IICL CTB 005, August 1, 2007

IICL

Preferred Specification For Supply of New (OEM) Bias Ply

10.00 x 20 Tire, Tube, Flap, Rim & Lock Ring

(Unless Otherwise Specified By Owner)

Tire Specifications:

- Tires will be 10.00 – 20 new tube type, 14 ply and load range G with single and dual ratings clearly indicated on the sidewall of each tire.

- Tire outside diameter (OD) to be a minimum of 41.25" (104.78 cm). However, for each order the OD's of all tires in that order will NOT be more than 5/16" (7.9 mm) larger than the smallest tire in the order (maximum variance).

Note: Measuring is to be conducted with a tire caliper using the following steps:

1) Assemble the tire, tube & flap on the rim and lock ring assembly;
2) Air up tire to stated pressure on sidewall, following all SAFETY requirements for inflating truck tires on multi piece rims;
3) Lay inflated tire down on a flat horizontal surface; and
4) Use a tire caliper to measure tire at the largest diameter.

- Tires must meet all current U.S. DOT / FMCSA regulations and requirements including, but not limited to FMVSS No. 119.

- Tires randomly selected by the manufacturer, owner, or owner's representative must be supplied to an IICL approved testing facility (e.g. Smithers) for testing. Test results will be submitted to IICL and must include a U.S. DOT number, tire serial numbers, and date tire was manufactured. Tests are to be continuously run, so that no test results are ever more than 6 (six) months old.

- Due to daily exposure to extreme outdoor conditions, tires must be compounded with adequate protection against ALL effects of outdoor exposure (including UV & ozone). Tires will be formulated NOT to crack or degrade for a minimum 5 year period of service life, due to long term outdoor exposure.

- Tires must be stored under cover and protected from weather.

- Minimum tread depth requirement of 13/32" (10.3 mm)

- Minimum under tread of 5/32" (4 mm)

- Tread design must be traditional highway design and a minimum width of 7 inches (178 mm).

- Tread radius must be a minimum of 12 inches (300 mm).

- Tire weight for a 14 ply tire is a minimum of 75 lbs. (34 kg.), subject to a tolerance of +/- 2 lbs. (0.91 kg.) within the tire brand.

Tire Testing

- Currently, a Smithers testing report is the only measure used by North American intermodal tire buyers to determine the quality of a tire. The tests conducted are as follows:

- Plunger energy test – Tests the strength of the carcass of the tire. It measures the energy it takes to penetrate the tire by using a plunger tip.

  Plunger breaking design energy target to be 30,000 in-lbs. (w/ 1 ½" plunger spherical tip), and reflected in testing such that no tire tested display a value less then 28,000 in-lbs (to allow for population distribution cutoff among tires tested).

- Endurance – The endurance test as required by DOT Federal Motor Vehicle Safety Standard 119 measures tire strength under conditions of high temperature and maximum loading, but is also typically run beyond DOT requirements using stepped load increases in an overloaded condition. The three mandated DOT load steps are 66% of maximum load, 84% of maximum load, and finally 101% of maximum load over a 47 hour period. Load is then further increased in stepped increments every 10 hours beginning with a 10% increase initially (at hour 57) and approximately 10% (617 lbs. / 280 kg.) every 10 hours thereafter. Under this regimen, 85 hours of testing is required by IICL with no tire failure.

- Cleat wheel – is not required for DOT tests, but is required for the intermodal industry and simulates harsh intermodal conditions. This test measures how well treads and tire bodies hold up on rough surfaces over a period of time. The test uses 6 cleats and runs the tire at 30-35 mph (48-56 km/h). It starts at 80% maximum load and then increases 5% every 10 hours until it reaches 120% maximum load at 90 hours. Tires must be tested for a total of 100 hours without failure, so the 120% maximum load is experienced for the final 10 hours of testing. This test should be conducted when a new tire design or brand is being initially evaluated, when there is a new tire factory, or whenever there is a design change affecting the tire's structure or composition.

- Ozone – The ozone tests how well the tire holds up against ozone cracking over time. This test is not required, but requested by most clients especially when tires come from overseas. The test shows whether the tire will crack when left unused. Any score other than "0" should not be acceptable. The score "0" shows that no cracking occurred during testing. This test is performed with guidelines from ASTM-D1149-99 and tested for 72 hours at 40 degrees C at 50 pphm. There is a precondition period of 24 hours at 40 degrees C. The result is read based on a 7 times magnification.

- In addition to the above four tests, Smithers intermodal tire report should also contain two more sections dealing with physical dimensions that measures the tires physical characteristics; and a labeling section that details the tire labeling and marking.

Rim & Spacer Specifications:

- Rim measurements must be 7-1/2" (190.5 mm) wide and 20" (508 mm) diameter, and be tube type, "FL" design or Owner specified design.

- Rim spacer measurements must be 4" (101.6mm) wide and 20" (508 mm) diameter, channel type.

- Rims must be a two piece design (matched rim & lock ring set), with:

  - Manufacturer's name and respective part numbers stamped into rim and into lock ring.
  - Required U.S. DOT / FMCSA info stamped into rim.
  - A warning must also be stamped into the rim: "WARNING, USE ONLY LOCK RING PART NO. XXXXX" (XXXXX = manufacturer's correct part number for matching lock ring).

- Rim dimensions will conform to Tire and Rim Association (TRA) specifications and tolerances, EXCEPT that rim slot length will NOT exceed 3-1/2" (90 mm), and the locking ring must NOT be exposed or visible through the slot once assembled.

- Rims to be to all current U.S. DOT / FMCSA regulations and requirements, and to be regularly tested at Smithers. Test results, with rim & lock ring drawings (including stamped-in information) must be submitted to the Owner.

- **Tube Specifications:**

- When tires are assembled on rim and inflated, valve stems must be positioned in center of rim slot, with no side pressure on stem.

- Valve cores must be heavy duty, heat resistant type (as identified with red sealing ring), with 300 PSI rated working pressure.

- All tubes must have functioning valve stem caps and as required by owner.

- Tubes should be a 50% minimum of halobutyl or chlorobutyl rubber to ensure minimum air pressure leakage and failure.

- Tube size must match tire size and tube manufacturer/source must be clearly identified on the tube.

Flap Specifications:

- Flaps must be sufficiently rigid and reinforced in the area of the rim slot (or the tube is to be supplied with bridge washer) to effectively avoid flap protrusion through the rim slot. Flaps that push through the rim valve slot and beyond the exterior surface of the rim after the tire is inflated to the rated pressure are not acceptable.

- The flaps must be 8" (203.2mm) wide to completely avoid contact between the tube and any part of the rim or lock ring.

- The flaps must be flared or tapered at extremities to avoid chafing of the tube.

- The valve stem hole in the flap must be centered and uniform, preferably molded or die cut, without any partial blockage or tears, and must never punched by hand.

- Due to exposure to extreme outdoor conditions in the valve slot area, flaps must be compounded with adequate protection against ALL effects of outdoor exposure (including UV & ozone). Flaps will be formulated NOT to crack or degrade during their service life, due to long term outdoor exposure.

- Material must be compounded to provide a five year service life (minimum).

- Flaps must be of sufficient thickness and rubber quality to provide acceptable performance in service.

- Flaps must be sized to match the tire.