Power Train - Technical Merit		
	Max Score	Score
Motor mounted securely	5	
Low friction in power train alignment	5	
Friction reduction strategies (other than alignment)	5	
Design balance to distribute power to wheels	5	
Payload placement enhances traction	5	
Reliability of transmission as a system	5	
Judges discretionary bonus points	5	
TOTAL	35	

Power Train - Technical Merit

Purpose - System transfers power from the motor to the wheels.
Methods - Direct Drive (wheel's axle is also motor's output shaft, simple but not often practical).
Friction Drive (intimate physical contact with minimal slippage between input and output shafts, could use wheel tread to wheel tread at end of each shaft).
Belt Drive (V-belt or rubberband encircling different sized pulleys at shaft ends)
chain drive (like a bicycle chain).
Gears (gear teeth provide positive engagement).
Concepts – Speed vs. Torque, Gear Ratio, Input pulley size vs. Output pulley size

Power train design should recognize the relationship between the driving force available from the motor and the force necessary to turn the car's wheels under a range of conditions starting from a dead stop up to achieving maximum speed. A car equipped with large diameter wheels that give it a potential for high speed, may not have the torque necessary to overcome friction and inertia to get off the starting line. Also consider that each additional point of contact between moving parts adds the potential for more power robbing friction. Friction can often be reduced through use of lubricants, accurate and precise machining and construction, and by minimizing side and end loading on shafts.

Scoring Items

1. Motor mounted securely – will maintain intended position and optimum contact with drive train during race

Example Score 1 … You don't want to touch it for fear it will fall off.
Score 5 … Custom made, very rigid looking.

2. Low friction in power train alignment – any obvious gear impingement or binding, excessively tight belt or shaft loading is bad
3. Friction reduction strategies (other than alignment) – any use of bearings, lubricants or other device.
4. Design balance to distribute power to wheels – strategic use of gear ratios, don't over do it though.
5. Payload placement enhances traction – more weight placed over drive axle(s), centered side-to-side, not too high or too far past axle towards end of car.
6. Reliability of transmission as a system – it should meet the range of speed and torque conditions, and it looks sturdy.

Example Score 1 …Looks too fragile to run, you wouldn't want to turn drive wheel by hand.
Score 5 …Looks like built in a factory

7. Judges discretionary bonus points.