

The microstructure is predominantly austenitic grains with carbides, presumably cementite, in the grains occurring as needles, with fairly large amounts of pearlite, as shown in Figure B and at higher magnification in Figure C.

For industrial use, the steel is quenched after being austenized, in order to retain only austenite, which would make the steel magnetic, but if the steel is cooled very slowly carbides and grain boundary precipitation, pearlite in this case, occurs and magnetic properties are appearing.

Conclusion

It is of the opinion, the steel being analyzed is a austenitic-manganese steel, and due to the heating and cooling, conclusive morphology of various phases that is consistent with this type of steel is ascertained.