



**SUSTAINABLE
FLEET
TECHNOLOGY**

VIRTUAL CONFERENCE 2020

**Session 4: Green Garage Follow Up
& Application Review**

August 19, 2020



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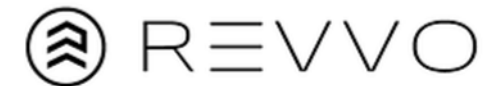
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Next Series Dates & Topics:

August 26: The Evolving World of Telematics: Real-Time Information for Fleet Performance

September 09: Green Fleet Award Winners 2020 Announcement

September 23: Best Practices & Lesson Learned in Charging Infrastructure Deployment

Format

- Q&A at the end
- Submit questions and comments to “Panelists”
- Scheduled for 2:00p-3:30p
- Slide handout
- Recording

Green Garage Follow Up & Application Review August 19, 2020

- 2:00-2:010 **Rick Sapienza, NC Clean Energy Technology Center**—Welcome & Introduction
- 2:10-2:15 **Courtney Bozic, Clean Fuels Consulting**—Overview of Green Garage Contest
- 2:15-2:22 **Chris Crawford, RinseKit**—Pressurized Portable Shower Kit
- 2:22-2:37 **Gary Lentsch, Eugene Water & Electric Board**—Green Garage Checklist
- 2:37-2:44 **Karen Edwards, United Soybean Board**—Join Fleets Across the Nation Go Biobased!
- 2:44-2:51 **Dave Woolf, TeleSwivel**—Solutions for Sustainable Disinfection
- 2:51-3:10 **TJ Tennent, Tennent & Associates**—Choosing the Right Tires & Tire Safety
- 3:10-3:30 **Q&A**





Rick Sapienza

resapienza@ncsu.edu

Phone: 919-515-2788

- **Clean Transportation Program Director NC Clean Energy Technology Center at NC State University**
- **8 years with NC State**
- **30+ years experience including General Motors, Draper Lab and Great Lakes Pulp & Fibre in both engineering and business management roles**



The 100 Best Fleets in the Americas



Tom C. Johnson,
author of *Green Fleet Awards™*
and *100 Best Fleets in the Americas™*

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- Environmental Scientist w/ more than 30 years experience
- Principal Consultant at Clean Fuels Consulting since 2003
- 20 years experience with clean transportation strategies and technologies
- Chief Judge for the Green Fleet Awards, involved for 13 years
- Chief judge for newly launched Green Garage Contest with *lighter* spin on highlighting sustainable fleet and garage practices

R. Courtney Bozic
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Courtney@greeningyourfleet.com
631-665-6513
www.greeningyourfleet.com





- Contest currently open
- Information & application on www.The100BestFleets.com
- Application deadline October 05, 2020

RINSEKIT[®]



Chris Crawford
Founder
San Diego, CA

www.RinseKit.com

chris@rinsekit.com

800-613-5764

PRODUCT OVERVIEW

The only product of its kind, RinseKit® provides pressurized, portable water that's like having a hose to go!

Easily wash away dirt, sand & more from people & gear.



WHAT IS A RINSEKIT?

RinseKit® is a portable pressurized self-contained hand-washing and cleaning product.

RINSEKIT PRODUCT FEATURES

- Fills and maintains pressure from a home spigot or via a pump for the entire workday.
- 2 gallon tank holds enough water to wash multiple times.
- Made from 100% recyclable PP and HDPE plastic; BPA free.
- Heater and hot water sink adapter accessories available.



HOW DOES RINSEKIT WORK?

- RinseKit sprays with the same water pressure as your home – think of it as a hose-to-go.
- RinseKit fills with water and pressure from a standard hose bib. Water pressure is transferred from your home to the RinseKit.
- Accessories available for filling and pressurizing the RinseKit via a sink or remotely.



RINSEKIT INDUSTRY USES



FLEET/DELIVERY DRIVERS



CONSTRUCTION



FIREFIGHTERS



LAW ENFORCEMENT



PROFESSIONAL SERVICES



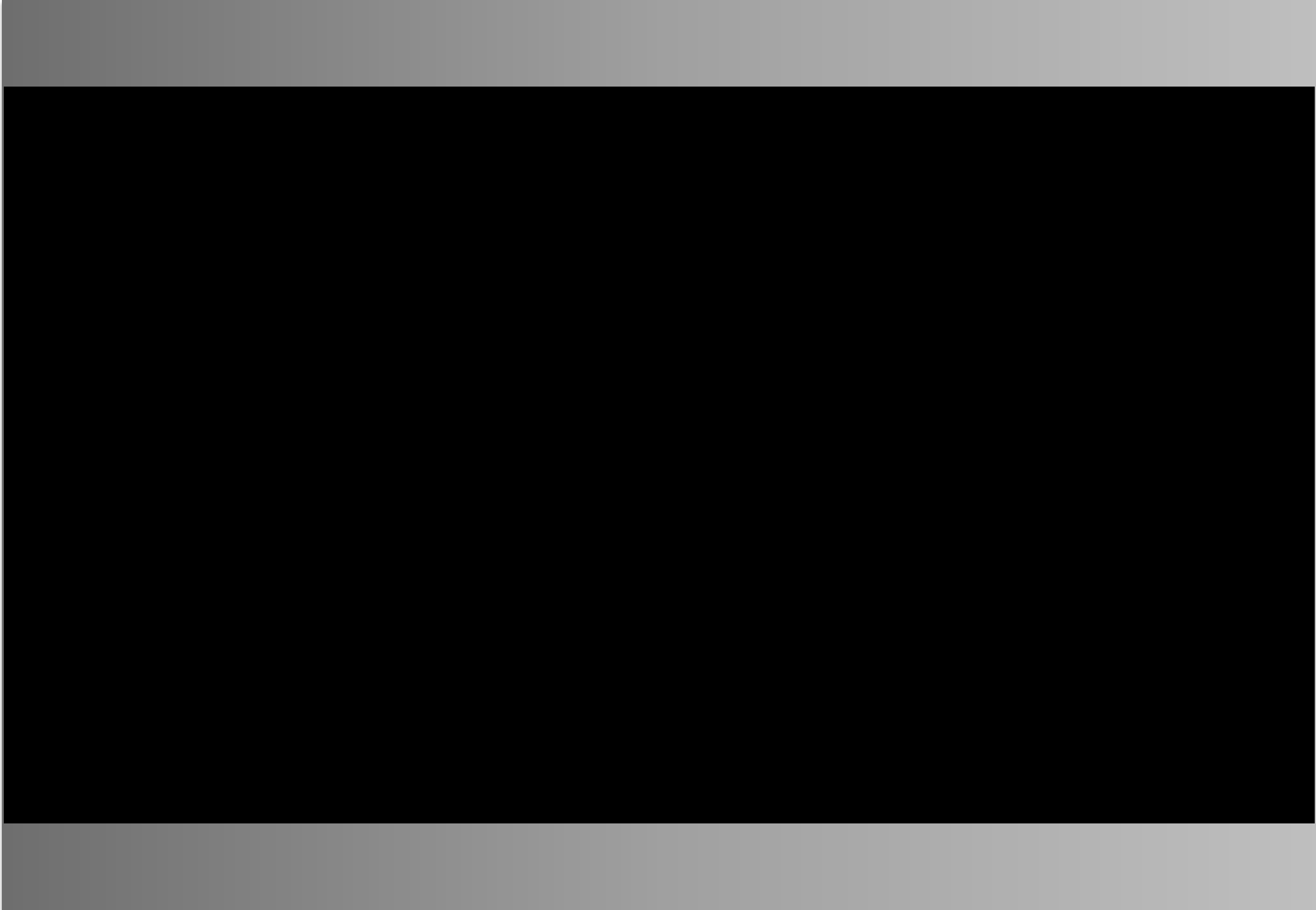
MILITARY

A hand holding a RinseKit spray nozzle, spraying water. The background is a blurred image of water and a hand holding the device. The text is overlaid on the left side of the image.

