

Reviewer 1:

Firs of all: Congratulation for the Authors of the paper. The presented work describes the design and strength properties of new high performance ferritic stainless steels in a very broad way.

The work is interesting and generally very good presented, but several issues should be improved for its greater readability and usability.

The main remarks to presented work:

1. What is on the right vertical axis on the Fig. 1?

Re: It is volume fraction, too. The Laves phase curves relate to the secondary y-axis for better visibility. A caption was added to the secondary y-axis now.

2. Writing using "/" is relatively unclear (first paragraph in section 2.2). Maybe it would be better to write two separate sentences?

Re: A relative clause has been inserted (marked up in red color).

3. How figures 2a and 2b were obtained? There is no information about it.

Re: These were obtained from optical micrographs, which were taken from the three directions. A clarifying insertion has been added to the figure caption (marked up in red color).

4. Generally: the use of "/" in texts is hard to read (see section 2.5, for example: "cylindrical specimens with a gauge length / diameter of 15 / 7 mm" or "the duration of the cooling / whole cycle was about 85 / 145 s").

Re: Several changes (marked up in red color have been implemented in lines 211, 221, 230, 288-290, 292-293, 332, 336, 458-459, 460 and 469) regarding this issue have been made.

5. Section 2.5 presents wide spectrum of mechanical testing. It seems advisable to present the geometry of the test samples on additional figures.

Re: Schematic drawings of the applied specimen geometries have been inserted into all the graphs.

6. Fatigue crack growth experiments: a_0 is not an initial notch dept – a_0 is the crack size obtained by precracking. a_n is the machined notch.

Re: You are right. Thank you for careful reading. This wording issue has been corrected. Clarifying modifications have been added in lines 233 and 236 (marked up in red color).

7. The rupture elongation is no less important than YS and UTS. Should not be shown on the figure like these values (see Fig. 3)?

Re: Tables containing the rupture elongation values have been added to Fig. 3.

8. There are no results of the thermomechanical fatigue testing for partly (80, 60, 45% oop) thermal expansion obstructed by the testing machine (see section 2.5 and 3.2).

Re: Indeed, there are: The results from the 80, 60, 45% oop experiments are contained in Fig. 5b.. If thermal strain obstruction is reduced this leads to lower stress range. Accordingly, 100 % of strain obstruction (100 % oop) relates to the high stress range end of Fig. 5b. The low stress range end correlates to 45 % of thermal strain obstruction, ... with 80 and 60 % in between.

An explanatory statement (... “i.e. as a result to differing obstruction of thermal strain,...”) was inserted into the brackets in the figure caption of Fig. 5b.

9. The data presented in the first paragraph of the section 3.2 by using “/” are unclear. Maybe they should be put in the table?

Re: The statement in brackets was rephrased and should be easier to understand now.

10. Figures 5 and 8 should be larger because of their readability.

Re: All figures were enlarged.

11. How can you read the data for the $\varepsilon_{\text{mech.}} = -0.45$ to $-1\varepsilon_{\text{th}}$ in Chart 5 (see description of this figure)?

Re: Cf. answer to question 8.

12. There are no curves for 17Cr2/3 RX-PA data on Fig. 8a – only points. Why?

Re: Because only 100 MPa experiments were performed for this heat treatment variant, because of limited material availability. Other stresses were not covered by creep experiments. For this reason there are just points at the 100 MPa stress level in the time to strain/rupture curves.

A clarifying additional remark “(100 MPa data available only)” has been added to the figure caption.

Conclusion:

In my opinion, the paper is very interesting for journal readers and suitable for publication in it after minor corrections.

Re: Thank you very much for your careful consideration and constructive remarks, which helped to increase the quality of the manuscript!