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The effects of laser absorption and mix on direct-drive capsule experiments at OMEGA E.S. DODD, J.F. BENAGE, G.A. KYRALA, I.L. TREGILLIS, D.C. WILSON, F.J. WYSOCKI, LANL, W. SEKA, V. YU. GLEBOV, LLE, UR, J.A. FRENJE, MIT — The yield of an ICF capsule can be affected by the inclusion of high-Z material in the fuel, either as a diagnostic or from hydrodynamic mixing. A series of experiments have been fielded at the OMEGA laser to better understand these effects. The targets are glass shells filled with a mixture of D_2 and ^{3}He, and with controlled amounts of a dopant, Ar, Kr, and/or Xe. These targets are then directly driven with a 1.0 ns (0.6 ns) square laser pulse having a total energy of 23 kJ (13.8 kJ), and the data compared with yield and burn-temperature predictions from 1-d radiation-hydrodynamics calculations. However, our calculated yields are typically a factor of two greater than the measured yield, while the calculated burn-weighted temperatures are lower. Estimates for the amount of absorbed laser energy indicate that only 65% to 70% is absorbed. However, our calculations absorb 85% of the energy. The ratio of D^{3}He-protons to DT-neutrons also indicates that mixing of shell material has occurred. We will discuss the results of recent 1-d calculations where the incident energy and flux limiter have been varied to match the absorption data. We will also discuss the use of a mix-model to match the charged particle data. Supported by US DOE and LANS, LLC under contract DE-AC52-06NA25396. LA-UR-09-04488

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