RINSEKIT SUPPORTS ON-THE-JOB SAFETY

Best Practices in the Current Environment & the Future

- RinseKit has been used by Police, Fire and other first responders for years. Drivers, delivery, fleet personal in multiple industries are all current customers.
- Hand washing between jobs or after in person contact.
- Washing tools on the job site to keep them well maintained.
- Washing boots and gloves prior to getting in vehicles improve cleanliness.
- Eye washing and decontamination uses.
- Can be filled with disinfectant to spray hands or larger areas.
- Portable and durable.





**RINSEKIT KEEPS YOU CLEAN
AND SAFE ON THE JOB**



RINSEKIT

CONTACT US WITH QUESTIONS OR COMMENTS

WEBSITE: www.RinseKit.com

FLEET INQUIRIES: www.RinseKit.com/fleet

CALL US TOLL-FREE: 800-613-5764

Green Garage Checklist



Gary Lentsch CAFM

Eugene Water & Electric Board
Eugene, Oregon

Depending on your organization - these questions may fall into three categories:



LEGAL – Sector specific, local and state requirements.*



CORE STANDARDS – organization requirements.*



ADDITIONAL STEPS –for improved environmental excellence.*



* Or if the question even applies to your business

Recycling & Waste Prevention

✓ Do you have systems in place to collect and recycle of the following materials?

- Scrap Metal
- Used Tires
- Vehicle Batteries
- Fluorescent Bulbs
- Cardboard
- Wood/Pallets
- Aerosol Cans
- Plastic Bumper
- E-Waste
- Solvents
- Used Oil
- Used Oil Filters
- Used Fuel Filters
- Used Anti-Freeze
- Metal Cans
- Plastic Bottles
- Mixed Paper
- Glass Bottles & Jars

Recycling & Waste Prevention

- ✓ Do you use refillable containers for paints, cleaners or lubricants? (such as pump, trigger or Sureshot® sprayers).
- ✓ Have you determined whether any waste streams or material can be reused or recycled on-site (e.g. parts, packaging, wraps, etc.)?
- ✓ If you use rechargeable batteries, are they properly recycled?
- ✓ Do you track how much your shop recycles monthly, quarterly?

Cleaning Practices

- ✓ Does your shop have a policy prohibiting the use of chlorinated solvents?
- ✓ If you use hazardous solvents to clean parts, does your shop use an enclosed parts cleaner?
- ✓ Are your shop's floors swept with a dry broom and damp mop as opposed to either wet mopping or hosing down the facility?
- ✓ Do you contract to have your parts cleaner(s) maintained?
 - ✓ If yes, how often do they visit (weekly, monthly, etc.)?

Cleaning Practices

- ✓ Has your shop minimized parts washer solvent use with any of these techniques?
 - ✓ Extended schedule for parts washer fluid switch out
 - ✓ Switched to smaller volume parts washer(s)
 - ✓ Reduced or eliminated number of parts washers
- ✓ Does your shop have at least one water-based parts washer (i.e. “dishwasher”)?
- ✓ Do you use a detergent and water re-circulation bath instead of an aerosol brake cleaner?
- ✓ Do you reuse rags by laundering them?

Employee Training

- ✓ Do you hold at least annual meetings and/or training refreshers on the proper use and storage of supplies, waste reduction and management, spill prevention, and how to use spill equipment?
- ✓ Do you train employees on proper material storage, hazardous material, and hazardous waste management techniques?
- ✓ Does your shop conduct at least annual spill response trainings for all employees?
- ✓ Have you participated in any voluntary technical assistance programs or trainings (e.g. City, County, OSHA, DEQ)?

Hazardous Materials

- ✓ Have you determined your facility's hazardous waste generator status?
 - ✓ Conditionally Exempt Generator (CEG)
 - ✓ Small Quantity Generator (SQG)
 - ✓ Large Quantity Generator (LQG)
- ✓ Are small, work-site sized containers labeled with the current content? (OSHA Employee Right to Know.)
- ✓ Are the hazardous materials used in your shop identified and labeled?
- ✓ If your shop captures metals from grinding or machining, have you performed a hazardous waste determination and disposed of materials properly?

Hazardous Materials

- ✓ Does your shop have a plan for the reduction of toxic chemicals?
- ✓ Have you checked to see if unneeded materials, chemicals, or unknown substances are being stored on your property? (That is, do you perform regular “boneyard” audits?)
- ✓ Do all containers of 55 gallons or more have secondary containment? *
 - ✓ Spill Pallet
 - ✓ Containment Berm
 - ✓ Containment Sump
 - ✓ Storage room as containment

Product Waste & Storage

- ✓ Does your shop keep liquid and solid wastes from entering storm drains? How?
- ✓ Has an employee been assigned to conduct at least monthly audits of your shop's hazardous material and waste storage areas?
- ✓ Are all vehicle (lead-acid) batteries stored under cover and in a manner that prevents acid spills or releases onto the floor or ground?
- ✓ Are all outdoor waste containers and storage areas covered to prevent rain from contacting the material and causing contamination?

Purchasing & Inventory

- ✓ Has your shop tested less hazardous/toxic products and/or replaced at least two hazardous materials with less hazardous/toxic ones in the last 6-months?
- ✓ Have at least two types of waste been reduced or eliminated from use in your shop in the past three years by changing operating practices?
- ✓ Are Safety Data Sheets (SDS) reviewed before a product is purchased?
- ✓ Do you use only non-lead wheel weights?
- ✓ Are product samples accepted only if unused portions can be returned to the vendor?

General Items

- ✓ Do your employees know where spill kits and spill response plans are located?
- ✓ Has your shop invested in energy efficient equipment?
- ✓ Have you requested and received a facility energy audit through your utility company?
- ✓ Have you installed programmable thermostats, lighting controls, or power management systems?
- ✓ Have you replaced low efficiency lighting with High Performance Lighting (LED, T8, T5)?
- ✓ Does your shop collect and/or recycle Used Oil? Where does it go?

More General Items

- ✓ Are all of your shop's used oil containers labeled as "Used Oil" and in good condition, including being free of leaks?
- ✓ Do you purchase and use re-refined crankcase oils or lubricants?
- ✓ Does your shop use only EPA-certified equipment to evacuate and recycle refrigerant?
- ✓ Does your shop employ only EPA-certified technicians to service air conditioning (Freon systems)?
- ✓ Does your shop manage wash water from vehicle washing, including engine or steam cleaning, by using equipment that recycles wash water?

Need More Information



Download the EcoBiz Checklist and guide for more ideas how to Green up your Garage.



<https://ecobiz.org>



Gary Lentsch CAFM
Fleet Manager
Eugene Water & Electric Board



gary.lentsch@eweb.org

**JOIN FLEETS ACROSS THE NATION
GO BIOBASED!**



*Karen Coble Edwards
United Soybean Board and National Biodiesel Board
Consultant*



Together, we can reduce the dependence on petroleum.

Together, we can improve air quality .

Together, we can reduce carbon emissions.

Together , we can improve the health and Safety of our employees.

Together, we can reduce our environmental footprint.



THE UNITED SOYBEAN BOARD



- **Established in 1991**
- **Funded by Soybean Farmers**
- **Supports Marketing, Research and Commercialization programs**
- **Governing Board - 78 Volunteer Farmer-Leaders**
- **Represents over 515,000 soybean producers**
- **Supports development of biobased products**



PROVEN PERFORMANCE AT DC WATER



PROVEN PERFORMANCE AT PORT AUTHORITY OF NY & NJ









Soy-Biobased Products:

- **Perform equal to or better than petroleum products**
- **Successfully used in Fleets for More than 20 years**
- **Safer for Employees and the Environment**
- **Cost Competitive with similar shop products**
- **Readily Available Online and through Typical Supply Chains**















Together, we can reduce the dependence on petroleum.

Together, we can improve air quality .

Together, we can reduce carbon emissions.

Together , we can improve the health and Safety of our employees.

Together, we can reduce our environmental footprint.



Learn more at

WWW.SOYBIOBASED.ORG



THANK YOU & JOIN US!

