

What Grade Are You In? by Carla L. Romita

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Builders, developers, property owners and managers in the Northeast have several choices when it comes to the type of heating equipment they install in new and renovated buildings. Fuel oil, natural gas, and propane are common choices. There is also some use of electricity. However, in the New York metropolitan area, the most commonly used products are fuel oil and natural gas. Even if you know that your building burns fuel oil, you may not fully appreciate the differences among the different grades of fuel oil, which can affect your building's budget and energy expenses.

Fuel oil for residential heating purposes is available in three grades in the New York area. The lightest, or most refined, grade is no. 2 heating oil. It is referred to as a distillate because it is capable of being distilled or vaporized at relatively low temperatures. A distillate fuel is very fluid and flows like water at room temperature. The heaviest grade is no. 6 oil, which is only semi-fluid at room temperature and must be preheated in order to ensure proper combustion. No. 6 oil is also called residual fuel oil because it is the residual product that remains when crude oil is refined to produce lighter products such as gasoline, kerosene, and distillates like no. 2 fuel oil and diesel fuel. No. 4 oil is a hybrid product that consists of a blend of residual and distillate fuels. No. 4 oil is fluid at room temperature and does not require preheating.

Selecting the right grade of fuel requires careful analysis of the needs of the particular building. A building owner or manager should consider cost, energy yield, location of fuel tanks, and the skill, training level, and licensing status of building maintenance personnel in making this choice.

In general, the price of fuel oil increases with the refining level of the product. No. 2 oil is the most expensive and no. 6 oil is the least expensive of the options. When this article was written, the no. 2 oil cost approximately \$0.50 per gallon more than no. 6 oil.

The heat-producing capacity of fuel products is measured in British thermal units (Btus). A Btu is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. One gallon of no. 2 heating oil contains approximately 138,000 Btu. One gallon of no. 6 residual fuel oil contains approximately 148,000 Btu. The Btu content of no. 4 fuel oil depends on the percentages of the distillate and residual components of the blend, but is commonly 143,000 Btu per gallon. Thus, all other factors being equal, a building will require less no. 6 oil than no. 4 oil or no. 2 oil to heat the same amount of space because it has the highest Btu content per gallon. The higher the Btu content of the fuel, the less of it you need attain the same results.

The three grades of heating fuels require different amounts of equipment maintenance. In addition to requiring preheating for proper combustion, no. 6 oil must be kept at minimum temperatures to remain in a fluid state. Therefore, no. 6 oil is not recommended for use in facilities with unheated outdoor storage tanks. To maintain no. 6 oil burning equipment in New York City, the building superintendent must maintain a Certificate of Fitness is issued by the Fire Department. For properties with a properly licensed maintenance staff, no. 6 oil is the most economical choice and can save many thousands of dollars each year in energy expenditures.

For buildings without the appropriate maintenance staff, no. 4 oil may be a viable option because it offers the benefit of a higher Btu content per gallon but does not require heated storage tanks or preheating.

No. 2 oil burning equipment requires the least amount of maintenance of all of the oil products. Smaller properties where it is unrealistic to maintain an on-site licensed superintendent will benefit from the convenience of no.2 oil burning equipment, which normally requires only annual maintenance typically covered by a burner service contract available from a fuel oil dealer or an independent service companies.

An additional benefit of no. 2 oil burning equipment is evidenced in recent studies that show that no. 2 oil burning equipment has air pollution emission rates comparable to that of natural gas and lower than that of no. 6 oil or no. 4 oil. When deciding on the right grade of fuel, it is important balance the building's economic needs, maintenance capabilities, and the environmental concerns of the owner or manager.