Steering & Suspension

A vehicle's steering and suspension system will also have a number of hazardous materials including, but not limited to:

- pressurized brake boosters
- shock absorbers, struts and other accumulators

These pressurized articles may be described as:

UN3164, ARTICLES, PRESSURIZED PNEUMATIC, 2.2
UN3164, ARTICLES, PRESSURIZED HYDRAULIC, 2.2

Accumulators intended to function as shock absorbers, struts, gas springs, pneumatic springs or other impact or energy-absorbing devices are not subject to the HMR, provided each design type complies with 49 CFR § 173.306(f)(4), and:

- has a gas space capacity ≤ 1.6 L;
- static charge pressure ≤ 280 bar (~ 4170 psi);
- has a Design Factor (DF) ≤ 80 where DF = pressure (bar) x volume (L);
- has a minimum burst pressure of 4 to 5 times the static charge pressure at 20 °C;
- is manufactured under a written quality assurance program; and
- is subjected to a fire test where the device does not fragment or rocket.

- **Brake Booster**

Pressurized brake boosters are pneumatically charged devices in the vehicle's anti-lock braking system (ABS). They use nitrogen or another non-flammable compressed gas to provide additional braking force to "pump" the brakes in order to avoid wheel lock-up while allowing the wheels to continue to turn.

These accumulators, or gas springs, are typically charged to several thousand pounds of pressure and are, therefore, regulated as:

UN3164, ARTICLES, PRESSURIZED PNEUMATIC, 2.2

These devices are entitled to significant regulatory relief and, for all intents and purposes, are not regulated for transportation by any mode if they comply with the provisions of 49 CFR § 173.306(f)(4).