Karen Coble Edwards

United Soybean Board Consultant

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David Woolf

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Phone: 919-623-2031

- **President TeleSwivel**
- **20 years sales, marketing and technology leadership**
- **Co-founder of three start-ups**
- **14 year US Army Veteran**
- **Instructor at US Military Academy at West Point**
- **BS from US Military Academy and MS from Johns Hopkins School of Advanced International Studies**



Jeff Allen

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Phone: 919-796-3298

- **Director of Sales & Marketing TeleSwivel**
- **15 years sales & marketing in automotive & construction industries**
- **BS from North Carolina State University**



The Green Garage: Solutions for Sustainable Disinfection

August 19, 2020

Dave Woolf

dwoolf@teleswivel.com

919-623-2031

- Founded 2009
- 4 NSN products
- 14 patents
- GSA Contract: 47QSWA18D007A
- SBIR Phase 1 Technology Development Award
- SDVOSB

Our mission is to develop and sell technology solutions to improve fleet safety, effectiveness, and sustainability

Sustainability is a Challenge with Conventional Disinfectants

- Health Risk to Employees from prolonged use.
- Damage and/or degrade materials used in vehicle interiors, electronics, optical equipment, tools.
- Environmental risks: transport/storage/disposal.
- Short Term Effect: agents need to be re-applied at short and regular intervals to maintain pathogen-free environments.

Active Ingredient	Bleach Sodium Hypochlorite	Isopropyl 70 (Alcohol)	Phenols	Quats Ammonium Compounds
Toxicity (EPA)	CAT I Highly toxic and Severely irritating	CAT II Moderately toxic and Moderately irritating,	CAT I or II Highly or Moderately Toxic	CAT III Slightly toxic and Slightly irritating
Health Effects	Corrosive to eyes and skin, respiratory irritant	Corrosive to eyes and skin, respiratory irritant	Corrosive to eyes and skin	Can cause contact dermatitis, can be associated with asthma
Environmental Issues	Toxic to aquatic organisms	Toxic to aquatic organisms	Toxic to aquatic organisms, Disposal Restrictions	Very toxic to aquatic organisms
PPE Requirement	PPE required and increased ventilation should be used	PPE required and increased ventilation should be used	PPE required and increased ventilation should be used	PPE required and proper ventilation should be used
Transport/Storage Requirements (US DOT)	Hazard Class 8 Corrosive	Hazard Class 3 Flammable and Combustible Liquid	Hazard Class 6 Poison	Not regulated as dangerous goods

- The COVID “music” will stop—the need to disinfect won’t
- There is no magic bullet—multiple countermeasures
- Cost (time, people, \$) is a factor
- Tech development will help



- Regular cleaning => biodegradable cleaners
- Botanical/biodegradable sprays
- New biochemical technologies
- UV energy-UVC

- Chlorine-Polymer spray: Non-hazardous; 30-Day effectiveness
- Durable Disinfectant Coating: 90-Day effectiveness
- UV-C

PROs

- Effective-long record in the science
- Lower operating costs
- Superior for fixed assets
- Flexible/modular applications
- No liquids involved

CONs

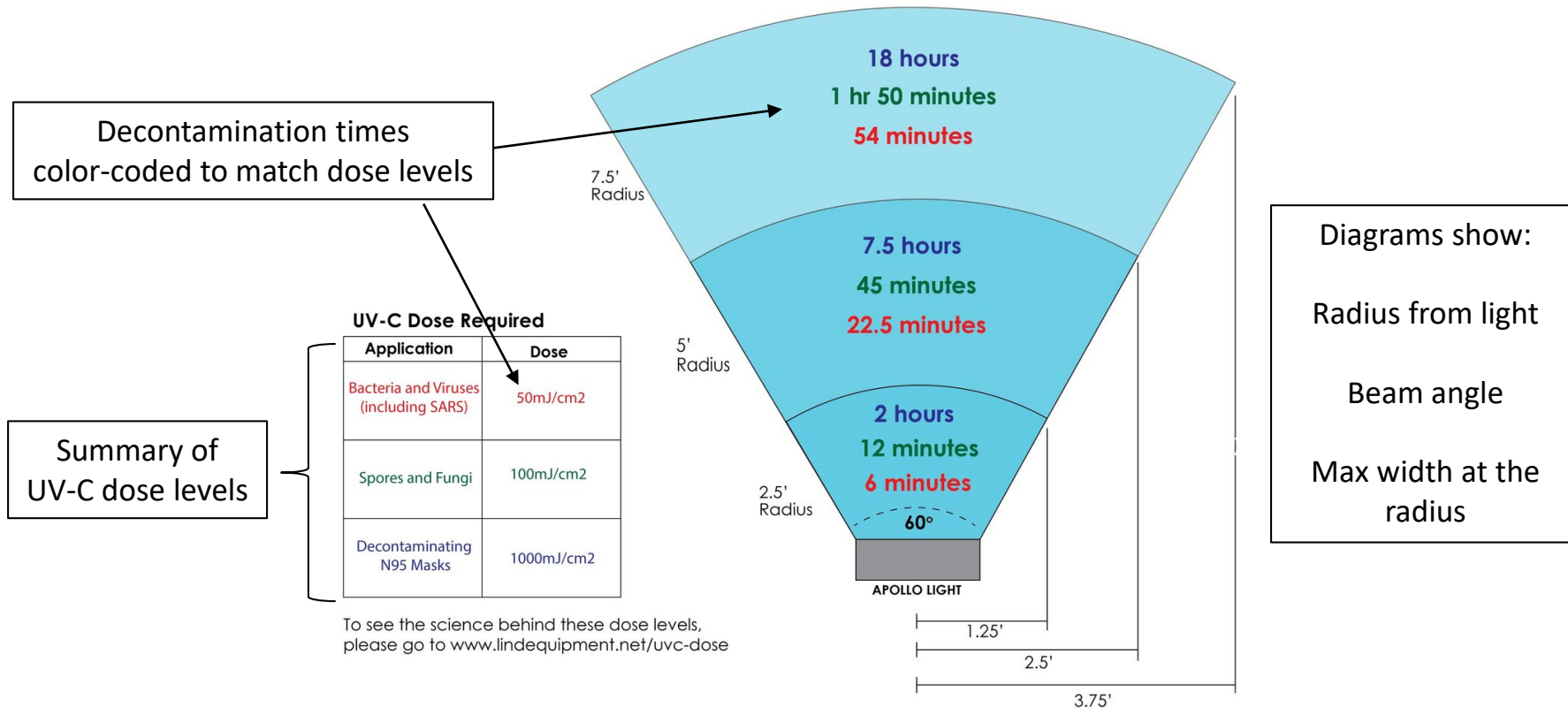
- Line of sight killer
- Must do the math
- Safety issues-exposure risk

State of the art LED technology

- EPA-Registered Manufacturer
- It is a 21" linear LED UVC light weighing only 6 lbs
- Can be daisy-chained together using the included plug and connector cords
- Can be mounted by hanging from the ceiling (with included straps), to a wall, or up to 8 lights mounted on our 51" stand

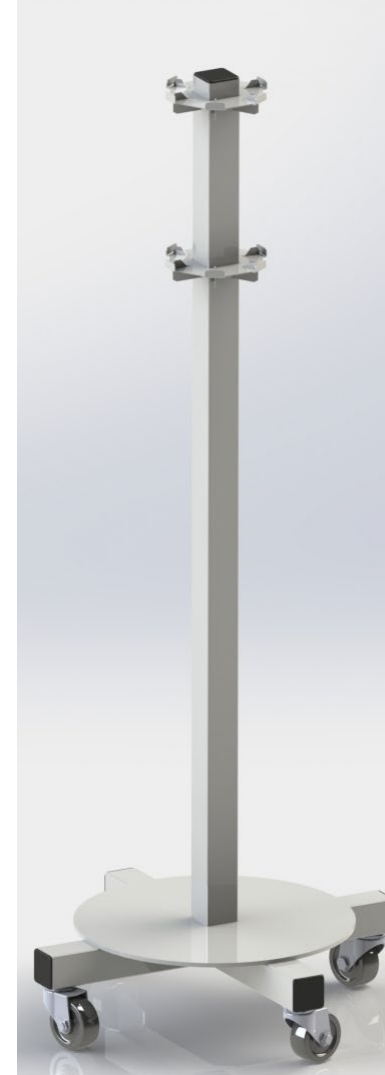
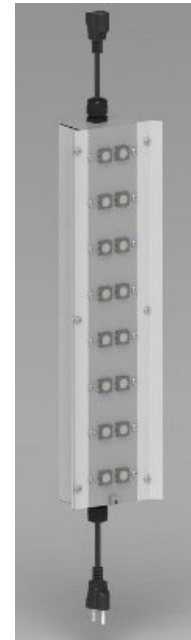


Single 50W Apollo Light Layout



Where can you replace spraying?

