

KAWASAKI STEEL TECHNICAL REPORT

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Automotive Materials and Instrumentation
and Process Control

Advanced Stainless Steels for Stricter Regulations of Automotive Exhaust Gas

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Synopsis :

The demands for advanced properties of stainless steels in automotive exhaust systems are increasing to meet the requirements for lighter weight and stricter regulations for exhaust gas. However, the properties of steel materials used for automotive exhaust systems differ depending on parts, where the materials are to be used. Under the circumstance, advanced stainless steels suitable for each of the parts were developed by Kawasaki Steel by making full use of the latest production facilities in Chiba Works . That is, a stainless steel (R429EX: 15Cr -0.9Si-0.45Nb), having properties excellent in thermal fatigue resistance, resistance to high- temperature fatigue, oxidation resistance and formability, suitable for parts used in high temperature environment, like exhaust manifolds, for example, and stainless steels (R436LT: 18Cr -1.2Mo-Ti and R432LTM: 18Cr-0.5Mo-Ti), having condensate corrosion resistance, appropriate for use in humid environment, like parts, such as, mufflers, have been developed.

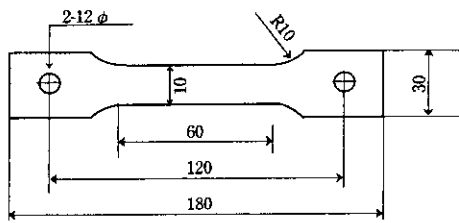
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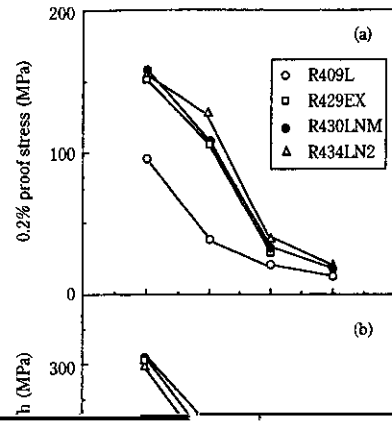
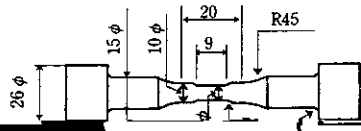


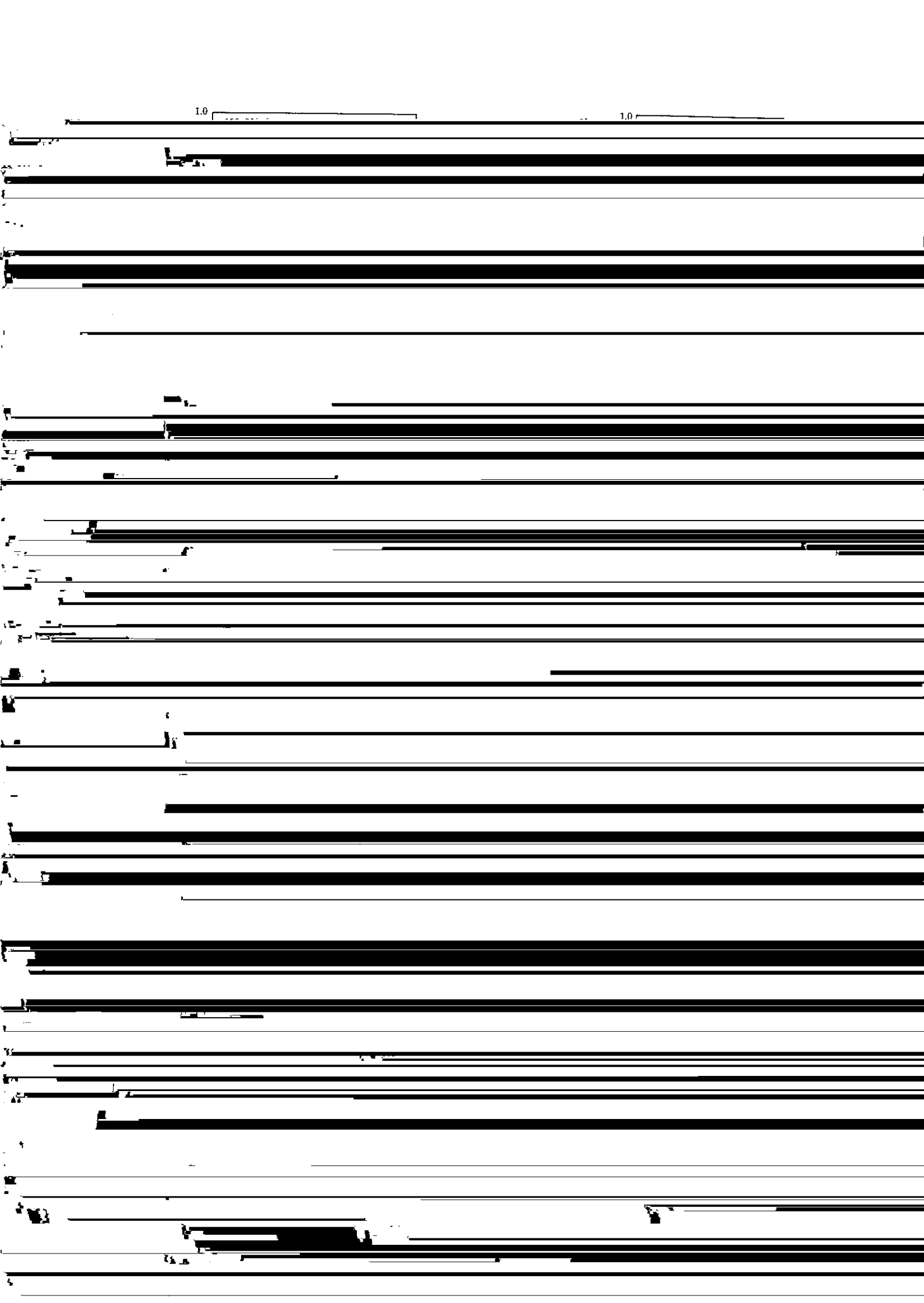
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(a) Specimen for tensile test at elevated temperatures







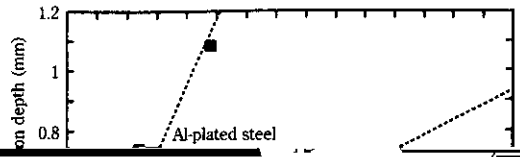
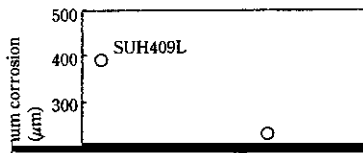
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exhaust gas purification systems, a highly corrosive condensate (condensed exhaust gas) containing NH_3^+ and



lations is foreseen in all countries. It is expected that high performance stainless steels which are suited to these stricter regulations will be used even more widely.

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8) A. Miyazaki, K. Ishii, and S. Satoh: *Kawasaki Steel Giho*, 30(1998)2, 31