CLAIMS

1. A method for joining a first metal part (11) with a second metal part (12), the metal parts (11, 12) having a solidus temperature above 1100 ºC, the method comprising

- applying (201) a melting depressant composition (14) at least on a surface (15) of the first metal part (11), the melting depressant composition (14) comprising
    - a melting depressant component comprising at least 25 wt% boron and silicon in total for decreasing a melting temperature of the first metal part (11), and
    - optionally, a binder component for facilitating the applying (201) of the melting depressant composition (14) on the surface (15),
- bringing (202) the second metal part (12) into contact with the melting depressant composition (14) at a contact point (16) on said surface (15),
- heating (203) the first and second metal parts (11, 12) to a temperature above 1100 ºC, said surface (15) of the first metal part (11) thereby melting such that a surface layer (21) of the first metal part (11) melts and, together with the melting depressant component, forms a molten metal layer (210) that is in contact with the second metal part (12) at the contact point (16), and
- allowing (204) the molten metal layer (210) to solidify, such that a joint (25) is obtained at the contact point (16), **characterized in that**

the boron at least partly originates from a boron compound selected from any of the following compounds: boric acid, borax, titanium diboride, boron nitride and/or combinations thereof, such that the boron source may consist of any of or combinations of the present boron sources, and

wherein boron constitutes at least 10 wt% of the boron and silicon content of the melting depressant component.

2. A method according to claim 1, wherein the boron originates from any of the boric acid, borax, titanium diboride, boron nitride and/or combinations thereof in an amount 15-100 wt%, or 50 to 100 wt%, based on the total weight of the boron, such that the boron source may consist of any of or combinations of the present boron sources, based on the total weight of the boron.

3. A method according to claim 1 or 2, wherein the silicon originates from any of elemental silicon and silicon of a silicon compound selected from at least any of the following compounds: silicon carbide, silicon boride and ferrosilicon, such that the silicon includes all silicon in the melting depressant component, which includes elemental silicon as well as silicon in a silicon compound.

4. A method according to any one of the preceding claims, wherein the melting depressant component comprises at least 40 wt% boron and silicon.

5. A method according to any one of the preceding claims, wherein the melting depressant component comprises at least 85 wt% boron and silicon.

6. A method according to any one of the preceding claims, wherein silicon constitutes at least 55 wt% of the boron and silicon content of the melting depressant component.

7. A method according to any one of the preceding claims, wherein the melting depressant component comprises less than 50 wt% metallic elements.

8. A method according to any one of the preceding claims, wherein the melting depressant component comprises less than 10wt% metallic elements.

9. A method according to any one of the preceding claims, wherein the first metal part comprises a thickness of 0.1 - 1.0, or 0.6 to 1.0, or 0.3 to 0.6 mm and the applying (201) of the melting depressant composition (14) comprises applying an average of 0.02 - 0.12 mg boron and silicon per mm^2 on the surface (15) of the first metal part (11).

10. A method according to any one of the preceding claims, wherein the surface (15) has an area (A1) that is larger than an area (A2) defined by the contact point (16) on said surface (15), such that metal in the melted metal layer (21') flows to the contact point (16) when allowing (204) the joint (25) to form.

11. A method according to any one of the preceding claims, wherein the first metal part comprises >50 wt% Fe, <13 wt% Cr, <1 wt% Mo, <1 wt% Ni and <3 wt% Mn.

12. A method according to any one of claims 1 - 10, wherein the first metal part comprises >10 wt% Cr and >60 wt% Ni.

13. A product comprising a first metal part (11) that is joined with a second metal part (12) according to the method of any one of claims 1-12.

14. A melting depressant composition for joining a first metal part (11) with a second metal part (12) according to a method of any one of claims 1 -12, the melting depressant composition comprising i) a melting depressant component that comprises at least 25 wt% boron and silicon in total for decreasing a melting temperature, and ii), optionally, a binder component for facilitating applying (201) of the melting depressant composition (14) on the first metal part (11), wherein the boron originates from a boron compound selected from any of the following compounds: boric acid, borax, titanium diboride and boron nitride, such that the boron source may consist of any of or combinations of the present boron sources.