- 30,000 hr UV-C LED Light
- Stand
- Timer
- \$1,095



Cooperative Purchasing at GSA Advantage

- Biodegradable Cleaners
- Biodegradable Lubricants
- Botanical Disinfectant
- UV-C Disinfection (coming soon)



RSC Bio Solutions		CSRL 100055	BIO CLEANER 1000								
PC:	CSRL100055	<p>HEALTH AND SAFETY INFORMATION See safety data sheet (SDS) for full details. PRECAUTIONS: Use proper ventilation. Avoid contact with eyes, skin, and clothing. Wash thoroughly with soap and water. ENVIRONMENTAL INFORMATION: Biodegradable. Do not discharge into water bodies. STORAGE AND HANDLING: Store in a cool, dry place. Avoid contact with incompatible materials. DISPOSAL: Dispose of according to local regulations. OTHER INFORMATION: For more information, visit www.rscbio.com.</p>									
PK:		<p>INFORMATIONS SUR LA SANTÉ ET LA SÉCURITÉ Voir la fiche de données de sécurité (FDS) pour plus de détails. PRÉCAUTIONS: Utilisez une ventilation adéquate. Évitez le contact avec les yeux, la peau et les vêtements. Lavez soigneusement avec du savon et de l'eau. INFORMATIONS ENVIRONNEMENTALES: Biodégradable. Ne déversez pas dans les eaux. STOCKAGE ET MANÈGE: Conservez dans un endroit frais et sec. Évitez le contact avec des matériaux incompatibles. ÉLIMINATION: Éliminez conformément aux réglementations locales. AUTRES INFORMATIONS: Pour plus de renseignements, visitez www.rscbio.com.</p>									
FD:		<p>HAZARD IDENTIFICATION</p> <table border="1"> <tr> <td>HEALTH</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>ENVIRONMENT</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		HEALTH	1	0	0	ENVIRONMENT	0	0	0
HEALTH	1	0	0								
ENVIRONMENT	0	0	0								
DN:		<p>Water: Consult Safety Data Sheet (SDS) prior to using this product. Call 800-450-6666 for SDS.</p>									
CS 10010 15 gal (56.7 L)		MADE IN THE USA									
		NET 55 GALLONS (208L)									



https://www.gsaadvantage.gov/advantage/ws/search/advantage_search?q=0:2teleswivel%20rsc&db=0&p=2

Welcome!

- Tennent and Associates
- theyreguy@yahoo.com
- 615-636-8136



T.J. Tennent - Sr. Consultant



Danny Roberts -
Consultant



Ron Winkelmann -
Consultant

Tennent and Associates/The Tyre Guys are the Global Premier Experts in Tire Forensics, Law Enforcement Training and Fleet Training.

Choosing the right tires for your fleet, improving maintenance processes and limiting tire proliferation is important in reducing inventory volume and using data to show significant cost reductions.

Our goal is to limit the liability to your organization before you need us to defend you in court.

