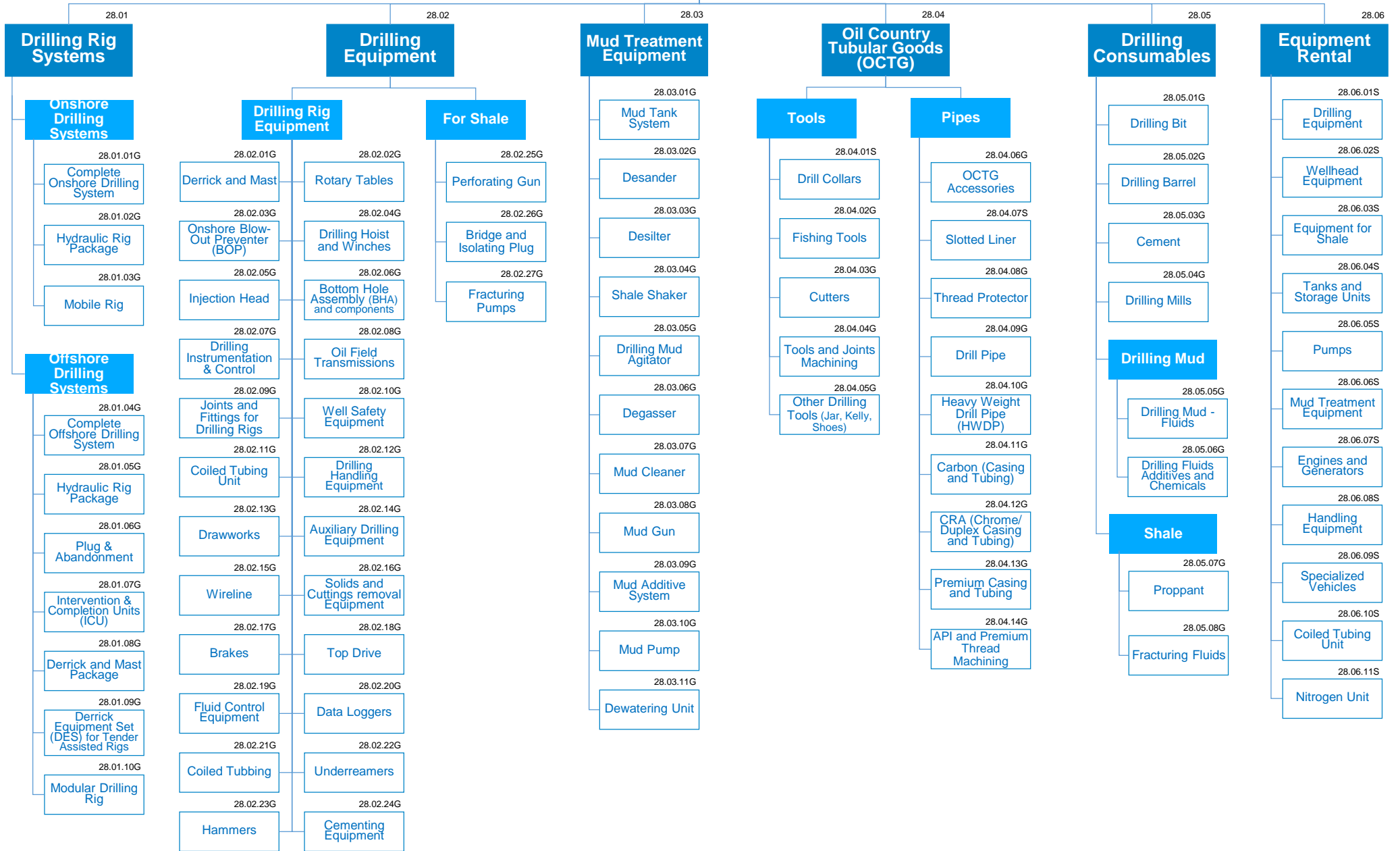


# Drilling Equipment and Materials



# Drilling Equipment and Materials

This category groups includes all equipment and materials used in drilling operations and annexed activities as well as equipment rental.

Pumps, generators and engines employed for drilling activities are not listed under this category but are instead categorized respectively under “Pumps” (08) and “Engines, Motors, Generators and Drives” (14).

## MAIN RATIONALES BEHIND THE STANDARD CATEGORIZATION

### Drilling Rig Systems

- This family includes systems that support complete drilling activities or more specific operations separated into 2 sub families onshore and offshore (i.e. hydraulic systems).
- It includes the drilling systems used during the contracting or rental services.
- “Mobile Rig” refers to drilling equipment mounted on trucks, tracks or trailers.

