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Hot formed steel possesses directionality of mechanical properties or anisotropy. These properties are mainly effected by elongated manganese sulfide inclusions.

Experimental works with low alloy steel (C 0.35%, Mn 1.3% and S 0.02%) as specimen and alloyed with rare earths in misch metals form were carried out in steel casting process. After casting and subsequent normalizing,the specimens were hot forged up to 50% reduction. The charpy V-notch(CVN) impact,tension and the microstructure test were investigated in both direction,longitudinal and transverse. The results show that the addition of rare earth can obtain the globular shape of the precipitated sulfide inclusion at the effective ratio of Ce:S about 1.5. The sulfide shape contribute to a remarkable improvement in the impact energy and the elongation. However,care must be taken about excessive rare earth addition, especially,with Ce:S ratio greater than 3.0 because of Hot shortness occured. The rare earth addition in small quantities exhibits minor affectation on the strength and the matrix of low alloy steel.

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