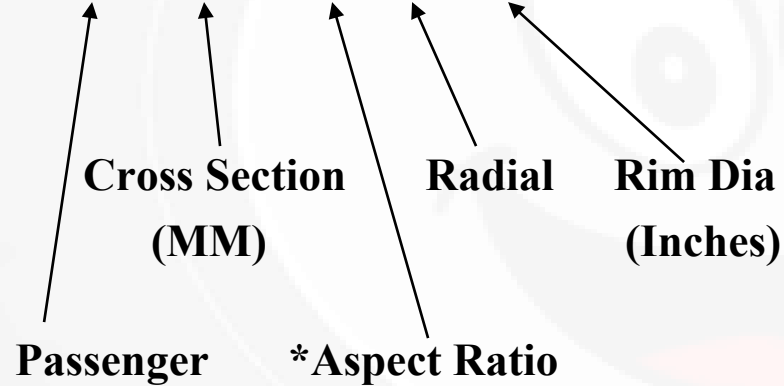


Meet Ron Flatt

Size Nomenclature

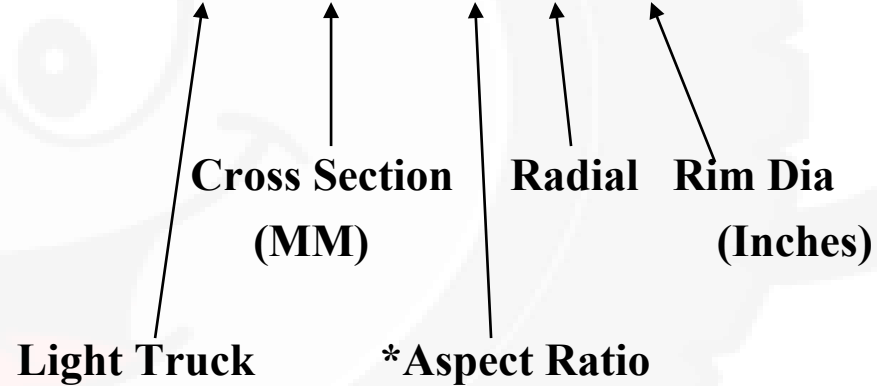
Passenger

P225/60R16

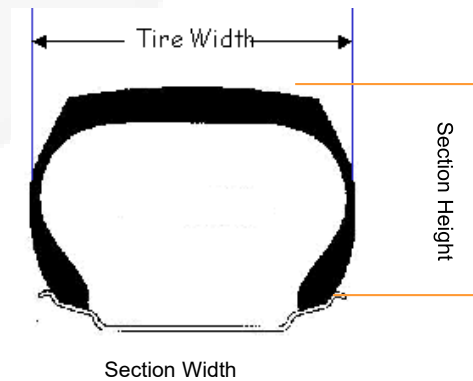


Light Truck

LT235/85R16

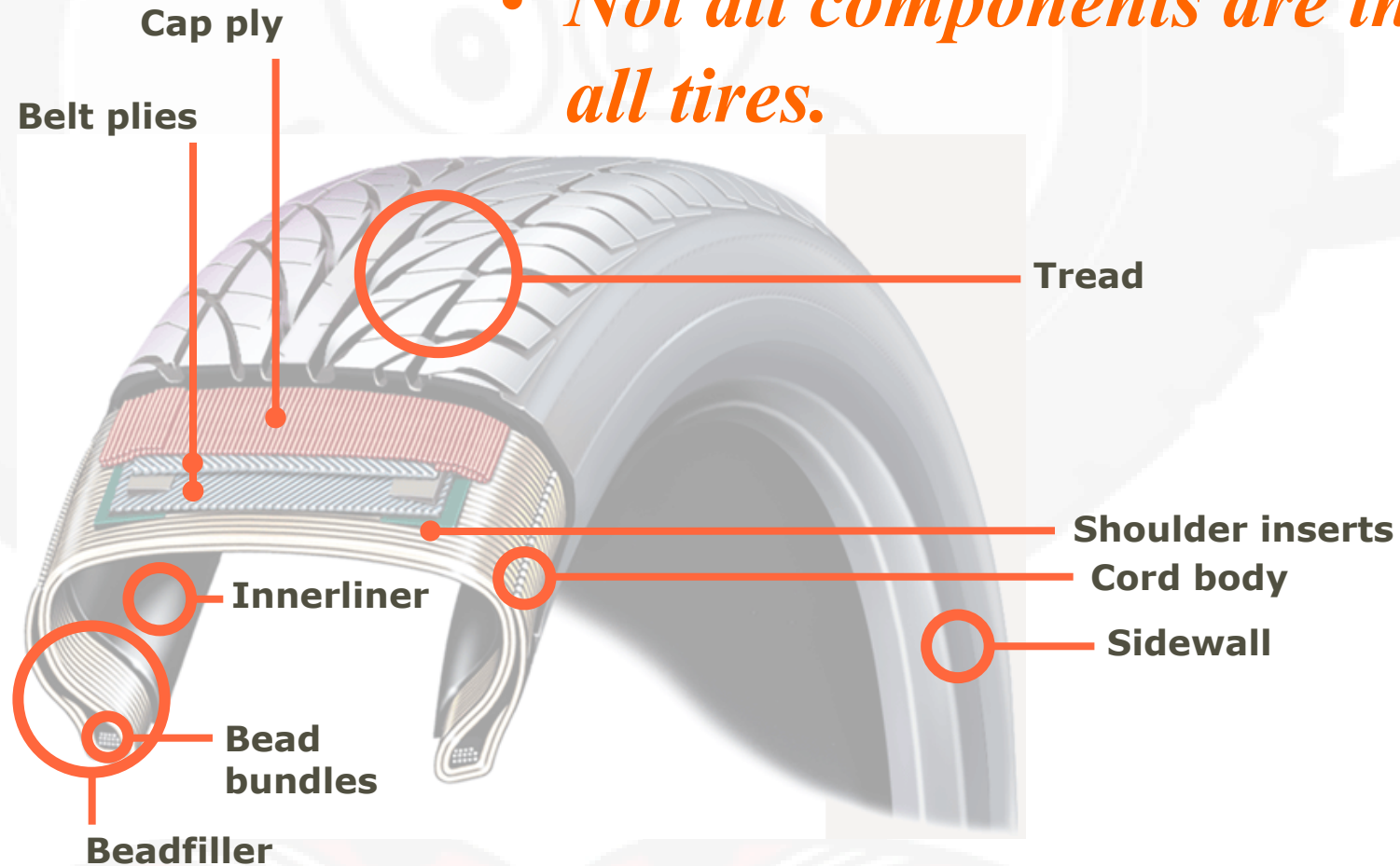


* Aspect Ratio = Section Height divided by Section Width
Lower Number = Shorter Sidewall & Wider Tread



Tire Components

• *Not all components are in all tires.*



P-Metric vs Euro-Metric

Standards Institutions

1. *"P"* in front of the tire's dimensions indicates that the tire manufacturer designed it under the American "P-metric" tire standards set by the Tire and Rim Association (TRA).
2. *Absence of the "P"* (or other letters) means it meets the standards of the European Tyre and Rim Technical Organization --- the "European metric" system (ETRTO).

Load Index

P195/70R14 has a load index of 90 (Max 1,323 lbs)

195/70R14 has a load index of 91 (Max 1,356 lbs)

Tire and Rim Association Designations

"P" is for passenger vehicles.

"LT" is for light truck vehicles.

"ST" is for special trailer.

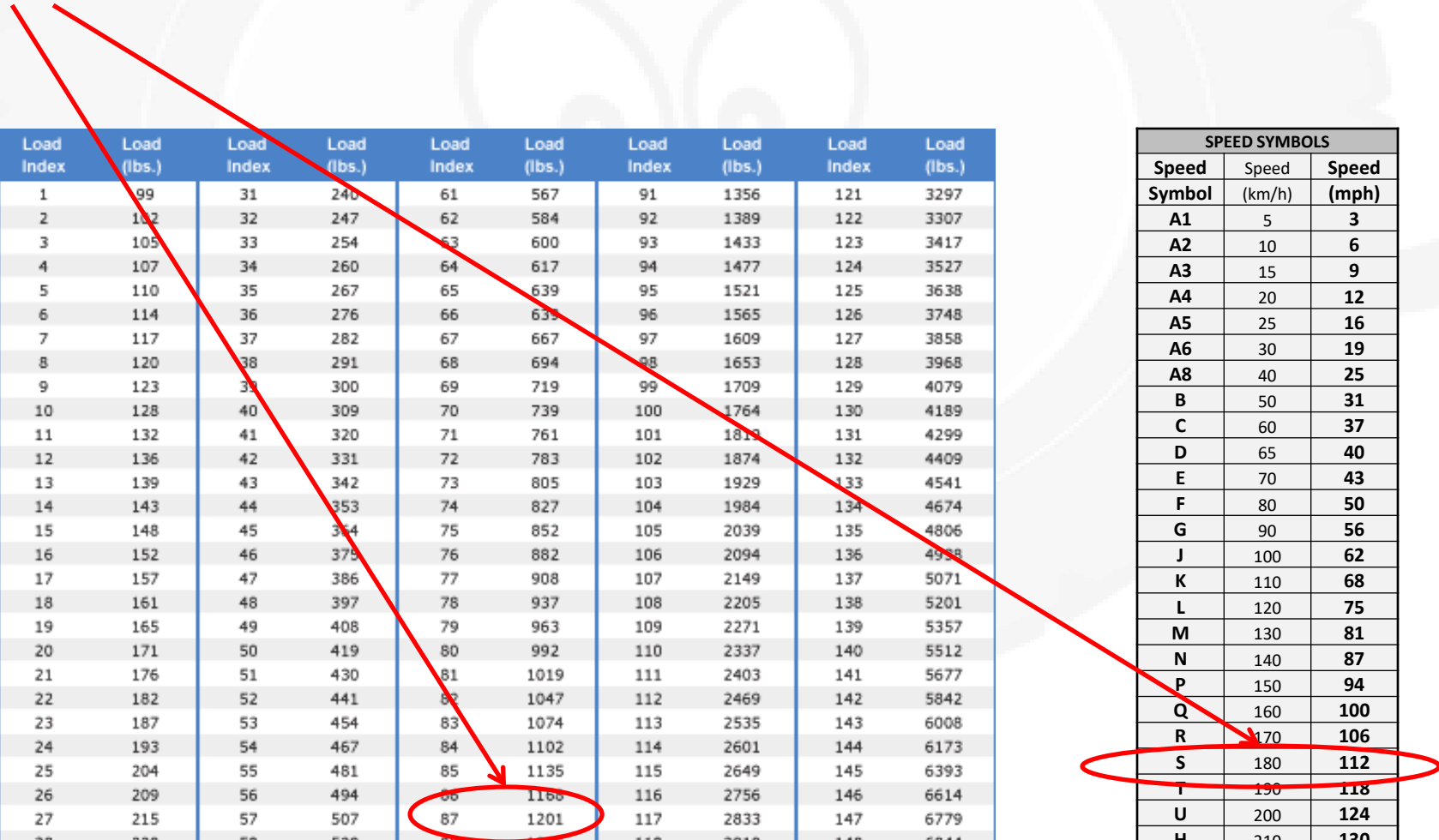
"T" is for temporary.

Using a P195/60R15 87S tire size as our example, the 87S at the end of the size represents the tire's service description. A service description identifies the tire's load index and speed rating. Service Descriptions are required on all speed rated (except for Z-speed rated) tires manufactured since 1991.

The first two digits (**87S**) represent the tire's load index and are followed by a single letter (**87S**) identifying the tire's speed rating.

Load Index	Load (lbs.)	Load Index	Load (lbs.)	Load Index	Load (lbs.)	Load Index	Load (lbs.)	Load Index	Load (lbs.)
1	99	31	240	61	567	91	1356	121	3297
2	102	32	247	62	584	92	1389	122	3307
3	105	33	254	63	600	93	1433	123	3417
4	107	34	260	64	617	94	1477	124	3527
5	110	35	267	65	639	95	1521	125	3638
6	114	36	276	66	659	96	1565	126	3748
7	117	37	282	67	667	97	1609	127	3858
8	120	38	291	68	694	98	1653	128	3968
9	123	39	300	69	719	99	1709	129	4079
10	128	40	309	70	739	100	1764	130	4189
11	132	41	320	71	761	101	1819	131	4299
12	136	42	331	72	783	102	1874	132	4409
13	139	43	342	73	805	103	1929	133	4541
14	143	44	353	74	827	104	1984	134	4674
15	148	45	364	75	852	105	2039	135	4806
16	152	46	375	76	882	106	2094	136	4938
17	157	47	386	77	908	107	2149	137	5071
18	161	48	397	78	937	108	2205	138	5201
19	165	49	408	79	963	109	2271	139	5357
20	171	50	419	80	992	110	2337	140	5512
21	176	51	430	81	1019	111	2403	141	5677
22	182	52	441	82	1047	112	2469	142	5842
23	187	53	454	83	1074	113	2535	143	6008
24	193	54	467	84	1102	114	2601	144	6173
25	204	55	481	85	1135	115	2649	145	6393
26	209	56	494	86	1166	116	2756	146	6614
27	215	57	507	87	1201	117	2833	147	6779
28	220	58	520	88	1235	118	2910	148	6844
29	227	59	536	89	1279	119	2998	149	7165
30	234	60	551	90	1323	120	3086	150	7385

