CLAIMS

1. An H-beam having protrusions on an outer surface of each flange, comprising:

a steel composition containing C: 0.05 mass% to 0.20 mass%, Si: 0.05 mass% to 0.60 mass%, Mn: 1.20 mass% to 1.70 mass%, P: 0.035 mass% or less, S: 0.035 mass% or less, V: 0.040 mass% to 0.200 mass%, and N: 0.0040 mass% to 0.0200 mass%, within a range satisfying the following Expression (1) with the balance being Fe and inevitable impurities:

$$0.05 \leq [\%V] \times [\%N]/[\%S] \leq 0.50 \quad (1),$$

where [%V], [%N], and [%S] are the contents in mass% of V, N, and S in steel;

a tensile strength of 490 MPa or more;

a yield strength of 355 MPa or more; and

an impact absorbed energy at 0 °C, vE_0, of 27 J or more.

2. The H-beam having protrusions according to claim 1, wherein the steel composition further contains at least one selected from the group consisting of Cr: 1.0 mass% or less, Cu: 1.0 mass% or less, Ni: 1.0 mass% or less, Mo: 1.0 mass% or less, Al: 0.10 mass% or less, Nb: 0.10 mass% or less, B: 0.010 mass% or less, Ca: 0.10 mass% or less, Mg: 0.10 mass% or less, and REM: 0.10 mass% or less.

3. The H-beam having protrusions according to claim 1 or 2, wherein each of the protrusions has a height of 1.5 mm or more.

4. A manufacturing method for an H-beam having protrusions by hot rolling a steel material having the steel composition as recited in claim 1 or 2, the method comprising:

in the hot rolling, performing finish rolling to form protrusions on outer surfaces of flanges of the H-beam; and

after the finish rolling, cooling the H-beam at an average cooling rate of 0.1 °C/s to 30 °C/s in a temperature range of from a cooling start temperature of 750 °C or higher to 500 °C.

5. The manufacturing method for an H-beam having protrusions according to claim 4, wherein the finish rolling is performed in a temperature range of 800 °C or higher.