### Oil Country Tubular Goods (OCTG)

- This family includes seamless rolled products consisting of drill pipe, casing and tubing and its accessories.
- “Other Drilling Tools (Jar, Kelly, Shoes)” includes other drilling tools not categorized separately such as shoes, jars and kellys.
- “OCTG Accessories” Includes fittings and joints specific for drilling activities such as Wash Tools, Bar Stocks, X-Over, Swages, Pump Joints, Drifts, Scrapers, Valves and BOP Ram, Centralizers, Cementing Plug, Float Equipment, all the joints that provide connection to the OCTG components and are inside the hole
- Manifolds are taken into account in the group 29 (Well Completion) being a set more related to completion activities.
- Premium Casing and Tubing: Premium Casing and tubing refers to licensed Threads used by certain manufacturers
- API and Premium Thread Machining: Refers to machining factories which are licensed to machining OCTG Threads
- Drilling Mills: Refers to a smaller type of drilling bits

### Equipment Rental

- This family classifies equipment items rented for drilling operations.
- “Handling Equipment” refers to handling systems employed in drilling operations, mainly used to move pipes and similar tubular goods. This category includes: pipe shuttles, cranes, hoists, rackers, etc.
- “Specialized Vehicles” includes support vehicles for drilling activities such as support trucks, service trucks, water supply equipment, etc.
- “Drilling Equipment” and “Wellhead Equipment” do not include specific equipment for shale, which is instead classified as “Equipment for Shale” (28.06.03S)
- “Pumps” Includes all kind of pumps that can be used for drilling purposes; Fracturing, Injection, among others...

### Drilling Equipment

- This family includes all materials employed in drilling activities for both onshore and offshore sites.
- “Well Safety Equipment” encompasses all material employed to contrast the occurrence of disrupting events during drilling. This category does not include Blow Out Preventers (20.01.01G & 20.01.02G) nor items listed under “Process Control and Safety / Relief Valves” (05.03).
- “Auxiliary Drilling Equipment” includes electro magnetic brakes for drilling equipment, brakes (hydromatic, drum, and disc), air clutches, cathead, and pulsation dampeners.
- “Land Blow-Out Preventer (BOP)” refers only to the systems used onshore, while offshore BOPs are classified under “Subsea Equipment” (20.01.01G & 20.01.02G).
- “Derrick / Mast” refers only to the supporting structure for drilling and does not include its installed equipment such as hoists, winches, etc.
- “Instrumentation” encompasses several instruments and tools used during drilling activities (e.g. manometers for hydrocarbon pressures). Such items have to be kept separate from other specialized instruments for exploration and reservoir management listed under category group 25.
- “BHA and components” can comprehends, subs such as bit Sub, Z-Over Sub, Floating Sub and lifting Sub, stabilizers, reamers, shocks and hole-openers
- “Drilling Hoist and Winches” refers to winches, mobile hoists, hooks, swivels, sheaves, traveling blocks, Crownblocks, Deadline Anchors and the hoist supports usually installed in the derrick.
- “Drilling Handling Tools” includes tools such Elevators, Slips, Bushings, Tongs, Stabbing Guides, Clamps, Backsavers and Safety Stands
- “Joints and Fittings for Drilling Rigs” includes tools such as Swivel Joints and Hammer Valves, Fittings that do not connect tools inside the hole. “Hammers” are put in a separate category

#### Notes:

- Engines and generators employed for drilling activities are not included in this category group and are instead listed under “Engines, Motors, Generators and Drives” (14).
- Pumps used for drilling activities (especially for drilling mud and hydrocarbon fluids) are not included in this category group and are instead listed under the comprehensive “Pumps” category group (08).

### Mud Treatment Equipment

- This family refers to specific material for mud guns, storing, filtering, cleaning as well as joints, fittings, shakers and agitators. Mud pumps and mud injection columns are not considered under this family.
- “Cementing Units” refers to both modular, skid-based cementing units and portable bulk plants.

### Drilling Consumables

- This family refers to all those goods that are quickly used and need to be replaced often (e.g. lubricants, drill bits).
- “Drilling Mud – Fluids” includes all drilling mud fluid based sych as water base, oil base, and lubricants.
- “Drilling Fluids Additives and Chemicals” Includes chemicals for processes related to drilling activities such as Acids, Production Enhancement, Pipe Lines Fracturing Additives and Drilling Fluids.
- “Fracturing Fluids” includes viscous water-based fluids, non-viscous water-based fluids, gelled oil-based fluids, acid-based fluids, and foam fluids.