SPEED SYMBOLS		
Speed Symbol	Speed (km/h)	Speed (mph)
A1	5	3
A2	10	6
A3	15	9
A4	20	12
A5	25	16
A6	30	19
A8	40	25
B	50	31
C	60	37
D	65	40
E	70	43
F	80	50
G	90	56
J	100	62
K	110	68
L	120	75
M	130	81
N	140	87
P	150	94
Q	160	100
R	170	106
S	180	112
T	190	118
U	200	124
H	210	130
V	240	149
W	270	168
Y	300	186



Passenger Tire Examples:

P-Metric

P225/75R16				
P	225	75	R	16
P-Metric	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code

P225/75R16 91H					
P	225	75	R	16	91H
P-Metric	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code	Load Index and Speed Symbol (Service Description)

P225/75ZR16					
P	225	75	Z	R	16
P-Metric	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Speed Symbol	Radial Construction	Rim Diameter Code

225/75R16 91H				
225	75	R	16	91H
Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code	Load Index and Speed Symbol (Service Description)

T115/75*16				
T	115	75	*D or R	16
Temporary Spare	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	D (Diagonal/Bias) or R (Radial) Construction	Rim Diameter Code

Light Truck Tire Examples:

LT-Metric

LT245/75R16 Load Range E					
LT	245	75	R	16	E
Light Truck	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code	Load Range

LT245/75R16 120/116Q Load Range E						
P	245	75	R	16	120/116Q	E
P-Metric	Nominal Cross-Section Width (millimeters)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code	Load Index and Speed Symbol (Service Description) (Single/Dual)	Load Range

31X10.50R15LT Load Range C					
31	10.50	R	15	LT	C
Overall Diameter (Inches)	Nominal Cross-Section Width (inches)	Radial Construction	Rim Diameter Code	Light Truck	Load Range

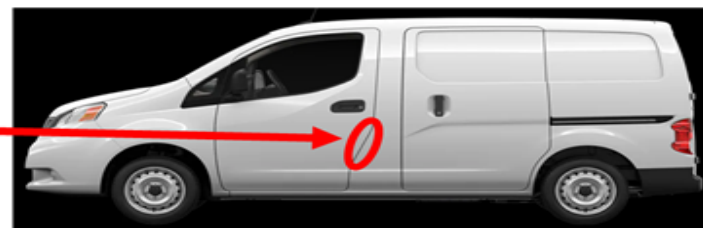
7.50-16LT Load Range D				
7.50	-	16	LT	D
Nominal Cross-Section Width (inches)	Non-radial Construction (bias)	Rim Diameter Code	Light Truck	Load Range

225/70R15C 112/110R					
225	70	R	15	C	112/110R
Nominal Cross-Section Width (inches)	Ratio of Height to Cross-Section Width (aspect ratio)	Radial Construction	Rim Diameter Code	European Commercial (Light Duty)	Load index and Speed Symbol (Service Description) (Single/Dual)

All these tires are 225/75R16. What are the differences??

Tire Description	Tire Construction	Tire Size	Load Index	Weight	Speed Rating	Speed (MPH)	Load Range	Pressure
Euro-Commercial	225/75R16C 121/120R	225/75R16C	121/120	3,197/3,086	R	106mph		83psi
Light Truck E load Range	LT225/75R16 115/112S E	LT225/75R16	115/112	2,679/2,469	S	112mph	E	80psi
Light Truck D load Range	LT225/75R16 110/107S D	LT225/75R16	110/107	2,337/2,149	S	112mph	D	65psi
Euro Metric Extra Load	225/75R16 108T XL	225/75R16	108	2,205	T	118mph	XL	42psi
Euro Metric	225/75R16 104T	225/75R16	104	1,984	T	118mph		36psi
P-Metric Extra Load	P225/75R16 106T XL	P225/75R16	106	2,094	T	118mph	XL	41psi
P-Metric	P225/75R16 104T	P225/75R16	104	1,984	T	118mph		35psi

TIRE AND LOADING INFORMATION			
SEATING CAPACITY - TOTAL 2 FRONT 2 REAR 0			
THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED 1752 KG OR 3863 LB			
TIRE	FRONT	REAR	SPARE
ORIGINAL TIRE SIZE	225/75R16C	225/75R16C	225/75R16C
COLD TIRE INFLATION PRESSURE	450 kPa / 65 PSI	500 kPa / 72 PSI	500 kPa / 72 PSI
SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION			
EE 100429			



Original Equipment Tire is a Euro-Commercial Tire.

This vehicle requires 72 psi in the tire of this construction.

If the O.E. tire, on this vehicle, is replaced by a tire of different construction, that tire will not carry the load at the door placard pressure!!!

All the tires, in the chart, are the same size but, are very different structurally. The vehicle above has a 225/75R16C tire mounted on it. This is a “Euro-Commercial” tire. This tire is designed to carry up to 3,197lbs at up to 83psi. Though all of the other tires listed on the chart above will fit on the same rim, non of them will carry as much load, at any pressure. If the P-Metric tire that is listed at the bottom of the list is applied to this vehicle, it will fit on the wheel but, it will carry a maximum load of 1,984lbs at a maximum pressure of 35psi. This would decrease the load carrying capacity of each tire by 1,213lbs (Total vehicle load carrying capacity would be reduced by 4,852lbs).

Hybrid and Electric Vehicle Tires

Fuel efficient tires have low rolling resistance that require less energy than standard tires to propel them in the direction of travel. The easier it is to roll the tires, the less heat is generated, and the less fuel needed to propel the vehicle. When tires heat up the tread will wear more quickly.



If you change the fuel-efficient tires on your hybrid or electric vehicle to conventional tires, the rolling resistance of the tires will be increased, and fuel economy will be decreased.



GOODYEAR
ASSURANCE FUEL MAX
Passenger All-Season

Size: **205/55R16 91H**
2016 Production
Eco Focus: **Fuel Max**
Serv. Desc: **91H**
UTQG: **580 A A**

Qty:

4



MICHELIN
ENERGY SAVER A/S
Passenger All-Season

Size: **205/55R16 91H**
Eco Focus: **Green X**
Serv. Desc: **91H**
UTQG: **480 A B**

Qty:

4



FIRESTONE
CHAMPION FUEL FIGHTER (H- OR V-SPEED RATED)
Grand Touring All-Season

Size: **205/55R16 91H**
Eco Focus: **eco focus**
Serv. Desc: **91H**
UTQG: **600 A A**

Qty:

4

Compare



ECOPIA EP422 PLUS (H- OR V-SPEED RATED)
Grand Touring All-Season

Size: **205/55R16 91H**
Eco Focus: **Eco-Product**
Serv. Desc: **91H**
UTQG: **640 A A**

Qty:

4



Two types of TPMS Systems.



Indirect TPMS relies on cars' anti-lock braking system (ABS). Since tire inflation levels affect tire rotation, indirect TPMS relies on the differences in wheel rotation to detect under-inflation. Unfortunately, indirect TPMS cannot detect all four tires being under-inflated and is prone to false alarms, for example when a long curve in the road causes the outside wheels to rotate more than the inside wheels.

The TPMS system does not mean that you do not have to check air pressure!

Direct TPMS is applied to all new cars and installs a monitor directly in the valve of each tire and lights up a dashboard alert when the tire pressure is 25% or more below the recommended level.



So Maintain Your Air Pressure!

- Most light vehicle tires can lose about 1 psi per month through leakage through the sidewall or around the bead/valve.
- Tire pressures will drop about 1 psi for every 10°F ambient temperature drop.
- It won't take long to undo all the rolling resistance improvement the tire engineer worked so hard to put in.
- Check your tire pressures monthly. It's the **FREE LUNCH!**

New Tire Application Guidelines

When you select a pair of replacement tires of the same size and construction as those on the vehicle, it is recommended they be placed on the rear axle.

