

## **AIR SUSPENSION WHEELS**

The ASWs are all metal construction wheels, first introduced on the aftermarket as replacement vehicle wheels, having their hubs suspended via air-cylinders to their rigid rim, which may have some metallic or rubber gripping layer or parts. ASWs replace complete rim and tire wheel assemblies, with the purpose to eliminate problems associated with inflated or solid rubber tires, as well as the need to replace worn out or damaged tires.

### **Product Classification**

- A. Classification by industry leads to easy to target customer groups.
- B. Classification by vehicle type ease wheel specification identification.
- C. Classification by wheel size facilitates grouping manufacturers of wheels or parts or subassemblies by their capabilities. Wheel weight is roughly proportional to the wheel volume (21-23 kg/ft<sup>3</sup> steel and 8-10 kg/ft<sup>3</sup> aluminum). The wheel load capacity is roughly proportional with the wheel width (30-35 mt/ft OTR, 18-24 mt/ft ATV and 8-12 mt/ft SPV).
- D. Classification by materials help finding specialty part manufacturers and subcontractors.
- E. Classification by gripping means help defining wear and maintenance needs.
- F. Classification by manufacturing technology helps finding suitable parts.

### **Field of interest**

- 1. OTR (Off The Road) wheels or ORV (Off Road Vehicles), not allowed on paved roads
- 2. ATV (All Terrain Vehicles), allowed on paved roads, often with some restrictions
- 3. SPV (Special Purpose Vehicle), mostly on paved strips or tracks, but allowed to run off the pavement

#### **A) By industry (users)**

- Mining
- Construction
- Agricultural
- Forestry
- Military
- Security
- Arctic
- Desert
- Amphibian
- Sport (ATV & SPV)
- Other (SPV)

#### **B) By vehicle type (construction)**

- Trucks
- Tractors
- Graders
- Rollers

- Loaders
- Dumpers
- Handlers
- Outriggers
- Cranes
- Jeeps
- Tanks
- Sedans
- Armored vehicles
- Aircrafts
- Drag racers
- Extreme sport vehicles
- Exploration vehicles
- Others

C)	By wheel size (Diameter x Width in feet)	Weight STL/ALU (kg)	Cost (2.5x mat'l) STL/ALU (USD)	Compare (Tire Price) STL Rim & Tire (USD)
<input type="checkbox"/>	1- <u>3</u> x 0.25-1.00	155/65	585/445	1,060
<input type="checkbox"/>	2- <u>5</u> x 0.50-3.00	1,295/530	4,890/3,710	8,835
<input type="checkbox"/>	4- <u>9</u> x 1.00-4.00	5,595/2,290	21,110/16,030	38,150
<input type="checkbox"/>	8- <u>14</u> x 2.00-5.00	16,925/6,925	63,655/48,475	115,395

D) By materials (structural parts)

- Steel
- Stainless
- Aluminum
- Composite

E) By gripping means (outer rolling surface)

- Metal only
- Bolt-on gripper blocks with rubber inserts
- Rubber belt (replaceable)
- Cast-on threaded rubber shell

F) By parts manufacturing technology

- Casting
- Plate cutting, bending and welding
- Laminating

Note: The wheel assembly with rubber tire and steel rim weighs about the same or less as that of the ASW made of steel.