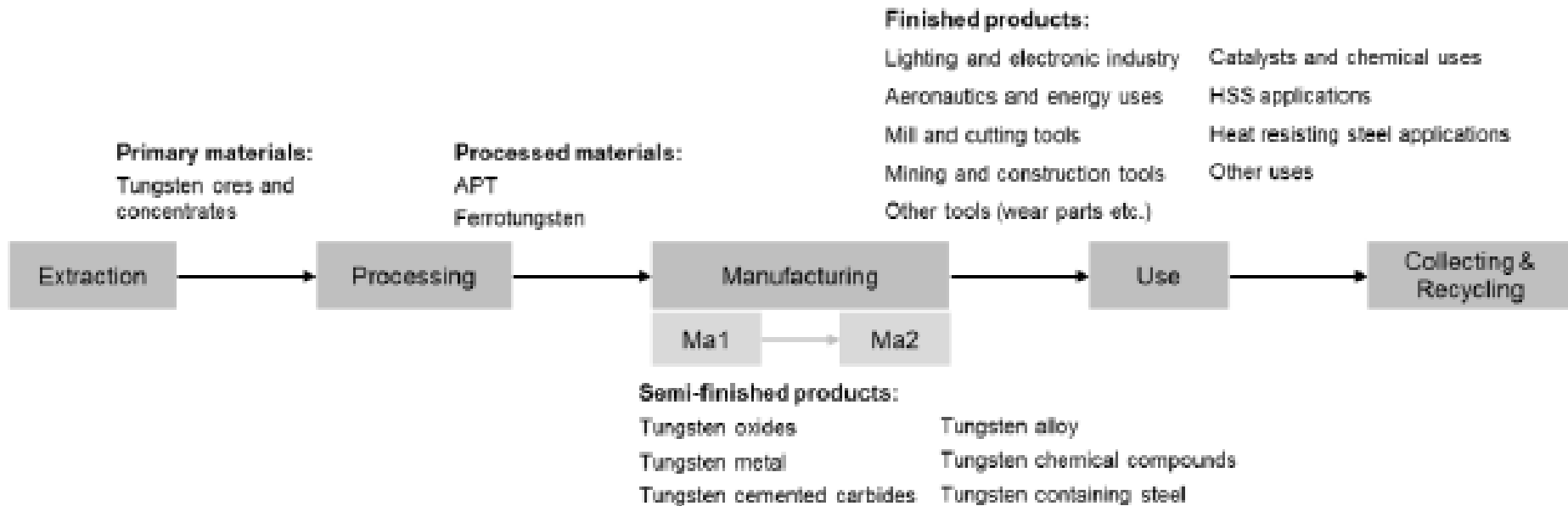


Tungsten

After extraction, tungsten ore is processed in two main intermediate products: ammonium paratungstate (APT thereafter) / tungsten oxides (further processed form of APT), and ferrotungsten. Although APT and tungsten oxides are similar, the MSA aims to focus on APT as the main tungsten intermediate; thus the two materials are not aggregated in one step but separated between processing and manufacturing. While ferrotungsten is used in tungsten containing steel; APT and tungsten oxides are manufactured into various tungsten semi-finished products: tungsten metal (highly conductive when pure), tungsten carbides (wear resistance), tungsten alloy (highly dense, for heavy parts) or chemical compounds. Finished applications are then manufactured from those tungsten components. For instance, lighting products are made from tungsten metal; mill and cutting tools or mining and construction tools are made of tungsten carbides. Aeronautics and energy applications are based on both tungsten metal and alloys. The figure below presents the value chain of tungsten and its main uses.



โซ่คุณค่าของ Tungsten