

Raw Material Usage at Nittōho Tatara

Nittōho Tatara uses the three-day direct method of smelting, which produces a massive bloom (*kera*) of iron and steel inside the furnace. Over the course of the 70-hour operation, the *murage* and the rest of the crew work day and night, shoveling loads of iron sand and charcoal into the fire roughly every 30 minutes. Three complete operations of the furnace are performed every winter. Each of them consumes roughly 10 metric tons of iron sand and 12 metric tons of charcoal.

Nearly 4 metric tons of clay are used to construct a new furnace at the start of each operation. As smelting progresses and the temperature climbs, the interior walls of the furnace begin to melt. The melted clay reacts with the molten iron, creating a solvent (called “slag”) that carries away impurities as it drains out. As a result, the type of clay used to build the furnace has a direct impact on the purity of the resulting metal: depending on the attributes of the clay, less slag is produced, and fewer impurities are removed.