

Uses of Niobium

90 % of Nb is used to manufacture High Strength Low Alloy Steels



- Increases strength and toughness
- Increases corrosion resistance
- Increases weldability
- American Society for Metals estimates 0.01% of niobium in HSLA increases strength by 35 to 40 MPA



- Increases in strength for steel leading to weight savings and reduced steel consumption

Use in Automotive Industry



- Accounts for 25% consumption of FeNb

- US \$10 of Nb reduces weight of a car by 200kg and increases fuel efficiency by 5%



- Demand expected to grow as fuel efficiency has greater emphasis

Use in O&G Industry



- Accounts for 20% consumption of FeNb
- Used mainly in gas transmission pipelines

- Used due to high resistivity to high pressure and toughness to prevent fracture during earthquakes



Use in Structural steel

- Accounts for 45% FeNb consumption
- Used in bridges, high rise building and other structures



- Examples include: Øresun Bridge where 0.02%Nb addition resulted in 15,000t reduction in weight and cost savings of \$25M



Other Uses (10 %)

- High performance alloys for aerospace industry and **electricity generation**
 - Jet engine turbines
 - Land base turbines
- Superconductors for the medical industry
 - MRI scans



Future Applications

- R&D being performed on niobium usage in aluminum alloys and titanium alloys
- Potential use in creating more efficient particle accelerators

