CLAIMS

1. High-Mn steel comprising:

a chemical composition containing, in mass%,

C: 0.10 % or more and 0.70 % or less,

Si: 0.10 % or more and 0.90 % or less,

Mn: 20 % or more and 30 % or less,

P: 0.030 % or less,

S: 0.0070 % or less,

Al: 0.01 % or more and 0.07 % or less,

Cr: 1.8 % or more and 7.0 % or less,

Ni: 0.01 % or more and less than 1.0 %,

Ca: 0.0005 % or more and 0.010 % or less,

N: 0.0050 % or more and 0.0500 % or less,

O: 0.0050 % or less,

Ti: 0.0050 % or less, and

Nb: 0.0050 % or less, within a range satisfying the following formula (1), with the balance being Fe and inevitable impurities,

$$Ca/S \geq 1.0 \quad (1);$$

a microstructure containing austenite as a matrix;

a yield stress of 400 MPa or more;

an average Charpy impact absorbed energy at –196 °C of 100 J or more for a full-sized test piece and 20 J or more for a half-sized test piece; and

a reduction of area 51% or more.

2. The High-Mn steel according to claim 1, wherein the chemical composition further contains, in mass%, at least one selected from the group consisting of

Cu: less than 2.0 %,

Mo: 2.0 % or less,

V: 2.0 % or less,

W: 2.0 % or less,

Mg: 0.0005 % or more and 0.0050 % or less, and

REM: 0.0010 % or more and 0.0200 % or less.

3. A manufacturing method of high-Mn steel, comprising: heating a steel material having the chemical composition according to claim 1 or 2 to a temperature range of 1100 °C to 1300 °C; then hot rolling the steel material with a rolling finish temperature of 750 °C or higher and lower than 950 °C to obtain a hot-rolled plate; and then subjecting the hot-rolled plate to cooling treatment at an average cooling rate of 0.5 °C/s or more from a temperature at or above (the rolling finish temperature – 100 °C) to a temperature range of 300 °C to 650 °C; and thereby obtaining the high-Mn steel as recited in claim 1 or claim 2.