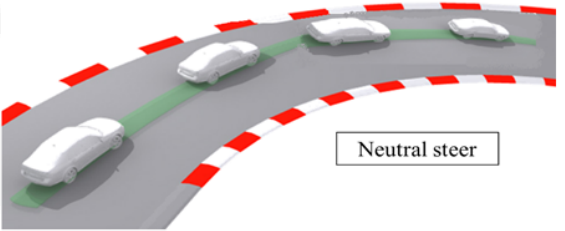
A single new tire should be paired on the rear axle with the tire having the most tread of the other three.

The best scenario is to replace all four tires and the same time, there will be opportunities that require the replacement of only two tires. During these occurrences, it is important that the two new tires be placed on the rear of the vehicle.

There are three scenarios (based on wet conditions) in which tires can be replaced on a vehicle:

1. Same tires all around, same amount of wear:

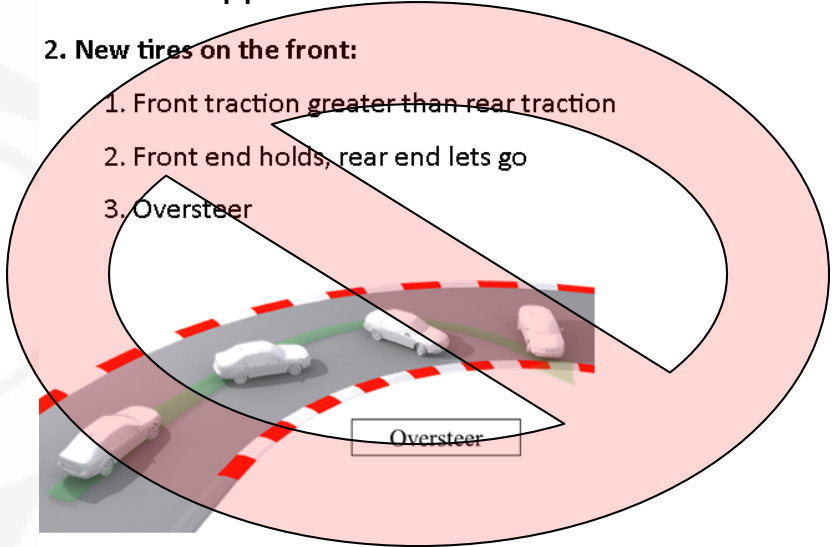
- 1. Traction equal on all tires
- 2. Neutral Steer



New Tire Application Guidelines

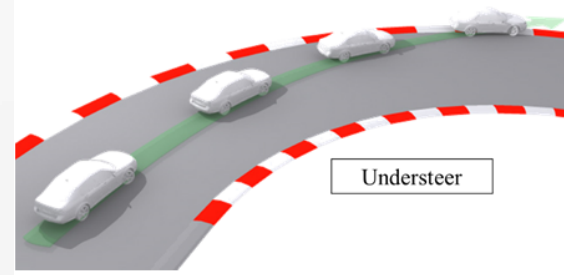
2. New tires on the front:

- 1. Front traction greater than rear traction
- 2. Front end holds, rear end lets go
- 3. Oversteer



3. New tires on the rear:

- 1. Rear traction greater than front traction
- 2. Rear End holds; front may tend to let go
- 3. Understeer



Note: This is preferable when it is not applicable to place four new tires on the vehicle simultaneously.

Can Tires Be Repaired Properly?

- Complete details can be found on the web
 - USTMA (United States Tire Manufacture's Association)
 - TIA (Tire Industry Association)
 - Or contact your tire vendor's technical service representative

Tire Manufacturer's Puncture Repair Recommendations

Manufacturer/Brand	Speed Rating	Multiple Repair Locations
BF Goodrich*	Maintained	3 repairs, minimum 90° apart*
Bridgestone**	Voided	Repairs cannot overlap
Continental***	Voided	Repairs cannot overlap
Dick Cepek/Cooper**	Voided	Repairs cannot overlap
Dunlop****	Maintained	Repairs cannot overlap 1 repair, H and above
Firestone**	Voided	Repairs cannot overlap
Fuzion**	Voided	Repairs cannot overlap
General***	Voided	Repairs cannot overlap
Goodyear****	Maintained	Repairs cannot overlap 1 repair, H and above
Hankook**	Voided	Repairs cannot overlap
Kumho**	Voided	Repairs cannot overlap
Michelin*	Maintained	3 repairs, minimum 90° apart*
Pirelli V and Above	Repair Not Endorsed by Pirelli	
H and Below	Maintained	2 repairs, minimum 180° apart*
Toyo* V and Above	Reduced to H	Repairs cannot overlap
H and Below	Maintained	Repairs cannot overlap
Sumitomo**	Voided	Repairs cannot overlap
Uniroyal*	Maintained	3 repairs, minimum 90° apart*
Yokohama**	Voided	Repairs cannot overlap

***Only 1 repair permitted for run-flat tires**

****To be driven as non-speed rated (85 mph/137 kmh maximum)**

*****Voids materials, workmanship and tread wear-out warranties**

******Only 1 repair permitted to retain H and above speed ratings.**

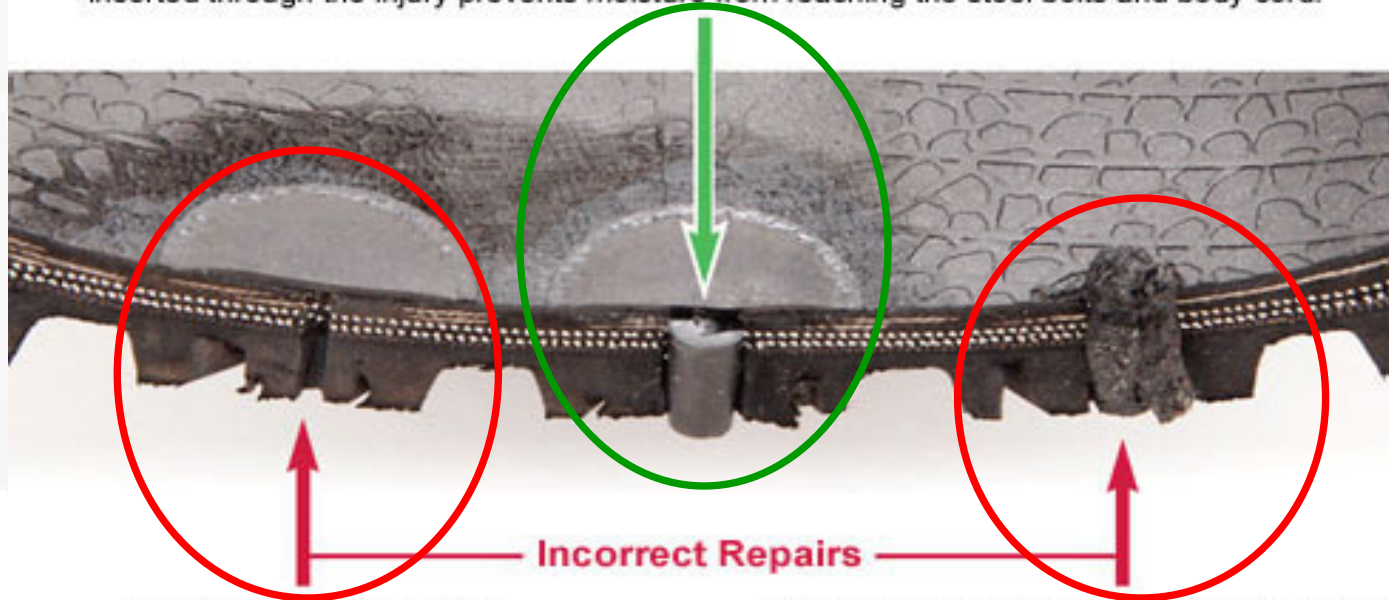
NOTE: Tire Rack will not repair any speed-rated run-flat tires because we cannot confirm their internal structural integrity.

Tire Repair

A Correct Repair

Seals the innerliner (the part of the tire that replaced the inner tubes and the only part designed to retain air) and fills the path of the injury.

