The surface state of the cast strands is very important in classification and evaluation of their quality. The surface defects of the cast strands, observed in industrial practice are the consequence of some deficiencies in the continuous casting technology, particularly - unsuitable selection of the lubricating casting powders (or not using the powders). The suitable selection of casting powders ensures the specific physical and chemical properties of liquid slag and the phenomena on steel surface in the continuous casting mould can be controlled.

Finally, the types and size of surface defects are limited or the defects are eliminated. The information concerning the properties of the lubricating casting powders presented in trade offers are unsufficient and the suitable selection of casting powders isn’t achieved. The information would satisfy if the chemical composition, mineralogical composition, grain composition, softening point melting point, fluidity point, melting rate, absolute viscosity and surface tension of the casting powders in liquid phase were known. In this situation the detailed investigations of the physical and chemical properties concerning the casting powders, offered in our country by Polish and foreign producers were very advisable.

The following measurements were carried out to realise the purpose of the investigations:
• mass changes of casting powders during the heating in oxidising atmosphere,
• softening point, melting point and fluidity point,
• absolute viscosity and surface tension of casting powder in liquid phase,
• wettability.

On the base of the received results a lot of physical and chemical properties of casting powders offered by Polish and foreign producers were verified. Moreover the investigations allowed proposing „the optimum casting powder” ensuring the high quality of the cast strand surface in each conditions of continuous casting process.