ANSWER: Yes. ASHRAE 90.1-2013 clarifies that this is referring to the “conditioned supply air delivered to any space with a kitchen hood.”

QUESTION 4: If the design conditioned supply air cfm serving the kitchen area is greater than the amount of transfer air available from adjacent spaces, may the conditioned supply air serving the kitchen be used to satisfy this requirement in lieu of utilizing transfer air?

ANSWER: Yes. Only when the total kitchen hood exhaust airflow rates are greater than 2000 cfm and Item 1 of the three available options is utilized, then “Not less than 50 percent of all the replacement air shall be transfer air that would otherwise be exhausted.” These exhaust hoods may only utilize transfer air that would otherwise be exhausted. See Q&A 5, below. Since there is no outdoor airflow rate for the kitchen per 2015 IMC Table 403.3, the conditioned air should be returned to the HVAC unit.

Note: ASHRAE 90.1-2013 defines replacement air as “outdoor air that is used to replace air removed from a building through an exhaust system. Replacement air may be derived from one or more of the following: makeup air, supply air, transfer air, and infiltration. However, the ultimate source of all replacement air is outdoor air. When replacement air exceeds exhaust, the result is exfiltration.”

QUESTION 5: Is the percentage of the design conditioned supply air serving the kitchen area that may be used to satisfy a portion or all of the cfm required to replace the kitchen hood exhaust cfm, 1) the minimum ventilation per Section C403.2.6, or 2) the total conditioned supply cfm assuming up to 100% outside air during kitchen exhaust hood operation?

ANSWER: Any or all of the conditioned supply air serving the kitchen may be used to replace the kitchen hood exhaust airflow. See below and 2015 IMC Section 508.1 for further requirements on pressure equalization for kitchens.

Per 2015 IMC Table 403.3 “Kitchens (cooking)” have a minimum design exhaust airflow rate of 0.70 cfm/sf but no minimum outdoor airflow rate. Per footnote b mechanical exhaust is required and air cannot be recirculated to other spaces but may be recirculated within the space.

Per 2015 IMC Section 508.1.1 the temperature differential between makeup air and the air in the conditioned space shall not exceed 10°F except where the added heating and cooling loads of the makeup air do not exceed the capacity of the HVAC system.

Only when the total kitchen hood exhaust airflow rates are greater than 2000 cfm and Item 1 of the three available options is utilized then “Not less than 50 percent of all the replacement air shall be transfer air that would otherwise be exhausted”. Then a minimum of 50% of the kitchen hood exhaust airflow must be transfer air that would otherwise be exhausted.

If the conditioned supply air exceeds the exhaust airflow rate during any operating mode then return air would need to be provided to HVAC unit.

QUESTION 6: Do the requirements of C403.2.7.1 apply to both Type I and Type II kitchen exhaust hoods?

ANSWER: Yes.

Please note the following:

- a. Each kitchen with a total kitchen hood exhaust airflow greater than 2000 CFM needs to comply with the UL 710, one of the three option requirements, as well as the different appliance duty requirements for a single hood or hood section.**
- b. If Type II equipment for a dishwasher or other appliance are in a separate room where the total kitchen hood exhaust airflow does not exceed 2000 CFM then requirements in Item a above would not apply.**
- c. Only Type I kitchen exhaust hoods can be certified under UL 710.**
- d. Per 2015 IMC Section 507.1 a Type I exhaust hood may be installed above a Type II appliance.**

QUESTION 7: Do exceptions 1 and 2 at the end of section C403.2.7.1 only apply to kitchens with total kitchen hood exhaust airflow rates greater than 2000 CFM?

ANSWER: Yes. Note that, per Exception 2, to be considered a “certified grease extractor hood” the hood(s) must comply with UL 710 but is not required to comply with the option 1, 2, or 3 requirements based on the low exhaust airflow hood face velocity of 60 fpm.

SUPERSEDES: None

REQUESTED BY: Whatcom County