Combination of patch & plug or a specific "mushroom" patch that combines the functions. The Patch on the inside reseals the innerliner to restore air containment and the rubber filler inserted through the injury prevents moisture from reaching the steel belts and body cord.



Patch Only on the Inside

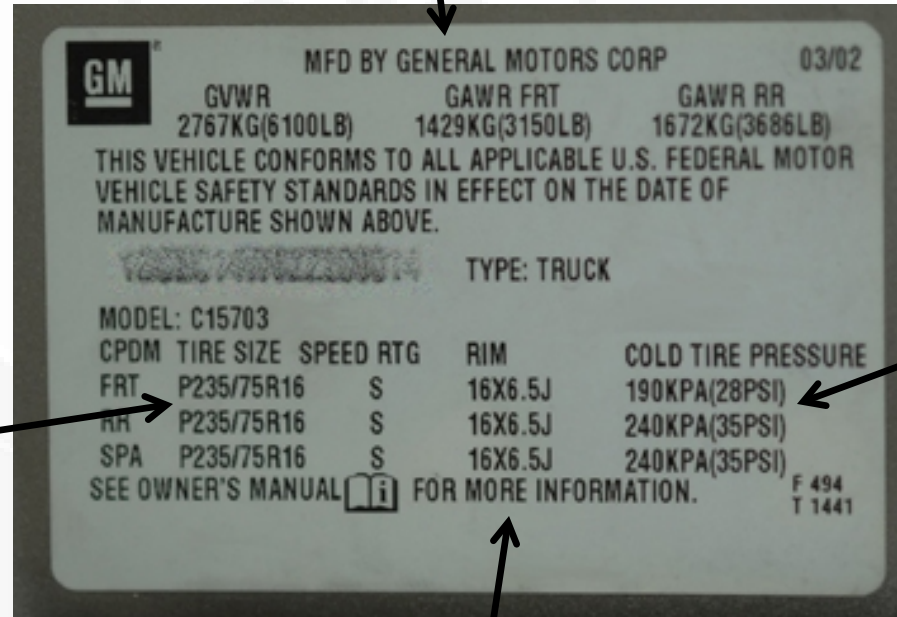
Reseals the innerliner but does not fill the path of the injury. This allows moisture to follow the path of the injury and reach the steel belts (causing them to rust) and/or the body cord.

String Plug Through the Path of the Injury

Often done as an external repair without inspecting the interior of the tire for damage. Fills the path of the injury, but does not guarantee sealing of the innerliner. This may allow air to migrate through the rubber as well as escape from the tire.

Door Placard

Gross, front and rear vehicle weights



CPDM	TIRE SIZE	SPEED RTG	RIM	COLD TIRE PRESSURE
FRT	P235/75R16	S	16X6.5J	190KPA(28PSI)
RR	P235/75R16	S	16X6.5J	240KPA(35PSI)
SPA	P235/75R16	S	16X6.5J	240KPA(35PSI)

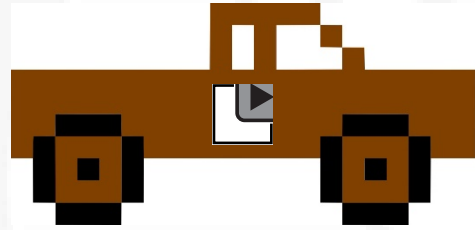
Original equipment tire size (including spare)

Cold tire pressure

Tire rim size

P-Metric vs Light Truck

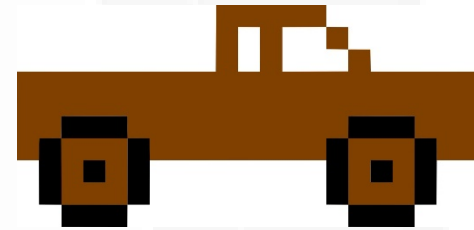
This can be done but, there are some differences in the tires and rims that need to be addressed:



Tire size



P245/75R17 110S
2337lbs



Tire size

LT245/75R17 121/118R E
3197lbs/2910lbs

P245/75R17 110S

Maximum load is 2,337lbs.

Maximum tire air pressure is **35psi**.

Minimum tire air pressure is 26psi

Load at minimum tire pressure is 2,050

Maximum sustained speed is 112 mph

Max Rim Pressure ~ 50psi

LT245/75R17 121/118R E

Maximum load is 3,197lbs/2,910lbs.*

Maximum tire air pressure is **80psi**.

Minimum tire air pressure is 35psi

Load at minimum pressure is 1,770/1,610*

Maximum sustained speed is 106 mph

Max Rim Pressure ~ 80psi

**The light truck tires have two load index ratings because light truck tires are often used on vehicles with dual rear wheels. ... The capacity for two tires is lower than a single tire because if one tire fails, it ensures that the vehicle can continue to carry the load.*

P-Metric vs Light Truck

If changing tires from one construction type to a different type, it is important to understand how this will affect load carrying capacity and air pressure requirements. The minimum and maximum air pressure requirements and load carrying capacities on these two tire types are very different. If the information on the door placard is linked to either of these tire construction types, when replacing the tire with the other construction type or size, the information on the vehicle door placard is then void!!!

TIRE SIZE DESIGNATION	STANDARD LOAD						EXTRA LOAD				
	kPa psi	180 26	200 29	220 32	240 35	250 36	LOAD INDEX	260 38	280 41	290 42	LOAD INDEX
P245/75R17	kg lbs.	930 2050	980 2160	1030 2271	1060 2337		110				

TIRE SIZE DESIGNATION	USAGE	TIRE LOAD LIMITS (lbs.) AT VARIOUS COLD INFLATION PRESSURES (psi)										
		35	40	45	50	55	60	65	70	75	80	95
LT245/75R17	DUAL	1610	1770	1920	2040	2210	2350	2535	2615	2750	2910 (E) ¹¹⁸	
	SINGLE	1770	1945	2110	2270	2430	2580	2755	2875	3020	3195 (E) ¹²¹	

Note: Chart is from the *Tire and Rim Association Annual Yearbook*

P-Metric vs Light Truck

If changing tires from one construction type to a different type, it is important to understand how this will affect tire and rim fitment requirements. The maximum air pressure requirements and load carrying capacities on these two rims are very different. Also, the P-Metric rim has a maximum rim width of 8" X 17". The Light Truck tire will not fit safely on a rim at this width. Also, the max rim pressure on the P-Metric rim is ~ 50psi (depending on rim) and the maximum pressure on the Light Truck tire is ~80psi.

TIRE SIZE DESIGNATION	MEAS. RIM WIDTH	DESIGN TIRE			MAXIMUM GROWN TIRE				*MIN. SIZE FACTOR	APPROVED RIM CONTOURS
		SECTION WIDTH	OVERALL DIAMETER		OVERALL WIDTH (")		OVERALL DIAMETER			
			HWY/ TRAC.	DEEP TRAC.	(For tire designs prior to 4/18/07)	(For tire designs after 4/18/07)	HWY/ TRAC.	DEEP TRAC.		
P245/75R17	7.00	248 9.76	800 31.50	806 31.73	263 10.35	258 10.16	816 32.13	822 32.36	1030 40.55	6½J, 7J, 7½J, 8J

TIRE SIZE DESIGNATION	MEASURING RIM WIDTH	DESIGN NEW TIRE			MAXIMUM GROWN TIRE			MINIMUM DUAL SPACING	*MINIMUM SIZE FACTOR	(3) APPROVED RIM CONTOURS
		SECTION WIDTH	OVERALL DIA.		OVERALL WIDTH	OVERALL DIA.				
			HWY.	TRAC.		HWY.	TRAC.			
LT245/75R17	7.00	248 9.76	800 31.50	806 31.73	263 10.35	814 32.05	820 32.28	288 11.34	1030 40.55	6½J, 7J, 7½J

Note: Chart is from the *Tire and Rim Association Annual Yearbook*

A cartoon character with a large, round, textured body, a smiling face, and a hand pointing upwards. The character is rendered in a light gray color. The text "Questions???" is centered on the character's face.

Questions???



**SUSTAINABLE
FLEET
TECHNOLOGY**

VIRTUAL CONFERENCE 2020

**Session 4: Green Garage Follow Up
& Application Review**

August 19, 2020